Moifjellet vindkraftverk

Del B

B1: Tekniske fagrapporter

Mars 2025
Rev1 sendt til NVE april 2026

Statkraft

Statkraft Vind Utvikling DA har gjennomført konsekvensutredninger av Moifjellet vindkraftverk i henhold til utredningsprogrammet fastsatt av Norges vassdrags- og energidirektorat (NVE) 26. juni 2024, som er beskrevet i vedlegg 1 i del A av konsesjonssøknaden.

Denne delen av konsesjonssøknaden (del B) inneholder fagrapportene i sin helhet. Alle utredningene er utført av uavhengige konsulenter, som er oppsummert i tabell 6-1 i del A av konsesjonssøknaden. En oppsummering av utredningene finnes i kapittel 6 i del A av konsesjonssøknaden. Grunnet omfanget av fagrapportene er del B delt i to deler, en del som inneholder de tekniske fagrapportene og en del som inneholder miljø og samfunn fagrapportene. De tekniske rapportene er samlet i dette dokumentet, mens miljørapportene er samlet i et separat dokument som sendes som andre del av del B. Videre er vedlegg til landskapsrapporten, på grunn av sin betydelige størrelse, presentert som et eget dokument. En oversikt er presentert i innholdsoversikten på neste side..

Konsekvensene er vurdert med utgangspunkt i et «0-alternativ» (dagens situasjon) som beskriver den antatte situasjonen i de berørte områdene dersom tiltaket ikke blir gjennomført.

Innholdsoversikt

B1: Tekniske fagrapporter (dette dokumentet)

- Klimatilpasning
- ROS-analyse
- Støy
- Skyggekast
- Eiendomsverdi
- Transportanalyse
- Værradar

B2: Miljørapporter

- Vannmiljø og forurensing
- Kulturminner og kulturmiljø
- Lokalt og regionalt næringsliv
- Landbruk
- Mineralressurser
- Folkehelse
- Landskap
- Naturmangfold
- Friluftsliv
- Klimagassutslipp

Vedlegg

- Et eget dokument med temakart fra konsesjonssøknaden del A er lagt ved som vedlegg.
- Visualiseringer fra landskapsutredning

B3: Rapporter unntatt offentligheten:

Rapportene er unntatt offentlighet og sendt til NVE som en del av konsesjonssøknaden.

- Tematisk fagutredning fugl
- Kapasitet Moifjellet
- Flomfare
- Skredfare
- Elektronisk kommunikasjon
    1. Moifjellet KU DAB Del 1
    2. Moifjellet KU DTT Del 1 foreløpig
    3. Rapport om påvirkning på ekomnettet VHF radio, Mobilkommunikasjon, Radiolinjer
- Luftfart
    1. Moifjellet KU Luftfart fra Avinor
    2. Moifjellet KU Luftfart fra QinetiQ
- Forsvaret

Fagrapport:

Klimatilpasning

RAPPORT

KU for Moifjellet Vindkraftverk - Klimatilpasning

OPPDRAGSGIVER

Statkraft

EMNE

KLIMATILPASNING FOR MOIFJELLET VINDKRAFTVERK

Dato / Revisjon: 29. januar 2025 / 02

Dokumentkode: 10252119-01-RIM-NOT-002

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Rapport

OPPDRAG	KU for Moifjellet Vindkraftverk - Klimatilpasning	DOKUMENTKODE	10252119-01-RIM-NOT-002
EMNE	KLIMATILPASNING FOR MOIFJELLET VINDKRAFTVERK	TILGJENGELIGHET	Åpen
OPPDRAGSGIVER	Statkraft	OPPDRAGSLEDER	Håvard Finanger
KONTAKTPERSON	Andreas Stokke	UTARBEIDET AV	Kévin Sanouiller
KOORDINATER	Sone: / Øst: / Nord:	ANSVARLIG ENHET	10234052 Vindkraft Midt
GNR./BNR./SNR.	/ /		

SAMMENDRAG

På oppdrag fra Statkraft er det utført en analyse om klimatilpasning for Moifjellet Vindkraftverk i Rogaland fylke. Risiko for økte nedbør, gressbrann og vindstyrke er vurdert spesielt. Vår anbefaling til planarbeidet er å vurdere risiko for branntilløp fra turbiner til tørt gress kombinert med sterkt vindkast, og sikre eventuelle avbøtende tiltak.

02	29.01.25	Oppdatert opplysninger om prosjektet	Kévin Sanouiller	Henrik Bjørgan	Håvard Finanger
01	19.12.24	Lagt inn flere detaljer etter tilbakemeldinger fra Statkraft	Kévin Sanouiller	Henrik Bjørgan	Håvard Finanger
00	15.11.24	Leveranse av rapport	Kévin Sanouiller	Henrik Bjørgan	Håvard Finanger
REV.	DATO	BESKRIVELSE	UTARBEIDET AV	KONTROLLERT AV	GODKJENT AV

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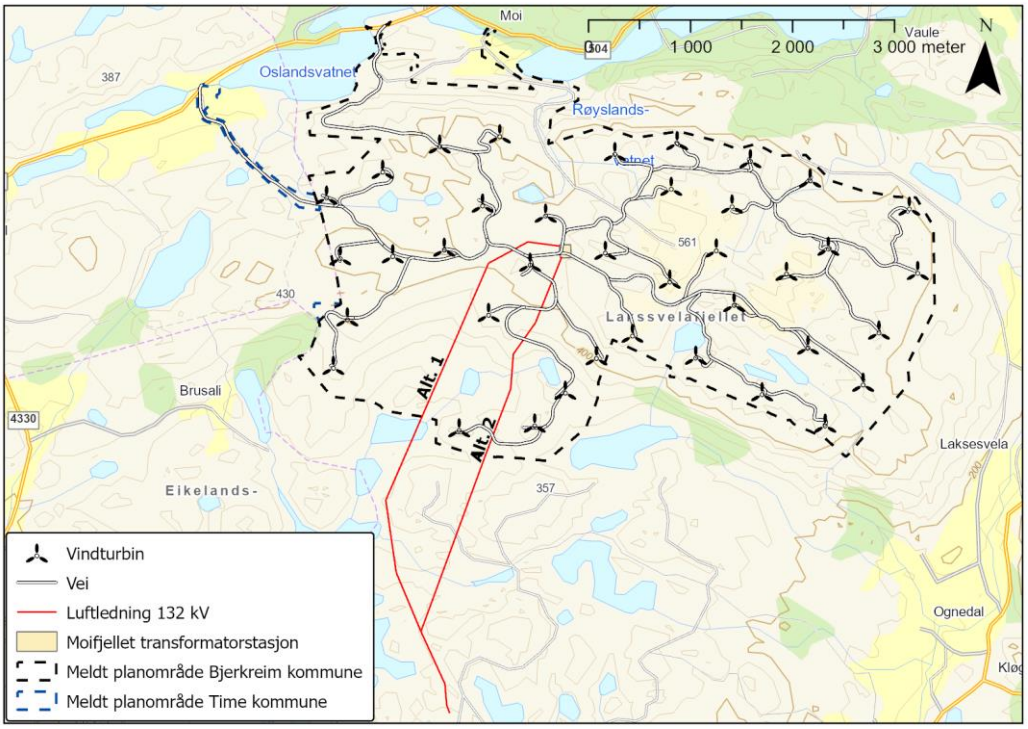
1 Bakgrunn

1.1 Bakgrunn for prosjektet

Denne konsekvensutredningen skal gi felles underlag for Bjerkreim kommune og Time kommunes behandling av områderegulering for Moifjellet vindkraftverk med atkomstvei, og for NVEs behandling av konsesjonssøknad for Moifjellet vindkraftverk med atkomstvei og nettilknytning.

1.2 Planområdet

Moifjellet vindkraftverk planlegges i Bjerkreim og Time kommune i Rogaland fylke. Selve vindkraftverket med vindturbiner planlegges i Bjerkreim kommune, mens atkomstveien i hovedsak ligger i Time kommune. Nettilknytningen fra vindkraftverket til Bjerkreim transformatorstasjon ligger i Bjerkreim kommune. Lokalisering og det samlete planområdet framgår på kart i Figur 1.

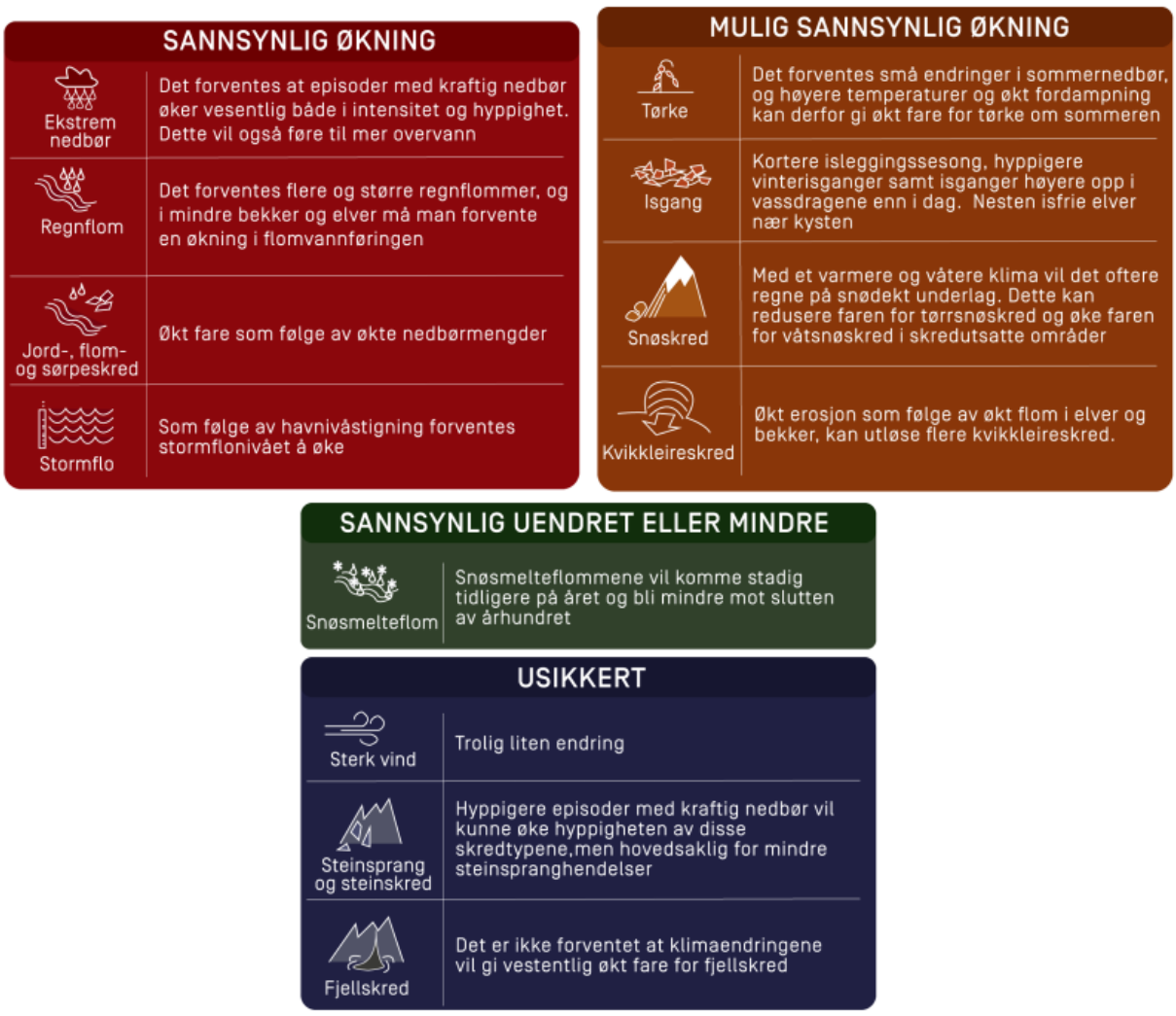


Figur 1: Kart over planområdet.

2 Behov for klimatilpasning

Menneskeskapt global oppvarming øker sannsynligheten for ekstrem værhendelser som tørke og skybrudd. Kombinert med menneskeskapte naturinngrep og aktivitet, geologiske og hydrologisk forhold, kan disse ekstreme værhendelser utløse ulike typer skred, flom, stormflo med flere. Dette utgjør en risiko for tap av liv og materielle skader (Oppenheimer et al., 2015). For å forebygge disse skadene er det behov for å dimensjonere bygg og infrastruktur med et klimapåslag som er en sikkerhetsfaktor (Norsk klimaservicesenter, 2024). Kvantifisering av dette påslaget avhenger av hvordan menneskeskapte utslipp styres. Klimatilpasning i alle planer etter plan- og bygningsloven skal legge «høye alternativer fra nasjonale klimaframskrivninger [...] til grunn» (Statlige planretningslinjer for klima- og energiplanlegging og klimatilpasning, 2018). Norsk klimaservicesenter publiserer det mest detaljerte kunnskapsgrunnlaget vi har om klimaendringene til bruk i arealplanlegging, basert på en global utslippssenario RCP 8.5 som anses som det høyet alternativet i retningslinjen. Kunnskapsgrunnlaget publiseres som fylkesvise klimaprofiler som beskriver hoved utfordringer med klimaendringer (se figur 1). Prognosen er hovedsakelig en nedskalering av klimamodeller fra FNs klimapanel (IPCC, 2014; Norsk klimaservicesenter, 2015). Prognose på kommunenivå er under utarbeidelse, men ikke tilgjengelig per dags dato.

2.1 Sannsynlighet for klimaendringer i Rogaland ved slutten av århundret



Figur 2. Sammendrag av forventede endringer fra perioden 1971–2000 til 2071–2100 i klima, hydrologiske forhold og naturfarer som kan ha betydning for samfunnsikkerheten. Kilde: (Norsk Klimaservicesenter, u.å.)

2.2 Usikkerheten

Norsk klimaservicesenter (2020) har redegjort for usikkerheten i klimaprofilene. Det bygger på usikkerheten i fremtidig menneskeskapte utslipp, naturlige klimavariasjoner og klimamodellene. Prognosene om nedbør er mer usikker enn endringer i temperatur.

2.3 Eksponering for klimaendringer

Vindkraftverket med tilhørende infrastruktur er lite eksponert for endringer i grunnforhold og hydrologi (skred, flom, tørke) fordi turbinene fundamenteres på fast fjell og overdekning av løsmasser over fjellgrunnen gir lite risiko for løsmasseskred ellers i planområdet. Se delrapport om skred i konsekvensutredningen (10252119-01-RIGberg-RAP-001). Det er ellers store ubebygde arealer i planområde som gir rom for en naturbasert overvannshåndtering ved kraftige nedbør. Det hydrologiske nettet av åpne vannveier tjern, bekker og vann fordeler overvann ut i forskjellige retninger ut av planområdet til nærmeste vann. Vegnettet internt i planområdet forringer ikke vannsystemet i dag. Der interne veier går over eksisterende bekker dimensjoneres kulvertene med klimapåslag. Se delrapporten om hydrologi i konsekvensutredningen (10252119-01-RIVASS-RAP-001).

Vindkraftverket er særlig utsatt for økt vindstyrke. Turbinene dimensjoneres iht. IEC61400 med klimapåslag som hensyntar denne økte belastningen etter en stedsspesifikk vurdering. Tørkeperioder kan øke fare for brann i kystlynghei dersom den ikke skjøtes. Vindturbinene er lite eksponerte for gressbrann fordi tårnene bygges i stål (ubrennbare materiale). Det samme gjelder infrastrukturen. Turbinene kan samtidig ta fyr ved elektrisk defekt (Bjerknes, 2024; Gjessing, 2023). Dersom det skjer når vinden er sterk og gresset er tørt (noe som ikke er uvanlig i tørke perioder), vil forholdet for et branntilløp være til stede. Dette scenarioet bør vurderes i risiko- og sårbarhetsanalysen i planen. Vi vil anbefale å vurdere forebyggende tiltak som å vanne og skjøte kystlynghei i tørkeperioder eller å etablere ubrennbare soner (grus kombinert med infrastrukturen) som er brede nok for at gressbrann slokkes av seg selv før den når evt. bygg og infrastruktur.

Vi har ellers ikke kunnskap om klimaendringene vil påvirke ising av turbinene.

3 Konklusjon

Infrastruktur må dimensjoneres med klimapåslag for å håndtere økte nedbørsmengder som følge av klimaendringer. Vindturbinene må dimensjoneres med klimapåslag for å hensynta økt vindstyrke. Disse kravene er allerede ivaretatt gjennom eksisterende regelverk (TEK17, IEC61400) (Direktoratet for byggkvalitet, u.å.; International Electrotechnical Commission, 2019). Vår anbefaling til planarbeidet er å vurdere risiko for branntilløp fra turbiner til tørt gress kombinert med sterkt vindkast, og sikre eventuelle avbøtende tiltak.

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Fagrapport:

ROS - Analyse

RAPPORT

Moifjellet vindkraftverk – ROS-analyse

OPPDRAGSGIVER

Statkraft Vind Utvikling DA

EMNE

ROS-ANALYSE

DATO / REVISJON: 29. 01 2026 / 01

DOKUMENTKODE: 10262775-01-PLAN-RAP-02

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RAPPORT

OPPDRAG	**Moifjellet vindkraftverk - områderegulering og konsesjonssøknad**	DOKUMENTKODE	10262775-01-PLAN-RAP-02
EMNE	ROS-analyse	TILGJENGELIGHET	Åpen
OPPDRAGSGIVER	**Statkraft Vind Utvikling DA**	OPPDRAGSLEDER	Håvard Finanger
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KOORDINATER	Sone: Øst: Nord:	ANSVARLIG ENHET	5032 Arealplan, Byggesak og Landskap
GNR./BNR./SNR.	/ /		

SAMMENDRAG

Det er gjennomført en risiko- og sårbarhetsanalyse (ROS-analyse) i forbindelse med utarbeidelsen av reguleringsplan for Moifjellet vindkraftverk i Bjerkreim kommune.

Hensikten med ROS-analysen er å gjennomføre en systematisk kartlegging av mulige uønskede hendelser som har betydning for om arealet er egnet til foreslått utbyggingsformål, for derigjennom å identifisere hvordan prosjektet ev. bør endres for å redusere risikoen til et akseptabelt nivå, jf. plan- og bygningsloven § 4-3.

I tabell 4 1 gjennomgås 35 risiko- og sårbarhetsforhold. Av disse vurderes syv uønskede hendelser å utgjøre en særskilt risiko, og disse har derfor blitt analysert mer i detalj. De syv vurderte, uønskede hendelsene er:

Risikomatrise	Konsekvens		
Sannsynlighet	Små	Middels	Store
Høy			
Middels	**Hendelse 1b) Sterk vind og løse gjenstander** **Hendelse 4 Vassdrags flom**	**Hendelse 3b) Nedfall av snø/is fra maskinhus eller iskast som skader mennesker, anlegg og/eller utstyr** **Hendelse 6 Skred (stein og snø) og steinsprang** **Hendelse 8a) Skog- og lyngbrann**	

01	23.01.26	Revidert etter innspill fra NVE	Eivind Holmvik	Tom Langeid	Tom Langeid
00	14.03.25	Leveranse av rapport	Eivind Holmvik	Tom Langeid	Tom Langeid
REV.	DATO	BESKRIVELSE	UTARBEIDET AV	KONTROLLERT AV	GODKJENT AV

Lav	**Hendelse 28 Fare for akutt forurensning på land eller i sjø, oljeutslipp etc.**		**Hendelse 1a) Sterk vind som påfører skade på vindturbin**

ROS-analysen peker på avbøtende tiltak som vil redusere sannsynligheten for og konsekvensene av de ulike hendelsene. Det må rettes fokus mot disse forholdene i den videre planprosessen. Forslag til avbøtende tiltak er oppsummeres i tabellen under.

Uønsket Hendelse	**Forslag til tiltak for planområdet/bygget:**	**Oppfølging gjennom planverktøy/info til kommunen etc.:**
Hendelse 1a) Sterk vind som påfører skade på vindturbin	- Prosjektering og utførelse av vindturbiner med tilstrekkelig sikkerhet mhp. dimensjonerende vindforhold. - Følge rutiner for vedlikehold, inspeksjoner og oppfølging - Sikkerhetssystemer som stanser blader og gir mulighet til å justere navet og/eller blader ved ekstrem vind.	– Følges opp i prosjektering, bygging av tiltak, gjennom føringer i detaljplanen jf. energiloven, og i drift av anlegg
Hendelse 1b) Sterk vind og løse gjenstander	- Følge rutiner for oppbevaring og sikring av utstyr og gjenstander. -	- Følges opp i prosjektering, bygging av tiltak, gjennom føringer i detaljplanen jf. energiloven, og i drift av anlegg.
Hendelse 3b) Nedfall av snø/is fra maskinhus eller iskast som skader mennesker, anlegg og/eller utstyr	- Interne rutiner og opplæring av driftspersonell. - Iskastfrisone langs turvei opp til Urdalsnipa. - I tråd med gjeldende vilkår om iskast i vindkraftkonsesjoner, må det settes opp fareskilt som varsler om at iskast kan inntreffe innenfor en definert sikkerhetssone rundt vindturbinene. - Varslingssystem for is-oppbygging (knyttet til egen arbeidsinstruks). - Risikovurdering for iskast for Moifjellet.	- Iskastfrisone langs turvei foreslås tatt inn i planbestemmelsene. - Følges opp i henhold til NVEs veileder for iskast. - Øvrige tiltak følges opp i prosjektering og bygging, gjennom føringer i detaljplanen jf. energiloven, og i drift av anlegg.
Hendelse 4 Vassdrags flom	- Etablere stikkrenner og kulverter for å bevare de naturlige vannveier så langt det er mulig. I noen tilfeller kan det være nødvendig å etablere	- Følges opp i prosjekteringen og bygging av tiltaket, gjennom føringer i detaljplanen jf. energiloven.

	grøfter og/eller justere veglinjer for gunstig kryssing av dreneringslinjer - Erosjonssikring bør vurderes i områder der tiltak plasseres innenfor flomutsatte områder	
Hendelse 6 Skred (stein og snø) og steinsprang	- Heve veien slik at den ligger på en veifylling som også kan fungere som en skredvoll mot steinsprang/snøskred med lav energi - Rensk og/eller sikring av ustabile bergpartier og -blokker - Flytte veitrasé ut av faresonene	- Følges opp i prosjektering og bygging av tiltak, gjennom føringer i detaljplanen jf. energiloven.
Hendelse 8a) Skog- og lyngbrann	- Gruset flate rundt turbiner, transformatorstasjon og driftsbygning, samt veier i området. - Det planlegges etablering av transformatorceller som begrenser spredning ved eventuell brann i transformator. - Branndeteksjon og kontinuerlig overvåkning av komponenter. - Rutiner for stopping av turbin før farlige høye temperaturer oppnås. - Beredskapsplan med rutiner for hindring av spredning (f.eks. vanning)	- Følges opp i prosjektering, bygging av tiltak, gjennom føringer i detaljplanen jf. energiloven, og i drift av anlegg.
Hendelse 28 Fare for akutt forurensning på land eller i sjø, oljeutslipp etc.	- Mattilsynet skal godkjenne tiltak som tillates innenfor nedbørsfeltet. - Nedbørsfeltet avsettes som hensynssone i områdeplanen, med begrensninger i aktivitet og tiltak. - Ved ekstrem værhendelse vil det ta noe tid før ev. utslipp vil nå drikkevannskilde. Det vil da være mulig å iverksette avbøtende tiltak som lenser. - Fysiske barrierer som lukkede systemer med oljetrau, tette celler og oljeoppsamling.	– Følges opp i områdereguleringen og detaljplan jf. energiloven, og drift av anlegget.

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Innledning

1.1 Hensikten med ROS-analyser

Krav om ROS-analyser er et generelt utredningskrav som gjelder alle planer for utbygging, i henhold til plan- og bygningsloven (PBL) § 4-3. Hensikten med ROS-analyse er å sikre et tilstrekkelig kunnskapsgrunnlag for å ivareta samfunnssikkerhet i planområdet, og gi kommunen et godt beslutningsgrunnlag for å ivareta samfunnssikkerhet i arealplanleggingen.

I en ROS-analyse kartlegges alle risiko- og sårbarhetsforhold i forbindelse med ønsket utbyggingstiltak i et planområde. Med risiko- og sårbarhetsforhold menes forhold som har betydning for om arealet er egnet til utbyggingsformålet, og eventuelle endringer i slike forhold som følge av planlagt utbygging. Dette kan knytte seg til arealet slik det er fra naturens side, eller som følge av arealbruken.

Denne ROS-analysen for Moifjellet vindkraftverk er utarbeidet av Multiconsult AS på oppdrag fra Statkraft Vind Utvikling DA.

1.2 Begrepsforklaring

Tabell 1 gir oversikt over de mest brukte begrepene i forbindelse med ROS-analyser.

Tabell 1-1: Begrepsforklaring

Begrep	Beskrivelse
ROS-analyse	Risiko- og sårbarhetsanalyse.
Fare	Med fare menes forhold som kan medføre konkrete stedfestede hendelser som innebærer skade eller tap.
Uønsket hendelse	En hendelse eller tilstand som kan medføre skade på mennesker, stabilitet eller materielle verdier.
Risiko	Uttrykk for den fare som uønskede hendelser/tilstander representerer for mennesker, stabilitet eller materielle verdier. Sannsynligheten for og konsekvensen av ulike hendelser gir til sammen et uttrykk for risikoen som en uønsket hendelse representerer.
Sannsynlighet	Et mål for hvor trolig det er at en bestemt hendelse inntreffer i planområdet innenfor et visst tidsrom.
Sårbarhet	Vurderer motstandsevnen til utbyggingsformålet, samfunnsfunksjonene, evt. barrierer og evnen til gjenopprettelse.
Konsekvens	Virkningen den uønskede hendelsen kan få i et planområde.
Usikkerhet	Handler om å vurdere kunnskapsgrunnlaget.
Barrierer	Eksisterende tiltak som f.eks. flom-/skredvoll, sikkerhetssoner rundt farlig industri eller varslingssystemer som kan redusere sannsynlighet for og konsekvens av en uønsket hendelse.
Tiltak	I oppfølging av funn for ROS-vurderingen kan det bli avdekket behov for tiltak for å redusere risiko og sårbarhet. Dette kan være forbedringer i barrierer eller nye tiltak.
Stabilitet	Innebærer en vurdering av eventuelle forstyrrelser i dagliglivet på grunn av svikt i kritiske samfunnsfunksjoner og manglende dekking av grunnleggende behov hos befolkningen. Konsekvenser for natur og miljø blir vurdert som egne punkter i ROS-analysen, der vurderingen av konsekvensene er rettet mot de tre konsekvenstypene.

1.3 Grunnlagsinformasjon

Vurderingene i analysen baserer seg på tilgjengelig dokumentasjon om prosjektet, samt på tilgjengelige faglige vurderinger. Dette består av offentlige tilgjengelige databaser og rapporter/notater utarbeidet ifm. planforslaget og annet oversendt underlag. Alle kildene som er blitt benyttet er opplistet i kapittel 7 Referanser.

2 Metode

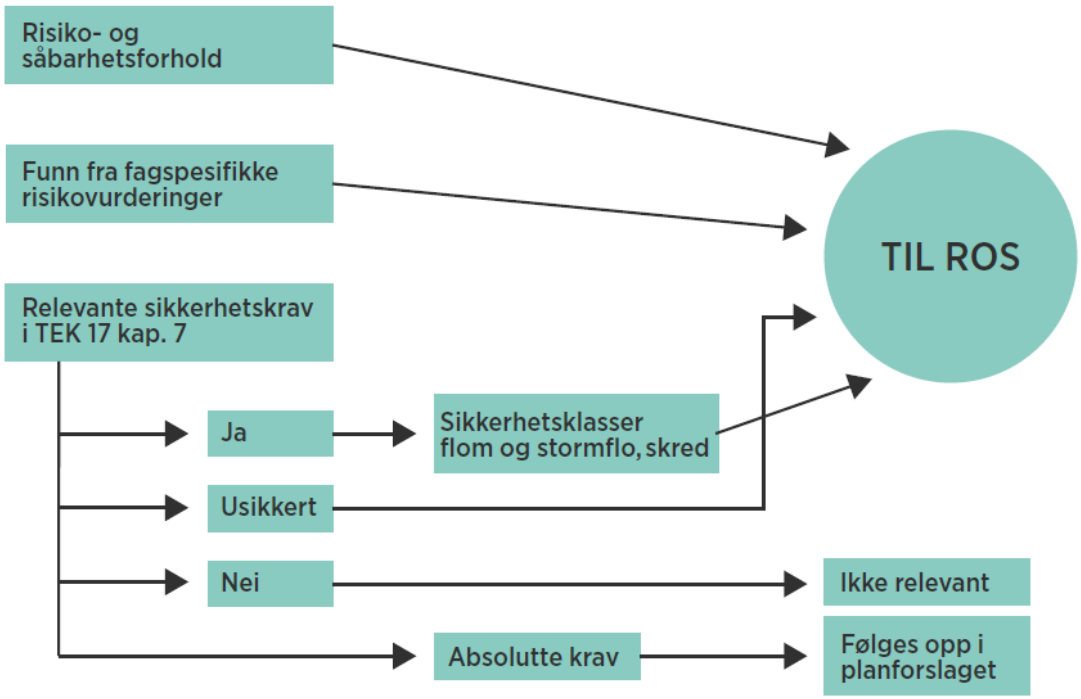
2.1 Bakgrunn og fremgangsmåte

Fremgangsmåten for utarbeidelse av denne ROS-analysen bygger på metode gitt i Direktoratet for sikkerhet og beredskaps (DSB) veileder *«Samfunnssikkerhet i kommunens arealplanlegging»* fra 2017. I veilederen anbefaler DSB at en ROS-analyse omfatter:

- Risiko- og sårbarhetsforhold som er vesentlig for å ivareta samfunnssikkerhet.
- Forhold i omkringliggende områder som kan få konsekvenser for planområdet.
- Endringer i risiko- og sårbarhetsforhold som følge av planlagt utbygging.
- Risiko- og sårbarhetsforhold i kombinasjon, herunder vurdering av endrede konsekvenser når det legges på klimapåslag for relevante naturforhold.
- Mulige konsekvenser av utbyggingen for omkringliggende områder.
- Vurdering av om kunnskapsgrunnlaget er tilstrekkelig for å vurdere risiko og sårbarhet, eller om ROS-analysen må følges opp gjennom nærmere kartlegginger.

Benyttet metoden tilrettelegger for å fange opp detaljert kunnskap om planområdet og utbyggingsformålet, se figur 1. Risikomomenter til ROS-analysen identifiseres på ulike måter. Det innebærer å identifisere mulige uønskede hendelser gjennom å:

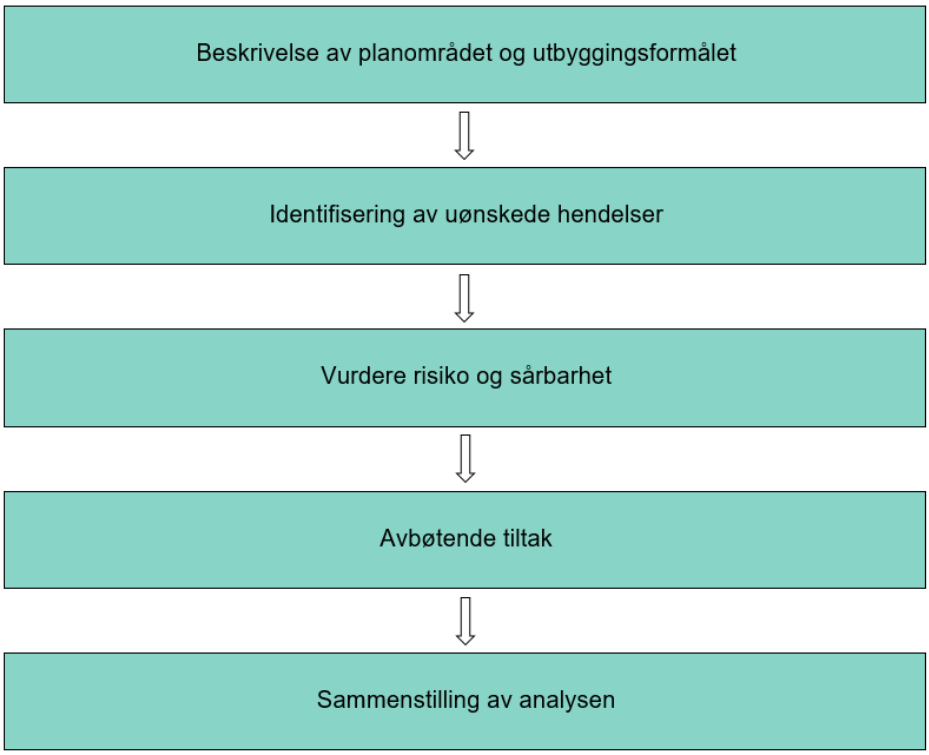
- kartlegge risiko- og sårbarhetsforhold,
- vurdere funn fra fagspesifikke risikovurderinger
- vurdere om sikkerhetskrav i byggteknisk forskrift (TEK 17), kap. 7, er relevante



Figur 2-1: Kartlegging av risiko- og sårbarhetsforhold for å identifisere mulige uønskede hendelser. Kilde: DSB veileder «samfunnssikkerhet i kommunens arealplanlegging» [1].

2.2 Analyseoppsett

Oppsettet i denne ROS-analysen tar utgangspunkt i anbefalt oppsett i DSBs veileder, og er inndelt i følgende trinn:



Figur 2-2: ROS-analysens hovedsteg, hentet fra DSBs veileder for Samfunnssikkerhet i kommunens arealplanlegging.

2.3 Avgrensning av analysen

I henhold til DSB sin veileder skal ROS-analysen inneholde hendelser som kan få konsekvenser for liv og helse, trygghet/stabilitet og eiendom/materielle verdier. Konsekvenser for ytre miljø inngår i begrenset grad, da dette først og fremst omfattes av andre utredninger i planlegging og prosjektering av tiltaket, som f.eks. YM-plan iht. internkontrollforskriften.

Hensikten med ROS-analysen er å påse at forhold som kan medføre *alvorlig* skade på mennesker, miljø, materielle verdier eller samfunnsfunksjoner skal klargjøres i plansaken og ligge til grunn for vedtak av planen. Alvorlige risikoforhold kan medføre krav om endringer, innføring av hensynssoner, planbestemmelser som ivaretar forholdet eller i alvorlige tilfeller at planen frarådes.

Fokus skal rettes mot det som er spesielt ved at virksomheten *lokaliseres som foreslått*, og ikke generelle trekk ved virksomheten som er uavhengig av lokalisering.

Analysen tar i hovedsak for seg forhold som knyttes til driftsfasen. Risiko i anleggsfasen vurderes i begrenset grad da dette er ivaretatt gjennom gjeldende lover og forskrifter (bl.a. av krav i byggherreforskriften). Forhold knyttet til anleggsfasen er kun medtatt dersom den uønskede hendelsen kan få konsekvenser for det omkringliggende området, da dette er relevant for

planarbeidet. Uønskede hendelser som f.eks. personskader på anlegget som kan inntreffe i anleggsperioden omfattes av SHA-reglementet, er derfor ikke beskrevet i denne analysen.

Analysen omfatter enkelthendelser, og eventuelle følgehendelser er beskrevet i analyseskjema for den enkelte hendelse. Analysen omfatter ikke flere uavhengige, sammenfallende hendelser.

Denne analysen er utført på områdereguleringsplannivå. På dette nivået er ikke tiltaket ferdig prosjektert. Innenfor de rammer som reguleringsplanen setter kan det være rom for valg av ulike løsninger i byggeplan. Selv om vi gjennom de forutsetningene som er spesifisert i analysen har forsøkt å sette klare rammer for risikovurderingen, kan det være detaljer i løsningsvalg som man ikke har oversikt over på dette planstadiet, og som kan påvirke risikoen.

Analysen som er gjennomført bygger på foreliggende planer og kunnskap. Ved endring i forutsetningene gjennom ny kunnskap eller endringer i løsningsvalg kan risikobildet bli annerledes. Hvis endringer medfører vesentlig økt risiko, må det vurderes om risikoanalysen bør oppdateres. Risikovurderinger må derfor være et løpende tema i videre planarbeid og prosjektering.

2.4 Prosess

ROS-analysen er utarbeidet med utgangspunkt i tilgjengelig informasjon, og gjennom to analysemøter (14.01.25 og 21.02.25) med ressurspersoner tilknyttet prosjektering og drift hos forslagstiller. I analysemøtene ble mulige uønskede hendelser drøftet og gjennomgått.

2.5 Avgrensning av analysen

I henhold til DSBs veileder skal ROS-analysen inneholde hendelser som kan få konsekvenser for liv og helse, trygghet/stabilitet og eiendom/materielle verdier. Konsekvenser for ytre miljø inngår i begrenset grad, da dette først og fremst omfattes av andre utredninger i planlegging og prosjektering av tiltaket, som f.eks. Ytre miljø-plan iht. internkontrollforskriften.

Hensikten med ROS-analysen er å påse at forhold som kan medføre alvorlig skade på mennesker, miljø, materielle verdier eller samfunnsfunksjoner skal klargjøres i plansaken og ligge til grunn for vedtak av planen. Alvorlige risikoforhold kan medføre krav om endringer, innføring av hensynssoner, planbestemmelser som ivaretar forholdet eller i alvorlige tilfeller at planen frarådes.

Fokus skal rettes mot det som er spesielt ved at virksomheten lokaliseres som foreslått, og ikke generelle trekk ved virksomheten som er uavhengig av lokalisering.

Analysen tar i hovedsak for seg forhold som knyttes til driftsfasen. Risiko i anleggsfasen følges opp iht. byggherreforskriften. Risikoforhold knyttet til anleggsfasen er kun medtatt dersom den uønskede hendelsen kan få konsekvenser for det omkringliggende området, da dette er relevant for planarbeidet. Uønskede hendelser som f.eks. personskader på anlegget som kan inntreffe i anleggsperioden omfattes av SHA-reglementet, er derfor ikke beskrevet i denne analysen.

Analysen omfatter enkelthendelser, og eventuelle følgehendelser er beskrevet i analyseskjema for den enkelte hendelse. Analysen omfatter ikke flere uavhengige, sammenfallende hendelser.

Denne analysen er utført på områdereguleringsplannivå. På dette nivået er ikke tiltaket ferdig prosjektert. Innenfor de rammer som reguleringsplanen setter kan det være rom for valg av ulike løsninger i byggeplan. Selv om vi gjennom de forutsetningene som er spesifisert i analysen har forsøkt å sette klare rammer for risikovurderingen, kan det være detaljer i løsningsvalg som man ikke har oversikt over på dette planstadiet, og som kan påvirke risikoen.

Analysen som er gjennomført bygger på foreliggende planer og kunnskap. Ved endring i forutsetningene gjennom ny kunnskap eller endringer i løsningsvalg kan risikobildet bli annerledes. Hvis endringer medfører vesentlig økt risiko, bør risikoanalysen oppdateres. Risikovurderinger må derfor være et løpende tema i videre planarbeid og prosjektering.

2.6 Identifikasjon av uønskede hendelser

For å ivareta en bred kartlegging av risiko- og sårbarhetsforhold benyttes liste over risikoer fra DSBs veileder [1]. Utsjekk av risikoene dokumenteres i kapittel 6.

2.7 Analyseskjema

Alle de uønskede hendelsene som er vurdert aktuelle for planområdet er analysert i eget skjema for å identifisere risiko og sårbarhetsforhold, som vist i Tabell 2-1. I skjemaet vurderes mulige årsaker til hendelsen, eksisterende barrierer, sårbarhet, sannsynlighet, konsekvenser og usikkerhet. I tillegg foreslås det forbyggende/risikoreduserende tiltak for planarbeidet og videre prosjektering der hvor dette anses som nødvendig eller hensiktsmessig.

Som en del av vurderingen av hvert aktuelt risiko- og sårbarhetsforhold skal sannsynligheten for at en uønsket hendelse skal inntreffe klassifiseres, dvs. det skal anslås hvor hyppig hendelsen kan forventes å inntreffe. Denne vurderingen må bygge på kjennskap til lokale forhold, erfaringer, statistikk og annen relevant informasjon. I denne ROS-analysen har vi benyttet klassifisering som vist i DSBs veileder [1].

I Tabell 2-1 er det spesifisert hvilke kriterier som ligger til grunn for vurderingene i analysen. Blant annet er konsekvenser for liv og helse vurdert som store dersom den uønskede hendelsen har dødsfall som verste konsekvens.

Tabell 2-1: Analyseskjema for uønskede hendelser.

Nr.	Navn uønsket hendelse:	(Navn)		
Beskrivelse av uønsket hendelse: Konkret scenario, herunder omfang og hvor i planområdet den inntreffer. Er det særlige forhold fra beskrivelsen av planområdet som er aktuelle?				
Om naturpåkjenninger (TEK 17)		**Sikkerhetsklasse flom/skred**		**Forklaring**
Ja/nei		[redacted]		[redacted]
Årsaker				
Beskriv mulige årsaker				
Eksisterende barrierer				
- *Hva finnes allerede?* - *Videre vurdering må ta hensyn til disse* - *Vurdering av funksjonalitet*				
Sårbarhetsvurdering				
Sårbarhetsvurderingen tar for seg evne til motstand og gjenopprettelse ved utbyggingsformålet, eventuelle eksisterende barrierer og følgehendelser som følge av den uønskede hendelsen.				
Sannsynlighet	Høy	Middels	Lav	Forklaring
PLAN-ROS SANNSYN-LIGHET	*Oftere enn 1 gang i løpet av 10 år. >10 år*	*1 gang i løpet av 10-100 år. 1-10 %*	*Sjeldnere enn 1 gang i løpet av 100 år. <1 %*	*Vurderingen skjer på bakgrunn av informasjon fra beskrivelsen av planområdet, kjente forekomster av tilsvarende hendelser, eksisterende barrierer eller forventede hendelser i fremtiden. Det gis en forklaring.*
FLOM OG STORMFLO SANNSYNLIG-HET	*1 gang i løpet av 20 år, 1/20*	*1 gang i løpet av 200 år, 1/200*	*1 gang i løpet av 1000 år, 1/1000*	

SKREDSANN-SYNLIGHET	*1 gang i løpet av 100 år, 1/100*	*1 gang i løpet av 1000 år, 1/1000*	*1 gang i løpet av 5000 år, 1/5000*		
Konsekvensvurdering					
	Konsekvenskategorier				
Konsekvenstyper	Store	Middels	Små	Ikke relevant	Forklaring
Liv og helse	Død	Alvorlige personskader	Få og små personskader		Antall skadde og alvorlighet.
Stabilitet	*Bidrar til manglende tilgang på husly, varme, mat eller drikke. Eller kommunikasjon og fremkommelighet som forårsaker manglende tilgang til lege, sykehus etc.*	*Bidrar til manglende tilgang på kommunikasjon, fremkommelighet, telefon etc. i en kortere periode uten livsviktige konsekvenser*	*Bidrar til manglende følelse av trygghet i nabolaget som ved manglende gatebelysning, uoversiktlig trafikk, glatte veier etc.*		*Antall og varighet.*
Materielle verdier, skadepotensial	*> 50 millioner*	*5–50 millioner*	*< 0-5 million*		*Direkte kostnader. Økonomiske tap knyttet til skade på eiendom.*
Samlet begrunnelse av konsekvens:					
Usikkerhet	Begrunnelse				
Høy, middels, lav	*1. Hvilke data og erfaringer er benyttet? Er dataene/erfaringene relevante for hendelsen? Dersom data eller erfaringer er utilgjengelige eller upålitelige er usikkerheten høy. Beskriv benyttede kilder.* *2. Har vi forstått hendelsen? Hvordan forstår vi den? Dersom forståelsen er dårlig er usikkerheten høy.* *3. Er ekspertene som har gjort vurderingen enige? Dersom det er manglende enighet er usikkerheten høy.* *4. Hvilket plannivå er ROS-analysen gjort på? På reguleringsplan/KP/KDP er tiltaket ikke ferdig prosjektert. Planen kan åpne for valg av ulike løsninger i byggeplan. Det kan være detaljer i løsningsvalg som man ikke har oversikt over på dette stadiet, og som kan påvirke risikoen.* *Dersom hendelsen er forstått, ekspertene er enige og det foreligger tilstrekkelig data som er delvis pålitelige, er usikkerheten middels eller lav. Avhengig av hvor pålitelige dataene er.*				
Forslag til tiltak og mulig oppfølging i arealplanleggingen og annet					
Tiltak: - *Foreslå tiltak som kan påvirke sannsynligheten for de uønskede hendelsene, årsakene, sårbarhet, konsekvenser og usikkerhet* - *Er det nødvendig å vurdere flere aktuelle planer, lokalisering og egnethet?* - *Synliggjøre dersom forhold er avdekket, men det ikke skal følges opp av kommunen*			*Oppfølging gjennom planverktøy/info til kommunen etc.:* - *Opprettelse av hensynssoner, bestemmelser, arealformål, krav til byggesak etc.* - *Man kan også foreslå at man skal la være å gå videre med planforslaget* - *Det er viktig at alvorlige forhold kommer frem her slik at de følges opp i planforslaget*		

2.8 Usikkerhet

Som vist i Tabell 2-1 vil bakgrunnen for vurderingen av hver aktuell uønsket hendelse komme tydelig frem ved hjelp av at usikkerheten rundt vurderingen også fremgår av analysen. Dette punktet er ment som en hjelp til kommunen og andre interessenter for å kunne etterprøve vurderingene. Det er derfor viktig at hvert analyseskjema leses i sin helhet, slik at man kan danne en egen mening om de enkelte uønskede hendelsene. Dersom usikkerheten er vurdert til å være høy kan det skyldes:

- manglende relevante data
- at hendelsen er vanskelig å forstå
- at det er manglende enighet blant ekspertene

Usikkerhet kan i mange tilfeller reduseres ved å tilføye eller tilegne seg ny eller mer kunnskap og informasjon, gjennom for eksempel fagvurderinger- og undersøkelser.

2.9 Risikoreduserende tiltak

Det foreslås risikoreduserende tiltak i forbindelse med uønskete hendelser. Tiltak som foreslås i analyseskjemaet kan både omfatte tiltak basert på verktøy i plan- og bygningsloven (hensynssoner, arealformål og bestemmelser), men også øvrige tiltak som bør følges opp i videre detaljprosjektering,

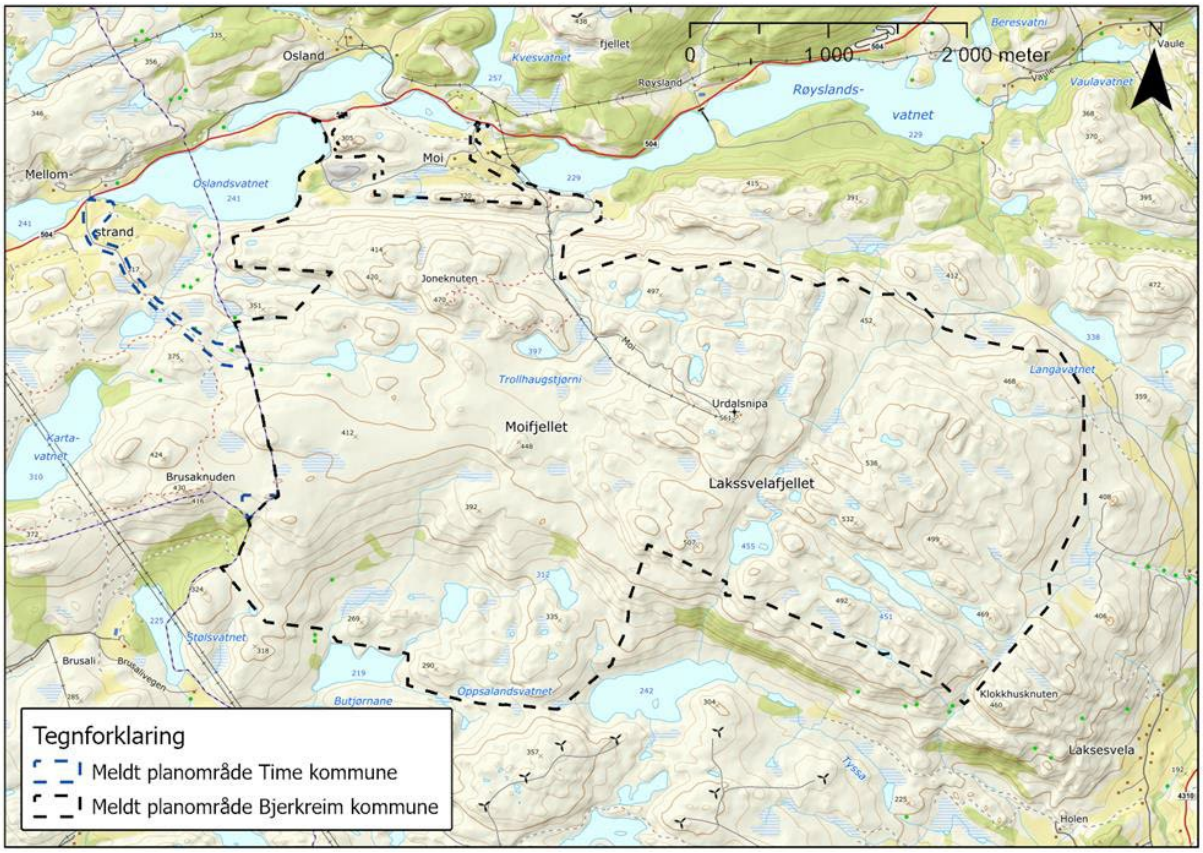
anleggsfasen og den permanente driftsfasen. Aktuelle tiltak kan være nye tiltak eller forbedringer av eksisterende barrierer. Det kan også være tiltak for å etablere ny kunnskap. Tiltakene kan påvirke sannsynligheten, årsakene, sårbarheten, konsekvensene og usikkerheten ved de uønskete hendelsene.

2.10 Sammenstilling

I kapittel 5 vises alle analyseskjema for mulige uønskede hendelser som er presentert i kapittel 4. For å gi en oversikt over tiltak for å hindre uønskede hendelser i planarbeidet og i gjennomføringsfasen, er det laget en sammenstilling av uønskede hendelser og avbøtende tiltak i kapittel 6 Oppsummering og konklusjon.

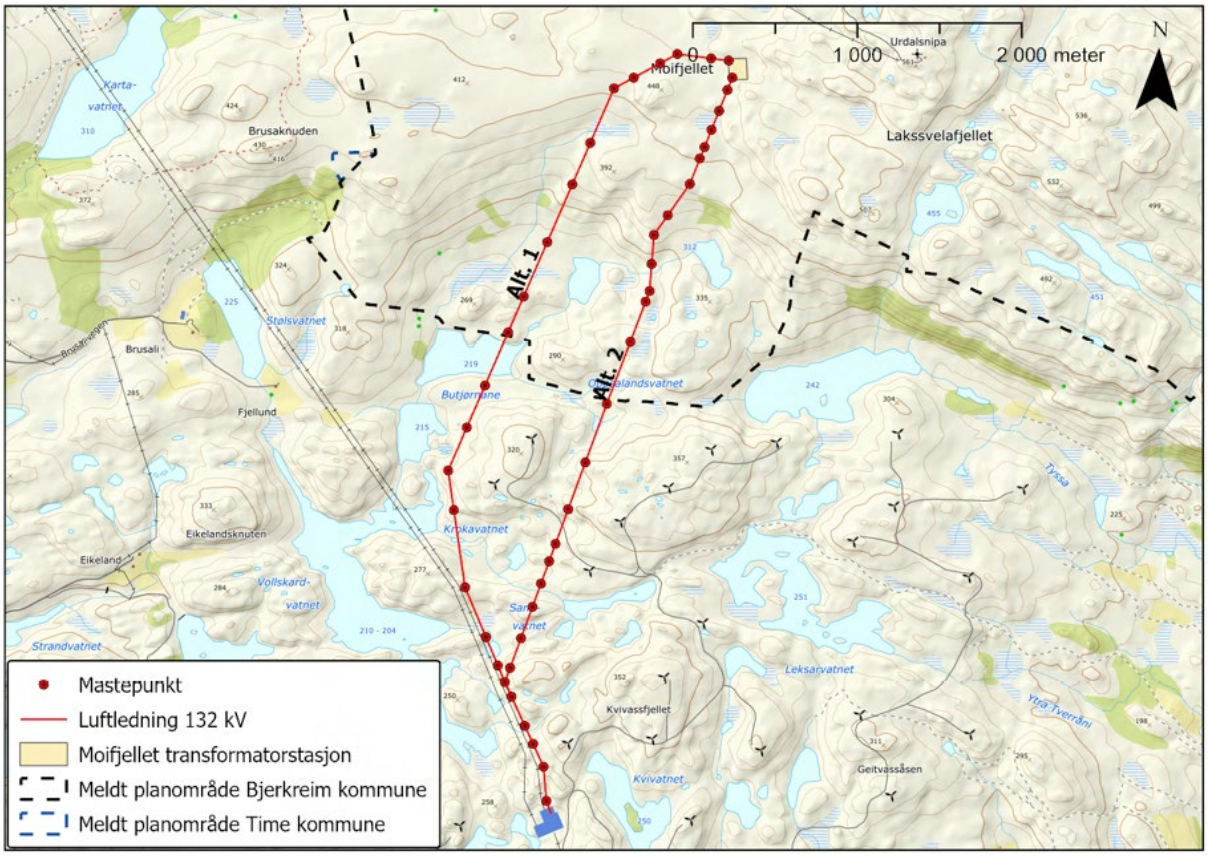
3 Planområdet og utbyggingsformål/tiltak

Multiconsult er engasjert for å gjennomføre risiko- og sårbarhetsanalyse (ROS-analyse) i forbindelse med områdereguleringsplan og konsesjonssøknad for Moifjellet vindkraftverk.



Figur 3-1: Avgrensning av området som er vurdert i forbindelse med Moifjellet vindkraftverk. Kilde Multiconsult.

I ROS-analysen er også to alternativer for nettilknytning vurdert.



Figur 3-2: Alternativer for nettilknytning for Moifjellet vindkraftverk. Kilde Multiconsult.

3.1 Dagens situasjon

Planområdet dekker deler av Moifjellet og ligger i Bjerkreim kommune i den sørlige delen av Rogaland, omtrent 17 km fra kysten. Området har en utstrekning på i underkant av 20 km2 og ligger i høydeintervallet mellom 250 og 450 meter over havet, og er noe høyere enn det nærmeste omlandet. Moifjellet preges av langsgående, knudrete rygger fra sørøst mot nordvest, mest markert i øst, med et titalls mindre vatn spredd utover. Vegetasjonen i både planområdet og landskapet rundt er preget av relativt fattige lyngheier med småskala jordbruksarealer i dalene. Nordvest i planområdet er det et steinbrudd i drift. I de mer høyereliggende deler av planområdet er det med unntak av vei og kraftledning til Bjerkreimsenderen på Urdalsnipa få inngrep. I omlandet rundt består av spredte gårder av varierende størrelse. E39 går øst for planområdet, og en 300 kV sentralnettslinje vest for planområdet. I sør ligger Bjerkreim vindpark søndre klynge med 70 vindturbiner, i nord Stigafjellet vindkraftverk med 7 vindturbiner og Måkaknuten vindkraftverk med 22 vindturbiner, i vest Høg-Jæren vindkraftverk med 32 vindturbiner.

3.2 Utbyggingsformålet

Hensikten med områdereguleringen og konsesjonssøknad er å utrede og planlegge et vindkraftverket med tilhørende infrastruktur på Moifjellet.

4 Identifisering av uønskede hendelser

I følgende tabell gis en oversikt over de identifiserte uønskede hendelsene for Moifjellet vindkraftverk. Hendelse i Tabell 4 1 er hentet fra DSBs veileder [1] og sjekkliste ROS fra Bjerkreim kommune. Kolonnen med overskrift «Vurderes videre (ja/nei) indikerer om forholdet er relevant å vurdere mer detaljert i eget analyseskjema i kapittel 5.1.

Tabell 4-1: Identifiserte uønskede hendelser

ID	Risiko- og sårbarhetsforhold	Kommentar	Vurderes videre (ja/nei)
Naturhendelser:			
1	Sterk vind (storm)	Flyvende gjenstander, ødeleggelse av gjenstander som reduserer fremkommelighet til planområdet etc.	I forhold til dette prosjektet vurderes: a) Helt eller delvis kollaps av vindturbin/turbinblad som følge av sterk vind b) Løse gjenstander som blir tatt av vind. a) Ekstremvind vil være en av flere viktige designkriterier og en av de sentrale parameterne som må vurderes og diskuteres i dialogen med de aktuelle turbinleverandørene. Ekstremvær og sterk vind kan føre til skade på vindturbinene. Vurderes videre som **Hendelse 1a) Sterk vind som påfører skade på vindturbin 5.1.1.** **b)** Løse gjenstander kan forekomme selv om det vil være rutiner som skal forhindre dette. Vurderes videre som **Hendelse 1b) Sterk vind og løse gjenstander 5.1.2.**
2	Bølger/bølgehøyde/ stormflo	Ikke relevant i dette prosjektet.	Vurderes ikke videre.
3	Snø/is	Kan resultere i glatt føre, fokksnø, fallulykker, redusert fremkommelighet for utrykningskjøretøy, samt redusert fremkommelighet for arbeidere.	I forhold til dette prosjektet vurderes: a) Vei og atkomst til anlegget b) Nedfall av snø/is fra kraftledning og maskinhus eller Iskast fra turbinblader. a) Vei og atkomst til anlegget. Veien til Moifjellet vil fortrinnsvis benyttes hele året. Det vil bli utarbeidet driftsrutiner som ivaretar føre og fremkommelighet. Det planlegges ikke for bebyggelse med varig opphold. Veien er stengt med bom for andre enn de som har tillatelse til kjøring. Punkt a) vurderes ikke videre. b) Nedfall av snø/is fra maskinhus eller iskast. Det vil informeres/skiltes om sikkerhetsavstand for nedfall av snø/is og

			iskast, samt at det etableres nødvendige rutiner, blant annet for å minimere eksponering av arbeidere for iskast. Punkt b) vurderes videre som **hendelse 3b). Iskast som skader mennesker, anlegg og/eller utstyr 5.1.3.**
4	Vassdrags flom	Oversvømmelse, materielle skader, stengte veier og redusert fremkommelighet.	Flomfare tilknyttet vassdrag i planområdet er vurdert, flomutsatte områder som kan berøre adkomst- og internveier, transformatorstasjoner og ev. infrastruktur knyttet i planområdet er identifisert. Vurderes videre som **hendelse 4 vassdragsflom 5.1.4.**
5	Urban flom/overvann	Ikke relevant for dette prosjektet.	Dette er ikke et urbant område. Vurderes ikke videre.
6	Skred (kvikkleire, stein, jord, fjell, snø, inkl. sekundærvirkning (oppdemming, flodbølge), flomras, steinsprang, områdestabilitet/fare for utglidning)	Tap av liv, ødelagt bebyggelse, materielle verdier	I planområdet er det gjort en overordnet skredfareutredning for alle ulike skredtyper i bratt terreng. Basert på overordnet skredfareutredning er det gjort en nærmere skredfareutredning for 13 delområder som er aktuell for adkomst- og internveier. Bygg og anlegg ment for personopphold ligger alle utenfor aktsomhetsområder for skred. Steinsprang er den dimensjonerende skredtypen. I noen områder er det også fare for mindre snøskred. Utrasing av større bergpartier, tilsvarende mindre steinskred, er aktuelt i noen delområder. I 11 av 13 delområder er det funnet at sikkerhetskravene for skred for adkomstveiene (og jordkablene) i deler av kartleggingsområdet ikke er oppfylt. For å oppfylle kravene til sikkerhet mot skred er det anbefalt avbøtende tiltak. Vurderes videre som **hendelse 6 Skred 5.1.5.**
7	Store nedbørsmengder	Kan resultere i samme uønskede hendelser som adresseres i punktet «vassdragsflom»- men mye av vannet her vil absorberes av den naturlige overflaten i planområdet.	Planområdet ligger i et forholdsvis uberørt fjellområde på toppen av et nedbørsfelt. Anlegget vil utformes slik at overvann håndteres. Vurderes ikke videre.
8	Skog- og lyngbrann	Fare for spredning til bebyggelse og materielle skader. Turbin brann kan forekomme, som kan sende gnister til omliggende natur.	I forhold til dette prosjektet vurderes: a) Brann i vindturbin eller transformatorstasjon som sprer seg til vegetasjon. b) Vegetasjonsbrann som skader turbinene og andre installasjoner.

			a) Ved turbinbrann kan gnister havne i omliggende natur. I tørkeperioder kan dette føre til branntilløp. Det legges til grunn at turbinene har branndeteksjon og kontinuerlig overvåkning av komponenter. Rutiner for stopping av turbin før farlige høye temperaturer oppnås. Ved spesielle planlagte tiltak som forårsaker økt risiko for brann har man egne rutiner for utarbeidelse av risikoanalyser og tiltak som følge av det. Rutiner for hindring av spredning Vurderes videre som **hendelse 8a) turbinbrann 5.1.6.** b) Det er opparbeidede grusflater uten vegetasjon inn mot anleggene som turbiner, transformatorstasjon og servicebygg. Kabler ligger i bakken. Grusflater omkring turbinene og annet anlegg vil være en barriere som gjør at brann i vegetasjonen i området (hovedsakelig kystlynghei) ikke vil få vesentlige konsekvenser for vindkraftanlegget. Vurderes ikke videre.
9	Torden/lyn	Lyn kan sette vindturbinen ut av drift, skade vindturbinen eller medføre brann i turbinen. Lyn kan sette elektrisk nettanlegg ut av drift eller medføre brann.	Turbinene vil få systemer for å avlede lyn. Nettanleggene vil få lyn- og overspenningssystem samt jordingsanlegg. Vurderes ikke videre i ROS-analyse, men i kvalitetsoppfølging av komponenter/anlegg. Delvis fulgt opp i pkt. 8 a) vedr. brann.
10	Erosjon	Erosjon som utløsende faktor for ras eller skred. Potensielle konsekvenser i anleggsfasen.	Veier og anlegg utformes med tilstrekkelig sikkerhet mot erosjon. Overvåkes gjennom rutinemessig vedlikehold av vei. Vurderes ikke videre. Håndteres delvis gjennom pkt. 6 skred
11	Radon	Krav i TEK17 reduserer forekomst av radon i bebyggelse, fare for liv/helse Ikke relevant her.	Det planlegges å gjøre målinger av radon og bebyggelse vil utføres iht. byggetekniskforskrift. Vurderes ikke videre.
12	Grunnvann	Kan tiltaket endre grunnvannstanden slik at skader oppstår eller avrenning endres?	I forbindelse med etablering av turbiner, transformatorstasjon, servicebygg og veier vil det gjøres terrengbearbeidelser som vil kunne påvirke avrenningen lokalt, men ikke i en slik grad at det medføre større endringer i planområdet og påvirke grunnvannstanden. Vurderes ikke videre.

13	Naturlige terrengformasjoner som utgjør fare (stup, vann, etc.)	Bratt terreng	Planområdet ligger i et fjellområde som er preget av utstikkende bergrygger som er generelt 20-50 m høyere enn omkringliggende terreng. Foreslått adkomstvei til tiltaksområdet eller etablert vei til Bjerkreimsenderen vil være adkomst inn i området. Ved ferdsel utover veier og merkede stier i området må det vises aktsomhet som normalt ved ferdsel i utmark. Vurderes ikke videre
Kritiske samfunnsfunksjoner og kritiske infrastrukturer Kan planen/tiltaket få konsekvenser for strategiske områder og funksjoner:			
14	Samferdselsårer som vei, jernbane, luftfart, skipsfart, bru, tunnel og knutepunkt	Behov for stenging av veier, mulig nedetid for jernbane, havner eller flyplass, ekstra avkjørsel fra hovedvei, færre avkjørsler fra hovedvei, redusert fremkommelighet.	Utbygningen meldes til Luftfartstilsynet. Merking iht. gjeldende retningslinjer. Merkekrav for alt over 30 m, både ved anleggs- og driftsfasen. Det forutsettes at transport av vindturbinene til planområdet risikovurderes og ivaretas gjennom transport- og anleggsplan i anleggsfasen. Vurderes ikke videre.
15	Infrastruktur for forsyning av vann, avløps- og overvannshåndtering , energi/el, gass og telekommunikasjon	Skade på viktig infrastruktur.	I forhold til dette prosjektet vurderes: a) Vannforsyning b) Telekommunikasjon a) I sør berører planområdet nedbørsfeltet til Hagavatnet drikkevannskilde. Vurderes under pkt. 28 - forurensning. b) Fare for forstyrrelser på ekomsignaler til/fra Bjerkreimsenderen. Tilstrekkelige tiltak for ivaretakelse av ekomsignaler vil bli iverksatt. Vurderes ikke videre.
16	Tjenester som skoler, barnehager, helseinstitusjoner, nød- og redningstjenester	Redusert fremkommelighet for redningstjenester/utrykningskjøretøyer, innsatstid nødetater etc.	Transport av vindturbinene til planområdet vil risikovurderes og ivaretas gjennom transport- og anleggsplan i anleggsfasen. Vurderes ikke videre.
17	Brannvannforsyning	Er det tilstrekkelig kapasitet i vannforsyning til brannslukking	Det anlegges ikke kommunalt vann/avløp i området, da det ikke tilrettelegges for permanent opphold. Naturlige vannkilder er tilgjengelig i området. Vurderes ikke videre.
18	Bortfall av strøm	Intern drift og opprettholde sikkerhet	Bortfall av strøm vil påvirke mulighet til å justere turbinstilling. Ved behov for justering under ekstreme vindforhold vil backupsystemer sikre at turbinblader vil kunne justeres til optimal stilling, og tårnhus vil designes for å tåle ekstremvind i alle posisjoner.

			Transformatorstasjonen planlegges etablert med backupsystemer.
19	Utrykningstid politi, ambulanse og brann	Bør være under 12 minutter i tettbygd strøk og uansett under 25 minutter der et større antall personer bor eller arbeider, ref. krav fra Helsedirektoratet. Ikke relevant i dette prosjektet.	Det tilrettelegges ikke for permanent opphold i planområdet. Transport av vindturbinene til planområdet risikovurderes og ivaretas i transport- og anleggsplan i anleggsfasen. Vurderes ikke videre.
20	Forsvarsområde	Tidligere skytefelt	Forsvarsbygg har informert prosjektet om at det er et gammelt skytefelt i området (Laksesvela skytefelt) og at det er risiko for ueksploderte sprenglegemer i området. Det er usikkerhet knyttet til omfanget av bruken av det gamle skytefeltet. I samtale med Forsvarsbygg mener de at under inspeksjoner og normal trafikk i terrenget er det liten risiko knyttet til ueksploderte sprenglegemer, og anbefalte tiltak er at det utarbeides en instruksjons-/varslingsplan for tilfeller hvor materiale skulle bli funnet i terrenget. For anleggsfasen vil det gjøres en egen risikovurdering og vurdering av aktuelle avbøtende tiltak. Vurderes ikke videre.
21	Ivaretakelse av sårbare grupper.	Nedleggelse/forringelse av omsorgsbygg, sykehjem etc, manglende tilrettelegging for universell utforming.	Omsorgsbygg, sykehjem etc. er Ikke relevant for dette prosjektet. Gjennom etablering av anleggsveier kan området ev. bli mer tilgjengelig for grupper med funksjonsnedsettelser. Vurderes ikke videre.
22	Dambrudd	Ikke relevant for dette prosjektet.	Ikke relevant for dette prosjektet. Vurderes ikke videre.
Menneske- og virksomhetsbaserte farer Kan planen føre til:			
23	Ulykke med farlig gods		Transport av ev. farlig gods i anleggsfasen ivaretas gjennom egne vurderinger og prosedyrer i transport- og anleggsplan. Transport av olje til transformatorstasjon vil utføres av spesialtransportfirma. I driftsfase vil det bli transporter noe olje (bl.a. gir- og hydraulikkolje) og noen kjemikaler som f.eks. kjølevæske. Mengden olje og kjemikalier vurderes som relativt liten, og vil ivaretas gjennom interne rutiner. Vurderes ikke videre.
24	Ulykke i av-/påkjørsler		Liten/ingen endring i trafikkmengde i driftsfasen. Anleggstrafikk vil risikovurderes og ivaretas i transport- og anleggsplan. Vurderes ikke videre.

25	Møteulykker/generell trafikkulykke		Liten/ingen endring i trafikkmengde i driftsfasen. Anleggstrafikk vil risikovurderes og ivaretas i transport- og anleggsplan. utredes ikke videre.
26	Ulykke med syklende/gående		Liten/ingen endring i trafikkmengde i driftsfasen. Anleggstrafikk risikovurderes og ivaretas gjennom transport- og anleggsplan. Vurderes ikke videre.
27	Virksomhet som håndterer farlige stoffer (kjemikalier, eksplosiver, olje/gass, radioaktivitet, storulykkevirksomheter)	(eksplosjon, forurensing, brann, gassutslipp) Medfører foreslått virksomhet fare for storulykker?	Ikke omfattet av storulykkeforskriften. Ev. farlige stoffer i anleggsfasen vil risikovurderes og ivaretas gjennom byggherreforskriften og håndteres gjennom byggherrens SHA-plan og ulykke- og beredskapsplaner. Vurderes ikke videre.
28	Fare for akutt forurensning på land eller i sjø, oljeutslipp etc.		I driftsfasen kan det forekomme utslipp av mineralolje, glykol, gir- og hydraulikkolje. Det kan også forekomme mindre utslipp av drivstoff andre kjemikaler. Deler av planområdet i sør berører nedbørsfeltet til Hagavatnet drikkevannskilde, tiltak innenfor nedbørsfeltet skal godkjennes av Mattilsynet. Vurderes videre som **hendelse 28 forurensning 5.1.7.** For anleggsfasen vi det gjennomføres egen risikovurdering knyttet til forurensing ved utslipp og bearbeidelse av terreng. Det skal utarbeides ulykke- og beredskapsplaner og transport- og anleggsplan.
29	Elektromagnetiske forhold	Risiko bør vurderes dersom det planlegges lokalisering av bygg der mennesker oppholder seg over lengre tid nær slike felt. Det finnes anbefalinger på tesla-verdi, som ikke samsvarer med krav til byggegrenser.	Planlegges ikke byggverk for varig opphold. Vurderes ikke videre.
30	Fare for sabotasje/terrorhandlinger	Er tiltaket i seg selv et mål med forhøyet risiko?	I forhold til dette prosjektet vurderes: a) Sabotasje og terrorhandlinger mot vindkraftverket. b) Økt tilgjengelighet for sabotasje og terrorhandlinger mot drikkevannskilde Hagavatnet. a) Ut fra et forsyningssikkerhetsperspektiv anses ikke vindparken som viktig i den

			nasjonale infrastrukturen. Dette underbygges av dagens regulering i kraftberedskapsforskriften hvor enkeltvindturbiner er uklassifisert. Fra andre vindkraftverk har man sett protestaksjoner hvor det har vært grupper som har benyttet sivil ulydighet, men det vurderes som lite sannsynlig at disse gruppene vil utføre handlinger som kan medføre miljøskade. Det vil bli utarbeidet en plan for å håndtere demonstrasjoner eller sabotasjehandlinger under byggefasen. For driftsfasen vil det bli utarbeidet en beredskapsplan. Vurderes ikke videre. b) I forbindelse med vindkraftverket planlegges det veier innenfor nedbørsfeltet til Hagavatnet, men det er eksisterende veier i området som vil ligger nærmere Hagavatnet. Motorisert ferdsel langs veier i planområdet vil regulert ved hjelp av bl.a. bom. Det vil også bli utført tiltak som skal forhindre forurensning fra bl.a. biler og turbiner. Vurderes ikke videre.
31	Gruver, åpne sjakter etc.		Det er en grotte registrert i planområdet, utover dette er forslagstiller ikke kjent med at det er gruver eller sjakter etc. i området. Ved ferdsel i utmark må aktsomhet vises. Vurderes ikke videre.
Farer relatert til anleggsarbeid			
32	Ulykker i forbindelse med anleggstrafikk	Atkomstforhold til anlegg-/riggplass, anleggstrafikk i nærheten av boligområder/skoler/ barnehager, snumuligheter på anlegget for å unngå rygging inn/ut av anleggsplassen etc.	Transport av transformatorer og vindturbiner til planområdet risikovurderes og ivaretas gjennom transport- og anleggsplan. Inntransport håndteres vanligvis av leverandør, og det må søkes til vegmyndigheter og politi. Vurderes ikke videre.
33	Uvedkommende tar seg inn på anleggsplass/ riggplass	Tilstrekkelig sikring av anleggsplass med gjerder etc. og rutiner for adgangskontroll.	Sikring av anleggsplass er tema som dekkes gjennom Byggherreforskriften og håndteres gjennom byggherrens SHA-plan. Vurderes ikke videre.
34	Ulykker i forbindelse med anleggsgjennom-føring/utbygging		Sikring av anleggsplass er tema som dekkes gjennom Byggherreforskriften og håndteres gjennom byggherrens SHA-plan og ulykke- og beredskapsplaner. Vurderes ikke videre.
Andre uønskede hendelser			
35			Ingen ytterligere risikoforhold som bør hensyntas. Vurderes ikke videre.

5 Risiko- og sårbarhetsvurdering

Det er identifisert 35 risiko- og sårbarhetsforhold i Tabell 4 1. Av disse ble 7 uønskede hendelser vurdert som relevante for planområdet. Disse vurderes mer detaljert i analyseskjemaene. Hendelsene som analyseres nærmere i egne analyseskjemaer er:

- Nr. 1a): Sterk vind som påfører skade på vindturbin.
- Nr. 1b): Sterk vind og løse gjenstander
- Nr.3b): Nedfall av snø/is fra maskinhus eller iskast som skader mennesker, anlegg og/eller utstyr
- Nr. 4: Vassdragsflom.
- Nr. 6: Skred (kvikkleire, stein, jord, fjell, snø, inkl. sekundærvirkning (oppdemming, flodbølge), flomras, steinsprang, områdestabilitet/fare for utglidning)
- Nr. 8a): Skog- og lyngbrann
- Nr 28: Fare for akutt forurensning på land eller i sjø, oljeutslipp etc.

5.1 Analyse av identifiserte hendelser

5.1.1 Hendelse 1a) Sterk vind som påfører skade på vindturbin

Nr. 1a)	Navn uønsket hendelse:	Sterk vind som påfører skade på vindturbin	
Beskrivelse av uønsket hendelse: Sterk vind kan fører til skade på vindturbiner/turbinblader.			
Om naturpåkjenninger (TEK 17)		Sikkerhetsklasse flom/skred	Forklaring
Ikke relevant		Ikke relevant	
Årsaker			
Beskriv mulige årsaker - Teknisk feil på vindturbin/turbinblader			
Eksisterende barrierer			
- Personlig verneutstyr. - Varslingssystem for sterk vind (knyttet til egen arbeidsinstruks). - Sikkerhetssystemer for stans av blader og for å snu nav.			
Sårbarhetsvurdering			
Ved sterkt vind er det sikkerhetssystemer som stanser blader. Det finnes også sikkerhetssystemer som kan vri på nav og bladene slik at man får mindre belastning på tårn, men helt eller delvis kollaps av vinger kan forekomme. Tårnkollaps har inntruffet svært sjeldent.			

Sannsynlighet	Høy	Middels	Lav	Forklaring
PLAN-ROS SANNSYN-LIGHET	Oftere enn 1 gang i løpet av 10 år. >10 år	1 gang i løpet av 10-100 år. 1-10 %	Sjeldnere enn 1 gang i løpet av 100 år. <1 %	
			X	Tiltakshaver har vært i kontakt med NVE vedr. hendelser med helt eller delvis kollaps av turbiner. Det foreligger ikke noen statistikk over hendelser da det på nåværende tidspunkt ikke er krav om innrapportering av hendelser. Det er allikevel registrert 8 hendelser i nyere tid knyttet til skade på rotor

				og vinge. 4 av hendelsene omfatter vingebrudd. Som følge av at det ikke foreligger statistikk er det tatt en skjønnsmessig vurdering basert på kjente hendelser, hvor sannsynligheten for at en større hendelse knyttet til f.eks. helt eller delvis kollaps av en vindturbin/turbinblad vurderes som svært liten, og mindre enn 1/100.

Konsekvensvurdering					
	Konsekvenskategorier				
Konsekvenstyper	Høy	Middels	Små	Ikke relevant	Forklaring
Liv og helse	X				Helt eller delvis kollaps av vindturbin/ turbinblad kan medføre alvorlig skade, og i verste fall død.
Stabilitet			X		I perioder med sterk vind kan det oppfattes som utrygt å ferdes i område
Materielle verdier	X				Ved kollaps eller delvis kollaps av en vindturbin/ turbinblad vil de materielle skadene være store.

Samlet begrunnelse av konsekvens:
Ved kollaps av vindturbin kan konsekvensene for liv og helse og materielle verdier være høy, men sannsynligheten for at dette inntreffer vurderes som svært lav. Samlet konsekvens vurderes som høy til middels.

Usikkerhet	Begrunnelse
Middels	Det er kjent at hendelsen kan skje, men tiltakshaver er ikke kjent med at det foreligger statistikk for hvor ofte hendelsen kan forekomme. Med stor sikkerhet kan man allikevel si at større hendelser som helt eller delvis kollaps av turbiner forekommer sjeldent, og er knyttet opp mot prosjekteringsfeil.

Forslag til tiltak og mulig oppfølging i arealplanleggingen og annet	
Tiltak: - Prosjektering og utførelse av vindturbiner med tilstrekkelig sikkerhet mhp. dimensjonerende vindforhold. - Følge rutiner for vedlikehold, inspeksjoner og oppfølging - Sikkerhetssystemer som stanser blader og gir mulighet til å justere navet og/eller blader ved ekstrem vind.	Oppfølging gjennom planverktøy/info til kommunen etc.: - Følges opp i prosjektering, bygging av tiltak, gjennom føringer i detaljplanen jf. energiloven, og i drift av anlegg

5.1.2 Hendelse 1b) Sterk vind og løse gjenstander som skader mennesker, anlegg og/eller utstyr

Nr. 1b)	Navn uønsket hendelse:	Sterk vind og løse gjenstander	
Beskrivelse av uønsket hendelse: Sterk vind kan kaste på løse/ikke sikrede gjenstander.			
Om naturpåkjenninger (TEK 17)		Sikkerhetsklasse flom/skred	Forklaring
Ikke relevant		Ikke relevant	
Årsaker			
Beskriv mulige årsaker - Løse eller ikke sikrede gjenstander blir tatt av vinden.			
Eksisterende barrierer			
- Rutine for forsvarlig oppbevaring av gjenstander i området i perioder med sterk vind. - Personlig verneutstyr. - Varslingssystem for sterk vind (knyttet til egen arbeidsinstruks). - Design på nye tårnhus reduserer muligheten for at løse gjenstander/komponenter kan Løsne/falle ned.			
Sårbarhetsvurdering			
Løse gjenstander under sterk vind kan medføre skade på personell og materiell i området, men det vil være interne rutiner for forsvarlig oppbevaring av utstyr. Driftspersonell vil bruke verneutstyr som bl.a. hjelm. Moifjellet er et mye brukt utfartsområde for lokale i området og på Jæren. Innenfor planområdet er det en markert turrute langs grusvei opp til Urdalsnipa (Bjerkreimsenderen). Ferdselen er i hovedsak konsentrert langs grusveien, men det er avstikkere til bl.a. Joneknuten og Brusaknuden. Turveien opp til Urdalsnipa benyttes store deler av året.			

Sannsynlighet	Høy	Middels	Lav	Forklaring
PLAN-ROS SANNSYN-LIGHET	Oftere enn 1 gang i løpet av 10 år. >10 år	1 gang i løpet av 10-100 år. 1-10 %	Sjeldnere enn 1 gang i løpet av 100 år. <1 %	
		X		Hendelser knyttet til gjenstander som ikke er tilstrekkelig sikret kan forekomme selv om det er rutiner som skal forhindre dette. Sannsynligheten vurderes derfor som middels.

Konsekvensvurdering					
	Konsekvenskategorier				
Konsekvenstyper	Høy	Middels	Små	Ikke relevant	Forklaring
Liv og helse		X			Konsekvens for liv og helse vil avhenge av størrelse på gjenstand og hvor gjenstanden befinner. En gjenstand som blir tatt av vinden og faller ned fra tårn eller tårnhuset vil kunne potensielt ha alvorlige konsekvens, mens en gjenstand som befinner seg på bakken vil sannsynligvis føre til små konsekvenser. som følge av dette vurderes konsekvens til middels
Stabilitet			X		I perioder med sterk vind kan det oppfattes som utrygt å ferdes i område

Materielle verdier			X		Løse gjenstander vil utgjøre begrenset materiell skade på anlegget.

Samlet begrunnelse av konsekvens:
Løse gjenstander som blir tatt av vinden vil kunne utgjøre en risiko for liv og helse hvis de faller fra vindturbinene, men det antas at bortsett fra driftspersonell med verneutstyr så vil det være begrenset med ferdsel i området rundt turbinene i perioder med sterk vind. Løse gjenstander vurderes å kunne forsake forholdsvis små materielle skalder. Samlet konsekvens vurderes derfor som små.

Usikkerhet	Begrunnelse
Middels	Det er kjent at hendelsen kan skje, men tiltakshaver er ikke kjent med at det foreligger statistikk for hvor ofte hendelsen kan forekomme. Både i drift og anleggsfase vil det utarbeides rutiner som skal forhindre at vinden tar løse gjenstander.

Forslag til tiltak og mulig oppfølging i arealplanleggingen og annet

Tiltak:	Oppfølging gjennom planverktøy/info til kommunen etc.:
- Følge rutiner for oppbevaring og sikring av utstyr og gjenstander.	- Følges opp i prosjektering, bygging av tiltak, gjennom føringer i detaljplanen jf. energiloven, og i drift av anlegg.

5.1.3 Hendelse 3b) Nedfall av snø/is fra maskinhus og kraftlinje eller iskast som skader mennesker, anlegg og/eller utstyr

Nr. 3	Navn uønsket hendelse:	Iskast

Beskrivelse av uønsket hendelse:
- Snø/iskast fra turbinblader
- Snø/is som faller ned fra maskinhus og kraftledninger.

Om naturpåkjenninger (TEK 17)	Sikkerhetsklasse flom/skred	Forklaring
Ikke relevant	Ikke relevant	

Årsaker

Kombinasjonen av lav temperatur, høy luftfuktighet/nedbør og sterk vind kunne medføre isdannelse på vindturbinens rotor, eller maskinhus og kraftledninger.
Personer som befinner seg innenfor kastesonen:
- Driftspersonell i området i forbindelse med reparasjon/vedlikehold.
- Driftspersonell som går ut og inn av turbinen.
- Turgåere

Eksisterende barrierer

- Rutiner for skilting i en gitt sikkerhetsavstand (myntet på tredjepart).
- Varslingssystem og interne rutiner for snø- og is-oppbygging (knyttet til egen arbeidsinstruks).
- Personlig verneutstyr.

Sårbarhetsvurdering

Det er driftspersonell i området i forbindelse med reparasjon/vedlikehold. Går inn og ut av i vindturbinen er kritisk punkt. Akkurat når turbinene starter og stopper skjer det bevegelser som kan trigge at snø/is løsner fra turbinbladene. Driftspersonell har rutiner for å stanse/starte vindturbinene med fjernstyring – når de selv er utenfor sikkerhetssonen for iskast.

Snø og is som har dannet seg på maskinhus eller kraftledning kan løsne flakvis og falle ned eller bli tatt av vinden.

Moifjellet er et mye brukt utfartsområde for lokale i området og på Jæren. Innenfor planområdet er det en markert turrute langs grusvei opp til Urdalsnipa (Bjerkreimsenderen). Ferdselen er i hovedsak konsentrert langs grusveien, men det er avstikkere til bl.a. Joneknuten og Brusaknuden. Turveien opp til Urdalsnipa benyttes store deler av året.

Sannsynlighet	Høy	Middels	Lav	Forklaring
			X	Den mest brukte metodikken for beregning av teoretisk lengde på iskaster er Seifert-formelen [7]. Basert på maksimal teoretisk kastelengde og at sannsynligheten for at is skal lande på en spesifikk flate avtar svært raskt med avstand fra turbinen. Ved nedfall av snø/is fra maskinhus så faller det erfaringsmessig innenfor 100 m, men at det kan bli kastet lenger ved vind. Kraftledninger er lavere enn vindturbiner og nedfall av snø/is vil derfor berøre et mindre område. Sannsynlighet for at mennesker skal bli truffet av nedfall av snø/is og iskast vurderes som lav.

Konsekvensvurdering					
	Konsekvenskategorier				
Konsekvenstyper	Høy	Middels	Små	Ikke relevant	Forklaring
Liv og helse	X				Å bli truffet av isklump/flak som et resultat av iskast eller nedfall kan i verste fall føre til død.
Stabilitet			X		Kan oppleves utrygt å ferdes i område på vinteren.
Materielle verdier			X		Skader på materiell som et resultat av kast eller nedfall av snø/is antas å være små.

Samlet begrunnelse av konsekvens:
Iskast fra turbinbladene og nedfall av snø/is fra maskinhus og kan få store konsekvensene for liv og helse, men skader på de materielle verdiene anses å være forholdsvis små. Ferdsel i område i perioder hvor det er fare for iskast eller nedfall av snø/is vurderes som begrenset både med tanke på vær, og at det vil skiltes om fare for iskast og nedfall av snø/is fra vindturbiner.
Samlet konsekvens vurderes derfor som små til middels

Usikkerhet	Begrunnelse
Lav	Det er ikke utført beregninger av sannsynlighet for at personer blir truffet av nedfall av snø/is eller iskast ifm. på Moifjellet. Forståelsen av hendelsen vurderes allikevel som god med bakgrunn i erfaringer fra andre vindkraftprosjekter.

Forslag til tiltak og mulig oppfølging i arealplanleggingen og annet	
Tiltak: - Risikovurdering for iskast for Moifjellet. - Interne rutiner og opplæring av driftspersonell. - Iskastfrisone langs turvei opp til Urdalsnipa. - I tråd med gjeldende vilkår om iskast i vindkraftkonsesjoner, må det settes opp fareskilt som varsler om at iskast kan inntreffe innenfor en definert sikkerhetssone rundt vindturbinene, både langs veier og i terrenget - Varslingssystem for is-oppbygging (knyttet til egen arbeidsinstruks).	Oppfølging gjennom planverktøy/info til kommunen etc. - Iskastfrisone langs turvei foreslås tatt inn i planbestemmelsene. - Følges opp i henhold til NVEs veileder for iskast. - Øvrige tiltak følges opp i prosjektering og bygging, gjennom føringer i detaljplanen jf. energiloven, og i drift av anlegg.

5.1.4 Hendelse 4 Vassdrags flom

Nr. 4	Navn uønsket hendelse:	Vassdrags flom

Beskrivelse av uønsket hendelse:
Vassdragsflom som skader turbiner eller internt veianlegg, internt kabelanlegg (går i vei) eller andre deler av anlegget. Hendelsen kan også medføre personskade.

Om naturpåkjenninger (TEK 17)	Sikkerhetsklasse flom/skred	Forklaring
Ja	[redacted]	Vindturbiner nevnes ikke under preaksepterte løsninger for sikkerhetsklasser i veiledning til TEK 17 § 7-2. Det vurderes at vindturbiner, ev. transformatorstasjoner og infrastruktur ment for personopphold omfattes av sikkerhetsklasse [redacted]. Adkomst- og internveier vurderes til å tilhøre sikkerhetsklasse [redacted].

Årsaker

Beskriv mulige årsaker:
Deler av planområdet langs bekker og vann er omfattet av aktsomhetssone for flom. Fare for at adkomstvegene til vindparken, transformatorstasjoner og ev. infrastruktur knyttet til vindparken, plasseres i flomutsatte områder eller bygges slik at de påvirker dreneringsveier. Klimaendringer kan bidra til å endre forekomst og størrelse av vassdragsflom.

Eksisterende barrierer

- Aktsomhetssonene er kjent.
- Regelverk og andre myndighetskrav skal bidra til sikkerhet mot flom, både i anleggs- og driftsfase.

Sårbarhetsvurdering

Vanninntrengning kan sette transformatorstasjon ev. infrastruktur knyttet til vindparken ut av drift. Lite trolig at
turbinene vil kunne ta skade av flom. Driftspersonell kan blir fast på anlegget om veien/tilkomstmulighetene påvirkes av flomvann.

Sannsynlighet	Høy	Middels	Lav	Forklaring
Sannsynlighet for flom	1 gang i løpet av 20 år, 1/20	1 gang i løpet av 200 år, 1/200	1 gang i løpet av 1000 år, 1/1000	
		X		Iht. sikkerhetsklasse [redacted].

Konsekvensvurdering

	Konsekvenskategorier				
Konsekvenstyper	Høy	Middels	Små	Ikke relevant	Forklaring
Liv og helse			X		Flomhendelse i planområdet vil ha så begrenset utredelse at fare for alvorlige personskader vurderes som er liten.
Stabilitet			X		Små konsekvenser for stabilitet dersom enkeltturbiner settes ut av drift, men middels konsekvens ved vanninntrengning

					i transformatorstasjon og. infrastruktur
Materielle verdier		X			Ved flomhendelser kan det forekomme skade på veier og kabler. Anslagsvis vurdert til lav-middels

Samlet begrunnelse av konsekvens:
Flomhendelser i planområdet vurderes å være så begrenset, samt at det vil være varslingssystemer som gjør at man med stor sannsynlighet vil kunne avverge hendelser som medfører fare for liv og helse. Flomhendelser vil kunne føre til noe materielle skader, men viktige elementer som turbiner og transformatorstasjon vil ligge utenfor potensielle flomsoner. Samlet konsekvens vurderes derfor som små.

Usikkerhet	Begrunnelse
Lav	Det er utarbeidet en Flomfarevurderingen er basert på en Rain-On-Grid (ROG)-modell. Modellen inkluderer både hydrologiske og hydrauliske beregninger. Nedbørsforløpene er modellert på flere ulike måter, både som konstante nedbørsforløp og som forløp fastsatt med metoden Chicago Design Storm (CDS). Et beregnet forløp med 120 minutters varighet (CDS120) er valgt som grunnlag for flomsonekartet.

Forslag til tiltak og mulig oppfølging i arealplanleggingen og annet	
Tiltak: - Etablere stikkrenner og kulverter for å bevare naturlige vannveier så langt det er mulig. I noen tilfeller kan det være nødvendig å etablere grøfter og/eller justere veglinjer for gunstig kryssing av dreneringslinjer. - Erosjonssikring bør vurderes i områder der tiltak plasseres innenfor flomutsatte områder.	Oppfølging gjennom planverktøy/info til kommunen etc.: - Følges opp i prosjekteringen og bygging av tiltaket, gjennom føringer i detaljplanen jf. energiloven.

5.1.5 Hendelse 6 Skred (stein og snø) og steinsprang

Nr. 6	Navn uønsket hendelse:	Skred (stein og snø) og steinsprang

Beskrivelse av uønsket hendelse:
Steinsprang kan skade veianlegg og jordkabler. I noen av områder er det også fare for mindre snøskred. I enkelte områder er det også vurdert fare for store utrasinger, som tilsvarer mindre steinskred. Hendelser kan også medføre personskade.

Om naturpåkjenninger (TEK 17)	Sikkerhetsklasse flom/skred	Forklaring
Ja	[redacted]	Adkomst- og internveier, samt jordkabler vurderes til å tilhøre sikkerhetsklasse [redacted]. Vindturbiner, ev. transformatorstasjoner og infrastruktur ment for personopphold omfattes av sikkerhetsklasse [redacted], men dette vurderes ikke aktuelt å

		etablere innenfor de identifiserte områdene.

Årsaker

Beskriv mulige årsaker:
Landskapet i planområdet er preget av utstikkende bergrygger som er generelt 20-50 m høyere enn omkringliggende terreng. Steinsprang kan forekomme som følge av at det løsner partier i oppsprukne skrenter, og gjennom remobilisering av løse urblokker i bratt terreng.

Klimaet i området er generelt mild og vått. Det kan imidlertid komme betydelige mengder snø, selv om det ikke nødvendigvis er årlig. Maksimal mengde snø som kan komme på et 3-døgns snøfall på 100 år er tilstrekkelig for at mindre snøskred kan forekomme.

Eksisterende barrierer

- Aktsomhetssonene er kjent
- Regelverk og andre myndighetskrav skal bidra til sikkerhet mot skredfare, både i anleggs- og driftsfase.

Sårbarhetsvurdering

Skulle det forekomme et skred, vil det potensielt kunne medføre betydelige konsekvenser for mennesker som ferdes i det aktuelle området. Områdene hvor det er fare for skred er av begrenset størrelse, og det legges ikke opp til varig oppholde.
Et ev. skred vil også kunne medføre skader på veier som vil kunne redusere framkommelighet til anlegget i perioder og skade på jordkabler som vil kunne medføre delvis driftsstans. Hvor lang tid området vil bli påvirket av konsekvenser av et ev. skred, vil avhenge av skadeomfang, men skred vil berøre avgrensede områder av begrenset størrelse

Sannsynlighet	Høy	Middels	Lav	Forklaring
	Oftere enn 1 gang i løpet av 10 år. >10 år	1 gang i løpet av 10-100 år. 1-10 %	Sjeldnere enn 1 gang i løpet av 100 år. <1 %	
		X		I 11 avgrensede områder er vurdert at nominell årlig Skredsannsynlighet er større enn 1/100 uten avbøtende tiltak. For de resterende delene av planområdet er sannsynligheten for skred mindre enn 1/100 eller ikke eksiterende. Sannsynligheten vurderes derfor som liten til middels.

Konsekvensvurdering

		Konsekvenskategorier			
Konsekvenstyper	Høy	Middels	Små	Ikke relevant	Forklaring
Liv og helse	X				En hendelse hvor personer som ferdes til fots er involvert kan potensielt få fatale konsekvenser. Driftspersonell vil hovedsakelig benytte kjøretøy når de ferdes i planområde noe som vil kunne bidra til å reduseres konsekvensene.
Stabilitet			X		Ev. hendelser vil kunne medføre midlertidig redusert fremkommelighet for driftspersonell.
Materielle verdier			X		Skred vil kunne medføre skade på veier og kabler. Størrelsene på de

					enkelte skredområdene er begrenset.

Samlet begrunnelse av konsekvens:
11 avgrensede områder som ikke oppfylle kravene til sikkerhetsklasse [redacted] er identifisert i skredfagligutredning. Ferdsel i disse områdene hvis det skjer en skredhendelse kan medføre død. Sannsynligheten for dette vurderes som svært liten, og det er foreslått avbøtende tiltak som vil gjøre at alle delområdene oppfyller kravet til [redacted].
Skredhendelser vil kunne føre til noe materielle skader, men viktige elementer som turbiner og transformatorstasjon vil ligge utenfor potensielle faresoner. Samlet konsekvens vurderes derfor som små til middels.

Usikkerhet	Begrunnelse
Lav	Det er utarbeidet en skredfare vurdering basert på feltkartlegging, kartstudier og simuleringer av skredutløp med modelleringsverktøy som Rockyfor3D og RAMMS::Avalanche.

Forslag til tiltak og mulig oppfølging i arealplanleggingen og annet	
Tiltak: - Heve veien slik at den ligger på en veifylling som også kan fungere som en skredvoll mot steinsprang/snøskred med lav energi - Rensk og/eller sikring av ustabile bergpartier og -blokker - Flytte veitrasé ut av faresonene	Oppfølging gjennom planverktøy/info til kommunen etc.: - Følges opp i prosjekteringen og bygging av tiltaket, gjennom føringer i detaljplanen. jf. energiloven.

5.1.6 Hendelse 8a) Skog- og lyngbrann

Nr. 8a)	Navn uønsket hendelse:	Turbinbrann som sprer seg til vegetasjon

Beskrivelse av uønsket hendelse:
Brann i vindturbin eller transformatorstasjon kan sende gnister til omliggende vegetasjon. I tørkeperioder vil dette kunne føre til branntilløp.

Om naturpåkjenninger (TEK 17)	Sikkerhetsklasse flom/skred	Forklaring
Ikke relevant	Ikke relevant	

Årsaker

Brann i vindturbin eller transformatorstasjon som sende gnister til omliggende natur.

Eksisterende barrierer

- Gruset flate rundt turbiner, transformatorstasjon og driftsbygning, samt veier i området.
- Skrinn vegetasjon i planområdet, og naturlige barrierer som bergrygger og vassdrag.
- Branndeteksjon og kontinuerlig overvåkning av komponenter.
- Rutiner for stopping av turbin før farlige høye temperaturer oppnås.
- Beredskapsplan med rutiner for hindring av spredning (f.eks. vanning).

Sårbarhetsvurdering

Systemer for tidlig deteksjon, naturlige og konstruerte barrierer, samt avstand gjør at en brann i området vil få begrenset omfang. Sannsynlighet for at brann vil kunne nå annen bebyggelse vurderes som svært liten.

Sannsynlighet	Høy	Middels	Lav	Forklaring
	Oftere enn 1 gang i løpet av 10 år. >10 år	1 gang i løpet av 10-100 år. 1-10 %	Sjeldnere enn 1 gang i løpet av 100 år. <1 %	

			X	Brann i vindturbin og transformatorstasjon kan forekomme, men sett opp mot antall vindturbiner og transformatorstasjoner i Norge så forekommer det sjeldent. For at en brann skal spre seg til omkringliggende vegetasjon er man videre avhengig av at det er tørt i terrenget, og betydelig vind. Sannsynligheten vurderes derfor som liten.

Konsekvensvurdering					
	Konsekvenskategorier				
Konsekvenstyper	Høy	Middels	Små	Ikke relevant	Forklaring
Liv og helse			X		Systemer og driftspersonell vil med stor sannsynlig oppdage og varsle brann på et tidlig stadium, hvor ikke essensiell personell vil bli ført bort fra området. Transformator planlegges etablert i lukkete celler og transformatorstasjonen vil være inngjerdet som vil hindre spredning og adgang for uvedkommende.
Stabilitet			X		Brann kan føre til midlertidig driftsstans og redusert fremkommelighet.
Materielle verdier	X				Kostnaden for en vindturbin eller transformatorstasjon er høy, og en brann som helt eller delvis skader en turbin eller transformatorstasjon vil kunne medføre betydelige kostnader.
Samlet begrunnelse av konsekvens: Ved brann i turbin kan det forekomme spredning til tilgrensende vegetasjon hvis værforholdene legger til rette for det. Transformatorer planlegges i lukkete celler som begrenser spredning. Konsekvensene av brann vurderes å begrense seg til en turbin eller transformatorstasjon, med små konsekvenser for liv og helse. Samlet konsekvens vurderes derfor som middels.					

Usikkerhet	Begrunnelse
Lav	Klimaendringer kan føre til periodevis varmere og tørrere værforhold, noe som kan øke sannsynligheten for lyng.
Forslag til tiltak og mulig oppfølging i arealplanleggingen og annet	
Tiltak: - Gruset flate rundt turbiner, transformatorstasjon og driftsbygning, samt veier i området. - Transformatorer planlegges etablert i lukkete celler som hindrer spredning. - Branndeteksjon og kontinuerlig overvåkning av komponenter. - Rutiner for stopping av turbin før farlige høye temperaturer oppnås. - Beredskapsplan med rutiner for hindring av spredning (f.eks. vanning)	Oppfølging gjennom planverktøy/info til kommunen etc.: - Følges opp i prosjektering, bygging av tiltak, gjennom føringer i detaljplanen jf. energiloven, og i drift av anlegg

5.1.7 Hendelse 28 Fare for akutt forurensning på land eller i sjø, oljeutslipp etc.

Nr. 28	Navn uønsket hendelse:	Forurensing drikkevann

Beskrivelse av uønsket hendelse:
Utslipp av mineralolje, glykol, gir- og hydraulikkolje eller andre drivstoff og kjemikaler fra vindturbiner og transformatorstasjon.

Om naturpåkjenninger (TEK 17)	Sikkerhetsklasse flom/skred	Forklaring
Ikke relevant	Ikke relevant	

Årsaker

- Lekkasje fra vindturbin eller transformatorstasjon som følge av teknisk feil eller mangelfullt vedlikehold.
- Lekkasje fra vindturbin som følge av helt eller delvis kollaps.
- Lekkasje fra kjøretøyer eller annet utstyr som følge av teknisk feil eller ulykke.

Eksisterende barrierer

- Klausuler som legger begrensninger på bruk og aktivitet innenfor nedbørsfeltet.
- Varslingssystemer ved lekkasje.
- Beredskapsplan med rutiner for hindring av spredning.

Sårbarhetsvurdering

Vindkraftverk på land vurderes generelt å ha lite potensial for større/alvorlig forurensing. Av mulige forurensningskilder i driftsfasen er gir- og hydraulikkolje, samt glykol eller annet type kjølemedium i vindturbinene eller transformatorstasjon. Moderne vindturbiner er utstyrt med trau hvor olje vil samles opp ved lekkasje. Transformatorcellene i planområdet planlegges med tette sjakter og oljeutskiller, hvor olje vil samles opp i tilfelle lekkasje.

Innenfor nedbørsfeltet til Hagavatnet som er reservedrikkevannsilde er det utført modellsimuleringer for å vurdere konsekvenser av utslipp av glykol, gir- og hydraulikkoljer. Hendelsene som er simulert og analysert er konstruert med hensikt å føre til størst transport av utslippene til Hagavatnet som er en reservedrikkevannkilde. De kombinerer rekke konservative antagelser om de mest ugunstige forholdene som kan inntreffe mht. antall turbiner som velter, hvor turbinhodene lander, tidspunkt for utslipp og hydrometeorologiske forhold. Til sammen utgjør antagelsene svært konservative, om ikke usannsynlige hendelser.

Resultatene fra simuleringene viser at konsentrasjonene av glykol med tilhørende biocid i tilløpspunktene til Hagavatnet overstiger anbefalte grenseverdier kun i noen få timer. Videre viser resultatene av simuleringene av gir- og hydraulikkoljene at mesteparten av oljene enten fordamper eller fanges oppstrøms uten at det når Hagavatnet. Mengdene gir- og hydraulikkolje som når Hagavatnet er derfor små og fører til konsentrasjoner som er langt lavere enn referansedosene.

Utslippene av glykol, gir- og hydraulikkolje som når Hagavatnet vil videre fortynnes, fordampe og brytes ned i magasinet. Drikkevannsinntaket er plassert i den søndre enden av Hagavatnet i en avstand på ca. 4 kilometer fra punktene utslippene drenerer til magasinet. Det vil ta lang tid for utslippene å transporteres til inntaket og innen de når inntaket vil mesteparten være fortynnet og nedbrutt til ubetydelige konsentrasjoner. Konklusjonen av simuleringene er at selv med svært konservative og usannsynlige antagelser, vil ikke utslipp fra et mulig velt av vindturbinene nord i nedbørfeltet til Hagavatnet utgjøre en risiko for vannkvaliteten ved inntaket.

Transformatorstasjoner og vindturbiner kan ha bryterfelt som inneholder SF_6-gass (kraftig klimagass), men anleggene på Moifjellet planlegges etablert med brytere som ikke inneholder SF_6-gass.

Lekkasje under anleggsfasen ivaretas gjennom byggherreforskriften og håndteres gjennom byggherrens SHA-plan og ulykke- og beredskapsplaner. Lekkasje fra kjøretøyer i driftsfase vurderes å være av så begrenset karakter at det ikke vil kunne påvirke resipient.

Sannsynlighet	Høy	Middels	Lav	Forklaring
	Oftere enn 1 gang i løpet av 10 år. >10 år	1 gang i løpet av 10-100 år. 1-10 %	Sjeldnere enn 1 gang i løpet av 100 år. <1 %	

			X	Hendelser som involverer større utslipp i driftsfasen forekommer svært sjeldent, og anslås å være mindre 1/100. Det vil være noe mer sannsynlig at mindre utslipp som f.eks. ved fylling av olje. Det vil være vil interne rutiner for å forhindre dette. Utslippene vil være begrenset, og det finnes også avbøtende tiltak som oljetrau som kan samle opp olje. Sannsynligheten vurderes derfor som liten.

Konsekvensvurdering					
	Konsekvenskategorier				
Konsekvenstyper	Høy	Middels	Små	Ikke relevant	Forklaring
Liv og helse			X		Basert på utført modellering vil tiltaket ikke kunne påvirke drikkevannskilden på en slik måte at det vil medføre personskader. Potensielle hendelser i resterende deler av planområde vurderes heller ikke å kunne være av et slikt omfang at det vil kunne medføre personskader.
Stabilitet		X			Forurensing som gjør at drikkevannskilden ikke kan benyttes i en periode vil kunne skape usikkerhet i forhold til vannkilden.
Materielle verdier			X		De materielle skadene ved forurensing av drikkevannskilden eller andre deler av planområdet vil være begrenset
Samlet begrunnelse av konsekvens: Forurensing av drikkevannskilden vil potensielt kunne før til fare liv og helse, og på bakgrunn av dette er det gjort simuleringer hvor 4 turbiner innenfor nedbørsfeltet kollapser under ekstreme forhold. Analyser viser at en hendelse med utslipp fra flere turbiner ikke vil få konsekvens for vannkvaliteten ved inntaket sør i Hagavatnet. Materielle skadene ved forurensing vil være små. Samlet konsekvens vurderes derfor som små					

Usikkerhet	Begrunnelse
Lav	Det er utført modellsimuleringer for å vurdere konsenkvenser av utslipp av glykol, gir- og hydraulikkoljer fra velt av vindturbiner planlaget plassert i den nordre delen av nedbørfeltet til Hagavatnet. Hensikten med studiet er å frembringe en «worst-case-analyse» av uhellsutslipp ved tårnvelt for Moifjellet vindkraftpark.

Forslag til tiltak og mulig oppfølging i arealplanleggingen og annet	
Tiltak: - Mattilsynet skal godkjenne tiltak som tillates innenfor nedbørsfeltet. - Nedbørsfeltet avsettes som hensynssone i områdeplanen, med begrensninger i aktivitet og tiltak. - Ved ekstrem værhendelse vil det ta noe tid før ev. utslipp vil nå drikkevannskilde. Det vil da være mulig å iverksette avbøtende tiltak som lenser. - Fysiske barrierer som lukkede systemer med oljetrau og tette celler	Oppfølging gjennom planverktøy/info til kommunen etc.: - Følges opp i områdereguleringen og detaljplan jf. energiloven, og drift av anlegget

6 Oppsummering og konklusjon

ROS-analysen har som mål å sikre at forhold som kan medføre alvorlige konsekvenser for mennesker, miljø, økonomiske verdier eller samfunnsfunksjoner klargjøres i plansaken, slik at omfang og skader av uønskede hendelser reduseres. ROS-analysen identifiserer hvordan prosjektet eventuelt bør endres, samt tiltak som bør følges opp i videre detaljprosjektering, anleggsfasen og den permanente driftsfasen for området for å redusere risikoen til et akseptabelt nivå. Analysen danner grunnlag for videre avgjørelser og kommer med anbefalinger om mulige risikoreduserende tiltak som er aktuelle for planområdet og/eller utbyggingstiltaket.

6.1 Risikomatrise

Matrisen under sammenstiller vurderinger for sannsynlighet og konsekvens for de 5 hendelsene som er analysert i kapittel 5.1. De er plassert i matrisen etter sannsynlighet og samlet vurderte konsekvens.

Tabell 6-1: Risikomatrise

Risikomatrise	Konsekvens		
Sannsynlighet	Små	Middels	Store
Høy			
Middels	**Hendelse 1b) Sterk vind og løse gjenstander som skader mennesker, anlegg og/eller utstyr** **Hendelse 4 Vassdrags flom**	**Hendelse 3b) Nedfall av snø/is fra maskinhus eller iskast som skader mennesker, anlegg og/eller utstyr** **Hendelse 6 Skred (stein og snø) og steinsprang** **Hendelse 8a) Skog- og lyngbrann**	
Lav	**Hendelse 28 Fare for akutt forurensning på land eller i sjø, oljeutslipp etc.**		**Hendelse 1a) Sterk vind som påfører skade på vindturbin**

6.2 Foreslåtte tiltak

ROS-analysen peker på avbøtende tiltak som vil redusere sannsynligheten for og konsekvensene av de ulike hendelsene. Det må rettes fokus mot disse forholdene i den videre planprosessen.

I Tabell 6-2 gis en opplisting av identifiserte uønskede hendelser i forbindelse med planforslaget og hvilke tiltak som foreslås for å redusere risikoen forbundet med hendelsene.

Tabell 6-2: Oversikt over foreslåtte tiltak

Uønsket Hendelse	**Forslag til tiltak for planområdet/bygget:**	**Oppfølging gjennom planverktøy/info til kommunen etc.:**
Hendelse 1a) Sterk vind som påfører skade på vindturbin	- Prosjektering og utførelse av vindturbiner med tilstrekkelig sikkerhet mhp. dimensjonerende vindforhold. - Følge rutiner for vedlikehold, inspeksjoner og oppfølging - Sikkerhetssystemer som stanser blader og gir mulighet til å justere navet og/eller blader ved ekstrem vind.	– Følges opp i prosjektering, bygging av tiltak, gjennom føringer i detaljplanen jf. energiloven, og drift av anlegg
Hendelse 1b) Sterk vind og løse gjenstander	- Følge rutiner for oppbevaring og sikring av utstyr og gjenstander.	- Følges opp i prosjektering, bygging av tiltak, gjennom føringer i detaljplanen jf. energiloven, og drift av anlegg.
Hendelse 3b) Nedfall av snø/is fra maskinhus eller iskast som skader mennesker, anlegg og/eller utstyr	- Interne rutiner og opplæring av driftspersonell. - Iskastfrisone langs turvei opp til Urdalsnipa. - I tråd med gjeldende vilkår om iskast i vindkraftkonsesjoner, må det settes opp fareskilt som varsler om at iskast kan inntreffe innenfor en definert sikkerhetssone rundt vindturbinene. - Varslingssystem for is-oppbygging (knyttet til egen arbeidsinstruks). - Risikovurdering for iskast for Moifjellet.	- Iskastfrisone langs turvei foreslås tatt inn i planbestemmelsene. - Følges opp i henhold til NVEs veileder for iskast. - Øvrige tiltak følges opp i prosjektering og bygging, gjennom føringer i detaljplanen jf. energiloven, og i drift av anlegg.
Hendelse 4 Vassdrags flom	- Etablere stikkrenner og kulverter for å bevare de naturlige vannveier så langt det er mulig. I noen tilfeller kan det være nødvendig å etablere grøfter og/eller justere veglinjer for gunstig kryssing av dreneringslinjer - Erosjonssikring bør vurderes i områder der tiltak plasseres innenfor flomutsatte områder	- Følges opp i prosjekteringen og bygging av tiltaket, gjennom føringer i detaljplanen jf. energiloven.
Hendelse 6 Skred (stein og snø) og steinsprang	- Heve veien slik at den ligger på en veifylling som også kan fungere som en skredvoll mot steinsprang/snøskred med lav	- Følges opp i prosjektering og bygging av tiltak, gjennom føringer i detaljplanen jf. energiloven.

	energi - Rensk og/eller sikring av ustabile bergpartier og -blokker - Flytte veitrasé ut av faresonene	
Hendelse 8a) Skog- og lyngbrann	- Gruset flate rundt turbiner, transformatorstasjon og driftsbygning, samt veier i området. - Transformatorer planlegges etablert i lukkete celler som hindrer spredning. - Branndeteksjon og kontinuerlig overvåkning av komponenter. - Rutiner for stopping av turbin før farlige høye temperaturer oppnås. - Beredskapsplan med rutiner for hindring av spredning (f.eks. vanning)	- Følges opp i prosjektering, bygging av tiltak, gjennom føringer i detaljplanen jf. energiloven, og i drift av anlegg.
Hendelse 28 Fare for akutt forurensning på land eller i sjø, oljeutslipp etc.	- Mattilsynet skal godkjenne tiltak som tillates innenfor nedbørsfeltet. - Nedbørsfeltet avsettes som hensynssone i områdeplanen, med begrensninger i aktivitet og tiltak. - Ved ekstrem værhendelse vil det ta noe tid før ev. utslipp vil nå drikkevannskilde. Det vil da være mulig å iverksette avbøtende tiltak som lenser. - Fysiske barrierer som lukkede systemer med oljetrau, tette celler og oljeoppsamling.	– Følges opp i områdereguleringen og detaljplan jf. energiloven, og drift av anlegget.

6.3 Oppsummering

Av de 35 risiko- og sårbarhetsforholdene som ble analysert ble 7 av disse vurdert videre i egne analyseskjemaer:

- Nr. 1a): Sterk vind som påfører skade på vindturbin.
- Nr. 1b): Sterk vind og løse gjenstander
- Nr.3b): Nedfall av snø/is fra maskinhus eller iskast som skader mennesker, anlegg og/eller utstyr
- Nr. 4: Vassdragsflom.
- Nr. 6: Skred (stein og snø) og steinsprang
- Nr. 8a): Skog- og lyngbrann
- Nr 28: Fare for akutt forurensning på land eller i sjø, oljeutslipp etc.

Analysen viser at det gjennom planlegging og risikoreduserende tiltak vil være mulig å redusere sannsynligheten, årsakene, sårbarheten, konsekvensene og usikkerheten ved de uønskete hendelsene.

Gitt at de foreslåtte tiltakene følges opp, vurderes risikoen forbundet med planforslaget og de foreslåtte tiltakene å reduseres til et akseptabelt nivå.

7 Referanser

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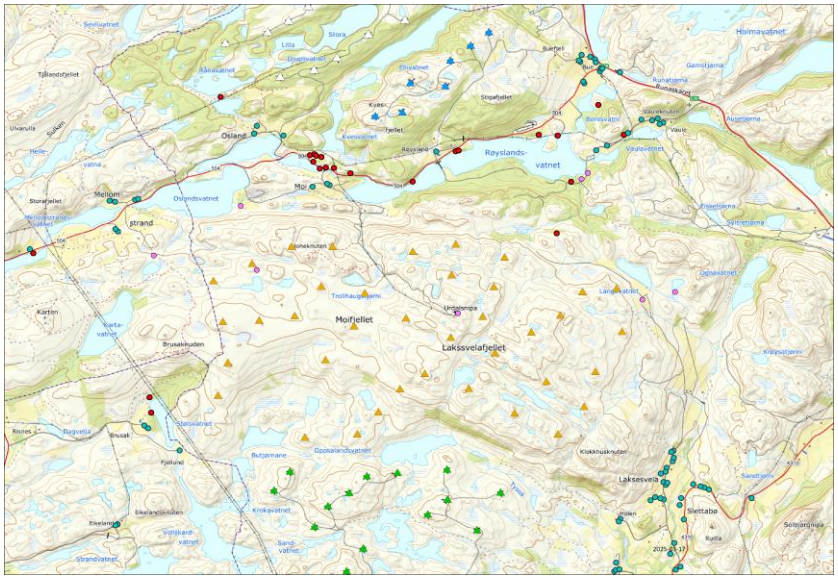
[2] Direktoratet for byggkvalitet, Byggteknisk forskrift (TEK17) med veiledning, https://dibk.no/regelverk/byggteknisk-forskrift-tek17/7/7-2
[3] Norges geologiske undersøkelse (NGU), Kart på nett, https://www.ngu.no/geologiske-kart
[4] Norges vassdrags- og energidirektorat (NVE), Atlas, https://atlas.nve.no/Html5Viewer/index.html?viewer=nveatlas#
[5] Multiconsult rapport 10252119-01-RIGberg-RAP001. Skredfareutredning, datert 05.02.2025
[6] Multiconsult, KU Moifjellet, Flomfarevurdering. Multiconsult 21.11.2024
[7] Multiconsult rapport 10252119-01-RIM-RAP-005. Konsekvensutredning vannmiljø og forurensning, datert 14.02.2025
[8] Multiconsult rapport 10252119-01-PLAN-RAP-002. Konsekvensutredning friluftsliv, datert 29.01.2025
[9] NVE veileder nr 5/2018 Iskast fra vindturbiner, https://publikasjoner.nve.no/veileder/2018/veileder2018_05.pdf

Fagrapport:

Støy

Calculation of noise immission from wind turbines

Wind farm Moifjellet - 38 Vestas V162-6.2 MW



Client information

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Project information

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Summary

Summary
Statkraft AS (Statkraft) are in the planing process for wind farm Moifjellet. To investigate the noise impact from the wind farm on nearby dwellings (houses) Statkraft has contracted Akustikkonsulten i Sverige AB (Akustikkonsulten) to perform calculations of noise levels in L_{den} outdoors. The wind farm consists of 38 wind turbines (WTG) of the WTG type Vestas V162-6.2 MW, with hub height 119 m and total height 200 m.

The calculations of L_{den} are performed with the Nordic environmental noise prediction method Nord2000 which is an approved method for calculation of wind turbine noise according to chapter 9.8.1. in the guidelines M-128/2014, *Veileder til retningslinje for behandling av støy i arealplanlegging (T-1442/2016)* (revised August 2018). The calculations are performed both as "Worst case støyberegninger" and "Støyutredning basert på lokale vindforhold" in accordance with chapter 9.8.2-9.8.3 in M-128/2014, according to the method description in page 6.

North of the project area the existing wind farms Måkaknuten and Stigafjellet is situated. South of the project area wind farm Bjerkreim is situated. All surrounding wind farms has presented noise calculations based on "lokale vindforhold" in their respective planning process and the same assumptions has been made in this report, to determine the noise contribution from those wind farms. However, the ground model, temperature and in some cases coordinates for calculation points, is different for calculations presented in this report. The results will therefor differ slightly compared to calculations made in each of the surrounding wind farms planning process.

The result is presented for 132 noise sensitive areas (NSA), residential dwellings, recreational dwellings and other, as the A-weighted L_{den} outdoors. The results are also presented in noise maps showing L_{den} as green zone (>40-45 dBA), yellow zone (>45-55 dBA) and red zone (>55 dBA). The result is compared to the noise limit L_{den}=45 dBA.

The following calculation cases is presented in this report:

D01-1 - Wind farm Moifjellet "Worst case støyberegninger".
D01-2 - Wind farms Bjerkreim, Måkaknuten and Stigafjellet "lokale vindforhold".
D01-3 - Cumulative noise, **D01-1** + **D01-2** (mix of worst case and lokale vindforhold).
D02-1 - Wind farm Moifjellet "lokale vindforhold".
D02-3 - Cumulative noise, **D02-1** + **D01-2** "lokale vindforhold".

The results of the calculations are summarized below:

	Number of (Residential dwellings / Recreational dwellings / Other) with noise levels	
Calculation	**L_{den} ≤ 45 dBA**	**L_{den} > 45 dBA**
D01-1	96 / 17 / 2	3 / 9 / 5
D01-2	99 / 23 / 7	0 / 3 / 0
D01-3	89 / 8 / 1	10 / 18 / 6
D02-1	99 / 26 / 3	0 / 0 / 4
D02-3	95 / 23 / 2	4 / 3 / 5

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Summary

For Moifjellet alone, Calculation D01-1 "Worst case støyberegninger": 3 residential dwellings and 9 recreational dwellings have a calculated Lden over 45 dBA.

For the other wind farms, Bjerkreim, Måkaknuten and Stigafjellet (without Moifjellet) calculation D01-2 "lokale vindforhold": 0 residential dwellings and 3 recreational dwellings have a calculated L_{den} over 45 dBA.

For the cumulative noise, Calculation D01-3 (mix of worst case and lokale vindforhold, D01-1 + D01-2): 10 residential dwellings and 18 recreational dwellings have a calculated L_{den} over 45 dBA.

For Moifjellet alone, calculation D02-1 "lokale vindforhold": No residential dwellings or recreational dwellings have a calculated L_{den} exceeding 45 dBA.

For the cumulative noise, calculation D02-3 ("lokale vindforhold", D02-1 + D01-2): 4 residential dwellings and 3 recreational dwellings have a calculated L_{den} over 45 dBA. The 3 recreational dwellings are the same as already have a calculated L_{den} over 45 dBA from existing wind farms.

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Calculation conditions

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Wind Farm	WTG type	Number of WTG	Hub height [m]	Total height [m]	Noise emission [dBA]
Moifjellet	Vestas V162-6.2 MW	38	119	200	92-105
Bjerkreim	Siemens SWT-DD-130	70	125	190	92,3-107
Måkaknuten & Stigafjellet	Siemens SWT-DD-130	29	115-125	180-190	92,3-107

Calculation parameters	
Calculation program	SoundPLAN 8.2
Calculation standard	Nord2000
Search radius	25 000 m
Calculation height	4,0 m
Air absorption	ISO 9613-1
Air pressure	1013,25 mBar
Relative humidity	70 %
Temperature	6,6 °C
Temperature gradient	+0,05 °C/m
Roughness length	0,3 m
Wind speed height	10 m (Hub height for statistics)
Wind speed	8 m/s (and Wind statistics)
Standard deviation wind speed	0,5 m/s
Wind direction	Downwind from all directions and wind statistics
Turbulence strength parameter wind	0,12 m4/3/s2
Turbulence strength parameter temp.	0,008 K/s2
Effective flow resistivity	Impedance class D, E, F, H
Coordinate system	UTM WGS84 Zone: 32
Height data	Detailed spot heights

Calculation cases	
D01-1	Noise from wind farm Moifjellet for "Worst case" with downwind from all wind directions for 8 m/s at 10 m height without any noise reducing measures. The highest noise emission for any given wind speed is used in the calculations. The used noise emission is presented in chp. "Noise data". WTG in operation 365 days a year (8760 hours).
D01-2	Noise from wind farm Måkaknuten, Stigafjellet and Bjerkreim for 3-31 m/s at hub height for measured wind speed and wind direction distribution in 30° sectors, calculated as in the noise calculation reports, displayed at NVE:s webpage [1) 2)]. This represents a yearly average of L_{den} based on wind speeds on site, "lokale vindforhold". Observe that temperature and ground model differs from previous calculations and therefore slightly different calculated noise contribution is expected, compared to original reports.
D01-3	Cumulative Noise: D01-1 + D01-2.
D02-1	Noise from wind farm Moifjellet for 3-30 m/s at hub height for measured wind speed and wind direction distribution in 30° sectors.based on wind speeds on site, "lokale vindforhold". The same wind statistics as in the Bjerkreim report [1)] has been used, presented in the chp. "wind data".
D02-3	Cumulative Noise: D02-1 + D01-2.

[1)] Akustikkonsultens report "10-16075 Case F01-F02 Noise calculation Wind Farm Bjerkreim 190716" (https://www.nve.no/konsesjon/konsesjonssaker/konsesjonssak/?id=32&type=A-6)

[2)] Akustikkonsultens report "10-16184 Case I01-I04 Noise calculation Wind Farm Måkaknuten 18100" (https://www.nve.no/konsesjon/konsesjonssaker/konsesjonssak/?type=A-6&id=207)

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Calculation conditions

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Information on calculation parameters

As the weather conditions varies during a normal year, weather parameters according to standard noise calculation methods are used, which are also identical to the values given in the ISA-Standard (International Standard Atmosphere), for air pressure and relative humidity 70 %. A yearly average of the temperature 6,6 °C is applied in the calculations, which is something that has been requested by authorities for many noise calculations of wind turbine noise i Norway recently. In this case, for a down wind calculation, the deviation from standardized 15 °C, causes in average +0,5 dB calculated noise levels with 6,6 °C compared to standardized 15 °C. For calculation points with L_{den} noise levels of 40 dBA or higher the average difference is +0,3 dB. For calculation points with L_{den} noise levels of 45 dBA or higher the average difference is +0,05 dB and min/max differences range from -0,5 to +0,4 dB.

It shall be noted that the calculations are performed for a positive temperature gradient which is comparable to moderate inversion. The used value +0,05 °C/m is also the highest approved value according to the measurement method for noise immission from wind turbines *Elforsk 98:24* as recommended for measurements in M-128/2014. The noise level at a positive temperature gradient is usually higher compared to a negative temperature gradient.

The effective flow resistivity in Nord2000 represent the ground impedance or hardness of the ground. In the guidelines for Nord2000 seven impedance classes are defined, impedance class A-H, where A represents the softest ground for example snow and H represents the hardest ground for example water. In the performed calculations areas with different impedance classes has been specified based on maps and satellite images as well as information from the client. The different areas are shown in a ground absorption map. In accordance to M-128/2014 a conservative approach is used when defining the impedance classes. For example areas with Mire are chosen as class D were class B is the recommended value in Nord2000 with the description "Soft forest floor (short, dense heather-like or thick moss)".

The calculations are performed with the assumption that the noise sensitive areas (NSA) are located 4,0 m above ground. The height of 4,0 m should be considered decisive according to M-128/2014. Although it shall be noted that sound immission measurements according to the measurement standard *Elforsk 98:24*, recommended in chapter 9.8.5 in M-128/2014, should be performed at 1,2-1,5 m above ground. According to the European directive on environmental noise it is also possible to use calculations on 1,5 m above ground for recreational areas and areas with one-story housing as an additional indicator. The result on 1,5 m above ground should also be considered more representative to the exposure of noise outside of a dwelling. Normally the noise level at 4,0 m height is marginally higher than on 1,5 m height.

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Method description

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Method description

The calculations are performed with the Nordic environmental noise prediction method Nord2000 which is an approved method for calculation of wind turbine noise according to chapter 9.8.1. in the guidelines M-128/2014. Nord2000 takes into account different aspects of noise spreading for example ground impedance, topography and wind direction. The calculations are performed both as "Worst case støyberegninger" (**Case D01:1**) and "Støyutredning basert på lokale vindforhold" (**Case D01:2, D02:1, D02:3**) in accordance with chapter 9.8.2-9.8.3 in M-128/2014. In Calculation (**Case D01:3**) a mix is used, where "lokale vindforhold" is used for the neighbouring wind farms and Worst case for Moifjellet.

The "Worst case støyberegninger" assumes specific weather conditions with a conservative transmission loss, high noise emission and the wind turbines in operation 8760 hours a year (365 days). This is equal to the noise immission during a day with downwind conditions and wind speed 8 m/s at 10 m height. The calculations according to "Støyutredning basert på lokale vindforhold" are based on long term wind measurements and also considering the wind speed dependence of the noise emission, both high and low noise emission depending on the wind speed. Such calculations represent a more accurate value of a yearly average L_{den}. The level of L_{den} based on "lokale vindforhold" is, according to Akustikkonsulten's experience, always lower than L_{den} for "worst case". This is also mentioned in chapter 9.8.3 in M-128/2014 where for example calculations considering different wind directions (Vindretning) is said to affect the calculation result with ±1-2 dB while different wind speed and noise emission (Vindhastighet og kildestøy) could affect the calculation result with up to 8 dB, both cases in comparison to "worst case" calculations.

Unfortunately, M-128/2014 do not present any detailed instructions on how to perform calculations assuming "lokale vindforhold". Akustikkonsulten suggests the method below to perform "Støyutredning basert på lokale vindforhold" based on long term wind measurements.

1. Sort the wind speed data so it corresponds to the wind speed dependency of the noise emission. For example, the cut-in wind speed, when the blades start to rotate and emit noise, is normally around 3 m/s at hub height for modern wind turbines. Based on wind and noise data for the current project the wind turbines has been assumed to not emit noise for wind speeds below 3 m/s, approx. 7,8 % of the year, and the highest noise emission (for the loudest noise setting) occurs for the wind speed 8 m/s at hub height and above, approx. 48 % of the year. For wind speeds between 3-9 m/s the noise emission is assumed to vary. The wind speed dependent noise emission is given in Table 4 for the used noise settings.
2. Divide the wind direction data in 30° sectors and calculate the percentual distribution for the wind speeds between 3 m/s to ≥9 m/s separately according, for more information see wind data. The percentage for each wind direction is used for the calculations in step 4, resulting in a NSA in a dominant wind direction gets more noise during a year.
3. Calculate the noise immission for each wind direction in 30° sectors for wind speeds between 3 m/s to ≥9 m/s, a total of 84 calculations. The 12 results, for each wind speed, are then weighted using the wind direction distribution calculated in step 2.
4. The last step is to calculate the yearly average based on the result in step 2-3. The yearly average is weighted using the wind speed distribution between 0-31 m/s (for more information see wind data).

The calculations in **Case D01:2, D02:1** and **D02:3** are performed according to the method described in point 1-4 above. Observe that one set of wind statistics have been used for Bjerkreim and Moifjellet. Another set of wind statistics have been used for Måkaknuten and Stigafjellet.

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Wind shadow

All noise calculations and reports produced by Akustikkonsulten undergoes a quality assurance check in accordance with Akustikkonsulten's quality system. Akustikkonsulten is one of few Acoustic consultants in the Nordic region that are accredited (by SWEDAC and in compliance with ILAC, International Laboratory Accreditation Cooperation) according to ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories as well as for the measurement standard for noise emission from wind turbines IEC 61400-11. Akustikkonsulten's consultants have more than 10 years of experience from noise calculations of wind turbine noise and have performed calculations for more than 500 wind farms over the years.

The performed "worst case" calculations are to be considered as conservative compared to the calculations based on "lokale vindforhold". In addition, the highest noise emission for wind speeds between 3 m/s-15 m/s is assumed in the "worst case" calculations, as recommended in M-128/2014 when there could be a risk for wind shadow.

Wind shadow
The former guidelines for wind turbine noise in Norway, *Veileder til Miljøverndepartementets retningslinje for behandling av støy i arealplanlegging (støyretningslinjen) (TA-2115/2005)*, had special recommendations for dwellings situated in wind shielded areas (wind shadow). But in the latest revision of the guidelines M-128/2014, dated August 2018, no special noise limits are given for these situations. The following recommendation is mentioned about wind shadow:

"Hvis en vindturbin er plassert høyt i terrenget og støymottaker ligger i le i dalformasjoner, kan maskeringen fra vindsuset reduseres vesentlig fordi mottaker er skjermet for vinden. Mottakeren ligger da i vindskygge, og vil høre støy fra vindturbinene bedre. Det finnes ikke spesielle støykrav ved vindskygge, men spesielt i detaljprosjekteringsfasen bør utreder være oppmerksom på støyfølsom bebyggelse som ligger i vindskygge. I slike tilfeller kanstøy fra vindturbiner ofte høres best ved vindstyrker i 10 –12 m/s. Dette bør da legges til grunn for støyberegninger. "

Although, in the new guidelines M-128/2014 the old noise limit for wind shielded areas, L_{den}=45 dBA, is used for all areas. Implicating that the updated noise limit considers areas with wind shadows.

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Noise data

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WTG Type	Noise setting	Wind Speed [m/s]	Noise emission [dBA]
Vestas V162-6.2 MW	PO6200	3-4	95,6
Vestas V162-6.2 MW	PO6200	5	96,3
Vestas V162-6.2 MW	PO6200	6	97,5
Vestas V162-6.2 MW	PO6200	7	100,2
Vestas V162-6.2 MW	PO6200	8	102,5
Vestas V162-6.2 MW	PO6200	≥9	104,8

Reference noise data: 1/3-octave band spectrums and total sound power levels at different wind speed has been taken from the suppliers documents (Source: "S*ound Performance Specification EnVentus™ V162* ", Document no.: 0180-3964 V00, 2024-10-31). The document is classified as restricted by Vestas and thus the data cannot be published.

WTG Type	Noise setting	Wind Speed [m/s]	Noise emission [dBA]
Siemens SWT-DD-130	Mode 1	3-4	92,3
Siemens SWT-DD-130	Mode 1	5	95,3
Siemens SWT-DD-130	Mode 1	6	98,3
Siemens SWT-DD-130	Mode 1	7	102,3
Siemens SWT-DD-130	Mode 1	8	105,6
Siemens SWT-DD-130	Mode 1	≥9	107,0

Reference noise data: Frequency spectrum and sound power levels has been taken from Akustikkonsultens report "10-16075 Case F01-F02 Noise calculation Wind Farm Bjerkreim 190716" (https://www.nve.no/konsesjon/konsesjonssaker/konsesjonssak/?id=32&type=A-6).

Disclaimer: The calculations are valid for the used noise emission and frequency spectrum. Akustikkonsulten gives no warranty on the accuracy of the noise emission data.

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Wind data

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Wind speed at hh [m/s]	Annual [Jan-Dec] [%]	Annual 0° [%]	Annual 30° [%]	Annual 60° [%]	Annual 90° [%]	Annual 120° [%]
0-2	7,76	0,60	0,52	0,48	0,62	0,84
3-4	15,58	1,51	1,01	0,65	1,25	1,92
5	9,56	1,26	0,55	0,33	0,97	1,47
6	9,67	1,40	0,37	0,29	1,06	1,66
7	9,62	1,25	0,22	0,17	1,14	1,79
8	9,43	1,15	0,14	0,10	1,16	1,95
9-31	38,37	2,83	0,11	0,08	4,95	11,51

Wind speed at hh [m/s]	Annual 150° [%]	Annual 180° [%]	Annual 210° [%]	Annual 240° [%]	Annual 270° [%]	Annual 300° [%]
0-2	0,81	0,63	0,60	0,74	0,71	0,62
3-4	1,53	1,40	1,03	1,37	1,27	1,14
5	0,87	0,80	0,44	0,50	0,60	0,65
6	0,93	0,74	0,46	0,40	0,49	0,62
7	1,04	0,71	0,49	0,38	0,44	0,60
8	1,05	0,73	0,49	0,38	0,36	0,53
9-31	4,02	3,69	1,91	1,02	1,19	2,01

Wind speed at hh [m/s]	Annual 330° [%]
0-2	0,55
3-4	1,53
5	1,12
6	1,25
7	1,40
8	1,40
9-31	5,01

Reference wind data: The wind speed distribution is from Akustikkonsultens report "10-16075 Case F01-F02 Noise calculation Wind Farm Bjerkreim 190716" (https://www.nve.no/konsesjon/konsesjonssaker/konsesjonssak/?id=32&type=A-6)

Wind distribution used in calculation

Case D01:2, D02:1 and D02:3: Both wind speed and wind direction distribution are used for wind speed 0-31 m/s, red values. This case represents a yearly average of L_{den}.

Disclaimer: The calculations are valid for the used wind speed distribution. Akustikkonsulten gives no warranty that the real wind distribution is the same.

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WTG Data D01

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Wind Farm Moifjellet							
WTG	**X [m]**	**Y [m]**	**Ground level [mas]**	**Hub height [m]**	**Turbine type**	**Noise emission [dBA]**	**Noise setting**
VT_01	319805	6503654	360	119	Vestas V162-6.2 MW	104,8	PO6200
VT_02	320355	6503906	388	119	Vestas V162-6.2 MW	104,8	PO6200
VT_03	320915	6504155	421	119	Vestas V162-6.2 MW	104,8	PO6200
VT_04	321497	6504154	401	119	Vestas V162-6.2 MW	104,8	PO6200
VT_05	321335	6503575	439	119	Vestas V162-6.2 MW	104,8	PO6200
VT_06	320959	6503143	393	119	Vestas V162-6.2 MW	104,8	PO6200
VT_07	320454	6503079	402	119	Vestas V162-6.2 MW	104,8	PO6200
VT_08	319939	6503060	419	119	Vestas V162-6.2 MW	104,8	PO6200
VT_09	320009	6502460	398	119	Vestas V162-6.2 MW	104,8	PO6200
VT_10	319871	6501985	337	119	Vestas V162-6.2 MW	104,8	PO6200
VT_11	321394	6502504	389	119	Vestas V162-6.2 MW	104,8	PO6200
VT_12	321801	6502996	431	119	Vestas V162-6.2 MW	104,8	PO6200
VT_13	321953	6503477	423	119	Vestas V162-6.2 MW	104,8	PO6200
VT_14	322632	6504080	476	119	Vestas V162-6.2 MW	104,8	PO6200
VT_15	323243	6504188	471	119	Vestas V162-6.2 MW	104,8	PO6200
VT_16	323185	6503740	506	119	Vestas V162-6.2 MW	104,8	PO6200
VT_17	322538	6503112	486	119	Vestas V162-6.2 MW	104,8	PO6200
VT_18	321105	6501373	284	119	Vestas V162-6.2 MW	104,8	PO6200
VT_19	321846	6501419	324	119	Vestas V162-6.2 MW	104,8	PO6200
VT_20	322147	6501742	313	119	Vestas V162-6.2 MW	104,8	PO6200
VT_21	322452	6502079	412	119	Vestas V162-6.2 MW	104,8	PO6200
VT_22	322805	6502300	506	119	Vestas V162-6.2 MW	104,8	PO6200
VT_23	323171	6502829	527	119	Vestas V162-6.2 MW	104,8	PO6200
VT_24	323627	6503136	501	119	Vestas V162-6.2 MW	104,8	PO6200
VT_25	323782	6503568	504	119	Vestas V162-6.2 MW	104,8	PO6200
VT_26	323935	6503998	461	119	Vestas V162-6.2 MW	104,8	PO6200
VT_27	323426	6502084	495	119	Vestas V162-6.2 MW	104,8	PO6200
VT_28	323801	6502601	519	119	Vestas V162-6.2 MW	104,8	PO6200

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WTG Data D01

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Wind Farm Moifjellet							
WTG	**X [m]**	**Y [m]**	**Ground level [mas]**	**Hub height [m]**	**Turbine type**	**Noise emission [dBA]**	**Noise setting**
VT_29	324315	6502907	530	119	Vestas V162-6.2 MW	104,8	PO6200
VT_30	324726	6503153	514	119	Vestas V162-6.2 MW	104,8	PO6200
VT_31	325041	6503494	446	119	Vestas V162-6.2 MW	104,8	PO6200
VT_32	325520	6503545	407	119	Vestas V162-6.2 MW	104,8	PO6200
VT_33	325602	6502915	425	119	Vestas V162-6.2 MW	104,8	PO6200
VT_34	325221	6502330	449	119	Vestas V162-6.2 MW	104,8	PO6200
VT_35	324527	6502184	490	119	Vestas V162-6.2 MW	104,8	PO6200
VT_36	324076	6501726	473	119	Vestas V162-6.2 MW	104,8	PO6200
VT_37	324695	6501419	460	119	Vestas V162-6.2 MW	104,8	PO6200
VT_38	325066	6501819	433	119	Vestas V162-6.2 MW	104,8	PO6200

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WTG Data D01

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Wind Farm Måkaknuten							
WTG	**X [m]**	**Y [m]**	**Ground level [mas]**	**Hub height [m]**	**Turbine type**	**Noise emission [dBA]**	**Noise setting**
M01	320750	6506633	340	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M02	321233	6506735	353	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M03	321558	6506908	354	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M04	322003	6507249	349	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M05	322521	6507459	342	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M06	321460	6507821	375	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M07	321149	6507661	360	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M08	320872	6507450	347	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M09	320576	6507284	320	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M10	319973	6507124	316	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M11	321805	6508152	379	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M12	322117	6508349	404	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M13	322359	6508569	403	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M14	322692	6508756	435	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M15	323070	6508863	416	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M16	322490	6508006	372	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M17	322953	6508200	373	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M18	323290	6508466	395	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M19	323596	6508729	391	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M20	324141	6508910	378	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M21	323959	6509365	366	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M22	323507	6509459	360	125	Siemens SWT-DD-130	92,3-107,0	Mode 1

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WTG Data D01

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Wind Farm Stigafjellet							
WTG	**X [m]**	**Y [m]**	**Ground level [mas]**	**Hub height [m]**	**Turbine type**	**Noise emission [dBA]**	**Noise setting**
S1	322100	6506060	421	115	Siemens SWT-DD-130	92,3-107,0	Mode 1
S2	322488	6506113	411	115	Siemens SWT-DD-130	92,3-107,0	Mode 1
S3	322598	6506542	399	115	Siemens SWT-DD-130	92,3-107,0	Mode 1
S4	323096	6506496	398	115	Siemens SWT-DD-130	92,3-107,0	Mode 1
S5	323167	6506869	385	115	Siemens SWT-DD-130	92,3-107,0	Mode 1
S6	323455	6507086	381	115	Siemens SWT-DD-130	92,3-107,0	Mode 1
S7	323711	6507282	373	115	Siemens SWT-DD-130	92,3-107,0	Mode 1

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Wind Farm Bjerkreim							
WTG	**X [m]**	**Y [m]**	**Ground level [mas]**	**Hub height [m]**	**Turbine type**	**Noise emission [dBA]**	**Noise setting**
E16	319300	6497649	249	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E20	319520	6498087	215	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E21	319928	6498138	245	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E22	320454	6498524	268	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E23	320460	6497883	280	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E24	320369	6497490	305	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E25	320087	6497238	251	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E41	320935	6497321	273	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E42	321319	6496749	230	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E43	321111	6499025	300	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E44	321623	6499035	309	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E45	321695	6499425	339	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E46	322264	6498980	300	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E47	321932	6499756	289	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E48	321430	6500372	335	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E49	321731	6500564	350	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E50	321982	6500810	345	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E51	322417	6500859	285	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E52	321242	6500072	275	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E53	320664	6500602	285	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E54	320891	6500877	312	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E55	321415	6498191	290	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E56	321856	6498558	287	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E57	321675	6497692	260	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E58	322209	6497960	250	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E59	322466	6498259	243	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E60	323076	6498707	280	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E61	322885	6499198	295	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E62	323554	6499080	280	125	Siemens SWT-DD-130	92,3-107,0	Mode 1

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WTG Data D01

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Wind Farm Bjerkreim							
WTG	**X [m]**	**Y [m]**	**Ground level [mas]**	**Hub height [m]**	**Turbine type**	**Noise emission [dBA]**	**Noise setting**
E63	323546	6500023	290	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E64	322845	6500252	320	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E65	323126	6500466	309	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E66	323118	6500908	290	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E67	323878	6500572	275	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E68	322512	6497401	220	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E69	323113	6497733	221	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E70	323576	6497804	200	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G26	319688	6496853	235	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G27	318969	6496352	226	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G28	319082	6495863	230	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G29	319719	6495640	283	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G30	320104	6495691	246	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G31	320335	6496015	256	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G32	319315	6495310	246	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G33	319046	6495025	250	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G34	319291	6494325	218	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G35	319752	6494629	254	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G36	320098	6494023	205	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G37	319810	6495052	261	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G38	320327	6494855	230	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G39	320753	6494843	228	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G40	320902	6495205	225	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S01	317136	6499026	225	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S02	317511	6499063	215	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S03	316881	6498811	218	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S04	316892	6498383	220	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S05	316602	6498180	196	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S06	316423	6497647	182	125	Siemens SWT-DD-130	92,3-107,0	Mode 1

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WTG Data D01

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Wind Farm Bjerkreim							
WTG	**X [m]**	**Y [m]**	**Ground level [mas]**	**Hub height [m]**	**Turbine type**	**Noise emission [dBA]**	**Noise setting**
S07	317173	6497851	200	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S08	318037	6498686	235	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S09	318202	6499115	250	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S10	317728	6498082	215	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S11	317743	6497453	200	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S12	318186	6497632	243	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S13	318559	6497709	247	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S14	318819	6497983	274	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S15	318947	6498311	261	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S17	319085	6497404	250	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S18	318695	6497186	235	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S19	318068	6496960	227	125	Siemens SWT-DD-130	92,3-107,0	Mode 1

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WTG Data D02

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Wind Farm Moifjellet							
WTG	**X [m]**	**Y [m]**	**Ground level [mas]**	**Hub height [m]**	**Turbine type**	**Noise emission [dBA]**	**Noise setting**
VT_01	319805	6503654	360	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_02	320355	6503906	388	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_03	320915	6504155	421	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_04	321497	6504154	401	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_05	321335	6503575	439	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_06	320959	6503143	393	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_07	320454	6503079	402	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_08	319939	6503060	419	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_09	320009	6502460	398	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_10	319871	6501985	337	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_11	321394	6502504	389	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_12	321801	6502996	431	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_13	321953	6503477	423	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_14	322632	6504080	476	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_15	323243	6504188	471	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_16	323185	6503740	506	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_17	322538	6503112	486	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_18	321105	6501373	284	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_19	321846	6501419	324	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_20	322147	6501742	313	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_21	322452	6502079	412	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_22	322805	6502300	506	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_23	323171	6502829	527	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_24	323627	6503136	501	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_25	323782	6503568	504	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_26	323935	6503998	461	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_27	323426	6502084	495	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_28	323801	6502601	519	119	Vestas V162-6.2 MW	95,6-104,8	PO6200

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Wind Farm Moifjellet							
WTG	**X [m]**	**Y [m]**	**Ground level [mas]**	**Hub height [m]**	**Turbine type**	**Noise emission [dBA]**	**Noise setting**
VT_29	324315	6502907	530	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_30	324726	6503153	514	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_31	325041	6503494	446	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_32	325520	6503545	407	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_33	325602	6502915	425	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_34	325221	6502330	449	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_35	324527	6502184	490	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_36	324076	6501726	473	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_37	324695	6501419	460	119	Vestas V162-6.2 MW	95,6-104,8	PO6200
VT_38	325066	6501819	433	119	Vestas V162-6.2 MW	95,6-104,8	PO6200

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Wind Farm Måkaknuten							
WTG	**X [m]**	**Y [m]**	**Ground level [mas]**	**Hub height [m]**	**Turbine type**	**Noise emission [dBA]**	**Noise setting**
M01	320750	6506633	340	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M02	321233	6506735	353	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M03	321558	6506908	354	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M04	322003	6507249	349	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M05	322521	6507459	342	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M06	321460	6507821	375	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M07	321149	6507661	360	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M08	320872	6507450	347	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M09	320576	6507284	320	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M10	319973	6507124	316	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M11	321805	6508152	379	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M12	322117	6508349	404	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M13	322359	6508569	403	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M14	322692	6508756	435	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M15	323070	6508863	416	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M16	322490	6508006	372	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M17	322953	6508200	373	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M18	323290	6508466	395	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M19	323596	6508729	391	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M20	324141	6508910	378	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M21	323959	6509365	366	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
M22	323507	6509459	360	125	Siemens SWT-DD-130	92,3-107,0	Mode 1

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Wind Farm Stigafjellet							
WTG	**X [m]**	**Y [m]**	**Ground level [mas]**	**Hub height [m]**	**Turbine type**	**Noise emission [dBA]**	**Noise setting**
S1	322100	6506060	421	115	Siemens SWT-DD-130	92,3-107,0	Mode 1
S2	322488	6506113	411	115	Siemens SWT-DD-130	92,3-107,0	Mode 1
S3	322598	6506542	399	115	Siemens SWT-DD-130	92,3-107,0	Mode 1
S4	323096	6506496	398	115	Siemens SWT-DD-130	92,3-107,0	Mode 1
S5	323167	6506869	385	115	Siemens SWT-DD-130	92,3-107,0	Mode 1
S6	323455	6507086	381	115	Siemens SWT-DD-130	92,3-107,0	Mode 1
S7	323711	6507282	373	115	Siemens SWT-DD-130	92,3-107,0	Mode 1

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WTG Data D02

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Wind Farm Bjerkreim							
WTG	**X [m]**	**Y [m]**	**Ground level [mas]**	**Hub height [m]**	**Turbine type**	**Noise emission [dBA]**	**Noise setting**
E16	319300	6497649	249	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E20	319520	6498087	215	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E21	319928	6498138	245	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E22	320454	6498524	268	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E23	320460	6497883	280	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E24	320369	6497490	305	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E25	320087	6497238	251	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E41	320935	6497321	273	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E42	321319	6496749	230	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E43	321111	6499025	300	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E44	321623	6499035	309	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E45	321695	6499425	339	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E46	322264	6498980	300	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E47	321932	6499756	289	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E48	321430	6500372	335	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E49	321731	6500564	350	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E50	321982	6500810	345	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E51	322417	6500859	285	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E52	321242	6500072	275	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E53	320664	6500602	285	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E54	320891	6500877	312	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E55	321415	6498191	290	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E56	321856	6498558	287	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E57	321675	6497692	260	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E58	322209	6497960	250	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E59	322466	6498259	243	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E60	323076	6498707	280	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E61	322885	6499198	295	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E62	323554	6499080	280	125	Siemens SWT-DD-130	92,3-107,0	Mode 1

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Wind Farm Bjerkreim							
WTG	**X [m]**	**Y [m]**	**Ground level [mas]**	**Hub height [m]**	**Turbine type**	**Noise emission [dBA]**	**Noise setting**
E63	323546	6500023	290	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E64	322845	6500252	320	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E65	323126	6500466	309	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E66	323118	6500908	290	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E67	323878	6500572	275	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E68	322512	6497401	220	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E69	323113	6497733	221	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
E70	323576	6497804	200	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G26	319688	6496853	235	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G27	318969	6496352	226	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G28	319082	6495863	230	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G29	319719	6495640	283	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G30	320104	6495691	246	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G31	320335	6496015	256	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G32	319315	6495310	246	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G33	319046	6495025	250	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G34	319291	6494325	218	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G35	319752	6494629	254	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G36	320098	6494023	205	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G37	319810	6495052	261	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G38	320327	6494855	230	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G39	320753	6494843	228	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
G40	320902	6495205	225	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S01	317136	6499026	225	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S02	317511	6499063	215	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S03	316881	6498811	218	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S04	316892	6498383	220	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S05	316602	6498180	196	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S06	316423	6497647	182	125	Siemens SWT-DD-130	92,3-107,0	Mode 1

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Wind Farm Bjerkreim							
WTG	**X [m]**	**Y [m]**	**Ground level [mas]**	**Hub height [m]**	**Turbine type**	**Noise emission [dBA]**	**Noise setting**
S07	317173	6497851	200	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S08	318037	6498686	235	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S09	318202	6499115	250	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S10	317728	6498082	215	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S11	317743	6497453	200	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S12	318186	6497632	243	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S13	318559	6497709	247	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S14	318819	6497983	274	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S15	318947	6498311	261	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S17	319085	6497404	250	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S18	318695	6497186	235	125	Siemens SWT-DD-130	92,3-107,0	Mode 1
S19	318068	6496960	227	125	Siemens SWT-DD-130	92,3-107,0	Mode 1

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Ground absorption map

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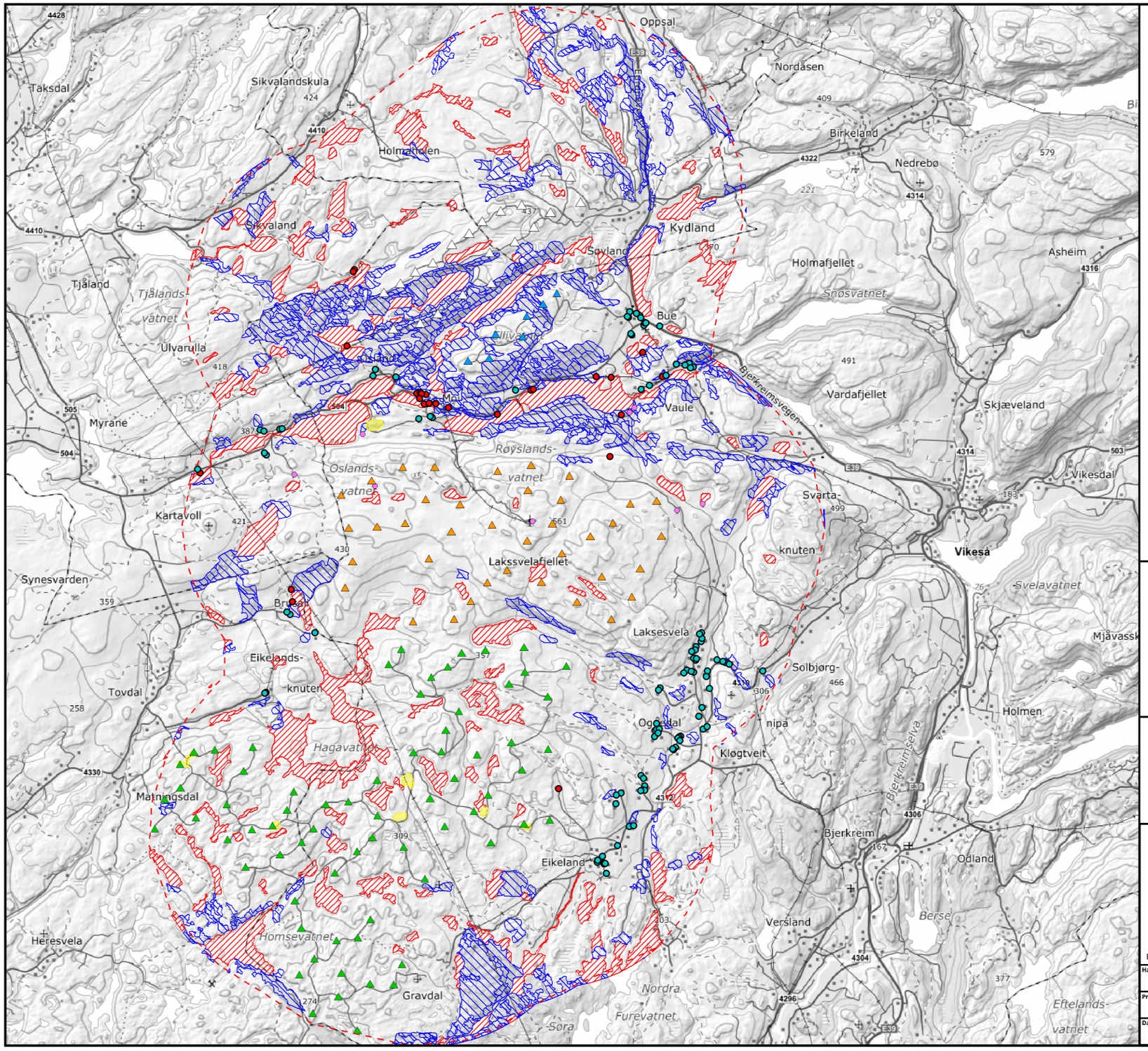

1) Impedance class D -
Normal uncompacted ground (forest floors, pasture fields)
2) Impedance class F -
Compacted dense ground (gravel road, parking lot)
3) Impedance class H -
Very hard and dense surface (dense asphalt, concrete, water)

All other areas Impedance class E -
Compact field and gravel (compacted lawns, park area)

Wind farm Moifjellet, Norway

Akustikkonsulten

Beräknad med SoundPLAN 8.2 uppdatering 2024-10-18 www.akustikkonsulten.se

Handläggare	Kvalitetsgranskare
Jens Fredriksson	Paul Appelqvist
Projekt nr. 10-22255	Ritning
Datum 2025-03-17	

Prepared by: Jens Fredriksson, jens@akustikkonsulten.se
Checked by: Paul Appelqvist, paul@akustikkonsulten.se

Distance NSA-WTG

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	Horizontal distance NSA-WTG [m]																																			
NSA	**T01**	**T02**	**T03**	**T04**	**T05**	**T06**	**T07**	**T08**	**T09**	**T10**	**T11**	**T12**	**T13**	**T14**	**T15**	**T16**	**T17**	**T18**	**T19**	**T20**	**T21**	**T22**	**T23**	**T24**	**T25**	**T26**	**T27**	**T28**	**T29**	**T30**	**T31**	**T32**	**T33**	**T34**	**T35**	**T36**	**T37**	**T38**
18	6978	6584	6214	5723	5562	5716	6162	6642	6407	6448	5086	4886	4975	4777	4414	4138	4286	5147	4414	4165	3949	3688	3598	3407	3593	3824	3031	2945	2747	2676	2817	2699	2072	1718	2111	2296	1611	**1461**
19	6004	5401	4791	4297	4770	5334	5771	6201	6502	6914	5462	4824	4372	3466	2981	3379	4265	6516	6055	5622	5176	4811	4173	3702	3243	**2788**	4754	4143	3716	3410	3052	3035	3670	4219	4395	4921	5140	4727
20	7584	7192	6822	6329	6170	6322	6766	7242	6998	7026	5685	5493	5583	5372	4993	4730	4894	5710	4983	4749	4547	4293	4205	4005	4174	4384	3637	3550	3332	3228	3325	3150	2545	2282	2715	2899	2212	**2064**
21	7407	7197	7023	6680	6308	6227	6540	6914	6488	6335	5465	5565	5864	6050	5915	5517	5241	4966	4398	4394	4442	4412	4690	4795	5158	5534	3910	4233	4386	4562	4878	4933	4311	3710	3635	3317	**2852**	3204
22	7558	7287	7049	6653	6342	6334	6694	7106	6732	6635	5597	5605	5844	5908	5694	5329	5185	5258	4621	4539	4506	4402	4572	4585	4899	5233	3827	4035	4079	4178	4438	4426	3792	3261	3331	3149	**2567**	2802
23	7521	7165	6834	6369	6160	6262	6684	7144	6858	6849	5588	5457	5596	5473	5146	4845	4908	5504	4795	4603	4450	4239	4234	4102	4325	4582	3595	3605	3476	3445	3606	3492	2865	2485	2793	2854	2168	**2159**
24	7139	6875	6647	6261	5938	5919	6274	6683	6307	6209	5178	5199	5449	5544	5355	4978	4797	4831	4195	4118	4094	4002	4198	4239	4572	4924	3441	3683	3769	3904	4194	4222	3594	3018	3016	2783	**2238**	2530
25	7369	7196	7063	6753	6347	6223	6506	6853	6398	6211	5453	5607	5939	6194	6104	5690	5344	4860	4343	4387	4484	4498	4833	4988	5374	5768	4046	4427	4634	4848	5190	5277	4665	4038	3893	3511	**3117**	3517
27	7024	6622	6243	5746	5597	5763	6214	6697	6473	6521	5143	4928	5006	4784	4407	4142	4317	5229	4493	4235	4009	3738	3626	3417	3587	3805	3081	2968	2745	2652	2772	2634	2013	1700	2132	2351	1672	**1481**
28	7583	7379	7211	6871	6495	6408	6716	7085	6653	6492	5644	5752	6055	6246	6111	5713	5434	5127	4569	4573	4628	4603	4885	4991	5354	5729	4104	4429	4580	4753	5065	5113	4489	3895	3828	3513	**3045**	3392
29	**1539**	1964	2475	3055	2996	2799	2392	1993	2477	2789	3493	3627	3618	4192	4796	4778	4281	4015	4509	4544	4618	4828	4970	5325	5393	5498	5482	5640	6048	6395	6650	7119	7301	7075	6463	6222	6913	7096
32	8157	8062	8005	7755	7298	7097	7314	7600	7088	6826	6326	6574	6955	7308	7277	6848	6409	5553	5163	5295	5472	5555	5962	6175	6582	6994	5179	5621	5879	6122	6478	6581	5972	5337	5151	4719	**4388**	4812
33	7515	7229	6974	6566	6271	6282	6654	7075	6716	6635	5554	5537	5760	5794	5561	5205	5094	5260	4606	4505	4450	4326	4469	4459	4760	5084	3736	3914	3933	4014	4262	4236	3601	3087	3189	3042	**2437**	2641
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38	2327	2806	3331	3714	3203	2639	2217	1870	1471	**1096**	2701	3274	3645	4544	5115	4845	3991	2231	2969	3276	3617	4003	4487	5016	5314	5631	4582	5040	5610	6071	6471	6943	6866	6394	5687	5201	5817	6194
43	1978	1424	935	**930**	1470	1915	2104	2356	2849	3338	2543	2127	1729	1712	2200	2361	2339	3669	3676	3428	3210	3168	2952	3073	2959	2913	3692	3555	3763	3986	4127	4557	4875	4837	4374	4379	5023	5021
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46	2168	1595	1055	**910**	1493	1983	2221	2511	2977	3461	2560	2096	1663	1535	1992	2179	2232	3706	3665	3393	3147	3076	2818	2905	2768	2701	3573	3402	3583	3790	3916	4341	4672	4655	4212	4244	4877	4856
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50	**1586**	2005	2511	3091	3038	2846	2440	2043	2528	2839	3542	3672	3660	4228	4831	4816	4324	4066	4559	4593	4666	4874	5013	5366	5432	5533	5528	5683	6089	6435	6688	7156	7341	7118	6507	6268	6959	7140
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52	7019	6613	6230	5730	5587	5758	6212	6696	6476	6529	5143	4922	4994	4763	4381	4120	4305	5241	4504	4242	4010	3735	3614	3398	3561	3774	3078	2954	2721	2620	2733	2590	1970	1670	2117	2350	1676	**1467**
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Prepared by: Jens Fredriksson, jens@akustikkonsulten.se
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Distance NSA-WTG

Akustikkonsulten

	Horizontal distance NSA-WTG [m]																																		
NSA	**T01**	**T02**	**T03**	**T04**	**T05**	**T06**	**T07**	**T08**	**T09**	**T10**	**T11**	**T12**	**T13**	**T14**	**T15**	**T16**	**T17**	**T18**	**T19**	**T20**	**T21**	**T22**	**T23**	**T24**	**T25**	**T26**	**T27**	**T28**	**T29**	**T30**	**T31**	**T32**	**T33**	**T34**	**T35**	**T36**	**T37**	**T38**
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109	6789	6187	5576	5029	5411	5944	6421	6893	7106	7469	5916	5300	4914	4027	3442	3741	4636	6854	6291	5849	5395	4992	4356	3821	3400	2995	4769	4130	3592	3176	2731	2518	3113	3769	4136	4742	4792	4302
111	2507	2901	3361	3671	3115	2543	2197	1965	1439	961	2448	3061	3480	4388	4930	4623	3741	1787	2529	2873	3248	3650	4178	4719	5049	5395	4195	4690	5274	5744	6160	6625	6507	6003	5294	4779	5373	5773
112	3788	4242	4732	5059	4505	3933	3578	3299	2816	2349	3793	4420	4856	5764	6291	5965	5070	2940	3640	4042	4460	4875	5447	5996	6354	6722	5354	5903	6498	6975	7409	7860	7683	7127	6422	5855	6383	6835
113	2312	2801	3332	3724	3219	2657	2227	1869	1487	1128	2736	3304	3668	4565	5140	4874	4024	2287	3023	3326	3663	4047	4527	5053	5348	5661	4630	5083	5652	6112	6509	6982	6910	6441	5735	5253	5871	6245
114	1886	2224	2668	3235	3254	3123	2753	2393	2906	3238	3847	3924	3865	4363	4951	4972	4543	4435	4899	4910	4955	5139	5236	5558	5593	5662	5787	5905	6283	6609	6839	7300	7517	7328	6736	6529	7220	7376
115	1632	1909	2326	2886	2931	2835	2496	2180	2728	3098	3576	3617	3535	4011	4595	4624	4217	4231	4658	4645	4668	4836	4911	5221	5245	5308	5480	5579	5946	6265	6488	6948	7172	6995	6412	6222	6911	7055
116	1611	1877	2287	2847	2897	2808	2474	2165	2717	3092	3551	3585	3499	3970	4553	4585	4182	4216	4638	4620	4640	4806	4876	5183	5206	5267	5448	5543	5908	6225	6448	6907	7133	6958	6377	6190	6879	7020
137	7599	7279	6986	6549	6295	6350	6747	7188	6862	6814	5645	5574	5757	5714	5433	5103	5077	5449	4766	4621	4519	4353	4424	4355	4618	4910	3732	3830	3775	3801	4005	3933	3299	2849	3054	3007	2352	2456
138	5759	5157	4547	3998	4382	4918	5392	5862	6082	6453	4915	4292	3894	3000	2425	2749	3650	5889	5359	4919	4465	4075	3432	2918	2474	2041	3928	3298	2818	2470	2085	2045	2680	3240	3459	4015	4186	3755
139	6736	6133	5522	4976	5358	5891	6368	6839	7053	7416	5864	5248	4861	3974	3389	3689	4585	6804	6242	5801	5346	4944	4307	3773	3351	2944	4724	4085	3549	3135	2692	2485	3084	3737	4098	4702	4757	4270
140	7655	7263	6892	6399	6241	6393	6836	7313	7068	7095	5756	5564	5654	5441	5059	4798	4965	5778	5052	4819	4618	4364	4276	4074	4241	4448	3708	3621	3400	3292	3384	3203	2601	2348	2785	2970	2282	2134
141	1818	2149	2592	3158	3179	3051	2685	2332	2851	3190	3777	3851	3789	4286	4874	4896	4467	4376	4835	4842	4884	5066	5161	5482	5516	5586	5714	5830	6207	6532	6762	7223	7440	7252	6661	6456	7146	7301
142	2644	3159	3711	4293	4168	3882	3415	2936	3264	3422	4494	4734	4793	5428	6039	5993	5430	4776	5375	5489	5634	5892	6107	6499	6602	6732	6549	6771	7215	7585	7862	8336	8485	8216	7577	7280	7966	8194
143	8025	7926	7866	7615	7159	6960	7180	7470	6961	6703	6189	6434	6814	7166	7134	6705	6267	5424	5027	5157	5331	5412	5819	6033	6440	6852	5036	5478	5739	5984	6342	6448	5841	5203	5012	4577	4250	4677

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Distance NSA-WTG

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	Horizontal distance NSA-WTG [m]																																		
NSA	**T01**	**T02**	**T03**	**T04**	**T05**	**T06**	**T07**	**T08**	**T09**	**T10**	**T11**	**T12**	**T13**	**T14**	**T15**	**T16**	**T17**	**T18**	**T19**	**T20**	**T21**	**T22**	**T23**	**T24**	**T25**	**T26**	**T27**	**T28**	**T29**	**T30**	**T31**	**T32**	**T33**	**T34**	**T35**	**T36**	**T37**	**T38**
144	7588	7392	7234	6902	6518	6420	6722	7084	6645	6476	5655	5775	6085	6292	6168	5766	5471	5114	4569	4584	4651	4636	4930	5048	5416	5795	4148	4486	4649	4830	5148	5204	4581	3981	3899	3569	3116	3474
145	7538	7272	7038	6646	6330	6316	6674	7083	6705	6604	5577	5592	5836	5909	5701	5333	5179	5226	4594	4518	4490	4391	4570	4590	4909	5246	3821	4038	4092	4197	4463	4456	3822	3285	3342	3149	2575	2821
146	7955	7799	7679	7376	6963	6826	7095	7429	6959	6750	6054	6225	6563	6824	6731	6319	5972	5416	4929	4992	5103	5125	5463	5615	5996	6387	4676	5053	5248	5447	5776	5841	5220	4613	4502	4137	3723	4100
147	7336	7170	7045	6742	6330	6197	6473	6816	6355	6162	5426	5591	5929	6197	6116	5700	5339	4815	4309	4362	4468	4491	4837	5003	5393	5791	4050	4442	4661	4884	5230	5326	4716	4083	3923	3529	3151	3560
149	7822	7507	7219	6784	6527	6575	6968	7406	7073	7017	5866	5803	5991	5952	5670	5341	5312	5648	4972	4837	4743	4583	4661	4593	4856	5145	3965	4067	4012	4032	4230	4147	3515	3079	3292	3242	2589	2692
151	6938	6552	6191	5707	5533	5676	6118	6595	6351	6384	5038	4851	4952	4775	4424	4139	4262	5076	4345	4104	3899	3647	3576	3403	3603	3846	2992	2929	2754	2704	2863	2762	2131	1744	2100	2253	1564	1453
156	3812	4267	4759	5087	4533	3961	3605	3324	2843	2376	3822	4450	4885	5793	6320	5994	5100	2970	3670	4071	4490	4904	5477	6026	6384	6752	5383	5932	6528	7005	7439	7890	7712	7156	6451	5884	6411	6864
157	7449	7291	7174	6877	6459	6318	6588	6924	6457	6255	5547	5721	6064	6342	6266	5849	5479	4915	4422	4485	4600	4630	4983	5154	5545	5945	4196	4593	4816	5039	5386	5481	4870	4239	4078	3681	3306	3716
158	1172	869	942	1438	1646	1789	1701	1719	2307	2794	2556	2387	2178	2532	3103	3161	2866	3508	3728	3595	3506	3588	3549	3799	3782	3819	4197	4205	4519	4809	5011	5464	5715	5584	5042	4928	5606	5692
163	6552	6013	5478	4901	5020	5408	5917	6432	6432	6660	5061	4583	4402	3767	3186	3179	3837	5667	4969	4563	4156	3750	3255	2753	2574	2469	3256	2710	2126	1667	1314	836	958	1634	2257	2892	2667	2124
165	929	1402	1960	2541	2421	2191	1776	1384	1895	2246	2877	3027	3046	3673	4287	4236	3697	3421	3897	3928	4004	4220	4382	4754	4846	4976	4875	5050	5474	5834	6106	6579	6737	6490	5868	5615	6305	6497
166	6093	5562	5036	4461	4562	4940	5448	5963	5957	6184	4586	4111	3941	3332	2766	2730	3367	5197	4503	4094	3683	3276	2780	2280	2118	2049	2793	2237	1651	1191	858	403	560	1258	1824	2466	2309	1778
169	3930	3327	2718	2240	2752	3324	3731	4142	4478	4913	3569	2939	2448	1598	1368	1817	2544	4699	4367	3969	3566	3286	2728	2450	2060	1705	3477	3007	2858	2823	2735	3037	3541	3784	3608	3920	4384	4158
175	640	**103**	593	1125	948	870	749	906	1428	1922	1642	1611	1571	2225	2845	2765	2234	2548	2798	2707	2680	2831	2925	3280	3371	3518	3474	3595	4001	4357	4632	5107	5261	5028	4423	4216	4906	5060
176	2697	2484	2414	2710	3120	3374	3315	3289	3890	4364	4122	3850	3526	3545	3974	4189	4171	5118	5297	5122	4970	4979	4800	4915	4769	4663	5529	5404	5592	5782	5874	6274	6649	6662	6220	6224	6872	6865
177	2236	1695	1216	1165	1729	2190	2385	2632	3129	3619	2801	2359	1936	1799	2229	2439	2511	3937	3921	3658	3420	3354	3095	3171	3018	2929	3851	3673	3841	4034	4144	4559	4909	4910	4479	4520	5151	5121
178	2306	1758	1261	1169	1745	2220	2432	2691	3180	3668	2815	2357	1923	1747	2162	2382	2483	3957	3925	3654	3406	3330	3055	3118	2956	2858	3817	3626	3783	3968	4072	4485	4840	4850	4427	4479	5105	5068
179	2385	1826	1306	1160	1749	2242	2475	2752	3228	3714	2813	2335	1888	1662	2060	2293	2427	3963	3909	3627	3367	3277	2985	3032	2859	2752	3751	3546	3690	3868	3965	4376	4736	4756	4342	4406	5026	4980
180	2509	1929	1367	1112	1713	2239	2518	2832	3278	3756	2756	2242	1772	1454	1824	2073	2266	3918	3819	3517	3235	3120	2796	2817	2629	2511	3570	3339	3465	3632	3723	4131	4497	4527	4126	4211	4821	4762
184	3500	3005	2548	2020	1977	2317	2823	3339	3348	3613	2004	1487	1352	1094	994	552	742	2833	2280	1839	1387	1011	380	357	629	1039	1121	793	1079	1452	1791	2272	2344	2130	1609	1673	2274	2259
186	3182	2578	1967	1487	2013	2586	2981	3388	3732	4174	2890	2276	1773	1035	1110	1482	2005	4042	3779	3408	3041	2820	2349	2215	1928	1716	3133	2772	2776	2870	2904	3287	3696	3803	3490	3684	4233	4097
187	5088	4483	3871	3353	3802	4361	4808	5251	5531	5935	4471	3834	3386	2478	1993	2398	3278	5527	5077	4647	4205	3851	3219	2775	2317	1862	3842	3254	2890	2660	2383	2504	3113	3556	3613	4084	4385	4028
188	5331	4726	4113	3587	4019	4573	5028	5478	5743	6138	4651	4016	3581	2673	2156	2539	3432	5685	5211	4776	4330	3962	3323	2854	2396	1940	3911	3305	2902	2631	2316	2387	3010	3494	3604	4104	4365	3983
189	6040	5435	4822	4305	4746	5301	5754	6201	6471	6867	5376	4742	4310	3402	2877	3247	4145	6398	5905	5468	5017	4639	3997	3504	3050	2601	4538	3916	3459	3126	2747	2699	3334	3902	4115	4661	4847	4418
190	6204	5601	4991	4445	4833	5370	5844	6313	6535	6904	5363	4742	4346	3453	2876	3193	4093	6326	5785	5343	4889	4493	3852	3329	2893	2470	4316	3680	3173	2793	2376	2254	2881	3490	3776	4356	4475	4017
191	5543	4945	4339	3779	4132	4656	5139	5617	5815	6173	4619	4003	3621	2742	2148	2445	3343	5571	5029	4588	4133	3739	3097	2577	2139	1714	3579	2948	2466	2122	1747	1741	2374	2911	3111	3664	3843	3420
192	5435	4838	4233	3671	4017	4539	5023	5504	5697	6053	4498	3883	3503	2626	2030	2323	3221	5449	4907	4466	4012	3618	2976	2457	2017	1591	3463	2833	2357	2023	1660	1682	2311	2830	3012	3558	3750	3335
193	5280	4683	4079	3516	3863	4387	4870	5350	5546	5904	4353	3735	3352	2473	1879	2180	3079	5313	4779	4338	3884	3494	2851	2339	1894	1460	3358	2732	2275	1964	1625	1692	2312	2802	2948	3479	3697	3297
194	6582	6482	6430	6195	5725	5517	5736	6031	5531	5291	4746	5007	5401	5806	5828	5387	4882	3990	3582	3721	3917	4029	4484	4755	5186	5619	3716	4219	4561	4871	5273	5459	4898	4215	3881	3360	3182	3682
195	2301	1794	1371	1384	1932	2368	2528	2737	3258	3751	3005	2582	2168	2034	2448	2671	2749	4129	4136	3882	3652	3591	3334	3405	3244	3141	4091	3911	4071	4255	4354	4763	5125	5139	4714	4760	5389	5356
196	2349	1835	1398	1385	1942	2388	2559	2777	3293	3785	3015	2581	2160	2001	2404	2635	2732	4144	4141	3881	3644	3577	3309	3371	3204	3094	4069	3881	4034	4213	4307	4713	5080	5100	4681	4734	5360	5321
197	2380	1851	1385	1329	1899	2362	2553	2791	3294	3785	2971	2521	2089	1901	2298	2533	2649	4108	4087	3818	3573	3496	3217	3271	3099	2986	3981	3784	3930	4106	4198	4605	4972	4995	4581	4641	5264	5220
198	2346	1827	1381	1357	1917	2368	2544	2769	3281	3773	2990	2552	2129	1965	2369	2599	2699	4121	4113	3852	3613	3544	3275	3336	3168	3060	4035	3846	3998	4178	4272	4680	5045	5065	4646	4699	5325	5286
199	2253	1732	1287	1279	1832	2276	2449	2673	3185	3677	2905	2476	2060	1933	2357	2572	2642	4033	4033	3777	3545	3483	3228	3304	3149	3054	3984	3808	3974	4163	4268	4681	5036	5042	4613	4654	5285	5255
201	1911	2421	2972	3393	2916	2369	1908	1505	1212	970	2550	3076	3404	4286	4876	4635	3812	2283	2996	3254	3553	3918	4356	4868	5136	5427	4526	4940	5494	5944	6326	6804	6767	6330	5630	5181	5820	6167
202	2589	3109	3666	4248	4115	3823	3354	2872	3194	3349	4430	4676	4740	5382	5994	5944	5374	4705	5306	5422	5570	5830	6050	6445	6551	6685	6487	6714	7160	7532	7812	8287	8431	8159	7517	7217	7903	8134
206	4073	3827	3670	3851	4342	4668	4659	4661	5260	5738	5388	5041	4653	4467	4766	5071	5240	6435	6554	6337	6134	6083	5806	5819	5587	5385	6573	6350	6435	6541	6545	6887	7348	7474	7124	7224	7832	7749
207	4042	3798	3646	3831	4319	4642	4631	4631	5230	5707	5364	5019	4634	4454	4757	5059	5223	6409	6530	6316	6114	6065	5791	5807	5578	5378	6558	6337	6426	6534	6540	6884	7343	7466	7113	7210	7819	7739
214	3970	3367	2757	2278	2786	3358	3768	4180	4514	4947	3599	2967	2477	1623	1379	1829	2565	4726	4390	3990	3585	3301	2740	2455	2060	1698	3485	3010	2853	2812	2717	3015	3522	3772	3604	3921	4381	4150
224	2101	2590	3125	3523	3025	2468	2028	1660	1298	976	2583	3136	3488	4381	4961	4704	3863	2212	2939	3222	3543	3919	4382	4903	5187	5493	4514	4950	5514	5969	6361	6836	6779	6323	5619	5151	5779	6141
225	4922	4345	3766	3186	3432	3911	4412	4912	5039	5360	3770	3182	2862	2063	1443	1615	2475	4655	4081	3640	3185	2783	2147	1612	1194	824	2596	1964	1497	1208	940	1173	1716	2102	2181	2701	2941	2570
226	3688	3088	2483	2029	2564	3136	3526	3922	4279	4724	3430	2810	2310	1510	1392	1825	2478	4575	4282	3897	3511	3256	2731	2504	2145	1831	3498	3066	2969	2975	2921	3247	3728	3932	3712	3983	4480	4282

Information on distance
The distance corresponds to the horizontal distance in m between the NSA and the WTG. The WTG with the shortest distance to each NSA are marked with blue color in the table.

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Point calculations D01

Akustikkonsulten

					L_{den} [dBA]		
					(D01-1)	(D01-2)	(D01-3)
NSA	X [m]	Y [m]	Z_{ground} [mas]	Calculation height [m]	Moifjellet (Worst case)	Other wind farms (lokale vindforhold)	Cumulative
18	326234	6500942	184	4,0 m	40	33	41
19	325067	6506546	240	4,0 m	41	40	43
20	326770	6500654	187	4,0 m	41	36	42
21	325238	6498620	136	4,0 m	38	39	41
22	325861	6499132	119	4,0 m	40	38	42
23	326480	6500188	160	4,0 m	41	37	43
24	325480	6499323	137	4,0 m	41	39	43
25	324876	6498307	177	4,0 m	39	40	42
27	326323	6501036	183	4,0 m	43	33	43
28	325307	6498436	131	4,0 m	39	39	42
29	318451	6504386	271	4,0 m	43	37	44
32	324569	6497033	113	4,0 m	36	41	42
33	325952	6499331	128	4,0 m	41	38	43
35	324812	6497361	117	4,0 m	37	41	43
36	324448	6497061	115	4,0 m	37	42	43
37	326223	6500694	174	4,0 m	42	35	43
38	318879	6501519	239	4,0 m	41	39	43
43	321215	6505041	262	4,0 m	48	43	49
44	325290	6506721	235	4,0 m	40	40	43
45	325390	6505638	243	4,0 m	43	35	44
46	321453	6505063	256	4,0 m	48	43	49
47	326109	6506033	246	4,0 m	40	33	41
48	326442	6500501	166	4,0 m	43	37	44
50	318418	6504424	270	4,0 m	43	37	44
51	325517	6499558	153	4,0 m	42	38	43
52	326338	6501088	185	4,0 m	43	33	43
53	326072	6500514	172	4,0 m	41	35	42
54	325021	6497704	123	4,0 m	37	37	40
58	320798	6505788	249	4,0 m	41	44	46

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Point calculations D01

Akustikkonsulten

					L_{den} [dBA]		
					(D01-1)	(D01-2)	(D01-3)
NSA	X [m]	Y [m]	Z_{ground} [mas]	Calculation height [m]	Moifjellet (Worst case)	Other wind farms (lokale vindforhold)	Cumulative
59	320422	6505926	265	4,0 m	43	45	47
60	320383	6505813	251	4,0 m	43	42	46
61	321419	6505083	257	4,0 m	47	43	49
62	325266	6498366	132	4,0 m	39	39	42
63	325283	6498569	134	4,0 m	39	39	42
64	325302	6498359	133	4,0 m	39	39	42
65	325491	6499430	142	4,0 m	41	39	43
66	326363	6499456	131	4,0 m	40	37	42
67	325925	6499317	127	4,0 m	40	38	42
68	325903	6499297	124	4,0 m	40	38	42
69	325940	6499252	128	4,0 m	40	39	42
70	325516	6499454	143	4,0 m	41	38	43
71	325565	6499461	141	4,0 m	41	38	43
72	325544	6499384	139	4,0 m	41	38	43
73	325824	6499090	118	4,0 m	40	38	42
74	324612	6496864	111	4,0 m	36	41	42
75	324565	6497049	114	4,0 m	37	41	42
76	324590	6497038	112	4,0 m	36	41	42
77	324455	6497096	118	4,0 m	37	42	43
81	325579	6500198	158	4,0 m	43	39	44
82	325556	6500160	155	4,0 m	43	39	45
83	326343	6499844	139	4,0 m	41	36	42
84	327442	6500501	202	4,0 m	38	33	39
85	326331	6501189	194	4,0 m	42	32	42
86	326301	6501171	197	4,0 m	42	32	43
87	326419	6500400	163	4,0 m	42	37	43
88	326221	6500885	177	4,0 m	39	33	40
89	326192	6500735	178	4,0 m	42	34	43
90	326244	6500722	176	4,0 m	42	34	43

Prepared by: Jens Fredriksson, jens@akustikkonsulten.se
Checked by: Paul Appelqvist, paul@akustikkonsulten.se

Point calculations D01

Akustikkonsulten

					L_{den} [dBA]		
					(D01-1)	(D01-2)	(D01-3)
NSA	X [m]	Y [m]	Z_{ground} [mas]	Calculation height [m]	Moifjellet (Worst case)	Other wind farms (lokale vindforhold)	Cumulative
91	326194	6500479	163	4,0 m	42	36	43
92	326148	6500496	164	4,0 m	42	35	43
93	326009	6500466	173	4,0 m	41	36	42
94	326613	6500702	174	4,0 m	42	36	43
95	326718	6500671	181	4,0 m	42	36	43
96	325030	6506961	261	4,0 m	39	38	42
97	325011	6506862	256	4,0 m	40	38	42
98	324990	6506881	259	4,0 m	40	37	42
99	325218	6506896	234	4,0 m	40	39	42
100	325155	6506934	238	4,0 m	39	38	41
101	325230	6506854	233	4,0 m	40	38	42
102	325301	6506767	238	4,0 m	40	41	43
103	325326	6506767	239	4,0 m	40	40	43
104	325576	6506708	243	4,0 m	39	40	42
105	325054	6506574	241	4,0 m	41	40	43
106	325688	6505823	243	4,0 m	41	30	42
107	325876	6506020	251	4,0 m	41	35	42
108	326031	6506006	239	4,0 m	41	34	42
109	326186	6505973	242	4,0 m	40	34	41
111	319327	6501193	225	4,0 m	43	41	46
112	318446	6500118	219	4,0 m	39	45	46
113	318826	6501559	241	4,0 m	41	40	44
114	318335	6504836	249	4,0 m	42	34	43
115	318696	6504851	255	4,0 m	43	36	44
116	318740	6504863	255	4,0 m	44	36	45
137	326286	6499687	144	4,0 m	39	35	40
138	325236	6505570	235	4,0 m	43	37	44
139	326137	6505953	246	4,0 m	40	35	41
140	326835	6500625	190	4,0 m	41	36	42

Prepared by: Jens Fredriksson, jens@akustikkonsulten.se
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Point calculations D01

Akustikkonsulten

					L_{den} [dBA]		
					(D01-1)	(D01-2)	(D01-3)
NSA	X [m]	Y [m]	Z_{ground} [mas]	Calculation height [m]	Moifjellet (Worst case)	Other wind farms (lokale vindforhold)	Cumulative
141	318410	6504821	249	4,0 m	42	35	43
142	317204	6504129	246	4,0 m	40	36	41
143	324536	6497172	119	4,0 m	37	42	43
144	325230	6498349	131	4,0 m	39	39	42
145	325811	6499098	118	4,0 m	40	38	42
146	325102	6497719	123	4,0 m	38	38	41
147	324787	6498270	187	4,0 m	39	38	41
149	326433	6499500	136	4,0 m	41	37	42
151	326155	6500857	191	4,0 m	38	33	39
156	318421	6500103	218	4,0 m	38	45	46
157	324784	6498114	189	4,0 m	37	35	39
158	320193	6504760	253	4,0 m	48	39	48
163	326355	6503507	335	4,0 m	49	35	49
165	318959	6504037	302	4,0 m	45	37	46
166	325893	6503393	360	4,0 m	50	34	50
169	323244	6505556	234	4,0 m	45	41	47
175	320421	6503827	375	4,0 m	59	38	59
176	319908	6506349	284	4,0 m	41	40	44
177	321314	6505304	242	4,0 m	46	40	47
178	321401	6505319	243	4,0 m	46	40	47
179	321518	6505314	249	4,0 m	46	39	47
180	321751	6505237	242	4,0 m	46	33	46
184	323275	6503195	554	4,0 m	56	39	56
186	322632	6505115	231	4,0 m	46	37	47
187	324421	6505795	238	4,0 m	43	36	44
188	324692	6505784	236	4,0 m	43	37	44
189	325267	6506232	241	4,0 m	41	39	43
190	325628	6505796	250	4,0 m	42	30	42
191	325117	6505239	236	4,0 m	43	38	44

Prepared by: Jens Fredriksson, jens@akustikkonsulten.se
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Point calculations D01

Akustikkonsulten

					L_{den} [dBA]		
					(D01-1)	(D01-2)	(D01-3)
NSA	X [m]	Y [m]	$Z_{,ground}$ [mas]	Calculation height [m]	Moifjellet (Worst case)	Other wind farms (lokale vindforhold)	Cumulative
192	325029	6505154	231	4,0 m	43	38	44
193	324880	6505111	246	4,0 m	44	38	45
194	323746	6498382	174	4,0 m	39	47	47
195	321177	6505501	250	4,0 m	45	40	46
196	321238	6505515	254	4,0 m	45	41	46
197	321339	6505474	263	4,0 m	46	44	48
198	321264	6505491	258	4,0 m	46	42	47
199	321224	6505404	250	4,0 m	45	42	47
201	318901	6501970	231	4,0 m	45	39	46
202	317250	6504070	244	4,0 m	40	35	41
206	320043	6507720	297	4,0 m	38	49	49
207	320024	6507690	296	4,0 m	38	49	49
214	323284	6505567	236	4,0 m	45	43	47
224	318925	6501746	227	4,0 m	46	38	47
225	324676	6504360	375	4,0 m	49	39	49
226	322967	6505552	241	4,0 m	45	44	48

Information
NSA 18-158 & 226, is residential dwellings.
NSA 163-224, marked with **green**, is recreational dwellings and marked with purple is other calculation points (not dwellings).

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Point calculations D02

Akustikkonsulten

					L_{den} [dBA] (lokale vindforhold)		
NSA	X [m]	Y [m]	$Z_{,ground}$ [mas]	Calculation height [m]	Moifjellet (D02-1)	Other wind farms (D01-2)	Cumulative (D02-3)
18	326234	6500942	184	4,0 m	33	33	36
19	325067	6506546	240	4,0 m	38	40	42
20	326770	6500654	187	4,0 m	38	36	40
21	325238	6498620	136	4,0 m	35	39	40
22	325861	6499132	119	4,0 m	36	38	40
23	326480	6500188	160	4,0 m	36	37	39
24	325480	6499323	137	4,0 m	37	39	41
25	324876	6498307	177	4,0 m	36	40	41
27	326323	6501036	183	4,0 m	36	33	38
28	325307	6498436	131	4,0 m	35	39	40
29	318451	6504386	271	4,0 m	40	37	41
32	324569	6497033	113	4,0 m	33	41	42
33	325952	6499331	128	4,0 m	37	38	41
35	324812	6497361	117	4,0 m	33	41	42
36	324448	6497061	115	4,0 m	33	42	43
37	326223	6500694	174	4,0 m	36	35	38
38	318879	6501519	239	4,0 m	38	39	42
43	321215	6505041	262	4,0 m	44	43	46
44	325290	6506721	235	4,0 m	37	40	42
45	325390	6505638	243	4,0 m	40	35	41
46	321453	6505063	256	4,0 m	44	43	47
47	326109	6506033	246	4,0 m	37	33	39
48	326442	6500501	166	4,0 m	38	37	40
50	318418	6504424	270	4,0 m	40	37	41
51	325517	6499558	153	4,0 m	37	38	41
52	326338	6501088	185	4,0 m	36	33	37
53	326072	6500514	172	4,0 m	35	35	38
54	325021	6497704	123	4,0 m	33	37	39
58	320798	6505788	249	4,0 m	38	44	45

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Point calculations D02

Akustikkonsulten

					L_{den} [dBA] (lokale vindforhold)		
NSA	X [m]	Y [m]	$Z_{,ground}$ [mas]	Calculation height [m]	Moifjellet (D02-1)	Other wind farms (D01-2)	Cumulative (D02-3)
59	320422	6505926	265	4,0 m	40	45	46
60	320383	6505813	251	4,0 m	40	42	44
61	321419	6505083	257	4,0 m	44	43	47
62	325266	6498366	132	4,0 m	35	39	41
63	325283	6498569	134	4,0 m	35	39	41
64	325302	6498359	133	4,0 m	35	39	41
65	325491	6499430	142	4,0 m	36	39	41
66	326363	6499456	131	4,0 m	36	37	39
67	325925	6499317	127	4,0 m	37	38	40
68	325903	6499297	124	4,0 m	37	38	40
69	325940	6499252	128	4,0 m	37	39	41
70	325516	6499454	143	4,0 m	36	38	40
71	325565	6499461	141	4,0 m	37	38	41
72	325544	6499384	139	4,0 m	37	38	41
73	325824	6499090	118	4,0 m	36	38	40
74	324612	6496864	111	4,0 m	33	41	42
75	324565	6497049	114	4,0 m	33	41	42
76	324590	6497038	112	4,0 m	33	41	41
77	324455	6497096	118	4,0 m	33	42	42
81	325579	6500198	158	4,0 m	37	39	41
82	325556	6500160	155	4,0 m	38	39	42
83	326343	6499844	139	4,0 m	36	36	39
84	327442	6500501	202	4,0 m	32	33	35
85	326331	6501189	194	4,0 m	34	32	37
86	326301	6501171	197	4,0 m	34	32	36
87	326419	6500400	163	4,0 m	37	37	40
88	326221	6500885	177	4,0 m	30	33	35
89	326192	6500735	178	4,0 m	35	34	37
90	326244	6500722	176	4,0 m	36	34	38

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Point calculations D02

Akustikkonsulten

					L_{den} [dBA] (lokale vindforhold)		
NSA	X [m]	Y [m]	$Z_{,ground}$ [mas]	Calculation height [m]	Moifjellet (D02-1)	Other wind farms (D01-2)	Cumulative (D02-3)
91	326194	6500479	163	4,0 m	36	36	39
92	326148	6500496	164	4,0 m	36	35	38
93	326009	6500466	173	4,0 m	35	36	38
94	326613	6500702	174	4,0 m	38	36	40
95	326718	6500671	181	4,0 m	38	36	40
96	325030	6506961	261	4,0 m	36	38	40
97	325011	6506862	256	4,0 m	37	38	40
98	324990	6506881	259	4,0 m	37	37	40
99	325218	6506896	234	4,0 m	37	39	41
100	325155	6506934	238	4,0 m	36	38	40
101	325230	6506854	233	4,0 m	36	38	40
102	325301	6506767	238	4,0 m	37	41	42
103	325326	6506767	239	4,0 m	37	40	42
104	325576	6506708	243	4,0 m	36	40	41
105	325054	6506574	241	4,0 m	38	40	42
106	325688	6505823	243	4,0 m	38	30	39
107	325876	6506020	251	4,0 m	38	35	40
108	326031	6506006	239	4,0 m	37	34	39
109	326186	6505973	242	4,0 m	36	34	39
111	319327	6501193	225	4,0 m	40	41	44
112	318446	6500118	219	4,0 m	36	45	45
113	318826	6501559	241	4,0 m	38	40	42
114	318335	6504836	249	4,0 m	39	34	40
115	318696	6504851	255	4,0 m	40	36	42
116	318740	6504863	255	4,0 m	41	36	42
137	326286	6499687	144	4,0 m	34	35	38
138	325236	6505570	235	4,0 m	40	37	42
139	326137	6505953	246	4,0 m	37	35	39
140	326835	6500625	190	4,0 m	37	36	39

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Point calculations D02

Akustikkonsulten

					L_{den} [dBA] (lokale vindforhold)		
NSA	X [m]	Y [m]	Z_{ground} [mas]	Calculation height [m]	Moifjellet (D02-1)	Other wind farms (D01-2)	Cumulative (D02-3)
141	318410	6504821	249	4,0 m	39	35	41
142	317204	6504129	246	4,0 m	36	36	39
143	324536	6497172	119	4,0 m	33	42	43
144	325230	6498349	131	4,0 m	35	39	41
145	325811	6499098	118	4,0 m	36	38	40
146	325102	6497719	123	4,0 m	34	38	39
147	324787	6498270	187	4,0 m	35	38	40
149	326433	6499500	136	4,0 m	37	37	40
151	326155	6500857	191	4,0 m	29	33	34
156	318421	6500103	218	4,0 m	35	45	45
157	324784	6498114	189	4,0 m	33	35	37
158	320193	6504760	253	4,0 m	43	39	45
163	326355	6503507	335	4,0 m	46	35	46
165	318959	6504037	302	4,0 m	42	37	43
166	325893	6503393	360	4,0 m	47	34	47
169	323244	6505556	234	4,0 m	42	41	44
175	320421	6503827	375	4,0 m	56	38	56
176	319908	6506349	284	4,0 m	38	40	42
177	321314	6505304	242	4,0 m	43	40	45
178	321401	6505319	243	4,0 m	43	40	45
179	321518	6505314	249	4,0 m	43	39	44
180	321751	6505237	242	4,0 m	43	33	43
184	323275	6503195	554	4,0 m	53	39	53
186	322632	6505115	231	4,0 m	42	37	43
187	324421	6505795	238	4,0 m	40	36	42
188	324692	6505784	236	4,0 m	40	37	42
189	325267	6506232	241	4,0 m	38	39	42
190	325628	6505796	250	4,0 m	39	30	40
191	325117	6505239	236	4,0 m	40	38	42

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Point calculations D02

Akustikkonsulten

					L_{den} [dBA] (lokale vindforhold)		
NSA	**X [m]**	**Y [m]**	**Z_{ground} [mas]**	**Calculation height [m]**	**Moifjellet (D02-1)**	**Other wind farms (D01-2)**	**Cumulative (D02-3)**
192	325029	6505154	231	4,0 m	39	38	42
193	324880	6505111	246	4,0 m	40	38	42
194	323746	6498382	174	4,0 m	35	47	47
195	321177	6505501	250	4,0 m	42	40	44
196	321238	6505515	254	4,0 m	41	41	44
197	321339	6505474	263	4,0 m	43	44	47
198	321264	6505491	258	4,0 m	42	42	45
199	321224	6505404	250	4,0 m	42	42	45
201	318901	6501970	231	4,0 m	42	39	44
202	317250	6504070	244	4,0 m	37	35	39
206	320043	6507720	297	4,0 m	35	49	49
207	320024	6507690	296	4,0 m	35	49	49
214	323284	6505567	236	4,0 m	42	43	46
224	318925	6501746	227	4,0 m	43	38	44
225	324676	6504360	375	4,0 m	45	39	46
226	322967	6505552	241	4,0 m	42	44	46

Information
NSA 18-158 & 226, is residential dwellings.
NSA 163-224, marked with **green**, is recreational dwellings and marked with purple is other calculation points (not dwellings).

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Point calculations D02

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Information on results
The calculations are performed with the assumption that the noise sensitive area (NSA) are located 4,0 m above ground. The height of 4,0 m should be considered decisive according to the Norwegian guidelines on noise. According to the European directive on environmental noise it is also possible to use calculations on 1,5 m above ground for recreational areas and areas with one-storey housing as an additional indicator. For indexing of NSA see the noise maps.

Note that if the point calculation and noise map show contradictory results, it is primary the point calculation that should be used. The noise map should be considered as a complement to the point calculation.

The calculation result is rounded to the nearest integer value according to the guidelines *Veileder til retningslinje for behandling av støy i arealplanlegging (T-1442/2016)*:

"Når det skal rundes av til nærmeste hele tall ser vi på første siffer rett etter kommaet.
-er sifferet 0, 1, 2, 3 eller 4 tar vi vekk alle desimalsifrene og beholder det hele tallet slik som det var
-er sifferet 5, 6, 7, 8 eller 9 tar vi vekk alle desimalsifrene og øker det hele tallet med 1

Eksempel; 54,499 = 54
54,511 = 55"

Calculated noise levels should always be presented as integer values according to this rounding principle, which is common knowledge for noise consultants.

L_{den} has been calculated with a penalty of 5 dB for L_e (evening 19-23) and 10 dB for L_n (night 23-07) which is resulting in an addition of 6,4 dBA to the calculated equivalent sound level.

The noise limit has been assumed to be L_{den}=45 dBA according to T-1442 and if the calculated value is above the limit 45 dBA it is marked with red.

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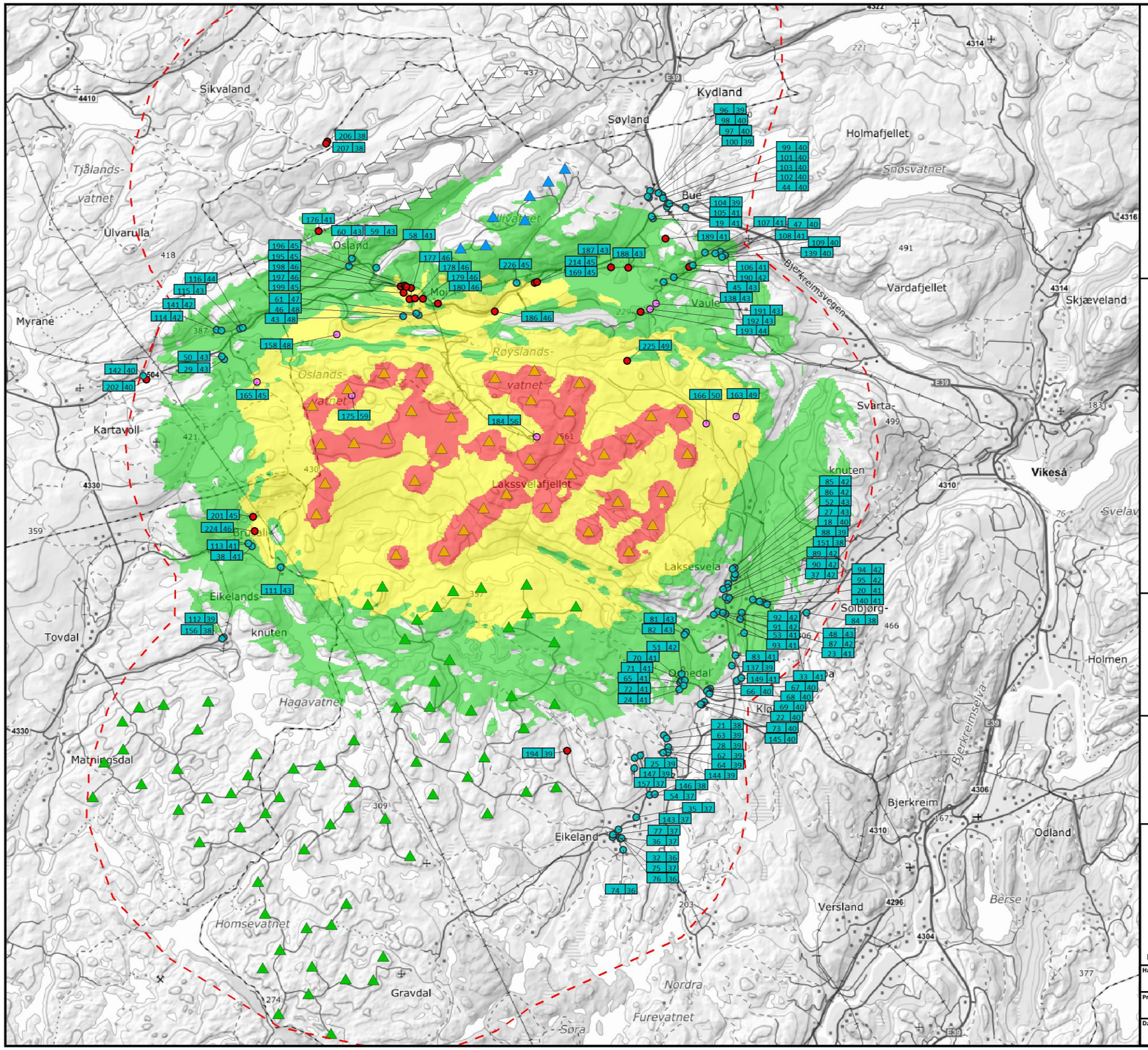
Noise Map - Case D01-1

Akustikkonsulten



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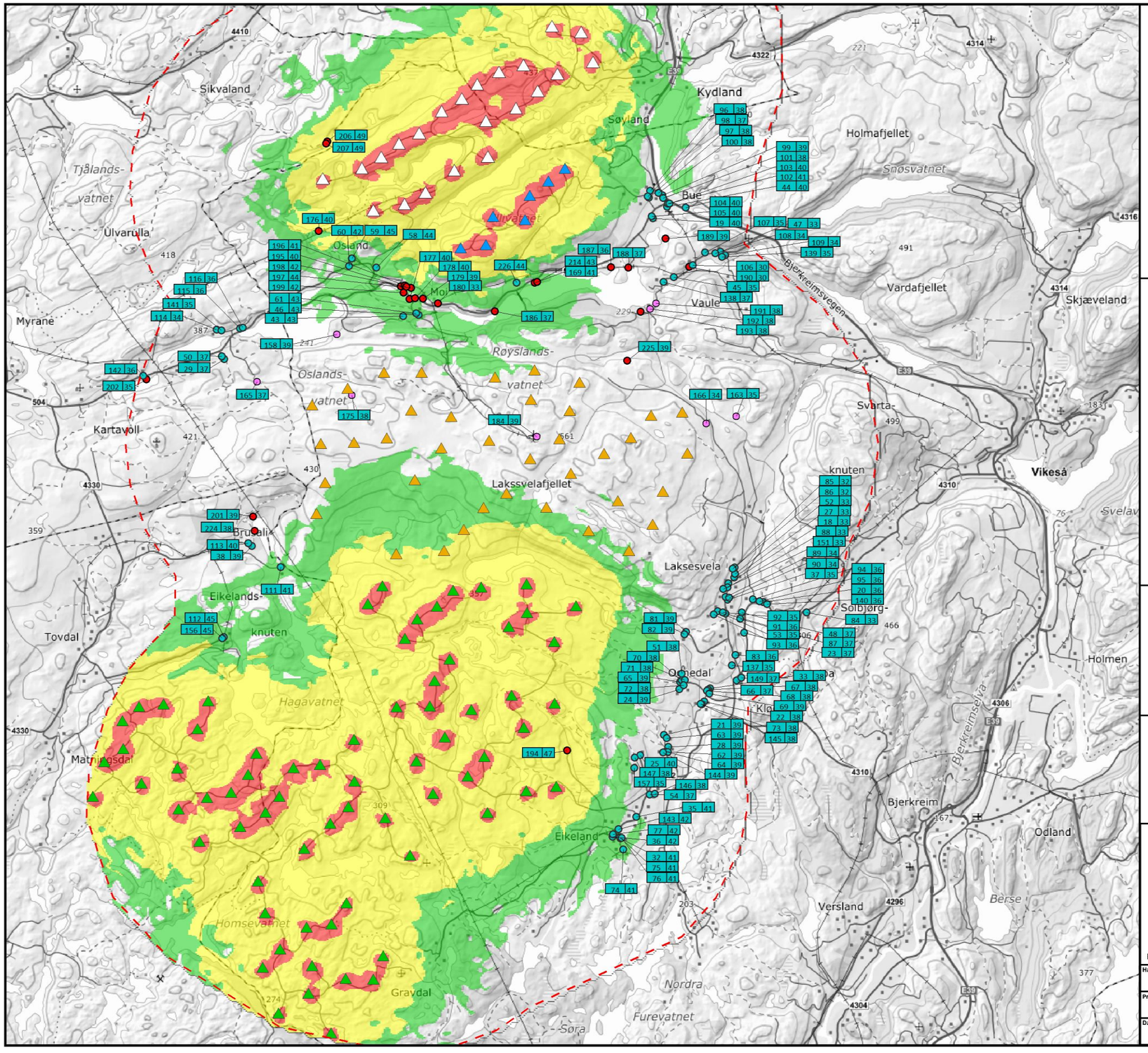
Noise Map - Case D01-2

Akustikkonsulten



Yearly Average, $L_{den,365\ days}$, in dBA
Result 4 m above ground

40 <=	< 45
45 <=	< 55
55 <=	

- NSA Residential
- NSA Recreational
- WTG Måkaknuten
- WTG Stigafjellet
- WTG Moifjellet
- WTG Bjerkreim
- Calculation area

NSA	L_{den} [dBA]	Index NSA

NSA Other

N

0 0,5 1 2 3 4 km

Wind farm Moifjellet, Norway
Bjerkreim, Måkaknuten & Stigafjellet

Akustikkonsulten

Case D01:2 - lokale vindforhold

Beräknad med SoundPLAN 8.2 uppdatering 2024-10-18

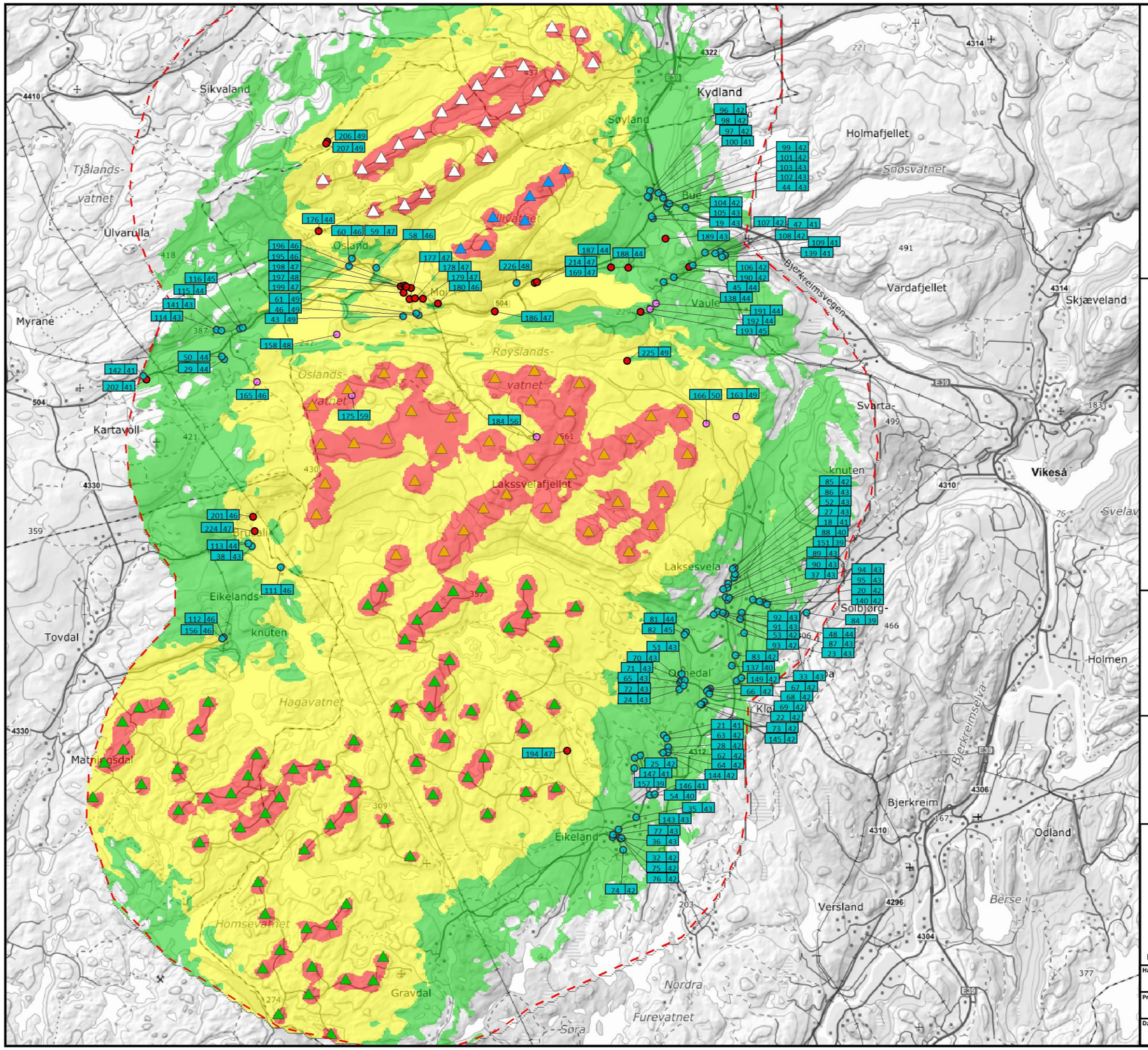
www.akustikkonsulten.se

Handläggare	Kvalitetsgranskare
Jens Fredriksson	Paul Appelqvist
Projekt nr.	**Ritning**
10-22255	D01:2
Datum	
2025-03-17	

Prepared by: Jens Fredriksson, jens@akustikkonsulten.se
Checked by: Paul Appelqvist, paul@akustikkonsulten.se

Noise Map - Case D01-3

Akustikkonsulten



Yearly Average, $L_{den,365\ days}$, in dBA
Result 4 m above ground

40 <=	< 45
45 <=	< 55
55 <=	

- NSA Residential
- NSA Recreational
- WTG Måkaknuten
- WTG Stigafjellet
- WTG Moifjellet
- WTG Bjerkreim
- Calculation area

NSA | L_{den} [dBA] Index NSA

NSA Other

N

0 0,5 1 2 3 4 km

Wind farm Moifjellet, Norway
Cumulative noise levels

Case D01:1 + Case D01:2

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Beräknad med SoundPLAN 8.2 uppdatering 2024-10-18
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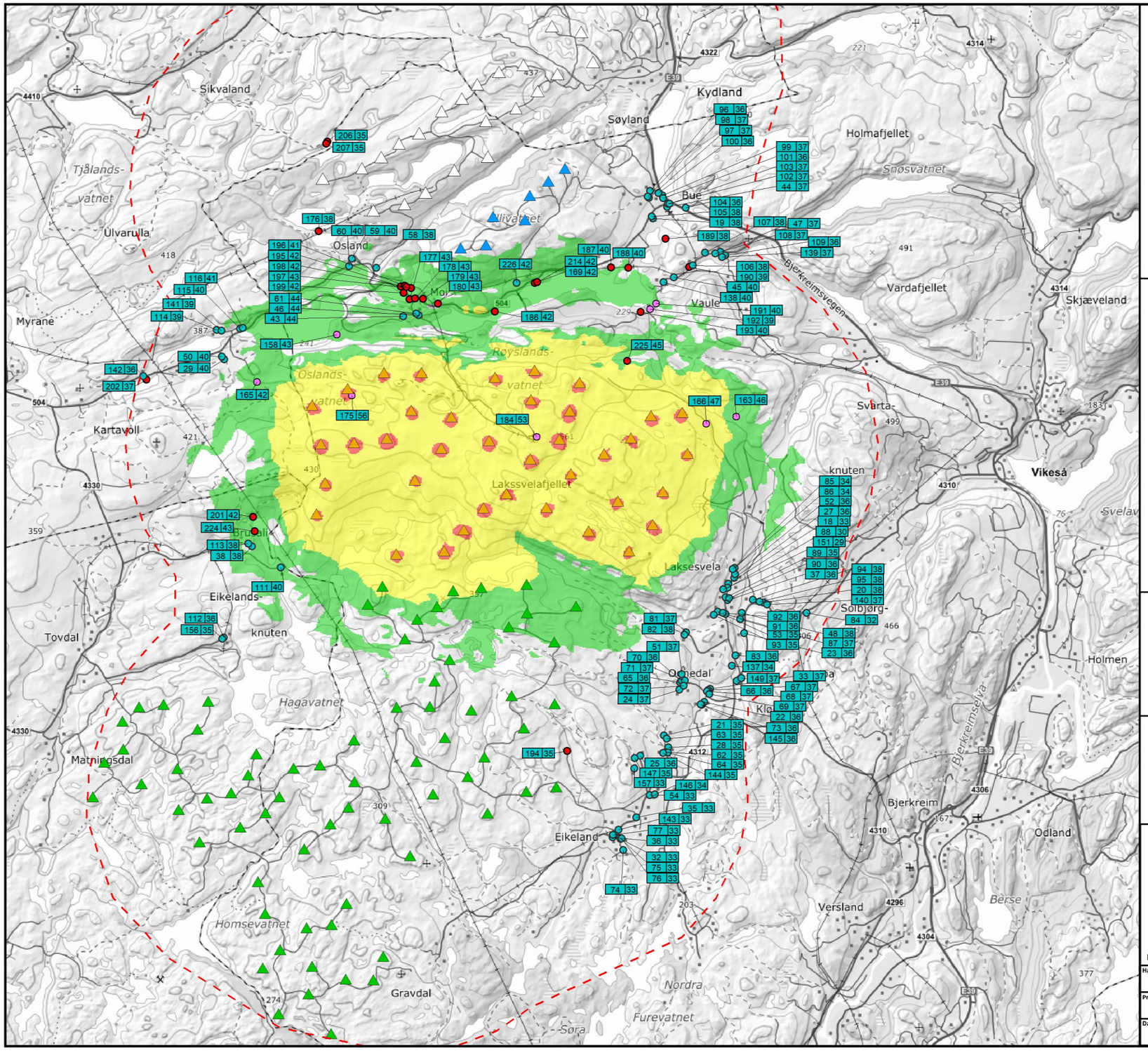
Handläggare	Kvalitetsgranskare
Jens Fredriksson	Paul Appelqvist
Projekt nr.	**Ritning**
10-22255	D01:3
Datum	
2025-03-17	

Prepared by: Jens Fredriksson, jens@akustikkonsulten.se
Checked by: Paul Appelqvist, paul@akustikkonsulten.se

Noise Map - Case D02-1

Akustikkonsulten



Yearly Average, $L_{den,365\ days}$, in dBA
Result 4 m above ground

40 <=		< 45
45 <=		< 55
55 <=		

- NSA Residential
- NSA Recreational
- WTG Måkaknuten
- WTG Stigafjellet
- WTG Moifjellet
- WTG Bjerkreim
- Calculation area

NSA	L_{den} [dBA]	Index NSA

NSA Other

N

0 0,5 1 2 3 4 km

Wind farm Moifjellet, Norway
38 Wind Turbines (WTG) - V162-6.2 MW
Full Power, no curtailment

Case D02:1 - Lokale vindforhold

Akustikkonsulten

Beräknad med SoundPLAN 8.2 uppdatering 2024-10-18
www.akustikkonsulten.se

Handläggare	Kvalitetsgranskare
Jens Fredriksson	Paul Appelqvist
Projekt nr. 10-22255	**Ritning** D02:1
Datum 2025-03-17	

Prepared by: Jens Fredriksson, jens@akustikkonsulten.se
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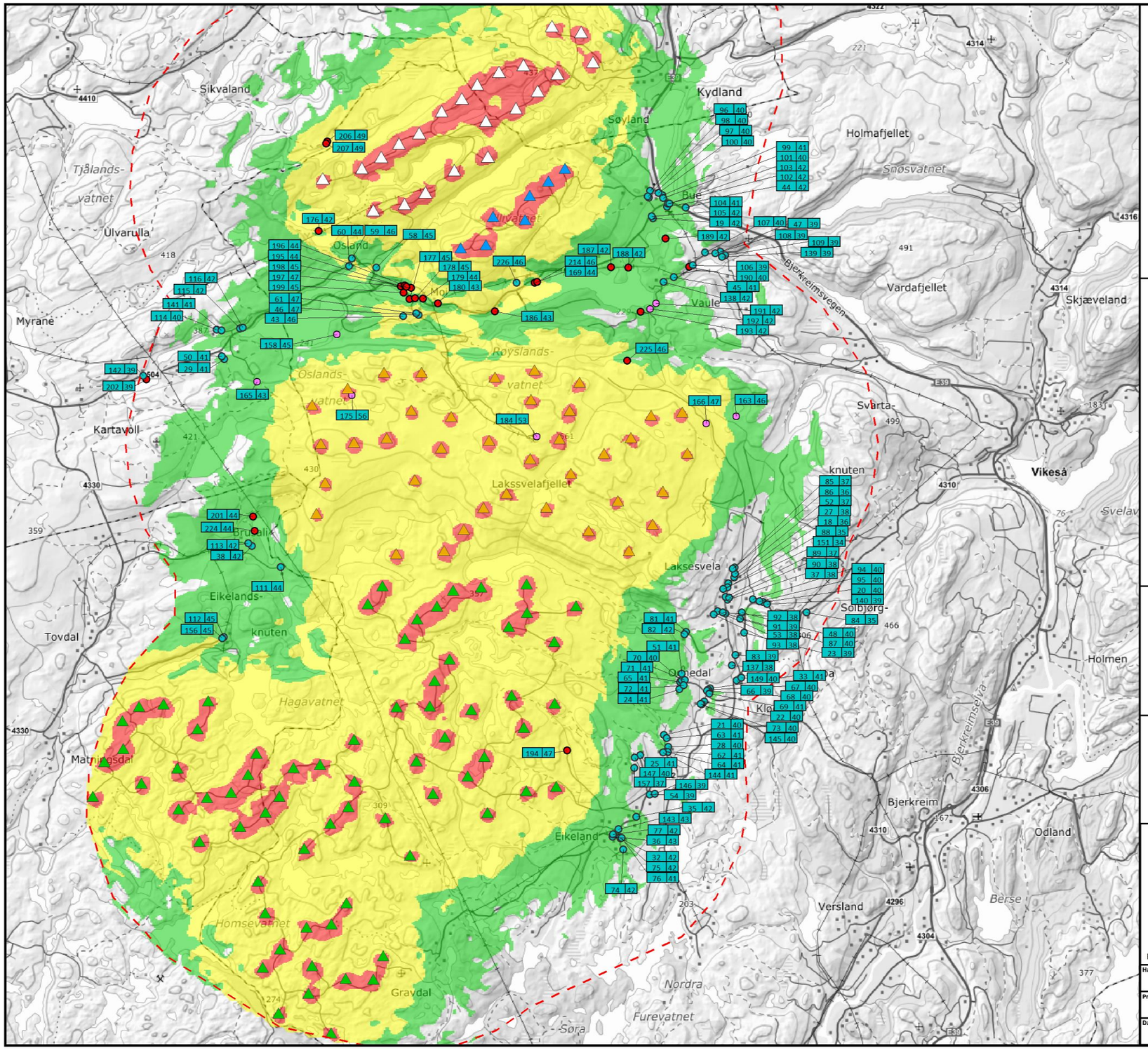
Noise Map - Case D02-3

Akustikkonsulten



Yearly Average, $L_{den,365\ days}$, in dBA
Result 4 m above ground

40 <=	< 45
45 <=	< 55
55 <=	

- NSA Residential
- NSA Recreational
- WTG Måkaknuten
- WTG Stigafjellet
- WTG Moifjellet
- WTG Bjerkreim
- Calculation area

NSA	L_{den} [dBA]	Index NSA

NSA Other

N

0 0,5 1 2 3 4 km

Wind farm Moifjellet, Norway
38 Wind Turbines (WTG) - V162-6.2 MW
Full Power, no curtailment

Case D02:1 + Case D01:2

Akustikkonsulten

Beräknad med SoundPLAN 8.2 uppdatering 2024-10-18
www.akustikkonsulten.se

Handläggare	Kvalitetsgranskare
Jens Fredriksson	Paul Appelqvist
Projekt nr. 10-22255	**Ritning** D02:3
Datum 2025-03-17	

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Project number:
10-22255
PM 01

Date
2025-03-18

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Client:
Statkraft
Reference:
Lars Martin Magnus

Moifjellet Wind Farm

Calculations of noise from wind turbines and traffic

1 Background

Akustikkonsulten I Sverige AB (Akustikkonsulten) has been commissioned by Statkraft to investigate cumulative noise levels from Statkrafts planned wind farm Moifjellet, together with existing wind farms Stigafjellet, Måkaknuten and Bjerkreim. In addition to that, authorities have requested a calculation of noise levels from the wind farms together with traffic noise from E39 based on the method.

2 Sources

The following sources have been used in this PM:

- Akustikkonsultens calculation report of wind turbine noise "*10-22255-D01 Noise calculation wind farm Moifjellet 250318*". The report contains calculated noise levels from wind farm Moifjellet alone and together with nearby wind farms Stigafjellet, Måkaknuten and Bjerkreim.
- COWI AS road traffic noise report "E39 BÅ – Støyrapport" (2020-05-15).
- SINTEF, "Rapport - Metode for å beregne samlet støybelastning", report nr. 2023:01232 (2023-11-17).

3 Calculations

Calculating traffic noise, from a road that has not yet been built, is not feasible for an outside party without detailed knowledge of the plans. Assessment of cumulative noise, in accordance with the SINTEF method, from wind turbines and road traffic (samlet støybelastning) has therefore, at this stage, been done based on road traffic noise levels obtained through COWI's calculation report. Assessment has been made for the relevant residential buildings, covered in both reports (COWIs and Akustikkonsultens). There are residents further away from road E39, closer to the wind farms, where there is no information on the road traffic noise levels in the COWI report and its therefor not possible to assess.

In the COWI report there are multiple alternative plans for road E39 . In this PM cumulative noise from three of the alternatives, all at calculation height 4 m above ground, has been investigated together with the wind turbine noise. Those are:

- "0-alternativet"
- "A1-B1-C1-D2 uten tilltak"
- "A1-B1-C1-D2 med tilltak"

The noise maps from these 3 calculations are attached in the end of this PM.

The SINTEF method states correction factor for different noise sources. There is no correction factor mentioned for wind turbine noise so in this the same factor as for industrial noise has been utilized (0 dB). The method states that the combined (cumulative) noise level should be compared to the reference sources limit values (L_{den} > 55 dB "gul sone", L_{den} > 65 dB "rød sone").

Road traffic noise is only reported in intervals, and it is therefore not possible to calculate exact cumulative levels. Therefor the cumulative noise levels are also given as intervals.

It shall be noted that the SINTEF method states that:

"*Det foreslås at samlet støybelastning bare beregnes for samferdselskilder (fly, vei, bane) og industri (inklusive havner og terminaler). Dette på grunn av manglende erfaringsgrunnlag og veletablerte dose-responskurver for øvrige kilder.*"

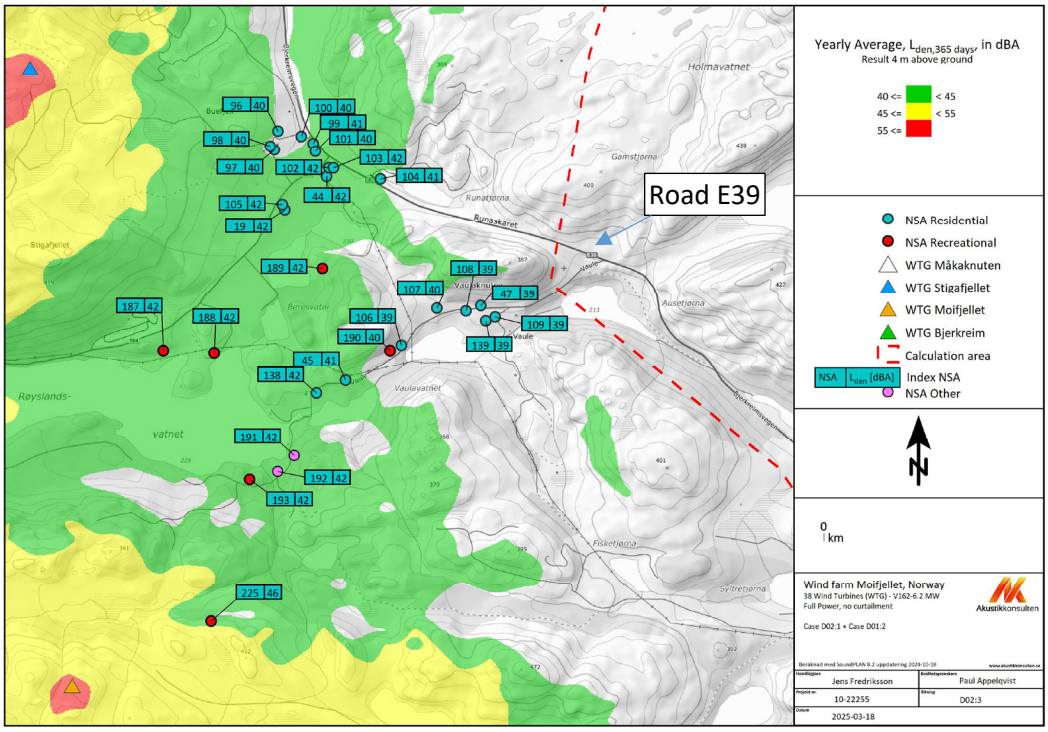


Figure 1. Overview of calculation points (NSAs) for wind turbine noise. Calculated noise levels are the calculated yearly average (lokale vindforhold) of the existing wind farms together with wind farm Moifjellet.

Table 1. Cumulative noise "Samlet støybelastning" from wind turbines and road E39 (0-alternativet). L_{den} > 55 dB "gul sone" has been marked in yellow, L_{den} > 65 dB "rød sone" has been marked in red.

NSA	Wind turbine noise - "lokale vindforhold" (Case D02-3), L_{DEN}	Road noise - Vegtrafikk for 0-alternativet, L_{DEN}	Samlet støybelastning, road+wind turbines, L_{DEN}
19	42 dBA	40-55 dBA	44-55 dBA
44	42 dBA	55-60 dBA	55-60 dBA
47	39 dBA	40-55 dBA	42-55 dBA
96	40 dBA	60-65 dBA	60-65 dBA
97	40 dBA	55-60 dBA	55-60 dBA
98	40 dBA	60-65 dBA	60-65 dBA
99	41 dBA	75-80 dBA	75-80 dBA
100	40 dBA	65-70 dBA	65-70 dBA
101	40 dBA	70-75 dBA	70-75 dBA
102	42 dBA	70-75 dBA	70-75 dBA
103	42 dBA	70-75 dBA	70-75 dBA
104	41 dBA	70-75 dBA	70-75 dBA
105	42 dBA	40-55 dBA	44-55 dBA
106	39 dBA	40-55 dBA	42-55 dBA
107	40 dBA	40-55 dBA	43-55 dBA
108	39 dBA	≤40 dBA	39-42 dBA
109	39 dBA	40-55 dBA	42-55 dBA
139	39 dBA	40-55 dBA	43-55 dBA
189*	42 dBA	≤40 dBA	42-44 dBA
190	40 dBA	40-55 dBA	43-55 dBA

* Recreational dwelling.

Table 2. Cumulative noise "Samlet støybelastning" from wind turbines and road E39 (A1-B1-C1-D2 uten tilltak). L_{den} > 55 dB "gul sone" has been marked in yellow, L_{den} > 65 dB "rød sone" has been marked in red.

NSA	Wind turbine noise - lokale vindforhold (Case D02-3), L_{DEN}	Road noise - Vegtrafikk for A1-B1-C1-D2 uten tilltak, L_{DEN}	Samlet støybelastning, road+wind turbines, L_{DEN}
19	42 dBA	40-55 dBA	44-55 dBA
44	42 dBA	55-60 dBA	55-60 dBA
47	39 dBA	≤40 dBA	39-42 dBA
96	40 dBA	60-65 dBA	60-65 dBA
97	40 dBA	55-60 dBA	55-60 dBA
98	40 dBA	60-65 dBA	60-65 dBA
99	41 dBA	70-75 dBA	70-75 dBA
100	40 dBA	65-70 dBA	65-70 dBA
101	40 dBA	65-70 dBA	65-70 dBA
102	42 dBA	65-70 dBA	65-70 dBA
103	42 dBA	65-70 dBA	65-70 dBA
104	41 dBA	-**	-**
105	42 dBA	40-55 dBA	44-55 dBA
106	39 dBA	≤40 dBA	39-42dBA
107	40 dBA	≤40 dBA	40-43 dBA
108	39 dBA	≤40 dBA	39-42 dBA
109	39 dBA	40-55 dBA	42-55 dBA
139	39 dBA	40-55 dBA	43-55 dBA
189*	42 dBA	≤40 dBA	42-44 dBA
190*	40 dBA	≤40 dBA	40-43 dBA

* Recreational dwelling.

**Building removed.

Table 3. Cumulative noise "Samlet støybelastning" from wind turbines and road E39 (A1-B1-C1-D2 Med tilltak). L_{den} > 55 dB "gul sone" has been marked in yellow, L_{den} > 65 dB "rød sone" has been marked in red.

NSA	Wind turbine noise - lokale vindforhold (Case D02-3), L_{DEN}	Road noise - Vegtrafikk for A1-B1-C1-D2 uten tilltak, L_{DEN}	Samlet støybelastning, road+wind turbines, L_{DEN}
19	42 dBA	40-55 dBA	44-55 dBA
44	42 dBA	55-60 dBA	55-60 dBA
47	39 dBA	≤40 dBA	39-42 dBA
96	40 dBA	60-65 dBA	60-65 dBA
97	40 dBA	55-60 dBA	55-60 dBA
98	40 dBA	55-60 dBA	55-60 dBA
99	41 dBA	65-70 dBA	65-70 dBA
100	40 dBA	60-65 dBA	60-65 dBA
101	40 dBA	60-65 dBA	60-65 dBA
102	42 dBA	65-70 dBA	65-70 dBA
103	42 dBA	65-70 dBA	65-70 dBA
104	41 dBA	-**	-**
105	42 dBA	40-55 dBA	44-55 dBA
106	39 dBA	≤40 dBA	39-42dBA
107	40 dBA	≤40 dBA	40-43 dBA
108	39 dBA	≤40 dBA	39-42 dBA
109	39 dBA	40-55 dBA	42-55 dBA
139	39 dBA	40-55 dBA	43-55 dBA
189*	42 dBA	≤40 dBA	42-44 dBA
190*	40 dBA	≤40 dBA	40-43 dBA

* Recreational dwelling.

**Building removed.

Comment:

The wind turbine noise does not cause any cumulative levels ("Samlet støybelastning") to exceed any noise limits, that wasn't already exceeded from road traffic noise alone, in any of the 3 investigated cases.

4 Conclusions

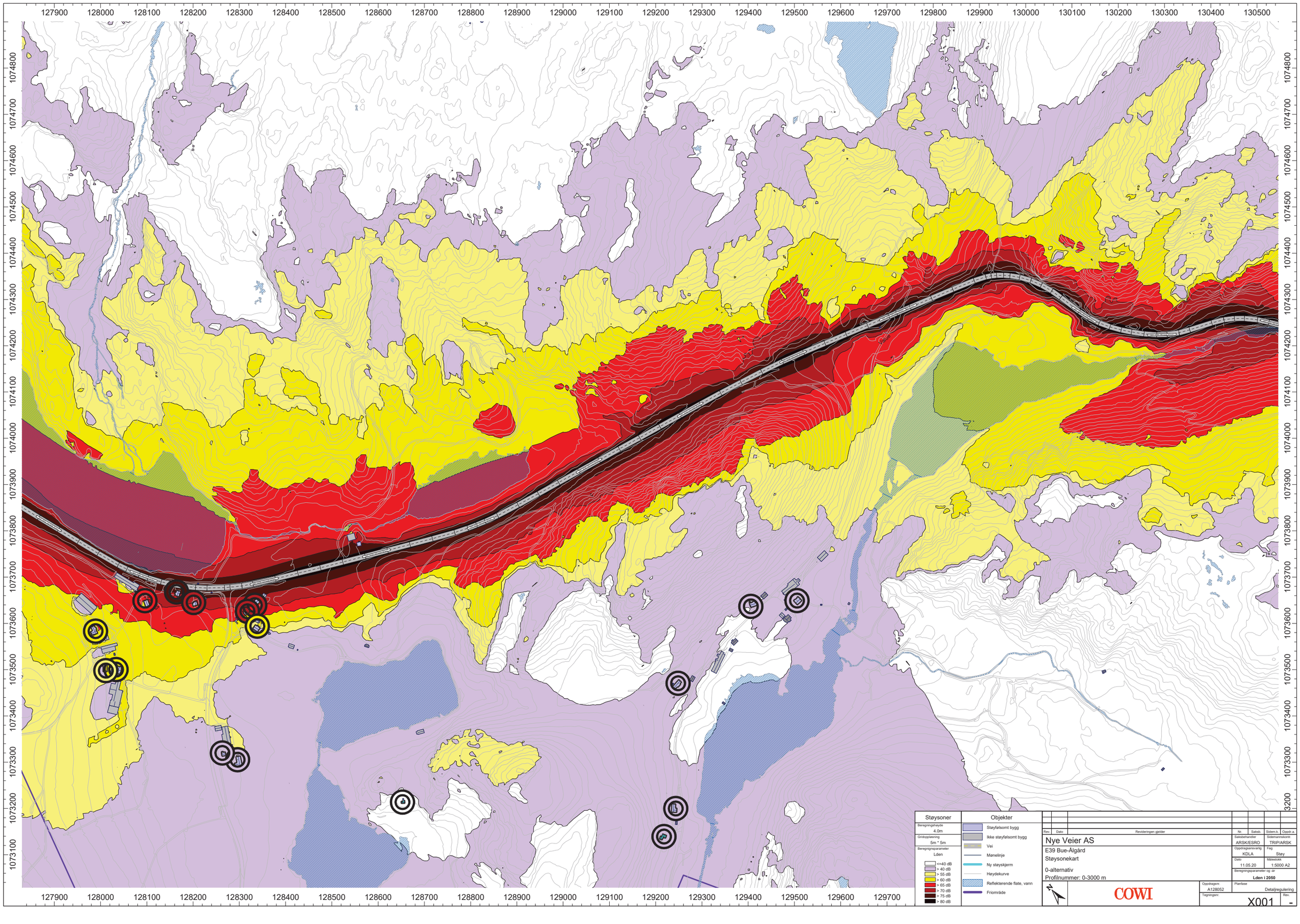
Noise from road traffic (the reference source in the SINTEF-method) has a limit value of L_{den} > 55 dB “gul sone”, L_{den} > 65 dB “rød sone”). Since wind turbine noise is limited to 45 dBA for “gul sone”, 10 dB below, the wind turbine noise will not have a cumulative impact such that it can cause a cumulative exceedance of L_{den} > 55 dBA. This assuming that the same SINTEF correction factor as for industrial noise should be utilized for wind turbines (+0 dB).

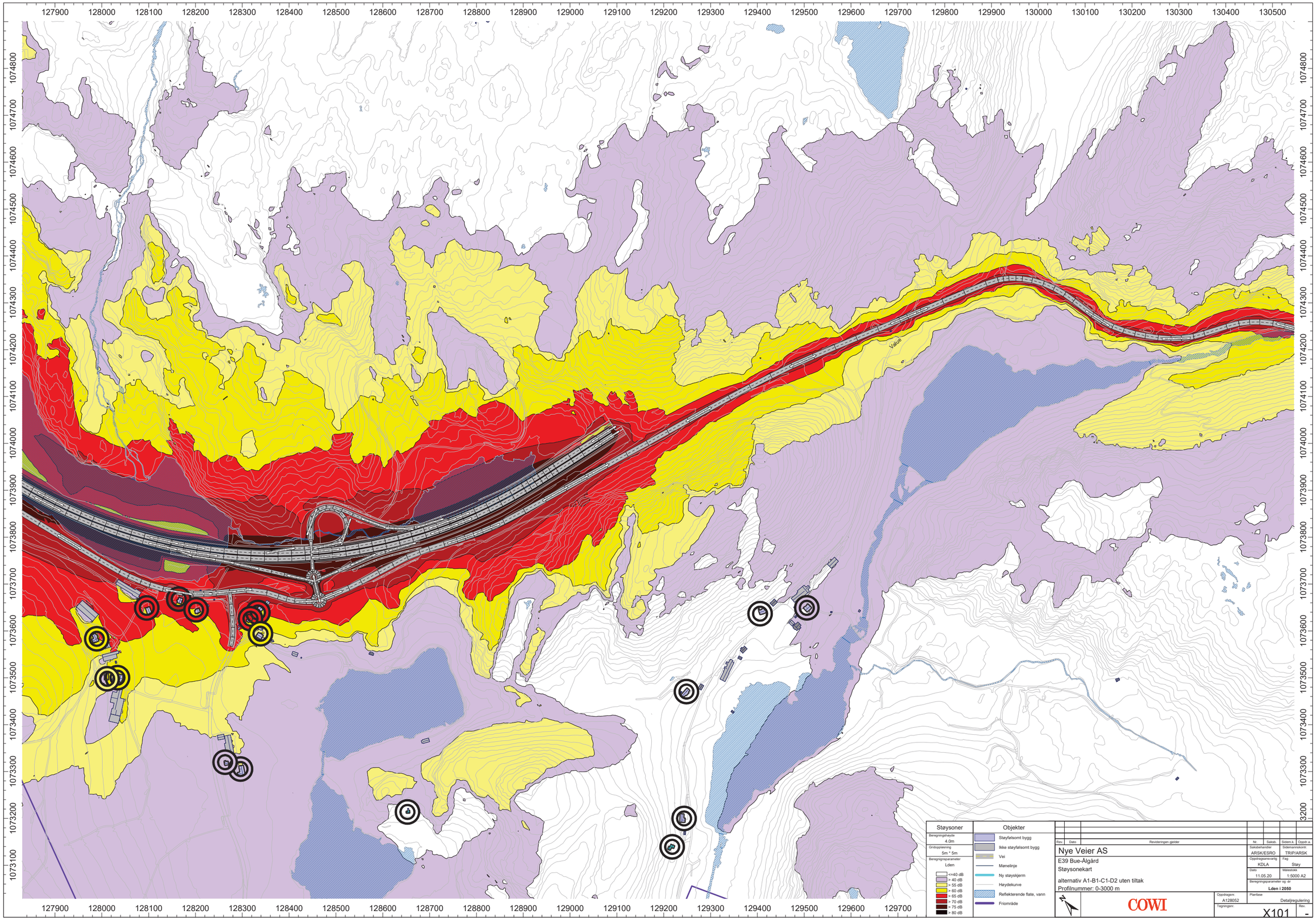
Example: 45 dBA wind turbine noise (+ 0 dB correction factor) + 55 dBA road traffic noise = 55 dBA cumulative noise.

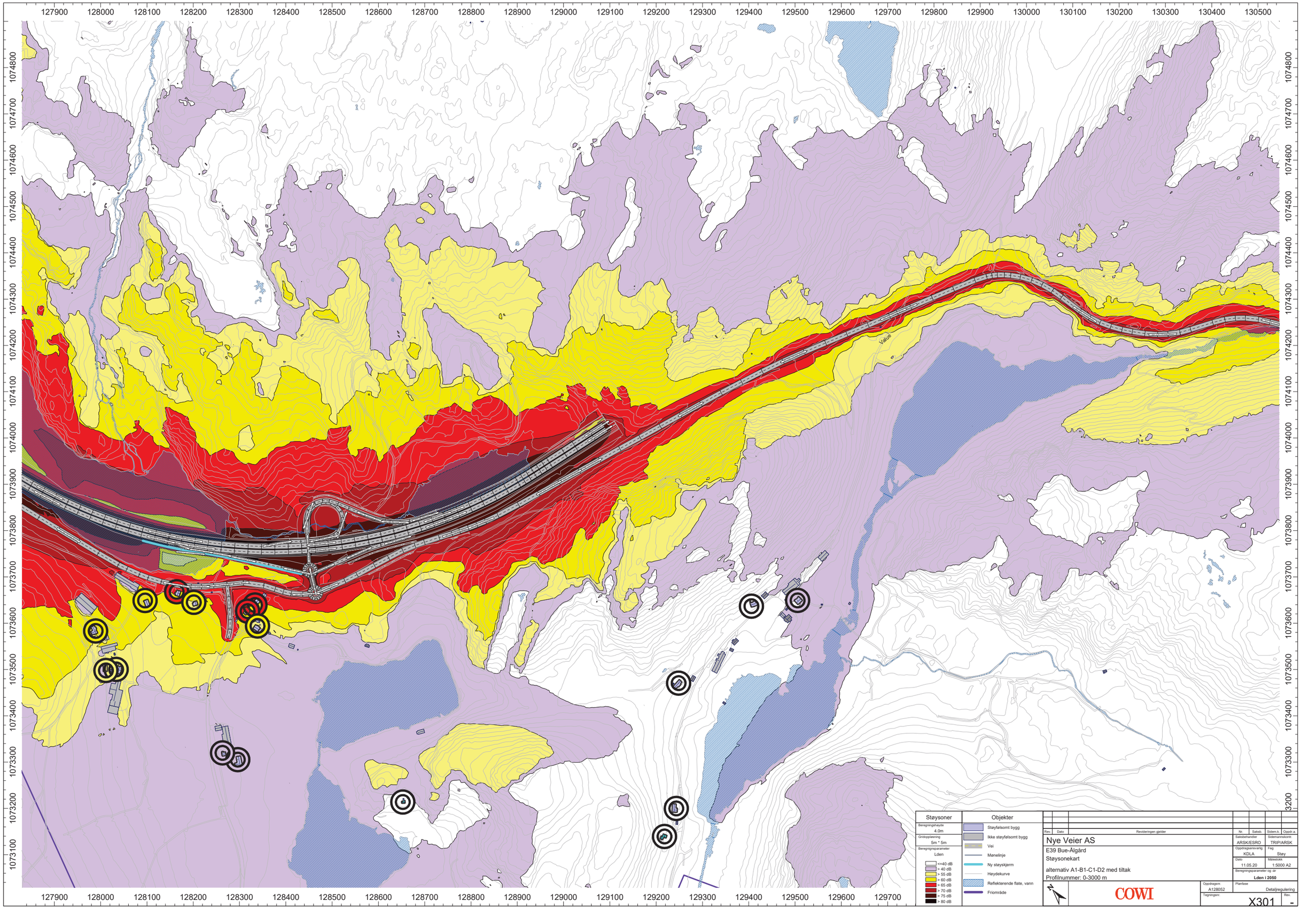
This follows the same reasoning as is stated in the SINTEF method:

”I praksis vil det for tilfeller ved stor differanse mellom støykildene, > 10 dB, være den kraftigste kilden som vil dominere støybildet og en beregning med samlet støybelastning vil gi lite endring.”

In the calculations presented in this PM, the wind turbine noise for yearly average, based on “lokale vindforhold”, have been used. It shall be noted that none of the NSAs have a calculated wind turbine noise level that exceeds 45 dBA for the “worst case” calculations either (see calculation D01-3 in Akustikkonsultens calculation report of wind turbine noise “*10-22255-D01 Noise calculation wind farm Moifjellet 250318”).*


127900 128000 128100 128200 128300 128400 128500 128600 128700 128800 128900 129000 129100 129200 129300 129400 129500 129600 129700 129800 129900 130000 130100 130200 130300 130400 130500
1074800 1074700 1074600 1074500 1074400 1074300 1074200 1074100 1074000 1073900 1073800 1073700 1073600 1073500 1073400 1073300 1073200 1073100
Støysoner
Beregningshøyde
4.0m
Gridoppløsning
5m * 5m
Beregningsparameter
Lden
<=40 dB
> 40 dB
> 55 dB
> 60 dB
> 65 dB
> 70 dB
> 75 dB
> 80 dB
Objekter
Støyfølsomt bygg
Ikke støyfølsomt bygg
Vei
Menelinje
Ny støyskjerm
Høydekurve
Reflekterende flate, vann
Friområde
Rev. Dato Revideringen gjelder
Nr. Saksb. Sidem.k. Oppdr.a.
Nye Veier AS
E39 Bue-Ålgård
Støysonekart
0-alternativ
Profilnummer: 0-3000 m
Saksbehandler ARSK/ESRO
Sidemannskontr. TRIP/ARSK
Oppdragsansvarlig KDLA
Fag Støy
Dato 11.05.20
Målestokk 1:5000 A2
Beregningsparameter og -år
Lden i 2050
COWI
Oppdragsnr. A128052
Tegningsnr. X001
Planfase Detaljregulering
Rev. -


Value
Støysoner
Beregningshøyde
4.0m
Gridoppløsning
5m * 5m
Beregningsparameter
Lden
<=40 dB
> 40 dB
> 55 dB
> 60 dB
> 65 dB
> 70 dB
> 75 dB
> 80 dB
Objekter
Støyfølsomt bygg
Ikke støyfølsomt bygg
Vei
Mønelinje
Ny støyskjerm
Høydekurve
Reflekterende flate, vann
Friområde
Rev. Dato Revideringen gjelder
Nr. Saksb. Sidem.k. Oppdr.a
Nye Veier AS
Saksbehandler ARSK/ESRO
Sidemannskontr. TRIP/ARSK
E39 Bue-Ålgård
Støysonekart
alternativ A1-B1-C1-D2 uten tiltak
Profilnummer: 0-3000 m
Oppdragsansvarlig KDLA
Fag Støy
Dato 11.05.20
Målestokk 1:5000 A2
Beregningsparameter og år
Lden | 2050
COWI
Oppdragsnr. A128052
Plantype Detaljregulering
Tegningsnr. X101
Rev. -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1074800 1074700 1074600 1074500 1074400 1074300 1074200 1074100 1074000 1073900 1073800 1073700 1073600 1073500 1073400 1073300 1073200 1073100
Value
Støysoner
Beregningshøyde
4.0m
Gridoppløsning
5m * 5m
Beregningsparameter
Lden
<=40 dB
> 40 dB
> 55 dB
> 60 dB
> 65 dB
> 70 dB
> 75 dB
> 80 dB
Objekter
Støyfølsomt bygg
Ikke støyfølsomt bygg
Vei
Menelinje
Ny støyskjerm
Høydekurve
Reflekterende flate, vann
Friområde
Rev. Dato Revideringen gjelder
Nr. Saksb. Sidem.k. Oppdr.a.
Nye Veier AS
E39 Bue-Ålgård
Støysonekart
alternativ A1-B1-C1-D2 med tiltak
Profilnummer: 0-3000 m
Saksbehandler ARSK/ESRO
Sidemannskontr. TRIP/ARSK
Oppdragsansvarlig KDLA
Fag Støy
Dato 11.05.20
Målestokk 1:5000 A2
Beregningsparameter og -år
Lden i 2050
COWI
Oppdragsnr. A128052
Planfase Detaljregulering
Tegningsnr. X301
Rev. -

Fagrapport:

Skyggekast

RAPPORT

KU for Moifjellet Vindkraftverk - Skyggekast

OPPDRAGSGIVER

Statkraft

EMNE

SKYGGEKAST FOR MOIFJELLET VINDKRAFTVERK

Dato / Revisjon: 30. januar 2025 / 01

Dokumentkode: 10252119-01-RIVIND-RAP-001

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Rapport

OPPDRAG	KU for Moifjellet Vindkraftverk - Skyggekast	DOKUMENTKODE	10252119-01-RIVIND-RAP-001
EMNE	SKYGGEKAST FOR MOIFJELLET VINDKRAFTVERK	TILGJENGELIGHET	Åpen
OPPDRAGSGIVER	Statkraft	OPPDRAGSLEDER	Håvard Finanger
KONTAKTPERSON	Andreas Stokke	UTARBEIDET AV	Martine Bjugg
KOORDINATER	Sone: / Øst: / Nord:	ANSVARLIG ENHET	10234052 Vindkraft Midt
GNR./BNR./SNR.	/ /		

SAMMENDRAG

På oppdrag fra Statkraft er det utført en skyggekastanalyse for Moifjellet vindkraftverk i Bjerkreim kommune, Rogaland fylke.

Analysen er gjort i henhold til NVE sin veileder nr. 2/2014 som ble utarbeidet for å vurdere skyggekast fra vindturbiner. I tillegg er rapport fra 2022 anvendt i fastsettelse av influensområde.

Rapporten kartlegger hvor skyggekast kan oppstå, samt omfanget av dette på nærliggende boliger, friluftsområder og andre relevante steder. Det er utarbeidet kart over omfanget av skyggekast. Det er også sett på omfanget av sumvirkninger av skyggekast fra flere vindkraftverk på bygg som blir utsatt for skyggekast fra Moifjellet vindkraftverk.

Skyggekastanalysen viser at områdene i umiddelbar nærhet til Moifjellet vindkraftverk vil bli utsatt for skyggekast. Når det ikke tas hensyn til sumvirkninger fra nærliggende vindkraftverk er det 26 av 40 mottakere som overskrider NVEs anbefalte grenseverdi. Ser man derimot på sumvirkningen av Moifjellet vindkraftverk og Bjerkreim vindkraftverk, Måkaknuten vindkraftverk og Stigafjell vindkraftverk viser analysen at 30 mottakere vil overskride NVEs anbefalte grenseverdi. Analysen viser at boligene ved Mellomstrand vil ligge under grenseverdiene, både når man ser på Moifjellet alene og med sumvirkninger fra nærliggende vindkraftverk.

Flere friluftsområder og turruter kan også bli påvirket av skyggekast fra Moifjellet vindkraftverk.

For å redusere belastningen av skyggekast på mottakerne kan det derfor være nødvendig med avbøtende tiltak. For å unngå skyggekast over grenseverdiene kan det lages skyggekastkalendere som viser når skyggekast er forventet. Turbinene kan stoppes på disse tidspunktene for å redusere påvirkningen, og automatiserte lyssensorer kan brukes til å stanse turbinen ved klarvær. Dette vil minimere ulempene for naboer og berørte.

01	30.01.25	Oppdatering av rapport etter tilbakemelding	Martine Bjugg	Jonas B Ghini	Håvard Finanger
00	15.11.24	Leveranse av rapport	Martine Bjugg	Jonas B Ghini	Håvard Finanger
REV.	DATO	BESKRIVELSE	UTARBEIDET AV	KONTROLLERT AV	GODKJENT AV

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1 Bakgrunn

I forbindelse med konsekvensutredningen av Moifjellet vindkraftverk er det utført en skyggekastanalyse for det planlagte vindkraftverket. Moifjellet vindkraftverk er planlagt i Bjerkreim kommune, Rogaland fylke.

Det er 6 eksisterende vindkraftverk i området rundt Moifjellet vindkraftverk. Bare de i umiddelbar nærhet vil bli tatt til betraktning i vurderingen av sumvirkninger. Dette inkluderer Bjerkreim, Stigafjellet og Måkaknuten, de tre andre, som ligger lenger unna, er ikke tatt med i betraktningen av sumvirkninger. Noter at det ble gjort egne simuleringer for å forsikre at de tre vindkraftverkene alene ikke ville bidra til med skyggekastbelastning over grenseverdiene i Moifjellet vindkraftverk sitt influensområde.

Analysen er gjort i henhold til NVE sin veileder nr. 2/2014 som ble utarbeidet for å vurdere skyggekast fra vindturbiner.

For utredningen av skyggekast er det lagt til grunn et eksempelutlegg med 38 vindturbiner og det er lagt til grunn en turbin som er 200 meter til vingetipp, rotordiameter på noe over 160 meter og en kapasitet på rundt 7 MW. Figur 3-1 viser det analyserte turbinutlegget.

2 Skyggekast

Et punkt er skyggelagt dersom det står et legeme mellom punktet og solskiven langs strålen fra solskiven mot punktet. Dersom det skyggende legemet beveger seg vil også den resulterende skyggen bevege seg, og dette vil kunne oppleves som sjenerende.

En vindturbin skiller seg ut fra andre høye byggverk og installasjoner med sine roterende blader. Normalt vil man bare observere den direkte bevegelsen når man betrakter turbinene. Men under spesielle omstendigheter vil turbinen stå i en posisjon mellom solen og betraktningsstedet. Da vil rotorbladene sveipe foran solskiven og kaste en bevegelig skygge som vil projiseres mot betraktningsstedet i et repeterende mønster. Dels vil man oppleve dette som en sveipende skygge over en flate, dels vil man merke en hurtig veksling mellom direkte lys og korte «glimt» med skygge. Dette kan være sjenerende mens fenomenet pågår. Et slikt betraktningssted, som mottar skyggekast, kalles for en skyggekastmottaker. En skyggekastmottaker er altså eksponert for en roterende skygge i løpet av mer eller mindre avgrensende tidsrom ettersom solen beveger seg gjennom året.

Fordi skyggen kastes lengst når solbanen er lav, er det typisk om morgen og kveld skyggekast inntreffer, og oftere i vintermånedene enn om sommeren. Imidlertid er det nødvendig med eksakte beregninger for å få en klar forståelse av skyggekastproblematikken.

For skyggekast fra vindturbiner er det etablert solide metoder og grenseverdier (Norges vassdrags- og energidirektorat, u.å.) og NVE har publisert en veileder til gjennomføring av slike beregninger (Norges vassdrags- og energidirektorat, 2014).

2.1 Skyggekastmottakere

Flere typer mottakere defineres som følsomme for skyggekastmottak. Det er i stor grad snakk om bygg der mennesker oppholder seg over tid, og i noen grad uteareal med spesielle bruksmønster. NVE definerer følgende typer mottakere som sensitive for skyggekast fra vindturbiner:

- Helårsboliger, samt fritidsboliger i aktiv bruk
- Skoler og barnehager
- Sykehus, samt alders- og sykehjem
- Hoteller og andre overnattingsbygg, kafeer, restauranter og veikroer

- Kontor- og næringslokaler med regelmessige dagaktiviteter som samtidig har eksponerte vindusflater

I tillegg til dette kan NVE trekke inn følgende kategorier som sensitive, etter skjønn:

- Veldefinerte kulturminner/kulturmiljøer med stor opplevelsesverdi/pedagogisk verdi
- Kirker, kirkegårder, parker, idrettsanlegg og lekeplasser
- Definerte turmål, utsiktspunkter og lignende
- Havneanlegg, marinaer

2.2 Anbefalte grenseverdier for vindturbiner

Grenseverdiene NVE oppgir referer til antallet timer i året en skyggekastsensitiv mottaker kan utsettes for skyggekast fra en vindturbin før omfanget av belastningen vil regnes som sjenerende. Verdiene gis for to forskjellige scenarioer: verst tenkelig grad av skyggekast, og realistisk grad av skyggekast. Verdiene er anbefalinger, og grenseverdiene kan fravikes i unntakstilfeller.

Verst tenkelig scenario

En skyggekastmottaker, som f.eks. en helårsbolig, regnes som et slags drivhus, med vinduer i alle retninger, slik at all skygge som faller på boligen også legges til total belastningsgrad. I tillegg regner man at solen alltid skinner i alle timer med dagslys, at turbinen alltid står vinkelrett på mottakerpunktet, og man tar ikke høyde for driftsstans på anlegg (for vindturbiner er det snakk om vedlikehold og dårlige vindforhold).

NVEs anbefalinger er at skyggekastmottakere ikke utsettes for mer enn 30 timer verst-tenkelig skyggekast per år, eller mer enn 30 minutter per dag

Realistisk scenario

Samme som for verst tenkelig scenario regnes en skyggekastmottaker som et slags drivhus, med vinduer i alle retninger, slik at all skygge som faller på boligen også legges til total belastningsgrad. Videre vil det realistiske scenarioet utføre beregninger med en viss sannsynlighet for solskinn i løpet av timene med dagslys, som altså reduserer total belastning siden under overskyet vær er lyset fra solskiven altfor diffust til at en skygge regnes som sjenerende. I tillegg tar man hensyn til realistisk driftstid for anlegget, basert på vindrosen for området. Ved å bruke vindrosen blir turbinene orientert slik at de vender mot vindretningen, og de er ikke standard fordelt. En viktig effekt av dette er at når vinden dreier turbinene kan det oppstå perioder der skyggen slutter å flakke over mottakeren og dermed reduseres skyggekastbelastningen til null i en slik periode. Dette skyldes at dersom turbinen roterer i et plan (tilnærmet) parallelt med linjen mellom en mottaker og solskiven, så vil skyggen fra bladene være fast, ikke «blinkende».

For realistisk skyggekastmottak anbefaler NVE at en mottaker ikke utsettes for mer enn 8 timer per år. NVE trekker også inn at i en situasjon der vest tenkelig skyggekast overskrider grenseverdien kan man fravike denne dersom realistisk skyggekast kan reduseres til under 8 timer per år ved avbøtende tiltak.

2.3 NVEs krav til beregningsmetodikk

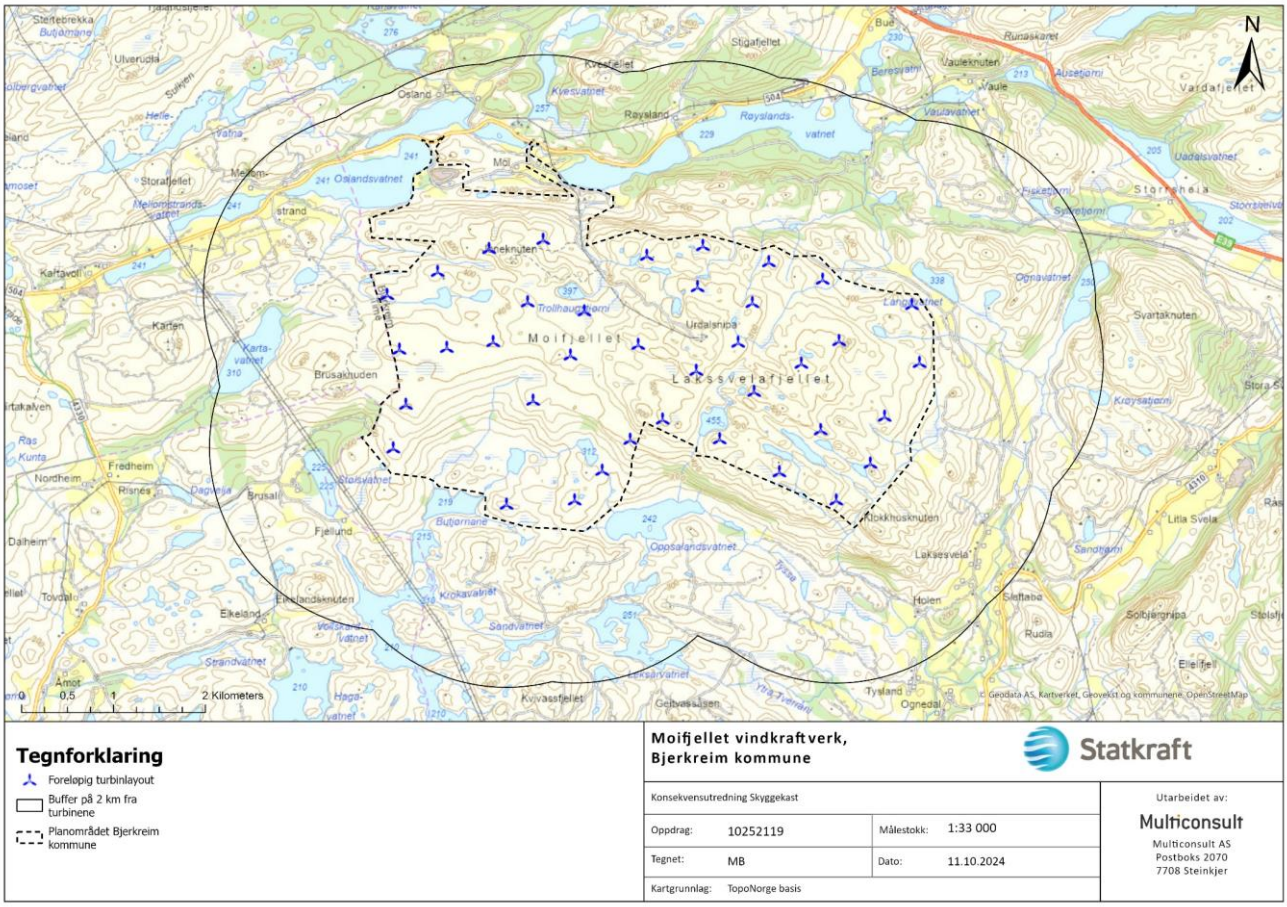
NVEs veileder beskriver noen detaljer rundt fremgangsmåten for skyggekastberegninger.

- Beregningene skal ta hensyn til terrengets høydeprofil i området som vurderes, og dette inkluderer skjermingseffekter av terreng som ligger mellom en mottaker og en kilde til skygge.
- Beregningene av teoretisk skyggekast skal baseres på drivhustilstand, det vil si at bygningene ikke har én bestemt retning mot vindturbinene og at mottakeren har vinduer i alle retninger. Mottakeren skal være en standard vertikal flate på 2 x 2 meter hevet 2 meter over bakken med mindre spesielle forhold tilsier noe annet.

- I det realistiske scenarioet skal en solskinnssannsynlighet på 50% benyttes. Dette er stort sett en overvurdering for de fleste steder i Norge, som forsikrer at man holder seg til et konservativt estimat for skyggekastbelastning. Det skal benyttes en retningsfordeling på vind fordelt på minst 8 sektorer og en årlig driftstid på 7000 timer.
- For beregningene regnes skyggekast fra en kilde som er mer enn 1500 m fra en mottaker som så svakt at det ikke bidrar til total belastning.

3 Skyggekastmottakere og analyseområde

NVEs krav til beregningsmetodikk innebærer at ingen områder som er lenger enn 1500 meter fra vindkraftverket er relevante for skyggekastanalysen. Det er planlagt å bruke mer moderne og større turbiner som vil ha bredere blader enn det som ble lagt til grunn for NVEs krav fra 2014. Det vil derfor bli anvendt en radius på 2000 meter etter anbefalinger i rapport utarbeidet av Norconsult på oppdrag fra NVE (Norges vassdrags- og energidirektorat [NVE], 2022). Denne avstanden ekskluderer boligene langs E39 ved Vikeså, Røysland og Bue. Figur 3-1 viser området som er relevant for skyggekastanalysen, der det er lagt til grunn an avstand på 2000 meter.



Figur 3-1: Området som er relevant for skyggekastanalysen (svart strek), med en avstand på 2000 meter fra turbinene.

På grunn av flere vindkraftverk i området, kan noen mottakere oppleve skyggekast fra ulike vindkraftverk på forskjellige tider av dagen eller året. Selv om hvert enkelt vindkraftverk ikke nødvendigvis overskrider de anbefalte grenseverdiene for skyggekast, kan sumvirkningene føre til at den totale mengden skyggekast i løpet av et år overstiger disse grenseverdiene. Det er derfor gjort simuleringer i to omganger. Første omgang tar bare

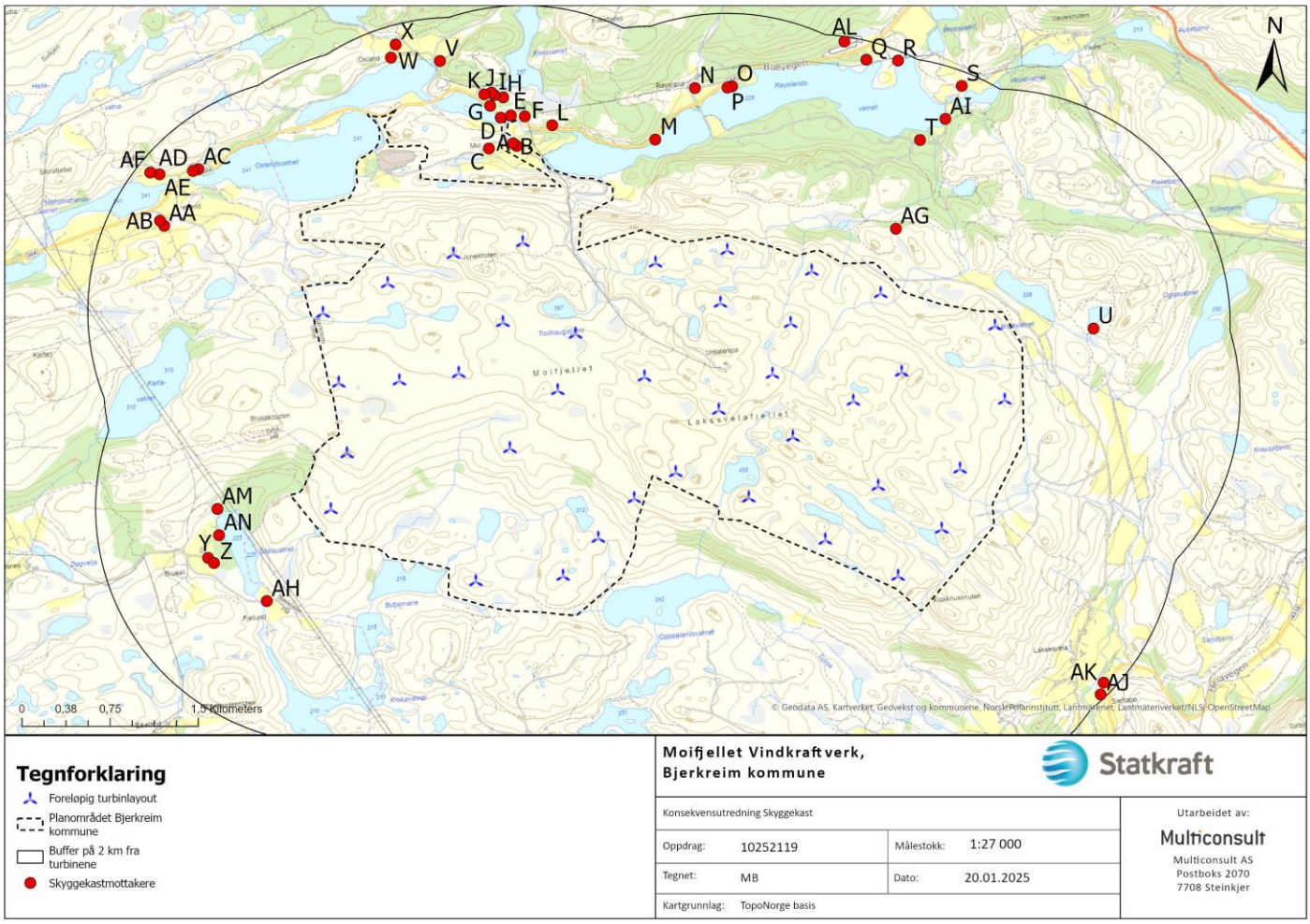
hensyn til vindturbinene i Moifjellet vindkraftverk, mens andre omgang inkluderer nærliggende vindkraftverk for å vurdere sumvirkninger skyggekast.

Det er forventet at utbyggingen vil føre til mest skyggekast oppe på Moifjellet og Lakssvelafjellet, og i grensene mellom Moifjellet vindkraftverk og de allerede etablerte vindkraftverkene nord og sør for Moifjellet vindkraftverk. Det er forventet at boliger nord for vindkraftverket vil kunne oppleve mye skyggekast. Spesielt boligene rundt Røyslandsvatnet og Oslandsvatnet forventes å bli berørt av utbygging av Moifjellet vindkraftverk. Disse boligene vil ha de eksisterende vindkraftverkene, Stigafjellet og Måkaknuten nord for seg og få Moifjellet vindkraftverk sør for seg.

3.1 Definerte skyggekastmottakere

Figur 3-2 viser skyggekastmottakerne som røde sirkler i området rundt Moifjellet, og Tabell 3-1 viser oversikt over boligene, deres posisjon og avstand til nærmeste vindturbin. Det er mest eneboliger og fritidsboliger spredt i området nord for Moifjellet, men noen er også lokalisert både på østsiden og vestsiden av planområdet. Det er registret en mottaker inne i planområdet i umiddelbar nærhet til en av turbinene.

Det er totalt definert 40 mottakere som er alle vist på Figur 3-2. Utvalget av mottakere er i praksis gjort ved en iterativ prosess der flere simuleringer er kjørt etter hverandre for å bestemme hvilke mottakere som skal undersøkes i detalj og hvilke mottakere som ikke undersøkes videre. Simuleringene viste at ikke alle boligene innenfor en radius på 2 km blir utsatt for skyggekast. Det kan være på grunn av beliggenhet i forhold til solen og vindkraftverket eller skjerming i terrenget. De mottakerne som ikke undersøkes er beskrevet i kapittel 3.2. For de utvalgte mottakerne er der valgt å ta med alle boligene hver for seg og ikke inkludere dem i grupper for å grundigere vurdere mengden skyggekast de vil utsettes for.



Figur 3-2: Definerte skyggekastmottakere (røde sirkler).

I tråd med NVE sine krav for beregningsmetodikk (avsnitt 2.3) for verst tenkelig scenario utføres beregningene presentert i avsnitt 0 og 6.2 med skyggekastmottakerne vist i Figur 3-2 definert som «drivhus», hvor hver mottaker er et vindu 2x2 meter, som alltid peker rett mot skyggekilden. For det realistiske scenarioet, der solskinnsannsynligheten er 50% og driftstiden satt til 7000 timer, brukes samme størrelse og mål på mottakerne som for verst tenkelig scenario, resultater presentert i avsnitt 5.3 og 6.4.

Tabell 3-1: Oversikt over skyggekastmottakere, deres lokasjon og avstand til nærmeste vindturbin. Koordinatsystemet er EU89, UTM 32.

	Mottaker	**Retning**		**Avstand til nærmeste turbin (m)**
		Østlig	Nordlig	
A	Våningshus–Moi 32	321 454	6 505 063	808
B	Enebolig – Moi 26	321 420	6 505 084	841
C	Våningshus – Moi 21	321 215	6 505 041	840
D	Fritidsbygning – Buevegen 1805	321 315	6 505 303	1 067
E	Fritidsbygning – Buevegen 1816	321 403	6 505 321	1 076
F	Fritidsbygning – Buevegen 1818	321 520	6 505 315	1 060
G	Fritidsbygning – Buevegen 1786	321 226	6 505 404	1 183
H	Fritidsbygning – Buevegen 1784	321 338	6 505 475	1 230
I	Fritidsbygning – Buevegen 1782	321 263	6 505 492	1 260
J	Fritidsbygning – Buevegen 1780	321 239	6 505 515	1 287
K	Fritidsbygning – Buevegen 1778	321 178	6 505 500	1 289
L	Fritidsbygning – Buevegen 1850	321 753	6 505 237	1 015
M	Fritidsbygning – Buevegen 1941	322 631	6 505 117	1 034
N	Bygning for overnatting – Buevegen 1988	322 968	6 505 553	1 392
O	Fritidsbygning – Buevegen 2023	323 284	6 505 569	1 383
P	Fritidsbygning – Buevegen 2021	323 246	6 505 557	1 371
Q	Fritidsbygning – Buevegen 2141	324 426	6 505 794	1 844
R	Fritidsbygning – Buevegen 2165	324 693	6 505 786	1 922
S	Enebolig – Vaule 176	325 238	6 505 571	1 883

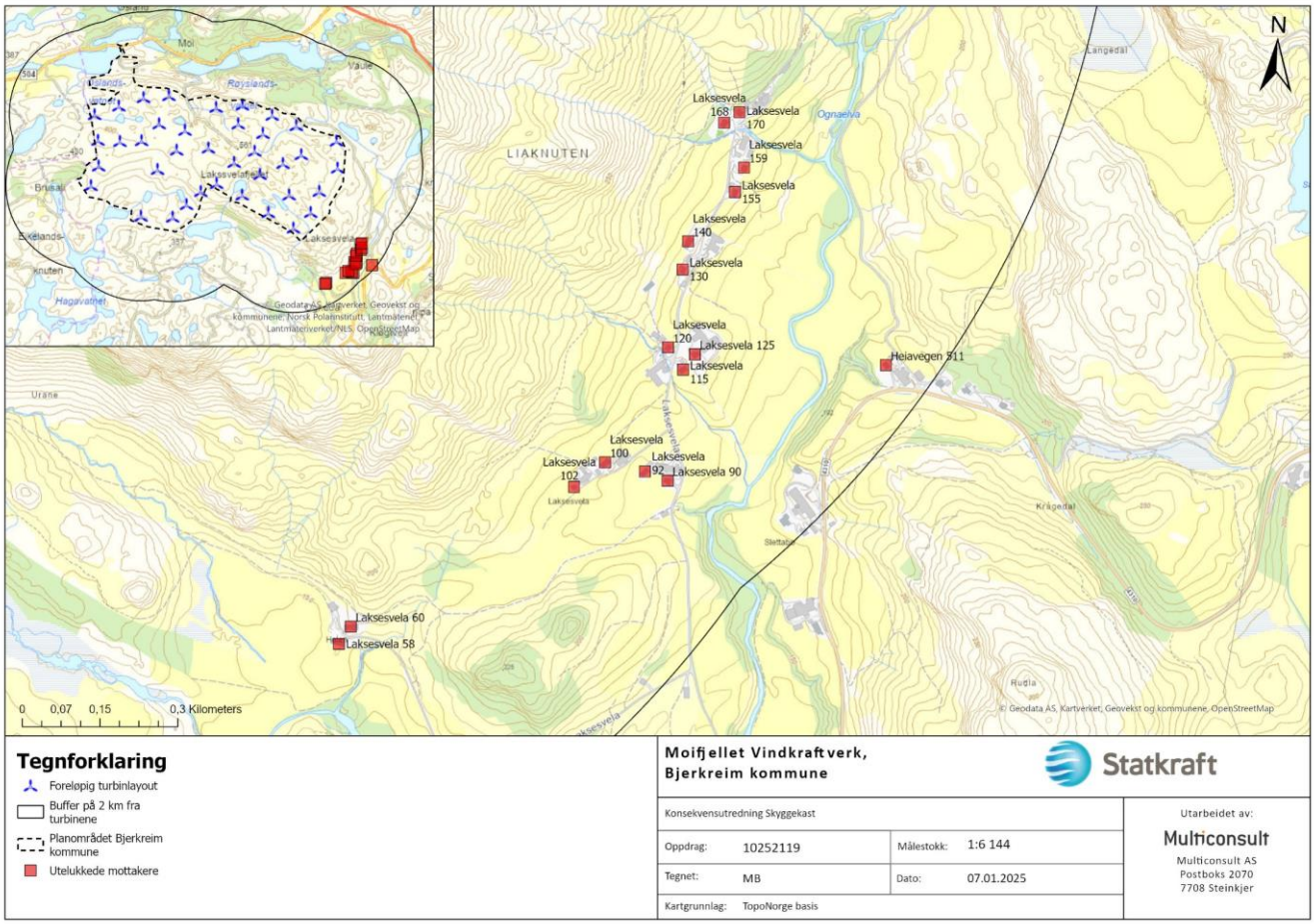
T	Fritidsbygning – Vaule 247	324 881	6 505 111	1 334
U	Fritidsbygning – Store Svela – eiendom 60/5 - Bjerkreim kommune	326 356	6 503 511	835
V	Våningshus – Osland 45	320 801	6 505 783	1 636
W	Våningshus – Osland 85	320 384	6 505 811	1 740
X	Våningshus – Osland 65	320 423	6 505 925	1 837
Y	Enebolig – Brusalivegen 215	318 829	6 501 559	1 129
Z	Enebolig – Brusalivegen 217	318 880	6 501 518	1 096
AA	Våningshus – Buevegen 1463	318 453	6 504 383	1 536
AB	Enebolig – Buevegen 1461	318 418	6 504 425	1 587
AC	Enebolig – Buevegen 1502	318 747	6 504 864	1 607
AD	Våningshus – Buevegen 1500	318 697	6 504 851	1 631
AE	Våningshus – Buevegen 1498	318 415	6 594 822	1 815
AF	Våningshus – Buevegen 1496	318 337	6 504 834	1 884
AG	Fritidsbygning (ikke ferdig bygd) – Bjerkreim kommune – eiendom 57/3	324 676	6 504 359	553
AH	Våningshus – Brusalivegen 201	319 326	6 501 193	961
AI	Fritidsbygning - Vaule 218	325 098	6 505 291	1 560
AJ	Enebolig – Heiavegen 543	326 420	6 500 403	1 959
AK	Våningshus – Heiavegen 541	326 443	6 500 501	1 905
AL	Gatekjøkken, kioskbygning – Buevegen 2100	324 241	6 505 947	1 956

AM	Fritidsbygning – eiendom121/8, Hå kommune	318 902	6 501 969	969
AN	Fritidsbygning – Brusalivegen 219	318 928	6 501 743	974

3.2 Skyggekastmottakere som ble utelukket

Etter flere simuleringer, både verst tenkelig og realistisk simulering, ble flere boliger ekskludert fra vurderingene til tross for at de ligger innenfor en radius på 2 km fra turbinene. Alle simuleringene viste at disse boligene ikke ville oppleve belastning fra skyggekast, og de ble derfor utelatt fra resultatene for å forenkle fremstillingen og utregningene.

Bygningene som ble utelukket fra vurderingen ligger sørøst for planområdet ved Laksesvela. De innledende simuleringene indikerte at disse boligene sannsynligvis ikke vil bli påvirket av skyggekast fra vindkraftverkene. Dette skyldes flere faktorer, inkludert bygningenes plassering i forhold til turbinene og solens bane. I tillegg spiller topografien en viktig rolle, da boligene ligger relativt tett oppunder østsida av dalen, som betyr at dersom skyggekast skulle nådd disse mottakerne, så måtte solen ha stått høyt i nordvest. Selv ikke midt på sommeren kommer solen i en slik posisjon, og dermed treffes ikke disse ekskluderte mottakerne av skyggekast. Figur 3-3 viser de utelukkede mottakerne.



Figur 3-3: Utelukkede mottakere.

4 Modellering

Modellen tar inn de planlagte turbinplasseringene, høyde på turbinene og rotordiameter.

4.1 Hvordan beregningene utføres

Beregningen av skyggekast i programvaren skjer ved en kombinasjon av:

- Kjent geografisk posisjon, for å finne solbanen gjennom året.
- Definert terreng, så man kan bestemme når solens bane er under horisonten sett fra ethvert relevant punkt i simuleringen.
- Turbinenes posisjon og størrelse.

For å sikre en grundig analyse av området rundt Moifjellet, er det lagt til grunn et influensområde som dekker en avstand på omtrent 12 x 12 km. Dette gir tilstrekkelig rom for å inkludere de omkringliggende omgivelsene som kan ha innvirkning på resultatene. Influensområdet deles inn i et rutenett med 10 x 10 meter oppløsning. Dette rutenettet utgjør en stor samling individuelle punkt (altså små «lapper» á 10 x 10 m), og modellen stiller seg i hvert slikt punkt, og ser mot solen. Dersom en av turbinene står mellom observasjonspunktet og solskiven uten at det er skyggende terreng i veien, tikkes det opp en teller som holder styr på hvor mange minutter skyggekast dette ene punktet mottar per år. Solbanen representeres ved at man hopper tre dager av gangen (dette håndterer årstider), og vurderer hvert døgn oppstykket i 2-minuttersbolker. Etter at alle punkt i rutenettet har gått gjennom en slik solbaneberegning blir det satt sammen kart som beskriver forskjellige karakteristikker ved skyggekastbelastningen.

I tillegg til kartene brukes de spesifikke skyggekastmottakerne, omtalt i avsnitt 3.1, for mer avanserte beregninger.

5 Resultater for Moifjellet Vindkraftverk

I dette kapittelet presenteres skyggekastberegningene for Moifjellet vindkraftverk. Det er ikke tatt hensyn til sumvirkninger i dette kapittelet, de vises i kapittel 6. Resultatene, og diskusjonen rundt disse, som presenteres i dette kapitlet starter med kart over maksimal teoretisk skyggekastbelastning på en flate 1.5 meter over bakkenivå. Dette vil representere den typen skyggekast en person ute på en plen vil kunne motta. Deretter vises skyggekastmottak for de definerte mottakerne i avsnitt 3.1.

Etter dette presenteres et kart der sannsynligheten for solskinn er satt til 50% og driftstiden til turbinen satt til 7000 timer i tråd med NVEs retningslinjer for beregninger av vindturbiner. For å oppnå en mer realistisk orientering av turbinene, er vindrosen for Moifjellet benyttet i fordelingen av driftstid per sektor/vindretning. Deretter presenteres beregnet realistisk skyggekast for de definerte mottakerne.

Noter at sammenligningen av kartene med de individuelt definerte mottakerne er ikke rett frem; geometrien for modellen er annerledes. Kartene viser skyggekast ned på en tenkt horisontal flate, hvor oppgitt belastning er et gjennomsnitt for en rute på 10 x 10 meter, mens de individuelle beregningene ser på et vertikalt vindu med 2 x 2 meter med senter 2 meter over bakken. Kartene vil gi en kvalitativ indikasjon på hvilke deler av et område som er tungt belastet, men ikke nødvendigvis et nøyaktig tall på hvor mange timer skyggekast et kjøkkenvindu utsettes for per år. Generelt viser kartene et lavere antall timer med skyggekastbelastning enn det man finner ved den detaljerte beregningen for mottakere representert med vinduer.

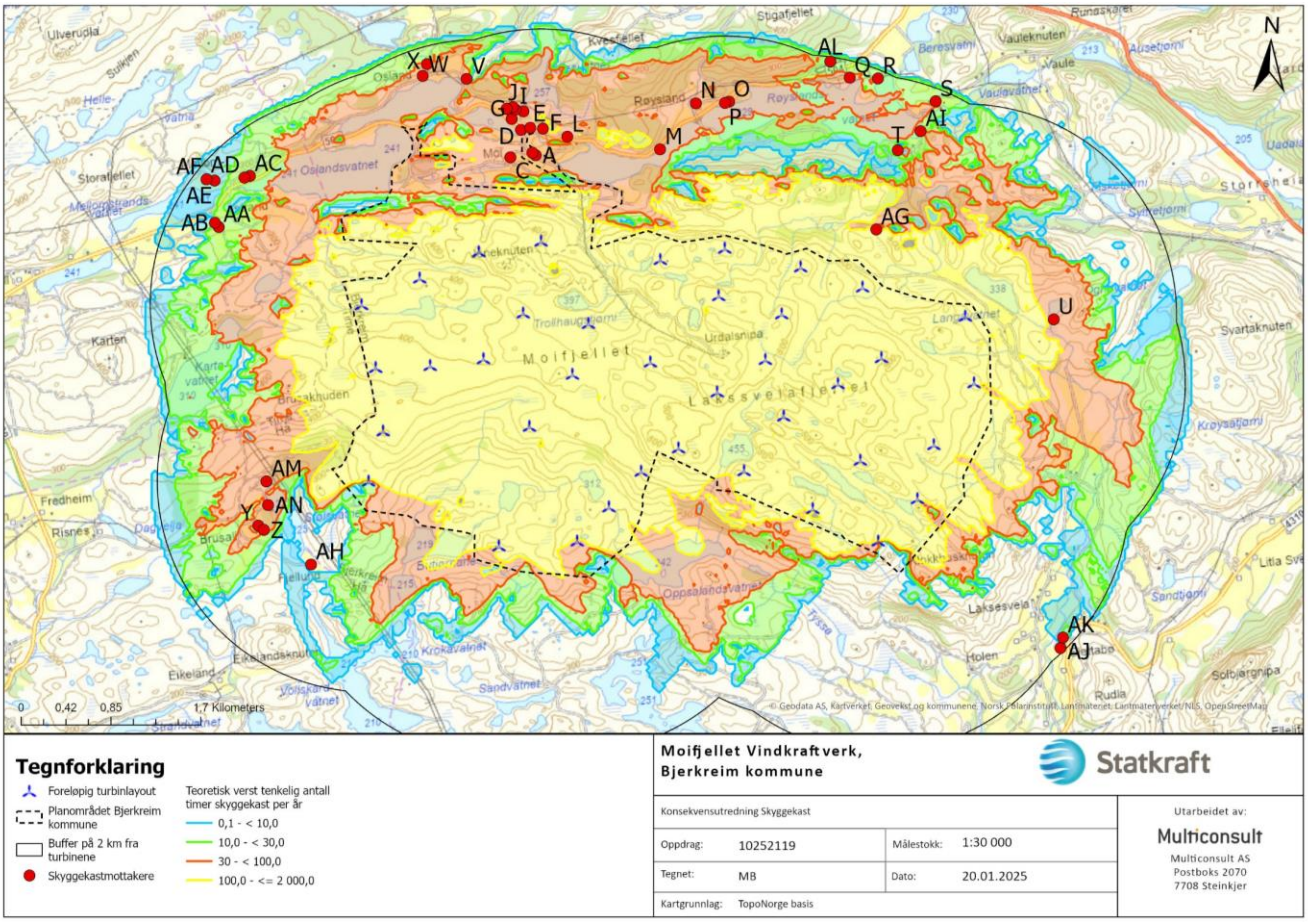
5.1 Kart – Verst tenkelig scenario

Figur 5-1 viser kartet over teoretisk verst tenkelig skyggekast, målt i antall timer per år. For denne beregningen antas at solen skinner alle timer i løpet av en dag og at turbinen alltid står vinkelrett på mottakerpunktet, og man ender da opp med en beskrivelse av den maksimale skyggekastbelastningen man forventer fra vindkraftverket.

De tykke linjene i kartet representerer koter eller konturlinjer, tilsvarende de som brukes på et terrengkart, men i denne sammenhengen viser de mengden skyggekast i løpet av et år. Innenfor hver konturlinje er skyggekastvarigheten høyere enn verdien angitt i tegnforklaringen. Dette betyr at områdene som befinner seg innenfor en bestemt kontur vil oppleve lengre perioder med skyggekast sammenlignet med områdene utenfor.

Fargene grønn og blå indikerer akseptable nivåer av skyggekast, som ligger under de anbefalte grenseverdiene for maksimalt teoretisk skyggekast. Fargene rød og gul indikerer områder som er over akseptable nivåer for skyggekast, der gul er områder som er mest utsatt. Kartet gir en klar visualisering av hvor man kan forvente mest skyggekast fra vindkraftverket, som forventet er størst skyggekastbelastning innenfor vindkraftverkets planområde.

Figuren gir en god indikasjon på hvilke områder og mottakere som vil bli meget utsatt for skyggekast. Nord til nordvest for vindkraftverket er det en konsentrasjon av røde områder, med noen gule flekker, som indikerer høy skyggekastpåvirkning. Boliger i disse områdene kan derfor bli betydelig utsatt for skyggekast.



Figur 5-1: Teoretisk verst tenkelig scenario, målt i antall timer per år.

Individuelle mottakere – Verst tenkelig scenario

Tabell 5-1 viser resultatet av beregningene av maksimalt teoretisk skyggekast for alle de definerte mottakerne i avsnitt 3.1. Det kommer tre delresultater fra beregningen. Det første er vist i kolonnen «Timer/år». Dette er antall timer med skyggekast på mottakeren (på format *timer:minutter*). Det andre delresultatet, vist i kolonnen «Dager/år», gir hvor mange dager i løpet av året det inntreffer skyggekast på mottakeren. Det sier ikke i seg selv noe om intensiteten per dag. Demonstrert med for eksempel, Moi 32 (mottaker A), der det kommer omtrent 97 timer skyggekast fordelt over 117 dager. Dette betyr i snitt, ca. 49 minutter skyggekast per dag med skyggekast. Men, som man ser i kolonnen «Timer/dag (verste dag)» (på format *timer:minutter*), som gir belastningen på den verste dagen, ser vi at maksimalt mottak på én dag er 1 time og 43 minutter. Altså er det mange dager med kortere skyggekastmottak enn 49 minutter, og andre dager med mottak opp mot maksimal teoretisk verdi.

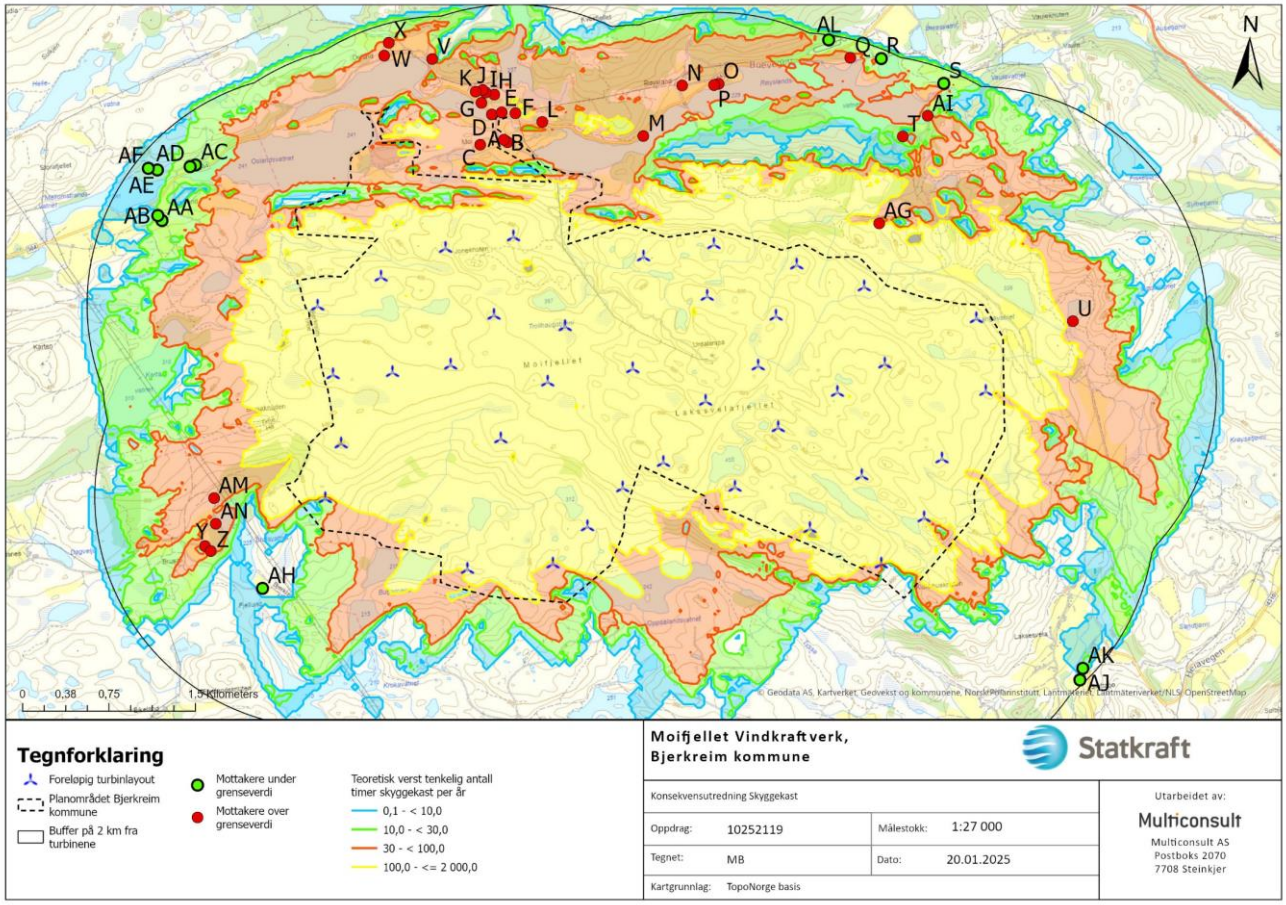
Tabell 5-1: Maksimalt teoretisk skyggekast for skyggekastmottakerne for Moifjellet vindkraftverk. Kolonnen «Timer/år» gir totalt antall timer skyggekast på mottakeren per år. Kolonnen «Dager/år» gir antallet dager per år det inntreffer skyggekast i det hele tatt. Kolonnen «Timer/dag (verste dag)» gir antallet timer skyggekast på den dagen med aller størst belastning.

	Mottaker	Timer/år	Dager/år	Timer/dag (verste dag)
A	Våningshus– Moi 32	97:05	117	1:43
B	Enebolig – Moi 26	93:36	103	1:42
C	Våningshus – Moi 21	86:09	91	1:52
D	Fritidsbygning – Buevegen 1805	86:54	112	1:30
E	Fritidsbygning – Buevegen 1816	89:51	118	1:28
F	Fritidsbygning – Buevegen 1818	94:18	136	1:27
G	Fritidsbygning – Buevegen 1786	75:03	111	1:29
H	Fritidsbygning – Buevegen 1784	84:52	122	1:28
I	Fritidsbygning – Buevegen 1782	83:18	123	1:29
J	Fritidsbygning – Buevegen 1780	82:37	122	1:28
K	Fritidsbygning – Buevegen 1778	70:44	89	1:28
L	Fritidsbygning – Buevegen 1850	93:11	157	1:30
M	Fritidsbygning – Buevegen 1941	59:03	78	1:34
N	Bygning for overnatting – Buevegen 1988	52:09	72	1:06
O	Fritidsbygning – Buevegen 2023	43:17	58	1:14
P	Fritidsbygning – Buevegen 2021	41:32	56	1:15
Q	Fritidsbygning – Buevegen 2141	38:42	104	0:36
R	Fritidsbygning – Buevegen 2165	27:58	84	0:27
S	Enebolig – Vaule 176	22:43	87	0:22
T	Fritidsbygning – Vaule 247	35:34	100	0:46

U	Fritidsbygning – Store Svela – eiendom 60/5 - Bjerkreim kommune	88:43	177	1:04
V	Våningshus – Osland 45	39:44	74	0:43
W	Våningshus – Osland 85	38:18	102	0:32
X	Våningshus – Osland 65	37:42	92	0:32
Y	Enebolig – Brusalivegen 215	31:42	76	0:34
Z	Enebolig – Brusalivegen 217	37:54	72	0:37
AA	Våningshus – Buevegen 1463	22:51	83	0:25
AB	Enebolig – Buevegen 1461	15:19	54	0:24
AC	Enebolig – Buevegen 1502	18:26	62	0:24
AD	Våningshus – Buevegen 1500	17:27	61	0:24
AE	Våningshus – Buevegen 1498	8:09	30	0:21
AF	Våningshus – Buevegen 1496	7:31	28	0:21
AG	Fritidsbygning (ikke ferdig bygd) – Bjerkreim kommune – eiendom 57/3	239:41	207	1:56
AH	Våningshus – Brusalivegen 201	0:00	0	0:00
AI	Fritidsbygning-Vaule 218	29:38	80	0:45
AJ	Enebolig – Heiavegen 543	0:55	23	0:04
AK	Våningshus – Heiavegen 541	10:49	46	0:19
AL	Gatekjøkken, kioskbygning – Buevegen 2100	18:07	66	0:20
AM	Fritidsbygning – eiendom121/8, Hå kommune	51:08	110	0:39

AN	Fritidsbygning – Brusalivegen 219	49:02	102	0:40

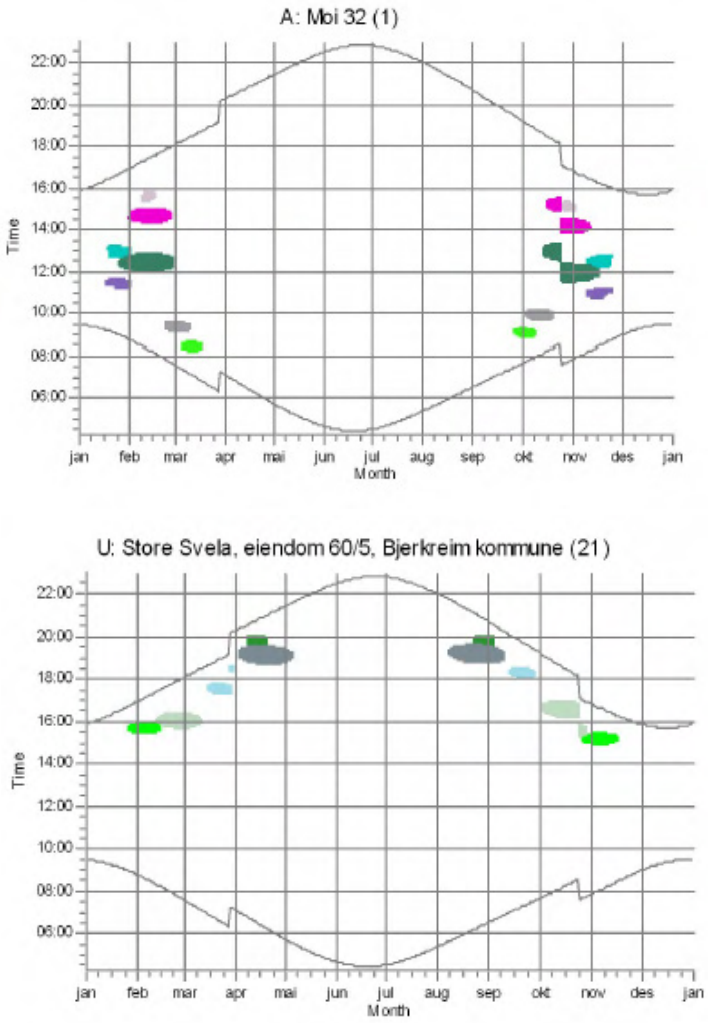
Det er anslått at 12 av 40 mottakere ligger under NVEs anbefalte grenseverdi for teoretisk maksimalt skyggekast, se Figur 5-2 der disse 12 mottakerne er vist med grønne prikker. Tre av disse mottakerne er lokalisert nordøst for planområdet nært Beresvatni (mottakere R, S og AL i tabell), seks mottakere er lokalisert nordvest for planområdet ved Mellomstrand (mottakere AA – AF i tabell), en er lokalisert sørvest for planområdet ved Fjellund (mottaker AH i tabell) og to er lokalisert sørøst for planområdet ved Slettabø (mottakere AJ og AK i tabell). Den mottakeren som blir mest utsatt for skyggekast er den som ligger nært en turbin, mottakeren er lokalisert nord for planområdet, det er en hytte som er under bygging og er omtrent 553 meter unna en turbin (mottaker AG i tabell).



Figur 5-2: Verst tenkelig skyggekast med mottakere. Mottakere vist i grønt ligger under anbefalt grenseverdi mens mottakere vist i rødt ligger over anbefalt grenseverdi.

Mange av de mest utsatte boligene og fritidsbygningene er lokalisert rett nord for vindkraftverket, noe som gjør det sannsynlig at de vil oppleve skyggekast på samme tid i løpet av dagen. Grunnet boligenes posisjon i forhold til vindkraftverket og solens bane vil de fleste av mottakerne mest sannsynlig oppleve mest skyggekast på dagtid, mellom 9 - 16. Mottakernes lokalisering kombinert med solens bevegelsesmønster gjør at belastningen av skyggekast på mottakerne er høyest når solen står høyest på himmelen i løpet av vinterhalvåret. Da strekker skyggen fra vindturbinene seg lenger og mottakerne i nord opplever skyggekast. De fleste av mottakerne vil kun oppleve skyggekast om vinteren, mens noen få vil kunne merke det også i sen høst og tidlig vår. Seks av mottakerne kan imidlertid oppleve skyggekast om sommeren, men da enten tidlig om morgenen eller sent på kvelden.

Figur 5-3 illustrerer når to mottakere forventes å oppleve skyggekast gjennom året (x-aksen), samt på hvilke tidspunkter av døgnet dette skjer (y-aksen). De ulike fargene representerer de ulike vindturbinene som vil bidra til skyggekast. Tynn grå linje representerer solbanen og viser når det er teoretisk mulig å oppleve skyggekast. Mottakerne A og U er valgt for å illustrere den forventede skyggekastbelastningen for de områdene som ligger nord og øst for planområdet. Disse mottakerne er valgt spesielt fordi det antas at de vil oppleve ulike resultater, basert på deres beliggenhet i forhold til vindkraftverket og solens bane. En fullstendig oversikt over når hver mottaker kan forvente skyggekast for alle fire scenarioene legges ved rapporten som vedlegg.



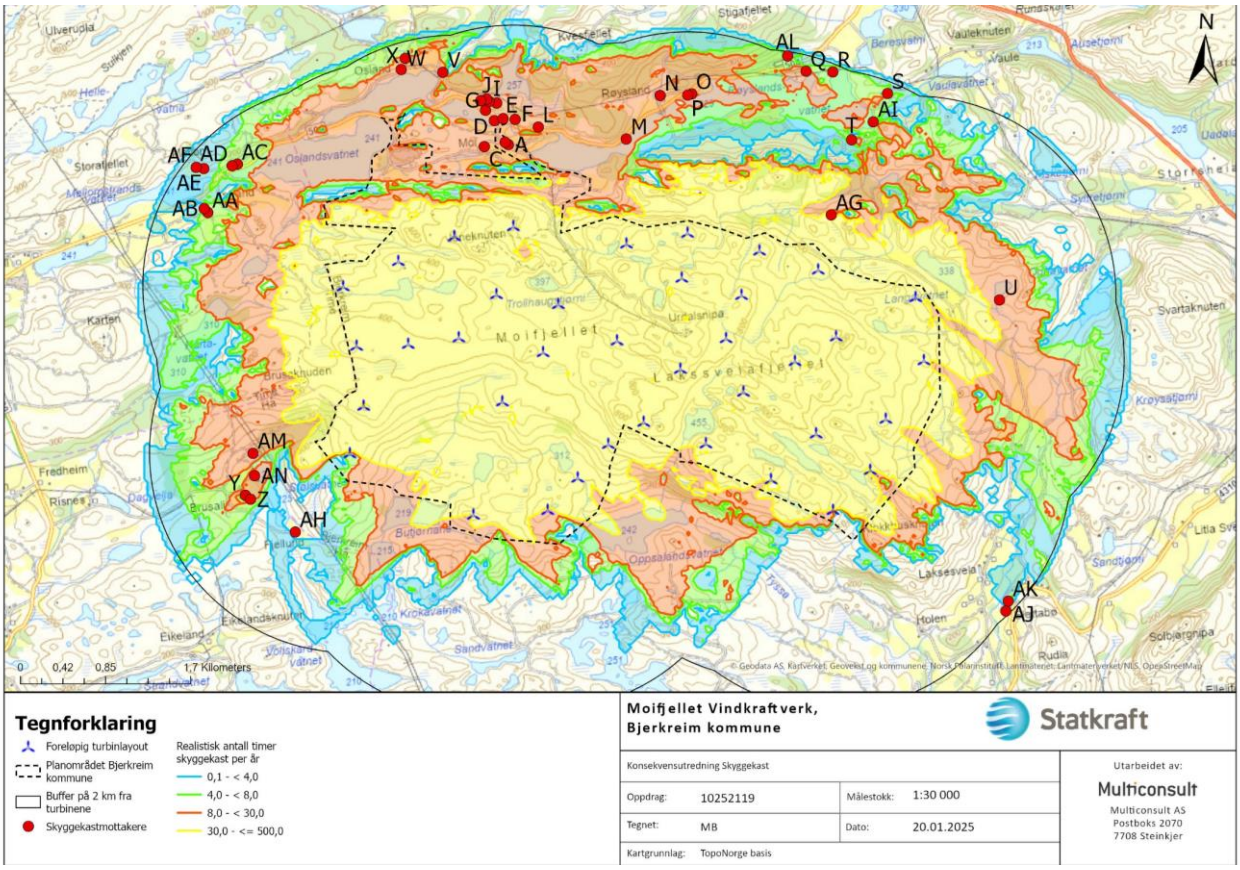
Figur 5-3: Forventet tidspunkt for skyggekast for mottaker A og U. Mottaker A er lokalisert nord for planområdet, mens mottaker U ligger nært planområdet på østsiden.

5.2 Kart – Realistisk scenario

Figur 5-4 viser et tilsvarende kart som Figur 5-1, men nå er en solskinnssannsynlighet på 50% og driftstid basert på vindrosen tatt med. Forskjellen i resultatet er at simuleringen først beregner teoretisk maksimum som om sola skinner hele tiden (nøyaktig på samme vis som vist i Figur 5-1), og deretter reduseres denne teoretiske maksimumsbelastningen med 50%, basert på antakelsen om at faktisk solskinn bare inntreffer halvparten av tiden. I tillegg justeres belastningen med en driftstid på totalt 7000 timer, basert på vindrosen og driftstid per sektor/vindretning.

Sammenlignet med maksimalt teoretisk skyggekast reduseres utstrekningen av skyggekast noe, og områdene som viser verdier over anbefalt nivå krymper. Denne reduksjonen er imidlertid ikke betydelig nok til å være

visuelt fremtredende. Kartet indikerer at arealene med høy belastning forblir omfattende, noe som indikerer at de fleste mottakerne fremdeles vil bli eksponert for skyggekast i mengder som overskrider anbefalte verdier.



Figur 5-4: Realistisk scenario med antall timer per år.

5.3 Individuelle mottakere – Realistisk scenario

Den realistiske skyggekastbelastningen skiller seg fra den verst tenkelige på to viktige områder. For det første anvendes en solskinnsannsynlighet på 50% for det realistiske scenarioet. For det andre tar man høyde for en årlig driftstid på 7000 timer for vindkraftverket, som er basert på vindrosen og driftstid per sektor/vindretning.

Reduksjonen i solskinnsannsynlighet håndteres i praksis ved at tallene i tabellen for verst tenkelig skyggekastbelastning (se

Tabell *5-1*) reduseres med solskinnsannsynligheten (i dette tilfellet ekvivalent med å dele på 2). Driftstiden håndteres med å gi analyseprogrammet en gitt driftstid per vindretningssektor, som er basert på vindrosen for området, som til sammen utgjør 7000 timer. For analyser av vindparker regner man at skyggen som skyldes en stasjonær vindturbin ikke bidrar til skyggekastbelastning da den ikke beveger seg i det hele tatt.

Tabell 5-2 oppsummerer resultatet av denne beregningen. Sammenlignet med tallene for teoretisk maksimum (se

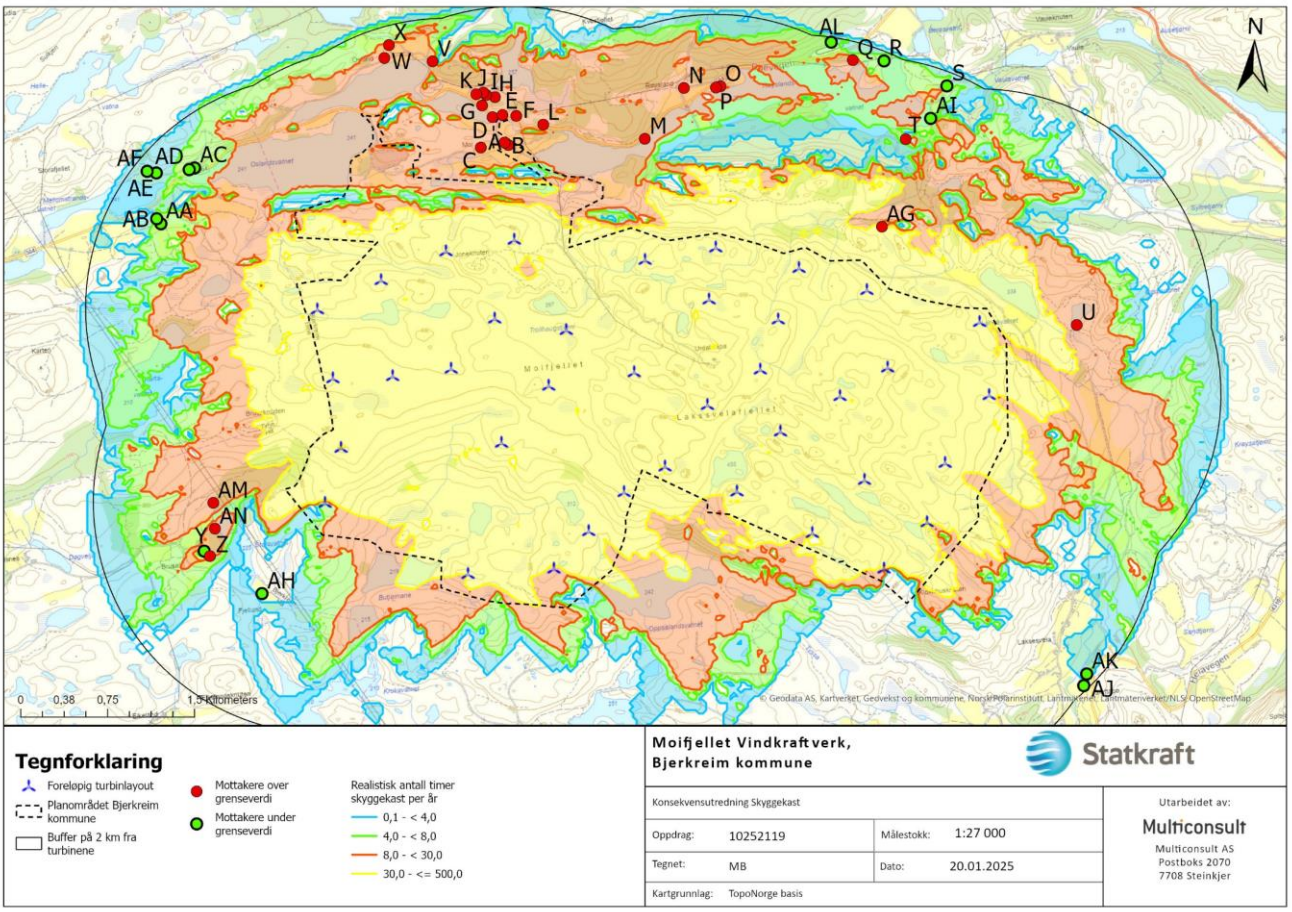
Tabell *5-1*) er disse tallene redusert både på grunn av 50% solskinnssannsynlighet og driftstiden til turbinene.

Tabell 5-2: Realistisk skyggekastberegning for skyggekastmottakerne for Moifjellet Vindkraftverk definert i avsnitt 3.1. Tredje kolonne «Timer/dag (verste dag)» er hentet fra tabell 5-1 for sammenligningsgrunnlag.

	Mottaker	**Timer/år**	***Timer/år (verst tenkelig)***
A	Våningshus– Moi 32	24:26	97:05
B	Enebolig – Moi 26	23:24	93:36

C	Våningshus – Moi 21	21:53	86:09
D	Fritidsbygning – Buevegen 1805	21:42	86:54
E	Fritidsbygning – Buevegen 1816	22:25	89:51
F	Fritidsbygning – Buevegen 1818	23:27	94:18
G	Fritidsbygning – Buevegen 1786	18:47	75:03
H	Fritidsbygning – Buevegen 1784	20:53	84:52
I	Fritidsbygning – Buevegen 1782	20:40	83:18
J	Fritidsbygning – Buevegen 1780	20:34	82:37
K	Fritidsbygning – Buevegen 1778	17:29	70:44
L	Fritidsbygning – Buevegen 1850	22:55	93:11
M	Fritidsbygning – Buevegen 1941	14:25	58:55
N	Bygning for overnatting – Buevegen 1988	12:51	51:15
O	Fritidsbygning – Buevegen 2023	10:45	40:55
P	Fritidsbygning – Buevegen 2021	10:18	39:31
Q	Fritidsbygning – Buevegen 2141	9:14	33:39
R	Fritidsbygning – Buevegen 2165	6:36	24:05
S	Enebolig – Vaule 176	4:58	20:07
T	Fritidsbygning – Vaule 247	8:48	34:15
U	Fritidsbygning – Store Svela – eiendom 60/5 - Bjerkreim kommune	21:51	89:46
V	Våningshus – Osland 45	9:46	39:44
W	Våningshus – Osland 85	10:16	38:18
X	Våningshus – Osland 65	10:08	37:42
Y	Enebolig – Brusalivegen 215	7:23	31:42
Z	Enebolig – Brusalivegen 217	8:44	37:54
AA	Våningshus – Buevegen 1463	6:34	22:51
AB	Enebolig – Buevegen 1461	4:22	15:19
AC	Enebolig – Buevegen 1502	5:20	18:26
AD	Våningshus – Buevegen 1500	5:04	17:27
AE	Våningshus – Buevegen 1498	2:23	8:09
AF	Våningshus – Buevegen 1496	2:12	7:31
AG	Fritidsbygning (ikke ferdig bygd) – Bjerkreim kommune – eiendom 57/3	55:38	239:41
AH	Våningshus – Brusalivegen 201	0:00	0:00
AI	Fritidsbygning – Vaule 218	6:43	29:38
AJ	Enebolig – Heiavegen 543	0:16	0:55
AK	Våningshus – Heiavegen 541	3:10	10:49
AL	Gatekjøkken, kioskbygning – Buevegen 2100	4:22	18:07
AM	Fritidsbygning – eiendom121/8, Hå kommune	12:35	51:08
AN	Fritidsbygning – Brusalivegen 219	11:37	49:02

I det realistiske scenarioet observeres samme hovedtrender som i det maksimale teoretiske scenarioet, noe som indikerer en konsistent fordeling av skyggekastbelastningen. Det er estimert at 14 mottakere befinner seg under NVEs anbefalte grenseverdi på 8 timer årlig skyggekast (mottakere R, S, Y, AA – AF og AH - AL), se Figur 5-5. Av disse 14 er 12 de samme som også lå under grenseverdien i det maksimale teoretiske scenarioet. De to mottakerne, Y og AI, som kun ligger under grenseverdien i det realistiske scenarioet, er lokalisert sørvest og nordøst for planområdet.



Figur 5-5: Realistisk skyggekast med mottakere. Mottakere vist i grønt ligger under anbefalt grenseverdi mens mottakere vist i rødt ligger over anbefalt grenseverdi

For begge scenariene er det de samme tre turbinene som genererer mest skyggekast, noe som understreker at plasseringen og designet av disse turbinene er avgjørende faktorer for skyggekastpåvirkningen. Den mottakeren som befinner seg nærmest turbinene, er den som er mest utsatt for skyggekast. Dette antyder at både fysisk avstand fra turbinene og den lokale topografien spiller en sentral rolle i hvor mye skyggekast en mottaker vil oppleve.

For mottakerne som opplever skyggekast rundt midt på dagen, reduseres varigheten av skyggekast primært på grunn av lavere sannsynlighet for solskinn. Dette betyr at selv om skyggekast teoretisk sett kan vare lenger, vil faktiske værforhold, som perioder med overskyet vær, bidra til å korte ned skyggekastets varighet. Dermed oppstår en reduksjon i skyggekastets påvirkning, selv i de mest utsatte periodene, noe som fører til en lavere faktisk eksponering enn beregningene for teoretisk maksimalt skyggekast skulle tilsi. For eksempel Buevegen 2023 (mottaker O) har gått fra 43:17 til 10:45 og Brusalivegen 215 (mottaker Y) har gått fra 31:42 til 7:23. Det er viktig å nevne at Buevegen 2023 fortsatt ikke er under grenseverdiene, mens Brusalivegen 215 er akkurat under anbefalt grenseverdi.

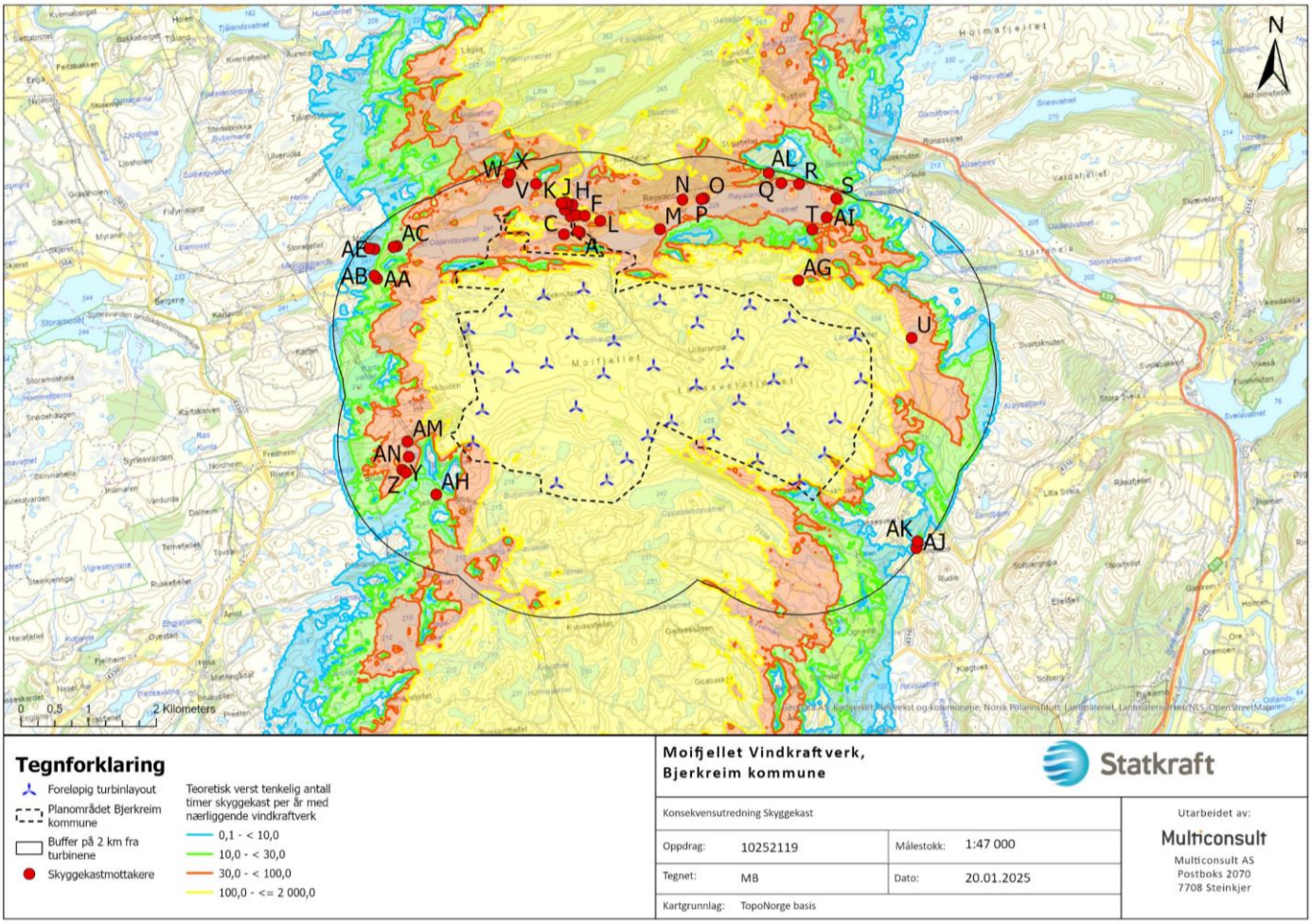
6 Resultater for sumvirkninger fra nærliggende vindkraftverk

I dette kapittelet presenteres skyggekastberegningene for Moifjellet Vindkraftverk med hensyn til nærliggende vindkraftverk. Resultatene og diskusjonen rundt disse vil ha samme oppsett som i forrige kapittel for å gi et godt sammenligningsgrunnlag, og tydelig vise hvilke skyggekastmottakere som får ekstra belastning på grunn av sumvirkningen av flere vindkraftverk.

Noter at for realistisk skyggekastberegning er vindrosen for Moifjellet benyttet. Dette kan medføre en viss unøyaktighet når den anvendes på de andre vindkraftverkene, da vindrosen spesifikt representerer vindforholdene ved Moifjellet og ikke nødvendigvis de eksakte forholdene ved de andre lokasjonene.

6.1 Kart – Verst tenkelig scenario

Figur 6-1 viser kartet over teoretisk verst tenkelig skyggekast, målt i antall timer per år. For denne beregningen antas at solen skinner alle timer i løpet av en dag og at turbinen alltid står vinkelrett på mottakerpunktet, og man ender da opp med en beskrivelse av den maksimale skyggekastbelastningen man forventer som følge av alle de tre vindkraftverkene rundt Moifjellet Vindkraftverk sitt influensområde.



Figur 6-1:Teoretisk verst tenkelig skyggekast med hensyn til nærliggende vindkraftverk med definerte skyggekastmottakere.

Når man tar hensyn til nærliggende vindkraftverk ser man en større utstrekning nord og sør for Moifjellet av arealer som ligger over anbefalt grenseverdi, spesielt røde arealer har blitt større. Dette er naturlig siden disse vindkraftverkene hver for seg vil lage skyggekast som nå legges sammen for en større total belastning. Figuren viser at det vil bli mer skyggekast sør for Moifjellet Vindkraftverk, men der er det ikke registret noen mottakere. Områdene nord for planområdet er i hovedsak fremdeles rød og det forventes av den grunn ikke særlig endring for mottakerne som er lokalisert der.

6.2 Individuelle mottakere – Verst tenkelig scenario

Tabell 6-1 viser resultatet av beregningene av maksimalt teoretisk skyggekast for alle de definerte mottakerne i Figur 3-2 og tar hensyn til sumvirkninger fra alle vindkraftverkene. Resultatene er vist med de samme oppsettet som delresultatene i avsnitt 0, der første er vist i kolonnene «Timer/år». Dette er antall timer med skyggekast på mottakeren (på format *timer:minutter*). Det andre delresultatet, vist i kolonne «Dager/år», gir hvor mange dager i løpet av året det inntreffer skyggekast på mottakeren. Den tredje kolonnen «Timer/dag (verste dag)» (på format *timer:minutter*), gir belastningen på den verste dagen.

Tabell 6-1: Teoretisk skyggekast for skyggekastmottakerne for Moifjellet vindkraftverk med hensyn til nærliggende vindkraftverk. Kolonne 6, 7 og 8 (i grått) er hentet fra tabell 5-1 for skyggekast for Moifjellet uten nærliggende vindkraftverk for sammenligningsgrunnlag.

	Mottaker	**Timer/år**	**Dager/år**	**Timer/dag (verste dag)**	*Timer/år*	*Dager/år*	*Timer/dag (verste dag)*
A	Våningshus– Moi 32	97:05	117	1:43	97:05	117	1:43
B	Enebolig – Moi 26	93:36	103	1:42	93:36	103	1:42
C	Våningshus – Moi 21	86:09	91	1:52	86:09	91	1:52
D	Fritidsbygning – Buevegen 1805	86:54	112	1:30	86:54	112	1:30
E	Fritidsbygning – Buevegen 1816	89:51	118	1:28	89:51	118	1:28
F	Fritidsbygning – Buevegen 1818	94:18	136	1:27	94:18	136	1:27
G	Fritidsbygning – Buevegen 1786	76:55	129	1:29	75:03	111	1:29
H	Fritidsbygning – Buevegen 1784	85:59	137	1:28	84:52	122	1:28
I	Fritidsbygning – Buevegen 1782	90:47	162	1:29	83:18	123	1:29
J	Fritidsbygning – Buevegen 1780	93:47	169	1:28	82:37	122	1:28
K	Fritidsbygning – Buevegen 1778	84:48	141	1:28	70:44	89	1:28
L	Fritidsbygning – Buevegen 1850	93:11	157	1:30	93:11	157	1:30
M	Fritidsbygning – Buevegen 1941	59:03	78	1:34	59:03	78	1:34
N	Bygning for overnatting – Buevegen 1988	52:09	72	1:06	52:09	72	1:06
O	Fritidsbygning – Buevegen 2023	67:50	136	1:14	43:17	58	1:14
P	Fritidsbygning – Buevegen 2021	65:28	126	1:15	41:32	56	1:15
Q	Fritidsbygning – Buevegen 2141	56:00	209	0:36	38:42	104	0:36
R	Fritidsbygning – Buevegen 2165	40:17	156	0:27	27:58	84	0:27
S	Enebolig – Vaule 176	35:28	167	0:22	22:43	87	0:22

T	Fritidsbygning – Vaule 247	43:58	141	0:46	35:34	100	0:46
U	Fritidsbygning – Store Svela – eiendom 60/5 - Bjerkreim kommune	88:43	177	1:04	88:43	177	1:04
V	Våningshus – Osland 45	39:44	74	0:43	39:44	74	0:43
W	Våningshus – Osland 85	50:52	155	0:32	38:18	102	0:32
X	Våningshus – Osland 65	50:47	143	0:32	37:42	92	0:32
Y	Enebolig – Brusalivegen 215	38:48	115	0:34	31:42	76	0:34
Z	Enebolig – Brusalivegen 217	45:31	110	0:37	37:54	72	0:37
AA	Våningshus – Buevegen 1463	22:51	83	0:25	22:51	83	0:25
AB	Enebolig – Buevegen 1461	15:19	54	0:24	15:19	54	0:24
AC	Enebolig – Buevegen 1502	18:26	62	0:24	18:26	62	0:24
AD	Våningshus – Buevegen 1500	17:27	61	0:24	17:27	61	0:24
AE	Våningshus – Buevegen 1498	8:09	30	0:21	8:09	30	0:21
AF	Våningshus – Buevegen 1496	7:31	28	0:21	7:31	28	0:21
AG	Fritidsbygning (ikke ferdig bygd) – Bjerkreim kommune – eiendom 57/3	239:41	207	1:56	239:41	207	1:56
AH	Våningshus – Brusalivegen 201	20:54	76	0:28	0:00	0	0:00
AI	Fritidsbygning – Vaule 218	37:28	141	0:45	29:38	80	0:45
AJ	Enebolig – Heiavegen 543	0:55	23	0:04	0:55	23	0:04
AK	Våningshus – Heiavegen 541	10:49	46	0:19	10:49	46	0:19
AL	Gatekjøkken, kioskbygning – Buevegen 2100	18:07	66	0:20	18:07	66	0:20
AM	Fritidsbygning – eiendom121/8, Hå kommune	54:36	131	0:39	51:08	110	0:39
AN	Fritidsbygning – Brusalivegen 219	56:21	141	0:40	49:02	102	0:40

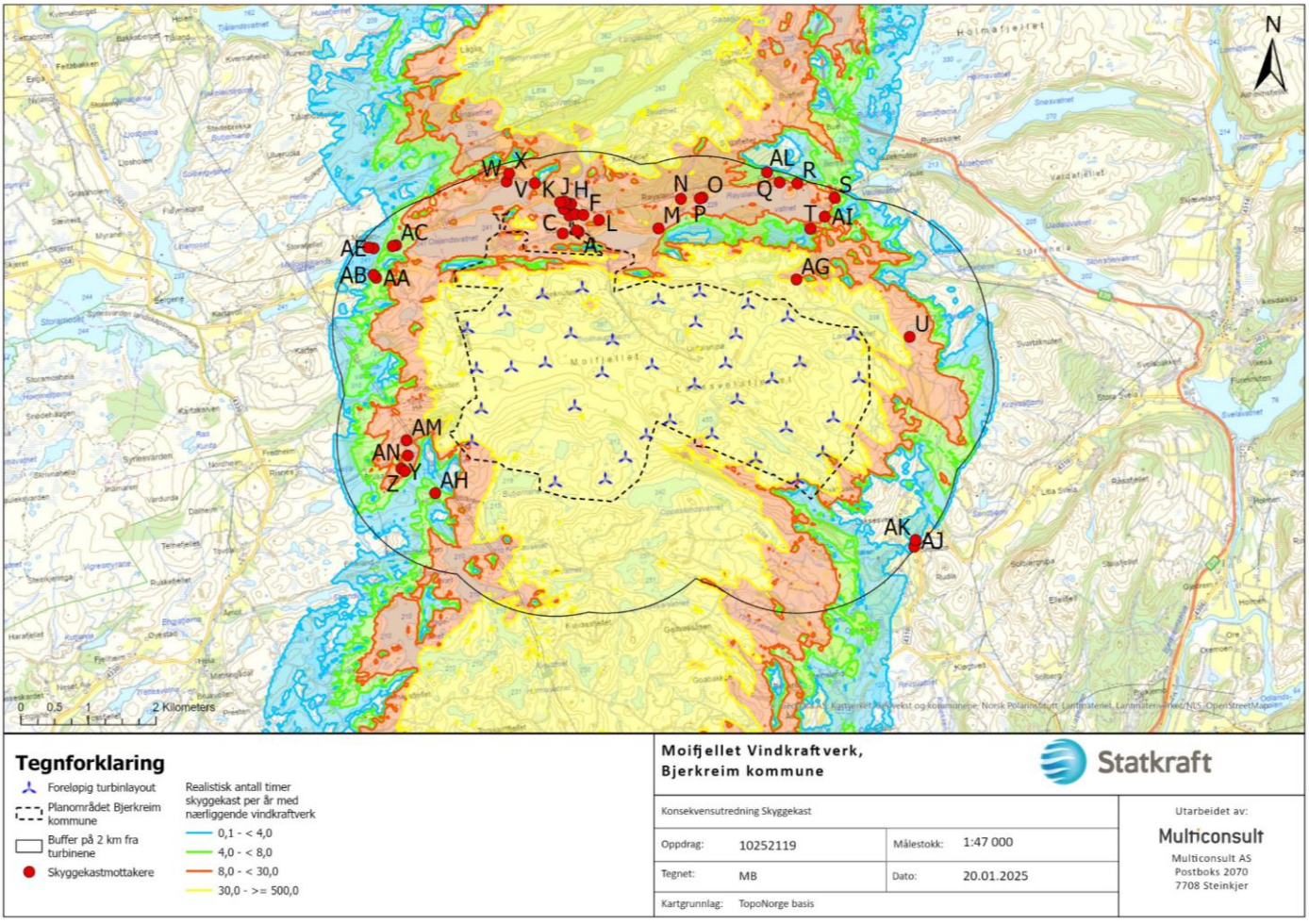
Det er noen forskjeller mellom denne tabellen og tabell 5-1 i avsnitt 5.2. For 19 mottakere er det en endring i antall timer per år og antall dager hvor det oppleves skyggekast, men det er ingen forskjell på timer per dag. Det er 2 mottakere (mottakere R og S) som overskrider grenseverdiene når man tar til betraktning nærliggende vindkraftverk. Basert på den maksimerte teoretiske analysen vil det ikke bli stor endring for mottakerne når man ser på sumeffekten av alle aktuelle nærliggende vindkraftverk. Det vil kunne bli en endring på antall timer over et helt år, men ingen endring i hva som maksimalt kan oppleves gjennom en dag. Dette betyr at når man vurderer sumvirkninger fra nærliggende vindkraftverk, kan det oppstå endringer i forholdene for mottakerne. Selv om den verste dagen fortsatt vil ha samme belastning, kan det bli flere dager med høy skyggekastbelastning, noe som kan merkes av enkelte mottakere.

6.3 Kart – Realistisk scenario

Figur 6-2 viser et tilsvarende kart som Figur 6-1, men nå er en solskinnssannsynlighet på 50% tatt med og driftstid basert på vindrosen tatt med. Forskjellen i resultatet er at simuleringen først beregner teoretisk maksimum som om sola skinner hele tiden (nøyaktig på samme vis som vist i Figur 6-1), og deretter reduseres denne teoretiske maksimumsbelastningen med 50%, basert på antakelsen om at faktisk solskinn bare inntreffer halvparten av tiden. I tillegg justeres belastningen med en driftstid på totalt 7000 timer, basert på vindrosen og driftstid per sektor/vindretning.

Sammenlignet med maksimalt teoretisk i avsnitt 6.1 kan man observere en liten endring. Selv om endringen ikke er svært merkbar, viser kartet at arealene har blitt noe redusert. Spesielt ser man at andelen av røde og gule områder har minsket, og disse strekker seg ikke like langt ut som tidligere.

Dersom man sammenligner med de tilsvarende figurene i kapittel 5 (som omtaler skyggekast fra Moifjellet Vindkraftverk alene) ser man derimot en litt større endring. De arealene som viser utsatte områder, er større og dekker mesteparten av områdene der det befinner seg mottakere. Dette antyder at sumvirkninger fra nærliggende vindkraftverk er noe mer omfattende enn den maksimale teoretiske beregningen indikerer.



Figur 6-2: Realistisk skyggekast med hensyn til nærliggende vindkraftverk med definerte skyggekastmottakere.

6.4 Individuelle mottakere – Realistisk scenario

Tabell 6-2 oppsummerer resultatet av det realistiske scenarioet. Det er benyttet samme metodikk som i avsnitt 5.3. Sammenlignet med tallene for teoretisk maksimum (se Tabell 6-1) er disse tallene redusert både på grunn av 50% solskinnssannsynlighet og driftstiden til turbinene. Antall timer er betraktelig redusert. Mottakeren som anses å være mest utsatt for skyggekast opplever nesten 56 timer per år (mottaker AG). Denne fritidsboligen er

under bygging og ligger i nærhet av planområdet, omtrent 550 meter unna nærmeste turbin og det er derfor forventet at vil ha en stor belastning. Tabellen viser i tillegg økningen av forventet skyggekasttimer per år når man tar med sumvirkninger.

Tabell 6-2: Realistisk skyggekastberegning for skyggekastmottakerne for Moifjellet vindkraftverk med hensyn til nærliggende vindkraftverk. Tabellen viser økning i antatt skyggekast når det tas hensyn til sumvirkninger.

	Mottaker	Timer/år	Økning
A	Våningshus– Moi 32	24:26	-
B	Enebolig – Moi 26	23:24	-
C	Våningshus – Moi 21	21:53	-
D	Fritidsbygning – Buevegen 1805	21:42	-
E	Fritidsbygning – Buevegen 1816	22:25	-
F	Fritidsbygning – Buevegen 1818	23:27	-
G	Fritidsbygning – Buevegen 1786	19:12	0:25
H	Fritidsbygning – Buevegen 1784	21:08	0:15
I	Fritidsbygning – Buevegen 1782	22:23	1:43
J	Fritidsbygning – Buevegen 1780	23:08	2:42
K	Fritidsbygning – Buevegen 1778	20:43	3:14
L	Fritidsbygning – Buevegen 1850	22:25	-
M	Fritidsbygning – Buevegen 1941	14:25	-
N	Bygning for overnatting – Buevegen 1988	12:51	-
O	Fritidsbygning – Buevegen 2023	17:42	6:57
P	Fritidsbygning – Buevegen 2021	17:08	6:50
Q	Fritidsbygning – Buevegen 2141	14:08	4:54
R	Fritidsbygning – Buevegen 2165	10:04	3:28
S	Enebolig – Vaule 176	8:41	3:43
T	Fritidsbygning – Vaule 247	11:16	2:28
U	Fritidsbygning – Store Svela – eiendom 60/5 - Bjerkreim kommune	21:51	-
V	Våningshus – Osland 45	9:46	-
W	Våningshus – Osland 85	13:17	3:01
X	Våningshus – Osland 65	13:21	3:13
Y	Enebolig – Brusalivegen 215	9:25	2:02
Z	Enebolig – Brusalivegen 217	10:54	2:10
AA	Våningshus – Buevegen 1463	6:34	-
AB	Enebolig – Buevegen 1461	4:22	-
AC	Enebolig – Buevegen 1502	5:20	-
AD	Våningshus – Buevegen 1500	5:04	-
AE	Våningshus – Buevegen 1498	2:23	-
AF	Våningshus – Buevegen 1496	2:12	-
AG	Fritidsbygning (ikke ferdig bygd) – Bjerkreim kommune – eiendom 57/3	55:38	-
AH	Våningshus – Brusalivegen 201	5:54	5:54

AI	Fritidsbygning – Vaule 218	9:00	2:17
AJ	Enebolig – Heiavegen 543	0:16	-
AK	Våningshus – Heiavegen 541	3:10	-
AL	Gatekjøkken, kioskbygning – Buevegen 2100	4:22	-
AM	Fritidsbygning – eiendom121/8, Hå kommune	13:37	1:02
AN	Fritidsbygning – Brusalivegen 219	13:45	2:08

I motsetning til teoretisk skyggekast, tar realistisk skyggekast mer hensyn til realistiske forhold som vær og solskinnsvariasjoner, og gir dermed et mer nøyaktig bilde av hvordan mottakerne vil bli påvirket av nærliggende vindkraftverk. Mens teoretisk skyggekast antar maksimal påvirkning basert på ideelle solforhold, reflekterer realistisk skyggekast hvordan mottakerne faktisk vil oppleve skyggekast under varierende værforhold, noe som ofte resulterer i kortere varighet og mindre intensitet enn de maksimale beregningene tilsier. Det er derfor ulike resultater mellom de to scenarioene.

Når man tar hensyn til nærliggende vindkraftverk, endres resultatene slik at færre mottakere ligger under NVEs anbefalte grenseverdi på 8 timer årlig skyggekast. Det er nå 10 mottakere som er under anbefalt grenseverdi (mottakere AA – AF, AH og AJ-AL). Seks av mottakerne er lokalisert ved Mellomstrand, en sørvest for området, to sørøst for området og en nordøst for området. Resultatene fra Tabell 6-2 viser at skyggekast fra flere vindkraftverk kan forekomme, det er fire mottakere (mottakere R, S, Y og AI) som går over anbefalt grenseverdi når man tar betraktning av nærliggende vindkraftverk. Det vil si at de nærliggende vindkraftverkene fører til en økning i den totale skyggekastbelastningen for enkelte mottakere.

Basert på hvilke mottakere som opplever en økning i skyggekast, kan vi konkludere med at de to vindkraftverkene, Stigafjell og Måkaknuten, nord for disse mottakerne i stor grad bidrar til de kumulative effektene. I tillegg får flere mottakere sørøst og sørvest for Moifjellet vindkraftverk økt skyggekastbelastning fra Bjerkreim vindkraftverk.

Det vil si at for kun Moifellet vindkraftverk er det hovedsakelig mottakerne nord for vindkraftverket som belastes over anbefalt grenseverdi. Mens når man tar hensyn til nærliggende vindkraftverk vil noen av mottakere til øst og til vest merke en større belastning, over anbefalt grenseverdi. I tillegg vil noen mottakere nord for Moifjellet vindkraftverk merke en økt belastning.

Det er ingen av mottakerne som opplever skyggekast over anbefalt grenseverdi fra de eksisterende vindkraftverkene. De mottakerne som merker en belastning fra eksisterende, opplever det i hovedsak tidlig på morgenen eller sent på kvelden i sommerhalvåret. Det er ulike tidspunkt og på ulike tider av året enn hva det forventes Moifjellet vindkraftverk vil bidra med. Det vil si at det vil bidra med mer skyggekast på flere tidspunkt igjennom dagen. En oversikt over når hver mottaker opplever skyggekast ligger i vedlegg.

7 Avbøtende tiltak

For å sikre at ikke noen mottakere blir utsatt for skyggekast over anbefalt grenseverdi er det flere aktuelle tiltak som kan gjøres. Før utbygging burde det utarbeides skyggekastkalendere som indikerer når skyggekast er forventet å inntreffe. Ved å stanse turbinen på tidspunkt hvor skyggekast inntreffer kan virkningene for naboer og andre berørte reduseres. Turbinene burde bli utstyrt med automatiserte lyssensorer som stanser vindturbinen på forhåndsdefinerte tidspunkt dersom der er klarvær i det aktuelle tidsrommet. Et annet tiltak kan være endring av turbinlayout. Det er spesielt tre turbiner som bidrar med mye skyggekast, en liten justering i layout kan bidra til mindre skyggekastbelastning for mottakerne.

8 Påvirkning på bebyggelse, friluftsliv og eventuelt andre aktiviteter

Siden det er flere boliger i nærheten av vindkraftverket, forventes det at bebyggelsen kan påvirkes av skyggekast. Også flere friluftsområder kan bli utsatt, med deler av disse innenfor de "røde" sonene. I tillegg kan to registrerte turruter bli berørt av skyggekast. Dette kan føre til at turgåere opplever skyggekast i perioder med sollys, noe som kan påvirke brukervennligheten av områdene.

9 Konklusjon

Skyggekastanalysen viser at boligene rundt Moifjellet vindkraftverk kan bli utsatt for skyggekast og det kan være behov for avbøtende tiltak. Det er 30 utav 40 mottakere som overskrider NVEs anbefalte grenseverdi for skyggekast når man tar hensyn til nærliggende vindkraftverk. Dersom man kun tar Moifjellet vindkraftverk til betraktning er det 26 mottakere som overskrider anbefalt grenseverdi. Mesteparten av mottakerne vil oppleve høyest belastning av skyggekast midt på dagen gjennom vinterhalvåret, men noen få vil oppleve skyggekast på morgen og kveld på sommerhalvåret.

Det er anbefales avbøtende tiltak for å redusere skyggekast. For å unngå skyggekast over grenseverdiene kan det lages skyggekastkalendere som viser når skyggekast er forventet. Turbinene kan stoppes på disse tidspunktene for å redusere påvirkningen, og automatiserte lyssensorer kan brukes til å stanse turbinen ved klarvær. Dette vil minimere ulempene for naboer og berørte.

Flere friluftsområder og turruter kan bli påvirket av skyggekast fra Moifjellet vindkraftverk, særlig i perioder med direkte sollys. Dette kan skape ubehag for turgåere, som kan oppleve forstyrrende skyggeeffekter når de ferdes langs disse rutene. Over tid kan slik skyggekast redusere områdenes attraktivitet og brukervennlighet.

10 Vedlegg

1.1 Skyggekastkalender – Tabell – Verst tenkelig scenario kun Moifjellet vindkraftverk
Dokument: *10252119-01-RIVIND-RAP-001-Vedlegg-1.1_Tabell-kun-Moifjellet-worst-case*
Vedlegget representerer råresultatet fra WindPRO sin SHADOW-modul der hver skyggekastmottaker har sin egen kalender.

1.2 Skyggekastkalender – Grafisk – Verst tenkelig scenario kun Moifjellet vindkraftverk
Dokument: *10252119-01-RIVIND-RAP-001-Vedlegg-1.2_Grafisk-kun-Moifjellet-worst-case*
Vedlegget representerer råresultatet fra WindPRO sin SHADOW-modul der hver skyggekastmottaker har sin egen belastningsfigur som eksempelvis vist i Figur 5-3.

2.1 Skyggekastkalender – Tabell – Realistisk scenario kun Moifjellet vindkraftverk
Dokument: *10252119-01-RIVIND-RAP-001-Vedlegg-2.1_Tabell-kun-Moifjellet-realistic-case*
Vedlegget representerer råresultatet fra WindPRO sin SHADOW-modul der hver skyggekastmottaker har sin egen kalender.

2.2 Skyggekastkalender – Grafisk – Realistisk scenario kun Moifjellet vindkraftverk
Dokument: *10252119-01-RIVIND-RAP-001-Vedlegg-2.2_Grafisk-kun-Moifjellet-realistic-case*
Vedlegget representerer råresultatet fra WindPRO sin SHADOW-modul der hver skyggekastmottaker har sin egen belastningsfigur som eksempelvis vist i Figur 5-3.

3.1 Skyggekastkalender – Tabell – Verst tenkelig scenario med nærliggende vindkraftverk
Dokument: *10252119-01-RIVIND-RAP-001-Vedlegg-3.1_Tabell-med-nærliggende-worst-case*
Vedlegget representerer råresultatet fra WindPRO sin SHADOW-modul der hver skyggekastmottaker har sin egen kalender.

3.2 Skyggekastkalender – Grafisk – Verst tenkelig scenario med nærliggende vindkraftverk
Dokument: *10252119-01-RIVIND-RAP-001-Vedlegg-3.2_Grafisk-med-nærliggende-worst-case*

Vedlegget representerer råresultatet fra WindPRO sin SHADOW-modul der hver skyggekastmottaker har sin egen belastningsfigur som eksempelvis vist i Figur 5-3.

4.1 Skyggekastkalender – Tabell – Realistisk scenario med nærliggende vindkraftverk

Dokument: *10252119-01-RIVIND-RAP-001-Vedlegg-4.1_Tabell-med-nærliggende-realistic-case*
Vedlegget representerer råresultatet fra WindPRO sin SHADOW-modul der hver skyggekastmottaker har sin egen kalender.

4.2 Skyggekastkalender – Grafisk – Realistisk scenario med nærliggende vindkraftverk

Dokument: *10252119-01-RIVIND-RAP-001-Vedlegg-4.2_Grafisk-med-nærliggende-realistic-case*
Vedlegget representerer råresultatet fra WindPRO sin SHADOW-modul der hver skyggekastmottaker har sin egen belastningsfigur som eksempelvis vist i Figur 5-3.

11 Referanser

Norges vassdrags- og energidirektorat. (2014). *Skyggekast fra vindkraftverk: Veileder for beregning av skyggekast og presentasjon av NVEs forvaltningspraksis* (Veileder nr. 2/2014). NVE. https://publikasjoner.nve.no/veileder/2014/veileder2014_02.pdf

Norges vassdrags- og energidirektorat. (2022). *Oppdatert kunnskapsgrunnlag om skyggekast fra vindturbiner* (Ekstern rapport nr. 4/2022). NVE. https://publikasjoner.nve.no/eksternrapport/2022/eksternrapport2022_04.pdf

Norges vassdrags- og energidirektorat. (u.å.). *Skyggekast fra vindturbiner*. NVE. https://www.nve.no/energi/energisystem/vindkraft/kunnskapsgrunnlag-om-virkninger-av-vindkraft-paa-land/skyggekast-fra-vindturbiner/, dato sist besøkt 19.09.24

Multiconsult

Vedlegg 1.1

Project:
Moifjellet vindkraftverk

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** A - Moi 32 (1)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March			April		May	June
1	09:28			08:46		11:21 (34)	07:35		09:10 (16)	07:07		05:44	04:40
	15:53			16:56	46	14:37 (24)	18:05	24	09:34 (16)	20:17		21:26	22:30
2	09:27			08:43		12:08 (29)	07:33		09:10 (16)	07:04		05:41	04:38
	15:54			16:58	46	14:44 (24)	18:07	24	09:34 (16)	20:19		21:28	22:32
3	09:27			08:41		12:06 (29)	07:30		09:10 (16)	07:01		05:39	04:37
	15:55			17:01	57	14:50 (24)	18:09	24	09:34 (16)	20:21		21:30	22:34
4	09:26			08:39		12:06 (29)	07:27		09:10 (16)	06:58		05:36	04:36
	15:57			17:03	62	14:52 (24)	18:12	23	09:33 (16)	20:24		21:33	22:35
5	09:26			08:37		12:05 (29)	07:24		09:10 (16)	06:55		05:34	04:35
	15:58			17:06	65	14:53 (24)	18:14	22	09:32 (16)	20:26		21:35	22:37
6	09:25			08:34		12:05 (29)	07:21		08:23 (18)	06:52		05:31	04:34
	16:00			17:08	69	14:55 (24)	18:17	29	09:31 (16)	20:28		21:37	22:38
7	09:24			08:32		12:04 (29)	07:19		08:20 (18)	06:50		05:29	04:33
	16:02			17:11	73	14:56 (24)	18:19	33	09:30 (16)	20:30		21:40	22:39
8	09:24			08:30		12:04 (29)	07:16		08:19 (18)	06:47		05:26	04:32
	16:03			17:13	75	14:57 (24)	18:21	31	09:28 (16)	20:33		21:42	22:40
9	09:23			08:27		12:04 (29)	07:13		08:18 (18)	06:44		05:24	04:31
	16:05			17:16	81	15:36 (25)	18:24	27	09:25 (16)	20:35		21:44	22:42
10	09:22			08:25		12:03 (29)	07:10		08:17 (18)	06:41		05:22	04:30
	16:07			17:18	95	15:42 (25)	18:26	18	08:35 (18)	20:37		21:46	22:43
11	09:21			08:23		12:04 (29)	07:07		08:16 (18)	06:38		05:19	04:29
	16:09			17:21	100	15:47 (25)	18:28	19	08:35 (18)	20:40		21:49	22:44
12	09:20			08:20		12:03 (29)	07:04		08:17 (18)	06:35		05:17	04:29
	16:11			17:23	103	15:49 (25)	18:31	19	08:36 (18)	20:42		21:51	22:45
13	09:18			08:18		12:03 (29)	07:01		08:17 (18)	06:32		05:15	04:28
	16:13			17:26	101	15:48 (25)	18:33	18	08:35 (18)	20:44		21:53	22:46
14	09:17			08:15		12:04 (29)	06:59		08:17 (18)	06:30		05:13	04:28
	16:15			17:28	98	15:48 (25)	18:35	17	08:34 (18)	20:47		21:55	22:47
15	09:16			08:13		12:04 (29)	06:56		08:18 (18)	06:27		05:10	04:27
	16:17			17:31	95	15:46 (25)	18:38	14	08:32 (18)	20:49		21:58	22:47
16	09:15			08:10		12:03 (29)	06:53		08:20 (18)	06:24		05:08	04:27
	16:19			17:33	90	15:43 (25)	18:40	10	08:30 (18)	20:51		22:00	22:48
17	09:13			08:07		12:04 (29)	06:50			06:21		05:06	04:27
	16:21			17:36	78	14:58 (24)	18:42			20:53		22:02	22:49
18	09:12		11:27 (34)	08:05		12:05 (29)	06:47			06:19		05:04	04:27
	16:23	6	11:33 (34)	17:38	76	14:58 (24)	18:45			20:56		22:04	22:49
19	09:10		11:28 (34)	08:02		12:05 (29)	06:44			06:16		05:02	04:27
	16:25	6	13:07 (21)	17:40	75	14:58 (24)	18:47			20:58		22:06	22:50
20	09:08		11:28 (34)	08:00		12:05 (29)	06:41			06:13		05:00	04:27
	16:28	23	13:08 (21)	17:43	72	14:57 (24)	18:49			21:00		22:08	22:50
21	09:07		11:26 (34)	07:57		12:06 (29)	06:38			06:10		04:58	04:27
	16:30	24	13:08 (21)	17:45	67	14:55 (24)	18:51			21:03		22:10	22:50
22	09:05		11:22 (34)	07:54		12:07 (29)	06:36			06:08		04:56	04:27
	16:32	38	13:07 (21)	17:48	62	14:54 (24)	18:54			21:05		22:12	22:50
23	09:03		11:17 (34)	07:52		09:18 (16)	06:33			06:05		04:54	04:27
	16:34	43	13:08 (21)	17:50	68	14:53 (24)	18:56			21:07		22:14	22:50
24	09:02		11:11 (34)	07:49		09:15 (16)	06:30			06:02		04:52	04:27
	16:37	48	13:08 (21)	17:53	66	14:51 (24)	18:58			21:10		22:16	22:51
25	09:00		11:12 (34)	07:46		09:14 (16)	06:27			05:59		04:51	04:28
	16:39	48	13:08 (21)	17:55	55	14:47 (24)	19:01			21:12		22:18	22:50
26	08:58		11:13 (34)	07:44		09:12 (16)	06:24			05:57		04:49	04:28
	16:41	48	13:08 (21)	17:57	41	12:35 (29)	19:03			21:14		22:20	22:50
27	08:56		11:13 (34)	07:41		09:11 (16)	06:21			05:54		04:47	04:29
	16:44	58	13:07 (21)	18:00	33	12:30 (29)	19:05			21:17		22:22	22:50
28	08:54		11:14 (34)	07:38		09:10 (16)	06:18			05:52		04:46	04:30
	16:46	61	13:07 (21)	18:02	23	09:33 (16)	19:07			21:19		22:24	22:50
29	08:52		11:15 (34)				07:15			05:49		04:44	04:30
	16:49	60	13:06 (21)				20:10			21:21		22:25	22:50
30	08:50		11:16 (34)				07:12			05:46		04:43	04:31
	16:51	59	13:04 (21)				20:12			21:24		22:27	22:49
31	08:48		11:18 (34)				07:10					04:41	
	16:54	55	13:03 (21)				20:14					22:29	
Potential sun hours	221			260			365			432		521	547
Total, worst case		577			1972			352					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** A - Moi 32 (1)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September			October			November			December
1	04:32	05:24	06:33			07:39		08:56 (18)	07:51		11:33 (29)	09:00
	22:49	22:01	20:40			19:13	18	09:14 (18)	16:49	91	15:09 (25)	15:51
2	04:33	05:26	06:35			07:42		08:55 (18)	07:54		11:33 (29)	09:02
	22:48	21:58	20:37			19:10	19	09:14 (18)	16:46	79	15:05 (25)	15:50
3	04:34	05:28	06:37			07:44		08:55 (18)	07:56		11:34 (29)	09:03
	22:47	21:56	20:34			19:07	18	09:13 (18)	16:44	73	14:26 (24)	15:49
4	04:35	05:31	06:40			07:46		08:55 (18)	07:59		11:34 (29)	09:05
	22:47	21:54	20:31			19:04	24	10:00 (16)	16:41	71	14:25 (24)	15:48
5	04:36	05:33	06:42			07:48		08:56 (18)	08:01		11:35 (29)	09:07
	22:46	21:51	20:28			19:02	29	10:04 (16)	16:39	68	14:24 (24)	15:47
6	04:37	05:35	06:44			07:51		08:56 (18)	08:03		11:36 (29)	09:09
	22:45	21:49	20:25			18:59	32	10:05 (16)	16:37	66	14:24 (24)	15:46
7	04:39	05:37	06:46			07:53		08:57 (18)	08:06		11:36 (29)	09:10
	22:44	21:47	20:22			18:56	32	10:06 (16)	16:34	61	14:22 (24)	15:45
8	04:40	05:39	06:49			07:55		09:00 (18)	08:08		11:37 (29)	09:12
	22:43	21:44	20:20			18:53	27	10:07 (16)	16:32	56	14:20 (24)	15:45
9	04:41	05:42	06:51			07:57		09:45 (16)	08:11		11:38 (29)	09:13
	22:42	21:42	20:17			18:50	22	10:07 (16)	16:30	46	14:15 (24)	15:44
10	04:43	05:44	06:53			08:00		09:45 (16)	08:13		10:52 (34)	09:15
	22:40	21:39	20:14			18:47	23	10:08 (16)	16:28	47	14:09 (24)	15:44
11	04:44	05:46	06:55			08:02		09:44 (16)	08:15		10:49 (34)	09:16
	22:39	21:37	20:11			18:45	24	10:08 (16)	16:25	55	12:34 (21)	15:43
12	04:46	05:48	06:57			08:04		09:43 (16)	08:18		10:48 (34)	09:18
	22:38	21:34	20:08			18:42	24	10:07 (16)	16:23	60	12:36 (21)	15:43
13	04:47	05:51	07:00			08:07		09:44 (16)	08:20		10:47 (34)	09:19
	22:37	21:31	20:05			18:39	23	10:07 (16)	16:21	60	12:38 (21)	15:42
14	04:49	05:53	07:02			08:09		09:43 (16)	08:22		10:46 (34)	09:20
	22:35	21:29	20:02			18:36	23	10:06 (16)	16:19	61	12:39 (21)	15:42
15	04:51	05:55	07:04			08:11		09:44 (16)	08:25		10:46 (34)	09:21
	22:34	21:26	19:59			18:33	37	13:05 (29)	16:17	58	12:40 (21)	15:42
16	04:52	05:57	07:06			08:13		09:45 (16)	08:27		10:46 (34)	09:22
	22:32	21:24	19:56			18:31	42	13:08 (29)	16:15	46	12:41 (21)	15:42
17	04:54	06:00	07:08			08:16		09:46 (16)	08:29		10:45 (34)	09:23
	22:30	21:21	19:54			18:28	61	15:21 (24)	16:13	48	12:41 (21)	15:42
18	04:56	06:02	07:11			08:18		09:47 (16)	08:32		10:45 (34)	09:24
	22:29	21:18	19:51			18:25	66	15:23 (24)	16:11	48	12:42 (21)	15:42
19	04:58	06:04	07:13			08:20		09:50 (16)	08:34		10:52 (34)	09:25
	22:27	21:16	19:48			18:22	68	15:25 (24)	16:09	43	12:43 (21)	15:42
20	05:00	06:06	07:15			08:23		12:38 (29)	08:36		10:57 (34)	09:26
	22:25	21:13	19:45			18:20	64	15:25 (24)	16:08	38	12:42 (21)	15:43
21	05:01	06:08	07:17			08:25		12:37 (29)	08:39		11:01 (34)	09:26
	22:24	21:10	19:42			18:17	68	15:27 (24)	16:06	24	12:43 (21)	15:43
22	05:03	06:11	07:19			08:27		12:35 (29)	08:41		11:04 (34)	09:27
	22:22	21:08	19:39			18:14	72	15:27 (24)	16:04	22	12:44 (21)	15:43
23	05:05	06:13	07:22			08:30		12:35 (29)	08:43		11:04 (34)	09:27
	22:20	21:05	19:36			18:12	75	15:28 (24)	16:02	9	12:44 (21)	15:44
24	05:07	06:15	07:24			08:32		12:34 (29)	08:45		11:04 (34)	09:28
	22:18	21:02	19:33			18:09	77	15:28 (24)	16:01	6	11:10 (34)	15:44
25	05:09	06:17	07:26			07:35		11:34 (29)	08:47			09:28
	22:16	20:59	19:30			17:06	78	14:28 (24)	15:59			15:45
26	05:11	06:20	07:28			07:37		11:33 (29)	08:50			09:28
	22:14	20:56	19:27			17:04	91	15:13 (25)	15:58			15:46
27	05:13	06:22	07:30		09:03 (18)	07:39		11:33 (29)	08:52			09:28
	22:12	20:54	19:25	8	09:11 (18)	17:01	97	15:16 (25)	15:56			15:47
28	05:16	06:24	07:33		09:00 (18)	07:42		11:33 (29)	08:54			09:28
	22:10	20:51	19:22	12	09:12 (18)	16:59	99	15:17 (25)	15:55			15:48
29	05:18	06:26	07:35		08:58 (18)	07:44		11:32 (29)	08:56			09:28
	22:07	20:48	19:19	15	09:13 (18)	16:56	102	15:18 (25)	15:54			15:49
30	05:20	06:29	07:37		08:56 (18)	07:47		11:33 (29)	08:58			09:28
	22:05	20:45	19:16	18	09:14 (18)	16:54	102	15:19 (25)	15:52			15:50
31	05:22	06:31				07:49		11:33 (29)				09:28
	22:03	20:42				16:51	98	15:16 (25)				15:51
Potential sun hours	546	478	386			319			236			199
Total, worst case				53			1635			1236		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** B - Moi 26 (2)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March			April	May	June
1	09:28			08:46		11:18 (34)	07:35		09:09 (16)	07:07	05:44	04:40
	15:53			16:56	58	14:41 (24)	18:05	23	09:32 (16)	20:17	21:26	22:30
2	09:27			08:43		11:58 (29)	07:33		09:09 (16)	07:04	05:41	04:38
	15:54			16:58	58	14:43 (24)	18:07	24	09:33 (16)	20:19	21:28	22:32
3	09:27			08:41		11:57 (29)	07:30		09:09 (16)	07:01	05:39	04:37
	15:55			17:01	63	14:44 (24)	18:09	23	09:32 (16)	20:21	21:30	22:34
4	09:26			08:39		11:57 (29)	07:27		09:09 (16)	06:58	05:36	04:36
	15:57			17:03	66	14:46 (24)	18:12	22	09:31 (16)	20:24	21:33	22:35
5	09:26			08:37		11:56 (29)	07:24		09:10 (16)	06:55	05:34	04:35
	15:58			17:06	70	14:47 (24)	18:14	20	09:30 (16)	20:26	21:35	22:37
6	09:25			08:34		11:56 (29)	07:21		09:10 (16)	06:52	05:31	04:34
	16:00			17:08	73	14:48 (24)	18:17	19	09:29 (16)	20:28	21:37	22:38
7	09:24			08:32		11:55 (29)	07:19		09:11 (16)	06:50	05:29	04:33
	16:02			17:11	85	15:29 (25)	18:19	16	09:27 (16)	20:30	21:40	22:39
8	09:24			08:30		11:56 (29)	07:16		09:13 (16)	06:47	05:26	04:32
	16:03			17:13	91	15:35 (25)	18:21	12	09:25 (16)	20:33	21:42	22:40
9	09:23			08:27		11:55 (29)	07:13			06:44	05:24	04:31
	16:05			17:16	97	15:40 (25)	18:24			20:35	21:44	22:42
10	09:22			08:25		11:55 (29)	07:10			06:41	05:22	04:30
	16:07			17:18	102	15:44 (25)	18:26			20:37	21:46	22:43
11	09:21			08:23		11:55 (29)	07:07			06:38	05:19	04:29
	16:09			17:21	101	15:44 (25)	18:28			20:40	21:49	22:44
12	09:20			08:20		11:55 (29)	07:04			06:35	05:17	04:29
	16:11			17:23	100	15:43 (25)	18:31			20:42	21:51	22:45
13	09:18			08:18		11:55 (29)	07:01			06:32	05:15	04:28
	16:13			17:26	96	15:41 (25)	18:33			20:44	21:53	22:46
14	09:17			08:15		11:55 (29)	06:59			06:30	05:13	04:28
	16:15			17:28	92	15:40 (25)	18:35			20:47	21:55	22:47
15	09:16			08:13		11:55 (29)	06:56			06:27	05:10	04:27
	16:17			17:31	86	15:37 (25)	18:38			20:49	21:58	22:47
16	09:15			08:10		11:55 (29)	06:53			06:24	05:08	04:27
	16:19			17:33	77	14:50 (24)	18:40			20:51	22:00	22:48
17	09:13		12:54 (21)	08:07		11:56 (29)	06:50			06:21	05:06	04:27
	16:21	1	12:55 (21)	17:36	75	14:49 (24)	18:42			20:53	22:02	22:49
18	09:12		11:10 (34)	08:05		11:57 (29)	06:47			06:19	05:04	04:27
	16:23	27	13:01 (21)	17:38	72	14:49 (24)	18:45			20:56	22:04	22:49
19	09:10		11:10 (34)	08:02		11:57 (29)	06:44			06:16	05:02	04:27
	16:25	34	13:02 (21)	17:40	70	14:48 (24)	18:47			20:58	22:06	22:50
20	09:08		11:10 (34)	08:00		11:58 (29)	06:41			06:13	05:00	04:27
	16:28	39	13:02 (21)	17:43	65	14:47 (24)	18:49			21:00	22:08	22:50
21	09:07		11:09 (34)	07:57		11:59 (29)	06:38			06:10	04:58	04:27
	16:30	47	13:02 (21)	17:45	59	14:45 (24)	18:51			21:03	22:10	22:50
22	09:05		11:07 (34)	07:54		09:19 (16)	06:36			06:08	04:56	04:27
	16:32	49	13:02 (21)	17:48	58	14:43 (24)	18:54			21:05	22:12	22:50
23	09:03		11:07 (34)	07:52		09:16 (16)	06:33			06:05	04:54	04:27
	16:34	48	13:02 (21)	17:50	56	14:41 (24)	18:56			21:07	22:14	22:50
24	09:02		11:08 (34)	07:49		09:14 (16)	06:30			06:02	04:52	04:27
	16:37	47	13:02 (21)	17:53	46	14:36 (24)	18:58			21:10	22:16	22:51
25	09:00		11:08 (34)	07:46		09:12 (16)	06:27			05:59	04:51	04:28
	16:39	47	13:02 (21)	17:55	37	12:25 (29)	19:01			21:12	22:18	22:50
26	08:58		11:09 (34)	07:44		09:11 (16)	06:24			05:57	04:49	04:28
	16:41	59	13:02 (21)	17:57	26	12:18 (29)	19:03			21:14	22:20	22:50
27	08:56		11:09 (34)	07:41		09:10 (16)	06:21			05:54	04:47	04:29
	16:44	61	13:01 (21)	18:00	22	09:32 (16)	19:05			21:17	22:22	22:50
28	08:54		11:10 (34)	07:38		09:09 (16)	06:18			05:52	04:46	04:30
	16:46	62	13:00 (21)	18:02	23	09:32 (16)	19:07			21:19	22:24	22:50
29	08:52		11:12 (34)				07:15			05:49	04:44	04:30
	16:49	61	13:00 (21)				20:10			21:21	22:25	22:50
30	08:50		11:13 (34)				07:12			05:46	04:43	04:31
	16:51	61	14:31 (24)				20:12			21:24	22:27	22:49
31	08:48		11:15 (34)				07:10				04:41	
	16:54	65	14:39 (24)				20:14				22:29	
Potential sun hours	221			260			365			432	521	547
Total, worst case		708			1924			159				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** B - Moi 26 (2)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September	October		November		December
1	04:32	05:24	06:33	07:39		07:51		11:24 (29)	09:00
	22:49	22:01	20:40	19:13		16:49	101	15:13 (25)	15:51
2	04:33	05:26	06:35	07:42		07:54		11:25 (29)	09:02
	22:48	21:58	20:37	19:10		16:46	96	15:09 (25)	15:50
3	04:34	05:28	06:37	07:44		07:56		11:25 (29)	09:03
	22:47	21:56	20:34	19:07		16:44	90	15:04 (25)	15:49
4	04:35	05:31	06:40	07:46		07:59		11:25 (29)	09:05
	22:47	21:54	20:31	19:04		16:41	81	14:58 (25)	15:48
5	04:36	05:33	06:42	07:48	09:52 (16)	08:01		11:26 (29)	09:07
	22:46	21:51	20:28	19:02	8 10:00 (16)	16:39	72	14:18 (24)	15:47
6	04:37	05:35	06:44	07:51	09:48 (16)	08:03		11:27 (29)	09:09
	22:45	21:49	20:25	18:59	15 10:03 (16)	16:37	69	14:17 (24)	15:46
7	04:39	05:37	06:46	07:53	09:46 (16)	08:06		11:27 (29)	09:10
	22:44	21:47	20:22	18:56	18 10:04 (16)	16:34	67	14:16 (24)	15:45
8	04:40	05:39	06:49	07:55	09:45 (16)	08:08		11:28 (29)	09:12
	22:43	21:44	20:20	18:53	20 10:05 (16)	16:32	62	14:15 (24)	15:45
9	04:41	05:42	06:51	07:57	09:44 (16)	08:11		11:29 (29)	09:13
	22:42	21:42	20:17	18:50	22 10:06 (16)	16:30	58	14:14 (24)	15:44
10	04:43	05:44	06:53	08:00	09:44 (16)	08:13		10:49 (34)	09:15
	22:40	21:39	20:14	18:47	22 10:06 (16)	16:28	59	14:13 (24)	15:44
11	04:44	05:46	06:55	08:02	09:43 (16)	08:15		10:46 (34)	09:16
	22:39	21:37	20:11	18:45	23 10:06 (16)	16:25	66	14:10 (24)	15:43
12	04:46	05:48	06:57	08:04	09:42 (16)	08:18		10:44 (34)	09:18
	22:38	21:34	20:08	18:42	24 10:06 (16)	16:23	61	14:02 (24)	15:43
13	04:47	05:51	07:00	08:07	09:42 (16)	08:20		10:44 (34)	09:19
	22:37	21:31	20:05	18:39	24 10:06 (16)	16:21	60	12:31 (21)	15:42
14	04:49	05:53	07:02	08:09	09:42 (16)	08:22		10:42 (34)	09:20
	22:35	21:29	20:02	18:36	23 10:05 (16)	16:19	62	12:32 (21)	15:42
15	04:51	05:55	07:04	08:11	09:43 (16)	08:25		10:42 (34)	09:21
	22:34	21:26	19:59	18:33	22 10:05 (16)	16:17	62	12:34 (21)	15:42
16	04:52	05:57	07:06	08:13	09:43 (16)	08:27		10:42 (34)	09:22
	22:32	21:24	19:56	18:31	32 12:54 (29)	16:15	59	12:35 (21)	15:42
17	04:54	06:00	07:08	08:16	09:44 (16)	08:29		10:41 (34)	09:23
	22:30	21:21	19:54	18:28	39 12:58 (29)	16:13	47	12:35 (21)	15:42
18	04:56	06:02	07:11	08:18	09:45 (16)	08:32		10:42 (34)	09:24
	22:29	21:18	19:51	18:25	53 15:09 (24)	16:11	47	12:36 (21)	15:42
19	04:58	06:04	07:13	08:20	09:48 (16)	08:34		10:42 (34)	09:25
	22:27	21:16	19:48	18:22	58 15:13 (24)	16:09	48	12:37 (21)	15:42
20	05:00	06:06	07:15	08:23	12:31 (29)	08:36		10:42 (34)	09:26
	22:25	21:13	19:45	18:20	55 15:15 (24)	16:08	49	12:37 (21)	15:43
21	05:01	06:08	07:17	08:25	12:30 (29)	08:39		10:44 (34)	09:26
	22:24	21:10	19:42	18:17	61 15:17 (24)	16:06	47	12:37 (21)	15:43
22	05:03	06:11	07:19	08:27	12:28 (29)	08:41		10:46 (34)	09:27
	22:22	21:08	19:39	18:14	66 15:17 (24)	16:04	39	12:38 (21)	15:43
23	05:05	06:13	07:22	08:30	12:27 (29)	08:43		10:46 (34)	09:27
	22:20	21:05	19:36	18:12	71 15:19 (24)	16:02	34	12:38 (21)	15:44
24	05:07	06:15	07:24	08:32	12:26 (29)	08:45		10:47 (34)	09:28
	22:18	21:02	19:33	18:09	73 15:19 (24)	16:01	27	12:38 (21)	15:44
25	05:09	06:17	07:26	07:35	11:26 (29)	08:47		12:32 (21)	09:28
	22:16	20:59	19:30	17:06	76 14:20 (24)	15:59	2	12:34 (21)	15:45
26	05:11	06:20	07:28	07:37	11:25 (29)	08:50			09:28
	22:14	20:56	19:27	17:04	77 14:19 (24)	15:58			15:46
27	05:13	06:22	07:30	07:39	11:25 (29)	08:52			09:28
	22:12	20:54	19:25	17:01	87 15:07 (25)	15:56			15:47
28	05:16	06:24	07:33	07:42	11:25 (29)	08:54			09:28
	22:10	20:51	19:22	16:59	93 15:10 (25)	15:55			15:48
29	05:18	06:26	07:35	07:44	11:24 (29)	08:56			09:28
	22:07	20:48	19:19	16:56	98 15:11 (25)	15:54			15:49
30	05:20	06:29	07:37	07:47	11:24 (29)	08:58			09:28
	22:05	20:45	19:16	16:54	100 15:12 (25)	15:52			15:50
31	05:22	06:31		07:49	11:25 (29)				09:28
	22:03	20:42		16:51	100 15:13 (25)				15:51
Potential sun hours	546	478	386	319		236			199
Total, worst case					1360		1465		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** C - Moi 21 (3)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March			April	May	June
1	09:28			08:46		10:42 (34)	07:35		08:50 (16)	07:07	05:44	04:40
	15:53			16:56	72	14:06 (24)	18:05	39	11:29 (29)	20:17	21:26	22:30
2	09:27			08:43		10:44 (34)	07:33		08:50 (16)	07:04	05:41	04:38
	15:54			16:58	70	14:08 (24)	18:07	31	11:25 (29)	20:19	21:28	22:32
3	09:27			08:41		10:46 (34)	07:30		08:49 (16)	07:01	05:39	04:37
	15:55			17:01	72	14:10 (24)	18:09	21	09:10 (16)	20:21	21:31	22:34
4	09:26			08:39		10:47 (34)	07:27		08:48 (16)	06:58	05:36	04:36
	15:57			17:03	77	15:02 (25)	18:12	22	09:10 (16)	20:24	21:33	22:35
5	09:26			08:37		10:50 (34)	07:24		08:48 (16)	06:55	05:34	04:35
	15:58			17:06	77	15:05 (25)	18:14	21	09:09 (16)	20:26	21:35	22:37
6	09:25			08:34		11:05 (29)	07:21		08:48 (16)	06:52	05:31	04:34
	16:00			17:08	82	15:12 (25)	18:17	21	09:09 (16)	20:28	21:37	22:38
7	09:24			08:32		11:03 (29)	07:19		08:48 (16)	06:50	05:29	04:33
	16:02			17:11	92	15:18 (25)	18:19	20	09:08 (16)	20:30	21:40	22:39
8	09:24			08:30		11:03 (29)	07:16		08:48 (16)	06:47	05:26	04:32
	16:03			17:13	101	15:25 (25)	18:21	19	09:07 (16)	20:33	21:42	22:40
9	09:23			08:27		11:02 (29)	07:13		08:48 (16)	06:44	05:24	04:31
	16:05			17:16	112	15:55 (23)	18:24	18	09:06 (16)	20:35	21:44	22:42
10	09:22			08:25		11:01 (29)	07:10		08:49 (16)	06:41	05:22	04:30
	16:07			17:18	104	15:51 (23)	18:26	15	09:04 (16)	20:37	21:46	22:43
11	09:21			08:23		11:01 (29)	07:07		08:51 (16)	06:38	05:19	04:29
	16:09			17:21	101	15:23 (25)	18:28	11	09:02 (16)	20:40	21:49	22:44
12	09:20			08:20		11:00 (29)	07:04			06:35	05:17	04:29
	16:11			17:23	98	15:21 (25)	18:31			20:42	21:51	22:45
13	09:18			08:18		10:59 (29)	07:02			06:33	05:15	04:28
	16:13			17:26	94	15:18 (25)	18:33			20:44	21:53	22:46
14	09:17			08:15		11:00 (29)	06:59			06:30	05:13	04:28
	16:15			17:28	83	14:14 (24)	18:35			20:47	21:55	22:47
15	09:16			08:13		10:59 (29)	06:56			06:27	05:10	04:27
	16:17			17:31	83	14:13 (24)	18:38			20:49	21:58	22:47
16	09:15			08:10		10:59 (29)	06:53			06:24	05:08	04:27
	16:19			17:33	81	14:12 (24)	18:40			20:51	22:00	22:48
17	09:13			08:07		10:59 (29)	06:50			06:21	05:06	04:27
	16:21			17:36	81	14:12 (24)	18:42			20:53	22:02	22:49
18	09:12			08:05		10:59 (29)	06:47			06:19	05:04	04:27
	16:23			17:38	80	14:12 (24)	18:45			20:56	22:04	22:49
19	09:10			08:02		10:59 (29)	06:44			06:16	05:02	04:27
	16:25			17:40	78	14:11 (24)	18:47			20:58	22:06	22:50
20	09:08			08:00		10:59 (29)	06:41			06:13	05:00	04:27
	16:28			17:43	74	14:09 (24)	18:49			21:00	22:08	22:50
21	09:07			07:57		10:59 (29)	06:39			06:10	04:58	04:27
	16:30			17:45	71	14:08 (24)	18:51			21:03	22:10	22:50
22	09:05			07:54		11:00 (29)	06:36			06:08	04:56	04:27
	16:32			17:48	66	14:06 (24)	18:54			21:05	22:12	22:50
23	09:03			07:52		11:01 (29)	06:33			06:05	04:54	04:27
	16:34			17:50	60	14:04 (24)	18:56			21:07	22:14	22:50
24	09:02			07:49		11:01 (29)	06:30			06:02	04:52	04:27
	16:37			17:53	50	14:00 (24)	18:58			21:10	22:16	22:51
25	09:00			07:46		11:02 (29)	06:27			06:00	04:51	04:28
	16:39			17:55	36	11:38 (29)	19:01			21:12	22:18	22:50
26	08:58		12:05 (21)	07:44		11:03 (29)	06:24			05:57	04:49	04:28
	16:41	5	12:10 (21)	17:57	33	11:36 (29)	19:03			21:14	22:20	22:50
27	08:56		12:05 (21)	07:41		08:54 (16)	06:21			05:54	04:47	04:29
	16:44	19	13:53 (24)	18:00	41	11:34 (29)	19:05			21:17	22:22	22:50
28	08:54		11:00 (34)	07:38		08:52 (16)	06:18			05:52	04:46	04:30
	16:46	40	13:59 (24)	18:02	41	11:32 (29)	19:08			21:19	22:24	22:50
29	08:52		10:56 (34)				07:15			05:49	04:44	04:30
	16:49	47	14:02 (24)				20:10			21:21	22:25	22:50
30	08:50		10:50 (34)				07:13			05:46	04:43	04:31
	16:51	55	14:03 (24)				20:12			21:24	22:27	22:49
31	08:48		10:44 (34)				07:10				04:41	
	16:54	61	14:05 (24)				20:14				22:29	
Potential sun hours	221			260			365			432	521	547
Total, worst case		227			2110			238				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** C - Moi 21 (3)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September	October		November		December
1	04:32	05:24	06:33	07:39		07:51		10:30 (29)	09:00
	22:49	22:01	20:40	19:13		16:49	107	15:21 (23)	15:51
2	04:33	05:26	06:35	07:42		09:32 (16)	07:54		10:31 (29)	09:02
	22:48	21:58	20:37	19:10	7	09:39 (16)	16:46	111	15:25 (23)	15:50
3	04:34	05:28	06:37	07:44		09:28 (16)	07:56		10:33 (29)	09:03
	22:47	21:56	20:34	19:07	14	09:42 (16)	16:44	97	14:53 (25)	15:49
4	04:35	05:31	06:40	07:46		09:26 (16)	07:59		10:33 (29)	09:05
	22:47	21:54	20:31	19:04	17	09:43 (16)	16:41	89	14:46 (25)	15:48
5	04:36	05:33	06:42	07:48		09:25 (16)	08:01		10:34 (29)	09:07
	22:46	21:51	20:28	19:02	19	09:44 (16)	16:39	82	14:41 (25)	15:47
6	04:37	05:35	06:44	07:51		09:24 (16)	08:03		10:20 (34)	09:09
	22:45	21:49	20:25	18:59	20	09:44 (16)	16:37	77	14:35 (25)	15:46
7	04:39	05:37	06:46	07:53		09:23 (16)	08:06		10:16 (34)	09:10
	22:44	21:47	20:22	18:56	21	09:44 (16)	16:34	78	14:32 (25)	15:45
8	04:40	05:39	06:49	07:55		09:23 (16)	08:08		10:15 (34)	09:12
	22:43	21:44	20:20	18:53	22	09:45 (16)	16:32	71	13:39 (24)	15:45
9	04:41	05:42	06:51	07:57		09:23 (16)	08:11		10:15 (34)	09:13
	22:42	21:42	20:17	18:50	21	09:44 (16)	16:30	71	13:39 (24)	15:44
10	04:43	05:44	06:53	08:00		09:23 (16)	08:13		10:14 (34)	09:15
	22:40	21:39	20:14	18:47	21	09:44 (16)	16:28	70	13:38 (24)	15:44
11	04:44	05:46	06:55	08:02		09:23 (16)	08:15		10:15 (34)	09:16
	22:39	21:37	20:11	18:45	20	09:43 (16)	16:25	61	13:36 (24)	15:43
12	04:46	05:48	06:57	08:04		09:23 (16)	08:18		10:24 (34)	09:18
	22:38	21:34	20:08	18:42	35	12:00 (29)	16:23	52	13:35 (24)	15:43
13	04:47	05:51	07:00	08:07		09:25 (16)	08:20		10:28 (34)	09:19
	22:37	21:31	20:05	18:39	39	12:04 (29)	16:21	46	13:33 (24)	15:42
14	04:49	05:53	07:02	08:09		09:25 (16)	08:22		10:32 (34)	09:20
	22:35	21:29	20:02	18:36	42	12:06 (29)	16:19	39	13:30 (24)	15:42
15	04:51	05:55	07:04	08:11		09:28 (16)	08:25		11:38 (21)	09:21
	22:34	21:26	19:59	18:33	40	12:08 (29)	16:17	19	13:26 (24)	15:42
16	04:52	05:57	07:06	08:13		11:35 (29)	08:27		11:38 (21)	09:22
	22:32	21:24	19:56	18:31	34	12:09 (29)	16:15	4	11:42 (21)	15:42
17	04:54	06:00	07:08	08:16		11:34 (29)	08:29			09:23
	22:30	21:21	19:54	18:28	36	12:10 (29)	16:13			15:42
18	04:56	06:02	07:11	08:18		11:32 (29)	08:32			09:24
	22:29	21:18	19:51	18:25	55	14:33 (24)	16:11			15:42
19	04:58	06:04	07:13	08:20		11:32 (29)	08:34			09:25
	22:27	21:16	19:48	18:22	62	14:36 (24)	16:09			15:42
20	05:00	06:06	07:15	08:23		11:31 (29)	08:36			09:26
	22:25	21:13	19:45	18:20	67	14:37 (24)	16:08			15:43
21	05:01	06:09	07:17	08:25		11:30 (29)	08:39			09:26
	22:24	21:10	19:42	18:17	72	14:39 (24)	16:06			15:43
22	05:03	06:11	07:19	08:27		11:29 (29)	08:41			09:27
	22:22	21:08	19:39	18:14	75	14:40 (24)	16:04			15:43
23	05:05	06:13	07:22	08:30		11:29 (29)	08:43			09:27
	22:20	21:05	19:36	18:12	78	14:41 (24)	16:02			15:44
24	05:07	06:15	07:24	08:32		11:29 (29)	08:45			09:28
	22:18	21:02	19:33	18:09	78	14:41 (24)	16:01			15:45
25	05:09	06:17	07:26	07:35		10:29 (29)	08:47			09:28
	22:16	20:59	19:30	17:07	81	13:42 (24)	15:59			15:45
26	05:11	06:20	07:28	07:37		10:29 (29)	08:50			09:28
	22:14	20:57	19:27	17:04	82	13:43 (24)	15:58			15:46
27	05:13	06:22	07:30	07:39		10:29 (29)	08:52			09:28
	22:12	20:54	19:25	17:01	81	13:42 (24)	15:56			15:47
28	05:16	06:24	07:33	07:42		10:29 (29)	08:54			09:28
	22:10	20:51	19:22	16:59	87	14:45 (25)	15:55			15:48
29	05:18	06:26	07:35	07:44		10:29 (29)	08:56			09:28
	22:07	20:48	19:19	16:56	95	14:48 (25)	15:54			15:49
30	05:20	06:29	07:37	07:47		10:30 (29)	08:58			09:28
	22:05	20:45	19:16	16:54	99	14:51 (25)	15:52			15:50
31	05:22	06:31		07:49		10:30 (29)				09:28
	22:03	20:42		16:51	100	14:52 (25)				15:51
Potential sun hours	546	478	386	319			236			199
Total, worst case					1520			1074		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** D - Buevegen 1805 (4)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January		February		March		April	May	June
1	09:28		08:46		11:39 (29)	07:35	09:25 (16)	07:07	05:44	04:40
	15:53		16:56	88	15:12 (25)	18:05	9 09:34 (16)	20:17	21:26	22:31
2	09:27		08:43		11:39 (29)	07:33		07:04	05:41	04:38
	15:54		16:58	88	15:13 (25)	18:07		20:19	21:28	22:32
3	09:27		08:41		11:40 (29)	07:30		07:01	05:39	04:37
	15:55		17:01	85	15:12 (25)	18:09		20:21	21:31	22:34
4	09:27		08:39		11:39 (29)	07:27		06:58	05:36	04:36
	15:57		17:03	83	15:11 (25)	18:12		20:24	21:33	22:35
5	09:26	12:20 (21)	08:37		11:39 (29)	07:24		06:55	05:34	04:35
	15:58	1 12:21 (21)	17:06	80	15:09 (25)	18:14		20:26	21:35	22:37
6	09:25	12:19 (21)	08:34		11:40 (29)	07:21		06:52	05:31	04:34
	16:00	5 12:24 (21)	17:08	74	15:08 (25)	18:17		20:28	21:37	22:38
7	09:24	12:17 (21)	08:32		11:40 (29)	07:19		06:50	05:29	04:33
	16:02	11 12:28 (21)	17:11	62	14:11 (24)	18:19		20:30	21:40	22:39
8	09:24	12:17 (21)	08:30		11:41 (29)	07:16		06:47	05:26	04:32
	16:03	13 12:30 (21)	17:13	61	14:11 (24)	18:21		20:33	21:42	22:40
9	09:23	12:18 (21)	08:27		11:42 (29)	07:13		06:44	05:24	04:31
	16:05	16 12:34 (21)	17:16	57	14:10 (24)	18:24		20:35	21:44	22:42
10	09:22	11:06 (34)	08:25		11:42 (29)	07:10		06:41	05:22	04:30
	16:07	25 12:39 (21)	17:18	54	14:09 (24)	18:26		20:37	21:46	22:43
11	09:21	11:02 (34)	08:23		11:44 (29)	07:07		06:38	05:19	04:29
	16:09	31 12:41 (21)	17:21	48	14:08 (24)	18:28		20:40	21:49	22:44
12	09:20	11:01 (34)	08:20		11:45 (29)	07:04		06:35	05:17	04:29
	16:11	40 12:41 (21)	17:23	42	14:06 (24)	18:31		20:42	21:51	22:45
13	09:18	11:02 (34)	08:18		11:46 (29)	07:02		06:32	05:15	04:28
	16:13	42 12:42 (21)	17:26	32	14:02 (24)	18:33		20:44	21:53	22:46
14	09:17	11:02 (34)	08:15		11:49 (29)	06:59		06:30	05:13	04:28
	16:15	42 12:42 (21)	17:28	18	12:07 (29)	18:35		20:47	21:55	22:47
15	09:16	11:02 (34)	08:13		11:52 (29)	06:56		06:27	05:10	04:27
	16:17	43 12:42 (21)	17:31	12	12:04 (29)	18:38		20:49	21:58	22:47
16	09:15	11:02 (34)	08:10		09:29 (16)	06:53		06:24	05:08	04:27
	16:19	43 12:42 (21)	17:33	5	09:34 (16)	18:40		20:51	22:00	22:48
17	09:13	11:02 (34)	08:07		09:26 (16)	06:50		06:21	05:06	04:27
	16:21	47 12:42 (21)	17:36	11	09:37 (16)	18:42		20:53	22:02	22:49
18	09:12	11:03 (34)	08:05		09:25 (16)	06:47		06:19	05:04	04:27
	16:23	58 13:55 (24)	17:38	14	09:39 (16)	18:45		20:56	22:04	22:49
19	09:10	11:03 (34)	08:02		09:23 (16)	06:44		06:16	05:02	04:27
	16:25	69 13:59 (24)	17:40	17	09:40 (16)	18:47		20:58	22:06	22:50
20	09:08	11:04 (34)	08:00		09:22 (16)	06:41		06:13	05:00	04:27
	16:28	75 14:01 (24)	17:43	19	09:41 (16)	18:49		21:00	22:08	22:50
21	09:07	11:04 (34)	07:57		09:21 (16)	06:39		06:10	04:58	04:27
	16:30	79 14:03 (24)	17:45	20	09:41 (16)	18:51		21:03	22:10	22:50
22	09:05	11:05 (34)	07:54		09:20 (16)	06:36		06:08	04:56	04:27
	16:32	82 14:05 (24)	17:48	21	09:41 (16)	18:54		21:05	22:12	22:50
23	09:03	11:05 (34)	07:52		09:21 (16)	06:33		06:05	04:54	04:27
	16:34	83 14:05 (24)	17:50	21	09:42 (16)	18:56		21:07	22:14	22:51
24	09:02	11:06 (34)	07:49		09:21 (16)	06:30		06:02	04:52	04:27
	16:37	84 14:07 (24)	17:53	21	09:42 (16)	18:58		21:10	22:16	22:51
25	09:00	11:07 (34)	07:46		09:21 (16)	06:27		05:59	04:51	04:28
	16:39	82 14:52 (25)	17:55	20	09:41 (16)	19:01		21:12	22:18	22:51
26	08:58	11:09 (34)	07:44		09:21 (16)	06:24		05:57	04:49	04:28
	16:41	78 14:57 (25)	17:57	19	09:40 (16)	19:03		21:14	22:20	22:50
27	08:56	11:10 (34)	07:41		09:22 (16)	06:21		05:54	04:47	04:29
	16:44	86 15:12 (25)	18:00	17	09:39 (16)	19:05		21:17	22:22	22:50
28	08:54	11:13 (34)	07:38		09:23 (16)	06:18		05:52	04:46	04:30
	16:46	90 15:13 (25)	18:02	14	09:37 (16)	19:08		21:19	22:24	22:50
29	08:52	11:40 (29)				07:15		05:49	04:44	04:30
	16:49	88 15:14 (25)				20:10		21:21	22:25	22:50
30	08:50	11:39 (29)				07:12		05:46	04:42	04:31
	16:51	88 15:13 (25)				20:12		21:24	22:27	22:49
31	08:48	11:39 (29)				07:10			04:41	
	16:54	88 15:13 (25)				20:14			22:29	
Potential sun hours	221		260			365		432	521	547
Total, worst case		1489		1103			9			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** D - Buevegen 1805 (4)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July		August		September		October			November			December		
1	04:32		05:24		06:33		07:39			07:51		11:12 (29)	09:00		10:44 (34)
	22:49		22:01		20:40		19:13			16:49	53	13:38 (24)	15:51	31	12:23 (21)
2	04:33		05:26		06:35		07:42			07:54		11:11 (29)	09:02		10:48 (34)
	22:48		21:58		20:37		19:10			16:46	58	13:40 (24)	15:50	27	12:23 (21)
3	04:34		05:28		06:37		07:44			07:56		11:11 (29)	09:03		12:01 (21)
	22:47		21:56		20:34		19:07			16:44	60	13:41 (24)	15:49	17	12:18 (21)
4	04:35		05:31		06:40		07:46			07:59		11:10 (29)	09:05		12:01 (21)
	22:47		21:54		20:31		19:04			16:41	63	13:41 (24)	15:48	13	12:14 (21)
5	04:36		05:33		06:42		07:48			08:01		11:10 (29)	09:07		12:02 (21)
	22:46		21:51		20:28		19:02			16:39	75	14:38 (25)	15:47	11	12:13 (21)
6	04:37		05:35		06:44		07:51			08:03		11:10 (29)	09:09		12:05 (21)
	22:45		21:49		20:25		18:59			16:37	79	14:40 (25)	15:46	5	12:10 (21)
7	04:39		05:37		06:46		07:53			08:06		11:09 (29)	09:10		12:07 (21)
	22:44		21:47		20:22		18:56			16:34	84	14:41 (25)	15:45	2	12:09 (21)
8	04:40		05:39		06:49		07:55			08:08		11:09 (29)	09:12		
	22:43		21:44		20:20		18:53			16:32	87	14:42 (25)	15:45		
9	04:41		05:42		06:51		07:57			08:11		11:10 (29)	09:13		
	22:42		21:42		20:17		18:50			16:30	87	14:43 (25)	15:44		
10	04:43		05:44		06:53		08:00			08:13		11:10 (29)	09:15		
	22:41		21:39		20:14		18:47			16:28	88	14:44 (25)	15:43		
11	04:44		05:46		06:55		08:02			08:15		11:10 (29)	09:16		
	22:39		21:37		20:11		18:45			16:25	88	14:44 (25)	15:43		
12	04:46		05:48		06:57		08:04		10:01 (16)	08:18		11:11 (29)	09:18		
	22:38		21:34		20:08		18:42	4	10:05 (16)	16:23	88	14:45 (25)	15:43		
13	04:47		05:51		07:00		08:07		09:58 (16)	08:20		11:11 (29)	09:19		
	22:37		21:32		20:05		18:39	11	10:09 (16)	16:21	87	14:45 (25)	15:42		
14	04:49		05:53		07:02		08:09		09:55 (16)	08:22		10:45 (34)	09:20		
	22:35		21:29		20:02		18:36	16	10:11 (16)	16:19	89	14:45 (25)	15:42		
15	04:51		05:55		07:04		08:11		09:54 (16)	08:25		10:42 (34)	09:21		
	22:34		21:26		19:59		18:33	18	10:12 (16)	16:17	87	14:45 (25)	15:42		
16	04:52		05:57		07:06		08:13		09:53 (16)	08:27		10:41 (34)	09:22		
	22:32		21:24		19:56		18:31	19	10:12 (16)	16:15	79	14:30 (25)	15:42		
17	04:54		06:00		07:08		08:16		09:53 (16)	08:30		10:41 (34)	09:23		
	22:30		21:21		19:54		18:28	20	10:13 (16)	16:13	81	14:25 (25)	15:42		
18	04:56		06:02		07:11		08:18		09:52 (16)	08:32		10:40 (34)	09:24		
	22:29		21:18		19:51		18:25	21	10:13 (16)	16:11	84	13:41 (24)	15:42		
19	04:58		06:04		07:13		08:20		09:52 (16)	08:34		10:40 (34)	09:25		
	22:27		21:16		19:48		18:22	21	10:13 (16)	16:09	83	13:40 (24)	15:42		
20	05:00		06:06		07:15		08:23		09:52 (16)	08:36		10:39 (34)	09:26		
	22:25		21:13		19:45		18:20	20	10:12 (16)	16:08	82	13:39 (24)	15:43		
21	05:01		06:08		07:17		08:25		09:52 (16)	08:39		10:39 (34)	09:26		
	22:24		21:10		19:42		18:17	20	10:12 (16)	16:06	79	13:38 (24)	15:43		
22	05:03		06:11		07:19		08:27		09:52 (16)	08:41		10:40 (34)	09:27		
	22:22		21:08		19:39		18:14	19	10:11 (16)	16:04	75	13:37 (24)	15:43		
23	05:05		06:13		07:22		08:30		09:54 (16)	08:43		10:39 (34)	09:27		
	22:20		21:05		19:36		18:12	16	10:10 (16)	16:02	69	13:35 (24)	15:44		
24	05:07		06:15		07:24		08:32		09:54 (16)	08:45		10:40 (34)	09:28		
	22:18		21:02		19:33		18:09	14	10:08 (16)	16:01	58	13:32 (24)	15:44		
25	05:09		06:17		07:26		07:35		08:57 (16)	08:47		10:40 (34)	09:28		
	22:16		20:59		19:30		17:06	10	09:07 (16)	15:59	46	12:20 (21)	15:45		
26	05:11		06:20		07:28		07:37			08:50		10:41 (34)	09:28		
	22:14		20:57		19:27		17:04			15:58	43	12:21 (21)	15:46		
27	05:13		06:22		07:30		07:39		11:20 (29)	08:52		10:41 (34)	09:28		
	22:12		20:54		19:25		17:01	14	11:34 (29)	15:56	43	12:21 (21)	15:47		
28	05:16		06:24		07:33		07:42		11:18 (29)	08:54		10:42 (34)	09:28		
	22:10		20:51		19:22		16:59	19	11:37 (29)	15:55	42	12:22 (21)	15:48		
29	05:18		06:26		07:35		07:44		11:15 (29)	08:56		10:42 (34)	09:28		
	22:07		20:48		19:19		16:56	34	13:32 (24)	15:54	42	12:22 (21)	15:49		
30	05:20		06:29		07:37		07:47		11:14 (29)	08:58		10:42 (34)	09:28		
	22:05		20:45		19:16		16:54	42	13:35 (24)	15:52	40	12:22 (21)	15:50		
31	05:22		06:31				07:49		11:13 (29)				09:28		
	22:03		20:42				16:51	50	13:38 (24)				15:51		
Potential sun hours	546		478		386		319			236			199		
Total, worst case								388			2119			106	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** E - Buevegen 1816 (5)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January		February		March	April	May	June
1	09:28		11:12 (34)	08:46	11:58 (29)	07:35	07:07	05:44	04:40
	15:53	2	11:14 (34)	16:56	87	15:21 (25)	18:05	20:17	21:26	22:30
2	09:27		11:12 (34)	08:43	11:59 (29)	07:33	07:04	05:41	04:38
	15:54	2	11:14 (34)	16:58	85	15:21 (25)	18:07	20:19	21:28	22:32
3	09:27		11:11 (34)	08:41	12:00 (29)	07:30	07:01	05:39	04:37
	15:55	4	12:42 (21)	17:01	84	15:21 (25)	18:09	20:21	21:31	22:34
4	09:27		11:11 (34)	08:39	11:59 (29)	07:27	06:58	05:36	04:36
	15:57	12	12:45 (21)	17:03	83	15:20 (25)	18:12	20:24	21:33	22:35
5	09:26		11:11 (34)	08:37	11:59 (29)	07:24	06:55	05:34	04:35
	15:58	18	12:46 (21)	17:06	81	15:19 (25)	18:14	20:26	21:35	22:37
6	09:25		11:11 (34)	08:34	12:00 (29)	07:21	06:52	05:31	04:34
	16:00	29	12:50 (21)	17:08	76	15:18 (25)	18:17	20:28	21:37	22:38
7	09:24		11:11 (34)	08:32	12:01 (29)	07:19	06:50	05:29	04:33
	16:02	35	12:50 (21)	17:11	67	15:15 (25)	18:19	20:30	21:40	22:39
8	09:24		11:12 (34)	08:30	12:02 (29)	07:16	06:47	05:26	04:32
	16:03	38	12:51 (21)	17:13	57	14:25 (24)	18:21	20:33	21:42	22:40
9	09:23		11:12 (34)	08:27	12:03 (29)	07:13	06:44	05:24	04:31
	16:05	40	12:52 (21)	17:16	54	14:24 (24)	18:24	20:35	21:44	22:42
10	09:22		11:11 (34)	08:25	12:03 (29)	07:10	06:41	05:22	04:30
	16:07	41	12:52 (21)	17:18	51	14:23 (24)	18:26	20:37	21:46	22:43
11	09:21		11:12 (34)	08:23	12:05 (29)	07:07	06:38	05:19	04:29
	16:09	42	12:53 (21)	17:21	45	14:22 (24)	18:28	20:40	21:49	22:44
12	09:20		11:12 (34)	08:20	12:07 (29)	07:04	06:35	05:17	04:29
	16:11	43	12:53 (21)	17:23	37	14:20 (24)	18:31	20:42	21:51	22:45
13	09:18		11:12 (34)	08:18	12:09 (29)	07:02	06:32	05:15	04:28
	16:13	44	12:54 (21)	17:26	26	14:17 (24)	18:33	20:44	21:53	22:46
14	09:17		11:12 (34)	08:15	09:39 (16)	06:59	06:30	05:13	04:28
	16:15	44	12:54 (21)	17:28	12	12:21 (29)	18:35	20:47	21:55	22:47
15	09:16		11:12 (34)	08:13	09:36 (16)	06:56	06:27	05:10	04:27
	16:17	51	12:54 (21)	17:31	11	09:47 (16)	18:38	20:49	21:58	22:47
16	09:15		11:13 (34)	08:10	09:33 (16)	06:53	06:24	05:08	04:27
	16:19	54	12:54 (21)	17:33	16	09:49 (16)	18:40	20:51	22:00	22:48
17	09:13		11:13 (34)	08:07	09:32 (16)	06:50	06:21	05:06	04:27
	16:21	58	12:54 (21)	17:36	17	09:49 (16)	18:42	20:53	22:02	22:49
18	09:12		11:14 (34)	08:05	09:32 (16)	06:47	06:19	05:04	04:27
	16:23	61	12:55 (21)	17:38	19	09:51 (16)	18:45	20:56	22:04	22:49
19	09:10		11:15 (34)	08:02	09:31 (16)	06:44	06:16	05:02	04:27
	16:25	63	12:55 (21)	17:40	20	09:51 (16)	18:47	20:58	22:06	22:50
20	09:08		11:15 (34)	08:00	09:30 (16)	06:41	06:13	05:00	04:27
	16:28	73	14:13 (24)	17:43	21	09:51 (16)	18:49	21:00	22:08	22:50
21	09:07		11:16 (34)	07:57	09:30 (16)	06:38	06:10	04:58	04:27
	16:30	76	14:15 (24)	17:45	21	09:51 (16)	18:51	21:03	22:10	22:50
22	09:05		11:16 (34)	07:54	09:30 (16)	06:36	06:08	04:56	04:27
	16:32	78	14:16 (24)	17:48	21	09:51 (16)	18:54	21:05	22:12	22:50
23	09:03		11:17 (34)	07:52	09:31 (16)	06:33	06:05	04:54	04:27
	16:34	79	14:18 (24)	17:50	20	09:51 (16)	18:56	21:07	22:14	22:51
24	09:02		11:18 (34)	07:49	09:31 (16)	06:30	06:02	04:52	04:27
	16:37	79	14:20 (24)	17:53	20	09:51 (16)	18:58	21:10	22:16	22:51
25	09:00		11:20 (34)	07:46	09:31 (16)	06:27	05:59	04:51	04:28
	16:39	73	14:21 (24)	17:55	18	09:49 (16)	19:01	21:12	22:18	22:51
26	08:58		11:23 (34)	07:44	09:32 (16)	06:24	05:57	04:49	04:28
	16:41	69	15:03 (25)	17:57	16	09:48 (16)	19:03	21:14	22:20	22:50
27	08:56		11:58 (29)	07:41	09:33 (16)	06:21	05:54	04:47	04:29
	16:44	66	15:04 (25)	18:00	13	09:46 (16)	19:05	21:17	22:22	22:50
28	08:54		11:58 (29)	07:38	09:36 (16)	06:18	05:52	04:46	04:30
	16:46	74	15:10 (25)	18:02	6	09:42 (16)	19:07	21:19	22:24	22:50
29	08:52		11:59 (29)			07:15	05:49	04:44	04:30
	16:49	82	15:17 (25)			20:10	21:21	22:25	22:50
30	08:50		11:58 (29)			07:12	05:46	04:42	04:31
	16:51	86	15:21 (25)			20:12	21:24	22:27	22:49
31	08:48		11:59 (29)			07:10		04:41	
	16:54	87	15:22 (25)			20:14		22:29	
Potential sun hours	221			260		365	432	521	547
Total, worst case		1603			1084				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** E - Buevegen 1816 (5)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September	October			November			December		
1	04:32	05:24	06:33	07:39			07:51		11:33 (29)	09:00		10:54 (34)
	22:49	22:01	20:40	19:13			16:49	50	13:53 (24)	15:51	43	12:35 (21)
2	04:33	05:26	06:35	07:42			07:54		11:32 (29)	09:02		10:55 (34)
	22:48	21:58	20:37	19:10			16:46	55	13:54 (24)	15:50	40	12:35 (21)
3	04:34	05:28	06:37	07:44			07:56		11:31 (29)	09:03		10:55 (34)
	22:47	21:56	20:34	19:07			16:44	59	13:55 (24)	15:49	40	12:35 (21)
4	04:35	05:31	06:40	07:46			07:59		11:30 (29)	09:05		10:56 (34)
	22:47	21:54	20:31	19:04			16:41	69	14:45 (25)	15:48	39	12:35 (21)
5	04:36	05:33	06:42	07:48			08:01		11:30 (29)	09:07		10:56 (34)
	22:46	21:51	20:28	19:02			16:39	76	14:48 (25)	15:47	35	12:36 (21)
6	04:37	05:35	06:44	07:51			08:03		11:30 (29)	09:09		10:57 (34)
	22:45	21:49	20:25	18:59			16:37	79	14:50 (25)	15:46	29	12:36 (21)
7	04:39	05:37	06:46	07:53			08:06		11:29 (29)	09:10		10:58 (34)
	22:44	21:47	20:22	18:56			16:34	83	14:50 (25)	15:45	21	12:34 (21)
8	04:40	05:39	06:49	07:55			08:08		11:29 (29)	09:12		10:59 (34)
	22:43	21:44	20:20	18:53			16:32	87	14:51 (25)	15:45	12	12:33 (21)
9	04:41	05:42	06:51	07:57			08:11		11:30 (29)	09:13		11:00 (34)
	22:42	21:42	20:17	18:50			16:30	86	14:52 (25)	15:44	5	12:32 (21)
10	04:43	05:44	06:53	08:00			08:13		11:30 (29)	09:15		11:01 (34)
	22:41	21:39	20:14	18:47			16:28	88	14:53 (25)	15:43	2	11:03 (34)
11	04:44	05:46	06:55	08:02			08:15		11:29 (29)	09:16		11:02 (34)
	22:39	21:37	20:11	18:45			16:25	87	14:52 (25)	15:43	2	11:04 (34)
12	04:46	05:48	06:57	08:04			08:18		11:30 (29)	09:18		
	22:38	21:34	20:08	18:42			16:23	87	14:53 (25)	15:43		
13	04:47	05:51	07:00	08:07			08:20		11:31 (29)	09:19		
	22:37	21:31	20:05	18:39			16:21	81	14:49 (25)	15:42		
14	04:49	05:53	07:02	08:09		10:08 (16)	08:22		11:30 (29)	09:20		
	22:35	21:29	20:02	18:36	9	10:17 (16)	16:19	73	14:41 (25)	15:42		
15	04:51	05:55	07:04	08:11		10:06 (16)	08:25		11:31 (29)	09:21		
	22:34	21:26	19:59	18:33	14	10:20 (16)	16:17	67	14:37 (25)	15:42		
16	04:52	05:57	07:06	08:13		10:04 (16)	08:27		10:56 (34)	09:22		
	22:32	21:24	19:56	18:31	16	10:20 (16)	16:15	69	14:36 (25)	15:42		
17	04:54	06:00	07:08	08:16		10:03 (16)	08:30		10:54 (34)	09:23		
	22:30	21:21	19:54	18:28	19	10:22 (16)	16:13	73	13:55 (24)	15:42		
18	04:56	06:02	07:11	08:18		10:02 (16)	08:32		10:52 (34)	09:24		
	22:29	21:18	19:51	18:25	20	10:22 (16)	16:11	79	13:54 (24)	15:42		
19	04:58	06:04	07:13	08:20		10:02 (16)	08:34		10:52 (34)	09:25		
	22:27	21:16	19:48	18:22	21	10:23 (16)	16:09	79	13:53 (24)	15:42		
20	05:00	06:06	07:15	08:23		10:01 (16)	08:36		10:51 (34)	09:26		
	22:25	21:13	19:45	18:20	21	10:22 (16)	16:08	78	13:51 (24)	15:43		
21	05:01	06:08	07:17	08:25		10:01 (16)	08:39		10:51 (34)	09:26		
	22:24	21:10	19:42	18:17	21	10:22 (16)	16:06	76	13:50 (24)	15:43		
22	05:03	06:11	07:19	08:27		10:01 (16)	08:41		10:51 (34)	09:27		
	22:22	21:08	19:39	18:14	21	10:22 (16)	16:04	73	13:49 (24)	15:43		
23	05:05	06:13	07:22	08:30		10:01 (16)	08:43		10:51 (34)	09:27		
	22:20	21:05	19:36	18:12	20	10:21 (16)	16:02	63	12:31 (21)	15:44		
24	05:07	06:15	07:24	08:32		10:01 (16)	08:45		10:51 (34)	09:28		
	22:18	21:02	19:33	18:09	19	10:20 (16)	16:01	61	12:32 (21)	15:44		
25	05:09	06:17	07:26	07:35		09:02 (16)	08:47		10:51 (34)	09:28		
	22:16	20:59	19:30	17:06	17	09:19 (16)	15:59	59	12:32 (21)	15:45		
26	05:11	06:20	07:28	07:37		09:03 (16)	08:50		10:52 (34)	09:28		
	22:14	20:57	19:27	17:04	14	09:17 (16)	15:58	55	12:33 (21)	15:46		
27	05:13	06:22	07:30	07:39		09:06 (16)	08:52		10:52 (34)	09:28		
	22:12	20:54	19:25	17:01	10	09:16 (16)	15:56	51	12:33 (21)	15:47		
28	05:16	06:24	07:33	07:42		11:42 (29)	08:54		10:53 (34)	09:28		
	22:10	20:51	19:22	16:59	10	11:52 (29)	15:55	43	12:34 (21)	15:48		
29	05:18	06:26	07:35	07:44		11:38 (29)	08:56		10:53 (34)	09:28		
	22:07	20:48	19:19	16:56	28	13:47 (24)	15:54	43	12:34 (21)	15:49		
30	05:20	06:29	07:37	07:47		11:36 (29)	08:58		10:53 (34)	09:28		
	22:05	20:45	19:16	16:54	39	13:50 (24)	15:52	43	12:34 (21)	15:50		
31	05:22	06:31		07:49		11:35 (29)				09:28		
	22:03	20:42		16:51	45	13:52 (24)				15:51		
Potential sun hours	546	478	386	319			236			199		
Total, worst case					364			2072			268	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** F - Buevegen 1818 (6)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April	May	June
1	09:28		11:23 (34)	08:46		12:23 (29)	07:35	07:07	05:44	04:40
	15:53	17	11:40 (34)	16:56	82	15:30 (25)	18:05	20:17	21:26	22:30
2	09:27		11:23 (34)	08:43		12:24 (29)	07:33	07:04	05:41	04:38
	15:54	17	11:40 (34)	16:58	86	15:34 (25)	18:07	20:19	21:28	22:32
3	09:27		11:23 (34)	08:41		12:25 (29)	07:30	07:01	05:39	04:37
	15:55	18	11:41 (34)	17:01	84	15:34 (25)	18:09	20:21	21:31	22:34
4	09:26		11:23 (34)	08:39		12:25 (29)	07:27	06:58	05:36	04:36
	15:57	23	12:52 (21)	17:03	85	15:34 (25)	18:12	20:24	21:33	22:35
5	09:26		11:23 (34)	08:37		12:25 (29)	07:24	06:55	05:34	04:35
	15:58	25	12:53 (21)	17:06	82	15:33 (25)	18:14	20:26	21:35	22:37
6	09:25		11:24 (34)	08:34		12:26 (29)	07:21	06:52	05:31	04:34
	16:00	31	13:06 (21)	17:08	79	15:33 (25)	18:17	20:28	21:37	22:38
7	09:24		11:24 (34)	08:32		12:26 (29)	07:19	06:50	05:29	04:33
	16:02	34	13:07 (21)	17:11	74	15:31 (25)	18:19	20:30	21:40	22:39
8	09:24		11:24 (34)	08:30		12:28 (29)	07:16	06:47	05:26	04:32
	16:03	41	13:07 (21)	17:13	68	15:30 (25)	18:21	20:33	21:42	22:40
9	09:23		11:24 (34)	08:27		12:28 (29)	07:13	06:44	05:24	04:31
	16:05	42	13:07 (21)	17:16	60	15:26 (25)	18:24	20:35	21:44	22:42
10	09:22		11:25 (34)	08:25		12:29 (29)	07:10	06:41	05:22	04:30
	16:07	42	13:08 (21)	17:18	51	14:44 (24)	18:26	20:37	21:46	22:43
11	09:21		11:25 (34)	08:23		12:32 (29)	07:07	06:38	05:19	04:29
	16:09	43	13:09 (21)	17:21	44	14:43 (24)	18:28	20:40	21:49	22:44
12	09:20		11:25 (34)	08:20		09:50 (16)	07:04	06:35	05:17	04:29
	16:11	44	13:09 (21)	17:23	43	14:42 (24)	18:31	20:42	21:51	22:45
13	09:18		11:26 (34)	08:18		09:46 (16)	07:01	06:32	05:15	04:28
	16:13	44	13:10 (21)	17:26	41	14:40 (24)	18:33	20:44	21:53	22:46
14	09:17		11:26 (34)	08:15		09:45 (16)	06:59	06:30	05:13	04:28
	16:15	54	13:10 (21)	17:28	26	14:38 (24)	18:35	20:47	21:55	22:47
15	09:16		11:26 (34)	08:13		09:43 (16)	06:56	06:27	05:10	04:27
	16:17	57	13:10 (21)	17:31	18	10:01 (16)	18:38	20:49	21:58	22:47
16	09:15		11:27 (34)	08:10		09:42 (16)	06:53	06:24	05:08	04:27
	16:19	60	13:10 (21)	17:33	20	10:02 (16)	18:40	20:51	22:00	22:48
17	09:13		11:27 (34)	08:07		09:41 (16)	06:50	06:21	05:06	04:27
	16:21	63	13:10 (21)	17:35	21	10:02 (16)	18:42	20:53	22:02	22:49
18	09:12		11:28 (34)	08:05		09:41 (16)	06:47	06:19	05:04	04:27
	16:23	64	13:11 (21)	17:38	22	10:03 (16)	18:45	20:56	22:04	22:49
19	09:10		11:29 (34)	08:02		09:41 (16)	06:44	06:16	05:02	04:27
	16:25	63	13:11 (21)	17:40	22	10:03 (16)	18:47	20:58	22:06	22:50
20	09:08		11:30 (34)	08:00		09:40 (16)	06:41	06:13	05:00	04:27
	16:28	63	13:11 (21)	17:43	23	10:03 (16)	18:49	21:00	22:08	22:50
21	09:07		11:31 (34)	07:57		09:40 (16)	06:38	06:10	04:58	04:27
	16:30	62	13:10 (21)	17:45	22	10:02 (16)	18:51	21:03	22:10	22:50
22	09:05		11:31 (34)	07:54		09:40 (16)	06:36	06:08	04:56	04:27
	16:32	60	13:09 (21)	17:48	22	10:02 (16)	18:54	21:05	22:12	22:50
23	09:03		11:33 (34)	07:52		09:42 (16)	06:33	06:05	04:54	04:27
	16:34	66	14:33 (24)	17:50	20	10:02 (16)	18:56	21:07	22:14	22:50
24	09:02		11:35 (34)	07:49		09:42 (16)	06:30	06:02	04:52	04:27
	16:37	67	14:36 (24)	17:53	19	10:01 (16)	18:58	21:10	22:16	22:51
25	09:00		11:39 (34)	07:46		09:43 (16)	06:27	05:59	04:51	04:28
	16:39	58	14:38 (24)	17:55	16	09:59 (16)	19:01	21:12	22:18	22:50
26	08:58		12:24 (29)	07:44		09:45 (16)	06:24	05:57	04:49	04:28
	16:41	55	14:40 (24)	17:57	12	09:57 (16)	19:03	21:14	22:20	22:50
27	08:56		12:23 (29)	07:41		09:48 (16)	06:21	05:54	04:47	04:29
	16:44	57	14:40 (24)	18:00	5	09:53 (16)	19:05	21:17	22:22	22:50
28	08:54		12:23 (29)	07:38			06:18	05:52	04:46	04:30
	16:46	61	15:15 (25)	18:02			19:07	21:19	22:24	22:50
29	08:52		12:24 (29)				07:15	05:49	04:44	04:30
	16:49	67	15:19 (25)				20:10	21:21	22:25	22:50
30	08:50		12:23 (29)				07:12	05:46	04:42	04:31
	16:51	74	15:23 (25)				20:12	21:24	22:27	22:49
31	08:48		12:24 (29)				07:10		04:41	
	16:53	77	15:26 (25)				20:14		22:29	
Potential sun hours	221			260			365	432	521	547
Total, worst case		1549			1147					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** F - Buevegen 1818 (6)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September	October			November			December		
1	04:32	05:24	06:33	07:39			07:51		11:59 (29)	09:00		11:07 (34)
	22:49	22:01	20:40	19:13			16:49	51	14:13 (24)	15:51	43	12:51 (21)
2	04:33	05:26	06:35	07:42			07:54		11:58 (29)	09:02		11:08 (34)
	22:48	21:58	20:37	19:10			16:46	61	14:57 (25)	15:50	42	12:51 (21)
3	04:34	05:28	06:37	07:44			07:56		11:57 (29)	09:03		11:08 (34)
	22:47	21:56	20:34	19:07			16:44	71	15:00 (25)	15:49	42	12:51 (21)
4	04:35	05:31	06:40	07:46			07:59		11:56 (29)	09:05		11:09 (34)
	22:47	21:54	20:31	19:04			16:41	76	15:01 (25)	15:48	41	12:52 (21)
5	04:36	05:33	06:42	07:48			08:01		11:55 (29)	09:07		11:09 (34)
	22:46	21:51	20:28	19:02			16:39	80	15:02 (25)	15:47	35	12:52 (21)
6	04:37	05:35	06:44	07:51			08:03		11:55 (29)	09:09		11:10 (34)
	22:45	21:49	20:25	18:59			16:37	82	15:03 (25)	15:46	31	12:52 (21)
7	04:38	05:37	06:46	07:53			08:06		11:54 (29)	09:10		11:11 (34)
	22:44	21:47	20:22	18:56			16:34	84	15:03 (25)	15:45	24	12:40 (21)
8	04:40	05:39	06:49	07:55			08:08		11:54 (29)	09:12		11:11 (34)
	22:43	21:44	20:20	18:53			16:32	87	15:04 (25)	15:45	24	12:41 (21)
9	04:41	05:42	06:51	07:57			08:11		11:55 (29)	09:13		11:12 (34)
	22:42	21:42	20:17	18:50			16:30	87	15:05 (25)	15:44	20	12:37 (21)
10	04:43	05:44	06:53	08:00			08:13		11:55 (29)	09:15		11:12 (34)
	22:40	21:39	20:14	18:47			16:28	81	15:01 (25)	15:43	17	11:29 (34)
11	04:44	05:46	06:55	08:02			08:15		11:54 (29)	09:16		11:14 (34)
	22:39	21:37	20:11	18:45			16:25	78	14:57 (25)	15:43	16	11:30 (34)
12	04:46	05:48	06:57	08:04			08:18		11:55 (29)	09:18		11:14 (34)
	22:38	21:34	20:08	18:42			16:23	74	14:55 (25)	15:43	15	11:29 (34)
13	04:47	05:51	07:00	08:07			08:20		11:55 (29)	09:19		11:15 (34)
	22:37	21:31	20:05	18:39			16:21	68	14:51 (25)	15:42	15	11:30 (34)
14	04:49	05:53	07:02	08:09			08:22		11:55 (29)	09:20		11:16 (34)
	22:35	21:29	20:02	18:36			16:19	62	14:47 (25)	15:42	14	11:30 (34)
15	04:51	05:55	07:04	08:11		10:19 (16)	08:25		11:56 (29)	09:21		11:16 (34)
	22:34	21:26	19:59	18:33	8	10:27 (16)	16:17	57	14:13 (24)	15:42	14	11:30 (34)
16	04:52	05:57	07:06	08:13		10:16 (16)	08:27		11:57 (29)	09:22		11:17 (34)
	22:32	21:24	19:56	18:31	14	10:30 (16)	16:15	54	14:12 (24)	15:42	12	11:29 (34)
17	04:54	06:00	07:08	08:16		10:15 (16)	08:29		11:12 (34)	09:23		11:17 (34)
	22:30	21:21	19:54	18:28	17	10:32 (16)	16:13	58	14:11 (24)	15:42	12	11:29 (34)
18	04:56	06:02	07:11	08:18		10:13 (16)	08:32		11:09 (34)	09:24		11:18 (34)
	22:29	21:18	19:51	18:25	19	10:32 (16)	16:11	67	14:10 (24)	15:42	11	11:29 (34)
19	04:58	06:04	07:13	08:20		10:12 (16)	08:34		11:08 (34)	09:25		11:19 (34)
	22:27	21:16	19:48	18:22	21	10:33 (16)	16:09	66	14:08 (24)	15:42	11	11:30 (34)
20	05:00	06:06	07:15	08:23		10:11 (16)	08:36		11:06 (34)	09:26		11:20 (34)
	22:25	21:13	19:45	18:20	22	10:33 (16)	16:08	60	12:44 (21)	15:43	10	11:30 (34)
21	05:01	06:08	07:17	08:25		10:11 (16)	08:39		11:06 (34)	09:26		11:20 (34)
	22:24	21:10	19:42	18:17	23	10:34 (16)	16:06	62	12:45 (21)	15:43	10	11:30 (34)
22	05:03	06:11	07:19	08:27		10:10 (16)	08:41		11:06 (34)	09:27		11:21 (34)
	22:22	21:08	19:39	18:14	23	10:33 (16)	16:04	63	12:47 (21)	15:43	10	11:31 (34)
23	05:05	06:13	07:22	08:30		10:11 (16)	08:43		11:05 (34)	09:27		11:21 (34)
	22:20	21:05	19:36	18:12	22	10:33 (16)	16:02	63	12:47 (21)	15:44	10	11:31 (34)
24	05:07	06:15	07:24	08:32		10:10 (16)	08:45		11:05 (34)	09:28		11:22 (34)
	22:18	21:02	19:33	18:09	22	10:32 (16)	16:01	64	12:48 (21)	15:44	10	11:32 (34)
25	05:09	06:17	07:26	07:35		09:11 (16)	08:47		11:05 (34)	09:28		11:22 (34)
	22:16	20:59	19:30	17:06	21	09:32 (16)	15:59	63	12:48 (21)	15:45	11	11:33 (34)
26	05:11	06:20	07:28	07:37		09:11 (16)	08:50		11:06 (34)	09:28		11:22 (34)
	22:14	20:56	19:27	17:04	20	09:31 (16)	15:58	60	12:49 (21)	15:46	12	11:34 (34)
27	05:13	06:22	07:30	07:39		09:13 (16)	08:52		11:05 (34)	09:28		11:23 (34)
	22:12	20:54	19:25	17:01	17	09:30 (16)	15:56	58	12:49 (21)	15:47	11	11:34 (34)
28	05:16	06:24	07:33	07:42		09:14 (16)	08:54		11:06 (34)	09:28		11:23 (34)
	22:10	20:51	19:22	16:59	28	14:08 (24)	15:55	53	12:50 (21)	15:48	13	11:36 (34)
29	05:18	06:26	07:35	07:44		09:16 (16)	08:56		11:06 (34)	09:28		11:22 (34)
	22:07	20:48	19:19	16:56	42	14:10 (24)	15:54	44	12:50 (21)	15:49	14	11:36 (34)
30	05:20	06:29	07:37	07:47		12:02 (29)	08:58		11:06 (34)	09:28		11:23 (34)
	22:05	20:45	19:16	16:54	40	14:11 (24)	15:52	43	12:50 (21)	15:50	15	11:38 (34)
31	05:22	06:31		07:49		12:01 (29)				09:28		11:23 (34)
	22:03	20:42		16:51	46	14:13 (24)				15:51	15	11:38 (34)
Potential sun hours	546	478	386	319			236			199		
Total, worst case					405			1977			580	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** G - Buevegen 1786 (7)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April	May	June
1	09:28			08:46		11:27 (29)	07:35	07:07	05:44	04:40
	15:53			16:56	70	14:51 (25)	18:05	20:17	21:26	22:31
2	09:27		12:04 (21)	08:43		11:27 (29)	07:33	07:04	05:41	04:38
	15:54	1	12:05 (21)	16:58	60	13:50 (24)	18:07	20:19	21:28	22:32
3	09:27		12:04 (21)	08:41		11:28 (29)	07:30	07:01	05:39	04:37
	15:55	4	12:08 (21)	17:01	58	13:50 (24)	18:09	20:21	21:31	22:34
4	09:27		12:04 (21)	08:39		11:28 (29)	07:27	06:58	05:36	04:36
	15:57	7	12:11 (21)	17:03	54	13:48 (24)	18:12	20:24	21:33	22:35
5	09:26		12:04 (21)	08:37		11:28 (29)	07:24	06:55	05:34	04:35
	15:58	17	12:21 (21)	17:06	52	13:47 (24)	18:14	20:26	21:35	22:37
6	09:25		12:04 (21)	08:34		11:29 (29)	07:21	06:52	05:31	04:34
	16:00	17	12:21 (21)	17:08	49	13:47 (24)	18:17	20:28	21:37	22:38
7	09:24		12:05 (21)	08:32		11:29 (29)	07:19	06:50	05:29	04:33
	16:02	19	12:26 (21)	17:11	43	13:44 (24)	18:19	20:30	21:40	22:39
8	09:24		12:05 (21)	08:30		11:31 (29)	07:16	06:47	05:26	04:32
	16:03	22	12:27 (21)	17:13	35	13:42 (24)	18:21	20:33	21:42	22:40
9	09:23		12:06 (21)	08:27		11:32 (29)	07:13	06:44	05:24	04:31
	16:05	22	12:28 (21)	17:16	22	11:54 (29)	18:24	20:35	21:44	22:42
10	09:22		12:06 (21)	08:25		11:34 (29)	07:10	06:41	05:22	04:30
	16:07	22	12:28 (21)	17:18	18	11:52 (29)	18:26	20:37	21:46	22:43
11	09:21		12:07 (21)	08:23		11:37 (29)	07:07	06:38	05:19	04:29
	16:09	22	12:29 (21)	17:21	13	11:50 (29)	18:28	20:40	21:49	22:44
12	09:20		12:07 (21)	08:20		11:42 (29)	07:04	06:35	05:17	04:29
	16:11	28	13:33 (24)	17:23	2	11:44 (29)	18:31	20:42	21:51	22:45
13	09:18		12:08 (21)	08:18			07:02	06:32	05:15	04:28
	16:13	33	13:37 (24)	17:26			18:33	20:44	21:53	22:46
14	09:17		12:08 (21)	08:15		09:31 (16)	06:59	06:30	05:13	04:28
	16:15	36	13:38 (24)	17:28	3	09:34 (16)	18:35	20:47	21:55	22:47
15	09:16		11:34 (29)	08:13		09:27 (16)	06:56	06:27	05:10	04:27
	16:17	47	13:40 (24)	17:31	10	09:37 (16)	18:38	20:49	21:58	22:47
16	09:15		11:31 (29)	08:10		09:25 (16)	06:53	06:24	05:08	04:27
	16:19	55	13:41 (24)	17:33	14	09:39 (16)	18:40	20:51	22:00	22:48
17	09:13		11:31 (29)	08:07		09:23 (16)	06:50	06:21	05:06	04:27
	16:21	58	13:43 (24)	17:36	17	09:40 (16)	18:42	20:53	22:02	22:49
18	09:12		11:30 (29)	08:05		09:23 (16)	06:47	06:19	05:04	04:27
	16:23	72	14:53 (25)	17:38	18	09:41 (16)	18:45	20:56	22:04	22:49
19	09:10		11:29 (29)	08:02		09:23 (16)	06:44	06:16	05:02	04:27
	16:25	85	14:53 (25)	17:40	18	09:41 (16)	18:47	20:58	22:06	22:50
20	09:09		11:28 (29)	08:00		09:22 (16)	06:41	06:13	05:00	04:27
	16:28	88	14:54 (25)	17:43	19	09:41 (16)	18:49	21:00	22:08	22:50
21	09:07		11:28 (29)	07:57		09:22 (16)	06:39	06:10	04:58	04:27
	16:30	88	14:54 (25)	17:45	19	09:41 (16)	18:51	21:03	22:10	22:50
22	09:05		11:27 (29)	07:54		09:22 (16)	06:36	06:08	04:56	04:27
	16:32	89	14:55 (25)	17:48	19	09:41 (16)	18:54	21:05	22:12	22:50
23	09:03		11:26 (29)	07:52		09:23 (16)	06:33	06:05	04:54	04:27
	16:34	87	14:54 (25)	17:50	18	09:41 (16)	18:56	21:07	22:14	22:51
24	09:02		11:26 (29)	07:49		09:23 (16)	06:30	06:02	04:52	04:27
	16:37	81	14:55 (25)	17:53	17	09:40 (16)	18:58	21:10	22:16	22:51
25	09:00		11:26 (29)	07:46		09:24 (16)	06:27	05:59	04:51	04:28
	16:39	82	14:55 (25)	17:55	14	09:38 (16)	19:01	21:12	22:18	22:51
26	08:58		11:26 (29)	07:44		09:25 (16)	06:24	05:57	04:49	04:28
	16:41	83	14:55 (25)	17:57	11	09:36 (16)	19:03	21:14	22:20	22:50
27	08:56		11:25 (29)	07:41		09:29 (16)	06:21	05:54	04:47	04:29
	16:44	83	14:54 (25)	18:00	3	09:32 (16)	19:05	21:17	22:22	22:50
28	08:54		11:26 (29)	07:38			06:18	05:52	04:46	04:30
	16:46	82	14:54 (25)	18:02			19:08	21:19	22:24	22:50
29	08:52		11:26 (29)				07:15	05:49	04:44	04:30
	16:49	80	14:54 (25)				20:10	21:21	22:25	22:50
30	08:50		11:26 (29)				07:13	05:46	04:42	04:31
	16:51	79	14:53 (25)				20:12	21:24	22:27	22:49
31	08:48		11:26 (29)				07:10		04:41	
	16:54	76	14:52 (25)				20:14		22:29	
Potential sun hours	221			260			365	432	521	547
Total, worst case		1565			676					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** G - Buevegen 1786 (7)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July		August		September		October			November			December		
1	04:32		05:24		06:33		07:39			07:51		11:03 (29)	09:00		11:49 (21)
	22:49		22:01		20:40		19:13			16:49	19	11:22 (29)	15:51	22	12:11 (21)
2	04:33		05:26		06:35		07:42			07:54		11:01 (29)	09:02		11:49 (21)
	22:48		21:59		20:37		19:10			16:46	23	11:24 (29)	15:50	22	12:11 (21)
3	04:34		05:28		06:37		07:44			07:56		11:01 (29)	09:03		11:49 (21)
	22:47		21:56		20:34		19:07			16:44	36	13:12 (24)	15:49	22	12:11 (21)
4	04:35		05:31		06:40		07:46			07:59		10:59 (29)	09:05		11:50 (21)
	22:47		21:54		20:31		19:04			16:41	43	13:14 (24)	15:48	21	12:11 (21)
5	04:36		05:33		06:42		07:48			08:01		10:59 (29)	09:07		11:50 (21)
	22:46		21:51		20:28		19:02			16:39	48	13:16 (24)	15:47	21	12:11 (21)
6	04:37		05:35		06:44		07:51			08:03		10:58 (29)	09:09		11:51 (21)
	22:45		21:49		20:25		18:59			16:37	53	13:18 (24)	15:46	16	12:07 (21)
7	04:39		05:37		06:46		07:53			08:06		10:57 (29)	09:10		11:51 (21)
	22:44		21:47		20:23		18:56			16:34	55	13:18 (24)	15:45	17	12:08 (21)
8	04:40		05:39		06:49		07:55			08:08		10:57 (29)	09:12		11:52 (21)
	22:43		21:44		20:20		18:53			16:32	58	13:19 (24)	15:45	8	12:00 (21)
9	04:41		05:42		06:51		07:57			08:11		10:57 (29)	09:13		11:53 (21)
	22:42		21:42		20:17		18:50			16:30	63	14:18 (25)	15:44	4	11:57 (21)
10	04:43		05:44		06:53		08:00			08:13		10:58 (29)	09:15		11:53 (21)
	22:41		21:39		20:14		18:47			16:28	71	14:22 (25)	15:43	1	11:54 (21)
11	04:44		05:46		06:55		08:02			08:15		10:57 (29)	09:16		
	22:39		21:37		20:11		18:45			16:25	76	14:23 (25)	15:43		
12	04:46		05:48		06:57		08:04			08:18		10:57 (29)	09:18		
	22:38		21:34		20:08		18:42			16:23	80	14:25 (25)	15:43		
13	04:47		05:51		07:00		08:07			08:20		10:58 (29)	09:19		
	22:37		21:32		20:05		18:39			16:21	81	14:26 (25)	15:42		
14	04:49		05:53		07:02		08:09			08:22		10:58 (29)	09:20		
	22:35		21:29		20:02		18:36			16:19	82	14:26 (25)	15:42		
15	04:51		05:55		07:04		08:11		10:00 (16)	08:25		10:58 (29)	09:21		
	22:34		21:26		19:59		18:33	7	10:07 (16)	16:17	83	14:27 (25)	15:42		
16	04:52		05:57		07:06		08:13		09:57 (16)	08:27		10:59 (29)	09:22		
	22:32		21:24		19:56		18:31	12	10:09 (16)	16:15	83	14:28 (25)	15:42		
17	04:54		06:00		07:08		08:16		09:55 (16)	08:30		11:00 (29)	09:23		
	22:31		21:21		19:54		18:28	16	10:11 (16)	16:13	83	14:29 (25)	15:42		
18	04:56		06:02		07:11		08:18		09:54 (16)	08:32		11:00 (29)	09:24		
	22:29		21:18		19:51		18:25	17	10:11 (16)	16:11	81	14:29 (25)	15:42		
19	04:58		06:04		07:13		08:20		09:54 (16)	08:34		11:01 (29)	09:25		
	22:27		21:16		19:48		18:22	18	10:12 (16)	16:09	87	14:29 (25)	15:42		
20	05:00		06:06		07:15		08:23		09:53 (16)	08:36		11:01 (29)	09:26		
	22:25		21:13		19:45		18:20	19	10:12 (16)	16:08	89	14:29 (25)	15:43		
21	05:01		06:08		07:17		08:25		09:53 (16)	08:39		11:03 (29)	09:26		
	22:24		21:10		19:42		18:17	19	10:12 (16)	16:06	88	14:29 (25)	15:43		
22	05:03		06:11		07:19		08:27		09:52 (16)	08:41		11:04 (29)	09:27		
	22:22		21:08		19:39		18:14	20	10:12 (16)	16:04	88	14:30 (25)	15:43		
23	05:05		06:13		07:22		08:30		09:53 (16)	08:43		11:05 (29)	09:27		
	22:20		21:05		19:36		18:12	19	10:12 (16)	16:02	84	14:29 (25)	15:44		
24	05:07		06:15		07:24		08:32		09:53 (16)	08:45		11:07 (29)	09:28		
	22:18		21:02		19:33		18:09	17	10:10 (16)	16:01	72	14:30 (25)	15:44		
25	05:09		06:17		07:26		07:35		08:54 (16)	08:47		11:08 (29)	09:28		
	22:16		20:59		19:30		17:06	16	09:10 (16)	15:59	58	13:20 (24)	15:45		
26	05:11		06:20		07:28		07:37		08:56 (16)	08:50		11:10 (29)	09:28		
	22:14		20:57		19:27		17:04	13	09:09 (16)	15:58	54	13:20 (24)	15:46		
27	05:13		06:22		07:30		07:39		08:57 (16)	08:52		11:12 (29)	09:28		
	22:12		20:54		19:25		17:01	9	09:06 (16)	15:56	49	13:19 (24)	15:47		
28	05:16		06:24		07:33		07:42			08:54		11:48 (21)	09:28		
	22:10		20:51		19:22		16:59			15:55	35	13:18 (24)	15:48		
29	05:18		06:26		07:35		07:44			08:56		11:48 (21)	09:28		
	22:07		20:48		19:19		16:56			15:54	33	13:17 (24)	15:49		
30	05:20		06:29		07:37		07:47		11:09 (29)	08:58		11:48 (21)	09:28		
	22:05		20:45		19:16		16:54	7	11:16 (29)	15:52	30	13:15 (24)	15:50		
31	05:22		06:31				07:49		11:06 (29)				09:28		
	22:03		20:42				16:51	14	11:20 (29)				15:51		
Potential sun hours	546		478		386		319			236			199		
Total, worst case								223			1885			154	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** H - Buevegen 1784 (8)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April	May	June
1	09:28		12:18 (21)	08:46		11:54 (29)	07:35	07:07	05:44	04:40
	15:53	21	12:39 (21)	16:56	47	14:04 (24)	18:05	20:17	21:26	22:31
2	09:27		11:56 (29)	08:43		11:54 (29)	07:33	07:04	05:41	04:38
	15:54	22	12:39 (21)	16:58	44	14:02 (24)	18:07	20:19	21:28	22:32
3	09:27		11:53 (29)	08:41		11:56 (29)	07:30	07:01	05:39	04:37
	15:55	28	12:39 (21)	17:01	38	14:01 (24)	18:09	20:21	21:31	22:34
4	09:27		11:52 (29)	08:39		11:57 (29)	07:27	06:58	05:36	04:36
	15:57	32	12:40 (21)	17:03	31	13:59 (24)	18:12	20:24	21:33	22:35
5	09:26		11:51 (29)	08:37		11:59 (29)	07:24	06:55	05:34	04:35
	15:58	34	12:40 (21)	17:06	18	13:54 (24)	18:14	20:26	21:35	22:37
6	09:25		11:50 (29)	08:34		12:05 (29)	07:21	06:52	05:31	04:34
	16:00	36	12:40 (21)	17:08	3	12:08 (29)	18:17	20:28	21:37	22:38
7	09:24		11:50 (29)	08:32			07:19	06:50	05:29	04:33
	16:02	43	13:47 (24)	17:11			18:19	20:30	21:40	22:39
8	09:24		11:50 (29)	08:30			07:16	06:47	05:26	04:32
	16:03	49	13:50 (24)	17:13			18:21	20:33	21:42	22:40
9	09:23		11:50 (29)	08:27		09:43 (16)	07:13	06:44	05:24	04:31
	16:05	54	13:52 (24)	17:16	6	09:49 (16)	18:24	20:35	21:44	22:42
10	09:22		11:49 (29)	08:25		09:40 (16)	07:10	06:41	05:22	04:30
	16:07	57	13:53 (24)	17:18	11	09:51 (16)	18:26	20:37	21:46	22:43
11	09:21		11:49 (29)	08:23		09:39 (16)	07:07	06:38	05:19	04:29
	16:09	60	13:55 (24)	17:21	15	09:54 (16)	18:28	20:40	21:49	22:44
12	09:20		11:48 (29)	08:20		09:38 (16)	07:04	06:35	05:17	04:29
	16:11	61	13:55 (24)	17:23	16	09:54 (16)	18:31	20:42	21:51	22:45
13	09:18		11:49 (29)	08:18		09:37 (16)	07:02	06:32	05:15	04:28
	16:13	64	13:57 (24)	17:26	18	09:55 (16)	18:33	20:44	21:53	22:46
14	09:17		11:48 (29)	08:15		09:37 (16)	06:59	06:30	05:13	04:28
	16:15	64	13:58 (24)	17:28	19	09:56 (16)	18:35	20:47	21:55	22:47
15	09:16		11:48 (29)	08:13		09:36 (16)	06:56	06:27	05:10	04:27
	16:17	74	14:47 (25)	17:31	20	09:56 (16)	18:38	20:49	21:58	22:47
16	09:15		11:47 (29)	08:10		09:36 (16)	06:53	06:24	05:08	04:27
	16:19	83	14:59 (25)	17:33	20	09:56 (16)	18:40	20:51	22:00	22:48
17	09:13		11:48 (29)	08:07		09:36 (16)	06:50	06:21	05:06	04:27
	16:21	88	15:01 (25)	17:36	19	09:55 (16)	18:42	20:53	22:02	22:49
18	09:12		11:48 (29)	08:05		09:37 (16)	06:47	06:19	05:04	04:27
	16:23	87	15:01 (25)	17:38	19	09:56 (16)	18:45	20:56	22:04	22:49
19	09:10		11:48 (29)	08:02		09:37 (16)	06:44	06:16	05:02	04:27
	16:25	84	15:02 (25)	17:40	18	09:55 (16)	18:47	20:58	22:06	22:50
20	09:08		11:48 (29)	08:00		09:38 (16)	06:41	06:13	05:00	04:27
	16:28	79	15:02 (25)	17:43	16	09:54 (16)	18:49	21:00	22:08	22:50
21	09:07		11:48 (29)	07:57		09:39 (16)	06:39	06:10	04:58	04:27
	16:30	80	15:02 (25)	17:45	13	09:52 (16)	18:51	21:03	22:10	22:50
22	09:05		11:48 (29)	07:54		09:41 (16)	06:36	06:08	04:56	04:27
	16:32	82	15:03 (25)	17:48	8	09:49 (16)	18:54	21:05	22:12	22:50
23	09:03		11:48 (29)	07:52			06:33	06:05	04:54	04:27
	16:34	80	15:02 (25)	17:50			18:56	21:07	22:14	22:51
24	09:02		11:48 (29)	07:49			06:30	06:02	04:52	04:27
	16:37	80	15:02 (25)	17:53			18:58	21:10	22:16	22:51
25	09:00		11:49 (29)	07:46			06:27	05:59	04:51	04:28
	16:39	80	15:02 (25)	17:55			19:01	21:12	22:18	22:51
26	08:58		11:49 (29)	07:44			06:24	05:57	04:49	04:28
	16:41	79	15:02 (25)	17:57			19:03	21:14	22:20	22:50
27	08:56		11:49 (29)	07:41			06:21	05:54	04:47	04:29
	16:44	75	15:01 (25)	18:00			19:05	21:17	22:22	22:50
28	08:54		11:50 (29)	07:38			06:18	05:52	04:46	04:30
	16:46	73	15:01 (25)	18:02			19:08	21:19	22:24	22:50
29	08:52		11:51 (29)				07:15	05:49	04:44	04:30
	16:49	69	15:00 (25)				20:10	21:21	22:25	22:50
30	08:50		11:51 (29)				07:12	05:46	04:42	04:31
	16:51	64	14:58 (25)				20:12	21:24	22:27	22:49
31	08:48		11:52 (29)				07:10		04:41	
	16:54	54	14:55 (25)				20:14		22:29	
Potential sun hours	221			260			365	432	521	547
Total, worst case		1936			399					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** H - Buevegen 1784 (8)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July		August		September		October				November				December			
1	04:32		05:24		06:33		07:39				07:51		09:10 (16)		09:00		11:31 (29)	
	22:49		22:01		20:40		19:13				16:49	11	09:21 (16)		15:51	60	13:37 (24)	
2	04:33		05:26		06:35		07:42				07:54		09:13 (16)		09:02		11:32 (29)	
	22:48		21:59		20:37		19:10				16:46	5	09:18 (16)		15:50	56	13:36 (24)	
3	04:34		05:28		06:37		07:44				07:56				09:03		11:33 (29)	
	22:47		21:56		20:34		19:07				16:44				15:49	53	13:35 (24)	
4	04:35		05:31		06:40		07:46				07:59				09:05		11:34 (29)	
	22:47		21:54		20:31		19:04				16:41				15:48	49	13:34 (24)	
5	04:36		05:33		06:42		07:48				08:01		11:33 (29)		09:07		11:35 (29)	
	22:46		21:51		20:28		19:02				16:39	6	11:39 (29)		15:47	44	13:32 (24)	
6	04:37		05:35		06:44		07:51				08:03		11:30 (29)		09:09		11:36 (29)	
	22:45		21:49		20:25		18:59				16:37	20	13:26 (24)		15:46	37	12:27 (21)	
7	04:38		05:37		06:46		07:53				08:06		11:27 (29)		09:10		11:38 (29)	
	22:44		21:47		20:22		18:56				16:34	31	13:29 (24)		15:45	34	12:27 (21)	
8	04:40		05:39		06:49		07:55				08:08		11:26 (29)		09:12		11:40 (29)	
	22:43		21:44		20:20		18:53				16:32	38	13:31 (24)		15:45	32	12:28 (21)	
9	04:41		05:42		06:51		07:57				08:11		11:25 (29)		09:13		11:42 (29)	
	22:42		21:42		20:17		18:50				16:30	44	13:33 (24)		15:44	29	12:28 (21)	
10	04:43		05:44		06:53		08:00				08:13		11:24 (29)		09:15		11:44 (29)	
	22:41		21:39		20:14		18:47				16:28	48	13:34 (24)		15:43	24	12:28 (21)	
11	04:44		05:46		06:55		08:02				08:15		11:23 (29)		09:16		12:08 (21)	
	22:39		21:37		20:11		18:45				16:25	55	14:27 (25)		15:43	21	12:29 (21)	
12	04:46		05:48		06:57		08:04				08:18		11:23 (29)		09:18		12:08 (21)	
	22:38		21:34		20:08		18:42				16:23	63	14:30 (25)		15:43	21	12:29 (21)	
13	04:47		05:51		07:00		08:07				08:20		11:23 (29)		09:19		12:09 (21)	
	22:37		21:32		20:05		18:39				16:21	69	14:32 (25)		15:42	21	12:30 (21)	
14	04:49		05:53		07:02		08:09				08:22		11:22 (29)		09:20		12:09 (21)	
	22:35		21:29		20:02		18:36				16:19	73	14:33 (25)		15:42	21	12:30 (21)	
15	04:51		05:55		07:04		08:11				08:25		11:22 (29)		09:21		12:09 (21)	
	22:34		21:26		19:59		18:33				16:17	76	14:34 (25)		15:42	21	12:30 (21)	
16	04:52		05:57		07:06		08:13				08:27		11:22 (29)		09:22		12:10 (21)	
	22:32		21:24		19:56		18:31				16:15	79	14:35 (25)		15:42	20	12:30 (21)	
17	04:54		06:00		07:08		08:16				08:30		11:23 (29)		09:23		12:10 (21)	
	22:31		21:21		19:54		18:28				16:13	80	14:36 (25)		15:42	21	12:31 (21)	
18	04:56		06:02		07:11		08:18				08:32		11:22 (29)		09:24		12:11 (21)	
	22:29		21:18		19:51		18:25				16:11	80	14:36 (25)		15:42	20	12:31 (21)	
19	04:58		06:04		07:13		08:20				08:34		11:23 (29)		09:25		12:12 (21)	
	22:27		21:16		19:48		18:22				16:09	80	14:37 (25)		15:42	20	12:32 (21)	
20	05:00		06:06		07:15		08:23		10:11 (16)		08:36		11:22 (29)		09:26		12:12 (21)	
	22:25		21:13		19:45		18:20	10	10:21 (16)		16:08	82	14:37 (25)		15:43	20	12:32 (21)	
21	05:01		06:08		07:17		08:25		10:09 (16)		08:39		11:23 (29)		09:26		12:12 (21)	
	22:24		21:10		19:42		18:17	15	10:24 (16)		16:06	80	14:37 (25)		15:43	20	12:32 (21)	
22	05:03		06:11		07:19		08:27		10:08 (16)		08:41		11:24 (29)		09:27		12:13 (21)	
	22:22		21:08		19:39		18:14	16	10:24 (16)		16:04	79	14:38 (25)		15:43	20	12:33 (21)	
23	05:05		06:13		07:22		08:30		10:07 (16)		08:43		11:24 (29)		09:27		12:13 (21)	
	22:20		21:05		19:36		18:12	18	10:25 (16)		16:02	83	14:38 (25)		15:44	20	12:33 (21)	
24	05:07		06:15		07:24		08:32		10:06 (16)		08:45		11:25 (29)		09:28		12:14 (21)	
	22:18		21:02		19:33		18:09	19	10:25 (16)		16:01	87	14:38 (25)		15:44	21	12:35 (21)	
25	05:09		06:17		07:26		07:35		09:06 (16)		08:47		11:25 (29)		09:28		12:15 (21)	
	22:16		20:59		19:30		17:06	20	09:26 (16)		15:59	87	14:38 (25)		15:45	20	12:35 (21)	
26	05:11		06:20		07:28		07:37		09:06 (16)		08:50		11:26 (29)		09:28		12:15 (21)	
	22:14		20:57		19:27		17:04	20	09:26 (16)		15:58	83	14:38 (25)		15:46	20	12:35 (21)	
27	05:13		06:22		07:30		07:39		09:06 (16)		08:52		11:27 (29)		09:28		12:16 (21)	
	22:12		20:54		19:25		17:01	19	09:25 (16)		15:56	75	14:34 (25)		15:47	20	12:36 (21)	
28	05:16		06:24		07:33		07:42		09:06 (16)		08:54		11:28 (29)		09:28		12:16 (21)	
	22:10		20:51		19:22		16:59	19	09:25 (16)		15:55	65	13:38 (24)		15:48	21	12:37 (21)	
29	05:18		06:26		07:35		07:44		09:06 (16)		08:56		11:29 (29)		09:28		12:16 (21)	
	22:07		20:48		19:19		16:56	18	09:24 (16)		15:54	64	13:37 (24)		15:49	20	12:36 (21)	
30	05:20		06:29		07:37		07:47		09:07 (16)		08:58		11:29 (29)		09:28		12:17 (21)	
	22:05		20:45		19:16		16:54	17	09:24 (16)		15:52	62	13:37 (24)		15:50	20	12:37 (21)	
31	05:22		06:31				07:49		09:09 (16)						09:28		12:16 (21)	
	22:03		20:42				16:51	14	09:23 (16)						15:51	21	12:37 (21)	
Potential sun hours	546		478		386		319				236				199			
Total, worst case								205				1705				847		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** I - Buevegen 1782 (9)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April	May	June
1	09:28		12:08 (21)	08:46		11:39 (29)	07:35	07:07	05:44	04:40
	15:53	21	12:29 (21)	16:56	48	13:50 (24)	18:05	20:17	21:26	22:31
2	09:27		12:08 (21)	08:43		11:40 (29)	07:33	07:04	05:41	04:38
	15:54	21	12:29 (21)	16:58	44	13:48 (24)	18:07	20:19	21:28	22:32
3	09:27		12:09 (21)	08:41		11:41 (29)	07:30	07:01	05:39	04:37
	15:55	20	12:29 (21)	17:01	39	13:47 (24)	18:09	20:21	21:31	22:34
4	09:27		12:09 (21)	08:39		11:42 (29)	07:27	06:58	05:36	04:36
	15:57	21	12:30 (21)	17:03	31	13:44 (24)	18:12	20:24	21:33	22:35
5	09:26		12:09 (21)	08:37		11:43 (29)	07:24	06:55	05:34	04:35
	15:58	21	12:30 (21)	17:06	18	12:01 (29)	18:14	20:26	21:35	22:37
6	09:25		12:10 (21)	08:34		11:46 (29)	07:21	06:52	05:31	04:34
	16:00	26	13:33 (24)	17:08	14	12:00 (29)	18:17	20:28	21:37	22:38
7	09:24		11:42 (29)	08:32		11:51 (29)	07:19	06:50	05:29	04:33
	16:02	37	13:36 (24)	17:11	3	11:54 (29)	18:19	20:30	21:40	22:39
8	09:24		11:40 (29)	08:30			07:16	06:47	05:26	04:32
	16:03	45	13:38 (24)	17:13			18:21	20:33	21:42	22:41
9	09:23		11:39 (29)	08:27			07:13	06:44	05:24	04:31
	16:05	50	13:40 (24)	17:16			18:24	20:35	21:44	22:42
10	09:22		11:38 (29)	08:25		09:40 (16)	07:10	06:41	05:22	04:30
	16:07	52	13:40 (24)	17:18	2	09:42 (16)	18:26	20:37	21:46	22:43
11	09:21		11:38 (29)	08:23		09:36 (16)	07:07	06:38	05:19	04:29
	16:09	56	13:42 (24)	17:21	10	09:46 (16)	18:28	20:40	21:49	22:44
12	09:20		11:37 (29)	08:20		09:34 (16)	07:04	06:35	05:17	04:29
	16:11	63	14:47 (25)	17:23	14	09:48 (16)	18:31	20:42	21:51	22:45
13	09:18		11:37 (29)	08:18		09:33 (16)	07:02	06:32	05:15	04:28
	16:13	74	14:49 (25)	17:26	16	09:49 (16)	18:33	20:44	21:53	22:46
14	09:17		11:36 (29)	08:15		09:33 (16)	06:59	06:30	05:13	04:28
	16:15	82	14:49 (25)	17:28	17	09:50 (16)	18:35	20:47	21:55	22:47
15	09:16		11:36 (29)	08:13		09:32 (16)	06:56	06:27	05:10	04:27
	16:17	87	14:50 (25)	17:31	18	09:50 (16)	18:38	20:49	21:58	22:47
16	09:15		11:35 (29)	08:10		09:31 (16)	06:53	06:24	05:08	04:27
	16:19	87	14:50 (25)	17:33	19	09:50 (16)	18:40	20:51	22:00	22:48
17	09:13		11:36 (29)	08:07		09:31 (16)	06:50	06:21	05:06	04:27
	16:21	87	14:52 (25)	17:36	19	09:50 (16)	18:42	20:53	22:02	22:49
18	09:12		11:36 (29)	08:05		09:32 (16)	06:47	06:19	05:04	04:27
	16:23	89	14:52 (25)	17:38	19	09:51 (16)	18:45	20:56	22:04	22:49
19	09:10		11:35 (29)	08:02		09:32 (16)	06:44	06:16	05:02	04:27
	16:25	86	14:52 (25)	17:40	18	09:50 (16)	18:47	20:58	22:06	22:50
20	09:09		11:35 (29)	08:00		09:32 (16)	06:41	06:13	05:00	04:27
	16:28	83	14:53 (25)	17:43	17	09:49 (16)	18:49	21:00	22:08	22:50
21	09:07		11:35 (29)	07:57		09:33 (16)	06:39	06:10	04:58	04:27
	16:30	79	14:53 (25)	17:45	15	09:48 (16)	18:51	21:03	22:10	22:50
22	09:05		11:35 (29)	07:54		09:34 (16)	06:36	06:08	04:56	04:27
	16:32	80	14:53 (25)	17:48	12	09:46 (16)	18:54	21:05	22:12	22:50
23	09:03		11:35 (29)	07:52		09:37 (16)	06:33	06:05	04:54	04:27
	16:34	79	14:52 (25)	17:50	7	09:44 (16)	18:56	21:07	22:14	22:51
24	09:02		11:35 (29)	07:49			06:30	06:02	04:52	04:27
	16:37	79	14:52 (25)	17:53			18:58	21:10	22:16	22:51
25	09:00		11:35 (29)	07:46			06:27	05:59	04:51	04:28
	16:39	78	14:52 (25)	17:55			19:01	21:12	22:18	22:51
26	08:58		11:36 (29)	07:44			06:24	05:57	04:49	04:28
	16:41	77	14:52 (25)	17:57			19:03	21:14	22:20	22:50
27	08:56		11:36 (29)	07:41			06:21	05:54	04:47	04:29
	16:44	73	14:51 (25)	18:00			19:05	21:17	22:22	22:50
28	08:54		11:36 (29)	07:38			06:18	05:52	04:46	04:30
	16:46	71	14:50 (25)	18:02			19:08	21:19	22:24	22:50
29	08:52		11:37 (29)				07:15	05:49	04:44	04:30
	16:49	66	14:49 (25)				20:10	21:21	22:25	22:50
30	08:50		11:37 (29)				07:13	05:46	04:42	04:31
	16:51	54	14:44 (25)				20:12	21:24	22:27	22:49
31	08:48		11:38 (29)				07:10		04:41	
	16:54	51	13:50 (24)				20:14		22:29	
Potential sun hours	221			260			365	432	521	547
Total, worst case		1895			400					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** I - Buevegen 1782 (9)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July		August		September		October			November			December		
1	04:32		05:24		06:33		07:39			07:51			09:00		11:20 (29)
	22:49		22:01		20:40		19:13			16:49			15:51	56	13:24 (24)
2	04:33		05:26		06:35		07:42			07:54			09:02		11:21 (29)
	22:48		21:59		20:37		19:10			16:46			15:50	52	13:23 (24)
3	04:34		05:28		06:37		07:44			07:56			09:03		11:22 (29)
	22:47		21:56		20:34		19:07			16:44			15:49	50	13:23 (24)
4	04:35		05:31		06:40		07:46			07:59		11:19 (29)	09:05		11:24 (29)
	22:47		21:54		20:31		19:04			16:41	6	11:25 (29)	15:48	45	13:22 (24)
5	04:36		05:33		06:42		07:48			08:01		11:16 (29)	09:07		11:26 (29)
	22:46		21:51		20:28		19:02			16:39	14	11:30 (29)	15:47	38	13:21 (24)
6	04:37		05:35		06:44		07:51			08:03		11:14 (29)	09:09		11:56 (21)
	22:45		21:49		20:25		18:59			16:37	18	11:32 (29)	15:46	26	13:19 (24)
7	04:38		05:37		06:46		07:53			08:06		11:12 (29)	09:10		11:56 (21)
	22:44		21:47		20:23		18:56			16:34	32	13:14 (24)	15:45	21	12:17 (21)
8	04:40		05:39		06:49		07:55			08:08		11:11 (29)	09:12		11:57 (21)
	22:43		21:44		20:20		18:53			16:32	40	13:17 (24)	15:45	21	12:18 (21)
9	04:41		05:42		06:51		07:57			08:11		11:10 (29)	09:13		11:58 (21)
	22:42		21:42		20:17		18:50			16:30	45	13:19 (24)	15:44	20	12:18 (21)
10	04:43		05:44		06:53		08:00			08:13		11:10 (29)	09:15		11:57 (21)
	22:41		21:39		20:14		18:47			16:28	49	13:21 (24)	15:43	21	12:18 (21)
11	04:44		05:46		06:55		08:02			08:15		11:09 (29)	09:16		11:58 (21)
	22:39		21:37		20:11		18:45			16:25	51	13:21 (24)	15:43	21	12:19 (21)
12	04:46		05:48		06:57		08:04			08:18		11:09 (29)	09:18		11:58 (21)
	22:38		21:34		20:08		18:42			16:23	57	14:17 (25)	15:43	21	12:19 (21)
13	04:47		05:51		07:00		08:07			08:20		11:09 (29)	09:19		12:00 (21)
	22:37		21:32		20:05		18:39			16:21	66	14:21 (25)	15:42	20	12:20 (21)
14	04:49		05:53		07:02		08:09			08:23		11:08 (29)	09:20		12:00 (21)
	22:35		21:29		20:02		18:36			16:19	72	14:22 (25)	15:42	20	12:20 (21)
15	04:51		05:55		07:04		08:11			08:25		11:08 (29)	09:21		12:00 (21)
	22:34		21:26		19:59		18:33			16:17	75	14:24 (25)	15:42	20	12:20 (21)
16	04:52		05:57		07:06		08:13			08:27		11:09 (29)	09:22		12:00 (21)
	22:32		21:24		19:56		18:31			16:15	77	14:25 (25)	15:42	20	12:20 (21)
17	04:54		06:00		07:08		08:16			08:30		11:09 (29)	09:23		12:01 (21)
	22:31		21:21		19:54		18:28			16:13	78	14:26 (25)	15:42	20	12:21 (21)
18	04:56		06:02		07:11		08:18			08:32		11:09 (29)	09:24		12:02 (21)
	22:29		21:18		19:51		18:25			16:11	79	14:26 (25)	15:42	19	12:21 (21)
19	04:58		06:04		07:13		08:20		10:07 (16)	08:34		11:10 (29)	09:25		12:02 (21)
	22:27		21:16		19:48		18:22	9	10:16 (16)	16:09	79	14:27 (25)	15:42	20	12:22 (21)
20	05:00		06:06		07:15		08:23		10:05 (16)	08:36		11:10 (29)	09:26		12:03 (21)
	22:25		21:13		19:45		18:20	13	10:18 (16)	16:08	79	14:27 (25)	15:43	19	12:22 (21)
21	05:01		06:08		07:17		08:25		10:04 (16)	08:39		11:10 (29)	09:26		12:03 (21)
	22:24		21:10		19:42		18:17	15	10:19 (16)	16:06	79	14:28 (25)	15:43	19	12:22 (21)
22	05:03		06:11		07:19		08:27		10:02 (16)	08:41		11:11 (29)	09:27		12:04 (21)
	22:22		21:08		19:39		18:14	18	10:20 (16)	16:04	83	14:29 (25)	15:43	19	12:23 (21)
23	05:05		06:13		07:22		08:30		10:02 (16)	08:43		11:11 (29)	09:27		12:04 (21)
	22:20		21:05		19:36		18:12	18	10:20 (16)	16:02	86	14:28 (25)	15:44	19	12:23 (21)
24	05:07		06:15		07:24		08:32		10:01 (16)	08:45		11:13 (29)	09:28		12:05 (21)
	22:18		21:02		19:33		18:09	19	10:20 (16)	16:01	88	14:29 (25)	15:44	20	12:25 (21)
25	05:09		06:17		07:26		07:35		09:01 (16)	08:47		11:13 (29)	09:28		12:05 (21)
	22:16		20:59		19:30		17:06	19	09:20 (16)	15:59	88	14:29 (25)	15:45	20	12:25 (21)
26	05:11		06:20		07:28		07:37		09:02 (16)	08:50		11:14 (29)	09:28		12:06 (21)
	22:14		20:57		19:27		17:04	19	09:21 (16)	15:58	87	14:29 (25)	15:46	19	12:25 (21)
27	05:13		06:22		07:30		07:39		09:01 (16)	08:52		11:15 (29)	09:28		12:06 (21)
	22:12		20:54		19:25		17:01	19	09:20 (16)	15:56	86	14:29 (25)	15:47	20	12:26 (21)
28	05:16		06:24		07:33		07:42		09:02 (16)	08:54		11:16 (29)	09:28		12:07 (21)
	22:10		20:51		19:22		16:59	17	09:19 (16)	15:55	82	14:29 (25)	15:48	20	12:27 (21)
29	05:18		06:26		07:35		07:44		09:02 (16)	08:56		11:17 (29)	09:28		12:06 (21)
	22:07		20:48		19:19		16:56	16	09:18 (16)	15:54	75	14:29 (25)	15:49	20	12:26 (21)
30	05:20		06:29		07:37		07:47		09:04 (16)	08:58		11:18 (29)	09:28		12:07 (21)
	22:05		20:45		19:16		16:54	13	09:17 (16)	15:52	62	14:28 (25)	15:50	20	12:27 (21)
31	05:22		06:31				07:49		09:06 (16)				09:28		12:07 (21)
	22:03		20:42				16:51	9	09:15 (16)				15:51	20	12:27 (21)
Potential sun hours	546		478		386		319			236			199		
Total, worst case								204			1733			766	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** J - Buevegen 1780 (10)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April	May	June
1	09:28		12:05 (21)	08:46		11:36 (29)	07:35	07:07	05:44	04:40
	15:53	21	12:26 (21)	16:56	45	13:44 (24)	18:05	20:17	21:26	22:31
2	09:27		12:06 (21)	08:43		11:37 (29)	07:33	07:04	05:41	04:38
	15:54	20	12:26 (21)	16:58	40	13:42 (24)	18:07	20:19	21:28	22:32
3	09:27		12:06 (21)	08:41		11:38 (29)	07:30	07:01	05:39	04:37
	15:55	20	12:26 (21)	17:01	34	13:40 (24)	18:09	20:21	21:31	22:34
4	09:27		12:06 (21)	08:39		11:39 (29)	07:27	06:58	05:36	04:36
	15:57	21	12:27 (21)	17:03	20	11:59 (29)	18:12	20:24	21:33	22:35
5	09:26		12:06 (21)	08:37		11:41 (29)	07:24	06:55	05:34	04:35
	15:58	28	13:28 (24)	17:06	16	11:57 (29)	18:14	20:26	21:35	22:37
6	09:25		12:07 (21)	08:34		11:44 (29)	07:21	06:52	05:31	04:34
	16:00	31	13:30 (24)	17:08	10	11:54 (29)	18:17	20:28	21:37	22:38
7	09:24		11:38 (29)	08:32			07:19	06:50	05:29	04:33
	16:02	39	13:32 (24)	17:11			18:19	20:30	21:40	22:39
8	09:24		11:37 (29)	08:30			07:16	06:47	05:26	04:32
	16:03	46	13:34 (24)	17:13			18:21	20:33	21:42	22:41
9	09:23		11:36 (29)	08:27			07:13	06:44	05:24	04:31
	16:05	50	13:36 (24)	17:16			18:24	20:35	21:44	22:42
10	09:22		11:35 (29)	08:25		09:38 (16)	07:10	06:41	05:22	04:30
	16:07	58	14:41 (25)	17:18	5	09:43 (16)	18:26	20:37	21:46	22:43
11	09:21		11:34 (29)	08:23		09:36 (16)	07:07	06:38	05:19	04:29
	16:09	71	14:43 (25)	17:21	10	09:46 (16)	18:28	20:40	21:49	22:44
12	09:20		11:33 (29)	08:20		09:34 (16)	07:04	06:35	05:17	04:29
	16:11	79	14:44 (25)	17:23	14	09:48 (16)	18:31	20:42	21:51	22:45
13	09:18		11:34 (29)	08:18		09:32 (16)	07:02	06:32	05:15	04:28
	16:13	81	14:45 (25)	17:26	16	09:48 (16)	18:33	20:44	21:53	22:46
14	09:17		11:33 (29)	08:15		09:32 (16)	06:59	06:30	05:13	04:28
	16:15	84	14:45 (25)	17:28	18	09:50 (16)	18:35	20:47	21:55	22:47
15	09:16		11:32 (29)	08:13		09:32 (16)	06:56	06:27	05:10	04:27
	16:17	86	14:46 (25)	17:31	18	09:50 (16)	18:38	20:49	21:58	22:47
16	09:15		11:32 (29)	08:10		09:31 (16)	06:53	06:24	05:08	04:27
	16:19	87	14:46 (25)	17:33	19	09:50 (16)	18:40	20:51	22:00	22:48
17	09:13		11:32 (29)	08:07		09:31 (16)	06:50	06:21	05:06	04:27
	16:21	87	14:47 (25)	17:36	19	09:50 (16)	18:42	20:53	22:02	22:49
18	09:12		11:32 (29)	08:05		09:32 (16)	06:47	06:19	05:04	04:27
	16:23	88	14:48 (25)	17:38	18	09:50 (16)	18:45	20:56	22:04	22:49
19	09:10		11:32 (29)	08:02		09:32 (16)	06:44	06:16	05:02	04:27
	16:25	86	14:48 (25)	17:40	17	09:49 (16)	18:47	20:58	22:06	22:50
20	09:09		11:32 (29)	08:00		09:32 (16)	06:41	06:13	05:00	04:27
	16:28	77	14:48 (25)	17:43	16	09:48 (16)	18:49	21:00	22:08	22:50
21	09:07		11:32 (29)	07:57		09:33 (16)	06:39	06:10	04:58	04:27
	16:30	77	14:48 (25)	17:45	14	09:47 (16)	18:51	21:03	22:10	22:50
22	09:05		11:32 (29)	07:54		09:35 (16)	06:36	06:08	04:56	04:27
	16:32	79	14:49 (25)	17:48	10	09:45 (16)	18:54	21:05	22:12	22:50
23	09:03		11:31 (29)	07:52		09:39 (16)	06:33	06:05	04:54	04:27
	16:34	78	14:48 (25)	17:50	2	09:41 (16)	18:56	21:07	22:14	22:51
24	09:02		11:32 (29)	07:49			06:30	06:02	04:52	04:27
	16:37	77	14:48 (25)	17:53			18:58	21:10	22:16	22:51
25	09:00		11:32 (29)	07:46			06:27	05:59	04:51	04:28
	16:39	75	14:47 (25)	17:55			19:01	21:12	22:18	22:51
26	08:58		11:33 (29)	07:44			06:24	05:57	04:49	04:28
	16:41	73	14:47 (25)	17:57			19:03	21:14	22:20	22:50
27	08:56		11:32 (29)	07:41			06:21	05:54	04:47	04:29
	16:44	70	14:45 (25)	18:00			19:05	21:17	22:22	22:50
28	08:54		11:33 (29)	07:38			06:18	05:52	04:46	04:30
	16:46	66	14:44 (25)	18:02			19:08	21:19	22:24	22:50
29	08:52		11:34 (29)				07:15	05:49	04:44	04:30
	16:49	57	14:41 (25)				20:10	21:21	22:25	22:50
30	08:50		11:34 (29)				07:13	05:46	04:42	04:31
	16:51	52	13:45 (24)				20:12	21:24	22:27	22:49
31	08:48		11:35 (29)				07:10		04:41	
	16:54	48	13:44 (24)				20:14		22:29	
Potential sun hours	221			260			365	432	521	547
Total, worst case		1912			361					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** J - Buevegen 1780 (10)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September	October			November			December		
1	04:32	05:24	06:33	07:39			07:51		09:09 (16)	09:00		11:16 (29)
	22:49	22:01	20:40	19:13			16:49	2	09:11 (16)	15:51	74	14:26 (25)
2	04:33	05:26	06:35	07:42			07:54			09:02		11:18 (29)
	22:48	21:59	20:37	19:10			16:46			15:50	58	14:24 (25)
3	04:34	05:28	06:37	07:44			07:56			09:03		11:19 (29)
	22:47	21:56	20:34	19:07			16:44			15:49	51	13:19 (24)
4	04:35	05:31	06:40	07:46			07:59			09:05		11:21 (29)
	22:47	21:54	20:31	19:04			16:41			15:48	46	13:18 (24)
5	04:36	05:33	06:42	07:48			08:01		11:13 (29)	09:07		11:23 (29)
	22:46	21:51	20:28	19:02			16:39	12	11:25 (29)	15:47	39	13:18 (24)
6	04:37	05:35	06:44	07:51			08:03		11:11 (29)	09:09		11:53 (21)
	22:45	21:49	20:25	18:59			16:37	17	11:28 (29)	15:46	32	13:17 (24)
7	04:38	05:37	06:46	07:53			08:06		11:10 (29)	09:10		11:54 (21)
	22:44	21:47	20:23	18:56			16:34	22	13:06 (24)	15:45	28	13:16 (24)
8	04:40	05:39	06:49	07:55			08:08		11:08 (29)	09:12		11:54 (21)
	22:43	21:44	20:20	18:53			16:32	34	13:10 (24)	15:45	22	13:13 (24)
9	04:41	05:42	06:51	07:57			08:11		11:07 (29)	09:13		11:55 (21)
	22:42	21:42	20:17	18:50			16:30	41	13:13 (24)	15:44	20	12:15 (21)
10	04:43	05:44	06:53	08:00			08:13		11:07 (29)	09:15		11:55 (21)
	22:41	21:39	20:14	18:47			16:28	46	13:15 (24)	15:43	20	12:15 (21)
11	04:44	05:46	06:55	08:02			08:15		11:06 (29)	09:16		11:56 (21)
	22:39	21:37	20:11	18:45			16:25	48	13:15 (24)	15:43	20	12:16 (21)
12	04:46	05:48	06:57	08:04			08:18		11:06 (29)	09:18		11:56 (21)
	22:38	21:34	20:08	18:42			16:23	52	13:17 (24)	15:43	20	12:16 (21)
13	04:47	05:51	07:00	08:07			08:20		11:06 (29)	09:19		11:57 (21)
	22:37	21:32	20:05	18:39			16:21	58	14:14 (25)	15:42	20	12:17 (21)
14	04:49	05:53	07:02	08:09			08:23		11:05 (29)	09:20		11:57 (21)
	22:35	21:29	20:02	18:36			16:19	66	14:16 (25)	15:42	20	12:17 (21)
15	04:51	05:55	07:04	08:11			08:25		11:05 (29)	09:21		11:57 (21)
	22:34	21:26	19:59	18:33			16:17	70	14:18 (25)	15:42	20	12:17 (21)
16	04:52	05:57	07:06	08:13			08:27		11:06 (29)	09:22		11:58 (21)
	22:32	21:24	19:56	18:31			16:15	73	14:20 (25)	15:42	19	12:17 (21)
17	04:54	06:00	07:08	08:16			08:30		11:06 (29)	09:23		11:58 (21)
	22:31	21:21	19:54	18:28			16:13	75	14:21 (25)	15:42	20	12:18 (21)
18	04:56	06:02	07:11	08:18			08:32		11:06 (29)	09:24		11:59 (21)
	22:29	21:18	19:51	18:25			16:11	77	14:22 (25)	15:42	19	12:18 (21)
19	04:58	06:04	07:13	08:20		10:08 (16)	08:34		11:06 (29)	09:25		11:59 (21)
	22:27	21:16	19:48	18:22	7	10:15 (16)	16:09	78	14:23 (25)	15:42	20	12:19 (21)
20	05:00	06:06	07:15	08:23		10:05 (16)	08:36		11:06 (29)	09:26		12:00 (21)
	22:25	21:13	19:45	18:20	12	10:17 (16)	16:08	79	14:23 (25)	15:43	19	12:19 (21)
21	05:01	06:08	07:17	08:25		10:04 (16)	08:39		11:07 (29)	09:26		12:00 (21)
	22:24	21:10	19:42	18:17	15	10:19 (16)	16:06	77	14:23 (25)	15:43	19	12:19 (21)
22	05:03	06:11	07:19	08:27		10:02 (16)	08:41		11:08 (29)	09:27		12:01 (21)
	22:22	21:08	19:39	18:14	17	10:19 (16)	16:04	77	14:24 (25)	15:43	19	12:20 (21)
23	05:05	06:13	07:22	08:30		10:02 (16)	08:43		11:08 (29)	09:27		12:01 (21)
	22:20	21:05	19:36	18:12	18	10:20 (16)	16:02	86	14:24 (25)	15:44	19	12:20 (21)
24	05:07	06:15	07:24	08:32		10:01 (16)	08:45		11:09 (29)	09:28		12:02 (21)
	22:18	21:02	19:33	18:09	19	10:20 (16)	16:01	87	14:25 (25)	15:44	19	12:21 (21)
25	05:09	06:17	07:26	07:35		09:01 (16)	08:47		11:09 (29)	09:28		12:03 (21)
	22:16	20:59	19:30	17:06	19	09:20 (16)	15:59	88	14:25 (25)	15:45	19	12:22 (21)
26	05:11	06:20	07:28	07:37		09:01 (16)	08:50		11:11 (29)	09:28		12:03 (21)
	22:14	20:57	19:27	17:04	19	09:20 (16)	15:58	87	14:25 (25)	15:46	19	12:22 (21)
27	05:13	06:22	07:30	07:39		09:01 (16)	08:52		11:11 (29)	09:28		12:03 (21)
	22:12	20:54	19:25	17:01	18	09:19 (16)	15:56	85	14:25 (25)	15:47	20	12:23 (21)
28	05:16	06:24	07:33	07:42		09:02 (16)	08:54		11:13 (29)	09:28		12:04 (21)
	22:10	20:51	19:22	16:59	17	09:19 (16)	15:55	85	14:26 (25)	15:48	20	12:24 (21)
29	05:18	06:26	07:35	07:44		09:02 (16)	08:56		11:14 (29)	09:28		12:04 (21)
	22:07	20:48	19:19	16:56	16	09:18 (16)	15:54	82	14:25 (25)	15:49	19	12:23 (21)
30	05:20	06:29	07:37	07:47		09:03 (16)	08:58		11:14 (29)	09:28		12:04 (21)
	22:05	20:45	19:16	16:54	14	09:17 (16)	15:52	80	14:25 (25)	15:50	20	12:24 (21)
31	05:22	06:31		07:49		09:06 (16)				09:28		12:04 (21)
	22:03	20:42		16:51	9	09:15 (16)				15:51	20	12:24 (21)
Potential sun hours	546	478	386	319			236			199		
Total, worst case					200			1684			800	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** K - Buevegen 1778 (11)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January		February		March	April	May	June	July	August	September	October	November		December		
1	09:28		11:58 (21)	08:46		11:24 (29)	07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:39	07:51		09:00		11:13 (29)
	15:53	16	12:14 (21)	16:56	49	13:35 (24)	18:05	20:17	21:26	22:31	22:49	22:01	20:40	19:13	16:49		15:51	59	14:20 (25)
2	09:28		11:58 (21)	08:43		11:24 (29)	07:33	07:04	05:41	04:38	04:33	05:26	06:35	07:42	07:54		09:02		11:44 (21)
	15:54	18	12:16 (21)	16:58	47	13:34 (24)	18:07	20:19	21:28	22:32	22:48	21:59	20:37	19:10	16:46		15:50	50	14:19 (25)
3	09:27		11:58 (21)	08:41		11:25 (29)	07:30	07:01	05:39	04:37	04:34	05:28	06:37	07:44	07:56	11:02 (29)	09:03		11:44 (21)
	15:55	20	12:18 (21)	17:01	42	13:33 (24)	18:09	20:21	21:31	22:34	22:47	21:56	20:34	19:07	16:44	11:14 (29)	15:49	40	14:19 (25)
4	09:27		11:58 (21)	08:39		11:26 (29)	07:27	06:58	05:36	04:36	04:35	05:31	06:40	07:46	07:59	10:59 (29)	09:05		11:44 (21)
	15:57	21	12:19 (21)	17:03	35	13:30 (24)	18:12	20:24	21:33	22:35	22:47	21:54	20:31	19:04	16:41	11:16 (29)	15:48	34	14:19 (25)
5	09:26		11:59 (21)	08:37		11:26 (29)	07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48	08:01	10:58 (29)	09:07		11:45 (21)
	15:58	20	12:19 (21)	17:06	23	11:49 (29)	18:14	20:26	21:35	22:37	22:46	21:51	20:28	19:02	16:39	11:18 (29)	15:47	31	13:06 (24)
6	09:25		11:59 (21)	08:34		11:28 (29)	07:21	06:52	05:31	04:34	04:37	05:35	06:44	07:51	08:03	10:57 (29)	09:09		11:45 (21)
	16:00	26	13:18 (24)	17:08	20	11:48 (29)	18:17	20:28	21:37	22:38	22:45	21:49	20:25	18:59	16:37	11:19 (29)	15:46	27	13:05 (24)
7	09:25		12:00 (21)	08:32		11:30 (29)	07:19	06:50	05:29	04:33	04:39	05:37	06:46	07:53	08:06	10:56 (29)	09:10		11:46 (21)
	16:02	30	13:21 (24)	17:11	16	11:46 (29)	18:19	20:30	21:40	22:39	22:44	21:47	20:23	18:56	16:34	13:01 (24)	15:45	20	12:06 (21)
8	09:24		12:00 (21)	08:30		11:33 (29)	07:16	06:47	05:26	04:32	04:40	05:39	06:49	07:55	08:08	10:55 (29)	09:12		11:47 (21)
	16:03	34	14:35 (25)	17:13	11	11:44 (29)	18:21	20:33	21:42	22:41	22:43	21:44	20:20	18:53	16:32	13:03 (24)	15:45	20	12:07 (21)
9	09:23		12:01 (21)	08:27			07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:57	08:11	10:55 (29)	09:13		11:47 (21)
	16:05	41	14:36 (25)	17:16			18:24	20:35	21:44	22:42	22:42	21:42	20:17	18:50	16:30	13:05 (24)	15:44	20	12:07 (21)
10	09:22		12:01 (21)	08:25			07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00	08:13	10:54 (29)	09:15		11:47 (21)
	16:07	50	14:36 (25)	17:18			18:26	20:37	21:46	22:43	22:41	21:39	20:14	18:47	16:28	13:06 (24)	15:43	19	12:07 (21)
11	09:21		12:02 (21)	08:23			07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02	08:15	10:54 (29)	09:16		11:48 (21)
	16:09	57	14:37 (25)	17:21			18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:45	16:25	13:06 (24)	15:43	16	12:04 (21)
12	09:20		11:27 (29)	08:20			07:04	06:35	05:17	04:29	04:46	05:48	06:57	08:04	08:18	10:54 (29)	09:18		11:48 (21)
	16:11	69	14:38 (25)	17:23			18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42	16:23	13:08 (24)	15:43	11	11:59 (21)
13	09:18		11:26 (29)	08:18			07:02	06:32	05:15	04:28	04:47	05:51	07:00	08:07	08:20	10:54 (29)	09:19		11:49 (21)
	16:13	75	14:39 (25)	17:26			18:33	20:44	21:53	22:46	22:37	21:32	20:05	18:39	16:21	14:08 (25)	15:42	11	12:00 (21)
14	09:17		11:25 (29)	08:15			06:59	06:30	05:13	04:28	04:49	05:53	07:02	08:09	08:23	10:53 (29)	09:20		11:50 (21)
	16:15	78	14:39 (25)	17:28			18:35	20:47	21:55	22:47	22:35	21:29	20:02	18:36	16:19	14:10 (25)	15:42	7	12:00 (21)
15	09:16		11:24 (29)	08:13			06:56	06:27	05:10	04:27	04:51	05:55	07:04	08:11	08:25	10:54 (29)	09:21		11:50 (21)
	16:17	82	14:40 (25)	17:31			18:38	20:49	21:58	22:47	22:34	21:26	19:59	18:33	16:17	14:12 (25)	15:42	3	11:53 (21)
16	09:15		11:23 (29)	08:10			06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13	08:27	10:54 (29)	09:22		11:50 (21)
	16:19	85	14:40 (25)	17:33			18:40	20:51	22:00	22:48	22:32	21:24	19:56	18:31	16:15	14:14 (25)	15:42	3	11:53 (21)
17	09:13		11:23 (29)	08:07			06:50	06:21	05:06	04:27	04:54	06:00	07:08	08:16	08:30	10:55 (29)	09:23		11:51 (21)
	16:21	86	14:41 (25)	17:36			18:42	20:54	22:02	22:49	22:31	21:21	19:54	18:28	16:13	14:15 (25)	15:42	1	11:52 (21)
18	09:12		11:23 (29)	08:05			06:47	06:19	05:04	04:27	04:56	06:02	07:11	08:18	08:32	10:55 (29)	09:24		
	16:23	87	14:42 (25)	17:38			18:45	20:56	22:04	22:49	22:29	21:18	19:51	18:25	16:11	14:15 (25)	15:42		
19	09:10		11:22 (29)	08:02			06:44	06:16	05:02	04:27	04:58	06:04	07:13	08:20	08:34	10:56 (29)	09:25		
	16:25	87	14:42 (25)	17:40			18:47	20:58	22:06	22:50	22:27	21:16	19:48	18:22	16:09	14:16 (25)	15:42		
20	09:09		11:22 (29)	08:00			06:41	06:13	05:00	04:27	05:00	06:06	07:15	08:23	08:36	10:56 (29)	09:26		
	16:28	85	14:42 (25)	17:43			18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20	16:08	14:16 (25)	15:43		
21	09:07		11:22 (29)	07:57			06:39	06:10	04:58	04:27	05:01	06:08	07:17	08:25	08:39	10:57 (29)	09:26		
	16:30	82	14:42 (25)	17:45			18:51	21:03	22:10	22:50	22:24	21:10	19:42	18:17	16:06	14:17 (25)	15:43		
22	09:05		11:22 (29)	07:54			06:36	06:08	04:56	04:27	05:03	06:11	07:19	08:27	08:41	10:58 (29)	09:27		
	16:32	77	14:42 (25)	17:48			18:54	21:05	22:12	22:50	22:22	21:08	19:39	18:14	16:04	14:18 (25)	15:43		
23	09:03		11:21 (29)	07:52			06:33	06:05	04:54	04:27	05:05	06:13	07:22	08:30	08:43	10:58 (29)	09:27		
	16:34	77	14:41 (25)	17:50			18:56	21:07	22:14	22:51	22:20	21:05	19:36	18:12	16:02	14:18 (25)	15:44		
24	09:02		11:21 (29)	07:49			06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32	08:45	11:00 (29)	09:28		
	16:37	76	14:41 (25)	17:53			18:58	21:10	22:16	22:51	22:18	21:02	19:33	18:09	16:01	14:19 (25)	15:44		
25	09:00		11:21 (29)	07:46			06:27	05:59	04:51	04:28	05:09	06:17	07:26	07:35	08:47	11:00 (29)	09:28		
	16:39	77	14:41 (25)	17:55			19:01	21:12	22:18	22:51	22:16	20:59	19:30	17:06	15:59	14:18 (25)	15:45		
26	08:58		11:21 (29)	07:44			06:24	05:57	04:49	04:28	05:11	06:20	07:28	07:37	08:50	11:02 (29)	09:28		
	16:41	75	14:41 (25)	17:57			19:03	21:14	22:20	22:50	22:14	20:57	19:27	17:04	15:58	14:19 (25)	15:46		
27	08:56		11:21 (29)	07:41			06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39	08:52	11:03 (29)	09:28		11:56 (21)
	16:44	71	14:39 (25)	18:00			19:05	21:17	22:22	22:50	22:12	20:54	19:25	17:01	15:56	14:19 (25)	15:47	3	11:59 (21)
28	08:54		11:21 (29)	07:38			06:18	05:52	04:46	04:30	05:16	06:24	07:33	07:42	08:54	11:05 (29)	09:28		11:57 (21)
	16:46	69	14:38 (25)	18:02			19:08	21:19	22:24	22:50	22:10	20:51	19:22	16:59	15:55	14:19 (25)	15:48	3	12:00 (21)
29	08:52		11:22 (29)				07:15	05:49	04:44	04:30	05:18	06:26	07:35	07:44	08:56	11:06 (29)	09:28		11:56 (21)
	16:49	61	14:36 (25)				20:10	21:21	22:25	22:50	22:07	20:48	19:19	16:56	15:54	14:19 (25)	15:49	5	12:07 (21)
30	08:50		11:22 (29)				07:13	05:46	04:42	04:31	05:20	06:29	07:37	07:47	08:58	11:08 (29)	09:28		11:57 (21)
	16:51	55	13:36 (24)				20:12	21:24	22:27	22:49	22:05	20:45	19:16	16:54	15:52	14:19 (25)	15:50	11	12:08 (21)
31	08:48		11:23 (29)				07:10		04:41		05:22	06:31		07:49			09:28		11:57 (21)
	16:54	53	13:36 (24)				20:14		22:29		22:03	20:42		16:51			15:51	11	12:08 (21)
Potential sun hours	221			260			365	432	521	547	546	478	386	319	236		199		
Total, worst case		1840			243											1756		405	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** L - Buevegen 1850 (12)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January		February		March		April	May	June
1	09:28		11:52 (34)	08:46		13:17 (29)	07:35	08:53 (18)	07:07	05:44	04:40
	15:53	17	12:09 (34)	16:56	36	13:53 (29)	18:05	19	09:12 (18)	20:17	21:26	22:30
2	09:27		11:51 (34)	08:43		13:18 (29)	07:32	08:53 (18)	07:04	05:41	04:38
	15:54	19	12:10 (34)	16:58	43	15:13 (24)	18:07	20	09:13 (18)	20:19	21:28	22:32
3	09:27		11:51 (34)	08:41		13:17 (29)	07:30	08:52 (18)	07:01	05:39	04:37
	15:55	19	12:10 (34)	17:01	52	15:18 (24)	18:09	21	09:13 (18)	20:21	21:30	22:34
4	09:26		11:51 (34)	08:39		13:18 (29)	07:27	08:52 (18)	06:58	05:36	04:36
	15:57	20	12:11 (34)	17:03	54	15:20 (24)	18:12	20	09:12 (18)	20:24	21:33	22:35
5	09:26		11:52 (34)	08:37		13:17 (29)	07:24	08:52 (18)	06:55	05:34	04:35
	15:58	20	12:12 (34)	17:06	58	15:21 (24)	18:14	20	09:12 (18)	20:26	21:35	22:37
6	09:25		11:52 (34)	08:34		13:18 (29)	07:21	08:52 (18)	06:52	05:31	04:34
	16:00	20	12:12 (34)	17:08	63	15:44 (25)	18:16	19	09:11 (18)	20:28	21:37	22:38
7	09:24		11:52 (34)	08:32		13:17 (29)	07:19	08:53 (18)	06:49	05:29	04:33
	16:02	21	12:13 (34)	17:11	68	15:46 (25)	18:19	17	09:10 (18)	20:30	21:40	22:39
8	09:24		11:53 (34)	08:30		13:18 (29)	07:16	08:54 (18)	06:47	05:26	04:32
	16:03	21	12:14 (34)	17:13	73	15:51 (25)	18:21	14	09:08 (18)	20:33	21:42	22:40
9	09:23		11:52 (34)	08:27		13:18 (29)	07:13	08:55 (18)	06:44	05:24	04:31
	16:05	22	12:14 (34)	17:16	79	15:59 (25)	18:24	10	09:05 (18)	20:35	21:44	22:42
10	09:22		11:53 (34)	08:25		13:18 (29)	07:10			06:41	05:22	04:30
	16:07	22	12:15 (34)	17:18	82	16:00 (25)	18:26			20:37	21:46	22:43
11	09:21		11:54 (34)	08:23		13:20 (29)	07:07			06:38	05:19	04:29
	16:09	22	12:16 (34)	17:21	80	16:00 (25)	18:28			20:40	21:49	22:44
12	09:20		11:53 (34)	08:20		10:07 (16)	07:04			06:35	05:17	04:29
	16:11	24	13:22 (21)	17:23	88	15:59 (25)	18:31			20:42	21:51	22:45
13	09:18		11:53 (34)	08:18		10:04 (16)	07:01			06:32	05:15	04:28
	16:13	30	13:28 (21)	17:26	90	15:58 (25)	18:33			20:44	21:53	22:46
14	09:17		11:54 (34)	08:15		10:03 (16)	06:59			06:30	05:13	04:28
	16:15	38	13:37 (21)	17:28	87	15:57 (25)	18:35			20:47	21:55	22:46
15	09:16		11:55 (34)	08:13		10:02 (16)	06:56			06:27	05:10	04:27
	16:17	44	13:43 (21)	17:31	80	15:54 (25)	18:38			20:49	21:57	22:47
16	09:15		11:55 (34)	08:10		10:01 (16)	06:53			06:24	05:08	04:27
	16:19	45	13:44 (21)	17:33	72	15:24 (24)	18:40			20:51	22:00	22:48
17	09:13		11:55 (34)	08:07		10:00 (16)	06:50			06:21	05:06	04:27
	16:21	45	13:44 (21)	17:35	66	15:23 (24)	18:42			20:53	22:02	22:49
18	09:12		11:57 (34)	08:05		10:00 (16)	06:47			06:19	05:04	04:27
	16:23	44	13:46 (21)	17:38	60	15:23 (24)	18:45			20:56	22:04	22:49
19	09:10		11:57 (34)	08:02		10:00 (16)	06:44			06:16	05:02	04:27
	16:25	44	13:46 (21)	17:40	43	15:21 (24)	18:47			20:58	22:06	22:50
20	09:08		11:58 (34)	08:00		09:59 (16)	06:41			06:13	05:00	04:27
	16:28	43	13:46 (21)	17:43	41	15:19 (24)	18:49			21:00	22:08	22:50
21	09:07		11:59 (34)	07:57		09:59 (16)	06:38			06:10	04:58	04:27
	16:30	40	13:46 (21)	17:45	33	15:15 (24)	18:51			21:03	22:10	22:50
22	09:05		11:59 (34)	07:54		09:59 (16)	06:36			06:08	04:56	04:27
	16:32	40	13:46 (21)	17:48	25	10:24 (16)	18:54			21:05	22:12	22:50
23	09:03		12:01 (34)	07:52		10:00 (16)	06:33			06:05	04:54	04:27
	16:34	36	13:46 (21)	17:50	24	10:24 (16)	18:56			21:07	22:14	22:50
24	09:02		12:03 (34)	07:49		10:01 (16)	06:30			06:02	04:52	04:27
	16:37	34	13:46 (21)	17:53	22	10:23 (16)	18:58			21:10	22:16	22:51
25	09:00		12:05 (34)	07:46		09:00 (18)	06:27			05:59	04:51	04:28
	16:39	32	13:46 (29)	17:55	27	10:22 (16)	19:01			21:12	22:18	22:50
26	08:58		13:21 (29)	07:43		08:57 (18)	06:24			05:57	04:49	04:28
	16:41	27	13:48 (29)	17:57	30	10:20 (16)	19:03			21:14	22:20	22:50
27	08:56		13:20 (29)	07:41		08:55 (18)	06:21			05:54	04:47	04:29
	16:44	28	13:48 (29)	18:00	29	10:18 (16)	19:05			21:17	22:22	22:50
28	08:54		13:19 (29)	07:38		08:54 (18)	06:18			05:52	04:46	04:30
	16:46	31	13:50 (29)	18:02	24	10:14 (16)	19:07			21:19	22:24	22:50
29	08:52		13:19 (29)				07:15			05:49	04:44	04:30
	16:49	32	13:51 (29)				20:10			21:21	22:25	22:50
30	08:50		13:18 (29)				07:12			05:46	04:42	04:31
	16:51	33	13:51 (29)				20:12			21:24	22:27	22:49
31	08:48		13:18 (29)				07:10				04:41	
	16:53	35	13:53 (29)				20:14				22:29	
Potential sun hours	221			260			365			432	521	547
Total, worst case		948			1529			160				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** L - Buevegen 1850 (12)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July		August		September		October			November			December		
1	04:32		05:24		06:33		07:39			07:51		12:48 (29)	09:00		11:36 (34)
	22:49		22:01		20:40		19:13			16:49	83	15:30 (25)	15:51	22	11:58 (34)
2	04:33		05:26		06:35		07:42			07:54		12:48 (29)	09:02		11:36 (34)
	22:48		21:58		20:37		19:10			16:46	76	15:28 (25)	15:50	22	11:58 (34)
3	04:34		05:28		06:37		07:44			07:56		12:48 (29)	09:03		11:36 (34)
	22:47		21:56		20:34		19:07			16:44	71	15:20 (25)	15:49	22	11:58 (34)
4	04:35		05:31		06:40		07:46		09:34 (18)	07:59		12:47 (29)	09:05		11:37 (34)
	22:47		21:54		20:31		19:04	7	09:41 (18)	16:41	66	15:15 (25)	15:48	21	11:58 (34)
5	04:36		05:33		06:42		07:48		09:32 (18)	08:01		12:47 (29)	09:07		11:37 (34)
	22:46		21:51		20:28		19:01	12	09:44 (18)	16:39	62	15:13 (25)	15:47	21	11:58 (34)
6	04:37		05:35		06:44		07:51		09:30 (18)	08:03		12:48 (29)	09:09		11:38 (34)
	22:45		21:49		20:25		18:59	15	09:45 (18)	16:37	58	14:52 (24)	15:46	21	11:59 (34)
7	04:38		05:37		06:46		07:53		09:28 (18)	08:06		12:47 (29)	09:10		11:39 (34)
	22:44		21:47		20:22		18:56	18	09:46 (18)	16:34	55	14:50 (24)	15:45	20	11:59 (34)
8	04:40		05:39		06:48		07:55		09:28 (18)	08:08		12:48 (29)	09:12		11:40 (34)
	22:43		21:44		20:20		18:53	19	09:47 (18)	16:32	50	14:48 (24)	15:45	19	11:59 (34)
9	04:41		05:42		06:51		07:57		09:27 (18)	08:11		12:48 (29)	09:13		11:41 (34)
	22:42		21:42		20:17		18:50	20	09:47 (18)	16:30	42	14:43 (24)	15:44	19	12:00 (34)
10	04:43		05:44		06:53		08:00		09:27 (18)	08:13		12:49 (29)	09:15		11:41 (34)
	22:40		21:39		20:14		18:47	20	09:47 (18)	16:28	35	13:24 (29)	15:43	18	11:59 (34)
11	04:44		05:46		06:55		08:02		09:26 (18)	08:15		12:49 (29)	09:16		11:42 (34)
	22:39		21:37		20:11		18:45	20	09:46 (18)	16:25	34	13:23 (29)	15:43	18	12:00 (34)
12	04:46		05:48		06:57		08:04		09:26 (18)	08:18		12:50 (29)	09:18		11:42 (34)
	22:38		21:34		20:08		18:42	19	09:45 (18)	16:23	33	13:23 (29)	15:43	17	11:59 (34)
13	04:47		05:51		07:00		08:06		09:27 (18)	08:20		12:51 (29)	09:19		11:43 (34)
	22:37		21:31		20:05		18:39	18	09:45 (18)	16:21	32	13:23 (29)	15:42	17	12:00 (34)
14	04:49		05:53		07:02		08:09		09:27 (18)	08:22		12:51 (29)	09:20		11:44 (34)
	22:35		21:29		20:02		18:36	28	10:49 (16)	16:19	31	13:22 (29)	15:42	16	12:00 (34)
15	04:51		05:55		07:04		08:11		09:29 (18)	08:25		12:53 (29)	09:21		11:44 (34)
	22:34		21:26		19:59		18:33	30	10:52 (16)	16:17	28	13:21 (29)	15:42	16	12:00 (34)
16	04:52		05:57		07:06		08:13		09:30 (18)	08:27		12:54 (29)	09:22		11:45 (34)
	22:32		21:24		19:56		18:31	29	10:53 (16)	16:15	27	13:21 (29)	15:42	15	12:00 (34)
17	04:54		05:59		07:08		08:16		10:33 (16)	08:29		11:38 (34)	09:23		11:45 (34)
	22:30		21:21		19:54		18:28	21	10:54 (16)	16:13	32	13:19 (29)	15:42	15	12:00 (34)
18	04:56		06:02		07:10		08:18		10:31 (16)	08:32		11:37 (34)	09:24		11:46 (34)
	22:29		21:18		19:51		18:25	24	10:55 (16)	16:11	34	13:20 (21)	15:42	15	12:01 (34)
19	04:58		06:04		07:13		08:20		10:31 (16)	08:34		11:36 (34)	09:25		11:47 (34)
	22:27		21:16		19:48		18:22	24	10:55 (16)	16:09	36	13:21 (21)	15:42	14	12:01 (34)
20	05:00		06:06		07:15		08:23		10:30 (16)	08:36		11:34 (34)	09:26		11:48 (34)
	22:25		21:13		19:45		18:20	25	10:55 (16)	16:08	39	13:21 (21)	15:42	14	12:02 (34)
21	05:01		06:08		07:17		08:25		10:30 (16)	08:39		11:34 (34)	09:26		11:48 (34)
	22:24		21:10		19:42		18:17	36	15:48 (24)	16:06	40	13:21 (21)	15:43	14	12:02 (34)
22	05:03		06:11		07:19		08:27		10:30 (16)	08:41		11:34 (34)	09:27		11:48 (34)
	22:22		21:08		19:39		18:14	41	15:50 (24)	16:04	43	13:22 (21)	15:43	15	12:03 (34)
23	05:05		06:13		07:22		08:30		10:30 (16)	08:43		11:33 (34)	09:27		11:49 (34)
	22:20		21:05		19:36		18:12	48	15:52 (24)	16:02	44	13:22 (21)	15:44	14	12:03 (34)
24	05:07		06:15		07:24		08:32		10:30 (16)	08:45		11:34 (34)	09:28		11:50 (34)
	22:18		21:02		19:33		18:09	61	15:52 (24)	16:01	44	13:23 (21)	15:44	14	12:04 (34)
25	05:09		06:17		07:26		07:35		09:30 (16)	08:47		11:33 (34)	09:28		11:50 (34)
	22:16		20:59		19:30		17:06	69	14:54 (24)	15:59	44	13:22 (21)	15:45	14	12:04 (34)
26	05:11		06:20		07:28		07:37		09:30 (16)	08:50		11:34 (34)	09:28		11:50 (34)
	22:14		20:56		19:27		17:04	73	14:54 (24)	15:58	44	13:23 (21)	15:46	15	12:05 (34)
27	05:13		06:22		07:30		07:39		09:32 (16)	08:52		11:34 (34)	09:28		11:50 (34)
	22:12		20:54		19:24		17:01	81	15:24 (25)	15:56	44	13:23 (21)	15:47	16	12:06 (34)
28	05:16		06:24		07:33		07:42		09:33 (16)	08:54		11:35 (34)	09:28		11:50 (34)
	22:10		20:51		19:22		16:59	88	15:27 (25)	15:55	38	13:18 (21)	15:48	16	12:06 (34)
29	05:18		06:26		07:35		07:44		09:34 (16)	08:56		11:35 (34)	09:28		11:50 (34)
	22:07		20:48		19:19		16:56	90	15:28 (25)	15:54	29	13:09 (21)	15:49	17	12:07 (34)
30	05:20		06:29		07:37		07:47		09:37 (16)	08:58		11:35 (34)	09:28		11:51 (34)
	22:05		20:45		19:16		16:54	89	15:29 (25)	15:52	23	13:03 (21)	15:50	17	12:08 (34)
31	05:22		06:31				07:49		12:49 (29)				09:28		11:51 (34)
	22:03		20:42				16:51	81	15:30 (25)				15:51	17	12:08 (34)
Potential sun hours	546		478		386		319			236			199		
Total, worst case								1106			1317			531	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** M - Buevegen 1941 (13)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March			April	May	June
1	09:28			08:46		14:11 (34)	07:35		10:14 (18)	07:07	05:44	04:40
	15:53			16:56	18	15:31 (21)	18:05	73	16:49 (24)	20:17	21:26	22:30
2	09:27			08:43		15:15 (21)	07:32		10:15 (18)	07:04	05:41	04:38
	15:54			16:58	17	15:32 (21)	18:07	70	16:50 (24)	20:19	21:28	22:32
3	09:27			08:41		15:14 (21)	07:30		10:16 (18)	07:01	05:39	04:37
	15:55			17:01	19	15:33 (21)	18:09	62	16:48 (24)	20:21	21:30	22:34
4	09:26			08:39		12:34 (16)	07:27		10:16 (18)	06:58	05:36	04:36
	15:57			17:03	30	15:33 (21)	18:12	54	16:47 (24)	20:23	21:33	22:35
5	09:26			08:37		12:30 (16)	07:24		09:25 (13)	06:55	05:34	04:35
	15:58			17:06	36	15:33 (21)	18:14	36	16:44 (24)	20:26	21:35	22:36
6	09:25			08:34		12:29 (16)	07:21		09:21 (13)	06:52	05:31	04:34
	16:00			17:08	40	15:34 (21)	18:16	27	10:42 (18)	20:28	21:37	22:38
7	09:24			08:32		12:27 (16)	07:18		10:19 (18)	06:49	05:29	04:33
	16:02			17:11	42	15:33 (21)	18:19	20	10:39 (18)	20:30	21:40	22:39
8	09:24			08:30		12:27 (16)	07:16		10:21 (18)	06:47	05:26	04:32
	16:03			17:13	44	15:34 (21)	18:21	15	10:36 (18)	20:33	21:42	22:40
9	09:23			08:27		12:25 (16)	07:13		10:25 (18)	06:44	05:24	04:31
	16:05			17:16	46	15:33 (21)	18:24	7	10:32 (18)	20:35	21:44	22:42
10	09:22			08:25		12:24 (16)	07:10			06:41	05:22	04:30
	16:07			17:18	45	15:31 (21)	18:26			20:37	21:46	22:43
11	09:21			08:22		12:24 (16)	07:07			06:38	05:19	04:29
	16:09			17:21	43	15:30 (21)	18:28			20:40	21:49	22:44
12	09:20			08:20		12:23 (16)	07:04			06:35	05:17	04:29
	16:11			17:23	38	15:27 (21)	18:31			20:42	21:51	22:45
13	09:18			08:18		12:22 (16)	07:01			06:32	05:15	04:28
	16:13			17:26	34	12:56 (16)	18:33			20:44	21:53	22:46
14	09:17			08:15		12:23 (16)	06:59			06:30	05:12	04:28
	16:15			17:28	34	12:57 (16)	18:35			20:46	21:55	22:46
15	09:16			08:12		12:22 (16)	06:56			06:27	05:10	04:27
	16:17			17:30	35	12:57 (16)	18:38			20:49	21:57	22:47
16	09:14			08:10		12:22 (16)	06:53			06:24	05:08	04:27
	16:19			17:33	43	16:12 (29)	18:40			20:51	22:00	22:48
17	09:13			08:07		12:22 (16)	06:50			06:21	05:06	04:27
	16:21			17:35	49	16:15 (29)	18:42			20:53	22:02	22:48
18	09:12			08:05		12:23 (16)	06:47			06:18	05:04	04:27
	16:23			17:38	51	16:17 (29)	18:44			20:56	22:04	22:49
19	09:10			08:02		12:23 (16)	06:44			06:16	05:02	04:27
	16:25			17:40	54	16:18 (29)	18:47			20:58	22:06	22:49
20	09:08			08:00		12:23 (16)	06:41			06:13	05:00	04:27
	16:28			17:43	55	16:19 (29)	18:49			21:00	22:08	22:50
21	09:07			07:57		12:23 (16)	06:38			06:10	04:58	04:27
	16:30			17:45	56	16:20 (29)	18:51			21:03	22:10	22:50
22	09:05			07:54		12:24 (16)	06:36			06:07	04:56	04:27
	16:32			17:48	61	16:42 (24)	18:54			21:05	22:12	22:50
23	09:03			07:52		12:26 (16)	06:33			06:05	04:54	04:27
	16:34			17:50	67	16:48 (24)	18:56			21:07	22:14	22:50
24	09:01			07:49		10:20 (18)	06:30			06:02	04:52	04:27
	16:37			17:52	68	16:49 (24)	18:58			21:10	22:16	22:50
25	09:00			07:46		10:16 (18)	06:27			05:59	04:51	04:28
	16:39			17:55	91	16:50 (24)	19:01			21:12	22:18	22:50
26	08:58			07:43		10:15 (18)	06:24			05:57	04:49	04:28
	16:41			17:57	92	16:50 (24)	19:03			21:14	22:20	22:50
27	08:56			07:41		10:15 (18)	06:21			05:54	04:47	04:29
	16:44			18:00	82	16:50 (24)	19:05			21:17	22:22	22:50
28	08:54			07:38		10:15 (18)	06:18			05:51	04:45	04:29
	16:46			18:02	75	16:50 (24)	19:07			21:19	22:24	22:50
29	08:52						07:15			05:49	04:44	04:30
	16:49						20:10			21:21	22:25	22:49
30	08:50		14:16 (34)				07:12			05:46	04:42	04:31
	16:51	3	14:19 (34)				20:12			21:23	22:27	22:49
31	08:48		14:08 (34)				07:10				04:41	
	16:53	21	15:27 (21)				20:14				22:29	
Potential sun hours	221			260			365			432	521	547
Total, worst case		24			1365			364				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** M - Buevegen 1941 (13)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September	October		November		December
1	04:32	05:24	06:33	07:39		07:51		11:54 (16)	09:00
	22:48	22:01	20:40	19:13		16:49	45	15:01 (21)	15:51
2	04:33	05:26	06:35	07:41		07:54		11:55 (16)	09:01
	22:48	21:58	20:37	19:10		16:46	44	15:02 (21)	15:50
3	04:34	05:28	06:37	07:44		07:56		11:56 (16)	09:03
	22:47	21:56	20:34	19:07		16:44	45	15:03 (21)	15:49
4	04:35	05:31	06:40	07:46		07:58		11:57 (16)	09:05
	22:46	21:54	20:31	19:04		16:41	43	15:03 (21)	15:48
5	04:36	05:33	06:42	07:48	10:59 (18)	08:01		11:59 (16)	09:07
	22:46	21:51	20:28	19:01	13	11:12 (18)	16:39	39	15:03 (21)	15:47
6	04:37	05:35	06:44	07:50	10:56 (18)	08:03		12:01 (16)	09:09
	22:45	21:49	20:25	18:59	19	11:15 (18)	16:37	36	15:04 (21)	15:46
7	04:38	05:37	06:46	07:53	09:54 (13)	08:06		12:04 (16)	09:10
	22:44	21:47	20:22	18:56	25	11:16 (18)	16:34	29	15:03 (21)	15:45
8	04:40	05:39	06:48	07:55	09:58 (13)	08:08		14:45 (21)	09:12
	22:43	21:44	20:20	18:53	33	17:18 (24)	16:32	18	15:03 (21)	15:45
9	04:41	05:42	06:51	07:57	10:01 (13)	08:10		14:46 (21)	09:13
	22:42	21:42	20:17	18:50	49	17:20 (24)	16:30	17	15:03 (21)	15:44
10	04:43	05:44	06:53	08:00	10:49 (18)	08:13		13:42 (34)	09:15
	22:40	21:39	20:14	18:47	59	17:21 (24)	16:28	20	15:03 (21)	15:43
11	04:44	05:46	06:55	08:02	10:49 (18)	08:15		13:39 (34)	09:16
	22:39	21:37	20:11	18:44	66	17:23 (24)	16:25	20	14:58 (21)	15:43
12	04:46	05:48	06:57	08:04	10:48 (18)	08:18		13:48 (34)	09:17
	22:38	21:34	20:08	18:42	71	17:23 (24)	16:23	3	13:51 (34)	15:43
13	04:47	05:50	06:59	08:06	10:48 (18)	08:20			09:19
	22:36	21:31	20:05	18:39	73	17:23 (24)	16:21			15:42
14	04:49	05:53	07:02	08:09	10:47 (18)	08:22			09:20
	22:35	21:29	20:02	18:36	77	17:23 (24)	16:19			15:42
15	04:50	05:55	07:04	08:11	10:48 (18)	08:25			09:21
	22:34	21:26	19:59	18:33	88	17:23 (24)	16:17			15:42
16	04:52	05:57	07:06	08:13	10:47 (18)	08:27			09:22
	22:32	21:24	19:56	18:31	94	17:22 (24)	16:15			15:42
17	04:54	05:59	07:08	08:16	10:48 (18)	08:29			09:23
	22:30	21:21	19:53	18:28	85	17:22 (24)	16:13			15:42
18	04:56	06:02	07:10	08:18	12:57 (16)	08:32			09:24
	22:29	21:18	19:51	18:25	67	17:20 (24)	16:11			15:42
19	04:58	06:04	07:13	08:20	12:56 (16)	08:34			09:25
	22:27	21:16	19:48	18:22	65	17:17 (24)	16:09			15:42
20	04:59	06:06	07:15	08:23	12:55 (16)	08:36			09:25
	22:25	21:13	19:45	18:20	58	17:12 (24)	16:07			15:42
21	05:01	06:08	07:17	08:25	12:54 (16)	08:39			09:26
	22:23	21:10	19:42	18:17	57	16:51 (29)	16:06			15:43
22	05:03	06:11	07:19	08:27	12:53 (16)	08:41			09:27
	22:22	21:07	19:39	18:14	55	16:49 (29)	16:04			15:43
23	05:05	06:13	07:21	08:30	12:53 (16)	08:43			09:27
	22:20	21:05	19:36	18:12	53	16:48 (29)	16:02			15:44
24	05:07	06:15	07:24	08:32	12:52 (16)	08:45			09:28
	22:18	21:02	19:33	18:09	52	16:46 (29)	16:01			15:44
25	05:09	06:17	07:26	07:34	11:52 (16)	08:47			09:28
	22:16	20:59	19:30	17:06	47	15:44 (29)	15:59			15:45
26	05:11	06:20	07:28	07:37	11:51 (16)	08:49			09:28
	22:14	20:56	19:27	17:04	40	15:40 (29)	15:58			15:46
27	05:13	06:22	07:30	07:39	11:52 (16)	08:52			09:28
	22:12	20:54	19:24	17:01	35	12:27 (16)	15:56			15:47
28	05:15	06:24	07:33	07:42	11:52 (16)	08:54			09:28
	22:10	20:51	19:22	16:59	35	12:27 (16)	15:55			15:48
29	05:18	06:26	07:35	07:44	11:52 (16)	08:56			09:28
	22:07	20:48	19:19	16:56	34	12:26 (16)	15:53			15:49
30	05:20	06:29	07:37	07:46	11:53 (16)	08:58			09:28
	22:05	20:45	19:16	16:54	39	14:57 (21)	15:52			15:50
31	05:22	06:31		07:49	11:54 (16)				09:28
	22:03	20:42		16:51	42	15:00 (21)				15:51
Potential sun hours	546	478	386	319		236			199
Total, worst case					1431			359	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** N - Buevegen 1988 (14)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January		February		March	April	May	June	July	August	September	October		November		December
1	09:28		08:46		11:38 (18)	07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:39		07:51		09:44 (13)	09:00
	15:53		16:56	62	13:43 (16)	18:05	20:17	21:26	22:30	22:48	22:01	20:40	19:13		16:49	55	15:37 (29)	15:51
2	09:27		08:43		11:39 (18)	07:32	07:04	05:41	04:38	04:33	05:26	06:35	07:41		07:54		09:56 (13)	09:01
	15:54		16:58	57	13:43 (16)	18:07	20:19	21:28	22:32	22:48	21:58	20:37	19:10		16:46	51	15:37 (29)	15:50
3	09:27		08:41		11:38 (18)	07:30	07:01	05:39	04:37	04:34	05:28	06:37	07:44		07:56		09:57 (13)	09:03
	15:55		17:01	51	13:42 (16)	18:09	20:21	21:30	22:34	22:47	21:56	20:34	19:07		16:44	57	15:36 (29)	15:49
4	09:26		08:39		11:39 (18)	07:27	06:58	05:36	04:36	04:35	05:30	06:40	07:46		07:58		10:02 (13)	09:05
	15:57		17:03	51	15:59 (29)	18:12	20:23	21:33	22:35	22:46	21:54	20:31	19:04		16:41	58	15:35 (29)	15:48
5	09:26		08:37		11:39 (18)	07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48		08:01		11:09 (18)	09:07
	15:58		17:06	57	16:02 (29)	18:14	20:26	21:35	22:36	22:46	21:51	20:28	19:01		16:39	57	15:34 (29)	15:47
6	09:25		08:34		11:40 (18)	07:21	06:52	05:31	04:34	04:37	05:35	06:44	07:50		08:03		11:10 (18)	09:09
	16:00		17:08	57	16:05 (29)	18:16	20:28	21:37	22:38	22:45	21:49	20:25	18:59		16:37	56	15:33 (29)	15:46
7	09:24		08:32		10:32 (13)	07:18	06:49	05:29	04:33	04:38	05:37	06:46	07:53		08:06		11:09 (18)	09:10
	16:02		17:11	56	16:05 (29)	18:19	20:30	21:40	22:39	22:44	21:47	20:22	18:56		16:34	49	13:12 (16)	15:45
8	09:24		08:30		10:27 (13)	07:16	06:47	05:26	04:32	04:40	05:39	06:48	07:55		08:08		11:09 (18)	09:12
	16:03		17:13	56	16:07 (29)	18:21	20:33	21:42	22:40	22:43	21:44	20:20	18:53		16:32	50	13:13 (16)	15:45
9	09:23		08:27		10:26 (13)	07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:57		08:10		11:09 (18)	09:13
	16:05		17:16	49	16:07 (29)	18:23	20:35	21:44	22:42	22:42	21:42	20:17	18:50		16:30	59	13:14 (16)	15:44
10	09:22		08:25		10:15 (13)	07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00		08:13		11:10 (18)	09:15
	16:07		17:18	57	16:07 (29)	18:26	20:37	21:46	22:43	22:40	21:39	20:14	18:47		16:28	62	13:15 (16)	15:43
11	09:21		08:22		10:16 (13)	07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02		08:15		11:10 (18)	09:16
	16:09		17:21	55	16:08 (29)	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:44		16:25	63	13:14 (16)	15:43
12	09:20		08:20		10:17 (13)	07:04	06:35	05:17	04:29	04:46	05:48	06:57	08:04		08:18		11:10 (18)	09:17
	16:11		17:23	48	16:08 (29)	18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42		16:23	65	13:15 (16)	15:43
13	09:18		08:17		10:18 (13)	07:01	06:32	05:15	04:28	04:47	05:50	06:59	08:06		08:20		11:11 (18)	09:19
	16:13		17:26	33	16:07 (29)	18:33	20:44	21:53	22:46	22:36	21:31	20:05	18:39		16:21	65	13:15 (16)	15:42
14	09:17	12:03 (10)	08:15		10:21 (13)	06:59	06:30	05:12	04:28	04:49	05:53	07:02	08:09		08:22		11:11 (18)	09:20
	16:15	8 12:11 (10)	17:28	28	16:08 (29)	18:35	20:46	21:55	22:46	22:35	21:29	20:02	18:36		16:19	66	13:15 (16)	15:42
15	09:16	12:02 (10)	08:12		15:50 (29)	06:56	06:27	05:10	04:27	04:50	05:55	07:04	08:11		08:25		11:13 (18)	09:21
	16:17	10 12:12 (10)	17:30	17	16:07 (29)	18:37	20:49	21:57	22:47	22:34	21:26	19:59	18:33		16:17	64	13:15 (16)	15:42
16	09:14	12:02 (10)	08:10		15:51 (29)	06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13		08:27		11:14 (18)	09:22
	16:19	11 12:13 (10)	17:33	14	16:05 (29)	18:40	20:51	22:00	22:48	22:32	21:24	19:56	18:31		16:15	62	13:15 (16)	15:42
17	09:13	12:02 (10)	08:07		15:52 (29)	06:50	06:21	05:06	04:27	04:54	05:59	07:08	08:16		08:29		11:15 (18)	09:23
	16:21	18 13:29 (16)	17:35	12	16:04 (29)	18:42	20:53	22:02	22:48	22:30	21:21	19:53	18:28		16:13	61	13:14 (16)	15:42
18	09:12	11:58 (10)	08:05		15:56 (29)	06:47	06:18	05:04	04:27	04:56	06:02	07:10	08:18		08:32		11:17 (18)	09:24
	16:23	29 13:33 (16)	17:38	6	16:02 (29)	18:44	20:56	22:04	22:49	22:29	21:18	19:51	18:25		16:11	59	13:14 (16)	15:42
19	09:10	11:58 (10)	08:02			06:44	06:16	05:02	04:26	04:58	06:04	07:13	08:20		08:34		11:19 (18)	09:25
	16:25	32 13:35 (16)	17:40			18:47	20:58	22:06	22:49	22:27	21:16	19:48	18:22		16:09	54	13:14 (16)	15:42
20	09:08	11:57 (10)	08:00			06:41	06:13	05:00	04:26	04:59	06:06	07:15	08:23		08:36		11:21 (18)	09:25
	16:27	37 13:37 (16)	17:43			18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20		16:07	48	13:13 (16)	15:42
21	09:07	11:57 (10)	07:57			06:38	06:10	04:58	04:27	05:01	06:08	07:17	08:25		08:39		11:32 (10)	09:26
	16:30	40 13:38 (16)	17:45			18:51	21:03	22:10	22:50	22:23	21:10	19:42	18:17		16:06	40	13:13 (16)	15:43
22	09:05	11:46 (18)	07:54			06:36	06:07	04:56	04:27	05:03	06:11	07:19	08:27		08:41		11:33 (10)	09:27
	16:32	48 13:38 (16)	17:48			18:54	21:05	22:12	22:50	22:22	21:07	19:39	18:14		16:04	37	13:13 (16)	15:43
23	09:03	11:44 (18)	07:52			06:33	06:05	04:54	04:27	05:05	06:13	07:21	08:30		08:43		11:34 (10)	09:27
	16:34	54 13:39 (16)	17:50			18:56	21:07	22:14	22:50	22:20	21:05	19:36	18:12		16:02	33	13:11 (16)	15:44
24	09:01	11:43 (18)	07:49			06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32	16:24 (29)	08:45		11:35 (10)	09:28
	16:37	59 13:40 (16)	17:52			18:58	21:10	22:16	22:50	22:18	21:02	19:33	18:09	8 16:32 (29)	16:01	29	13:10 (16)	15:44
25	09:00	11:42 (18)	07:46			06:27	05:59	04:50	04:28	05:09	06:17	07:26	07:34	15:22 (29)	08:47		11:41 (10)	09:28
	16:39	60 13:41 (16)	17:55			19:01	21:12	22:18	22:50	22:16	20:59	19:30	17:06	12 15:34 (29)	15:59	18	13:08 (16)	15:45
26	08:58	11:41 (18)	07:43			06:24	05:57	04:49	04:28	05:11	06:20	07:28	07:37	15:20 (29)	08:49		11:41 (10)	09:28
	16:41	62 13:42 (16)	17:57			19:03	21:14	22:20	22:50	22:14	20:56	19:27	17:04	15 15:35 (29)	15:58	11	11:52 (10)	15:46
27	08:56	11:40 (18)	07:41			06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39	09:53 (13)	08:52		11:41 (10)	09:28
	16:44	64 13:42 (16)	18:00			19:05	21:17	22:22	22:50	22:12	20:54	19:24	17:01	20 15:36 (29)	15:56	10	11:51 (10)	15:47
28	08:54	11:40 (18)	07:38			06:18	05:51	04:45	04:29	05:15	06:24	07:33	07:42	09:49 (13)	08:54		11:43 (10)	09:28
	16:46	65 13:43 (16)	18:02			19:07	21:19	22:24	22:50	22:10	20:51	19:22	16:59	29 15:37 (29)	15:55	8	11:51 (10)	15:48
29	08:52	11:40 (18)				07:15	05:49	04:44	04:30	05:18	06:26	07:35	07:44	09:47 (13)	08:56			09:28
	16:49	64 13:43 (16)				20:10	21:21	22:25	22:49	22:07	20:48	19:19	16:56	38 15:37 (29)	15:53			15:49
30	08:50	11:39 (18)				07:12	05:46	04:42	04:31	05:20	06:28	07:37	07:46	09:46 (13)	08:58			09:28
	16:51	65 13:43 (16)				20:12	21:23	22:27	22:49	22:05	20:45	19:16	16:54	49 15:37 (29)	15:52			15:50
31	08:48	11:39 (18)				07:09		04:41		05:22	06:31		07:49	09:46 (13)				09:28
	16:53	63 13:43 (16)				20:14		22:29		22:03	20:42		16:51	56 15:38 (29)				15:51
Potential sun hours	221		260		365	432	521	547	546	478	386	319			236		199	
Total, worst case		789		766									227			1347		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** O - Buevegen 2023 (15)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January		February		March	April	May	June	July	August	September	October	November	December
1	09:28		08:46	10:50 (13)	07:35	07:07	05:44	04:39	04:32	05:24	06:33	07:39	07:51	10:26 (13)	09:00
	15:53		16:56 74	14:26 (16)	18:04	20:17	21:26	22:30	22:48	22:01	20:40	19:13	16:49 35	13:50 (16)	15:51
2	09:27		08:43	10:51 (13)	07:32	07:04	05:41	04:38	04:33	05:26	06:35	07:41	07:54	10:25 (13)	09:01
	15:54		16:58 73	14:27 (16)	18:07	20:19	21:28	22:32	22:48	21:58	20:37	19:10	16:46 48	13:53 (16)	15:50
3	09:27		08:41	10:50 (13)	07:30	07:01	05:39	04:37	04:34	05:28	06:37	07:44	07:56	10:24 (13)	09:03
	15:55		17:01 74	14:27 (16)	18:09	20:21	21:30	22:34	22:47	21:56	20:34	19:07	16:44 57	13:55 (16)	15:49
4	09:26		08:39	10:51 (13)	07:27	06:58	05:36	04:36	04:35	05:30	06:40	07:46	07:58	10:22 (13)	09:05
	15:57		17:03 73	14:27 (16)	18:12	20:23	21:33	22:35	22:46	21:54	20:31	19:04	16:41 62	13:55 (16)	15:48
5	09:26		08:37	10:51 (13)	07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48	08:01	10:22 (13)	09:07
	15:58		17:06 69	14:26 (16)	18:14	20:26	21:35	22:36	22:46	21:51	20:28	19:01	16:39 67	13:56 (16)	15:47
6	09:25		08:34	10:52 (13)	07:21	06:52	05:31	04:34	04:37	05:35	06:44	07:50	08:03	10:22 (13)	09:09
	16:00		17:08 65	14:26 (16)	18:16	20:28	21:37	22:38	22:45	21:49	20:25	18:59	16:37 70	13:57 (16)	15:46
7	09:24		08:32	10:53 (13)	07:18	06:49	05:29	04:33	04:38	05:37	06:46	07:53	08:06	10:21 (13)	09:10
	16:02		17:11 61	14:25 (16)	18:19	20:30	21:40	22:39	22:44	21:46	20:22	18:56	16:34 72	13:57 (16)	15:45
8	09:24		08:30	10:55 (13)	07:16	06:47	05:26	04:32	04:40	05:39	06:48	07:55	08:08	10:21 (13)	09:12
	16:03		17:13 55	14:25 (16)	18:21	20:33	21:42	22:40	22:43	21:44	20:19	18:53	16:32 73	13:57 (16)	15:45
9	09:23		08:27	10:56 (13)	07:13	06:44	05:24	04:31	04:41	05:41	06:51	07:57	08:10	10:22 (13)	09:13
	16:05		17:16 46	14:23 (16)	18:23	20:35	21:44	22:42	22:42	21:42	20:17	18:50	16:30 74	13:58 (16)	15:44
10	09:22		08:25	10:57 (13)	07:10	06:41	05:22	04:30	04:42	05:44	06:53	08:00	08:13	10:22 (13)	09:15
	16:07		17:18 32	14:20 (16)	18:26	20:37	21:46	22:43	22:40	21:39	20:14	18:47	16:28 72	13:58 (16)	15:43
11	09:21		08:22	12:43 (18)	07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02	08:15	10:22 (13)	09:16
	16:09		17:21 8	12:51 (18)	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:44	16:25 73	13:57 (16)	15:43
12	09:20		08:20		07:04	06:35	05:17	04:29	04:46	05:48	06:57	08:04	08:18	10:22 (13)	09:17
	16:11		17:23		18:30	20:42	21:51	22:45	22:38	21:34	20:08	18:42	16:23 72	13:58 (16)	15:42
13	09:18		08:17		07:01	06:32	05:15	04:28	04:47	05:50	06:59	08:06	08:20	10:23 (13)	09:19
	16:13		17:25		18:33	20:44	21:53	22:46	22:36	21:31	20:05	18:39	16:21 70	13:58 (16)	15:42
14	09:17	12:39 (10)	08:15		06:59	06:30	05:12	04:28	04:49	05:53	07:02	08:09	08:22	10:23 (13)	09:20
	16:15 6	12:45 (10)	17:28		18:35	20:46	21:55	22:46	22:35	21:29	20:02	18:36	16:19 68	13:57 (16)	15:42
15	09:16	12:39 (10)	08:12		06:56	06:27	05:10	04:27	04:50	05:55	07:04	08:11	08:25	10:27 (13)	09:21
	16:17 7	12:46 (10)	17:30		18:37	20:49	21:57	22:47	22:34	21:26	19:59	18:33	16:17 53	13:56 (16)	15:42
16	09:14	12:38 (10)	08:10		06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13	08:27	12:05 (18)	09:22
	16:19 17	12:55 (10)	17:33		18:40	20:51	22:00	22:48	22:32	21:24	19:56	18:31	16:15 46	13:56 (16)	15:42
17	09:13	12:38 (10)	08:07		06:50	06:21	05:06	04:27	04:54	05:59	07:08	08:16	08:29	12:06 (18)	09:23
	16:21 18	12:56 (10)	17:35		18:42	20:53	22:02	22:48	22:30	21:21	19:53	18:28	16:13 44	13:55 (16)	15:42
18	09:12	12:37 (10)	08:05		06:47	06:18	05:04	04:27	04:56	06:02	07:10	08:18	08:32	12:07 (18)	09:24
	16:23 19	12:56 (10)	17:38		18:44	20:56	22:04	22:49	22:29	21:18	19:51	18:25	16:11 41	13:54 (16)	15:42
19	09:10	12:38 (10)	08:02		06:44	06:16	05:02	04:26	04:58	06:04	07:13	08:20	08:34	12:09 (18)	09:25
	16:25 20	12:58 (10)	17:40		18:47	20:58	22:06	22:49	22:27	21:16	19:48	18:22	16:09 36	13:53 (16)	15:42
20	09:08	12:38 (18)	07:59		06:41	06:13	05:00	04:26	04:59	06:06	07:15	08:23	08:36	12:09 (18)	09:25
	16:27 21	12:59 (10)	17:43		18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20	16:07 29	13:49 (16)	15:42
21	09:07	12:35 (18)	07:57		06:38	06:10	04:58	04:27	05:01	06:08	07:17	08:25	08:39	12:11 (18)	09:26
	16:30 23	12:58 (10)	17:45		18:51	21:03	22:10	22:50	22:23	21:10	19:42	18:17	16:06 23	12:34 (10)	15:43
22	09:05	12:34 (18)	07:54		06:35	06:07	04:56	04:27	05:03	06:11	07:19	08:27	08:41	12:14 (18)	09:27
	16:32 29	14:14 (16)	17:48		18:54	21:05	22:12	22:50	22:22	21:07	19:39	18:14	16:04 21	12:35 (10)	15:43
23	09:03	12:34 (18)	07:52		06:33	06:05	04:54	04:27	05:05	06:13	07:21	08:30	08:43	12:14 (10)	09:27
	16:34 36	14:18 (16)	17:50		18:56	21:07	22:14	22:50	22:20	21:05	19:36	18:12	16:02 20	12:34 (10)	15:44
24	09:01	12:33 (18)	07:49		06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32	08:45	12:15 (10)	09:28
	16:37 41	14:20 (16)	17:52		18:58	21:10	22:16	22:50	22:18	21:02	19:33	18:09	16:01 20	12:35 (10)	15:44
25	09:00	12:33 (18)	07:46		06:27	05:59	04:50	04:28	05:09	06:17	07:26	07:34	08:47	12:16 (10)	09:28
	16:39 44	14:22 (16)	17:55		19:00	21:12	22:18	22:50	22:16	20:59	19:30	17:06	15:59 18	12:34 (10)	15:45
26	08:58	12:32 (18)	07:43		06:24	05:57	04:49	04:28	05:11	06:20	07:28	07:37	08:49	12:17 (10)	09:28
	16:41 46	14:23 (16)	17:57		19:03	21:14	22:20	22:50	22:14	20:56	19:27	17:04	15:58 17	12:34 (10)	15:46
27	08:56	10:54 (13)	07:41		06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39	08:52	12:18 (10)	09:28
	16:44 54	14:24 (16)	18:00		19:05	21:17	22:22	22:50	22:12	20:54	19:24	17:01	15:56 7	12:25 (10)	15:47
28	08:54	10:52 (13)	07:38		06:18	05:51	04:45	04:29	05:15	06:24	07:32	07:42	08:54	12:19 (10)	09:28
	16:46 67	14:25 (16)	18:02		19:07	21:19	22:24	22:50	22:09	20:51	19:21	16:59	15:55 6	12:25 (10)	15:48
29	08:52	10:51 (13)			07:15	05:49	04:44	04:30	05:18	06:26	07:35	07:44	08:56		09:28
	16:49 70	14:26 (16)			20:10	21:21	22:25	22:49	22:07	20:48	19:19	16:56	15:53		15:49
30	08:50	10:51 (13)			07:12	05:46	04:42	04:31	05:20	06:28	07:37	07:46	08:58		09:28
	16:51 71	14:26 (16)			20:12	21:23	22:27	22:49	22:05	20:45	19:16	16:54	15:52		15:50
31	08:48	10:51 (13)			07:09		04:41		05:22	06:31		07:49 12:11 (18)			09:28
	16:53 74	14:27 (16)			20:14		22:29		22:03	20:42		16:51 10 12:21 (18)			15:51
Potential sun hours	221		260		365	432	521	547	546	478	386	319	236		199
Total, worst case	663		630									10	1294		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Licensed user:
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NO-0276 Oslo
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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** P - Buevegen 2021 (16)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January		February		March	April	May	June	July	August	September	October		November		December
1	09:28		08:46	10:45 (13)	07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:39		07:51	10:19 (13)	09:00
	15:53		16:56 73	14:22 (16)	18:04	20:17	21:26	22:30	22:48	22:01	20:40	19:13		16:49 44	13:46 (16)	15:51
2	09:27		08:43	10:46 (13)	07:32	07:04	05:41	04:38	04:33	05:26	06:35	07:41		07:54	10:18 (13)	09:01
	15:54		16:58 74	14:23 (16)	18:07	20:19	21:28	22:32	22:48	21:58	20:37	19:10		16:46 55	13:49 (16)	15:50
3	09:27		08:41	10:45 (13)	07:30	07:01	05:39	04:37	04:34	05:28	06:37	07:44		07:56	10:18 (13)	09:03
	15:55		17:01 74	14:22 (16)	18:09	20:21	21:30	22:34	22:47	21:56	20:34	19:07		16:44 60	13:50 (16)	15:49
4	09:26		08:39	10:46 (13)	07:27	06:58	05:36	04:36	04:35	05:30	06:40	07:46		07:58	10:16 (13)	09:05
	15:57		17:03 73	14:23 (16)	18:12	20:23	21:33	22:35	22:46	21:54	20:31	19:04		16:41 65	13:51 (16)	15:48
5	09:26		08:37	10:46 (13)	07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48		08:01	10:16 (13)	09:07
	15:58		17:06 71	14:22 (16)	18:14	20:26	21:35	22:36	22:46	21:51	20:28	19:01		16:39 70	13:52 (16)	15:47
6	09:25		08:34	10:47 (13)	07:21	06:52	05:31	04:34	04:37	05:35	06:44	07:50		08:03	10:16 (13)	09:09
	16:00		17:08 68	14:22 (16)	18:16	20:28	21:37	22:38	22:45	21:49	20:25	18:59		16:37 73	13:53 (16)	15:46
7	09:24		08:32	10:47 (13)	07:18	06:49	05:29	04:33	04:38	05:37	06:46	07:53		08:06	10:16 (13)	09:10
	16:02		17:11 65	14:21 (16)	18:19	20:30	21:40	22:39	22:44	21:46	20:22	18:56		16:34 73	13:52 (16)	15:45
8	09:24		08:30	10:48 (13)	07:16	06:47	05:26	04:32	04:40	05:39	06:48	07:55		08:08	10:16 (13)	09:12
	16:03		17:13 59	14:21 (16)	18:21	20:33	21:42	22:40	22:43	21:44	20:19	18:53		16:32 73	13:53 (16)	15:45
9	09:23		08:27	10:49 (13)	07:13	06:44	05:24	04:31	04:41	05:41	06:51	07:57		08:10	10:16 (13)	09:13
	16:05		17:16 52	14:19 (16)	18:23	20:35	21:44	22:42	22:42	21:42	20:17	18:50		16:30 75	13:53 (16)	15:44
10	09:22		08:25	10:50 (13)	07:10	06:41	05:22	04:30	04:42	05:44	06:53	08:00		08:13	10:17 (13)	09:15
	16:07		17:18 41	14:16 (16)	18:26	20:37	21:46	22:43	22:40	21:39	20:14	18:47		16:28 74	13:54 (16)	15:43
11	09:21		08:22	10:53 (13)	07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02		08:15	10:17 (13)	09:16
	16:09		17:21 23	12:47 (18)	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:44		16:25 69	13:53 (16)	15:43
12	09:20		08:20	12:38 (18)	07:04	06:35	05:17	04:29	04:46	05:48	06:57	08:04		08:18	10:18 (13)	09:17
	16:11		17:23 3	12:41 (18)	18:30	20:42	21:51	22:45	22:38	21:34	20:08	18:42		16:23 53	13:53 (16)	15:42
13	09:18		08:17		07:01	06:32	05:15	04:28	04:47	05:50	06:59	08:06		08:20	10:20 (13)	09:19
	16:13		17:25		18:33	20:44	21:53	22:46	22:36	21:31	20:05	18:39		16:21 53	13:53 (16)	15:42
14	09:17		08:15		06:59	06:30	05:12	04:28	04:49	05:53	07:02	08:09		08:22	11:57 (18)	09:20
	16:15		17:28		18:35	20:46	21:55	22:46	22:35	21:29	20:02	18:36		16:19 51	13:52 (16)	15:42
15	09:16		08:12		06:56	06:27	05:10	04:27	04:50	05:55	07:04	08:11		08:25	11:58 (18)	09:21
	16:17		17:30		18:37	20:49	21:57	22:47	22:34	21:26	19:59	18:33		16:17 50	13:52 (16)	15:42
16	09:14	12:49 (10)	08:10		06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13		08:27	11:59 (18)	09:22
	16:19 1	12:50 (10)	17:33		18:40	20:51	22:00	22:48	22:32	21:24	19:56	18:31		16:15 49	13:52 (16)	15:42
17	09:13	12:33 (10)	08:07		06:50	06:21	05:06	04:27	04:54	05:59	07:08	08:16		08:29	12:00 (18)	09:23
	16:21 5	12:50 (10)	17:35		18:42	20:53	22:02	22:48	22:30	21:21	19:53	18:28		16:13 44	13:50 (16)	15:42
18	09:12	12:33 (10)	08:05		06:47	06:18	05:04	04:27	04:56	06:02	07:10	08:18		08:32	12:01 (18)	09:24
	16:23 18	12:51 (10)	17:38		18:44	20:56	22:04	22:49	22:29	21:18	19:51	18:25		16:11 42	13:49 (16)	15:42
19	09:10	12:34 (10)	08:02		06:44	06:16	05:02	04:26	04:58	06:04	07:13	08:20		08:34	12:03 (18)	09:25
	16:25 19	12:53 (10)	17:40		18:47	20:58	22:06	22:49	22:27	21:16	19:48	18:22		16:09 36	13:48 (16)	15:42
20	09:08	12:33 (10)	07:59		06:41	06:13	05:00	04:26	04:59	06:06	07:15	08:23		08:36	12:04 (18)	09:25
	16:27 21	12:54 (10)	17:43		18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20		16:07 26	13:41 (16)	15:42
21	09:07	12:31 (18)	07:57		06:38	06:10	04:58	04:27	05:01	06:08	07:17	08:25		08:39	12:07 (18)	09:26
	16:30 22	12:53 (10)	17:45		18:51	21:03	22:10	22:50	22:23	21:10	19:42	18:17		16:06 22	12:29 (10)	15:43
22	09:05	12:29 (18)	07:54		06:35	06:07	04:56	04:27	05:03	06:11	07:19	08:27		08:41	12:10 (10)	09:27
	16:32 26	14:06 (16)	17:48		18:54	21:05	22:12	22:50	22:22	21:07	19:39	18:14		16:04 20	12:30 (10)	15:43
23	09:03	12:28 (18)	07:52		06:33	06:05	04:54	04:27	05:05	06:13	07:21	08:30		08:43	12:10 (10)	09:27
	16:34 36	14:13 (16)	17:50		18:56	21:07	22:14	22:50	22:20	21:05	19:36	18:12		16:02 19	12:29 (10)	15:44
24	09:01	12:27 (18)	07:49		06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32		08:45	12:11 (10)	09:28
	16:37 42	14:15 (16)	17:52		18:58	21:10	22:16	22:50	22:18	21:02	19:33	18:09		16:01 18	12:29 (10)	15:44
25	09:00	12:27 (18)	07:46		06:27	05:59	04:50	04:28	05:09	06:17	07:26	07:34		08:47	12:11 (10)	09:28
	16:39 44	14:17 (16)	17:55		19:00	21:12	22:18	22:50	22:16	20:59	19:30	17:06		15:59 7	12:29 (10)	15:45
26	08:58	12:26 (18)	07:43		06:24	05:57	04:49	04:28	05:11	06:20	07:28	07:37		08:49	12:28 (10)	09:28
	16:41 49	14:19 (16)	17:57		19:03	21:14	22:20	22:50	22:14	20:56	19:27	17:04		15:58 1	12:29 (10)	15:46
27	08:56	12:25 (18)	07:41		06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39		08:52		09:28
	16:44 50	14:19 (16)	18:00		19:05	21:17	22:22	22:50	22:12	20:54	19:24	17:01		15:56		15:47
28	08:54	12:25 (18)	07:38		06:18	05:51	04:45	04:29	05:15	06:24	07:32	07:42		08:54		09:28
	16:46 51	14:20 (16)	18:02		19:07	21:19	22:24	22:50	22:09	20:51	19:22	16:59		15:55		15:48
29	08:52	10:48 (13)			07:15	05:49	04:44	04:30	05:18	06:26	07:35	07:44		08:56		09:28
	16:49 53	14:21 (16)			20:10	21:21	22:25	22:49	22:07	20:48	19:19	16:56		15:53		15:49
30	08:50	10:46 (13)			07:12	05:46	04:42	04:31	05:20	06:28	07:37	07:46	10:26 (13)	08:58		09:28
	16:51 55	14:21 (16)			20:12	21:23	22:27	22:49	22:05	20:45	19:16	16:54 8	12:13 (18)	15:52		15:50
31	08:48	10:46 (13)			07:09		04:41		05:22	06:31		07:49	10:22 (13)			09:28
	16:53 69	14:22 (16)			20:14		22:29		22:03	20:42		16:51 25	12:17 (18)			15:51
Potential sun hours	221		260		365	432	521	547	546	478	386	319		236		199
Total, worst case	561		676									33		1222		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** Q - Buevegen 2141 (17)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April	May	June
1	09:28		12:03 (27)	08:45		14:59 (18)	07:35	07:07	05:44	04:39
	15:52	20	12:23 (27)	16:56	18	15:17 (18)	18:04	20:16	21:26	22:30
2	09:27		12:03 (27)	08:43		14:59 (18)	07:32	07:04	05:41	04:38
	15:54	20	12:23 (27)	16:58	19	15:18 (18)	18:07	20:19	21:28	22:32
3	09:27		12:03 (27)	08:41		14:58 (18)	07:30	07:01	05:38	04:37
	15:55	20	12:23 (27)	17:01	19	15:17 (18)	18:09	20:21	21:30	22:33
4	09:26		12:03 (27)	08:39		14:59 (18)	07:27	06:58	05:36	04:36
	15:57	21	12:24 (27)	17:03	19	15:18 (18)	18:12	20:23	21:33	22:35
5	09:26		12:04 (27)	08:37		14:59 (18)	07:24	06:55	05:33	04:34
	15:58	25	13:33 (13)	17:06	19	15:18 (18)	18:14	20:26	21:35	22:36
6	09:25		12:04 (27)	08:34		15:00 (18)	07:21	06:52	05:31	04:33
	16:00	29	13:35 (13)	17:08	18	15:18 (18)	18:16	20:28	21:37	22:38
7	09:24		12:05 (27)	08:32		15:00 (18)	07:18	06:49	05:29	04:32
	16:01	31	13:37 (13)	17:11	17	15:17 (18)	18:19	20:30	21:39	22:39
8	09:23		12:06 (27)	08:30		15:00 (18)	07:16	06:46	05:26	04:31
	16:03	32	13:38 (13)	17:13	16	15:16 (18)	18:21	20:33	21:42	22:40
9	09:23		12:06 (27)	08:27		15:02 (18)	07:13	06:44	05:24	04:31
	16:05	33	13:39 (13)	17:15	14	15:16 (18)	18:23	20:35	21:44	22:42
10	09:22		12:07 (27)	08:25		15:03 (18)	07:10	06:41	05:21	04:30
	16:07	34	13:40 (13)	17:18	11	15:14 (18)	18:26	20:37	21:46	22:43
11	09:21		12:07 (27)	08:22		15:07 (18)	07:07	06:38	05:19	04:29
	16:09	35	13:41 (13)	17:20	5	15:12 (18)	18:28	20:39	21:49	22:44
12	09:19		12:08 (27)	08:20			07:04	06:35	05:17	04:29
	16:11	35	13:42 (13)	17:23			18:30	20:42	21:51	22:45
13	09:18		12:08 (27)	08:17			07:01	06:32	05:15	04:28
	16:12	36	13:43 (13)	17:25			18:33	20:44	21:53	22:46
14	09:17		12:10 (27)	08:15			06:58	06:29	05:12	04:28
	16:14	35	13:44 (13)	17:28			18:35	20:46	21:55	22:46
15	09:16		12:11 (27)	08:12			06:56	06:27	05:10	04:27
	16:17	34	13:45 (13)	17:30			18:37	20:49	21:57	22:47
16	09:14		12:12 (27)	08:10			06:53	06:24	05:08	04:27
	16:19	32	13:45 (13)	17:33			18:40	20:51	22:00	22:48
17	09:13		12:14 (27)	08:07			06:50	06:21	05:06	04:27
	16:21	29	13:45 (13)	17:35			18:42	20:53	22:02	22:48
18	09:11		12:16 (27)	08:05			06:47	06:18	05:04	04:26
	16:23	26	13:46 (13)	17:38			18:44	20:56	22:04	22:49
19	09:10		13:25 (13)	08:02			06:44	06:16	05:02	04:26
	16:25	21	13:46 (13)	17:40			18:47	20:58	22:06	22:49
20	09:08		13:25 (13)	07:59			06:41	06:13	05:00	04:26
	16:27	22	13:47 (13)	17:43			18:49	21:00	22:08	22:50
21	09:07		13:26 (13)	07:57			06:38	06:10	04:58	04:26
	16:30	21	13:47 (13)	17:45			18:51	21:03	22:10	22:50
22	09:05		13:26 (13)	07:54			06:35	06:07	04:56	04:27
	16:32	21	13:47 (13)	17:48			18:54	21:05	22:12	22:50
23	09:03		13:27 (13)	07:51			06:33	06:05	04:54	04:27
	16:34	20	13:47 (13)	17:50			18:56	21:07	22:14	22:50
24	09:01		13:28 (13)	07:49			06:30	06:02	04:52	04:27
	16:37	19	13:47 (13)	17:52			18:58	21:09	22:16	22:50
25	09:00		13:29 (13)	07:46			06:27	05:59	04:50	04:28
	16:39	18	13:47 (13)	17:55			19:00	21:12	22:18	22:50
26	08:58		13:30 (13)	07:43			06:24	05:57	04:49	04:28
	16:41	17	13:47 (13)	17:57			19:03	21:14	22:20	22:50
27	08:56		13:30 (13)	07:41			06:21	05:54	04:47	04:29
	16:44	21	15:09 (18)	18:00			19:05	21:16	22:22	22:50
28	08:54		13:32 (13)	07:38			06:18	05:51	04:45	04:29
	16:46	23	15:12 (18)	18:02			19:07	21:19	22:23	22:50
29	08:52		13:35 (13)				07:15	05:49	04:44	04:30
	16:48	21	15:14 (18)				20:10	21:21	22:25	22:49
30	08:50		15:00 (18)				07:12	05:46	04:42	04:31
	16:51	15	15:15 (18)				20:12	21:23	22:27	22:49
31	08:48		15:00 (18)				07:09		04:41	
	16:53	16	15:16 (18)				20:14		22:29	
Potential sun hours	221			260			365	432	521	547
Total, worst case		782			175					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** Q - Buevegen 2141 (17)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September	October			November			December		
1	04:32	05:24	06:33	07:39			07:51		14:32 (18)	08:59		11:49 (27)
	22:48	22:01	20:39	19:13			16:48	12	14:44 (18)	15:51	34	13:23 (13)
2	04:33	05:26	06:35	07:41			07:54		14:31 (18)	09:01		11:50 (27)
	22:48	21:58	20:37	19:10			16:46	15	14:46 (18)	15:50	35	13:24 (13)
3	04:34	05:28	06:37	07:44			07:56		14:31 (18)	09:03		11:50 (27)
	22:47	21:56	20:34	19:07			16:44	16	14:47 (18)	15:49	33	13:23 (13)
4	04:35	05:30	06:39	07:46			07:58		14:29 (18)	09:05		11:50 (27)
	22:46	21:54	20:31	19:04			16:41	18	14:47 (18)	15:48	33	13:23 (13)
5	04:36	05:33	06:42	07:48			08:01		14:29 (18)	09:07		11:50 (27)
	22:46	21:51	20:28	19:01			16:39	19	14:48 (18)	15:47	31	13:22 (13)
6	04:37	05:35	06:44	07:50			08:03		14:29 (18)	09:08		11:50 (27)
	22:45	21:49	20:25	18:58			16:36	19	14:48 (18)	15:46	29	13:21 (13)
7	04:38	05:37	06:46	07:53			08:06		14:29 (18)	09:10		11:51 (27)
	22:44	21:46	20:22	18:56			16:34	19	14:48 (18)	15:45	25	13:20 (13)
8	04:40	05:39	06:48	07:55			08:08		14:29 (18)	09:12		11:51 (27)
	22:43	21:44	20:19	18:53			16:32	19	14:48 (18)	15:44	21	12:12 (27)
9	04:41	05:41	06:51	07:57			08:10		14:30 (18)	09:13		11:51 (27)
	22:42	21:41	20:17	18:50			16:30	18	14:48 (18)	15:44	21	12:12 (27)
10	04:42	05:44	06:53	07:59			08:13		14:29 (18)	09:15		11:52 (27)
	22:40	21:39	20:14	18:47			16:27	18	14:47 (18)	15:43	20	12:12 (27)
11	04:44	05:46	06:55	08:02			08:15		14:30 (18)	09:16		11:53 (27)
	22:39	21:36	20:11	18:44			16:25	17	14:47 (18)	15:43	20	12:13 (27)
12	04:45	05:48	06:57	08:04			08:18		14:32 (18)	09:17		11:53 (27)
	22:38	21:34	20:08	18:42			16:23	15	14:47 (18)	15:42	20	12:13 (27)
13	04:47	05:50	06:59	08:06			08:20		13:07 (13)	09:19		11:54 (27)
	22:36	21:31	20:05	18:39			16:21	21	14:46 (18)	15:42	20	12:14 (27)
14	04:49	05:53	07:02	08:09			08:22		13:04 (13)	09:20		11:54 (27)
	22:35	21:29	20:02	18:36			16:19	23	14:44 (18)	15:42	20	12:14 (27)
15	04:50	05:55	07:04	08:11			08:25		13:03 (13)	09:21		11:54 (27)
	22:33	21:26	19:59	18:33			16:17	21	14:42 (18)	15:42	20	12:14 (27)
16	04:52	05:57	07:06	08:13			08:27		13:03 (13)	09:22		11:55 (27)
	22:32	21:23	19:56	18:30			16:15	17	13:20 (13)	15:42	20	12:15 (27)
17	04:54	05:59	07:08	08:16			08:29		13:02 (13)	09:23		11:55 (27)
	22:30	21:21	19:53	18:28			16:13	18	13:20 (13)	15:42	20	12:15 (27)
18	04:56	06:02	07:10	08:18			08:32		13:02 (13)	09:24		11:56 (27)
	22:29	21:18	19:50	18:25			16:11	19	13:21 (13)	15:42	19	12:15 (27)
19	04:57	06:04	07:13	08:20			08:34		13:02 (13)	09:25		11:56 (27)
	22:27	21:15	19:48	18:22			16:09	20	13:22 (13)	15:42	20	12:16 (27)
20	04:59	06:06	07:15	08:23			08:36		13:01 (13)	09:25		11:57 (27)
	22:25	21:13	19:45	18:20			16:07	21	13:22 (13)	15:42	20	12:17 (27)
21	05:01	06:08	07:17	08:25			08:38		13:02 (13)	09:26		11:57 (27)
	22:23	21:10	19:42	18:17			16:06	21	13:23 (13)	15:43	20	12:17 (27)
22	05:03	06:10	07:19	08:27			08:41		13:02 (13)	09:27		11:58 (27)
	22:22	21:07	19:39	18:14			16:04	22	13:24 (13)	15:43	20	12:18 (27)
23	05:05	06:13	07:21	08:30			08:43		13:02 (13)	09:27		11:58 (27)
	22:20	21:05	19:36	18:12			16:02	21	13:23 (13)	15:44	20	12:18 (27)
24	05:07	06:15	07:24	08:32			08:45		11:54 (27)	09:27		11:58 (27)
	22:18	21:02	19:33	18:09			16:01	26	13:24 (13)	15:44	20	12:18 (27)
25	05:09	06:17	07:26	07:34			08:47		11:52 (27)	09:28		11:59 (27)
	22:16	20:59	19:30	17:06			15:59	30	13:24 (13)	15:45	20	12:19 (27)
26	05:11	06:19	07:28	07:37			08:49		11:51 (27)	09:28		12:00 (27)
	22:14	20:56	19:27	17:04			15:57	32	13:24 (13)	15:46	20	12:20 (27)
27	05:13	06:22	07:30	07:39			08:51		11:50 (27)	09:28		12:00 (27)
	22:12	20:54	19:24	17:01			15:56	34	13:24 (13)	15:47	20	12:20 (27)
28	05:15	06:24	07:32	07:42			08:54		11:49 (27)	09:28		12:00 (27)
	22:09	20:51	19:21	16:59			15:55	35	13:23 (13)	15:48	20	12:20 (27)
29	05:17	06:26	07:35	07:44			08:56		11:50 (27)	09:28		12:01 (27)
	22:07	20:48	19:19	16:56			15:53	35	13:24 (13)	15:49	20	12:21 (27)
30	05:20	06:28	07:37	07:46			08:58		11:49 (27)	09:28		12:01 (27)
	22:05	20:45	19:16	16:53			15:52	35	13:23 (13)	15:50	21	12:22 (27)
31	05:22	06:31		07:49		14:35 (18)				09:28		12:01 (27)
	22:03	20:42		16:51	6	14:41 (18)				15:51	21	12:22 (27)
Potential sun hours	546	478	386	319			236			199		
Total, worst case					6			656			703	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** R - Buevegen 2165 (18)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April	May	June	July	August	September	October	November		December		
1	09:28		12:35 (27)	08:45		14:09 (13)	07:35	07:06	05:44	04:39	04:32	05:24	06:33	07:39	07:51		08:59		12:22 (27)
	15:52	20	12:55 (27)	16:56	5	14:14 (13)	18:04	20:16	21:26	22:30	22:48	22:01	20:39	19:13	16:48		15:51	19	12:41 (27)
2	09:27		12:36 (27)	08:43			07:32	07:04	05:41	04:38	04:33	05:26	06:35	07:41	07:54		09:01		12:23 (27)
	15:54	21	12:57 (27)	16:58			18:07	20:19	21:28	22:32	22:48	21:58	20:37	19:10	16:46		15:50	19	12:42 (27)
3	09:27		12:36 (27)	08:41			07:30	07:01	05:38	04:37	04:34	05:28	06:37	07:44	07:56		09:03		12:23 (27)
	15:55	21	12:57 (27)	17:01			18:09	20:21	21:30	22:33	22:47	21:56	20:34	19:07	16:44		15:49	20	12:43 (27)
4	09:26		12:37 (27)	08:39			07:27	06:58	05:36	04:36	04:35	05:30	06:39	07:46	07:58		09:05		12:23 (27)
	15:57	20	12:57 (27)	17:03			18:12	20:23	21:33	22:35	22:46	21:54	20:31	19:04	16:41		15:48	20	12:43 (27)
5	09:26		12:37 (27)	08:37			07:24	06:55	05:33	04:34	04:36	05:33	06:42	07:48	08:01		09:07		12:24 (27)
	15:58	20	12:57 (27)	17:06			18:14	20:26	21:35	22:36	22:46	21:51	20:28	19:01	16:39		15:47	20	12:44 (27)
6	09:25		12:38 (27)	08:34			07:21	06:52	05:31	04:33	04:37	05:35	06:44	07:50	08:03		09:08		12:24 (27)
	16:00	20	12:58 (27)	17:08			18:16	20:28	21:37	22:38	22:45	21:49	20:25	18:58	16:36		15:46	20	12:44 (27)
7	09:24		12:38 (27)	08:32			07:18	06:49	05:29	04:32	04:38	05:37	06:46	07:53	08:06		09:10		12:24 (27)
	16:01	20	12:58 (27)	17:11			18:19	20:30	21:39	22:39	22:44	21:46	20:22	18:56	16:34		15:45	21	12:45 (27)
8	09:23		12:39 (27)	08:30			07:16	06:46	05:26	04:31	04:40	05:39	06:48	07:55	08:08		09:12		12:25 (27)
	16:03	20	12:59 (27)	17:13			18:21	20:33	21:42	22:40	22:43	21:44	20:19	18:53	16:32		15:44	20	12:45 (27)
9	09:23		12:39 (27)	08:27			07:13	06:44	05:24	04:31	04:41	05:41	06:50	07:57	08:10		09:13		12:24 (27)
	16:05	19	12:58 (27)	17:15			18:23	20:35	21:44	22:41	22:42	21:41	20:17	18:50	16:30		15:44	21	12:45 (27)
10	09:22		12:40 (27)	08:25			07:10	06:41	05:21	04:30	04:42	05:44	06:53	07:59	08:13		13:39 (13)	09:15	12:25 (27)
	16:07	19	12:59 (27)	17:18			18:26	20:37	21:46	22:43	22:40	21:39	20:14	18:47	16:27	7	13:46 (13)	15:43	21 12:46 (27)
11	09:21		12:40 (27)	08:22			07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02	08:15		13:37 (13)	09:16	12:26 (27)
	16:09	19	12:59 (27)	17:20			18:28	20:39	21:49	22:44	22:39	21:36	20:11	18:44	16:25	11	13:48 (13)	15:43	21 12:47 (27)
12	09:19		12:42 (27)	08:20			07:04	06:35	05:17	04:29	04:45	05:48	06:57	08:04	08:18		13:36 (13)	09:17	12:26 (27)
	16:10	23	14:09 (13)	17:23			18:30	20:42	21:51	22:45	22:38	21:34	20:08	18:42	16:23	14	13:50 (13)	15:42	20 12:46 (27)
13	09:18		12:42 (27)	08:17			07:01	06:32	05:15	04:28	04:47	05:50	06:59	08:06	08:20		13:35 (13)	09:19	12:27 (27)
	16:12	27	14:11 (13)	17:25			18:33	20:44	21:53	22:46	22:36	21:31	20:05	18:39	16:21	17	13:52 (13)	15:42	20 12:47 (27)
14	09:17		12:44 (27)	08:15			06:58	06:29	05:12	04:27	04:49	05:53	07:01	08:09	08:22		13:34 (13)	09:20	12:27 (27)
	16:14	27	14:13 (13)	17:28			18:35	20:46	21:55	22:46	22:35	21:29	20:02	18:36	16:19	18	13:52 (13)	15:42	21 12:48 (27)
15	09:16		12:45 (27)	08:12			06:56	06:27	05:10	04:27	04:50	05:55	07:04	08:11	08:25		13:34 (13)	09:21	12:27 (27)
	16:17	27	14:14 (13)	17:30			18:37	20:49	21:57	22:47	22:33	21:26	19:59	18:33	16:17	19	13:53 (13)	15:42	21 12:48 (27)
16	09:14		12:46 (27)	08:10			06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13	08:27		13:34 (13)	09:22	12:28 (27)
	16:19	26	14:15 (13)	17:33			18:40	20:51	21:59	22:48	22:32	21:23	19:56	18:30	16:15	20	13:54 (13)	15:42	20 12:48 (27)
17	09:13		12:48 (27)	08:07			06:50	06:21	05:06	04:27	04:54	05:59	07:08	08:16	08:29		13:33 (13)	09:23	12:28 (27)
	16:21	25	14:16 (13)	17:35			18:42	20:53	22:02	22:48	22:30	21:21	19:53	18:28	16:13	20	13:53 (13)	15:42	20 12:48 (27)
18	09:11		13:59 (13)	08:05			06:47	06:18	05:04	04:26	04:56	06:02	07:10	08:18	08:32		13:34 (13)	09:24	12:29 (27)
	16:23	18	14:17 (13)	17:38			18:44	20:56	22:04	22:49	22:29	21:18	19:50	18:25	16:11	20	13:54 (13)	15:42	20 12:49 (27)
19	09:10		13:59 (13)	08:02			06:44	06:16	05:02	04:26	04:57	06:04	07:12	08:20	08:34		13:34 (13)	09:25	12:30 (27)
	16:25	18	14:17 (13)	17:40			18:47	20:58	22:06	22:49	22:27	21:15	19:48	18:22	16:09	21	13:55 (13)	15:42	20 12:50 (27)
20	09:08		13:59 (13)	07:59			06:41	06:13	05:00	04:26	04:59	06:06	07:15	08:23	08:36		13:34 (13)	09:25	12:30 (27)
	16:27	19	14:18 (13)	17:43			18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20	16:07	20	13:54 (13)	15:42	20 12:50 (27)
21	09:07		13:59 (13)	07:57			06:38	06:10	04:58	04:26	05:01	06:08	07:17	08:25	08:38		13:35 (13)	09:26	12:30 (27)
	16:30	20	14:19 (13)	17:45			18:51	21:03	22:10	22:50	22:23	21:10	19:42	18:17	16:06	20	13:55 (13)	15:43	20 12:50 (27)
22	09:05		13:59 (13)	07:54			06:35	06:07	04:56	04:27	05:03	06:10	07:19	08:27	08:41		13:35 (13)	09:27	12:31 (27)
	16:32	20	14:19 (13)	17:47			18:54	21:05	22:12	22:50	22:21	21:07	19:39	18:14	16:04	19	13:54 (13)	15:43	20 12:51 (27)
23	09:03		13:59 (13)	07:51			06:32	06:05	04:54	04:27	05:05	06:13	07:21	08:30	08:43		13:36 (13)	09:27	12:31 (27)
	16:34	21	14:20 (13)	17:50			18:56	21:07	22:14	22:50	22:20	21:05	19:36	18:11	16:02	19	13:55 (13)	15:44	20 12:51 (27)
24	09:01		14:00 (13)	07:49			06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32	08:45		13:37 (13)	09:27	12:31 (27)
	16:36	20	14:20 (13)	17:52			18:58	21:09	22:16	22:50	22:18	21:02	19:33	18:09	16:01	18	13:55 (13)	15:44	21 12:52 (27)
25	09:00		14:00 (13)	07:46			06:27	05:59	04:50	04:28	05:09	06:17	07:26	07:34	08:47		12:26 (27)	09:28	12:33 (27)
	16:39	21	14:21 (13)	17:55			19:00	21:12	22:18	22:50	22:16	20:59	19:30	17:06	15:59	25	13:54 (13)	15:45	20 12:53 (27)
26	08:58		14:01 (13)	07:43			06:24	05:57	04:49	04:28	05:11	06:19	07:28	07:37	08:49		12:25 (27)	09:28	12:33 (27)
	16:41	20	14:21 (13)	17:57			19:03	21:14	22:20	22:50	22:14	20:56	19:27	17:04	15:57	26	13:54 (13)	15:46	20 12:53 (27)
27	08:56		14:01 (13)	07:41			06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39	08:51		12:24 (27)	09:28	12:34 (27)
	16:44	19	14:20 (13)	18:00			19:05	21:16	22:22	22:50	22:12	20:54	19:24	17:01	15:56	27	13:53 (13)	15:47	20 12:54 (27)
28	08:54		14:02 (13)	07:38			06:18	05:51	04:45	04:29	05:15	06:24	07:32	07:42	08:54		12:23 (27)	09:28	12:33 (27)
	16:46	18	14:20 (13)	18:02			19:07	21:19	22:23	22:50	22:09	20:51	19:21	16:58	15:55	27	13:52 (13)	15:47	20 12:53 (27)
29	08:52		14:04 (13)				07:15	05:49	04:44	04:30	05:17	06:26	07:35	07:44	08:56		12:23 (27)	09:28	12:34 (27)
	16:48	16	14:20 (13)				20:10	21:21	22:25	22:49	22:07	20:48	19:19	16:56	15:53	27	13:52 (13)	15:49	20 12:54 (27)
30	08:50		14:04 (13)				07:12	05:46	04:42	04:31	05:20	06:28	07:37	07:46	08:58		12:23 (27)	09:28	12:35 (27)
	16:51	14	14:18 (13)				20:12	21:23	22:27	22:49	22:05	20:45	19:16	16:53	15:52	24	13:51 (13)	15:50	20 12:55 (27)
31	08:48		14:06 (13)				07:09		04:41		05:22	06:31		07:49				09:28	12:35 (27)
	16:53	11	14:17 (13)				20:14		22:29		22:03	20:42		16:51				15:51	20 12:55 (27)
Potential sun hours	221			260			365	432	521	547	546	478	386	319	236			199	
Total, worst case		629			5											419			625

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** S - Vaule 176 (19)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April	May	June
1	09:28		13:54 (27)	08:45		15:13 (13)	07:35	07:06	05:43	04:39
	15:52	8	14:02 (27)	16:56	13	15:26 (13)	18:04	20:16	21:26	22:30
2	09:27		13:55 (27)	08:43		15:12 (13)	07:32	07:04	05:41	04:38
	15:54	9	14:04 (27)	16:58	16	15:28 (13)	18:07	20:19	21:28	22:32
3	09:27		13:54 (27)	08:41		15:11 (13)	07:29	07:01	05:38	04:37
	15:55	11	14:05 (27)	17:01	17	15:28 (13)	18:09	20:21	21:30	22:33
4	09:26		13:54 (27)	08:39		15:11 (13)	07:27	06:58	05:36	04:36
	15:57	12	14:06 (27)	17:03	18	15:29 (13)	18:12	20:23	21:33	22:35
5	09:26		13:54 (27)	08:37		15:11 (13)	07:24	06:55	05:33	04:34
	15:58	13	14:07 (27)	17:06	18	15:29 (13)	18:14	20:26	21:35	22:36
6	09:25		13:54 (27)	08:34		15:11 (13)	07:21	06:52	05:31	04:33
	16:00	14	14:08 (27)	17:08	19	15:30 (13)	18:16	20:28	21:37	22:38
7	09:24		13:54 (27)	08:32		15:11 (13)	07:18	06:49	05:29	04:32
	16:01	15	14:09 (27)	17:10	19	15:30 (13)	18:19	20:30	21:39	22:39
8	09:23		13:54 (27)	08:30		15:11 (13)	07:15	06:46	05:26	04:31
	16:03	17	14:11 (27)	17:13	18	15:29 (13)	18:21	20:32	21:42	22:40
9	09:23		13:53 (27)	08:27		15:12 (13)	07:13	06:44	05:24	04:31
	16:05	18	14:11 (27)	17:15	18	15:30 (13)	18:23	20:35	21:44	22:41
10	09:22		13:54 (27)	08:25		15:12 (13)	07:10	06:41	05:21	04:30
	16:07	18	14:12 (27)	17:18	17	15:29 (13)	18:26	20:37	21:46	22:43
11	09:20		13:53 (27)	08:22		15:13 (13)	07:07	06:38	05:19	04:29
	16:09	19	14:12 (27)	17:20	15	15:28 (13)	18:28	20:39	21:48	22:44
12	09:19		13:54 (27)	08:20		15:15 (13)	07:04	06:35	05:17	04:28
	16:10	19	14:13 (27)	17:23	12	15:27 (13)	18:30	20:42	21:51	22:45
13	09:18		13:53 (27)	08:17		15:17 (13)	07:01	06:32	05:14	04:28
	16:12	21	14:14 (27)	17:25	7	15:24 (13)	18:33	20:44	21:53	22:45
14	09:17		13:54 (27)	08:15			06:58	06:29	05:12	04:27
	16:14	21	14:15 (27)	17:28			18:35	20:46	21:55	22:46
15	09:16		13:54 (27)	08:12			06:56	06:27	05:10	04:27
	16:16	21	14:15 (27)	17:30			18:37	20:49	21:57	22:47
16	09:14		13:54 (27)	08:10			06:53	06:24	05:08	04:27
	16:19	21	14:15 (27)	17:33			18:40	20:51	21:59	22:48
17	09:13		13:54 (27)	08:07			06:50	06:21	05:06	04:27
	16:21	22	14:16 (27)	17:35			18:42	20:53	22:02	22:48
18	09:11		13:55 (27)	08:05			06:47	06:18	05:04	04:26
	16:23	21	14:16 (27)	17:38			18:44	20:56	22:04	22:49
19	09:10		13:55 (27)	08:02			06:44	06:15	05:02	04:26
	16:25	21	14:16 (27)	17:40			18:47	20:58	22:06	22:49
20	09:08		13:56 (27)	07:59			06:41	06:13	05:00	04:26
	16:27	20	14:16 (27)	17:43			18:49	21:00	22:08	22:50
21	09:07		13:56 (27)	07:57			06:38	06:10	04:58	04:26
	16:30	20	14:16 (27)	17:45			18:51	21:02	22:10	22:50
22	09:05		13:57 (27)	07:54			06:35	06:07	04:56	04:27
	16:32	19	14:16 (27)	17:47			18:53	21:05	22:12	22:50
23	09:03		13:58 (27)	07:51			06:32	06:05	04:54	04:27
	16:34	18	14:16 (27)	17:50			18:56	21:07	22:14	22:50
24	09:01		13:59 (27)	07:49			06:30	06:02	04:52	04:27
	16:36	17	14:16 (27)	17:52			18:58	21:09	22:16	22:50
25	08:59		14:01 (27)	07:46			06:27	05:59	04:50	04:28
	16:39	14	14:15 (27)	17:55			19:00	21:12	22:18	22:50
26	08:58		14:01 (27)	07:43			06:24	05:57	04:49	04:28
	16:41	13	14:14 (27)	17:57			19:03	21:14	22:20	22:50
27	08:56		14:04 (27)	07:41			06:21	05:54	04:47	04:29
	16:44	8	14:12 (27)	18:00			19:05	21:16	22:22	22:50
28	08:54			07:38			06:18	05:51	04:45	04:29
	16:46			18:02			19:07	21:19	22:23	22:50
29	08:52						07:15	05:49	04:44	04:30
	16:48						20:10	21:21	22:25	22:49
30	08:50		15:16 (13)				07:12	05:46	04:42	04:31
	16:51	6	15:22 (13)				20:12	21:23	22:27	22:49
31	08:48		15:14 (13)				07:09		04:41	
	16:53	11	15:25 (13)				20:14		22:29	
Potential sun hours	221			260			365	432	521	547
Total, worst case		467			207					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** S - Vaule 176 (19)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September	October			November			December		
1	04:32	05:24	06:33	07:39			07:51		14:42 (13)	08:59		13:35 (27)
	22:48	22:01	20:39	19:13			16:48	16	14:58 (13)	15:51	19	13:54 (27)
2	04:33	05:26	06:35	07:41			07:53		14:41 (13)	09:01		13:37 (27)
	22:48	21:58	20:37	19:10			16:46	18	14:59 (13)	15:50	18	13:55 (27)
3	04:34	05:28	06:37	07:44			07:56		14:40 (13)	09:03		13:37 (27)
	22:47	21:56	20:34	19:07			16:44	19	14:59 (13)	15:49	18	13:55 (27)
4	04:35	05:30	06:39	07:46			07:58		14:40 (13)	09:05		13:38 (27)
	22:46	21:54	20:31	19:04			16:41	19	14:59 (13)	15:48	17	13:55 (27)
5	04:36	05:32	06:42	07:48			08:01		14:41 (13)	09:07		13:39 (27)
	22:45	21:51	20:28	19:01			16:39	19	15:00 (13)	15:47	16	13:55 (27)
6	04:37	05:35	06:44	07:50			08:03		14:41 (13)	09:08		13:40 (27)
	22:45	21:49	20:25	18:58			16:36	19	15:00 (13)	15:46	14	13:54 (27)
7	04:38	05:37	06:46	07:53			08:06		14:41 (13)	09:10		13:41 (27)
	22:44	21:46	20:22	18:56			16:34	18	14:59 (13)	15:45	13	13:54 (27)
8	04:40	05:39	06:48	07:55			08:08		14:42 (13)	09:12		13:42 (27)
	22:43	21:44	20:19	18:53			16:32	17	14:59 (13)	15:44	12	13:54 (27)
9	04:41	05:41	06:50	07:57			08:10		14:43 (13)	09:13		13:42 (27)
	22:41	21:41	20:16	18:50			16:30	15	14:58 (13)	15:44	11	13:53 (27)
10	04:42	05:44	06:53	07:59			08:13		14:43 (13)	09:15		13:44 (27)
	22:40	21:39	20:14	18:47			16:27	14	14:57 (13)	15:43	9	13:53 (27)
11	04:44	05:46	06:55	08:02			08:15		14:45 (13)	09:16		13:45 (27)
	22:39	21:36	20:11	18:44			16:25	11	14:56 (13)	15:43	8	13:53 (27)
12	04:45	05:48	06:57	08:04			08:18		14:48 (13)	09:17		13:46 (27)
	22:38	21:34	20:08	18:41			16:23	5	14:53 (13)	15:42	6	13:52 (27)
13	04:47	05:50	06:59	08:06			08:20			09:19		13:49 (27)
	22:36	21:31	20:05	18:39			16:21			15:42	3	13:52 (27)
14	04:49	05:53	07:01	08:09			08:22			09:20		
	22:35	21:29	20:02	18:36			16:19			15:42		
15	04:50	05:55	07:04	08:11			08:25		13:37 (27)	09:21		
	22:33	21:26	19:59	18:33			16:17	8	13:45 (27)	15:42		
16	04:52	05:57	07:06	08:13			08:27		13:35 (27)	09:22		
	22:32	21:23	19:56	18:30			16:15	12	13:47 (27)	15:42		
17	04:54	05:59	07:08	08:16			08:29		13:33 (27)	09:23		
	22:30	21:21	19:53	18:28			16:13	15	13:48 (27)	15:42		
18	04:56	06:01	07:10	08:18			08:32		13:33 (27)	09:24		
	22:29	21:18	19:50	18:25			16:11	17	13:50 (27)	15:42		
19	04:57	06:04	07:12	08:20			08:34		13:33 (27)	09:25		
	22:27	21:15	19:47	18:22			16:09	18	13:51 (27)	15:42		
20	04:59	06:06	07:15	08:23			08:36		13:32 (27)	09:25		
	22:25	21:13	19:45	18:19			16:07	19	13:51 (27)	15:42		
21	05:01	06:08	07:17	08:25			08:38		13:32 (27)	09:26		
	22:23	21:10	19:42	18:17			16:06	20	13:52 (27)	15:43		
22	05:03	06:10	07:19	08:27			08:41		13:32 (27)	09:27		
	22:21	21:07	19:39	18:14			16:04	20	13:52 (27)	15:43		
23	05:05	06:13	07:21	08:30			08:43		13:32 (27)	09:27		
	22:20	21:05	19:36	18:11			16:02	21	13:53 (27)	15:44		
24	05:07	06:15	07:23	08:32			08:45		13:33 (27)	09:27		
	22:18	21:02	19:33	18:09			16:00	21	13:54 (27)	15:44		
25	05:09	06:17	07:26	07:34			08:47		13:32 (27)	09:28		
	22:16	20:59	19:30	17:06			15:59	22	13:54 (27)	15:45		
26	05:11	06:19	07:28	07:37			08:49		13:33 (27)	09:28		
	22:14	20:56	19:27	17:04			15:57	21	13:54 (27)	15:46		
27	05:13	06:22	07:30	07:39			08:51		13:33 (27)	09:28		
	22:11	20:53	19:24	17:01			15:56	21	13:54 (27)	15:47		
28	05:15	06:24	07:32	07:41			08:53		13:33 (27)	09:28		
	22:09	20:51	19:21	16:58			15:55	21	13:54 (27)	15:47		
29	05:17	06:26	07:35	07:44		14:46 (13)	08:55		13:35 (27)	09:28		
	22:07	20:48	19:18	16:56	8	14:54 (13)	15:53	20	13:55 (27)	15:48		
30	05:19	06:28	07:37	07:46		14:44 (13)	08:57		13:35 (27)	09:28		
	22:05	20:45	19:16	16:53	13	14:57 (13)	15:52	19	13:54 (27)	15:50		
31	05:22	06:31		07:49		14:42 (13)				09:28		13:56 (27)
	22:03	20:42		16:51	15	14:57 (13)				15:51	4	14:00 (27)
Potential sun hours	546	478	386	319			236			199		
Total, worst case					36			485			168	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** T - Vaule 247 (20)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March			April	May	June
1	09:28			08:45		10:57 (38)	07:35		16:28 (18)	07:06	05:44	04:39
	15:52			16:56	41	13:51 (27)	18:04	11	16:39 (18)	20:16	21:26	22:30
2	09:27			08:43		10:59 (38)	07:32		16:27 (18)	07:04	05:41	04:38
	15:54			16:58	37	13:51 (27)	18:07	14	16:41 (18)	20:19	21:28	22:32
3	09:27			08:41		11:02 (38)	07:30		16:27 (18)	07:01	05:38	04:37
	15:55			17:01	27	13:49 (27)	18:09	15	16:42 (18)	20:21	21:30	22:33
4	09:26			08:39		13:29 (27)	07:27		16:27 (18)	06:58	05:36	04:36
	15:57			17:03	20	13:49 (27)	18:12	18	16:45 (18)	20:23	21:33	22:35
5	09:26			08:37		13:30 (27)	07:24		16:28 (18)	06:55	05:33	04:34
	15:58			17:06	17	13:47 (27)	18:14	18	16:46 (18)	20:26	21:35	22:36
6	09:25			08:34		13:34 (27)	07:21		16:28 (18)	06:52	05:31	04:33
	16:00			17:08	11	13:45 (27)	18:16	17	16:45 (18)	20:28	21:37	22:38
7	09:24			08:32			07:18		16:29 (18)	06:49	05:29	04:32
	16:01			17:11			18:19	15	16:44 (18)	20:30	21:39	22:39
8	09:23			08:30			07:15		16:30 (18)	06:46	05:26	04:32
	16:03			17:13			18:21	12	16:42 (18)	20:32	21:42	22:40
9	09:23			08:27			07:13		16:33 (18)	06:44	05:24	04:31
	16:05			17:15			18:23	5	16:38 (18)	20:35	21:44	22:41
10	09:22			08:25			07:10			06:41	05:21	04:30
	16:07			17:18			18:26			20:37	21:46	22:43
11	09:20			08:22		14:55 (8)	07:07			06:38	05:19	04:29
	16:09			17:20	7	15:02 (8)	18:28			20:39	21:48	22:44
12	09:19			08:20		14:57 (8)	07:04			06:35	05:17	04:29
	16:11			17:23	10	15:07 (8)	18:30			20:42	21:51	22:45
13	09:18		11:01 (38)	08:17		14:59 (8)	07:01			06:32	05:15	04:28
	16:12	5	11:06 (38)	17:25	12	15:11 (13)	18:33			20:44	21:53	22:45
14	09:17		10:57 (38)	08:15		15:02 (8)	06:58			06:29	05:12	04:28
	16:14	11	11:08 (38)	17:28	12	15:15 (13)	18:35			20:46	21:55	22:46
15	09:16		10:52 (38)	08:12		15:06 (13)	06:56			06:27	05:10	04:27
	16:17	17	11:09 (38)	17:30	13	15:19 (13)	18:37			20:49	21:57	22:47
16	09:14		10:52 (38)	08:10		15:06 (13)	06:53			06:24	05:08	04:27
	16:19	18	11:10 (38)	17:33	16	15:22 (13)	18:40			20:51	21:59	22:48
17	09:13		10:51 (38)	08:07		15:05 (13)	06:50			06:21	05:06	04:27
	16:21	19	11:10 (38)	17:35	16	15:21 (13)	18:42			20:53	22:02	22:48
18	09:11		10:51 (38)	08:05		15:05 (13)	06:47			06:18	05:04	04:26
	16:23	20	11:11 (38)	17:38	15	15:20 (13)	18:44			20:56	22:04	22:49
19	09:10		10:51 (38)	08:02		15:06 (13)	06:44			06:16	05:02	04:26
	16:25	21	11:12 (38)	17:40	17	15:23 (13)	18:47			20:58	22:06	22:49
20	09:08		10:51 (38)	07:59		15:07 (13)	06:41			06:13	05:00	04:26
	16:27	22	11:13 (38)	17:43	18	15:25 (13)	18:49			21:00	22:08	22:50
21	09:07		10:51 (38)	07:57		15:07 (13)	06:38			06:10	04:58	04:26
	16:30	23	12:45 (33)	17:45	21	15:28 (13)	18:51			21:02	22:10	22:50
22	09:05		10:51 (38)	07:54		15:08 (13)	06:35			06:07	04:56	04:27
	16:32	35	12:57 (33)	17:47	20	15:28 (13)	18:53			21:05	22:12	22:50
23	09:03		10:51 (38)	07:51		15:09 (13)	06:32			06:05	04:54	04:27
	16:34	41	13:04 (33)	17:50	18	15:27 (13)	18:56			21:07	22:14	22:50
24	09:01		10:52 (38)	07:49		15:12 (13)	06:30			06:02	04:52	04:27
	16:37	40	13:04 (33)	17:52	14	15:26 (13)	18:58			21:09	22:16	22:50
25	08:59		10:52 (38)	07:46		15:16 (13)	06:27			05:59	04:50	04:28
	16:39	39	13:04 (33)	17:55	6	15:22 (13)	19:00			21:12	22:18	22:50
26	08:58		10:52 (38)	07:43			06:24			05:57	04:49	04:28
	16:41	40	13:25 (27)	17:57			19:03			21:14	22:20	22:50
27	08:56		10:53 (38)	07:41			06:21			05:54	04:47	04:29
	16:44	42	13:31 (27)	18:00			19:05			21:16	22:22	22:50
28	08:54		10:53 (38)	07:38		16:29 (18)	06:18			05:51	04:45	04:29
	16:46	46	13:41 (27)	18:02	6	16:37 (18)	19:07			21:19	22:23	22:50
29	08:52		10:54 (38)				07:15			05:49	04:44	04:30
	16:48	42	13:45 (27)				20:10			21:21	22:25	22:49
30	08:50		10:55 (38)				07:12			05:46	04:42	04:31
	16:51	43	13:48 (27)				20:12			21:23	22:27	22:49
31	08:48		10:56 (38)				07:09				04:41	
	16:53	43	13:50 (27)				20:14				22:29	
Potential sun hours	221			260			365			432	521	547
Total, worst case		567			374			125				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** T - Vaule 247 (20)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September	October		November		December
1	04:32	05:24	06:33	07:39		07:51		08:59
	22:48	22:01	20:39	19:13		16:48		15:51
2	04:33	05:26	06:35	07:41		07:54		09:01
	22:48	21:58	20:37	19:10		16:46		15:50
3	04:34	05:28	06:37	07:44		07:56		09:03
	22:47	21:56	20:34	19:07		16:44		15:49
4	04:35	05:30	06:39	07:46		07:58	13:08 (27)	09:05
	22:46	21:54	20:31	19:04		16:41 2	13:10 (27)	15:48
5	04:36	05:33	06:42	07:48	17:09 (18)	08:01	13:03 (27)	09:07
	22:45	21:51	20:28	19:01 9	17:18 (18)	16:39 12	13:15 (27)	15:47
6	04:37	05:35	06:44	07:50	17:06 (18)	08:03	13:01 (27)	09:08
	22:45	21:49	20:25	18:58 14	17:20 (18)	16:36 17	13:18 (27)	15:46
7	04:38	05:37	06:46	07:53	17:04 (18)	08:06	12:59 (27)	09:10
	22:44	21:46	20:22	18:56 16	17:20 (18)	16:34 20	13:19 (27)	15:45
8	04:40	05:39	06:48	07:55	17:03 (18)	08:08	10:32 (38)	09:12
	22:43	21:44	20:19	18:53 18	17:21 (18)	16:32 29	13:20 (27)	15:44
9	04:41	05:41	06:50	07:57	17:02 (18)	08:10	10:30 (38)	09:13
	22:41	21:41	20:16	18:50 18	17:20 (18)	16:30 37	13:22 (27)	15:44
10	04:42	05:44	06:53	07:59	17:01 (18)	08:13	10:28 (38)	09:15
	22:40	21:39	20:14	18:47 16	17:17 (18)	16:27 41	13:22 (27)	15:43
11	04:44	05:46	06:55	08:02	17:01 (18)	08:15	10:27 (38)	09:16
	22:39	21:36	20:11	18:44 15	17:16 (18)	16:25 42	13:20 (27)	15:43
12	04:45	05:48	06:57	08:04	17:01 (18)	08:18	10:27 (38)	09:17
	22:38	21:34	20:08	18:41 13	17:14 (18)	16:23 42	13:19 (27)	15:42
13	04:47	05:50	06:59	08:06	17:02 (18)	08:20	10:25 (38)	09:19
	22:36	21:31	20:05	18:39 10	17:12 (18)	16:21 43	13:17 (27)	15:42
14	04:49	05:53	07:01	08:09	17:06 (18)	08:22	10:25 (38)	09:20
	22:35	21:29	20:02	18:36 2	17:08 (18)	16:19 46	13:12 (27)	15:42
15	04:50	05:55	07:04	08:11		08:25	10:25 (38)	09:21
	22:33	21:26	19:59	18:33		16:17 43	13:04 (27)	15:42
16	04:52	05:57	07:06	08:13		08:27	10:26 (38)	09:22
	22:32	21:23	19:56	18:30		16:15 40	12:59 (27)	15:42
17	04:54	05:59	07:08	08:16	15:45 (13)	08:29	10:25 (38)	09:23
	22:30	21:21	19:53	18:28 9	15:54 (13)	16:13 39	12:37 (33)	15:42
18	04:56	06:02	07:10	08:18	15:42 (13)	08:32	10:26 (38)	09:24
	22:29	21:18	19:50	18:25 15	15:57 (13)	16:11 40	12:38 (33)	15:42
19	04:57	06:04	07:12	08:20	15:40 (13)	08:34	10:26 (38)	09:25
	22:27	21:15	19:47	18:22 18	15:58 (13)	16:09 41	12:39 (33)	15:42
20	04:59	06:06	07:15	08:23	15:39 (13)	08:36	10:26 (38)	09:25
	22:25	21:13	19:45	18:20 21	16:00 (13)	16:07 35	12:32 (33)	15:42
21	05:01	06:08	07:17	08:25	15:37 (13)	08:38	10:27 (38)	09:26
	22:23	21:10	19:42	18:17 20	15:57 (13)	16:06 23	12:21 (33)	15:43
22	05:03	06:10	07:19	08:27	15:37 (13)	08:41	10:27 (38)	09:27
	22:21	21:07	19:39	18:14 17	15:54 (13)	16:04 22	10:49 (38)	15:43
23	05:05	06:13	07:21	08:30	15:36 (13)	08:43	10:28 (38)	09:27
	22:20	21:05	19:36	18:12 16	15:52 (13)	16:02 21	10:49 (38)	15:44
24	05:07	06:15	07:24	08:32	15:35 (13)	08:45	10:29 (38)	09:27
	22:18	21:02	19:33	18:09 16	15:51 (13)	16:01 20	10:49 (38)	15:44
25	05:09	06:17	07:26	07:34	14:36 (13)	08:47	10:29 (38)	09:28
	22:16	20:59	19:30	17:06 15	14:51 (13)	15:59 20	10:49 (38)	15:45
26	05:11	06:19	07:28	07:37	14:35 (13)	08:49	10:31 (38)	09:28
	22:14	20:56	19:27	17:04 16	14:51 (13)	15:57 18	10:49 (38)	15:46
27	05:13	06:22	07:30	07:39	14:35 (13)	08:51	10:32 (38)	09:28
	22:11	20:53	19:24	17:01 13	14:48 (13)	15:56 16	10:48 (38)	15:47
28	05:15	06:24	07:32	07:41	14:30 (8)	08:53	10:36 (38)	09:28
	22:09	20:51	19:21	16:58 14	14:44 (13)	15:55 11	10:47 (38)	15:48
29	05:17	06:26	07:35	07:44	14:28 (8)	08:55	10:42 (38)	09:28
	22:07	20:48	19:19	16:56 12	14:40 (13)	15:53 5	10:47 (38)	15:49
30	05:20	06:28	07:37	07:46	14:26 (8)	08:57		09:28
	22:05	20:45	19:16	16:53 10	14:36 (8)	15:52		15:50
31	05:22	06:31		07:49				09:28
	22:03	20:42		16:51				15:51
Potential sun hours	546	478	386	319		236		199
Total, worst case					343		725	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** U - Store Svela, eiendom 60/5, Bjerkreim kommune (21)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March			April			May			June
1	09:27			08:45		15:29 (9)	07:35		15:43 (14)	07:06			05:43		18:53 (38)	04:39
	15:52			16:56	21	15:50 (9)	18:04	38	16:21 (14)	20:16			21:25	26	19:19 (38)	22:30
2	09:27			08:43		15:29 (9)	07:32		15:43 (14)	07:04			05:41		18:54 (38)	04:38
	15:54			16:58	23	15:52 (9)	18:07	37	16:20 (14)	20:19			21:28	23	19:17 (38)	22:32
3	09:27			08:41		15:29 (9)	07:29		15:43 (14)	07:01			05:38		18:56 (38)	04:37
	15:55			17:01	23	15:52 (9)	18:09	36	16:19 (14)	20:21			21:30	19	19:15 (38)	22:33
4	09:26			08:39		15:29 (9)	07:27		15:44 (14)	06:58		19:04 (38)	05:36		19:00 (38)	04:36
	15:57			17:03	23	15:52 (9)	18:11	34	16:18 (14)	20:23	15	19:19 (38)	21:32	12	19:12 (38)	22:35
5	09:25			08:36		15:29 (9)	07:24		15:46 (14)	06:55		19:00 (38)	05:33			04:35
	15:58			17:06	23	15:52 (9)	18:14	32	16:18 (14)	20:25	22	19:22 (38)	21:35			22:36
6	09:25			08:34		15:28 (9)	07:21		15:47 (14)	06:52		18:57 (38)	05:31			04:33
	16:00			17:08	24	15:52 (9)	18:16	29	16:16 (14)	20:28	27	19:24 (38)	21:37			22:37
7	09:24			08:32		15:29 (9)	07:18		15:48 (14)	06:49		18:55 (38)	05:29			04:32
	16:01			17:10	23	15:52 (9)	18:19	27	16:15 (14)	20:30	30	19:25 (38)	21:39			22:39
8	09:23			08:29		15:29 (9)	07:15		15:50 (14)	06:46		18:53 (38)	05:26			04:32
	16:03			17:13	23	15:52 (9)	18:21	22	16:12 (14)	20:32	33	19:26 (38)	21:42			22:40
9	09:22			08:27		15:30 (9)	07:13		15:52 (14)	06:43		18:52 (38)	05:24			04:31
	16:05			17:15	22	15:52 (9)	18:23	18	16:10 (14)	20:35	47	19:57 (27)	21:44			22:41
10	09:21			08:25		15:31 (9)	07:10		15:57 (14)	06:41		18:51 (38)	05:21			04:30
	16:07			17:18	20	15:51 (9)	18:26	8	16:05 (14)	20:37	55	19:58 (27)	21:46			22:42
11	09:20			08:22		15:31 (9)	07:07			06:38		18:49 (38)	05:19			04:29
	16:09			17:20	19	15:50 (9)	18:28			20:39	60	19:58 (27)	21:48			22:43
12	09:19			08:20		15:33 (9)	07:04			06:35		18:48 (38)	05:17			04:29
	16:11			17:23	16	15:49 (9)	18:30			20:42	61	19:58 (27)	21:50			22:44
13	09:18			08:17		15:35 (9)	07:01			06:32		18:48 (38)	05:15			04:28
	16:12			17:25	16	16:05 (14)	18:33			20:44	63	19:59 (27)	21:53			22:45
14	09:17			08:15		15:38 (9)	06:58			06:29		18:47 (38)	05:12			04:28
	16:14			17:28	21	16:10 (14)	18:35			20:46	63	19:58 (27)	21:55			22:46
15	09:15			08:12		15:52 (14)	06:55			06:27		18:46 (38)	05:10			04:27
	16:17			17:30	21	16:13 (14)	18:37			20:48	64	19:57 (27)	21:57			22:47
16	09:14			08:10		15:51 (14)	06:53		17:31 (33)	06:24		18:46 (38)	05:08			04:27
	16:19			17:33	25	16:16 (14)	18:40	6	17:37 (33)	20:51	63	19:57 (27)	21:59			22:47
17	09:13			08:07		15:49 (14)	06:50		17:27 (33)	06:21		18:45 (38)	05:06			04:27
	16:21			17:35	28	16:17 (14)	18:42	13	17:40 (33)	20:53	61	19:55 (27)	22:01			22:48
18	09:11			08:04		15:48 (14)	06:47		17:25 (33)	06:18		18:45 (38)	05:04			04:26
	16:23			17:38	30	16:18 (14)	18:44	16	17:41 (33)	20:55	58	19:54 (27)	22:04			22:49
19	09:10			08:02		15:46 (14)	06:44		17:23 (33)	06:15		18:45 (38)	05:02			04:26
	16:25			17:40	33	16:19 (14)	18:46	19	17:42 (33)	20:58	55	19:52 (27)	22:06			22:49
20	09:08			07:59		15:46 (14)	06:41		17:22 (33)	06:13		18:45 (38)	05:00			04:26
	16:27			17:43	34	16:20 (14)	18:49	20	17:42 (33)	21:00	44	19:29 (38)	22:08			22:49
21	09:06			07:57		15:45 (14)	06:38		17:21 (33)	06:10		18:45 (38)	04:58			04:26
	16:30			17:45	36	16:21 (14)	18:51	22	17:43 (33)	21:02	43	19:28 (38)	22:10			22:50
22	09:05			07:54		15:44 (14)	06:35		17:20 (33)	06:07		18:45 (38)	04:56			04:27
	16:32			17:47	37	16:21 (14)	18:53	22	17:42 (33)	21:05	43	19:28 (38)	22:12			22:50
23	09:03			07:51		15:44 (14)	06:32		17:20 (33)	06:05		18:45 (38)	04:54			04:27
	16:34			17:50	37	16:21 (14)	18:56	22	17:42 (33)	21:07	42	19:27 (38)	22:14			22:50
24	09:01			07:49		15:43 (14)	06:29		17:20 (33)	06:02		18:46 (38)	04:52			04:27
	16:36			17:52	38	16:21 (14)	18:58	22	17:42 (33)	21:09	41	19:27 (38)	22:16			22:50
25	08:59			07:46		15:44 (14)	06:27		17:20 (33)	05:59		18:46 (38)	04:50			04:28
	16:39			17:55	38	16:22 (14)	19:00	21	17:41 (33)	21:12	40	19:26 (38)	22:18			22:50
26	08:57			07:43		15:43 (14)	06:24		17:20 (33)	05:57		18:47 (38)	04:49			04:28
	16:41			17:57	39	16:22 (14)	19:03	20	17:40 (33)	21:14	38	19:25 (38)	22:20			22:50
27	08:55		15:35 (9)	07:40		15:43 (14)	06:21		17:22 (33)	05:54		18:47 (38)	04:47			04:29
	16:44	8	15:43 (9)	18:00	39	16:22 (14)	19:05	17	17:39 (33)	21:16	37	19:24 (38)	22:21			22:50
28	08:54		15:33 (9)	07:38		15:43 (14)	06:18		17:23 (33)	05:51		18:49 (38)	04:45			04:29
	16:46	13	15:46 (9)	18:02	38	16:21 (14)	19:07	14	17:37 (33)	21:19	34	19:23 (38)	22:23			22:49
29	08:51		15:31 (9)				07:15		18:25 (33)	05:49		18:49 (38)	04:44			04:30
	16:48	16	15:47 (9)				20:09	10	18:35 (33)	21:21	33	19:22 (38)	22:25			22:49
30	08:49		15:31 (9)				07:12			05:46		18:51 (38)	04:42			04:31
	16:51	17	15:48 (9)				20:12			21:23	30	19:21 (38)	22:27			22:49
31	08:47		15:29 (9)				07:09						04:41			
	16:53	20	15:49 (9)				20:14						22:28			
Potential sun hours	221			260			365			432			521			547
Total, worst case		74			770			525			1202			80		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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NO-0276 Oslo
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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** U - Store Svela, eiendom 60/5, Bjerkreim kommune (21)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August			September			October			November			December
1	04:32	05:24			06:33		18:48 (38)	07:39			07:51		15:00 (9)	08:59
	22:48	22:00			20:39	60	19:57 (27)	19:13			16:48	21	15:21 (9)	15:51
2	04:33	05:26			06:35		18:49 (38)	07:41			07:53		15:00 (9)	09:01
	22:47	21:58			20:36	56	19:56 (27)	19:10			16:46	22	15:22 (9)	15:50
3	04:34	05:28			06:37		18:49 (38)	07:43			07:56		14:59 (9)	09:03
	22:47	21:56			20:34	47	19:54 (27)	19:07			16:44	22	15:21 (9)	15:49
4	04:35	05:30			06:39		18:51 (38)	07:46		16:31 (14)	07:58		14:59 (9)	09:05
	22:46	21:53			20:31	33	19:24 (38)	19:04	14	16:45 (14)	16:41	23	15:22 (9)	15:48
5	04:36	05:33			06:42		18:52 (38)	07:48		16:27 (14)	08:01		14:59 (9)	09:07
	22:45	21:51			20:28	30	19:22 (38)	19:01	21	16:48 (14)	16:39	24	15:23 (9)	15:47
6	04:37	05:35			06:44		18:53 (38)	07:50		16:25 (14)	08:03		14:58 (9)	09:08
	22:44	21:49			20:25	27	19:20 (38)	18:58	25	16:50 (14)	16:36	24	15:22 (9)	15:46
7	04:38	05:37			06:46		18:55 (38)	07:52		16:23 (14)	08:05		14:59 (9)	09:10
	22:43	21:46			20:22	22	19:17 (38)	18:55	28	16:51 (14)	16:34	23	15:22 (9)	15:45
8	04:40	05:39		19:13 (38)	06:48		18:58 (38)	07:55		16:21 (14)	08:08		14:59 (9)	09:11
	22:42	21:44	3	19:16 (38)	20:19	15	19:13 (38)	18:53	31	16:52 (14)	16:32	23	15:22 (9)	15:44
9	04:41	05:41		19:07 (38)	06:50			07:57		16:20 (14)	08:10		14:59 (9)	09:13
	22:41	21:41	15	19:22 (38)	20:16			18:50	33	16:53 (14)	16:30	22	15:21 (9)	15:44
10	04:42	05:44		19:05 (38)	06:53			07:59		16:18 (14)	08:13		15:00 (9)	09:14
	22:40	21:39	20	19:25 (38)	20:13			18:47	35	16:53 (14)	16:27	21	15:21 (9)	15:43
11	04:44	05:46		19:03 (38)	06:55			08:02		16:18 (14)	08:15		15:01 (9)	09:16
	22:39	21:36	24	19:27 (38)	20:11			18:44	36	16:54 (14)	16:25	20	15:21 (9)	15:43
12	04:45	05:48		19:01 (38)	06:57			08:04		16:17 (14)	08:17		15:03 (9)	09:17
	22:37	21:34	27	19:28 (38)	20:08			18:41	37	16:54 (14)	16:23	17	15:20 (9)	15:42
13	04:47	05:50		18:59 (38)	06:59			08:06		16:16 (14)	08:20		15:03 (9)	09:18
	22:36	21:31	30	19:29 (38)	20:05			18:39	38	16:54 (14)	16:21	16	15:19 (9)	15:42
14	04:49	05:53		18:57 (38)	07:01		18:16 (33)	08:08		16:16 (14)	08:22		15:05 (9)	09:20
	22:35	21:28	33	19:30 (38)	20:02	8	18:24 (33)	18:36	38	16:54 (14)	16:19	12	15:17 (9)	15:42
15	04:50	05:55		18:56 (38)	07:04		18:13 (33)	08:11		16:15 (14)	08:24		15:08 (9)	09:21
	22:33	21:26	35	19:31 (38)	19:59	13	18:26 (33)	18:33	39	16:54 (14)	16:17	7	15:15 (9)	15:42
16	04:52	05:57		18:55 (38)	07:06		18:11 (33)	08:13		16:15 (14)	08:27			09:22
	22:32	21:23	37	19:32 (38)	19:56	16	18:27 (33)	18:30	39	16:54 (14)	16:15			15:42
17	04:54	05:59		18:53 (38)	07:08		18:09 (33)	08:15		16:15 (14)	08:29			09:23
	22:30	21:21	39	19:32 (38)	19:53	19	18:28 (33)	18:28	38	16:53 (14)	16:13			15:42
18	04:56	06:01		18:52 (38)	07:10		18:08 (33)	08:18		16:15 (14)	08:31			09:24
	22:28	21:18	40	19:32 (38)	19:50	20	18:28 (33)	18:25	38	16:53 (14)	16:11			15:42
19	04:57	06:04		18:51 (38)	07:12		18:07 (33)	08:20		16:15 (14)	08:34			09:24
	22:27	21:15	42	19:33 (38)	19:47	22	18:29 (33)	18:22	37	16:52 (14)	16:09			15:42
20	04:59	06:06		18:51 (38)	07:15		18:07 (33)	08:22		16:16 (14)	08:36			09:25
	22:25	21:13	42	19:33 (38)	19:44	22	18:29 (33)	18:19	36	16:52 (14)	16:07			15:42
21	05:01	06:08		18:50 (38)	07:17		18:06 (33)	08:25		16:16 (14)	08:38			09:26
	22:23	21:10	43	19:33 (38)	19:42	22	18:28 (33)	18:17	35	16:51 (14)	16:06			15:43
22	05:03	06:10		18:49 (38)	07:19		18:06 (33)	08:27		16:17 (14)	08:40			09:26
	22:21	21:07	44	19:33 (38)	19:39	21	18:27 (33)	18:14	33	16:50 (14)	16:04			15:43
23	05:05	06:13		18:49 (38)	07:21		18:06 (33)	08:29		16:17 (14)	08:43			09:27
	22:19	21:04	48	19:52 (27)	19:36	20	18:26 (33)	18:11	32	16:49 (14)	16:02			15:44
24	05:07	06:15		18:48 (38)	07:23		18:07 (33)	08:32		16:18 (14)	08:45			09:27
	22:17	21:02	55	19:55 (27)	19:33	19	18:26 (33)	18:09	30	16:48 (14)	16:01			15:44
25	05:09	06:17		18:49 (38)	07:26		18:07 (33)	07:34		15:19 (14)	08:47			09:28
	22:15	20:59	58	19:57 (27)	19:30	17	18:24 (33)	17:06	27	15:46 (14)	15:59			15:45
26	05:11	06:19		18:48 (38)	07:28		18:08 (33)	07:37		15:21 (14)	08:49			09:28
	22:13	20:56	62	19:58 (27)	19:27	14	18:22 (33)	17:04	23	15:44 (14)	15:57			15:46
27	05:13	06:22		18:48 (38)	07:30		18:10 (33)	07:39		15:23 (14)	08:51			09:28
	22:11	20:53	63	19:59 (27)	19:24	9	18:19 (33)	17:01	20	15:43 (14)	15:56			15:47
28	05:15	06:24		18:48 (38)	07:32			07:41		15:07 (9)	08:53			09:28
	22:09	20:51	63	19:59 (27)	19:21			16:58	21	15:39 (14)	15:55			15:48
29	05:17	06:26		18:48 (38)	07:34			07:44		15:04 (9)	08:55			09:28
	22:07	20:48	64	19:59 (27)	19:18			16:56	13	15:17 (9)	15:53			15:49
30	05:20	06:28		18:48 (38)	07:37			07:46		15:03 (9)	08:57			09:28
	22:05	20:45	63	19:59 (27)	19:16			16:53	16	15:19 (9)	15:52			15:50
31	05:22	06:30		18:48 (38)				07:49		15:01 (9)				09:28
	22:03	20:42	61	19:58 (27)				16:51	19	15:20 (9)				15:51
Potential sun hours	545	478			386			319			236			200
Total, worst case			1011			532			832			297		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** V - Osland 45 (22)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February	March	April	May	June	July	August	September	October	November			December		
1	09:28		12:02 (24)	08:46	07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:39	07:51			09:00		11:45 (24)
	15:53	39	13:36 (25)	16:56	18:05	20:17	21:26	22:31	22:49	22:01	20:40	19:13	16:49			15:51	40	13:20 (25)
2	09:28		12:01 (24)	08:44	07:33	07:04	05:41	04:38	04:33	05:26	06:35	07:42	07:54			09:02		11:46 (24)
	15:54	41	13:36 (25)	16:58	18:07	20:19	21:28	22:32	22:48	21:59	20:37	19:10	16:46			15:50	40	13:20 (25)
3	09:27		12:01 (24)	08:41	07:30	07:01	05:39	04:37	04:34	05:28	06:37	07:44	07:56			09:03		11:46 (24)
	15:55	41	13:36 (25)	17:01	18:09	20:21	21:31	22:34	22:47	21:56	20:34	19:07	16:44			15:49	41	13:21 (25)
4	09:27		12:01 (24)	08:39	07:27	06:58	05:36	04:36	04:35	05:31	06:40	07:46	07:59			09:05		11:47 (24)
	15:57	41	13:36 (25)	17:03	18:12	20:24	21:33	22:35	22:47	21:54	20:31	19:04	16:41			15:48	41	13:22 (25)
5	09:26		12:01 (24)	08:37	07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48	08:01			09:07		11:47 (24)
	15:58	43	13:37 (25)	17:06	18:14	20:26	21:35	22:37	22:46	21:52	20:28	19:02	16:39			15:47	41	13:22 (25)
6	09:25		12:02 (24)	08:35	07:21	06:52	05:31	04:34	04:37	05:35	06:44	07:51	08:03			09:09		11:48 (24)
	16:00	41	13:37 (25)	17:08	18:17	20:28	21:37	22:38	22:45	21:49	20:25	18:59	16:37			15:46	42	13:23 (25)
7	09:25		12:02 (24)	08:32	07:19	06:50	05:29	04:33	04:39	05:37	06:46	07:53	08:06			09:10		11:49 (24)
	16:02	41	13:37 (25)	17:11	18:19	20:30	21:40	22:39	22:44	21:47	20:23	18:56	16:34			15:45	41	13:24 (25)
8	09:24		12:02 (24)	08:30	07:16	06:47	05:26	04:32	04:40	05:39	06:49	07:55	08:08			09:12		11:49 (24)
	16:03	42	13:38 (25)	17:13	18:21	20:33	21:42	22:41	22:43	21:44	20:20	18:53	16:32			15:45	41	13:24 (25)
9	09:23		12:03 (24)	08:27	07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:57	08:11			09:13		11:50 (24)
	16:05	41	13:38 (25)	17:16	18:24	20:35	21:44	22:42	22:42	21:42	20:17	18:50	16:30			15:44	41	13:25 (25)
10	09:22		12:03 (24)	08:25	07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00	08:13			09:15		11:50 (24)
	16:07	40	13:37 (25)	17:18	18:26	20:37	21:47	22:43	22:41	21:39	20:14	18:47	16:28			15:43	41	13:25 (25)
11	09:21		12:03 (24)	08:23	07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02	08:15			09:16		11:52 (24)
	16:09	41	13:38 (25)	17:21	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:45	16:25			15:43	40	13:26 (25)
12	09:20		12:03 (24)	08:20	07:04	06:35	05:17	04:29	04:46	05:48	06:57	08:04	08:18			09:18		11:52 (24)
	16:11	39	13:37 (25)	17:23	18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42	16:23			15:43	39	13:26 (25)
13	09:19		12:04 (24)	08:18	07:02	06:33	05:15	04:28	04:47	05:51	07:00	08:07	08:20			09:19		11:53 (24)
	16:13	37	13:37 (25)	17:26	18:33	20:44	21:53	22:46	22:37	21:32	20:05	18:39	16:21			15:42	39	13:27 (25)
14	09:17		12:04 (24)	08:15	06:59	06:30	05:13	04:28	04:49	05:53	07:02	08:09	08:23			09:20		11:54 (24)
	16:15	35	13:36 (25)	17:28	18:35	20:47	21:55	22:47	22:35	21:29	20:02	18:36	16:19			15:42	38	13:27 (25)
15	09:16		12:04 (24)	08:13	06:56	06:27	05:10	04:27	04:51	05:55	07:04	08:11	08:25		11:50 (24)	09:21		11:54 (24)
	16:17	32	13:35 (25)	17:31	18:38	20:49	21:58	22:47	22:34	21:26	19:59	18:33	16:17	5	11:55 (24)	15:42	38	13:27 (25)
16	09:15		12:04 (24)	08:10	06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13	08:27		11:47 (24)	09:22		11:55 (24)
	16:19	24	12:28 (24)	17:33	18:40	20:51	22:00	22:48	22:32	21:24	19:56	18:31	16:15	11	11:58 (24)	15:42	37	13:28 (25)
17	09:13		12:06 (24)	08:07	06:50	06:21	05:06	04:27	04:54	06:00	07:08	08:16	08:30		11:46 (24)	09:23		11:55 (24)
	16:21	24	12:30 (24)	17:36	18:42	20:54	22:02	22:49	22:31	21:21	19:54	18:28	16:13	15	12:01 (24)	15:42	37	13:28 (25)
18	09:12		12:06 (24)	08:05	06:47	06:19	05:04	04:27	04:56	06:02	07:11	08:18	08:32		11:44 (24)	09:24		11:56 (24)
	16:23	24	12:30 (24)	17:38	18:45	20:56	22:04	22:49	22:29	21:18	19:51	18:25	16:11	17	12:01 (24)	15:42	36	13:29 (25)
19	09:10		12:06 (24)	08:02	06:44	06:16	05:02	04:27	04:58	06:04	07:13	08:20	08:34		11:44 (24)	09:25		11:57 (24)
	16:25	24	12:30 (24)	17:40	18:47	20:58	22:06	22:50	22:27	21:16	19:48	18:22	16:09	19	12:03 (24)	15:42	36	13:29 (25)
20	09:09		12:07 (24)	08:00	06:41	06:13	05:00	04:27	05:00	06:06	07:15	08:23	08:36		11:44 (24)	09:26		11:58 (24)
	16:28	23	12:30 (24)	17:43	18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20	16:08	20	12:04 (24)	15:43	36	13:30 (25)
21	09:07		12:08 (24)	07:57	06:39	06:10	04:58	04:27	05:01	06:09	07:17	08:25	08:39		11:43 (24)	09:26		11:59 (24)
	16:30	21	12:29 (24)	17:45	18:51	21:03	22:10	22:50	22:24	21:10	19:42	18:17	16:06	22	12:05 (24)	15:43	35	13:31 (25)
22	09:05		12:09 (24)	07:54	06:36	06:08	04:56	04:27	05:03	06:11	07:19	08:28	08:41		11:43 (24)	09:27		11:58 (24)
	16:32	20	12:29 (24)	17:48	18:54	21:05	22:12	22:50	22:22	21:08	19:39	18:14	16:04	23	12:06 (24)	15:43	36	13:31 (25)
23	09:03		12:09 (24)	07:52	06:33	06:05	04:54	04:27	05:05	06:13	07:22	08:30	08:43		11:43 (24)	09:27		11:59 (24)
	16:34	19	12:28 (24)	17:50	18:56	21:07	22:14	22:51	22:20	21:05	19:36	18:12	16:02	23	12:06 (24)	15:44	36	13:31 (25)
24	09:02		12:10 (24)	07:49	06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32	08:45		11:43 (24)	09:28		12:00 (24)
	16:37	17	12:27 (24)	17:53	18:58	21:10	22:16	22:51	22:18	21:02	19:33	18:09	16:01	24	12:07 (24)	15:44	36	13:32 (25)
25	09:00		12:12 (24)	07:46	06:27	06:00	04:51	04:28	05:09	06:17	07:26	07:35	08:48		11:43 (24)	09:28		12:00 (24)
	16:39	15	12:27 (24)	17:55	19:01	21:12	22:18	22:51	22:16	20:59	19:30	17:07	15:59	24	12:07 (24)	15:45	37	13:33 (25)
26	08:58		12:14 (24)	07:44	06:24	05:57	04:49	04:28	05:11	06:20	07:28	07:37	08:50		11:43 (24)	09:28		12:00 (24)
	16:41	11	12:25 (24)	17:57	19:03	21:14	22:20	22:50	22:14	20:57	19:27	17:04	15:58	25	12:08 (24)	15:46	37	13:33 (25)
27	08:56		12:17 (24)	07:41	06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39	08:52		11:43 (24)	09:28		12:00 (24)
	16:44	4	12:21 (24)	18:00	19:05	21:17	22:22	22:50	22:12	20:54	19:25	17:01	15:56	32	13:14 (25)	15:47	38	13:33 (25)
28	08:54			07:38	06:18	05:52	04:46	04:30	05:16	06:24	07:33	07:42	08:54		11:44 (24)	09:29		12:01 (24)
	16:46			18:02	19:08	21:19	22:24	22:50	22:10	20:51	19:22	16:59	15:55	35	13:16 (25)	15:48	37	13:34 (25)
29	08:52				07:15	05:49	04:44	04:30	05:18	06:26	07:35	07:44	08:56		11:44 (24)	09:28		12:00 (24)
	16:49				20:10	21:21	22:26	22:50	22:08	20:48	19:19	16:56	15:54	37	13:17 (25)	15:49	38	13:34 (25)
30	08:50				07:13	05:46	04:42	04:31	05:20	06:29	07:37	07:47	08:58		11:44 (24)	09:28		12:01 (24)
	16:51				20:12	21:24	22:27	22:49	22:05	20:45	19:16	16:54	15:52	39	13:18 (25)	15:50	39	13:35 (25)
31	08:48				07:10		04:41		05:22	06:31		07:49				09:28		12:01 (24)
	16:54				20:14		22:29		22:03	20:43		16:51				15:51	39	13:35 (25)
Potential sun hours	221			260	365	432	521	547	546	478	386	319	236			199		
Total, worst case		820												371			1193	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** W - Osland 85 (23)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April	May	June	July	August	September	October	November			December		
1	09:28		12:21 (25)	08:46		10:00 (29)	07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:39	07:51		09:35 (29)	09:00		10:51 (24)
	15:53	20	12:41 (25)	16:56	20	10:20 (29)	18:05	20:17	21:26	22:31	22:49	22:01	20:40	19:13	16:49	8	09:43 (29)	15:51	29	12:24 (25)
2	09:28		12:21 (25)	08:44		09:59 (29)	07:33	07:04	05:41	04:38	04:33	05:26	06:35	07:42	07:54		09:33 (29)	09:02		10:51 (24)
	15:54	20	12:41 (25)	16:58	20	10:19 (29)	18:07	20:19	21:28	22:32	22:48	21:59	20:37	19:10	16:46	13	09:46 (29)	15:50	31	12:25 (25)
3	09:27		12:22 (25)	08:41		10:00 (29)	07:30	07:01	05:39	04:37	04:34	05:28	06:38	07:44	07:56		09:32 (29)	09:04		10:52 (24)
	15:55	19	12:41 (25)	17:01	20	10:20 (29)	18:09	20:21	21:31	22:34	22:47	21:56	20:34	19:07	16:44	15	09:47 (29)	15:49	31	12:26 (25)
4	09:27		12:22 (25)	08:39		10:00 (29)	07:27	06:58	05:36	04:36	04:35	05:31	06:40	07:46	07:59		09:31 (29)	09:05		10:53 (24)
	15:57	20	12:42 (25)	17:03	20	10:20 (29)	18:12	20:24	21:33	22:35	22:47	21:54	20:31	19:04	16:41	17	09:48 (29)	15:48	30	12:26 (25)
5	09:26		11:11 (24)	08:37		10:01 (29)	07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48	08:01		09:30 (29)	09:07		10:55 (24)
	15:58	25	12:42 (25)	17:06	19	10:20 (29)	18:14	20:26	21:35	22:37	22:46	21:52	20:28	19:02	16:39	19	09:49 (29)	15:47	28	12:27 (25)
6	09:25		11:10 (24)	08:35		10:01 (29)	07:21	06:52	05:31	04:34	04:37	05:35	06:44	07:51	08:03		09:30 (29)	09:09		10:56 (24)
	16:00	27	12:42 (25)	17:08	18	10:19 (29)	18:17	20:28	21:37	22:38	22:45	21:49	20:25	18:59	16:37	20	09:50 (29)	15:46	27	12:28 (25)
7	09:25		11:10 (24)	08:32		10:01 (29)	07:19	06:50	05:29	04:33	04:39	05:37	06:46	07:53	08:06		09:30 (29)	09:10		10:58 (24)
	16:02	28	12:42 (25)	17:11	17	10:18 (29)	18:19	20:31	21:40	22:39	22:44	21:47	20:23	18:56	16:34	20	09:50 (29)	15:45	26	12:29 (25)
8	09:24		11:09 (24)	08:30		10:03 (29)	07:16	06:47	05:26	04:32	04:40	05:39	06:49	07:55	08:08		09:29 (29)	09:12		12:11 (25)
	16:03	29	12:42 (25)	17:13	15	10:18 (29)	18:21	20:33	21:42	22:41	22:43	21:44	20:20	18:53	16:32	21	09:50 (29)	15:45	19	12:30 (25)
9	09:23		11:09 (24)	08:27		10:04 (29)	07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:57	08:11		09:30 (29)	09:13		12:11 (25)
	16:05	30	12:42 (25)	17:16	12	10:16 (29)	18:24	20:35	21:44	22:42	22:42	21:42	20:17	18:50	16:30	20	09:50 (29)	15:44	20	12:31 (25)
10	09:22		11:08 (24)	08:25		10:07 (29)	07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00	08:13		09:30 (29)	09:15		12:11 (25)
	16:07	30	12:42 (25)	17:18	5	10:12 (29)	18:26	20:37	21:47	22:43	22:41	21:39	20:14	18:47	16:28	20	09:50 (29)	15:44	20	12:31 (25)
11	09:21		11:09 (24)	08:23			07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02	08:15		09:30 (29)	09:16		12:11 (25)
	16:09	29	12:42 (25)	17:21			18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:45	16:26	19	09:49 (29)	15:43	20	12:31 (25)
12	09:20		11:08 (24)	08:20			07:04	06:35	05:17	04:29	04:46	05:48	06:57	08:04	08:18		09:31 (29)	09:18		12:11 (25)
	16:11	27	12:40 (25)	17:23			18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42	16:23	28	10:59 (24)	15:43	21	12:32 (25)
13	09:19		11:08 (24)	08:18			07:02	06:33	05:15	04:28	04:47	05:51	07:00	08:07	08:20		09:32 (29)	09:19		12:12 (25)
	16:13	25	12:39 (25)	17:26			18:33	20:44	21:53	22:46	22:37	21:32	20:05	18:39	16:21	30	11:01 (24)	15:42	21	12:33 (25)
14	09:17		11:08 (24)	08:15			06:59	06:30	05:13	04:28	04:49	05:53	07:02	08:09	08:23		09:33 (29)	09:20		12:12 (25)
	16:15	20	11:28 (24)	17:28			18:35	20:47	21:55	22:47	22:35	21:29	20:02	18:36	16:19	32	11:03 (24)	15:42	21	12:33 (25)
15	09:16		11:08 (24)	08:13			06:56	06:27	05:10	04:27	04:51	05:55	07:04	08:11	08:25		09:34 (29)	09:21		12:12 (25)
	16:17	21	11:29 (24)	17:31			18:38	20:49	21:58	22:47	22:34	21:26	19:59	18:33	16:17	31	11:03 (24)	15:42	21	12:33 (25)
16	09:15		11:08 (24)	08:10			06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:14	08:27		09:36 (29)	09:22		12:13 (25)
	16:19	21	11:29 (24)	17:33			18:40	20:51	22:00	22:48	22:32	21:24	19:57	18:31	16:15	31	11:05 (24)	15:42	21	12:34 (25)
17	09:13		11:09 (24)	08:08			06:50	06:21	05:06	04:27	04:54	06:00	07:08	08:16	08:30		09:39 (29)	09:23		12:14 (25)
	16:21	22	11:31 (24)	17:36			18:42	20:54	22:02	22:49	22:31	21:21	19:54	18:28	16:13	27	11:06 (24)	15:42	21	12:35 (25)
18	09:12		11:09 (24)	08:05			06:47	06:19	05:04	04:27	04:56	06:02	07:11	08:18	08:32		10:44 (24)	09:24		12:14 (25)
	16:23	22	11:31 (24)	17:38			18:45	20:56	22:04	22:49	22:29	21:18	19:51	18:25	16:11	22	11:06 (24)	15:42	21	12:35 (25)
19	09:10		11:09 (24)	08:02			06:44	06:16	05:02	04:27	04:58	06:04	07:13	08:21	08:34		10:45 (24)	09:25		12:14 (25)
	16:25	22	11:31 (24)	17:40			18:47	20:58	22:06	22:50	22:27	21:16	19:48	18:23	16:09	22	11:07 (24)	15:42	21	12:35 (25)
20	09:09		11:09 (24)	08:00			06:41	06:13	05:00	04:27	05:00	06:06	07:15	08:23	08:36		10:45 (24)	09:26		12:15 (25)
	16:28	23	11:32 (24)	17:43			18:49	21:01	22:08	22:50	22:25	21:13	19:45	18:20	16:08	22	11:07 (24)	15:43	21	12:36 (25)
21	09:07		11:09 (24)	07:57			06:39	06:10	04:58	04:27	05:02	06:09	07:17	08:25	08:39		10:44 (24)	09:26		12:16 (25)
	16:30	23	11:32 (24)	17:45			18:52	21:03	22:10	22:50	22:24	21:10	19:42	18:17	16:06	23	11:07 (24)	15:43	21	12:37 (25)
22	09:05		11:10 (24)	07:54			06:36	06:08	04:56	04:27	05:03	06:11	07:19	08:28	08:41		10:45 (24)	09:27		12:16 (25)
	16:32	22	11:32 (24)	17:48			18:54	21:05	22:12	22:50	22:22	21:08	19:39	18:14	16:04	23	11:08 (24)	15:43	21	12:37 (25)
23	09:03		11:10 (24)	07:52			06:33	06:05	04:54	04:27	05:05	06:13	07:22	08:30	08:43		10:45 (24)	09:27		12:16 (25)
	16:34	22	11:32 (24)	17:50			18:56	21:07	22:14	22:51	22:20	21:05	19:36	18:12	16:02	22	11:07 (24)	15:44	21	12:37 (25)
24	09:02		11:10 (24)	07:49			06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32	08:45		10:46 (24)	09:28		12:17 (25)
	16:37	22	11:32 (24)	17:53			18:58	21:10	22:16	22:51	22:18	21:02	19:33	18:09	16:01	22	11:08 (24)	15:45	21	12:38 (25)
25	09:00		10:05 (29)	07:46			06:27	06:00	04:51	04:28	05:09	06:17	07:26	07:35	08:48		10:46 (24)	09:28		12:17 (25)
	16:39	27	11:32 (24)	17:55			19:01	21:12	22:18	22:51	22:16	20:59	19:30	17:07	15:59	22	11:08 (24)	15:45	21	12:38 (25)
26	08:58		10:03 (29)	07:44			06:24	05:57	04:49	04:28	05:11	06:20	07:28	07:37	08:50		10:47 (24)	09:28		12:18 (25)
	16:42	31	11:32 (24)	17:57			19:03	21:14	22:20	22:50	22:14	20:57	19:27	17:04	15:58	21	11:08 (24)	15:46	21	12:39 (25)
27	08:56		10:02 (29)	07:41			06:21	05:54	04:47	04:29	05:14	06:22	07:30	07:39	08:52		10:47 (24)	09:28		12:18 (25)
	16:44	32	11:31 (24)	18:00			19:05	21:17	22:22	22:50	22:12	20:54	19:25	17:01	15:56	21	11:08 (24)	15:47	21	12:39 (25)
28	08:54		10:00 (29)	07:38			06:18	05:52	04:46	04:30	05:16	06:24	07:33	07:42	08:54		10:48 (24)	09:29		12:19 (25)
	16:46	32	11:30 (24)	18:02			19:08	21:19	22:24	22:50	22:10	20:51	19:22	16:59	15:55	20	11:08 (24)	15:48	21	12:40 (25)
29	08:52		10:00 (29)				07:15	05:49	04:44	04:30	05:18	06:26	07:35	07:44	08:56		10:49 (24)	09:29		12:19 (25)
	16:49	30	11:29 (24)				20:10	21:21	22:26	22:50	22:08	20:48	19:19	16:56	15:54	24	12:19 (25)	15:49	21	12:40 (25)
30	08:50		09:59 (29)				07:13	05:46	04:43	04:31	05:20	06:29	07:37	07:47	08:58		10:49 (24)	09:28		12:20 (25)
	16:51	29	11:27 (24)				20:12	21:24	22:27	22:49	22:05	20:45	19:16	16:54	15:52	28	12:21 (25)	15:50	20	12:40 (25)
31	08:48		09:59 (29)				07:10		04:41		05:22	06:31		07:49				09:28		12:21 (25)
	16:54	20	10:19 (29)				20:14		22:29		22:03	20:43		16:51				15:51	20	12:41 (25)
Potential sun hours	221			260			365	432	521	547	546	478	386	319	236			199		
Total, worst case		770			166											663			699	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** X - Osland 65 (24)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April	May	June	July	August	September	October	November			December		
1	09:28		11:14 (24)	08:46		10:11 (29)	07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:39	07:51			09:00		10:57 (24)
	15:53	31	12:43 (25)	16:56	18	10:29 (29)	18:05	20:17	21:26	22:31	22:49	22:01	20:40	19:13	16:49			15:51	22	11:19 (24)
2	09:28		11:14 (24)	08:44		10:11 (29)	07:33	07:04	05:41	04:38	04:33	05:26	06:35	07:42	07:54			09:02		10:58 (24)
	15:54	30	12:43 (25)	16:58	17	10:28 (29)	18:07	20:19	21:28	22:32	22:48	21:59	20:37	19:10	16:46			15:50	21	11:19 (24)
3	09:27		11:13 (24)	08:41		10:13 (29)	07:30	07:01	05:39	04:37	04:34	05:28	06:38	07:44	07:56			09:04		10:58 (24)
	15:55	31	12:43 (25)	17:01	14	10:27 (29)	18:09	20:21	21:31	22:34	22:47	21:56	20:34	19:07	16:44			15:49	21	11:19 (24)
4	09:27		11:13 (24)	08:39		10:14 (29)	07:27	06:58	05:36	04:36	04:35	05:31	06:40	07:46	07:59			09:05		10:59 (24)
	15:57	31	12:43 (25)	17:03	11	10:25 (29)	18:12	20:24	21:33	22:35	22:47	21:54	20:31	19:04	16:41			15:48	20	11:19 (24)
5	09:26		11:14 (24)	08:37		10:17 (29)	07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48	08:01			09:07		10:59 (24)
	15:58	29	12:43 (25)	17:06	6	10:23 (29)	18:14	20:26	21:35	22:37	22:46	21:52	20:28	19:02	16:39			15:47	26	12:26 (25)
6	09:25		11:14 (24)	08:35			07:21	06:52	05:31	04:34	04:37	05:35	06:44	07:51	08:03		09:47 (29)	09:09		11:00 (24)
	16:00	28	12:42 (25)	17:08			18:17	20:28	21:37	22:38	22:45	21:49	20:25	18:59	16:37	7	09:54 (29)	15:46	28	12:28 (25)
7	09:25		11:14 (24)	08:32			07:19	06:50	05:29	04:33	04:39	05:37	06:46	07:53	08:06		09:45 (29)	09:10		11:01 (24)
	16:02	26	12:41 (25)	17:11			18:19	20:31	21:40	22:39	22:44	21:47	20:23	18:56	16:34	11	09:56 (29)	15:45	29	12:30 (25)
8	09:24		11:15 (24)	08:30			07:16	06:47	05:26	04:32	04:40	05:39	06:49	07:55	08:08		09:43 (29)	09:12		11:02 (24)
	16:03	20	11:35 (24)	17:13			18:21	20:33	21:42	22:41	22:43	21:44	20:20	18:53	16:32	14	09:57 (29)	15:45	30	12:31 (25)
9	09:23		11:15 (24)	08:27			07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:57	08:11		09:42 (29)	09:14		11:03 (24)
	16:05	21	11:36 (24)	17:16			18:24	20:35	21:44	22:42	22:42	21:42	20:17	18:50	16:30	17	09:59 (29)	15:44	30	12:32 (25)
10	09:22		11:15 (24)	08:25			07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00	08:13		09:42 (29)	09:15		11:03 (24)
	16:07	21	11:36 (24)	17:18			18:26	20:37	21:47	22:43	22:41	21:39	20:14	18:47	16:28	18	10:00 (29)	15:44	30	12:32 (25)
11	09:21		11:15 (24)	08:23			07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02	08:15		09:41 (29)	09:16		11:04 (24)
	16:09	22	11:37 (24)	17:21			18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:45	16:26	19	10:00 (29)	15:43	31	12:34 (25)
12	09:20		11:15 (24)	08:20			07:04	06:35	05:17	04:29	04:46	05:48	06:57	08:04	08:18		09:41 (29)	09:18		11:04 (24)
	16:11	22	11:37 (24)	17:23			18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42	16:23	19	10:00 (29)	15:43	31	12:34 (25)
13	09:19		11:16 (24)	08:18			07:02	06:33	05:15	04:28	04:47	05:51	07:00	08:07	08:20		09:41 (29)	09:19		11:05 (24)
	16:13	22	11:38 (24)	17:26			18:33	20:44	21:53	22:46	22:37	21:32	20:05	18:39	16:21	20	10:01 (29)	15:42	31	12:35 (25)
14	09:17		11:16 (24)	08:15			06:59	06:30	05:13	04:28	04:49	05:53	07:02	08:09	08:23		09:42 (29)	09:20		11:06 (24)
	16:15	22	11:38 (24)	17:28			18:35	20:47	21:55	22:47	22:35	21:29	20:02	18:36	16:19	19	10:01 (29)	15:42	30	12:35 (25)
15	09:16		11:16 (24)	08:13			06:56	06:27	05:10	04:27	04:51	05:55	07:04	08:11	08:25		09:41 (29)	09:21		11:06 (24)
	16:17	22	11:38 (24)	17:31			18:38	20:49	21:58	22:47	22:34	21:26	19:59	18:33	16:17	20	10:01 (29)	15:42	31	12:36 (25)
16	09:15		11:16 (24)	08:10			06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:14	08:27		09:42 (29)	09:22		11:08 (24)
	16:19	22	11:38 (24)	17:33			18:40	20:51	22:00	22:48	22:32	21:24	19:57	18:31	16:15	19	10:01 (29)	15:42	30	12:37 (25)
17	09:13		11:18 (24)	08:08			06:50	06:21	05:06	04:27	04:54	06:00	07:08	08:16	08:30		09:43 (29)	09:23		11:09 (24)
	16:21	21	11:39 (24)	17:36			18:42	20:54	22:02	22:49	22:31	21:21	19:54	18:28	16:13	26	11:08 (24)	15:42	30	12:38 (25)
18	09:12		11:18 (24)	08:05			06:47	06:19	05:04	04:27	04:56	06:02	07:11	08:18	08:32		09:43 (29)	09:24		11:09 (24)
	16:23	21	11:39 (24)	17:38			18:45	20:56	22:04	22:49	22:29	21:18	19:51	18:25	16:11	30	11:10 (24)	15:42	28	12:37 (25)
19	09:10		10:13 (29)	08:02			06:44	06:16	05:02	04:27	04:58	06:04	07:13	08:21	08:34		09:44 (29)	09:25		11:09 (24)
	16:25	27	11:39 (24)	17:40			18:47	20:58	22:06	22:50	22:27	21:16	19:48	18:23	16:09	31	11:12 (24)	15:42	30	12:38 (25)
20	09:09		10:12 (29)	08:00			06:41	06:13	05:00	04:27	05:00	06:06	07:15	08:23	08:36		09:45 (29)	09:26		11:10 (24)
	16:28	30	11:39 (24)	17:43			18:49	21:01	22:08	22:50	22:25	21:13	19:45	18:20	16:08	32	11:13 (24)	15:43	30	12:39 (25)
21	09:07		10:11 (29)	07:57			06:39	06:10	04:58	04:27	05:01	06:09	07:17	08:25	08:39		09:46 (29)	09:26		11:11 (24)
	16:30	32	11:39 (24)	17:45			18:52	21:03	22:10	22:50	22:24	21:10	19:42	18:17	16:06	32	11:14 (24)	15:43	29	12:40 (25)
22	09:05		10:10 (29)	07:54			06:36	06:08	04:56	04:27	05:03	06:11	07:19	08:28	08:41		09:48 (29)	09:27		11:11 (24)
	16:32	32	11:38 (24)	17:48			18:54	21:05	22:12	22:51	22:22	21:08	19:39	18:14	16:04	29	11:15 (24)	15:43	29	12:40 (25)
23	09:03		10:09 (29)	07:52			06:33	06:05	04:54	04:27	05:05	06:13	07:22	08:30	08:43		09:49 (29)	09:27		11:11 (24)
	16:34	31	11:37 (24)	17:50			18:56	21:07	22:14	22:51	22:20	21:05	19:36	18:12	16:02	27	11:15 (24)	15:44	30	12:40 (25)
24	09:02		10:09 (29)	07:49			06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32	08:45		10:55 (24)	09:28		11:12 (24)
	16:37	29	11:36 (24)	17:53			18:58	21:10	22:16	22:51	22:18	21:02	19:33	18:09	16:01	21	11:16 (24)	15:45	30	12:41 (25)
25	09:00		10:09 (29)	07:46			06:27	06:00	04:51	04:28	05:09	06:17	07:26	07:35	08:48		10:55 (24)	09:28		11:12 (24)
	16:39	26	11:34 (24)	17:55			19:01	21:12	22:18	22:51	22:16	20:59	19:30	17:07	15:59	21	11:16 (24)	15:45	29	12:41 (25)
26	08:58		10:09 (29)	07:44			06:24	05:57	04:49	04:28	05:11	06:20	07:28	07:37	08:50		10:55 (24)	09:28		11:13 (24)
	16:41	19	10:28 (29)	17:57			19:03	21:14	22:20	22:51	22:14	20:57	19:27	17:04	15:58	22	11:17 (24)	15:46	30	12:42 (25)
27	08:56		10:09 (29)	07:41			06:21	05:54	04:47	04:29	05:14	06:22	07:30	07:39	08:52		10:55 (24)	09:28		11:13 (24)
	16:44	20	10:29 (29)	18:00			19:05	21:17	22:22	22:50	22:12	20:54	19:25	17:01	15:56	22	11:17 (24)	15:47	30	12:42 (25)
28	08:54		10:09 (29)	07:38			06:18	05:52	04:46	04:30	05:16	06:24	07:33	07:42	08:54		10:56 (24)	09:29		11:13 (24)
	16:46	19	10:28 (29)	18:02			19:08	21:19	22:24	22:50	22:10	20:51	19:22	16:59	15:55	22	11:18 (24)	15:48	31	12:43 (25)
29	08:52		10:09 (29)				07:15	05:49	04:44	04:30	05:18	06:26	07:35	07:44	08:56		10:56 (24)	09:29		11:13 (24)
	16:49	20	10:29 (29)				20:10	21:21	22:26	22:50	22:08	20:48	19:19	16:56	15:54	22	11:18 (24)	15:49	31	12:42 (25)
30	08:50		10:09 (29)				07:13	05:46	04:43	04:31	05:20	06:29	07:37	07:47	08:58		10:56 (24)	09:28		11:13 (24)
	16:51	19	10:28 (29)				20:12	21:24	22:27	22:49	22:05	20:45	19:16	16:54	15:52	22	11:18 (24)	15:50	31	12:43 (25)
31	08:48		10:10 (29)				07:10		04:41		05:22	06:31		07:49				09:28		11:14 (24)
	16:54	19	10:29 (29)				20:14		22:29		22:03	20:43		16:51				15:51	30	12:43 (25)
Potential sun hours	221			260			365	432	521	547	546	478	386	319	236			199		
Total, worst case		765			66											542			889	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** Y - Brusalivegen 215 (25)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February	March	April	May			June			July			August	September	October	November	December
1	09:28	08:46	07:35	07:07	05:44			04:40		06:16 (1)	04:32		06:18 (1)	05:24	06:33	07:39	07:51	09:00
	15:53	16:56	18:05	20:17	21:26			22:30	29	06:45 (1)	22:48	33	06:51 (1)	22:01	20:40	19:13	16:49	15:52
2	09:27	08:43	07:33	07:04	05:42			04:39		06:15 (1)	04:33		06:18 (1)	05:27	06:35	07:42	07:54	09:01
	15:54	16:59	18:07	20:19	21:28			22:32	31	06:46 (1)	22:48	33	06:51 (1)	21:58	20:37	19:10	16:47	15:50
3	09:27	08:41	07:30	07:01	05:39			04:38		06:14 (1)	04:34		06:17 (1)	05:29	06:38	07:44	07:56	09:03
	15:56	17:01	18:10	20:21	21:31			22:33	32	06:46 (1)	22:47	34	06:51 (1)	21:56	20:34	19:07	16:44	15:49
4	09:26	08:39	07:27	06:58	05:37			04:36		06:14 (1)	04:35		06:18 (1)	05:31	06:40	07:46	07:59	09:05
	15:57	17:04	18:12	20:24	21:33			22:35	32	06:46 (1)	22:46	33	06:51 (1)	21:54	20:31	19:05	16:42	15:48
5	09:26	08:37	07:24	06:55	05:34			04:35		06:14 (1)	04:37		06:18 (1)	05:33	06:42	07:48	08:01	09:07
	15:59	17:06	18:14	20:26	21:35			22:36	32	06:46 (1)	22:46	33	06:51 (1)	21:51	20:28	19:02	16:39	15:47
6	09:25	08:34	07:21	06:53	05:32			04:34		06:13 (1)	04:38		06:19 (1)	05:35	06:44	07:51	08:03	09:09
	16:00	17:09	18:17	20:28	21:37			22:38	33	06:46 (1)	22:45	34	06:53 (1)	21:49	20:25	18:59	16:37	15:47
7	09:24	08:32	07:19	06:50	05:29			04:33		06:12 (1)	04:39		06:20 (1)	05:38	06:47	07:53	08:06	09:10
	16:02	17:11	18:19	20:31	21:40			22:39	34	06:46 (1)	22:44	33	06:53 (1)	21:47	20:23	18:56	16:35	15:46
8	09:24	08:30	07:16	06:47	05:27			04:32		06:12 (1)	04:40		06:21 (1)	05:40	06:49	07:55	08:08	09:12
	16:04	17:14	18:21	20:33	21:42			22:40	34	06:46 (1)	22:43	32	06:53 (1)	21:44	20:20	18:53	16:32	15:45
9	09:23	08:27	07:13	06:44	05:24			04:31		06:13 (1)	04:42		06:21 (1)	05:42	06:51	07:57	08:11	09:13
	16:06	17:16	18:24	20:35	21:44			22:41	34	06:47 (1)	22:42	32	06:53 (1)	21:42	20:17	18:50	16:30	15:44
10	09:22	08:25	07:10	06:41	05:22			04:31		06:13 (1)	04:43		06:22 (1)	05:44	06:53	08:00	08:13	09:15
	16:07	17:19	18:26	20:37	21:46			22:43	33	06:46 (1)	22:40	31	06:53 (1)	21:39	20:14	18:48	16:28	15:44
11	09:21	08:23	07:07	06:38	05:20			04:30		06:14 (1)	04:45		06:24 (1)	05:46	06:55	08:02	08:15	09:16
	16:09	17:21	18:28	20:40	21:49			22:44	33	06:47 (1)	22:39	30	06:54 (1)	21:37	20:11	18:45	16:26	15:43
12	09:20	08:20	07:04	06:36	05:17			04:29		06:13 (1)	04:46		06:25 (1)	05:49	06:58	08:04	08:18	09:17
	16:11	17:23	18:31	20:42	21:51			22:45	33	06:46 (1)	22:38	29	06:54 (1)	21:34	20:08	18:42	16:24	15:43
13	09:18	08:18	07:02	06:33	05:15			04:29		06:14 (1)	04:48		06:26 (1)	05:51	07:00	08:07	08:20	09:19
	16:13	17:26	18:33	20:44	21:53			22:46	33	06:47 (1)	22:36	28	06:54 (1)	21:32	20:05	18:39	16:22	15:43
14	09:17	08:15	06:59	06:30	05:13			04:28		06:15 (1)	04:49		06:28 (1)	05:53	07:02	08:09	08:22	09:20
	16:15	17:28	18:35	20:47	21:55			22:46	32	06:47 (1)	22:35	26	06:54 (1)	21:29	20:02	18:36	16:19	15:43
15	09:16	08:13	06:56	06:27	05:11		06:38 (1)	04:28		06:14 (1)	04:51		06:28 (1)	05:55	07:04	08:11	08:25	09:21
	16:17	17:31	18:38	20:49	21:57	2	06:40 (1)	22:47	32	06:46 (1)	22:34	26	06:54 (1)	21:26	19:59	18:34	16:17	15:42
16	09:14	08:10	06:53	06:24	05:09		06:37 (1)	04:28		06:15 (1)	04:53		06:30 (1)	05:58	07:06	08:14	08:27	09:22
	16:19	17:33	18:40	20:51	22:00	4	06:41 (1)	22:48	32	06:47 (1)	22:32	24	06:54 (1)	21:24	19:57	18:31	16:15	15:42
17	09:13	08:07	06:50	06:22	05:06		06:35 (1)	04:27		06:15 (1)	04:54		06:31 (1)	06:00	07:09	08:16	08:29	09:23
	16:21	17:36	18:42	20:54	22:02	6	06:41 (1)	22:48	32	06:47 (1)	22:30	23	06:54 (1)	21:21	19:54	18:28	16:14	15:42
18	09:12	08:05	06:47	06:19	05:04		06:34 (1)	04:27		06:15 (1)	04:56		06:33 (1)	06:02	07:11	08:18	08:32	09:24
	16:24	17:38	18:45	20:56	22:04	9	06:43 (1)	22:49	32	06:47 (1)	22:29	21	06:54 (1)	21:18	19:51	18:25	16:12	15:42
19	09:10	08:02	06:44	06:16	05:02		06:32 (1)	04:27		06:16 (1)	04:58		06:35 (1)	06:04	07:13	08:21	08:34	09:25
	16:26	17:41	18:47	20:58	22:06	11	06:43 (1)	22:49	31	06:47 (1)	22:27	20	06:55 (1)	21:16	19:48	18:23	16:10	15:43
20	09:08	08:00	06:42	06:13	05:00		06:31 (1)	04:27		06:16 (1)	05:00		06:35 (1)	06:07	07:15	08:23	08:36	09:25
	16:28	17:43	18:49	21:00	22:08	12	06:43 (1)	22:50	31	06:47 (1)	22:25	19	06:54 (1)	21:13	19:45	18:20	16:08	15:43
21	09:07	07:57	06:39	06:11	04:58		06:29 (1)	04:27		06:16 (1)	05:02		06:37 (1)	06:09	07:17	08:25	08:39	09:26
	16:30	17:46	18:52	21:03	22:10	14	06:43 (1)	22:50	31	06:47 (1)	22:23	17	06:54 (1)	21:10	19:42	18:17	16:06	15:43
22	09:05	07:54	06:36	06:08	04:56		06:28 (1)	04:27		06:17 (1)	05:04		06:39 (1)	06:11	07:20	08:28	08:41	09:27
	16:32	17:48	18:54	21:05	22:12	16	06:44 (1)	22:50	31	06:48 (1)	22:22	15	06:54 (1)	21:08	19:39	18:15	16:04	15:44
23	09:03	07:52	06:33	06:05	04:55		06:26 (1)	04:28		06:17 (1)	05:06		06:40 (1)	06:13	07:22	08:30	08:43	09:27
	16:35	17:50	18:56	21:07	22:14	18	06:44 (1)	22:50	31	06:48 (1)	22:20	13	06:53 (1)	21:05	19:36	18:12	16:03	15:44
24	09:02	07:49	06:30	06:02	04:53		06:26 (1)	04:28		06:16 (1)	05:08		06:42 (1)	06:15	07:24	08:32	08:45	09:28
	16:37	17:53	18:58	21:10	22:16	19	06:45 (1)	22:50	32	06:48 (1)	22:18	11	06:53 (1)	21:02	19:33	18:09	16:01	15:45
25	09:00	07:46	06:27	06:00	04:51		06:24 (1)	04:28		06:17 (1)	05:10		06:43 (1)	06:18	07:26	07:35	08:47	09:28
	16:39	17:55	19:01	21:12	22:18	21	06:45 (1)	22:50	32	06:49 (1)	22:16	10	06:53 (1)	20:59	19:30	17:07	16:00	15:46
26	08:58	07:44	06:24	05:57	04:49		06:23 (1)	04:29		06:17 (1)	05:12		06:45 (1)	06:20	07:28	07:37	08:49	09:28
	16:42	17:58	19:03	21:14	22:20	22	06:45 (1)	22:50	32	06:49 (1)	22:14	7	06:52 (1)	20:57	19:28	17:04	15:58	15:46
27	08:56	07:41	06:21	05:54	04:48		06:21 (1)	04:29		06:17 (1)	05:14		06:47 (1)	06:22	07:31	07:39	08:52	09:28
	16:44	18:00	19:05	21:17	22:22	24	06:45 (1)	22:50	32	06:49 (1)	22:12	5	06:52 (1)	20:54	19:25	17:02	15:57	15:47
28	08:54	07:38	06:18	05:52	04:46		06:20 (1)	04:30		06:17 (1)	05:16		06:49 (1)	06:24	07:33	07:42	08:54	09:28
	16:47	18:02	19:08	21:19	22:24	25	06:45 (1)	22:50	32	06:49 (1)	22:10	2	06:51 (1)	20:51	19:22	16:59	15:55	15:48
29	08:52		07:16	05:49	04:44		06:20 (1)	04:31		06:17 (1)	05:18		06:49 (1)	06:27	07:35	07:44	08:56	09:28
	16:49		20:10	21:21	22:25	26	06:46 (1)	22:49	33	06:50 (1)	22:07	1	06:50 (1)	20:48	19:19	16:56	15:54	15:49
30	08:50		07:13	05:47	04:43		06:19 (1)	04:32		06:18 (1)	05:20			06:29	07:37	07:47	08:58	09:28
	16:51		20:12	21:24	22:27	27	06:46 (1)	22:49	32	06:50 (1)	22:05			20:45	19:16	16:54	15:53	15:50
31	08:48		07:10		04:41		06:17 (1)				05:22			06:31		07:49		09:28
	16:54		20:14		22:29	28	06:45 (1)				22:03			20:43		16:51		15:51
Potential sun hours	221	260	365	432	521			547			545			478	386	319	236	200
Total, worst case						284			963			655						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** Z - Brusalivegen 217 (26)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February	March	April	May			June			July			August	September	October	November	December
1	09:28	08:46	07:35	07:07	05:44			04:40		06:00 (1)	04:32		06:06 (1)	05:24	06:33	07:39	07:51	09:00
	15:53	16:56	18:05	20:17	21:26			22:30	35	06:35 (1)	22:48	37	06:43 (1)	22:01	20:40	19:13	16:49	15:52
2	09:27	08:43	07:33	07:04	05:42			04:39		06:00 (1)	04:33		06:06 (1)	05:27	06:35	07:42	07:54	09:01
	15:54	16:59	18:07	20:19	21:28			22:32	35	06:35 (1)	22:48	37	06:43 (1)	21:58	20:37	19:10	16:47	15:50
3	09:27	08:41	07:30	07:01	05:39			04:38		06:00 (1)	04:34		06:06 (1)	05:29	06:38	07:44	07:56	09:03
	15:56	17:01	18:10	20:21	21:30			22:33	36	06:36 (1)	22:47	36	06:42 (1)	21:56	20:34	19:07	16:44	15:49
4	09:26	08:39	07:27	06:58	05:37			04:36		06:00 (1)	04:35		06:06 (1)	05:31	06:40	07:46	07:59	09:05
	15:57	17:04	18:12	20:24	21:33			22:35	36	06:36 (1)	22:46	36	06:42 (1)	21:54	20:31	19:05	16:42	15:48
5	09:26	08:37	07:24	06:55	05:34			04:35		06:01 (1)	04:37		06:06 (1)	05:33	06:42	07:48	08:01	09:07
	15:59	17:06	18:14	20:26	21:35			22:36	36	06:37 (1)	22:46	37	06:43 (1)	21:51	20:28	19:02	16:39	15:47
6	09:25	08:34	07:21	06:53	05:32			04:34		06:01 (1)	04:38		06:07 (1)	05:35	06:44	07:51	08:03	09:09
	16:00	17:09	18:17	20:28	21:37			22:38	36	06:37 (1)	22:45	37	06:44 (1)	21:49	20:25	18:59	16:37	15:47
7	09:24	08:32	07:19	06:50	05:29			04:33		06:01 (1)	04:39		06:08 (1)	05:38	06:47	07:53	08:06	09:10
	16:02	17:11	18:19	20:31	21:40			22:39	36	06:37 (1)	22:44	36	06:44 (1)	21:47	20:23	18:56	16:35	15:46
8	09:24	08:30	07:16	06:47	05:27			04:32		06:01 (1)	04:40		06:08 (1)	05:40	06:49	07:55	08:08	09:12
	16:04	17:14	18:21	20:33	21:42			22:40	36	06:37 (1)	22:43	35	06:43 (1)	21:44	20:20	18:53	16:32	15:45
9	09:23	08:27	07:13	06:44	05:24			04:31		06:01 (1)	04:42		06:08 (1)	05:42	06:51	07:57	08:11	09:13
	16:06	17:16	18:24	20:35	21:44			22:41	37	06:38 (1)	22:42	35	06:43 (1)	21:42	20:17	18:50	16:30	15:44
10	09:22	08:25	07:10	06:41	05:22			04:31		06:01 (1)	04:43		06:08 (1)	05:44	06:53	08:00	08:13	09:15
	16:07	17:19	18:26	20:37	21:46			22:43	37	06:38 (1)	22:40	35	06:43 (1)	21:39	20:14	18:48	16:28	15:44
11	09:21	08:23	07:07	06:38	05:20			04:30		06:02 (1)	04:45		06:09 (1)	05:46	06:55	08:02	08:15	09:16
	16:09	17:21	18:28	20:40	21:49			22:44	36	06:38 (1)	22:39	35	06:44 (1)	21:37	20:11	18:45	16:26	15:43
12	09:20	08:20	07:04	06:36	05:17			04:29		06:01 (1)	04:46		06:09 (1)	05:49	06:58	08:04	08:18	09:17
	16:11	17:23	18:31	20:42	21:51			22:45	37	06:38 (1)	22:38	34	06:43 (1)	21:34	20:08	18:42	16:24	15:43
13	09:18	08:18	07:02	06:33	05:15			04:29		06:02 (1)	04:48		06:09 (1)	05:51	07:00	08:07	08:20	09:19
	16:13	17:26	18:33	20:44	21:53			22:46	37	06:39 (1)	22:36	34	06:43 (1)	21:31	20:05	18:39	16:22	15:43
14	09:17	08:15	06:59	06:30	05:13			04:28		06:02 (1)	04:49		06:10 (1)	05:53	07:02	08:09	08:22	09:20
	16:15	17:28	18:35	20:47	21:55			22:46	37	06:39 (1)	22:35	33	06:43 (1)	21:29	20:02	18:36	16:19	15:43
15	09:16	08:13	06:56	06:27	05:11			04:28		06:02 (1)	04:51		06:10 (1)	05:55	07:04	08:11	08:25	09:21
	16:17	17:31	18:38	20:49	21:57			22:47	37	06:39 (1)	22:34	32	06:42 (1)	21:26	19:59	18:34	16:17	15:42
16	09:14	08:10	06:53	06:24	05:09			04:28		06:02 (1)	04:53		06:11 (1)	05:58	07:06	08:14	08:27	09:22
	16:19	17:33	18:40	20:51	22:00			22:48	37	06:39 (1)	22:32	32	06:43 (1)	21:24	19:57	18:31	16:15	15:42
17	09:13	08:07	06:50	06:22	05:06		06:13 (1)	04:27		06:03 (1)	04:54		06:11 (1)	06:00	07:09	08:16	08:29	09:23
	16:21	17:36	18:42	20:54	22:02	7	06:20 (1)	22:48	36	06:39 (1)	22:30	31	06:42 (1)	21:21	19:54	18:28	16:14	15:42
18	09:12	08:05	06:47	06:19	05:04		06:11 (1)	04:27		06:03 (1)	04:56		06:12 (1)	06:02	07:11	08:18	08:32	09:24
	16:24	17:38	18:45	20:56	22:04	13	06:24 (1)	22:49	37	06:40 (1)	22:29	30	06:42 (1)	21:18	19:51	18:25	16:12	15:42
19	09:10	08:02	06:44	06:16	05:02		06:10 (1)	04:27		06:03 (1)	04:58		06:13 (1)	06:04	07:13	08:20	08:34	09:25
	16:26	17:41	18:47	20:58	22:06	16	06:26 (1)	22:49	37	06:40 (1)	22:27	29	06:42 (1)	21:16	19:48	18:23	16:10	15:43
20	09:08	08:00	06:42	06:13	05:00		06:08 (1)	04:27		06:03 (1)	05:00		06:13 (1)	06:07	07:15	08:23	08:36	09:25
	16:28	17:43	18:49	21:00	22:08	19	06:27 (1)	22:50	37	06:40 (1)	22:25	27	06:40 (1)	21:13	19:45	18:20	16:08	15:43
21	09:07	07:57	06:39	06:11	04:58		06:06 (1)	04:27		06:03 (1)	05:02		06:15 (1)	06:09	07:17	08:25	08:39	09:26
	16:30	17:46	18:52	21:03	22:10	22	06:28 (1)	22:50	37	06:40 (1)	22:23	25	06:40 (1)	21:10	19:42	18:17	16:06	15:43
22	09:05	07:54	06:36	06:08	04:56		06:05 (1)	04:27		06:04 (1)	05:04		06:16 (1)	06:11	07:20	08:28	08:41	09:27
	16:32	17:48	18:54	21:05	22:12	25	06:30 (1)	22:50	37	06:41 (1)	22:22	24	06:40 (1)	21:08	19:39	18:15	16:04	15:44
23	09:03	07:52	06:33	06:05	04:55		06:04 (1)	04:28		06:04 (1)	05:06		06:17 (1)	06:13	07:22	08:30	08:43	09:27
	16:35	17:50	18:56	21:07	22:14	26	06:30 (1)	22:50	37	06:41 (1)	22:20	21	06:38 (1)	21:05	19:36	18:12	16:03	15:44
24	09:02	07:49	06:30	06:02	04:53		06:03 (1)	04:28		06:04 (1)	05:08		06:19 (1)	06:15	07:24	08:32	08:45	09:28
	16:37	17:53	18:58	21:10	22:16	29	06:32 (1)	22:50	37	06:41 (1)	22:18	18	06:37 (1)	21:02	19:33	18:09	16:01	15:45
25	09:00	07:46	06:27	06:00	04:51		06:02 (1)	04:28		06:05 (1)	05:10		06:20 (1)	06:18	07:26	07:35	08:47	09:28
	16:39	17:55	19:01	21:12	22:18	30	06:32 (1)	22:50	36	06:41 (1)	22:16	15	06:35 (1)	20:59	19:30	17:07	16:00	15:46
26	08:58	07:44	06:24	05:57	04:49		06:02 (1)	04:29		06:04 (1)	05:12		06:22 (1)	06:20	07:28	07:37	08:49	09:28
	16:42	17:58	19:03	21:14	22:20	31	06:33 (1)	22:50	37	06:41 (1)	22:14	11	06:33 (1)	20:57	19:28	17:04	15:58	15:46
27	08:56	07:41	06:21	05:54	04:48		06:01 (1)	04:29		06:05 (1)	05:14		06:27 (1)	06:22	07:31	07:39	08:52	09:28
	16:44	18:00	19:05	21:17	22:22	32	06:33 (1)	22:50	37	06:42 (1)	22:12	2	06:29 (1)	20:54	19:25	17:02	15:57	15:47
28	08:54	07:38	06:18	05:52	04:46		06:01 (1)	04:30		06:05 (1)	05:16			06:24	07:33	07:42	08:54	09:28
	16:47	18:02	19:08	21:19	22:24	33	06:34 (1)	22:50	36	06:41 (1)	22:10			20:51	19:22	16:59	15:55	15:48
29	08:52		07:16	05:49	04:44		06:01 (1)	04:31		06:05 (1)	05:18			06:27	07:35	07:44	08:56	09:28
	16:49		20:10	21:21	22:25	33	06:34 (1)	22:49	37	06:42 (1)	22:07			20:48	19:19	16:56	15:54	15:49
30	08:50		07:13	05:47	04:43		06:01 (1)	04:32		06:06 (1)	05:20			06:29	07:37	07:47	08:58	09:28
	16:51		20:12	21:24	22:27	34	06:35 (1)	22:49	36	06:42 (1)	22:05			20:45	19:16	16:54	15:53	15:50
31	08:48		07:10		04:41		06:00 (1)				05:22			06:31		07:49		09:28
	16:54		20:14		22:29	35	06:35 (1)				22:03			20:43		16:51		15:51
Potential sun hours	221	260	365	432	521			547			545			478	386	319	236	200
Total, worst case						385			1095			794						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** AA - Buevegen 1463 (27)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February		March		April	May	June
1	09:28	08:46		07:35		08:22 (23)	07:07	05:44	04:40
	15:53	16:56		18:05	22	08:44 (23)	20:17	21:26	22:31
2	09:28	08:44		07:33		08:21 (23)	07:04	05:41	04:39
	15:54	16:59		18:07	24	08:45 (23)	20:19	21:28	22:32
3	09:27	08:41		07:30		08:20 (23)	07:01	05:39	04:37
	15:56	17:01		18:10	25	08:45 (23)	20:21	21:31	22:34
4	09:27	08:39		07:27		08:20 (23)	06:58	05:36	04:36
	15:57	17:04		18:12	24	08:44 (23)	20:24	21:33	22:35
5	09:26	08:37		07:24		08:20 (23)	06:55	05:34	04:35
	15:59	17:06		18:14	24	08:44 (23)	20:26	21:35	22:37
6	09:25	08:35		07:22		08:20 (23)	06:53	05:31	04:34
	16:00	17:09		18:17	23	08:43 (23)	20:28	21:38	22:38
7	09:25	08:32		07:19		08:20 (23)	06:50	05:29	04:33
	16:02	17:11		18:19	22	08:42 (23)	20:31	21:40	22:39
8	09:24	08:30		07:16		08:20 (23)	06:47	05:27	04:32
	16:04	17:13		18:21	21	08:41 (23)	20:33	21:42	22:41
9	09:23	08:28	09:21 (3)	07:13		08:22 (23)	06:44	05:24	04:31
	16:05	17:16	1 09:22 (3)	18:24	19	08:41 (23)	20:35	21:44	22:42
10	09:22	08:25	09:18 (3)	07:10		08:23 (23)	06:41	05:22	04:30
	16:07	17:18	9 09:27 (3)	18:26	16	08:39 (23)	20:38	21:47	22:43
11	09:21	08:23	09:15 (3)	07:07		08:25 (23)	06:38	05:20	04:30
	16:09	17:21	14 09:29 (3)	18:28	11	08:36 (23)	20:40	21:49	22:44
12	09:20	08:20	09:14 (3)	07:05			06:36	05:17	04:29
	16:11	17:23	16 09:30 (3)	18:31			20:42	21:51	22:45
13	09:19	08:18	09:13 (3)	07:02			06:33	05:15	04:29
	16:13	17:26	17 09:30 (3)	18:33			20:44	21:53	22:46
14	09:17	08:15	09:13 (3)	06:59		07:38 (25)	06:30	05:13	04:28
	16:15	17:28	18 09:31 (3)	18:35	1	07:39 (25)	20:47	21:55	22:47
15	09:16	08:13	09:12 (3)	06:56		07:33 (25)	06:27	05:11	04:28
	16:17	17:31	19 09:31 (3)	18:38	11	07:44 (25)	20:49	21:58	22:47
16	09:15	08:10	09:12 (3)	06:53		07:31 (25)	06:24	05:08	04:27
	16:19	17:33	19 09:31 (3)	18:40	14	07:45 (25)	20:51	22:00	22:48
17	09:13	08:08	09:13 (3)	06:50		07:29 (25)	06:22	05:06	04:27
	16:21	17:36	19 09:32 (3)	18:42	17	07:46 (25)	20:54	22:02	22:49
18	09:12	08:05	09:13 (3)	06:47		07:28 (25)	06:19	05:04	04:27
	16:23	17:38	18 09:31 (3)	18:45	18	07:46 (25)	20:56	22:04	22:49
19	09:10	08:02	09:13 (3)	06:44		07:28 (25)	06:16	05:02	04:27
	16:26	17:41	17 09:30 (3)	18:47	18	07:46 (25)	20:58	22:06	22:50
20	09:09	08:00	09:14 (3)	06:42		07:27 (25)	06:13	05:00	04:27
	16:28	17:43	15 09:29 (3)	18:49	19	07:46 (25)	21:01	22:08	22:50
21	09:07	07:57	09:15 (3)	06:39		07:28 (25)	06:11	04:58	04:27
	16:30	17:46	12 09:27 (3)	18:52	19	07:47 (25)	21:03	22:10	22:50
22	09:05	07:54	09:18 (3)	06:36		07:28 (25)	06:08	04:56	04:27
	16:32	17:48	8 09:26 (3)	18:54	18	07:46 (25)	21:05	22:12	22:50
23	09:04	07:52		06:33		07:28 (25)	06:05	04:54	04:27
	16:35	17:50		18:56	17	07:45 (25)	21:08	22:14	22:51
24	09:02	07:49		06:30		07:29 (25)	06:02	04:53	04:28
	16:37	17:53		18:59	14	07:43 (25)	21:10	22:16	22:51
25	09:00	07:46	08:28 (23)	06:27		07:30 (25)	06:00	04:51	04:28
	16:39	17:55	11 08:39 (23)	19:01	11	07:41 (25)	21:12	22:18	22:51
26	08:58	07:44	08:25 (23)	06:24		07:34 (25)	05:57	04:49	04:29
	16:42	17:58	16 08:41 (23)	19:03	2	07:36 (25)	21:14	22:20	22:50
27	08:56	07:41	08:23 (23)	06:21			05:54	04:47	04:29
	16:44	18:00	19 08:42 (23)	19:05			21:17	22:22	22:50
28	08:54	07:38	08:23 (23)	06:18			05:52	04:46	04:30
	16:46	18:02	21 08:44 (23)	19:08			21:19	22:24	22:50
29	08:52			07:16			05:49	04:44	04:31
	16:49			20:10			21:21	22:26	22:50
30	08:50			07:13			05:47	04:43	04:31
	16:51			20:12			21:24	22:27	22:49
31	08:48			07:10				04:41	
	16:54			20:15				22:29	
Potential sun hours	221	260		365			432	521	547
Total, worst case			269		410				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** AA - Buevegen 1463 (27)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September			October			November			December
1	04:32	05:24	06:33			07:40			07:52		08:47 (3)	09:00
	22:49	22:01	20:40			19:13			16:49	8	08:55 (3)	15:51
2	04:33	05:26	06:35			07:42		09:05 (23)	07:54			09:02
	22:48	21:59	20:37			19:10	7	09:12 (23)	16:46			15:50
3	04:34	05:29	06:38			07:44		09:01 (23)	07:56			09:04
	22:47	21:56	20:34			19:07	14	09:15 (23)	16:44			15:49
4	04:35	05:31	06:40			07:46		09:00 (23)	07:59			09:05
	22:47	21:54	20:31			19:05	17	09:17 (23)	16:42			15:48
5	04:36	05:33	06:42			07:48		08:58 (23)	08:01			09:07
	22:46	21:52	20:28			19:02	20	09:18 (23)	16:39			15:47
6	04:38	05:35	06:44			07:51		08:56 (23)	08:04			09:09
	22:45	21:49	20:26			18:59	22	09:18 (23)	16:37			15:46
7	04:39	05:37	06:47			07:53		08:56 (23)	08:06			09:10
	22:44	21:47	20:23			18:56	23	09:19 (23)	16:35			15:46
8	04:40	05:40	06:49			07:55		08:55 (23)	08:08			09:12
	22:43	21:44	20:20			18:53	24	09:19 (23)	16:32			15:45
9	04:41	05:42	06:51			07:58		08:54 (23)	08:11			09:14
	22:42	21:42	20:17			18:50	25	09:19 (23)	16:30			15:44
10	04:43	05:44	06:53			08:00		08:55 (23)	08:13			09:15
	22:41	21:39	20:14			18:48	24	09:19 (23)	16:28			15:44
11	04:44	05:46	06:55			08:02		08:54 (23)	08:16			09:16
	22:39	21:37	20:11			18:45	24	09:18 (23)	16:26			15:43
12	04:46	05:49	06:58			08:04		08:55 (23)	08:18			09:18
	22:38	21:34	20:08			18:42	23	09:18 (23)	16:24			15:43
13	04:48	05:51	07:00			08:07		08:55 (23)	08:20			09:19
	22:37	21:32	20:05			18:39	22	09:17 (23)	16:21			15:43
14	04:49	05:53	07:02			08:09		08:55 (23)	08:23			09:20
	22:35	21:29	20:02			18:36	20	09:15 (23)	16:19			15:42
15	04:51	05:55	07:04			08:11		08:57 (23)	08:25			09:21
	22:34	21:26	20:00			18:34	18	09:15 (23)	16:17			15:42
16	04:53	05:58	07:06			08:14		08:58 (23)	08:27			09:22
	22:32	21:24	19:57			18:31	14	09:12 (23)	16:15			15:42
17	04:54	06:00	07:09			08:16		09:01 (23)	08:30			09:23
	22:31	21:21	19:54			18:28	9	09:10 (23)	16:13			15:42
18	04:56	06:02	07:11		08:18 (25)	08:18			08:32			09:24
	22:29	21:19	19:51	10	08:28 (25)	18:25			16:11			15:42
19	04:58	06:04	07:13		08:16 (25)	08:21			08:34			09:25
	22:27	21:16	19:48	13	08:29 (25)	18:23			16:10			15:43
20	05:00	06:06	07:15		08:14 (25)	08:23		09:47 (3)	08:37			09:26
	22:25	21:13	19:45	16	08:30 (25)	18:20	10	09:57 (3)	16:08			15:43
21	05:02	06:09	07:17		08:14 (25)	08:25		09:46 (3)	08:39			09:26
	22:24	21:10	19:42	17	08:31 (25)	18:17	13	09:59 (3)	16:06			15:43
22	05:04	06:11	07:20		08:13 (25)	08:28		09:44 (3)	08:41			09:27
	22:22	21:08	19:39	18	08:31 (25)	18:15	16	10:00 (3)	16:04			15:44
23	05:06	06:13	07:22		08:12 (25)	08:30		09:43 (3)	08:43			09:27
	22:20	21:05	19:36	19	08:31 (25)	18:12	18	10:01 (3)	16:03			15:44
24	05:08	06:15	07:24		08:11 (25)	08:32		09:42 (3)	08:45			09:28
	22:18	21:02	19:33	19	08:30 (25)	18:09	19	10:01 (3)	16:01			15:45
25	05:10	06:18	07:26		08:11 (25)	07:35		08:42 (3)	08:48			09:28
	22:16	20:59	19:31	18	08:29 (25)	17:07	19	09:01 (3)	15:59			15:45
26	05:12	06:20	07:28		08:12 (25)	07:37		08:42 (3)	08:50			09:28
	22:14	20:57	19:28	17	08:29 (25)	17:04	20	09:02 (3)	15:58			15:46
27	05:14	06:22	07:31		08:12 (25)	07:40		08:42 (3)	08:52			09:28
	22:12	20:54	19:25	16	08:28 (25)	17:02	19	09:01 (3)	15:57			15:47
28	05:16	06:24	07:33		08:13 (25)	07:42		08:43 (3)	08:54			09:29
	22:10	20:51	19:22	12	08:25 (25)	16:59	18	09:01 (3)	15:55			15:48
29	05:18	06:27	07:35		08:16 (25)	07:44		08:43 (3)	08:56			09:29
	22:08	20:48	19:19	6	08:22 (25)	16:56	17	09:00 (3)	15:54			15:49
30	05:20	06:29	07:37			07:47		08:44 (3)	08:58			09:28
	22:05	20:45	19:16			16:54	15	08:59 (3)	15:53			15:50
31	05:22	06:31				07:49		08:45 (3)				09:28
	22:03	20:43				16:51	13	08:58 (3)				15:51
Potential sun hours	545	478	386			319			236			200
Total, worst case				181			503			8		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** AB - Buevegen 1461 (28)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February		March		April	May	June	July	August	September		October		November	December
1	09:28	08:46		07:35	08:24 (23)	07:07	05:44	04:40	04:32	05:24	06:33		07:40		07:52	09:00
	15:53	16:56		18:05	23 08:47 (23)	20:17	21:26	22:31	22:49	22:01	20:40		19:13		16:49	15:51
2	09:28	08:44		07:33	08:23 (23)	07:04	05:41	04:39	04:33	05:26	06:35		07:42		07:54	09:02
	15:54	16:59		18:07	24 08:47 (23)	20:19	21:28	22:32	22:48	21:59	20:37		19:10		16:46	15:50
3	09:27	08:41		07:30	08:23 (23)	07:01	05:39	04:37	04:34	05:29	06:38		07:44		07:56	09:04
	15:56	17:01		18:10	24 08:47 (23)	20:21	21:31	22:34	22:47	21:56	20:34		19:07		16:44	15:49
4	09:27	08:39		07:27	08:23 (23)	06:58	05:36	04:36	04:35	05:31	06:40		07:46	09:05 (23)	07:59	09:05
	15:57	17:04		18:12	23 08:46 (23)	20:24	21:33	22:35	22:47	21:54	20:31		19:05	11 09:16 (23)	16:42	15:48
5	09:26	08:37		07:24	08:23 (23)	06:55	05:34	04:35	04:36	05:33	06:42		07:48	09:02 (23)	08:01	09:07
	15:59	17:06		18:14	22 08:45 (23)	20:26	21:35	22:37	22:46	21:52	20:28		19:02	16 09:18 (23)	16:39	15:47
6	09:25	08:35		07:22	08:23 (23)	06:53	05:31	04:34	04:38	05:35	06:44		07:51	09:00 (23)	08:04	09:09
	16:00	17:09		18:17	21 08:44 (23)	20:28	21:38	22:38	22:45	21:49	20:26		18:59	19 09:19 (23)	16:37	15:46
7	09:25	08:32		07:19	08:23 (23)	06:50	05:29	04:33	04:39	05:37	06:47		07:53	09:00 (23)	08:06	09:10
	16:02	17:11		18:19	20 08:43 (23)	20:31	21:40	22:39	22:44	21:47	20:23		18:56	20 09:20 (23)	16:35	15:46
8	09:24	08:30		07:16	08:24 (23)	06:47	05:27	04:32	04:40	05:40	06:49		07:55	08:58 (23)	08:08	09:12
	16:04	17:13		18:21	18 08:42 (23)	20:33	21:42	22:41	22:43	21:44	20:20		18:53	22 09:20 (23)	16:32	15:45
9	09:23	08:28		07:13	08:27 (23)	06:44	05:24	04:31	04:41	05:42	06:51		07:58	08:57 (23)	08:11	09:14
	16:05	17:16		18:24	13 08:40 (23)	20:35	21:44	22:42	22:42	21:42	20:17		18:50	23 09:20 (23)	16:30	15:44
10	09:22	08:25		07:10	08:30 (23)	06:41	05:22	04:30	04:43	05:44	06:53		08:00	08:57 (23)	08:13	09:15
	16:07	17:18		18:26	7 08:37 (23)	20:38	21:47	22:43	22:41	21:39	20:14		18:48	24 09:21 (23)	16:28	15:44
11	09:21	08:23		07:07		06:38	05:20	04:30	04:44	05:46	06:55		08:02	08:57 (23)	08:16	09:16
	16:09	17:21		18:28		20:40	21:49	22:44	22:39	21:37	20:11		18:45	23 09:20 (23)	16:26	15:43
12	09:20	08:20		07:05		06:36	05:17	04:29	04:46	05:49	06:58		08:04	08:57 (23)	08:18	09:18
	16:11	17:23		18:31		20:42	21:51	22:45	22:38	21:34	20:08		18:42	23 09:20 (23)	16:24	15:43
13	09:19	08:18		07:02	07:40 (25)	06:33	05:15	04:29	04:48	05:51	07:00		08:07	08:57 (23)	08:20	09:19
	16:13	17:26		18:33	5 07:45 (25)	20:44	21:53	22:46	22:37	21:32	20:05		18:39	22 09:19 (23)	16:21	15:43
14	09:17	08:15		06:59	07:36 (25)	06:30	05:13	04:28	04:49	05:53	07:02		08:09	08:57 (23)	08:23	09:20
	16:15	17:28		18:35	11 07:47 (25)	20:47	21:55	22:47	22:35	21:29	20:02		18:36	21 09:18 (23)	16:19	15:42
15	09:16	08:13		06:56	07:34 (25)	06:27	05:11	04:28	04:51	05:55	07:04		08:11	08:58 (23)	08:25	09:21
	16:17	17:31		18:38	15 07:49 (25)	20:49	21:58	22:47	22:34	21:26	20:00		18:34	20 09:18 (23)	16:17	15:42
16	09:15	08:10		06:53	07:33 (25)	06:24	05:08	04:27	04:53	05:58	07:06		08:14	08:58 (23)	08:27	09:22
	16:19	17:33		18:40	16 07:49 (25)	20:51	22:00	22:48	22:32	21:24	19:57		18:31	18 09:16 (23)	16:15	15:42
17	09:13	08:08		06:50	07:32 (25)	06:22	05:06	04:27	04:54	06:00	07:09		08:16	09:00 (23)	08:30	09:23
	16:21	17:36		18:42	18 07:50 (25)	20:54	22:02	22:49	22:31	21:21	19:54		18:28	15 09:15 (23)	16:13	15:42
18	09:12	08:05		06:47	07:31 (25)	06:19	05:04	04:27	04:56	06:02	07:11		08:18	09:02 (23)	08:32	09:24
	16:23	17:38		18:45	19 07:50 (25)	20:56	22:04	22:49	22:29	21:19	19:51		18:25	9 09:11 (23)	16:11	15:42
19	09:10	08:02		06:44	07:31 (25)	06:16	05:02	04:27	04:58	06:04	07:13	08:22 (25)	08:21		08:34	09:25
	16:26	17:41		18:47	18 07:49 (25)	20:58	22:06	22:50	22:27	21:16	19:48	6 08:28 (25)	18:23		16:10	15:43
20	09:09	08:00		06:42	07:30 (25)	06:13	05:00	04:27	05:00	06:06	07:15	08:19 (25)	08:23		08:37	09:26
	16:28	17:43		18:49	19 07:49 (25)	21:01	22:08	22:50	22:25	21:13	19:45	12 08:31 (25)	18:20		16:08	15:43
21	09:07	07:57		06:39	07:32 (25)	06:11	04:58	04:27	05:02	06:09	07:17	08:18 (25)	08:25		08:39	09:26
	16:30	17:46		18:52	17 07:49 (25)	21:03	22:10	22:50	22:24	21:10	19:42	15 08:33 (25)	18:17		16:06	15:43
22	09:05	07:54		06:36	07:32 (25)	06:08	04:56	04:27	05:04	06:11	07:20	08:16 (25)	08:28		08:41	09:27
	16:32	17:48		18:54	15 07:47 (25)	21:05	22:12	22:50	22:22	21:08	19:39	17 08:33 (25)	18:15		16:04	15:44
23	09:04	07:52		06:33	07:33 (25)	06:05	04:54	04:27	05:06	06:13	07:22	08:15 (25)	08:30		08:43	09:27
	16:35	17:50		18:56	13 07:46 (25)	21:08	22:14	22:51	22:20	21:05	19:36	18 08:33 (25)	18:12		16:03	15:44
24	09:02	07:49	08:30 (23)	06:30	07:35 (25)	06:02	04:53	04:28	05:08	06:15	07:24	08:14 (25)	08:32		08:45	09:28
	16:37	17:53	11 08:41 (23)	18:59	8 07:43 (25)	21:10	22:16	22:51	22:18	21:02	19:33	19 08:33 (25)	18:09		16:01	15:45
25	09:00	07:46	08:28 (23)	06:27		06:00	04:51	04:28	05:10	06:18	07:26	08:14 (25)	07:35		08:48	09:28
	16:39	17:55	15 08:43 (23)	19:01		21:12	22:18	22:51	22:16	20:59	19:31	18 08:32 (25)	17:07		15:59	15:45
26	08:58	07:44	08:26 (23)	06:24		05:57	04:49	04:29	05:12	06:20	07:28	08:14 (25)	07:37		08:50	09:28
	16:42	17:58	18 08:44 (23)	19:03		21:14	22:20	22:50	22:14	20:57	19:28	19 08:33 (25)	17:04		15:58	15:46
27	08:56	07:41	08:25 (23)	06:21		05:54	04:47	04:29	05:14	06:22	07:31	08:14 (25)	07:40		08:52	09:28
	16:44	18:00	20 08:45 (23)	19:05		21:17	22:22	22:50	22:12	20:54	19:25	18 08:32 (25)	17:02		15:57	15:47
28	08:54	07:38	08:25 (23)	06:18		05:52	04:46	04:30	05:16	06:24	07:33	08:15 (25)	07:42		08:54	09:29
	16:46	18:02	22 08:47 (23)	19:08		21:19	22:24	22:50	22:10	20:51	19:22	15 08:30 (25)	16:59		15:55	15:48
29	08:52			07:16		05:49	04:44	04:31	05:18	06:27	07:35	08:15 (25)	07:44		08:56	09:29
	16:49			20:10		21:21	22:26	22:50	22:08	20:48	19:19	13 08:28 (25)	16:56		15:54	15:49
30	08:50			07:13		05:47	04:43	04:31	05:20	06:29	07:37	08:18 (25)	07:47		08:58	09:28
	16:51			20:12		21:24	22:27	22:49	22:05	20:45	19:16	8 08:26 (25)	16:54		15:53	15:50
31	08:48			07:10			04:41		05:22	06:31			07:49			09:28
	16:54			20:15			22:29		22:03	20:43			16:51			15:51
Potential sun hours	221	260		365		432	521	547	545	478	386		319		236	200
Total, worst case			86		369							178		286		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** AC - Buevegen 1502 (29)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March			April		May	June
1	09:28			08:46		09:42 (23)	07:35		08:32 (25)	07:07		05:44	04:40
	15:53			16:56	14	09:56 (23)	18:05	20	08:52 (25)	20:17		21:26	22:31
2	09:28			08:44		09:40 (23)	07:33		08:32 (25)	07:04		05:41	04:39
	15:54			16:59	17	09:57 (23)	18:07	20	08:52 (25)	20:19		21:28	22:32
3	09:27			08:41		09:40 (23)	07:30		08:32 (25)	07:01		05:39	04:37
	15:56			17:01	19	09:59 (23)	18:10	19	08:51 (25)	20:21		21:31	22:34
4	09:27			08:39		09:38 (23)	07:27		08:32 (25)	06:58		05:36	04:36
	15:57			17:04	21	09:59 (23)	18:12	18	08:50 (25)	20:24		21:33	22:35
5	09:26			08:37		09:38 (23)	07:24		08:32 (25)	06:55		05:34	04:35
	15:59			17:06	22	10:00 (23)	18:14	17	08:49 (25)	20:26		21:35	22:37
6	09:25			08:35		09:38 (23)	07:22		08:33 (25)	06:53		05:31	04:34
	16:00			17:08	22	10:00 (23)	18:17	14	08:47 (25)	20:28		21:38	22:38
7	09:25			08:32		09:37 (23)	07:19		08:35 (25)	06:50		05:29	04:33
	16:02			17:11	24	10:01 (23)	18:19	10	08:45 (25)	20:31		21:40	22:39
8	09:24			08:30		09:37 (23)	07:16			06:47		05:27	04:32
	16:04			17:13	24	10:01 (23)	18:21			20:33		21:42	22:41
9	09:23			08:28		09:37 (23)	07:13			06:44		05:24	04:31
	16:05			17:16	24	10:01 (23)	18:24			20:35		21:44	22:42
10	09:22			08:25		09:38 (23)	07:10			06:41		05:22	04:30
	16:07			17:18	24	10:02 (23)	18:26			20:38		21:47	22:43
11	09:21			08:23		09:38 (23)	07:07			06:38		05:20	04:30
	16:09			17:21	23	10:01 (23)	18:28			20:40		21:49	22:44
12	09:20			08:20		09:38 (23)	07:05			06:36		05:17	04:29
	16:11			17:23	22	10:00 (23)	18:31			20:42		21:51	22:45
13	09:19			08:18		09:38 (23)	07:02			06:33		05:15	04:28
	16:13			17:26	21	09:59 (23)	18:33			20:44		21:53	22:46
14	09:17			08:15		09:40 (23)	06:59			06:30		05:13	04:28
	16:15			17:28	19	09:59 (23)	18:35			20:47		21:55	22:47
15	09:16			08:13		09:41 (23)	06:56			06:27		05:11	04:28
	16:17			17:31	17	09:58 (23)	18:38			20:49		21:58	22:47
16	09:15			08:10		09:43 (23)	06:53			06:24		05:08	04:27
	16:19			17:33	12	09:55 (23)	18:40			20:51		22:00	22:48
17	09:13			08:08		09:46 (23)	06:50			06:21		05:06	04:27
	16:21			17:36	7	09:53 (23)	18:42			20:54		22:02	22:49
18	09:12			08:05			06:47			06:19		05:04	04:27
	16:23			17:38			18:45			20:56		22:04	22:49
19	09:10			08:02			06:44			06:16		05:02	04:27
	16:26			17:41			18:47			20:58		22:06	22:50
20	09:09			08:00			06:42			06:13		05:00	04:27
	16:28			17:43			18:49			21:01		22:08	22:50
21	09:07			07:57			06:39			06:10		04:58	04:27
	16:30			17:45			18:52			21:03		22:10	22:50
22	09:05			07:54			06:36			06:08		04:56	04:27
	16:32			17:48			18:54			21:05		22:12	22:51
23	09:04			07:52		08:40 (25)	06:33			06:05		04:54	04:27
	16:35			17:50	6	08:46 (25)	18:56			21:08		22:14	22:51
24	09:02			07:49		08:36 (25)	06:30			06:02		04:53	04:28
	16:37			17:53	12	08:48 (25)	18:59			21:10		22:16	22:51
25	09:00			07:46		08:34 (25)	06:27			06:00		04:51	04:28
	16:39			17:55	16	08:50 (25)	19:01			21:12		22:18	22:51
26	08:58			07:44		08:33 (25)	06:24			05:57		04:49	04:29
	16:42			17:58	17	08:50 (25)	19:03			21:14		22:20	22:51
27	08:56			07:41		08:32 (25)	06:21			05:54		04:47	04:29
	16:44			18:00	19	08:51 (25)	19:05			21:17		22:22	22:50
28	08:54			07:38		08:32 (25)	06:18			05:52		04:46	04:30
	16:46			18:02	20	08:52 (25)	19:08			21:19		22:24	22:50
29	08:52						07:16			05:49		04:44	04:30
	16:49						20:10			21:21		22:26	22:50
30	08:50						07:13			05:47		04:43	04:31
	16:51						20:12			21:24		22:27	22:49
31	08:48		09:43 (23)				07:10					04:41	
	16:54	10	09:53 (23)				20:15					22:29	
Potential sun hours	221			260			365			432		521	547
Total, worst case		10			422			118					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** AC - Buevegen 1502 (29)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September	October			November			December
1	04:32	05:24	06:33	07:39			07:51		09:06 (23)	09:00
	22:49	22:01	20:40	19:13			16:49	24	09:30 (23)	15:51
2	04:33	05:26	06:35	07:42			07:54		09:07 (23)	09:02
	22:48	21:59	20:37	19:10			16:46	24	09:31 (23)	15:50
3	04:34	05:29	06:38	07:44			07:56		09:07 (23)	09:04
	22:47	21:56	20:34	19:07			16:44	24	09:31 (23)	15:49
4	04:35	05:31	06:40	07:46			07:59		09:08 (23)	09:05
	22:47	21:54	20:31	19:05			16:42	23	09:31 (23)	15:48
5	04:36	05:33	06:42	07:48			08:01		09:07 (23)	09:07
	22:46	21:52	20:28	19:02			16:39	23	09:30 (23)	15:47
6	04:37	05:35	06:44	07:51		09:13 (25)	08:04		09:08 (23)	09:09
	22:45	21:49	20:26	18:59	6	09:19 (25)	16:37	22	09:30 (23)	15:46
7	04:39	05:37	06:47	07:53		09:11 (25)	08:06		09:09 (23)	09:10
	22:44	21:47	20:23	18:56	11	09:22 (25)	16:35	21	09:30 (23)	15:46
8	04:40	05:40	06:49	07:55		09:08 (25)	08:08		09:09 (23)	09:12
	22:43	21:44	20:20	18:53	16	09:24 (25)	16:32	19	09:28 (23)	15:45
9	04:41	05:42	06:51	07:58		09:07 (25)	08:11		09:11 (23)	09:14
	22:42	21:42	20:17	18:50	17	09:24 (25)	16:30	16	09:27 (23)	15:44
10	04:43	05:44	06:53	08:00		09:06 (25)	08:13		09:13 (23)	09:15
	22:41	21:39	20:14	18:48	19	09:25 (25)	16:28	13	09:26 (23)	15:44
11	04:44	05:46	06:55	08:02		09:05 (25)	08:16		09:14 (23)	09:16
	22:39	21:37	20:11	18:45	20	09:25 (25)	16:26	10	09:24 (23)	15:43
12	04:46	05:49	06:58	08:04		09:05 (25)	08:18			09:18
	22:38	21:34	20:08	18:42	20	09:25 (25)	16:24			15:43
13	04:47	05:51	07:00	08:07		09:05 (25)	08:20			09:19
	22:37	21:32	20:05	18:39	20	09:25 (25)	16:21			15:43
14	04:49	05:53	07:02	08:09		09:04 (25)	08:23			09:20
	22:35	21:29	20:02	18:36	20	09:24 (25)	16:19			15:42
15	04:51	05:55	07:04	08:11		09:05 (25)	08:25			09:21
	22:34	21:26	20:00	18:34	19	09:24 (25)	16:17			15:42
16	04:53	05:57	07:06	08:14		09:05 (25)	08:27			09:22
	22:32	21:24	19:57	18:31	17	09:22 (25)	16:15			15:42
17	04:54	06:00	07:09	08:16		09:07 (25)	08:30			09:23
	22:31	21:21	19:54	18:28	14	09:21 (25)	16:13			15:42
18	04:56	06:02	07:11	08:18		09:08 (25)	08:32			09:24
	22:29	21:19	19:51	18:25	11	09:19 (25)	16:11			15:42
19	04:58	06:04	07:13	08:21			08:34			09:25
	22:27	21:16	19:48	18:23			16:10			15:42
20	05:00	06:06	07:15	08:23			08:37			09:26
	22:25	21:13	19:45	18:20			16:08			15:43
21	05:02	06:09	07:17	08:25			08:39			09:26
	22:24	21:10	19:42	18:17			16:06			15:43
22	05:04	06:11	07:20	08:28			08:41			09:27
	22:22	21:08	19:39	18:15			16:04			15:44
23	05:06	06:13	07:22	08:30			08:43			09:27
	22:20	21:05	19:36	18:12			16:03			15:44
24	05:08	06:15	07:24	08:32			08:45			09:28
	22:18	21:02	19:33	18:09			16:01			15:45
25	05:10	06:18	07:26	07:35		09:15 (23)	08:48			09:28
	22:16	20:59	19:30	17:07	8	09:23 (23)	15:59			15:45
26	05:12	06:20	07:28	07:37		09:12 (23)	08:50			09:28
	22:14	20:57	19:28	17:04	14	09:26 (23)	15:58			15:46
27	05:14	06:22	07:31	07:40		09:10 (23)	08:52			09:28
	22:12	20:54	19:25	17:01	17	09:27 (23)	15:56			15:47
28	05:16	06:24	07:33	07:42		09:09 (23)	08:54			09:29
	22:10	20:51	19:22	16:59	20	09:29 (23)	15:55			15:48
29	05:18	06:27	07:35	07:44		09:09 (23)	08:56			09:29
	22:08	20:48	19:19	16:56	21	09:30 (23)	15:54			15:49
30	05:20	06:29	07:37	07:47		09:07 (23)	08:58			09:28
	22:05	20:45	19:16	16:54	23	09:30 (23)	15:53			15:50
31	05:22	06:31		07:49		09:07 (23)				09:28
	22:03	20:43		16:51	24	09:31 (23)				15:51
Potential sun hours	546	478	386	319			236			199
Total, worst case					337			219		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** AD - Buevegen 1500 (30)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February		March		April	May	June	July	August	September	October		November		December
1	09:28	08:46		09:42 (23)	07:35	08:28 (25)	07:07	05:44	04:40	04:32	05:24	06:33	07:39		07:52	09:00 (23)	09:00
	15:53	16:56	1	09:43 (23)	18:05	19 08:47 (25)	20:17	21:26	22:31	22:49	22:01	20:40	19:13		16:49	24 09:24 (23)	15:51
2	09:28	08:44		09:37 (23)	07:33	08:27 (25)	07:04	05:41	04:39	04:33	05:26	06:35	07:42		07:54	09:01 (23)	09:02
	15:54	16:59	10	09:47 (23)	18:07	20 08:47 (25)	20:19	21:28	22:32	22:48	21:59	20:37	19:10		16:46	23 09:24 (23)	15:50
3	09:27	08:41		09:36 (23)	07:30	08:27 (25)	07:01	05:39	04:37	04:34	05:29	06:38	07:44		07:56	09:01 (23)	09:04
	15:56	17:01	14	09:50 (23)	18:10	20 08:47 (25)	20:21	21:31	22:34	22:47	21:56	20:34	19:07		16:44	23 09:24 (23)	15:49
4	09:27	08:39		09:34 (23)	07:27	08:27 (25)	06:58	05:36	04:36	04:35	05:31	06:40	07:46		07:59	09:02 (23)	09:05
	15:57	17:04	17	09:51 (23)	18:12	19 08:46 (25)	20:24	21:33	22:35	22:47	21:54	20:31	19:05		16:42	22 09:24 (23)	15:48
5	09:26	08:37		09:33 (23)	07:24	08:27 (25)	06:55	05:34	04:35	04:36	05:33	06:42	07:48	09:10 (25)	08:01	09:02 (23)	09:07
	15:59	17:06	20	09:53 (23)	18:14	18 08:45 (25)	20:26	21:35	22:37	22:46	21:52	20:28	19:02	4 09:14 (25)	16:39	21 09:23 (23)	15:47
6	09:25	08:35		09:32 (23)	07:22	08:28 (25)	06:53	05:31	04:34	04:37	05:35	06:44	07:51	09:06 (25)	08:04	09:03 (23)	09:09
	16:00	17:08	21	09:53 (23)	18:17	16 08:44 (25)	20:28	21:38	22:38	22:45	21:49	20:26	18:59	12 09:18 (25)	16:37	19 09:22 (23)	15:46
7	09:25	08:32		09:31 (23)	07:19	08:29 (25)	06:50	05:29	04:33	04:39	05:37	06:47	07:53	09:05 (25)	08:06	09:05 (23)	09:10
	16:02	17:11	22	09:53 (23)	18:19	13 08:42 (25)	20:31	21:40	22:39	22:44	21:47	20:23	18:56	15 09:20 (25)	16:35	16 09:21 (23)	15:46
8	09:24	08:30		09:32 (23)	07:16	08:31 (25)	06:47	05:27	04:32	04:40	05:40	06:49	07:55	09:03 (25)	08:08	09:05 (23)	09:12
	16:04	17:13	22	09:54 (23)	18:21	8 08:39 (25)	20:33	21:42	22:41	22:43	21:44	20:20	18:53	17 09:20 (25)	16:32	14 09:19 (23)	15:45
9	09:23	08:28		09:31 (23)	07:13		06:44	05:24	04:31	04:41	05:42	06:51	07:58	09:02 (25)	08:11	09:08 (23)	09:14
	16:05	17:16	23	09:54 (23)	18:24		20:35	21:44	22:42	22:42	21:42	20:17	18:50	18 09:20 (25)	16:30	10 09:18 (23)	15:44
10	09:22	08:25		09:32 (23)	07:10		06:41	05:22	04:30	04:43	05:44	06:53	08:00	09:02 (25)	08:13		09:15
	16:07	17:18	23	09:55 (23)	18:26		20:38	21:47	22:43	22:41	21:39	20:14	18:48	19 09:21 (25)	16:28		15:44
11	09:21	08:23		09:31 (23)	07:07		06:38	05:20	04:30	04:44	05:46	06:55	08:02	09:01 (25)	08:16		09:16
	16:09	17:21	24	09:55 (23)	18:28		20:40	21:49	22:44	22:39	21:37	20:11	18:45	20 09:21 (25)	16:26		15:43
12	09:20	08:20		09:31 (23)	07:05		06:36	05:17	04:29	04:46	05:49	06:58	08:04	09:01 (25)	08:18		09:18
	16:11	17:23	23	09:54 (23)	18:31		20:42	21:51	22:45	22:38	21:34	20:08	18:42	20 09:21 (25)	16:24		15:43
13	09:19	08:18		09:31 (23)	07:02		06:33	05:15	04:28	04:47	05:51	07:00	08:07	09:01 (25)	08:20		09:19
	16:13	17:26	23	09:54 (23)	18:33		20:44	21:53	22:46	22:37	21:32	20:05	18:39	19 09:20 (25)	16:21		15:43
14	09:17	08:15		09:33 (23)	06:59		06:30	05:13	04:28	04:49	05:53	07:02	08:09	09:01 (25)	08:23		09:20
	16:15	17:28	21	09:54 (23)	18:35		20:47	21:55	22:47	22:35	21:29	20:02	18:36	18 09:19 (25)	16:19		15:42
15	09:16	08:13		09:33 (23)	06:56		06:27	05:11	04:28	04:51	05:55	07:04	08:11	09:02 (25)	08:25		09:21
	16:17	17:31	20	09:53 (23)	18:38		20:49	21:58	22:47	22:34	21:26	20:00	18:34	16 09:18 (25)	16:17		15:42
16	09:15	08:10		09:34 (23)	06:53		06:24	05:08	04:27	04:53	05:57	07:06	08:14	09:03 (25)	08:27		09:22
	16:19	17:33	17	09:51 (23)	18:40		20:51	22:00	22:48	22:32	21:24	19:57	18:31	13 09:16 (25)	16:15		15:42
17	09:13	08:08		09:36 (23)	06:50		06:22	05:06	04:27	04:54	06:00	07:09	08:16	09:05 (25)	08:30		09:23
	16:21	17:36	14	09:50 (23)	18:42		20:54	22:02	22:49	22:31	21:21	19:54	18:28	10 09:15 (25)	16:13		15:42
18	09:12	08:05		09:39 (23)	06:47		06:19	05:04	04:27	04:56	06:02	07:11	08:18		08:32		09:24
	16:23	17:38	8	09:47 (23)	18:45		20:56	22:04	22:49	22:29	21:19	19:51	18:25		16:11		15:42
19	09:10	08:02			06:44		06:16	05:02	04:27	04:58	06:04	07:13	08:21		08:34		09:25
	16:26	17:41			18:47		20:58	22:06	22:50	22:27	21:16	19:48	18:23		16:10		15:42
20	09:09	08:00			06:42		06:13	05:00	04:27	05:00	06:06	07:15	08:23		08:37		09:26
	16:28	17:43			18:49		21:01	22:08	22:50	22:25	21:13	19:45	18:20		16:08		15:43
21	09:07	07:57			06:39		06:10	04:58	04:27	05:02	06:09	07:17	08:25		08:39		09:26
	16:30	17:45			18:52		21:03	22:10	22:50	22:24	21:10	19:42	18:17		16:06		15:43
22	09:05	07:54			06:36		06:08	04:56	04:27	05:04	06:11	07:20	08:28		08:41		09:27
	16:32	17:48			18:54		21:05	22:12	22:51	22:22	21:08	19:39	18:15		16:04		15:44
23	09:04	07:52			06:33		06:05	04:54	04:27	05:06	06:13	07:22	08:30		08:43		09:27
	16:35	17:50			18:56		21:08	22:14	22:51	22:20	21:05	19:36	18:12		16:03		15:44
24	09:02	07:49		08:36 (25)	06:30		06:02	04:53	04:28	05:08	06:15	07:24	08:32	10:07 (23)	08:45		09:28
	16:37	17:53	4	08:40 (25)	18:59		21:10	22:16	22:51	22:18	21:02	19:33	18:09	11 10:18 (23)	16:01		15:45
25	09:00	07:46		08:32 (25)	06:27		06:00	04:51	04:28	05:10	06:18	07:26	07:35	09:05 (23)	08:48		09:28
	16:39	17:55	11	08:43 (25)	19:01		21:12	22:18	22:51	22:16	20:59	19:30	17:07	15 09:20 (23)	15:59		15:45
26	08:58	07:44		08:30 (25)	06:24		05:57	04:49	04:29	05:12	06:20	07:28	07:37	09:04 (23)	08:50		09:28
	16:42	17:58	15	08:45 (25)	19:03		21:14	22:20	22:51	22:14	20:57	19:28	17:04	18 09:22 (23)	15:58		15:46
27	08:56	07:41		08:29 (25)	06:21		05:54	04:47	04:29	05:14	06:22	07:31	07:40	09:02 (23)	08:52		09:28
	16:44	18:00	17	08:46 (25)	19:05		21:17	22:22	22:50	22:12	20:54	19:25	17:02	20 09:22 (23)	15:56		15:47
28	08:54	07:38		08:29 (25)	06:18		05:52	04:46	04:30	05:16	06:24	07:33	07:42	09:02 (23)	08:54		09:29
	16:46	18:02	18	08:47 (25)	19:08		21:19	22:24	22:50	22:10	20:51	19:22	16:59	21 09:23 (23)	15:55		15:48
29	08:52				07:16		05:49	04:44	04:30	05:18	06:27	07:35	07:44	09:02 (23)	08:56		09:29
	16:49				20:10		21:21	22:26	22:50	22:08	20:48	19:19	16:56	22 09:24 (23)	15:54		15:49
30	08:50				07:13		05:47	04:43	04:31	05:20	06:29	07:37	07:47	09:01 (23)	08:58		09:28
	16:51				20:12		21:24	22:27	22:49	22:05	20:45	19:16	16:54	23 09:24 (23)	15:53		15:50
31	08:48				07:10			04:41		05:22	06:31		07:49	09:01 (23)			09:28
	16:54				20:15			22:29		22:03	20:43		16:51	23 09:24 (23)			15:51
Potential sun hours	221	260			365		432	521	547	546	478	386	319		236		199
Total, worst case			388			133								354		172	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** AE - Buevegen 1498 (31)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February		March	April	May	June	July	August	September	October		November		December
1	09:28	08:46		07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:40		07:52	08:41 (23)	09:00
	15:53	16:56		18:05	20:17	21:26	22:31	22:49	22:01	20:40	19:13		16:49	8 08:49 (23)	15:51
2	09:28	08:44		07:33	07:04	05:41	04:39	04:33	05:26	06:35	07:42		07:54		09:02
	15:54	16:59		18:07	20:19	21:28	22:32	22:48	21:59	20:37	19:10		16:46		15:50
3	09:27	08:41		07:30	07:01	05:39	04:37	04:34	05:29	06:38	07:44		07:56		09:04
	15:56	17:01		18:10	20:21	21:31	22:34	22:47	21:56	20:34	19:07		16:44		15:49
4	09:27	08:39		07:27	06:58	05:36	04:36	04:35	05:31	06:40	07:46		07:59		09:05
	15:57	17:04		18:12	20:24	21:33	22:35	22:47	21:54	20:31	19:05		16:42		15:48
5	09:26	08:37		07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48		08:01		09:07
	15:59	17:06		18:14	20:26	21:35	22:37	22:46	21:52	20:28	19:02		16:39		15:47
6	09:25	08:35		07:22	06:53	05:31	04:34	04:37	05:35	06:44	07:51		08:04		09:09
	16:00	17:09		18:17	20:28	21:38	22:38	22:45	21:49	20:26	18:59		16:37		15:46
7	09:25	08:32		07:19	06:50	05:29	04:33	04:39	05:37	06:47	07:53		08:06		09:10
	16:02	17:11		18:19	20:31	21:40	22:39	22:44	21:47	20:23	18:56		16:35		15:46
8	09:24	08:30		07:16	06:47	05:27	04:32	04:40	05:40	06:49	07:55		08:08		09:12
	16:04	17:13		18:21	20:33	21:42	22:41	22:43	21:44	20:20	18:53		16:32		15:45
9	09:23	08:28		07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:58		08:11		09:14
	16:05	17:16		18:24	20:35	21:44	22:42	22:42	21:42	20:17	18:50		16:30		15:44
10	09:22	08:25	09:11 (23)	07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00		08:13		09:15
	16:07	17:18	9 09:20 (23)	18:26	20:38	21:47	22:43	22:41	21:39	20:14	18:48		16:28		15:44
11	09:21	08:23	09:09 (23)	07:07	06:38	05:20	04:30	04:44	05:46	06:55	08:02		08:16		09:16
	16:09	17:21	13 09:22 (23)	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:45		16:26		15:43
12	09:20	08:20	09:07 (23)	07:05	06:36	05:17	04:29	04:46	05:49	06:58	08:04		08:18		09:18
	16:11	17:23	16 09:23 (23)	18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42		16:24		15:43
13	09:19	08:18	09:07 (23)	07:02	06:33	05:15	04:28	04:48	05:51	07:00	08:07		08:20		09:19
	16:13	17:26	18 09:25 (23)	18:33	20:44	21:53	22:46	22:37	21:32	20:05	18:39		16:21		15:43
14	09:17	08:15	09:06 (23)	06:59	06:30	05:13	04:28	04:49	05:53	07:02	08:09		08:23		09:20
	16:15	17:28	19 09:25 (23)	18:35	20:47	21:56	22:47	22:35	21:29	20:02	18:36		16:19		15:42
15	09:16	08:13	09:05 (23)	06:56	06:27	05:11	04:28	04:51	05:55	07:04	08:11		08:25		09:21
	16:17	17:31	20 09:25 (23)	18:38	20:49	21:58	22:47	22:34	21:26	20:00	18:34		16:17		15:42
16	09:15	08:10	09:04 (23)	06:53	06:24	05:08	04:27	04:53	05:58	07:06	08:14		08:27		09:22
	16:19	17:33	21 09:25 (23)	18:40	20:51	22:00	22:48	22:32	21:24	19:57	18:31		16:15		15:42
17	09:13	08:08	09:05 (23)	06:50	06:22	05:06	04:27	04:54	06:00	07:09	08:16		08:30		09:23
	16:21	17:36	21 09:26 (23)	18:42	20:54	22:02	22:49	22:31	21:21	19:54	18:28		16:13		15:42
18	09:12	08:05	09:05 (23)	06:47	06:19	05:04	04:27	04:56	06:02	07:11	08:18	09:42 (23)	08:32		09:24
	16:23	17:38	21 09:26 (23)	18:45	20:56	22:04	22:49	22:29	21:19	19:51	18:25	7 09:49 (23)	16:11		15:42
19	09:10	08:02	09:05 (23)	06:44	06:16	05:02	04:27	04:58	06:04	07:13	08:21	09:40 (23)	08:34		09:25
	16:26	17:41	20 09:25 (23)	18:47	20:58	22:06	22:50	22:27	21:16	19:48	18:23	12 09:52 (23)	16:10		15:42
20	09:09	08:00	09:05 (23)	06:42	06:13	05:00	04:27	05:00	06:06	07:15	08:23	09:37 (23)	08:37		09:26
	16:28	17:43	19 09:24 (23)	18:49	21:01	22:08	22:50	22:26	21:13	19:45	18:20	16 09:53 (23)	16:08		15:43
21	09:07	07:57	09:06 (23)	06:39	06:11	04:58	04:27	05:02	06:09	07:17	08:25	09:37 (23)	08:39		09:26
	16:30	17:46	17 09:23 (23)	18:52	21:03	22:10	22:50	22:24	21:10	19:42	18:17	18 09:55 (23)	16:06		15:43
22	09:05	07:54	09:08 (23)	06:36	06:08	04:56	04:27	05:04	06:11	07:20	08:28	09:35 (23)	08:41		09:27
	16:32	17:48	14 09:22 (23)	18:54	21:05	22:12	22:51	22:22	21:08	19:39	18:15	20 09:55 (23)	16:04		15:44
23	09:04	07:52	09:09 (23)	06:33	06:05	04:54	04:27	05:06	06:13	07:22	08:30	09:35 (23)	08:43		09:27
	16:35	17:50	11 09:20 (23)	18:56	21:08	22:14	22:51	22:20	21:05	19:36	18:12	20 09:55 (23)	16:03		15:44
24	09:02	07:49	09:14 (23)	06:30	06:02	04:53	04:28	05:08	06:15	07:24	08:32	09:34 (23)	08:45		09:28
	16:37	17:53	1 09:15 (23)	18:59	21:10	22:16	22:51	22:18	21:02	19:33	18:09	21 09:55 (23)	16:01		15:45
25	09:00	07:46		06:27	06:00	04:51	04:28	05:10	06:18	07:26	07:35	08:34 (23)	08:48		09:28
	16:39	17:55		19:01	21:12	22:18	22:51	22:16	20:59	19:31	17:07	21 08:55 (23)	15:59		15:45
26	08:58	07:44		06:24	05:57	04:49	04:29	05:12	06:20	07:28	07:37	08:35 (23)	08:50		09:28
	16:42	17:58		19:03	21:15	22:20	22:51	22:14	20:57	19:28	17:04	21 08:56 (23)	15:58		15:46
27	08:56	07:41		06:21	05:54	04:47	04:29	05:14	06:22	07:31	07:40	08:34 (23)	08:52		09:29
	16:44	18:00		19:05	21:17	22:22	22:50	22:12	20:54	19:25	17:02	21 08:55 (23)	15:57		15:47
28	08:54	07:38		06:18	05:52	04:46	04:30	05:16	06:24	07:33	07:42	08:35 (23)	08:54		09:29
	16:46	18:02		19:08	21:19	22:24	22:50	22:10	20:51	19:22	16:59	19 08:54 (23)	15:55		15:48
29	08:52			07:16	05:49	04:44	04:30	05:18	06:27	07:35	07:44	08:36 (23)	08:56		09:29
	16:49			20:10	21:21	22:26	22:50	22:08	20:48	19:19	16:56	18 08:54 (23)	15:54		15:49
30	08:50			07:13	05:47	04:43	04:31	05:20	06:29	07:37	07:47	08:37 (23)	08:58		09:28
	16:51			20:12	21:24	22:27	22:49	22:05	20:45	19:16	16:54	15 08:52 (23)	15:53		15:50
31	08:48			07:10		04:41		05:22	06:31		07:49	08:39 (23)			09:28
	16:54			20:15		22:29		22:03	20:43		16:51	12 08:51 (23)			15:51
Potential sun hours	221	260		365	432	521	547	546	478	386	319		236		199
Total, worst case			240									241		8	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** AF - Buevegen 1496 (32)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February		March	April	May	June	July	August	September	October		November	December
1	09:28	08:46		07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:40		07:52	09:00
	15:53	16:56		18:05	20:17	21:26	22:31	22:49	22:01	20:40	19:13		16:49	15:51
2	09:28	08:44		07:33	07:04	05:41	04:39	04:33	05:26	06:35	07:42		07:54	09:02
	15:54	16:59		18:07	20:19	21:28	22:32	22:48	21:59	20:37	19:10		16:46	15:50
3	09:27	08:41		07:30	07:01	05:39	04:37	04:34	05:29	06:38	07:44		07:56	09:04
	15:56	17:01		18:10	20:21	21:31	22:34	22:47	21:56	20:34	19:07		16:44	15:49
4	09:27	08:39		07:27	06:58	05:36	04:36	04:35	05:31	06:40	07:46		07:59	09:05
	15:57	17:04		18:12	20:24	21:33	22:35	22:47	21:54	20:31	19:05		16:42	15:48
5	09:26	08:37		07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:49		08:01	09:07
	15:59	17:06		18:14	20:26	21:35	22:37	22:46	21:52	20:28	19:02		16:39	15:47
6	09:25	08:35		07:22	06:53	05:31	04:34	04:38	05:35	06:44	07:51		08:04	09:09
	16:00	17:09		18:17	20:28	21:38	22:38	22:45	21:49	20:26	18:59		16:37	15:46
7	09:25	08:32		07:19	06:50	05:29	04:33	04:39	05:37	06:47	07:53		08:06	09:10
	16:02	17:11		18:19	20:31	21:40	22:39	22:44	21:47	20:23	18:56		16:35	15:46
8	09:24	08:30		07:16	06:47	05:27	04:32	04:40	05:40	06:49	07:55		08:08	09:12
	16:04	17:13		18:21	20:33	21:42	22:41	22:43	21:44	20:20	18:53		16:32	15:45
9	09:23	08:28		07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:58		08:11	09:14
	16:05	17:16		18:24	20:35	21:44	22:42	22:42	21:42	20:17	18:50		16:30	15:44
10	09:22	08:25		07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00		08:13	09:15
	16:07	17:18		18:26	20:38	21:47	22:43	22:41	21:39	20:14	18:48		16:28	15:44
11	09:21	08:23	09:07 (23)	07:07	06:38	05:20	04:30	04:44	05:46	06:55	08:02		08:16	09:16
	16:09	17:21	7 09:14 (23)	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:45		16:26	15:43
12	09:20	08:20	09:04 (23)	07:05	06:36	05:17	04:29	04:46	05:49	06:58	08:04		08:18	09:18
	16:11	17:23	12 09:16 (23)	18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42		16:24	15:43
13	09:19	08:18	09:03 (23)	07:02	06:33	05:15	04:28	04:48	05:51	07:00	08:07		08:20	09:19
	16:13	17:26	15 09:18 (23)	18:33	20:44	21:53	22:46	22:37	21:32	20:05	18:39		16:21	15:43
14	09:17	08:15	09:02 (23)	06:59	06:30	05:13	04:28	04:49	05:53	07:02	08:09		08:23	09:20
	16:15	17:28	17 09:19 (23)	18:35	20:47	21:56	22:47	22:35	21:29	20:02	18:36		16:19	15:42
15	09:16	08:13	09:01 (23)	06:56	06:27	05:11	04:28	04:51	05:55	07:04	08:11		08:25	09:21
	16:17	17:31	19 09:20 (23)	18:38	20:49	21:58	22:47	22:34	21:26	20:00	18:34		16:17	15:42
16	09:15	08:10	09:00 (23)	06:53	06:24	05:08	04:27	04:53	05:58	07:06	08:14		08:27	09:22
	16:19	17:33	20 09:20 (23)	18:40	20:51	22:00	22:48	22:32	21:24	19:57	18:31		16:15	15:42
17	09:13	08:08	09:01 (23)	06:50	06:22	05:06	04:27	04:54	06:00	07:09	08:16		08:30	09:23
	16:21	17:36	20 09:21 (23)	18:42	20:54	22:02	22:49	22:31	21:21	19:54	18:28		16:13	15:42
18	09:12	08:05	09:00 (23)	06:47	06:19	05:04	04:27	04:56	06:02	07:11	08:18	09:36 (23)	08:32	09:24
	16:23	17:38	20 09:20 (23)	18:45	20:56	22:04	22:49	22:29	21:19	19:51	18:25	10 09:46 (23)	16:11	15:42
19	09:10	08:02	09:00 (23)	06:44	06:16	05:02	04:27	04:58	06:04	07:13	08:21	09:34 (23)	08:34	09:25
	16:26	17:41	20 09:20 (23)	18:47	20:58	22:06	22:50	22:27	21:16	19:48	18:23	14 09:48 (23)	16:10	15:42
20	09:09	08:00	09:00 (23)	06:42	06:13	05:00	04:27	05:00	06:06	07:15	08:23	09:32 (23)	08:37	09:26
	16:28	17:43	19 09:19 (23)	18:49	21:01	22:08	22:50	22:26	21:13	19:45	18:20	17 09:49 (23)	16:08	15:43
21	09:07	07:57	09:01 (23)	06:39	06:11	04:58	04:27	05:02	06:09	07:17	08:25	09:32 (23)	08:39	09:26
	16:30	17:46	17 09:18 (23)	18:52	21:03	22:10	22:50	22:24	21:10	19:42	18:17	18 09:50 (23)	16:06	15:43
22	09:05	07:55	09:02 (23)	06:36	06:08	04:56	04:27	05:04	06:11	07:20	08:28	09:30 (23)	08:41	09:27
	16:32	17:48	16 09:18 (23)	18:54	21:05	22:12	22:51	22:22	21:08	19:39	18:15	20 09:50 (23)	16:04	15:44
23	09:04	07:52	09:03 (23)	06:33	06:05	04:54	04:27	05:06	06:13	07:22	08:30	09:30 (23)	08:43	09:27
	16:35	17:50	13 09:16 (23)	18:56	21:08	22:14	22:51	22:20	21:05	19:36	18:12	20 09:50 (23)	16:03	15:44
24	09:02	07:49	09:06 (23)	06:30	06:02	04:53	04:28	05:08	06:15	07:24	08:32	09:30 (23)	08:45	09:28
	16:37	17:53	8 09:14 (23)	18:59	21:10	22:16	22:51	22:18	21:02	19:33	18:09	21 09:51 (23)	16:01	15:45
25	09:00	07:46		06:27	06:00	04:51	04:28	05:10	06:18	07:26	07:35	08:30 (23)	08:48	09:28
	16:39	17:55		19:01	21:12	22:18	22:51	22:16	20:59	19:31	17:07	20 08:50 (23)	15:59	15:45
26	08:58	07:44		06:24	05:57	04:49	04:29	05:12	06:20	07:28	07:37	08:30 (23)	08:50	09:28
	16:42	17:58		19:03	21:15	22:20	22:51	22:14	20:57	19:28	17:04	20 08:50 (23)	15:58	15:46
27	08:56	07:41		06:21	05:54	04:47	04:29	05:14	06:22	07:31	07:40	08:30 (23)	08:52	09:29
	16:44	18:00		19:05	21:17	22:22	22:50	22:12	20:54	19:25	17:02	19 08:49 (23)	15:57	15:47
28	08:54	07:38		06:18	05:52	04:46	04:30	05:16	06:24	07:33	07:42	08:31 (23)	08:54	09:29
	16:46	18:02		19:08	21:19	22:24	22:50	22:10	20:51	19:22	16:59	17 08:48 (23)	15:55	15:48
29	08:52			07:16	05:49	04:44	04:31	05:18	06:27	07:35	07:44	08:33 (23)	08:56	09:29
	16:49			20:10	21:21	22:26	22:50	22:08	20:48	19:19	16:56	15 08:48 (23)	15:54	15:49
30	08:50			07:13	05:47	04:43	04:31	05:20	06:29	07:37	07:47	08:34 (23)	08:58	09:28
	16:51			20:12	21:24	22:27	22:49	22:05	20:45	19:16	16:54	11 08:45 (23)	15:53	15:50
31	08:48			07:10		04:41		05:22	06:31		07:49	08:37 (23)		09:28
	16:54			20:15		22:29		22:03	20:43		16:51	6 08:43 (23)		15:51
Potential sun hours	221	260		365	432	521	547	546	478	386	319		236	199
Total, worst case			223									228		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** AG - Hytte, ikke ferdig bygd. Eiendom 57/3 - Bjerkreim kommune (33)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March			April			May	June
1	09:28		12:11 (33)	08:45		12:16 (33)	07:35		15:43 (8)	07:07		18:42 (18)	05:44	04:39
	15:52	49	14:26 (15)	16:56	112	15:37 (36)	18:04	25	17:06 (10)	20:16	18	19:00 (18)	21:26	22:30
2	09:27		12:12 (33)	08:43		12:17 (33)	07:32		15:46 (8)	07:04		18:43 (18)	05:41	04:38
	15:54	54	14:28 (15)	16:58	113	15:38 (36)	18:07	35	17:10 (10)	20:19	14	18:57 (18)	21:28	22:32
3	09:27		12:11 (33)	08:41		12:19 (33)	07:30		16:31 (13)	07:01		18:47 (18)	05:38	04:37
	15:55	58	14:29 (15)	17:01	110	15:38 (36)	18:09	38	17:13 (10)	20:21	8	18:55 (18)	21:30	22:33
4	09:26		12:11 (33)	08:39		12:21 (33)	07:27		16:29 (13)	06:58			05:36	04:36
	15:57	61	14:29 (15)	17:03	107	15:39 (36)	18:12	46	17:15 (10)	20:23			21:33	22:35
5	09:26		12:10 (33)	08:36		12:25 (33)	07:24		16:27 (13)	06:55			05:34	04:35
	15:58	66	14:30 (15)	17:06	99	15:39 (36)	18:14	48	17:15 (10)	20:26			21:35	22:36
6	09:25		12:10 (33)	08:34		12:59 (27)	07:21		16:25 (13)	06:52			05:31	04:34
	16:00	70	14:31 (15)	17:08	92	15:39 (36)	18:16	50	17:15 (10)	20:28			21:37	22:38
7	09:24		12:10 (33)	08:32		12:59 (27)	07:18		16:23 (13)	06:49			05:29	04:33
	16:01	73	14:32 (15)	17:11	91	15:38 (36)	18:19	52	17:15 (10)	20:30			21:39	22:39
8	09:23		12:10 (33)	08:30		12:59 (27)	07:15		16:22 (13)	06:46			05:26	04:32
	16:03	78	14:33 (15)	17:13	90	15:38 (36)	18:21	52	17:14 (10)	20:32			21:42	22:40
9	09:22		12:09 (33)	08:27		13:00 (27)	07:13		16:20 (13)	06:44			05:24	04:31
	16:05	81	14:33 (15)	17:16	88	15:38 (36)	18:23	54	17:14 (10)	20:35			21:44	22:41
10	09:21		12:09 (33)	08:25		12:59 (27)	07:10		16:19 (13)	06:41			05:21	04:30
	16:07	84	14:34 (15)	17:18	97	15:58 (8)	18:26	54	17:13 (10)	20:37			21:46	22:42
11	09:20		12:09 (33)	08:22		12:59 (27)	07:07		16:18 (13)	06:38			05:19	04:29
	16:09	87	14:34 (15)	17:20	99	16:00 (8)	18:28	54	17:12 (10)	20:39			21:48	22:44
12	09:19		12:09 (33)	08:20		13:00 (27)	07:04		16:17 (13)	06:35			05:17	04:29
	16:11	91	14:35 (15)	17:23	100	16:03 (8)	18:30	54	17:11 (10)	20:42			21:51	22:44
13	09:18		12:09 (33)	08:17		13:00 (27)	07:01		16:16 (13)	06:32			05:15	04:28
	16:13	93	14:35 (15)	17:25	95	16:04 (8)	18:33	53	17:09 (10)	20:44			21:53	22:45
14	09:17		12:09 (33)	08:15		13:01 (27)	06:58		16:16 (13)	06:29			05:12	04:28
	16:15	96	14:36 (15)	17:28	90	16:05 (8)	18:35	50	17:06 (10)	20:46			21:55	22:46
15	09:16		12:09 (33)	08:12		13:02 (27)	06:56		16:16 (13)	06:27			05:10	04:27
	16:17	99	14:37 (15)	17:30	91	16:07 (8)	18:37	46	17:02 (13)	20:49			21:57	22:47
16	09:14		12:09 (33)	08:10		13:02 (27)	06:53		16:16 (13)	06:24			05:08	04:27
	16:19	101	14:37 (15)	17:33	91	16:07 (8)	18:40	46	17:02 (13)	20:51			21:59	22:48
17	09:13		12:09 (33)	08:07		13:03 (27)	06:50		16:16 (13)	06:21			05:06	04:27
	16:21	103	14:37 (15)	17:35	91	16:08 (8)	18:42	45	17:01 (13)	20:53			22:02	22:48
18	09:11		12:09 (33)	08:05		13:03 (27)	06:47		16:15 (13)	06:18			05:04	04:27
	16:23	104	14:37 (15)	17:38	91	16:08 (8)	18:44	48	17:56 (18)	20:56			22:04	22:49
19	09:10		12:09 (33)	08:02		13:05 (27)	06:44		16:15 (13)	06:16			05:02	04:26
	16:25	105	14:37 (15)	17:40	89	16:09 (8)	18:47	57	18:01 (18)	20:58			22:06	22:49
20	09:08		12:09 (33)	07:59		13:06 (27)	06:41		16:16 (13)	06:13			05:00	04:26
	16:27	107	14:37 (15)	17:43	88	16:09 (8)	18:49	60	18:03 (18)	21:00			22:08	22:50
21	09:07		12:09 (33)	07:57		13:07 (27)	06:38		16:16 (13)	06:10			04:58	04:27
	16:30	106	14:36 (15)	17:45	84	16:08 (8)	18:51	63	18:04 (18)	21:02			22:10	22:50
22	09:05		12:10 (33)	07:54		13:08 (27)	06:35		16:16 (13)	06:07			04:56	04:27
	16:32	106	14:36 (15)	17:48	82	16:08 (8)	18:54	63	18:05 (18)	21:05			22:12	22:50
23	09:03		12:10 (33)	07:51		13:09 (27)	06:32		16:17 (13)	06:05			04:54	04:27
	16:34	105	14:36 (15)	17:50	78	16:07 (8)	18:56	63	18:05 (18)	21:07			22:14	22:50
24	09:01		12:10 (33)	07:49		13:12 (27)	06:30		16:17 (13)	06:02			04:52	04:27
	16:37	106	14:35 (15)	17:52	74	16:08 (8)	18:58	63	18:05 (18)	21:09			22:16	22:50
25	08:59		12:11 (33)	07:46		13:14 (27)	06:27		16:18 (13)	05:59			04:50	04:28
	16:39	104	15:26 (36)	17:55	68	16:07 (8)	19:00	61	18:05 (18)	21:12			22:18	22:50
26	08:58		12:11 (33)	07:43		13:16 (27)	06:24		16:20 (13)	05:57			04:49	04:28
	16:41	103	15:28 (36)	17:57	62	16:06 (8)	19:03	59	18:06 (18)	21:14			22:20	22:50
27	08:56		12:12 (33)	07:41		13:19 (27)	06:21		16:22 (13)	05:54			04:47	04:29
	16:44	108	15:31 (36)	18:00	52	16:04 (8)	19:05	55	18:06 (18)	21:16			22:22	22:50
28	08:54		12:12 (33)	07:38		13:24 (27)	06:18		16:24 (13)	05:51			04:45	04:29
	16:46	111	15:33 (36)	18:02	40	17:03 (10)	19:07	49	18:05 (18)	21:19			22:23	22:50
29	08:52		12:13 (33)				07:15		17:27 (13)	05:49			04:44	04:30
	16:48	112	15:34 (36)				20:10	42	19:04 (18)	21:21			22:25	22:49
30	08:50		12:14 (33)				07:12		17:31 (13)	05:46			04:42	04:31
	16:51	115	15:36 (36)				20:12	32	19:03 (18)	21:23			22:27	22:49
31	08:47		12:15 (33)				07:09		18:41 (18)				04:41	
	16:53	116	15:37 (36)				20:14	20	19:01 (18)				22:29	
Potential sun hours	221			260			365			432			521	547
Total, worst case		2852			2464			1537			40			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** AG - Hytte, ikke ferdig bygd. Eiendom 57/3 - Bjerkreim kommune (33)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September			October			November			December		
1	04:32	05:24	06:33			07:39		16:56 (13)	07:51		12:29 (27)	08:59		11:51 (33)
	22:48	22:01	20:39			19:13	53	17:49 (10)	16:49	96	15:27 (8)	15:51	87	14:16 (15)
2	04:33	05:26	06:35			07:41		16:57 (13)	07:53		12:29 (27)	09:01		11:52 (33)
	22:48	21:58	20:37			19:10	54	17:51 (10)	16:46	89	15:07 (36)	15:50	84	14:16 (15)
3	04:34	05:28	06:37			07:44		16:57 (13)	07:56		12:28 (27)	09:03		11:53 (33)
	22:47	21:56	20:34			19:07	54	17:51 (10)	16:44	90	15:07 (36)	15:49	82	14:17 (15)
4	04:35	05:30	06:39			07:46		16:57 (13)	07:58		12:29 (27)	09:05		11:54 (33)
	22:46	21:54	20:31			19:04	54	17:51 (10)	16:41	91	15:08 (36)	15:48	78	14:17 (15)
5	04:36	05:33	06:42			07:48		16:58 (13)	08:01		12:29 (27)	09:07		11:55 (33)
	22:45	21:51	20:28			19:01	54	17:52 (10)	16:39	92	15:09 (36)	15:47	73	14:17 (15)
6	04:37	05:35	06:44			07:50		16:59 (13)	08:03		11:55 (33)	09:08		11:56 (33)
	22:45	21:49	20:25			18:58	52	17:51 (10)	16:37	101	15:09 (36)	15:46	71	14:17 (15)
7	04:38	05:37	06:46			07:53		16:59 (13)	08:06		11:51 (33)	09:10		11:57 (33)
	22:44	21:46	20:22			18:56	51	17:50 (10)	16:34	107	15:09 (36)	15:45	66	14:17 (15)
8	04:40	05:39	06:48			07:55		17:01 (13)	08:08		11:49 (33)	09:12		11:58 (33)
	22:43	21:44	20:19			18:53	49	17:50 (10)	16:32	112	15:09 (36)	15:44	62	14:17 (15)
9	04:41	05:41	06:51		18:41 (18)	07:57		17:02 (13)	08:10		11:48 (33)	09:13		11:59 (33)
	22:41	21:41	20:16	6	18:47 (18)	18:50	47	17:49 (10)	16:30	113	15:09 (36)	15:44	58	14:17 (15)
10	04:42	05:44	06:53		18:37 (18)	07:59		17:04 (13)	08:13		11:46 (33)	09:15		12:01 (33)
	22:40	21:39	20:14	13	18:50 (18)	18:47	43	17:48 (10)	16:27	115	15:08 (36)	15:43	54	14:17 (15)
11	04:44	05:46	06:55		18:35 (18)	08:02		16:24 (8)	08:15		11:46 (33)	09:16		12:01 (33)
	22:39	21:36	20:11	18	18:53 (18)	18:44	37	17:46 (10)	16:25	114	15:08 (36)	15:43	50	14:17 (15)
12	04:45	05:48	06:57		18:33 (18)	08:04		16:18 (8)	08:17		11:46 (33)	09:17		12:03 (33)
	22:38	21:34	20:08	21	18:54 (18)	18:42	26	17:42 (10)	16:23	114	15:08 (36)	15:42	46	14:17 (15)
13	04:47	05:50	06:59		17:24 (13)	08:06		14:04 (27)	08:20		11:44 (33)	09:19		12:04 (33)
	22:36	21:31	20:05	27	18:54 (18)	18:39	30	17:38 (10)	16:21	113	15:06 (36)	15:42	41	14:17 (15)
14	04:49	05:53	07:02		17:18 (13)	08:09		13:55 (27)	08:22		11:44 (33)	09:20		12:06 (33)
	22:35	21:29	20:02	41	18:54 (18)	18:36	44	16:36 (8)	16:19	111	15:05 (36)	15:42	37	14:17 (15)
15	04:50	05:55	07:04		17:14 (13)	08:11		13:50 (27)	08:25		11:44 (33)	09:21		12:08 (33)
	22:33	21:26	19:59	48	18:54 (18)	18:33	57	16:37 (8)	16:17	108	15:03 (36)	15:42	31	14:17 (15)
16	04:52	05:57	07:06		17:11 (13)	08:13		13:47 (27)	08:27		11:45 (33)	09:22		13:08 (27)
	22:32	21:23	19:56	54	18:54 (18)	18:30	64	16:38 (8)	16:15	103	15:02 (36)	15:42	23	14:16 (15)
17	04:54	05:59	07:08		17:08 (13)	08:16		13:44 (27)	08:29		11:44 (33)	09:23		13:09 (27)
	22:30	21:21	19:53	58	18:54 (18)	18:28	70	16:38 (8)	16:13	104	14:59 (36)	15:42	21	14:16 (15)
18	04:56	06:02	07:10		17:07 (13)	08:18		13:42 (27)	08:32		11:44 (33)	09:24		13:11 (27)
	22:29	21:18	19:50	61	18:54 (18)	18:25	76	16:39 (8)	16:11	106	14:09 (15)	15:42	19	14:15 (15)
19	04:58	06:04	07:12		17:05 (13)	08:20		13:39 (27)	08:34		11:45 (33)	09:25		13:12 (27)
	22:27	21:15	19:47	62	18:53 (18)	18:22	81	16:39 (8)	16:09	105	14:11 (15)	15:42	18	14:16 (15)
20	04:59	06:06	07:15		17:04 (13)	08:23		13:38 (27)	08:36		11:45 (33)	09:25		13:13 (27)
	22:25	21:13	19:45	63	18:52 (18)	18:20	83	16:39 (8)	16:07	106	14:11 (15)	15:42	16	14:15 (15)
21	05:01	06:08	07:17		17:02 (13)	08:25		13:36 (27)	08:38		11:45 (33)	09:26		13:15 (27)
	22:23	21:10	19:42	64	18:51 (18)	18:17	86	16:38 (8)	16:06	107	14:13 (15)	15:43	14	14:16 (15)
22	05:03	06:11	07:19		17:01 (13)	08:27		13:35 (27)	08:41		11:45 (33)	09:26		13:16 (27)
	22:21	21:07	19:39	63	18:49 (18)	18:14	89	16:39 (8)	16:04	107	14:13 (15)	15:43	14	14:17 (15)
23	05:05	06:13	07:21		16:59 (13)	08:30		13:34 (27)	08:43		11:46 (33)	09:27		13:15 (27)
	22:19	21:05	19:36	62	18:47 (18)	18:12	89	16:38 (8)	16:02	105	14:14 (15)	15:44	15	14:17 (15)
24	05:07	06:15	07:24		16:59 (13)	08:32		13:33 (27)	08:45		11:46 (33)	09:27		13:15 (27)
	22:18	21:02	19:33	59	18:46 (18)	18:09	92	16:38 (8)	16:01	104	14:14 (15)	15:44	16	14:17 (15)
25	05:09	06:17	07:26		16:58 (13)	07:34		12:33 (27)	08:47		11:47 (33)	09:28		13:14 (27)
	22:16	20:59	19:30	54	18:42 (18)	17:06	92	15:38 (8)	15:59	102	14:15 (15)	15:45	18	14:18 (15)
26	05:11	06:19	07:28		16:58 (13)	07:37		12:31 (27)	08:49		11:47 (33)	09:28		13:13 (27)
	22:14	20:56	19:27	45	17:43 (13)	17:04	92	15:36 (8)	15:58	101	14:15 (15)	15:46	21	14:19 (15)
27	05:13	06:22	07:30		16:57 (13)	07:39		12:31 (27)	08:51		11:48 (33)	09:28		13:13 (27)
	22:11	20:53	19:24	46	17:43 (13)	17:01	91	15:36 (8)	15:56	99	14:16 (15)	15:47	22	14:20 (15)
28	05:15	06:24	07:32		16:57 (13)	07:41		12:30 (27)	08:53		11:48 (33)	09:28		12:15 (33)
	22:09	20:51	19:21	46	17:43 (13)	16:59	90	15:34 (8)	15:55	97	14:16 (15)	15:48	27	14:22 (15)
29	05:17	06:26	07:35		16:57 (13)	07:44		12:30 (27)	08:55		11:50 (33)	09:28		12:13 (33)
	22:07	20:48	19:19	48	17:45 (10)	16:56	96	15:33 (8)	15:53	94	14:16 (15)	15:49	36	14:24 (15)
30	05:20	06:28	07:37		16:56 (13)	07:46		12:30 (27)	08:57		11:50 (33)	09:28		12:13 (33)
	22:05	20:45	19:16	52	17:48 (10)	16:53	99	15:32 (8)	15:52	91	14:16 (15)	15:50	41	14:25 (15)
31	05:22	06:31				07:49		12:29 (27)				09:28		12:12 (33)
	22:03	20:42				16:51	99	15:29 (8)				15:51	45	14:26 (15)
Potential sun hours	546	478	386			319			236			199		
Total, worst case				1011			2094			3097			1286	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** AH - Brusalivegen 201 (34)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	09:28	08:46	07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:39	07:51	09:00
	15:53	16:56	18:05	20:17	21:26	22:30	22:48	22:01	20:40	19:13	16:49	15:52
2	09:27	08:43	07:33	07:04	05:42	04:39	04:33	05:27	06:35	07:42	07:54	09:01
	15:54	16:59	18:07	20:19	21:28	22:32	22:48	21:58	20:37	19:10	16:47	15:50
3	09:27	08:41	07:30	07:01	05:39	04:38	04:34	05:29	06:38	07:44	07:56	09:03
	15:56	17:01	18:10	20:21	21:30	22:33	22:47	21:56	20:34	19:07	16:44	15:49
4	09:26	08:39	07:27	06:58	05:36	04:36	04:35	05:31	06:40	07:46	07:59	09:05
	15:57	17:04	18:12	20:24	21:33	22:35	22:46	21:54	20:31	19:05	16:42	15:48
5	09:26	08:37	07:24	06:55	05:34	04:35	04:37	05:33	06:42	07:48	08:01	09:07
	15:59	17:06	18:14	20:26	21:35	22:36	22:45	21:51	20:28	19:02	16:39	15:47
6	09:25	08:34	07:21	06:53	05:32	04:34	04:38	05:35	06:44	07:51	08:03	09:08
	16:00	17:09	18:17	20:28	21:37	22:38	22:45	21:49	20:25	18:59	16:37	15:47
7	09:24	08:32	07:19	06:50	05:29	04:33	04:39	05:38	06:47	07:53	08:06	09:10
	16:02	17:11	18:19	20:30	21:40	22:39	22:44	21:47	20:23	18:56	16:35	15:46
8	09:23	08:30	07:16	06:47	05:27	04:32	04:40	05:40	06:49	07:55	08:08	09:12
	16:04	17:14	18:21	20:33	21:42	22:40	22:43	21:44	20:20	18:53	16:32	15:45
9	09:23	08:27	07:13	06:44	05:24	04:31	04:42	05:42	06:51	07:57	08:11	09:13
	16:06	17:16	18:24	20:35	21:44	22:41	22:41	21:42	20:17	18:50	16:30	15:44
10	09:22	08:25	07:10	06:41	05:22	04:31	04:43	05:44	06:53	08:00	08:13	09:15
	16:07	17:18	18:26	20:37	21:46	22:43	22:40	21:39	20:14	18:48	16:28	15:44
11	09:21	08:23	07:07	06:38	05:20	04:30	04:45	05:46	06:55	08:02	08:15	09:16
	16:09	17:21	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:45	16:26	15:43
12	09:19	08:20	07:04	06:36	05:17	04:29	04:46	05:49	06:58	08:04	08:18	09:17
	16:11	17:23	18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42	16:24	15:43
13	09:18	08:18	07:02	06:33	05:15	04:29	04:48	05:51	07:00	08:07	08:20	09:19
	16:13	17:26	18:33	20:44	21:53	22:45	22:36	21:31	20:05	18:39	16:22	15:43
14	09:17	08:15	06:59	06:30	05:13	04:28	04:49	05:53	07:02	08:09	08:22	09:20
	16:15	17:28	18:35	20:47	21:55	22:46	22:35	21:29	20:02	18:36	16:19	15:43
15	09:16	08:13	06:56	06:27	05:11	04:28	04:51	05:55	07:04	08:11	08:25	09:21
	16:17	17:31	18:38	20:49	21:57	22:47	22:33	21:26	19:59	18:34	16:17	15:42
16	09:14	08:10	06:53	06:24	05:09	04:28	04:53	05:58	07:06	08:13	08:27	09:22
	16:19	17:33	18:40	20:51	22:00	22:48	22:32	21:24	19:57	18:31	16:15	15:42
17	09:13	08:07	06:50	06:22	05:06	04:27	04:54	06:00	07:08	08:16	08:29	09:23
	16:21	17:36	18:42	20:53	22:02	22:48	22:30	21:21	19:54	18:28	16:13	15:42
18	09:12	08:05	06:47	06:19	05:04	04:27	04:56	06:02	07:11	08:18	08:32	09:24
	16:24	17:38	18:45	20:56	22:04	22:49	22:29	21:18	19:51	18:25	16:12	15:42
19	09:10	08:02	06:44	06:16	05:02	04:27	04:58	06:04	07:13	08:20	08:34	09:25
	16:26	17:41	18:47	20:58	22:06	22:49	22:27	21:16	19:48	18:23	16:10	15:43
20	09:08	08:00	06:42	06:13	05:00	04:27	05:00	06:07	07:15	08:23	08:36	09:25
	16:28	17:43	18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20	16:08	15:43
21	09:07	07:57	06:39	06:11	04:58	04:27	05:02	06:09	07:17	08:25	08:39	09:26
	16:30	17:46	18:52	21:03	22:10	22:50	22:23	21:10	19:42	18:17	16:06	15:43
22	09:05	07:54	06:36	06:08	04:56	04:27	05:04	06:11	07:19	08:27	08:41	09:27
	16:32	17:48	18:54	21:05	22:12	22:50	22:22	21:08	19:39	18:15	16:04	15:44
23	09:03	07:52	06:33	06:05	04:55	04:28	05:06	06:13	07:22	08:30	08:43	09:27
	16:35	17:50	18:56	21:07	22:14	22:50	22:20	21:05	19:36	18:12	16:03	15:44
24	09:01	07:49	06:30	06:02	04:53	04:28	05:08	06:15	07:24	08:32	08:45	09:27
	16:37	17:53	18:58	21:10	22:16	22:50	22:18	21:02	19:33	18:09	16:01	15:45
25	09:00	07:46	06:27	06:00	04:51	04:28	05:10	06:18	07:26	07:35	08:47	09:28
	16:39	17:55	19:01	21:12	22:18	22:50	22:16	20:59	19:30	17:07	16:00	15:46
26	08:58	07:44	06:24	05:57	04:49	04:29	05:12	06:20	07:28	07:37	08:49	09:28
	16:42	17:58	19:03	21:14	22:20	22:50	22:14	20:57	19:28	17:04	15:58	15:46
27	08:56	07:41	06:21	05:54	04:48	04:29	05:14	06:22	07:31	07:39	08:52	09:28
	16:44	18:00	19:05	21:17	22:22	22:50	22:12	20:54	19:25	17:02	15:57	15:47
28	08:54	07:38	06:18	05:52	04:46	04:30	05:16	06:24	07:33	07:42	08:54	09:28
	16:47	18:02	19:08	21:19	22:23	22:50	22:09	20:51	19:22	16:59	15:55	15:48
29	08:52		07:16	05:49	04:44	04:31	05:18	06:27	07:35	07:44	08:56	09:28
	16:49		20:10	21:21	22:25	22:49	22:07	20:48	19:19	16:56	15:54	15:49
30	08:50		07:13	05:47	04:43	04:32	05:20	06:29	07:37	07:47	08:58	09:28
	16:51		20:12	21:24	22:27	22:49	22:05	20:45	19:16	16:54	15:53	15:50
31	08:48		07:10		04:41		05:22	06:31		07:49		09:28
	16:54		20:14		22:29		22:03	20:43		16:51		15:51
Potential sun hours	222	260	365	432	521	547	545	478	386	319	236	200
Total, worst case												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** AI - Vaule 218 (35)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January		February		March	April	May	June	July	August	September	October		November		December
1	09:28		08:45	13:54 (27)	07:35	07:06	05:44	04:39	04:32	05:24	06:33	07:39		07:51	14:47 (13)	08:59
	15:52		16:56 18	14:12 (27)	18:04	20:16	21:26	22:30	22:48	22:01	20:39	19:13		16:48 19	15:06 (13)	15:51
2	09:27		08:43	13:56 (27)	07:32	07:04	05:41	04:38	04:33	05:26	06:35	07:41		07:53	14:48 (13)	09:01
	15:54		16:58 16	14:12 (27)	18:07	20:19	21:28	22:32	22:48	21:58	20:37	19:10		16:46 17	15:05 (13)	15:50
3	09:27		08:41	13:58 (27)	07:29	07:01	05:38	04:37	04:34	05:28	06:37	07:44		07:56	14:48 (13)	09:03
	15:55		17:01 11	14:09 (27)	18:09	20:21	21:30	22:33	22:47	21:56	20:34	19:07		16:44 16	15:04 (13)	15:49
4	09:26		08:39		07:27	06:58	05:36	04:36	04:35	05:30	06:39	07:46		07:58	14:50 (13)	09:05
	15:57		17:03		18:12	20:23	21:33	22:35	22:46	21:54	20:31	19:04		16:41 12	15:02 (13)	15:48
5	09:26		08:37		07:24	06:55	05:33	04:34	04:36	05:33	06:42	07:48		08:01	14:54 (13)	09:07
	15:58		17:06		18:14	20:26	21:35	22:36	22:45	21:51	20:28	19:01		16:39 5	14:59 (13)	15:47
6	09:25		08:34	15:24 (13)	07:21	06:52	05:31	04:33	04:37	05:35	06:44	07:50		08:03		09:08
	16:00		17:08 6	15:30 (13)	18:16	20:28	21:37	22:38	22:45	21:49	20:25	18:58		16:36		15:46
7	09:24		08:32	15:21 (13)	07:18	06:49	05:29	04:32	04:38	05:37	06:46	07:53		08:06	13:33 (27)	09:10
	16:01		17:11 12	15:33 (13)	18:19	20:30	21:39	22:39	22:44	21:46	20:22	18:56		16:34 3	13:36 (27)	15:45
8	09:23		08:30	15:19 (13)	07:15	06:46	05:26	04:31	04:40	05:39	06:48	07:55		08:08	13:29 (27)	09:12
	16:03		17:13 15	15:34 (13)	18:21	20:32	21:42	22:40	22:43	21:44	20:19	18:53		16:32 11	13:40 (27)	15:44
9	09:23		08:27	15:18 (13)	07:13	06:44	05:24	04:31	04:41	05:41	06:50	07:57		08:10	13:27 (27)	09:13
	16:05		17:15 18	15:36 (13)	18:23	20:35	21:44	22:41	22:41	21:41	20:16	18:50		16:30 15	13:42 (27)	15:44
10	09:22		08:25	15:17 (13)	07:10	06:41	05:21	04:30	04:42	05:44	06:53	07:59		08:13	13:25 (27)	09:15
	16:07		17:18 20	15:37 (13)	18:26	20:37	21:46	22:43	22:40	21:39	20:14	18:47		16:27 18	13:43 (27)	15:43
11	09:20		08:22	15:16 (13)	07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02		08:15	13:24 (27)	09:16
	16:09		17:20 21	15:37 (13)	18:28	20:39	21:48	22:44	22:39	21:36	20:11	18:44		16:25 21	13:45 (27)	15:43
12	09:19	13:53 (27)	08:20	15:17 (13)	07:04	06:35	05:17	04:29	04:45	05:48	06:57	08:04		08:17	13:24 (27)	09:17
	16:10 2	13:55 (27)	17:23 21	15:38 (13)	18:30	20:42	21:51	22:45	22:38	21:34	20:08	18:41		16:23 22	13:46 (27)	15:42
13	09:18	13:53 (27)	08:17	15:16 (13)	07:01	06:32	05:15	04:28	04:47	05:50	06:59	08:06		08:20	13:23 (27)	09:19
	16:12 5	13:58 (27)	17:25 22	15:38 (13)	18:33	20:44	21:53	22:45	22:36	21:31	20:05	18:39		16:21 23	13:46 (27)	15:42
14	09:17	13:51 (27)	08:15	15:16 (13)	06:58	06:29	05:12	04:27	04:49	05:53	07:01	08:09		08:22	13:23 (27)	09:20
	16:14 8	13:59 (27)	17:28 22	15:38 (13)	18:35	20:46	21:55	22:46	22:35	21:29	20:02	18:36		16:19 24	13:47 (27)	15:42
15	09:16	13:50 (27)	08:12	15:17 (13)	06:56	06:27	05:10	04:27	04:50	05:55	07:04	08:11		08:25	11:08 (38)	09:21
	16:17 13	14:03 (27)	17:30 21	15:38 (13)	18:37	20:49	21:57	22:47	22:33	21:26	19:59	18:33		16:17 31	13:47 (27)	15:42
16	09:14	13:49 (27)	08:10	15:17 (13)	06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13		08:27	11:06 (38)	09:22
	16:19 19	14:08 (27)	17:33 21	15:38 (13)	18:40	20:51	21:59	22:48	22:32	21:23	19:56	18:30		16:15 37	13:48 (27)	15:42
17	09:13	11:39 (38)	08:07	15:17 (13)	06:50	06:21	05:06	04:27	04:54	05:59	07:08	08:16		08:29	11:05 (38)	09:23
	16:21 27	14:10 (27)	17:35 20	15:37 (13)	18:42	20:53	22:02	22:48	22:30	21:21	19:53	18:28		16:13 39	13:48 (27)	15:42
18	09:11	11:35 (38)	08:05	15:17 (13)	06:47	06:18	05:04	04:26	04:56	06:01	07:10	08:18		08:32	11:04 (38)	09:24
	16:23 33	14:11 (27)	17:38 19	15:36 (13)	18:44	20:56	22:04	22:49	22:29	21:18	19:50	18:25		16:11 42	13:48 (27)	15:42
19	09:10	11:32 (38)	08:02	15:19 (13)	06:44	06:16	05:02	04:26	04:57	06:04	07:12	08:20		08:34	11:04 (38)	09:25
	16:25 36	14:11 (27)	17:40 17	15:36 (13)	18:47	20:58	22:06	22:49	22:27	21:15	19:47	18:22		16:09 43	13:49 (27)	15:42
20	09:08	11:28 (38)	07:59	15:21 (13)	06:41	06:13	05:00	04:26	04:59	06:06	07:15	08:23		08:36	11:03 (38)	09:25
	16:27 43	14:12 (27)	17:43 13	15:34 (13)	18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:19		16:07 43	13:48 (27)	15:42
21	09:07	11:27 (38)	07:57	15:24 (13)	06:38	06:10	04:58	04:26	05:01	06:08	07:17	08:25	15:53 (13)	08:38	11:03 (38)	09:26
	16:30 44	14:13 (27)	17:45 6	15:30 (13)	18:51	21:02	22:10	22:50	22:23	21:10	19:42	18:17 9	16:02 (13)	16:06 44	13:49 (27)	15:43
22	09:05	11:28 (38)	07:54		06:35	06:07	04:56	04:27	05:03	06:10	07:19	08:27	15:51 (13)	08:41	11:04 (38)	09:27
	16:32 43	14:13 (27)	17:47		18:53	21:05	22:12	22:50	22:21	21:07	19:39	18:14 13	16:04 (13)	16:04 43	13:48 (27)	15:43
23	09:03	11:29 (38)	07:51		06:32	06:05	04:54	04:27	05:05	06:13	07:21	08:30	15:48 (13)	08:43	11:09 (38)	09:27
	16:34 43	14:14 (27)	17:50		18:56	21:07	22:14	22:50	22:20	21:05	19:36	18:11 17	16:05 (13)	16:02 36	13:48 (27)	15:44
24	09:01	11:30 (38)	07:49		06:30	06:02	04:52	04:27	05:07	06:15	07:23	08:32	15:47 (13)	08:45	11:13 (38)	09:27
	16:36 42	14:14 (27)	17:52		18:58	21:09	22:16	22:50	22:18	21:02	19:33	18:09 19	16:06 (13)	16:01 33	13:49 (27)	15:44
25	08:59	11:32 (38)	07:46		06:27	05:59	04:50	04:28	05:09	06:17	07:26	07:34	14:47 (13)	08:47	11:17 (38)	09:28
	16:39 39	14:15 (27)	17:55		19:00	21:12	22:18	22:50	22:16	20:59	19:30	17:06 20	15:07 (13)	15:59 27	13:48 (27)	15:45
26	08:58	11:33 (38)	07:43		06:24	05:57	04:49	04:28	05:11	06:19	07:28	07:37	14:46 (13)	08:49	13:28 (27)	09:28
	16:41 36	14:14 (27)	17:57		19:03	21:14	22:20	22:50	22:14	20:56	19:27	17:04 21	15:07 (13)	15:57 20	13:48 (27)	15:46
27	08:56	11:36 (38)	07:41		06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39	14:46 (13)	08:51	13:29 (27)	09:28
	16:44 30	14:14 (27)	18:00		19:05	21:16	22:22	22:50	22:11	20:53	19:24	17:01 22	15:08 (13)	15:56 13	13:42 (27)	15:47
28	08:54	13:51 (27)	07:38		06:18	05:51	04:45	04:29	05:15	06:24	07:32	07:41	14:45 (13)	08:53	13:30 (27)	09:28
	16:46 24	14:15 (27)	18:02		19:07	21:19	22:23	22:50	22:09	20:51	19:21	16:58 22	15:07 (13)	15:55 9	13:39 (27)	15:47
29	08:52	13:51 (27)			07:15	05:49	04:44	04:30	05:17	06:26	07:35	07:44	14:45 (13)	08:55	13:34 (27)	09:28
	16:48 23	14:14 (27)			20:10	21:21	22:25	22:49	22:07	20:48	19:18	16:56 22	15:07 (13)	15:53 5	13:39 (27)	15:49
30	08:50	13:52 (27)			07:12	05:46	04:42	04:31	05:20	06:28	07:37	07:46	14:46 (13)	08:57	13:34 (27)	09:28
	16:51 22	14:14 (27)			20:12	21:23	22:27	22:49	22:05	20:45	19:16	16:53 21	15:07 (13)	15:52 2	13:36 (27)	15:50
31	08:48	13:54 (27)			07:09		04:41		05:22	06:31		07:49	14:46 (13)			09:28
	16:53 20	14:14 (27)			20:14		22:29		22:03	20:42		16:51 20	15:06 (13)			15:51
Potential sun hours	221		260		365	432	521	547	546	478	386	319		236		199
Total, worst case		552		319									206		673	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Licensed user:
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Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** AJ - Heiavegen 543 (36)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February	March	April	May	June		July		August	September	October	November	December
1	09:27	08:45	07:35	07:06	05:44	04:40		04:32		20:43 (2)	05:24	06:33	07:39	07:51	08:59
	15:53	16:56	18:04	20:16	21:25	22:30		22:48	2	20:45 (2)	22:00	20:39	19:13	16:49	15:51
2	09:27	08:43	07:32	07:04	05:41	04:38		04:33		20:44 (2)	05:26	06:35	07:41	07:53	09:01
	15:54	16:58	18:07	20:19	21:28	22:31		22:47	1	20:45 (2)	21:58	20:36	19:10	16:46	15:50
3	09:26	08:41	07:29	07:01	05:39	04:37		04:34		20:44 (2)	05:28	06:37	07:43	07:56	09:03
	15:55	17:01	18:09	20:21	21:30	22:33		22:47	1	20:45 (2)	21:56	20:33	19:07	16:44	15:49
4	09:26	08:38	07:27	06:58	05:36	04:36		04:35			05:30	06:39	07:46	07:58	09:05
	15:57	17:03	18:11	20:23	21:32	22:34		22:46			21:53	20:31	19:04	16:41	15:48
5	09:25	08:36	07:24	06:55	05:34	04:35		04:36			05:33	06:42	07:48	08:00	09:06
	15:58	17:06	18:14	20:25	21:35	22:36		22:45			21:51	20:28	19:01	16:39	15:47
6	09:25	08:34	07:21	06:52	05:31	04:34		04:37			05:35	06:44	07:50	08:03	09:08
	16:00	17:08	18:16	20:28	21:37	22:37		22:44			21:48	20:25	18:58	16:37	15:46
7	09:24	08:32	07:18	06:49	05:29	04:33		04:39			05:37	06:46	07:52	08:05	09:10
	16:02	17:11	18:19	20:30	21:39	22:38		22:43			21:46	20:22	18:56	16:34	15:45
8	09:23	08:29	07:15	06:46	05:26	04:32		04:40			05:39	06:48	07:55	08:08	09:11
	16:03	17:13	18:21	20:32	21:41	22:40		22:42			21:44	20:19	18:53	16:32	15:45
9	09:22	08:27	07:12	06:44	05:24	04:31		04:41			05:41	06:50	07:57	08:10	09:13
	16:05	17:16	18:23	20:35	21:44	22:41		22:41			21:41	20:16	18:50	16:30	15:44
10	09:21	08:24	07:10	06:41	05:22	04:30		04:43			05:44	06:53	07:59	08:12	09:14
	16:07	17:18	18:26	20:37	21:46	22:42		22:40			21:39	20:13	18:47	16:27	15:43
11	09:20	08:22	07:07	06:38	05:19	04:29	20:39 (2)	04:44			05:46	06:55	08:01	08:15	09:16
	16:09	17:20	18:28	20:39	21:48	22:43	1 20:40 (2)	22:39			21:36	20:11	18:44	16:25	15:43
12	09:19	08:20	07:04	06:35	05:17	04:29	20:40 (2)	04:46			05:48	06:57	08:04	08:17	09:17
	16:11	17:23	18:30	20:41	21:50	22:44	1 20:41 (2)	22:37			21:34	20:08	18:41	16:23	15:43
13	09:18	08:17	07:01	06:32	05:15	04:28	20:39 (2)	04:47			05:50	06:59	08:06	08:20	09:18
	16:13	17:25	18:33	20:44	21:53	22:45	2 20:41 (2)	22:36			21:31	20:05	18:39	16:21	15:42
14	09:17	08:15	06:58	06:29	05:12	04:28	20:40 (2)	04:49			05:53	07:01	08:08	08:22	09:19
	16:15	17:28	18:35	20:46	21:55	22:46	2 20:42 (2)	22:34			21:28	20:02	18:36	16:19	15:42
15	09:15	08:12	06:55	06:27	05:10	04:27	20:40 (2)	04:51			05:55	07:04	08:11	08:24	09:20
	16:17	17:30	18:37	20:48	21:57	22:47	2 20:42 (2)	22:33			21:26	19:59	18:33	16:17	15:42
16	09:14	08:10	06:53	06:24	05:08	04:27	20:40 (2)	04:52			05:57	07:06	08:13	08:27	09:21
	16:19	17:33	18:40	20:51	21:59	22:47	3 20:43 (2)	22:31			21:23	19:56	18:30	16:15	15:42
17	09:12	08:07	06:50	06:21	05:06	04:27	20:40 (2)	04:54			05:59	07:08	08:15	08:29	09:22
	16:21	17:35	18:42	20:53	22:01	22:48	4 20:44 (2)	22:30			21:20	19:53	18:28	16:13	15:42
18	09:11	08:04	06:47	06:18	05:04	04:27	20:41 (2)	04:56			06:02	07:10	08:18	08:31	09:23
	16:23	17:38	18:44	20:55	22:03	22:48	3 20:44 (2)	22:28			21:18	19:50	18:25	16:11	15:42
19	09:09	08:02	06:44	06:16	05:02	04:27	20:41 (2)	04:58			06:04	07:12	08:20	08:33	09:24
	16:25	17:40	18:46	20:58	22:05	22:49	3 20:44 (2)	22:26			21:15	19:47	18:22	16:09	15:42
20	09:08	07:59	06:41	06:13	05:00	04:27	20:41 (2)	05:00			06:06	07:15	08:22	08:36	09:25
	16:27	17:43	18:49	21:00	22:07	22:49	3 20:44 (2)	22:25			21:12	19:44	18:20	16:07	15:43
21	09:06	07:56	06:38	06:10	04:58	04:27	20:41 (2)	05:01			06:08	07:17	08:25	08:38	09:25
	16:30	17:45	18:51	21:02	22:10	22:49	3 20:44 (2)	22:23			21:10	19:42	18:17	16:06	15:43
22	09:05	07:54	06:35	06:07	04:56	04:27	20:41 (2)	05:03			06:11	07:19	08:27	08:40	09:26
	16:32	17:47	18:53	21:05	22:12	22:50	3 20:44 (2)	22:21			21:07	19:39	18:14	16:04	15:43
23	09:03	07:51	06:32	06:05	04:54	04:27	20:42 (2)	05:05			06:13	07:21	08:29	08:42	09:27
	16:34	17:50	18:56	21:07	22:14	22:50	3 20:45 (2)	22:19			21:04	19:36	18:12	16:02	15:44
24	09:01	07:48	06:29	06:02	04:52	04:27	20:42 (2)	05:07			06:15	07:23	08:32	08:45	09:27
	16:37	17:52	18:58	21:09	22:15	22:50	3 20:45 (2)	22:17			21:02	19:33	18:09	16:01	15:44
25	08:59	07:46	06:27	05:59	04:51	04:28	20:42 (2)	05:09			06:17	07:26	07:34	08:47	09:27
	16:39	17:55	19:00	21:11	22:17	22:50	3 20:45 (2)	22:15			20:59	19:30	17:06	15:59	15:45
26	08:57	07:43	06:24	05:57	04:49	04:28	20:42 (2)	05:11			06:19	07:28	07:36	08:49	09:27
	16:41	17:57	19:03	21:14	22:19	22:50	3 20:45 (2)	22:13			20:56	19:27	17:04	15:58	15:46
27	08:55	07:40	06:21	05:54	04:47	04:29	20:42 (2)	05:13			06:22	07:30	07:39	08:51	09:28
	16:44	18:00	19:05	21:16	22:21	22:49	3 20:45 (2)	22:11			20:53	19:24	17:01	15:56	15:47
28	08:53	07:38	06:18	05:51	04:46	04:30	20:43 (2)	05:15			06:24	07:32	07:41	08:53	09:28
	16:46	18:02	19:07	21:18	22:23	22:49	2 20:45 (2)	22:09			20:50	19:21	16:59	15:55	15:48
29	08:51		07:15	05:49	04:44	04:30	20:43 (2)	05:18			06:26	07:34	07:44	08:55	09:28
	16:49		20:09	21:21	22:25	22:49	2 20:45 (2)	22:07			20:48	19:18	16:56	15:54	15:49
30	08:49		07:12	05:46	04:42	04:31	20:43 (2)	05:20			06:28	07:37	07:46	08:57	09:28
	16:51		20:12	21:23	22:26	22:48	2 20:45 (2)	22:05			20:45	19:16	16:53	15:52	15:50
31	08:47		07:09		04:41			05:22			06:31		07:48		09:27
	16:53		20:14		22:28			22:02			20:42		16:51		15:51
Potential sun hours	222	260	365	432	521	547		545			478	386	319	236	200
Total, worst case							51		4						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** AK - Heiavegen 541 (37)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February	March	April	May		June		July		August	September	October	November	December
1	09:27	08:45	07:35	07:06	05:44		04:40		20:27 (2)	04:32	20:32 (2)	05:24	06:33	07:39	07:51	08:59
	15:53	16:56	18:04	20:16	21:25		22:30	9	20:36 (2)	22:48	17 20:49 (2)	22:00	20:39	19:13	16:49	15:51
2	09:27	08:43	07:32	07:04	05:41		04:38		20:27 (2)	04:33	20:32 (2)	05:26	06:35	07:41	07:53	09:01
	15:54	16:58	18:07	20:19	21:28		22:31	11	20:38 (2)	22:47	16 20:48 (2)	21:58	20:36	19:10	16:46	15:50
3	09:26	08:41	07:29	07:01	05:39		04:37		20:27 (2)	04:34	20:33 (2)	05:28	06:37	07:43	07:56	09:03
	15:55	17:01	18:09	20:21	21:30		22:33	12	20:39 (2)	22:47	15 20:48 (2)	21:56	20:33	19:07	16:44	15:49
4	09:26	08:38	07:27	06:58	05:36		04:36		20:27 (2)	04:35	20:33 (2)	05:30	06:39	07:46	07:58	09:05
	15:57	17:03	18:11	20:23	21:32		22:34	12	20:39 (2)	22:46	14 20:47 (2)	21:53	20:31	19:04	16:41	15:48
5	09:25	08:36	07:24	06:55	05:34		04:35		20:27 (2)	04:36	20:33 (2)	05:33	06:42	07:48	08:00	09:06
	15:58	17:06	18:14	20:25	21:35		22:36	13	20:40 (2)	22:45	14 20:47 (2)	21:51	20:28	19:01	16:39	15:47
6	09:25	08:34	07:21	06:52	05:31		04:34		20:27 (2)	04:37	20:33 (2)	05:35	06:44	07:50	08:03	09:08
	16:00	17:08	18:16	20:28	21:37		22:37	13	20:40 (2)	22:44	14 20:47 (2)	21:48	20:25	18:58	16:37	15:46
7	09:24	08:32	07:18	06:49	05:29		04:33		20:28 (2)	04:39	20:33 (2)	05:37	06:46	07:52	08:05	09:10
	16:02	17:11	18:19	20:30	21:39		22:38	14	20:42 (2)	22:43	13 20:46 (2)	21:46	20:22	18:56	16:34	15:45
8	09:23	08:29	07:15	06:46	05:26		04:32		20:27 (2)	04:40	20:33 (2)	05:39	06:48	07:55	08:08	09:11
	16:03	17:13	18:21	20:32	21:41		22:40	15	20:42 (2)	22:42	13 20:46 (2)	21:44	20:19	18:53	16:32	15:45
9	09:22	08:27	07:12	06:44	05:24		04:31		20:27 (2)	04:41	20:34 (2)	05:41	06:50	07:57	08:10	09:13
	16:05	17:16	18:23	20:35	21:44		22:41	15	20:42 (2)	22:41	12 20:46 (2)	21:41	20:16	18:50	16:30	15:44
10	09:21	08:24	07:10	06:41	05:22		04:30		20:28 (2)	04:43	20:34 (2)	05:44	06:53	07:59	08:12	09:14
	16:07	17:18	18:26	20:37	21:46		22:42	15	20:43 (2)	22:40	12 20:46 (2)	21:39	20:13	18:47	16:27	15:43
11	09:20	08:22	07:07	06:38	05:19		04:29		20:28 (2)	04:44	20:34 (2)	05:46	06:55	08:01	08:15	09:16
	16:09	17:20	18:28	20:39	21:48		22:43	16	20:44 (2)	22:39	11 20:45 (2)	21:36	20:11	18:44	16:25	15:43
12	09:19	08:20	07:04	06:35	05:17		04:29		20:29 (2)	04:46	20:35 (2)	05:48	06:57	08:04	08:17	09:17
	16:11	17:23	18:30	20:41	21:50		22:44	16	20:45 (2)	22:37	5 20:42 (2)	21:34	20:08	18:41	16:23	15:43
13	09:18	08:17	07:01	06:32	05:15		04:28		20:28 (2)	04:47	20:35 (2)	05:50	06:59	08:06	08:20	09:18
	16:13	17:25	18:33	20:44	21:53		22:45	17	20:45 (2)	22:36	3 20:38 (2)	21:31	20:05	18:39	16:21	15:42
14	09:17	08:15	06:58	06:29	05:12		04:28		20:29 (2)	04:49	20:35 (2)	05:53	07:01	08:08	08:22	09:19
	16:15	17:28	18:35	20:46	21:55		22:46	17	20:46 (2)	22:34	2 20:37 (2)	21:28	20:02	18:36	16:19	15:42
15	09:15	08:12	06:55	06:27	05:10		04:27		20:29 (2)	04:51		05:55	07:04	08:11	08:24	09:20
	16:17	17:30	18:37	20:48	21:57		22:47	18	20:47 (2)	22:33		21:26	19:59	18:33	16:17	15:42
16	09:14	08:10	06:53	06:24	05:08		04:27		20:30 (2)	04:52		05:57	07:06	08:13	08:27	09:21
	16:19	17:33	18:40	20:51	21:59		22:47	17	20:47 (2)	22:31		21:23	19:56	18:30	16:15	15:42
17	09:12	08:07	06:50	06:21	05:06		04:27		20:30 (2)	04:54		05:59	07:08	08:15	08:29	09:22
	16:21	17:35	18:42	20:53	22:01		22:48	18	20:48 (2)	22:30		21:20	19:53	18:28	16:13	15:42
18	09:11	08:04	06:47	06:18	05:04		04:27		20:30 (2)	04:56		06:02	07:10	08:18	08:31	09:23
	16:23	17:38	18:44	20:55	22:03		22:48	18	20:48 (2)	22:28		21:18	19:50	18:25	16:11	15:42
19	09:09	08:02	06:44	06:16	05:02		04:27		20:30 (2)	04:58		06:04	07:12	08:20	08:34	09:24
	16:25	17:40	18:46	20:58	22:05		22:49	19	20:49 (2)	22:26		21:15	19:47	18:22	16:09	15:42
20	09:08	07:59	06:41	06:13	05:00		04:27		20:31 (2)	05:00		06:06	07:15	08:22	08:36	09:25
	16:27	17:43	18:49	21:00	22:07		22:49	18	20:49 (2)	22:25		21:12	19:44	18:19	16:07	15:42
21	09:06	07:56	06:38	06:10	04:58		04:27		20:31 (2)	05:01		06:08	07:17	08:25	08:38	09:25
	16:30	17:45	18:51	21:02	22:10		22:49	18	20:49 (2)	22:23		21:10	19:42	18:17	16:06	15:43
22	09:05	07:54	06:35	06:07	04:56		04:27		20:31 (2)	05:03		06:11	07:19	08:27	08:40	09:26
	16:32	17:47	18:53	21:05	22:12		22:50	18	20:49 (2)	22:21		21:07	19:39	18:14	16:04	15:43
23	09:03	07:51	06:32	06:05	04:54		04:27		20:30 (2)	05:05		06:13	07:21	08:29	08:42	09:27
	16:34	17:50	18:56	21:07	22:14		22:50	19	20:49 (2)	22:19		21:04	19:36	18:11	16:02	15:44
24	09:01	07:48	06:29	06:02	04:52		04:27		20:31 (2)	05:07		06:15	07:23	08:32	08:45	09:27
	16:37	17:52	18:58	21:09	22:15		22:50	19	20:50 (2)	22:17		21:02	19:33	18:09	16:01	15:44
25	08:59	07:46	06:27	05:59	04:51		04:28		20:31 (2)	05:09		06:17	07:26	07:34	08:47	09:27
	16:39	17:55	19:00	21:11	22:17		22:50	18	20:49 (2)	22:15		20:59	19:30	17:06	15:59	15:45
26	08:57	07:43	06:24	05:57	04:49		04:28		20:32 (2)	05:11		06:19	07:28	07:36	08:49	09:27
	16:41	17:57	19:03	21:14	22:19		22:50	18	20:50 (2)	22:13		20:56	19:27	17:04	15:58	15:46
27	08:55	07:40	06:21	05:54	04:47		04:29		20:31 (2)	05:13		06:22	07:30	07:39	08:51	09:28
	16:44	18:00	19:05	21:16	22:21		22:49	18	20:49 (2)	22:11		20:53	19:24	17:01	15:56	15:47
28	08:53	07:38	06:18	05:51	04:46		04:30		20:32 (2)	05:15		06:24	07:32	07:41	08:53	09:28
	16:46	18:02	19:07	21:18	22:23		22:49	17	20:49 (2)	22:09		20:50	19:21	16:59	15:55	15:48
29	08:51		07:15	05:49	04:44		04:30		20:32 (2)	05:18		06:26	07:34	07:44	08:55	09:28
	16:49		20:09	21:21	22:25		22:49	18	20:50 (2)	22:07		20:48	19:18	16:56	15:53	15:49
30	08:49		07:12	05:46	04:42	20:27 (2)	04:31		20:32 (2)	05:20		06:28	07:37	07:46	08:57	09:28
	16:51		20:12	21:23	22:26	2 20:29 (2)	22:48	17	20:49 (2)	22:05		20:45	19:16	16:53	15:52	15:50
31	08:47		07:09		04:41	20:27 (2)				05:22		06:31		07:48		09:27
	16:53		20:14		22:28	3 20:30 (2)				22:02		20:42		16:51		15:51
Potential sun hours	222	260	365	432	521		547		545		478	386	319	236	200	
Total, worst case						5		483		161						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** AL - Buevegen 2100 (38)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February	March	April	May	June	July	August	September	October	November			December		
1	09:28		12:55 (13)	08:45	07:35	07:07	05:44	04:39	04:32	05:24	06:33	07:39	07:51			09:00		12:38 (13)
	15:52	16	13:11 (13)	16:56	18:04	20:16	21:26	22:30	22:48	22:01	20:39	19:13	16:48			15:51	20	12:58 (13)
2	09:27		12:55 (13)	08:43	07:32	07:04	05:41	04:38	04:33	05:26	06:35	07:41	07:54			09:01		12:39 (13)
	15:54	16	13:11 (13)	16:58	18:07	20:19	21:28	22:32	22:48	21:58	20:37	19:10	16:46			15:50	20	12:59 (13)
3	09:27		12:55 (13)	08:41	07:30	07:01	05:38	04:37	04:34	05:28	06:37	07:44	07:56			09:03		12:40 (13)
	15:55	17	13:12 (13)	17:01	18:09	20:21	21:30	22:33	22:47	21:56	20:34	19:07	16:44			15:49	20	13:00 (13)
4	09:26		12:55 (13)	08:39	07:27	06:58	05:36	04:36	04:35	05:30	06:39	07:46	07:58			09:05		12:40 (13)
	15:57	17	13:12 (13)	17:03	18:12	20:23	21:33	22:35	22:46	21:54	20:31	19:04	16:41			15:48	20	13:00 (13)
5	09:26		12:55 (13)	08:37	07:24	06:55	05:33	04:34	04:36	05:33	06:42	07:48	08:01			09:07		12:41 (13)
	15:58	18	13:13 (13)	17:06	18:14	20:26	21:35	22:36	22:46	21:51	20:28	19:01	16:39			15:47	19	13:00 (13)
6	09:25		12:55 (13)	08:34	07:21	06:52	05:31	04:33	04:37	05:35	06:44	07:50	08:03			09:09		12:41 (13)
	16:00	19	13:14 (13)	17:08	18:16	20:28	21:37	22:38	22:45	21:49	20:25	18:58	16:36			15:46	19	13:00 (13)
7	09:24		12:55 (13)	08:32	07:18	06:49	05:29	04:32	04:38	05:37	06:46	07:53	08:06			09:10		12:42 (13)
	16:01	20	13:15 (13)	17:11	18:19	20:30	21:40	22:39	22:44	21:46	20:22	18:56	16:34			15:45	18	13:00 (13)
8	09:24		12:56 (13)	08:30	07:16	06:46	05:26	04:31	04:40	05:39	06:48	07:55	08:08			09:12		12:43 (13)
	16:03	19	13:15 (13)	17:13	18:21	20:33	21:42	22:40	22:43	21:44	20:19	18:53	16:32			15:44	18	13:01 (13)
9	09:23		12:55 (13)	08:27	07:13	06:44	05:24	04:31	04:41	05:41	06:51	07:57	08:10			09:13		12:43 (13)
	16:05	20	13:15 (13)	17:16	18:23	20:35	21:44	22:42	22:42	21:42	20:17	18:50	16:30			15:44	17	13:00 (13)
10	09:22		12:56 (13)	08:25	07:10	06:41	05:21	04:30	04:42	05:44	06:53	07:59	08:13			09:15		12:44 (13)
	16:07	20	13:16 (13)	17:18	18:26	20:37	21:46	22:43	22:40	21:39	20:14	18:47	16:27			15:43	16	13:00 (13)
11	09:21		12:57 (13)	08:22	07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02	08:15			09:16		12:45 (13)
	16:09	20	13:17 (13)	17:20	18:28	20:39	21:49	22:44	22:39	21:36	20:11	18:44	16:25			15:43	16	13:01 (13)
12	09:19		12:57 (13)	08:20	07:04	06:35	05:17	04:29	04:45	05:48	06:57	08:04	08:18			09:17		12:45 (13)
	16:11	20	13:17 (13)	17:23	18:30	20:42	21:51	22:45	22:38	21:34	20:08	18:42	16:23			15:42	16	13:01 (13)
13	09:18		12:57 (13)	08:17	07:01	06:32	05:15	04:28	04:47	05:50	06:59	08:06	08:20			09:19		12:46 (13)
	16:12	20	13:17 (13)	17:25	18:33	20:44	21:53	22:46	22:36	21:31	20:05	18:39	16:21			15:42	15	13:01 (13)
14	09:17		12:58 (13)	08:15	06:58	06:29	05:12	04:28	04:49	05:53	07:02	08:09	08:22			09:20		12:47 (13)
	16:14	20	13:18 (13)	17:28	18:35	20:46	21:55	22:46	22:35	21:29	20:02	18:36	16:19			15:42	14	13:01 (13)
15	09:16		12:58 (13)	08:12	06:56	06:27	05:10	04:27	04:50	05:55	07:04	08:11	08:25			09:21		12:47 (13)
	16:17	20	13:18 (13)	17:30	18:37	20:49	21:57	22:47	22:34	21:26	19:59	18:33	16:17			15:42	14	13:01 (13)
16	09:14		12:58 (13)	08:10	06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13	08:27			09:22		12:48 (13)
	16:19	20	13:18 (13)	17:33	18:40	20:51	22:00	22:48	22:32	21:23	19:56	18:30	16:15			15:42	13	13:01 (13)
17	09:13		12:59 (13)	08:07	06:50	06:21	05:06	04:27	04:54	05:59	07:08	08:16	08:29			09:23		12:48 (13)
	16:21	19	13:18 (13)	17:35	18:42	20:53	22:02	22:48	22:30	21:21	19:53	18:28	16:13			15:42	14	13:02 (13)
18	09:11		12:59 (13)	08:05	06:47	06:18	05:04	04:26	04:56	06:02	07:10	08:18	08:32			09:24		12:49 (13)
	16:23	19	13:18 (13)	17:38	18:44	20:56	22:04	22:49	22:29	21:18	19:50	18:25	16:11			15:42	13	13:02 (13)
19	09:10		13:01 (13)	08:02	06:44	06:16	05:02	04:26	04:57	06:04	07:13	08:20	08:34		12:41 (13)	09:25		12:50 (13)
	16:25	18	13:19 (13)	17:40	18:47	20:58	22:06	22:49	22:27	21:15	19:48	18:22	16:09	9	12:50 (13)	15:42	12	13:02 (13)
20	09:08		13:02 (13)	07:59	06:41	06:13	05:00	04:26	04:59	06:06	07:15	08:23	08:36		12:39 (13)	09:25		12:51 (13)
	16:27	16	13:18 (13)	17:43	18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20	16:07	12	12:51 (13)	15:42	12	13:03 (13)
21	09:07		13:02 (13)	07:57	06:38	06:10	04:58	04:26	05:01	06:08	07:17	08:25	08:38		12:38 (13)	09:26		12:51 (13)
	16:30	15	13:17 (13)	17:45	18:51	21:03	22:10	22:50	22:23	21:10	19:42	18:17	16:06	15	12:53 (13)	15:43	12	13:03 (13)
22	09:05		13:04 (13)	07:54	06:35	06:07	04:56	04:27	05:03	06:11	07:19	08:27	08:41		12:38 (13)	09:27		12:52 (13)
	16:32	12	13:16 (13)	17:48	18:54	21:05	22:12	22:50	22:22	21:07	19:39	18:14	16:04	16	12:54 (13)	15:43	12	13:04 (13)
23	09:03		13:06 (13)	07:51	06:33	06:05	04:54	04:27	05:05	06:13	07:21	08:30	08:43		12:37 (13)	09:27		12:52 (13)
	16:34	9	13:15 (13)	17:50	18:56	21:07	22:14	22:50	22:20	21:05	19:36	18:12	16:02	18	12:55 (13)	15:44	12	13:04 (13)
24	09:01			07:49	06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32	08:45		12:38 (13)	09:28		12:52 (13)
	16:37			17:52	18:58	21:10	22:16	22:50	22:18	21:02	19:33	18:09	16:01	18	12:56 (13)	15:44	12	13:04 (13)
25	09:00			07:46	06:27	05:59	04:50	04:28	05:09	06:17	07:26	07:34	08:47		12:37 (13)	09:28		12:53 (13)
	16:39			17:55	19:00	21:12	22:18	22:50	22:16	20:59	19:30	17:06	15:59	19	12:56 (13)	15:45	13	13:06 (13)
26	08:58			07:43	06:24	05:57	04:49	04:28	05:11	06:19	07:28	07:37	08:49		12:38 (13)	09:28		12:53 (13)
	16:41			17:57	19:03	21:14	22:20	22:50	22:14	20:56	19:27	17:04	15:57	19	12:57 (13)	15:46	13	13:06 (13)
27	08:56			07:41	06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39	08:52		12:37 (13)	09:28		12:54 (13)
	16:44			18:00	19:05	21:16	22:22	22:50	22:12	20:54	19:24	17:01	15:56	20	12:57 (13)	15:47	13	13:07 (13)
28	08:54			07:38	06:18	05:51	04:45	04:29	05:15	06:24	07:32	07:42	08:54		12:37 (13)	09:28		12:53 (13)
	16:46			18:02	19:07	21:19	22:24	22:50	22:09	20:51	19:21	16:59	15:55	20	12:57 (13)	15:48	14	13:07 (13)
29	08:52				07:15	05:49	04:44	04:30	05:17	06:26	07:35	07:44	08:56		12:38 (13)	09:28		12:54 (13)
	16:48				20:10	21:21	22:25	22:49	22:07	20:48	19:19	16:56	15:53	20	12:58 (13)	15:49	14	13:08 (13)
30	08:50				07:12	05:46	04:42	04:31	05:20	06:28	07:37	07:46	08:58		12:38 (13)	09:28		12:54 (13)
	16:51				20:12	21:23	22:27	22:49	22:05	20:45	19:16	16:53	15:52	20	12:58 (13)	15:50	15	13:09 (13)
31	08:48				07:09		04:41		05:22	06:31		07:49				09:28		12:54 (13)
	16:53				20:14		22:29		22:03	20:42		16:51				15:51	15	13:09 (13)
Potential sun hours	221			260	365	432	521	547	546	478	386	319	236			199		
Total, worst case		410												206			471	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** AM - Eiendom 121/9 - Hå kommune (39)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February	March	April		May		June		
1	09:28	08:46	07:35	07:07		05:44		07:30 (1)	04:40	06:17 (37)
	15:53	16:56	18:05	20:17		21:26	32	08:02 (1)	22:30	22 06:39 (37)
2	09:27	08:43	07:33	07:04		05:42		07:32 (1)	04:39	06:16 (37)
	15:54	16:59	18:07	20:19		21:28	29	08:01 (1)	22:32	24 06:40 (37)
3	09:27	08:41	07:30	07:01		05:39		07:32 (1)	04:37	06:16 (37)
	15:56	17:01	18:10	20:21		21:31	27	07:59 (1)	22:34	25 06:41 (37)
4	09:26	08:39	07:27	06:58		05:36		07:33 (1)	04:36	06:16 (37)
	15:57	17:04	18:12	20:24		21:33	25	07:58 (1)	22:35	25 06:41 (37)
5	09:26	08:37	07:24	06:55		05:34		07:35 (1)	04:35	06:16 (37)
	15:59	17:06	18:14	20:26		21:35	21	07:56 (1)	22:36	27 06:43 (37)
6	09:25	08:34	07:21	06:53		05:32		07:37 (1)	04:34	06:16 (37)
	16:00	17:09	18:17	20:28		21:37	18	07:55 (1)	22:38	27 06:43 (37)
7	09:24	08:32	07:19	06:50		05:29		07:39 (1)	04:33	06:15 (37)
	16:02	17:11	18:19	20:31		21:40	12	07:51 (1)	22:39	28 06:43 (37)
8	09:24	08:30	07:16	06:47		05:27			04:32	06:15 (37)
	16:04	17:14	18:21	20:33		21:42			22:40	28 06:43 (37)
9	09:23	08:27	07:13	06:44		05:24			04:31	06:16 (37)
	16:06	17:16	18:24	20:35		21:44			22:42	28 06:44 (37)
10	09:22	08:25	07:10	06:41	07:48 (1)	05:22			04:31	06:15 (37)
	16:07	17:18	18:26	20:37	9 07:57 (1)	21:46			22:43	29 06:44 (37)
11	09:21	08:23	07:07	06:38	07:46 (1)	05:20			04:30	06:16 (37)
	16:09	17:21	18:28	20:40	15 08:01 (1)	21:49			22:44	29 06:45 (37)
12	09:20	08:20	07:04	06:36	07:42 (1)	05:17			04:29	06:15 (37)
	16:11	17:23	18:31	20:42	21 08:03 (1)	21:51			22:45	30 06:45 (37)
13	09:18	08:18	07:02	06:33	07:38 (1)	05:15			04:29	06:16 (37)
	16:13	17:26	18:33	20:44	26 08:04 (1)	21:53			22:46	30 06:46 (37)
14	09:17	08:15	06:59	06:30	07:35 (1)	05:13			04:28	06:16 (37)
	16:15	17:28	18:35	20:47	30 08:05 (1)	21:55			22:46	30 06:46 (37)
15	09:16	08:13	06:56	06:27	07:34 (1)	05:11			04:28	06:15 (37)
	16:17	17:31	18:38	20:49	32 08:06 (1)	21:57			22:47	31 06:46 (37)
16	09:14	08:10	06:53	06:24	07:33 (1)	05:09			04:28	06:16 (37)
	16:19	17:33	18:40	20:51	34 08:07 (1)	22:00			22:48	30 06:46 (37)
17	09:13	08:07	06:50	06:22	07:32 (1)	05:06			04:27	06:16 (37)
	16:21	17:36	18:42	20:54	35 08:07 (1)	22:02			22:48	30 06:46 (37)
18	09:12	08:05	06:47	06:19	07:31 (1)	05:04			04:27	06:16 (37)
	16:24	17:38	18:45	20:56	37 08:08 (1)	22:04			22:49	31 06:47 (37)
19	09:10	08:02	06:44	06:16	07:30 (1)	05:02			04:27	06:16 (37)
	16:26	17:41	18:47	20:58	38 08:08 (1)	22:06			22:49	31 06:47 (37)
20	09:08	08:00	06:42	06:13	07:30 (1)	05:00			04:27	06:16 (37)
	16:28	17:43	18:49	21:00	38 08:08 (1)	22:08			22:50	31 06:47 (37)
21	09:07	07:57	06:39	06:11	07:29 (1)	04:58			04:27	06:16 (37)
	16:30	17:46	18:52	21:03	39 08:08 (1)	22:10			22:50	31 06:47 (37)
22	09:05	07:54	06:36	06:08	07:29 (1)	04:56			04:27	06:17 (37)
	16:32	17:48	18:54	21:05	38 08:07 (1)	22:12			22:50	31 06:48 (37)
23	09:03	07:52	06:33	06:05	07:29 (1)	04:55			04:28	06:17 (37)
	16:35	17:50	18:56	21:07	39 08:08 (1)	22:14			22:50	31 06:48 (37)
24	09:02	07:49	06:30	06:02	07:28 (1)	04:53			04:28	06:17 (37)
	16:37	17:53	18:58	21:10	39 08:07 (1)	22:16			22:50	31 06:48 (37)
25	09:00	07:46	06:27	06:00	07:29 (1)	04:51			04:28	06:18 (37)
	16:39	17:55	19:01	21:12	38 08:07 (1)	22:18			22:50	31 06:49 (37)
26	08:58	07:44	06:24	05:57	07:28 (1)	04:49		06:25 (37)	04:29	06:18 (37)
	16:42	17:58	19:03	21:14	38 08:06 (1)	22:20	6	06:31 (37)	22:50	30 06:48 (37)
27	08:56	07:41	06:21	05:54	07:29 (1)	04:48		06:22 (37)	04:29	06:18 (37)
	16:44	18:00	19:05	21:17	37 08:06 (1)	22:22	11	06:33 (37)	22:50	31 06:49 (37)
28	08:54	07:38	06:18	05:52	07:29 (1)	04:46		06:20 (37)	04:30	06:18 (37)
	16:47	18:02	19:08	21:19	36 08:05 (1)	22:24	15	06:35 (37)	22:50	30 06:48 (37)
29	08:52		07:16	05:49	07:30 (1)	04:44		06:20 (37)	04:31	06:19 (37)
	16:49		20:10	21:21	34 08:04 (1)	22:25	17	06:37 (37)	22:49	30 06:49 (37)
30	08:50		07:13	05:47	07:29 (1)	04:43		06:19 (37)	04:31	06:19 (37)
	16:51		20:12	21:24	34 08:03 (1)	22:27	19	06:38 (37)	22:49	30 06:49 (37)
31	08:48		07:10			04:41		06:17 (37)		
	16:54		20:14			22:29	21	06:38 (37)		
Potential sun hours	221	260	365	432		521			547	
Total, worst case					687		253			872

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** AM - Eiendom 121/9 - Hå kommune (39)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July			August			September			October	November	December
1	04:32		06:20 (37)	05:24			06:33		07:45 (1)	07:39	07:51	09:00
	22:48	29	06:49 (37)	22:01			20:40	15	08:00 (1)	19:13	16:49	15:51
2	04:33		06:20 (37)	05:27			06:35		07:47 (1)	07:42	07:54	09:01
	22:48	30	06:50 (37)	21:58			20:37	9	07:56 (1)	19:10	16:47	15:50
3	04:34		06:20 (37)	05:29			06:38			07:44	07:56	09:03
	22:47	29	06:49 (37)	21:56			20:34			19:07	16:44	15:49
4	04:35		06:20 (37)	05:31			06:40			07:46	07:59	09:05
	22:46	29	06:49 (37)	21:54			20:31			19:05	16:42	15:48
5	04:36		06:21 (37)	05:33		07:52 (1)	06:42			07:48	08:01	09:07
	22:46	28	06:49 (37)	21:51	6	07:58 (1)	20:28			19:02	16:39	15:47
6	04:38		06:21 (37)	05:35		07:48 (1)	06:44			07:51	08:03	09:09
	22:45	27	06:48 (37)	21:49	14	08:02 (1)	20:25			18:59	16:37	15:47
7	04:39		06:22 (37)	05:38		07:46 (1)	06:47			07:53	08:06	09:10
	22:44	27	06:49 (37)	21:47	19	08:05 (1)	20:23			18:56	16:35	15:46
8	04:40		06:23 (37)	05:40		07:44 (1)	06:49			07:55	08:08	09:12
	22:43	26	06:49 (37)	21:44	22	08:06 (1)	20:20			18:53	16:32	15:45
9	04:42		06:23 (37)	05:42		07:42 (1)	06:51			07:57	08:11	09:13
	22:42	25	06:48 (37)	21:42	26	08:08 (1)	20:17			18:50	16:30	15:44
10	04:43		06:24 (37)	05:44		07:41 (1)	06:53			08:00	08:13	09:15
	22:40	24	06:48 (37)	21:39	28	08:09 (1)	20:14			18:48	16:28	15:44
11	04:45		06:25 (37)	05:46		07:40 (1)	06:55			08:02	08:15	09:16
	22:39	23	06:48 (37)	21:37	30	08:10 (1)	20:11			18:45	16:26	15:43
12	04:46		06:25 (37)	05:49		07:39 (1)	06:58			08:04	08:18	09:17
	22:38	22	06:47 (37)	21:34	32	08:11 (1)	20:08			18:42	16:24	15:43
13	04:48		06:26 (37)	05:51		07:38 (1)	07:00			08:07	08:20	09:19
	22:36	20	06:46 (37)	21:32	33	08:11 (1)	20:05			18:39	16:22	15:43
14	04:49		06:28 (37)	05:53		07:37 (1)	07:02			08:09	08:22	09:20
	22:35	18	06:46 (37)	21:29	35	08:12 (1)	20:02			18:36	16:19	15:43
15	04:51		06:28 (37)	05:55		07:36 (1)	07:04			08:11	08:25	09:21
	22:34	16	06:44 (37)	21:26	36	08:12 (1)	19:59			18:34	16:17	15:42
16	04:53		06:30 (37)	05:58		07:35 (1)	07:06			08:14	08:27	09:22
	22:32	14	06:44 (37)	21:24	37	08:12 (1)	19:57			18:31	16:15	15:42
17	04:54		06:32 (37)	06:00		07:35 (1)	07:09			08:16	08:29	09:23
	22:30	9	06:41 (37)	21:21	38	08:13 (1)	19:54			18:28	16:13	15:42
18	04:56			06:02		07:35 (1)	07:11			08:18	08:32	09:24
	22:29			21:18	39	08:14 (1)	19:51			18:25	16:12	15:42
19	04:58			06:04		07:35 (1)	07:13			08:21	08:34	09:25
	22:27			21:16	38	08:13 (1)	19:48			18:23	16:10	15:43
20	05:00			06:07		07:35 (1)	07:15			08:23	08:36	09:25
	22:25			21:13	38	08:13 (1)	19:45			18:20	16:08	15:43
21	05:02			06:09		07:34 (1)	07:17			08:25	08:39	09:26
	22:23			21:10	39	08:13 (1)	19:42			18:17	16:06	15:43
22	05:04			06:11		07:34 (1)	07:20			08:28	08:41	09:27
	22:22			21:08	38	08:12 (1)	19:39			18:15	16:04	15:44
23	05:06			06:13		07:34 (1)	07:22			08:30	08:43	09:27
	22:20			21:05	38	08:12 (1)	19:36			18:12	16:03	15:44
24	05:08			06:15		07:34 (1)	07:24			08:32	08:45	09:28
	22:18			21:02	37	08:11 (1)	19:33			18:09	16:01	15:45
25	05:10			06:18		07:34 (1)	07:26			07:35	08:47	09:28
	22:16			20:59	36	08:10 (1)	19:30			17:07	16:00	15:46
26	05:12			06:20		07:34 (1)	07:28			07:37	08:50	09:28
	22:14			20:57	35	08:09 (1)	19:28			17:04	15:58	15:46
27	05:14			06:22		07:35 (1)	07:31			07:39	08:52	09:28
	22:12			20:54	33	08:08 (1)	19:25			17:02	15:57	15:47
28	05:16			06:24		07:35 (1)	07:33			07:42	08:54	09:28
	22:10			20:51	32	08:07 (1)	19:22			16:59	15:55	15:48
29	05:18			06:27		07:36 (1)	07:35			07:44	08:56	09:28
	22:07			20:48	30	08:06 (1)	19:19			16:56	15:54	15:49
30	05:20			06:29		07:39 (1)	07:37			07:47	08:58	09:28
	22:05			20:45	26	08:05 (1)	19:16			16:54	15:53	15:50
31	05:22			06:31		07:42 (1)				07:49		09:28
	22:03			20:43	21	08:03 (1)				16:51		15:51
Potential sun hours	545			478			386			319	236	200
Total, worst case		396			836			24				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker **Shadow receptor:** AN - Brusalivegen 219 (40)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February	March	April	May		June		July		August		September	October	November	December
1	09:28	08:46	07:35	07:07	05:44		04:40		06:44 (1)	04:32	06:54 (1)	05:24	06:57 (1)	06:33	07:39	07:51	09:00
	15:53	16:56	18:05	20:17	21:26		22:30	33	07:17 (1)	22:48	25 07:19 (1)	22:01	32 07:29 (1)	20:40	19:13	16:49	15:52
2	09:27	08:43	07:33	07:04	05:42	07:06 (1)	04:39		06:44 (1)	04:33	06:54 (1)	05:27	06:59 (1)	06:35	07:42	07:54	09:01
	15:54	16:59	18:07	20:19	21:28	4 07:10 (1)	22:32	33	07:17 (1)	22:48	26 07:20 (1)	21:58	30 07:29 (1)	20:37	19:10	16:47	15:50
3	09:27	08:41	07:30	07:01	05:39	07:04 (1)	04:38		06:45 (1)	04:34	06:53 (1)	05:29	07:01 (1)	06:38	07:44	07:56	09:03
	15:56	17:01	18:10	20:21	21:31	7 07:11 (1)	22:33	31	07:16 (1)	22:47	27 07:20 (1)	21:56	27 07:28 (1)	20:34	19:07	16:44	15:49
4	09:26	08:39	07:27	06:58	05:37	07:02 (1)	04:36		06:45 (1)	04:35	06:53 (1)	05:31	07:03 (1)	06:40	07:46	07:59	09:05
	15:57	17:04	18:12	20:24	21:33	11 07:13 (1)	22:35	31	07:16 (1)	22:46	27 07:20 (1)	21:54	24 07:27 (1)	20:31	19:05	16:42	15:48
5	09:26	08:37	07:24	06:55	05:34	07:00 (1)	04:35		06:47 (1)	04:37	06:53 (1)	05:33	07:05 (1)	06:42	07:48	08:01	09:07
	15:59	17:06	18:14	20:26	21:35	15 07:15 (1)	22:36	30	07:17 (1)	22:46	28 07:21 (1)	21:51	22 07:27 (1)	20:28	19:02	16:39	15:47
6	09:25	08:34	07:21	06:53	05:32	06:59 (1)	04:34		06:47 (1)	04:38	06:54 (1)	05:35	07:07 (1)	06:44	07:51	08:03	09:09
	16:00	17:09	18:17	20:28	21:37	17 07:16 (1)	22:38	29	07:16 (1)	22:45	28 07:22 (1)	21:49	19 07:26 (1)	20:25	18:59	16:37	15:47
7	09:24	08:32	07:19	06:50	05:29	06:56 (1)	04:33		06:47 (1)	04:39	06:53 (1)	05:38	07:09 (1)	06:47	07:53	08:06	09:10
	16:02	17:11	18:19	20:31	21:40	20 07:16 (1)	22:39	29	07:16 (1)	22:44	30 07:23 (1)	21:47	16 07:25 (1)	20:23	18:56	16:35	15:46
8	09:24	08:30	07:16	06:47	05:27	06:54 (1)	04:32		06:48 (1)	04:40	06:53 (1)	05:40	07:10 (1)	06:49	07:55	08:08	09:12
	16:04	17:14	18:21	20:33	21:42	23 07:17 (1)	22:40	27	07:15 (1)	22:43	30 07:23 (1)	21:44	13 07:23 (1)	20:20	18:53	16:32	15:45
9	09:23	08:27	07:13	06:44	05:24	06:52 (1)	04:31		06:49 (1)	04:42	06:52 (1)	05:42	07:12 (1)	06:51	07:57	08:11	09:13
	16:06	17:16	18:24	20:35	21:44	25 07:17 (1)	22:42	27	07:16 (1)	22:42	32 07:24 (1)	21:42	10 07:22 (1)	20:17	18:50	16:30	15:44
10	09:22	08:25	07:10	06:41	05:22	06:50 (1)	04:31		06:49 (1)	04:43	06:52 (1)	05:44	07:14 (1)	06:53	08:00	08:13	09:15
	16:07	17:18	18:26	20:37	21:46	28 07:18 (1)	22:43	26	07:15 (1)	22:40	32 07:24 (1)	21:39	6 07:20 (1)	20:14	18:48	16:28	15:44
11	09:21	08:23	07:07	06:38	05:20	06:48 (1)	04:30		06:50 (1)	04:45	06:52 (1)	05:46	07:15 (1)	06:55	08:02	08:15	09:16
	16:09	17:21	18:28	20:40	21:49	30 07:18 (1)	22:44	25	07:15 (1)	22:39	33 07:25 (1)	21:37	3 07:18 (1)	20:11	18:45	16:26	15:43
12	09:20	08:20	07:04	06:36	05:17	06:46 (1)	04:29		06:50 (1)	04:46	06:52 (1)	05:49		06:58	08:04	08:18	09:17
	16:11	17:23	18:31	20:42	21:51	33 07:19 (1)	22:45	24	07:14 (1)	22:38	34 07:26 (1)	21:34		20:08	18:42	16:24	15:43
13	09:18	08:18	07:02	06:33	05:15	06:45 (1)	04:29		06:51 (1)	04:48	06:51 (1)	05:51		07:00	08:07	08:20	09:19
	16:13	17:26	18:33	20:44	21:53	34 07:19 (1)	22:46	24	07:15 (1)	22:36	35 07:26 (1)	21:32		20:05	18:39	16:22	15:43
14	09:17	08:15	06:59	06:30	05:13	06:43 (1)	04:28		06:52 (1)	04:49	06:52 (1)	05:53		07:02	08:09	08:22	09:20
	16:15	17:28	18:35	20:47	21:55	36 07:19 (1)	22:46	23	07:15 (1)	22:35	35 07:27 (1)	21:29		20:02	18:36	16:19	15:43
15	09:16	08:13	06:56	06:27	05:11	06:41 (1)	04:28		06:51 (1)	04:51	06:51 (1)	05:55		07:04	08:11	08:25	09:21
	16:17	17:31	18:38	20:49	21:57	38 07:19 (1)	22:47	23	07:14 (1)	22:34	36 07:27 (1)	21:26		19:59	18:34	16:17	15:42
16	09:14	08:10	06:53	06:24	05:09	06:40 (1)	04:28		06:52 (1)	04:53	06:51 (1)	05:58		07:06	08:14	08:27	09:22
	16:19	17:33	18:40	20:51	22:00	39 07:19 (1)	22:48	22	07:14 (1)	22:32	37 07:28 (1)	21:24		19:57	18:31	16:15	15:42
17	09:13	08:07	06:50	06:22	05:06	06:39 (1)	04:27		06:52 (1)	04:54	06:50 (1)	06:00		07:09	08:16	08:29	09:23
	16:21	17:36	18:42	20:54	22:02	40 07:19 (1)	22:48	22	07:14 (1)	22:30	38 07:28 (1)	21:21		19:54	18:28	16:13	15:42
18	09:12	08:05	06:47	06:19	05:04	06:40 (1)	04:27		06:53 (1)	04:56	06:51 (1)	06:02		07:11	08:18	08:32	09:24
	16:24	17:38	18:45	20:56	22:04	40 07:20 (1)	22:49	21	07:14 (1)	22:29	37 07:28 (1)	21:18		19:51	18:25	16:12	15:42
19	09:10	08:02	06:44	06:16	05:02	06:40 (1)	04:27		06:53 (1)	04:58	06:51 (1)	06:04		07:13	08:21	08:34	09:25
	16:26	17:41	18:47	20:58	22:06	40 07:20 (1)	22:49	21	07:14 (1)	22:27	38 07:29 (1)	21:16		19:48	18:23	16:10	15:43
20	09:08	08:00	06:42	06:13	05:00	06:40 (1)	04:27		06:53 (1)	05:00	06:50 (1)	06:07		07:15	08:23	08:36	09:25
	16:28	17:43	18:49	21:00	22:08	40 07:20 (1)	22:50	21	07:14 (1)	22:25	39 07:29 (1)	21:13		19:45	18:20	16:08	15:43
21	09:07	07:57	06:39	06:11	04:58	06:40 (1)	04:27		06:53 (1)	05:02	06:50 (1)	06:09		07:17	08:25	08:39	09:26
	16:30	17:46	18:52	21:03	22:10	39 07:19 (1)	22:50	21	07:14 (1)	22:23	39 07:29 (1)	21:10		19:42	18:17	16:06	15:43
22	09:05	07:54	06:36	06:08	04:56	06:40 (1)	04:27		06:54 (1)	05:04	06:51 (1)	06:11		07:19	08:28	08:41	09:27
	16:32	17:48	18:54	21:05	22:12	40 07:20 (1)	22:50	21	07:15 (1)	22:22	39 07:30 (1)	21:08		19:39	18:15	16:04	15:44
23	09:03	07:52	06:33	06:05	04:55	06:40 (1)	04:28		06:54 (1)	05:06	06:50 (1)	06:13		07:22	08:30	08:43	09:27
	16:35	17:50	18:56	21:07	22:14	39 07:19 (1)	22:50	21	07:15 (1)	22:20	39 07:29 (1)	21:05		19:36	18:12	16:03	15:44
24	09:02	07:49	06:30	06:02	04:53	06:41 (1)	04:28		06:54 (1)	05:08	06:50 (1)	06:15		07:24	08:32	08:45	09:28
	16:37	17:53	18:58	21:10	22:16	38 07:19 (1)	22:50	21	07:15 (1)	22:18	40 07:30 (1)	21:02		19:33	18:09	16:01	15:45
25	09:00	07:46	06:27	06:00	04:51	06:41 (1)	04:28		06:55 (1)	05:10	06:50 (1)	06:18		07:26	08:35	08:47	09:28
	16:39	17:55	19:01	21:12	22:18	38 07:19 (1)	22:50	21	07:16 (1)	22:16	40 07:30 (1)	20:59		19:30	17:07	16:00	15:46
26	08:58	07:44	06:24	05:57	04:49	06:42 (1)	04:29		06:54 (1)	05:12	06:50 (1)	06:20		07:28	08:37	08:49	09:28
	16:42	17:58	19:03	21:14	22:20	37 07:19 (1)	22:50	22	07:16 (1)	22:14	40 07:30 (1)	20:57		19:28	17:04	15:58	15:46
27	08:56	07:41	06:21	05:54	04:48	06:41 (1)	04:29		06:54 (1)	05:14	06:51 (1)	06:22		07:31	07:39	08:52	09:28
	16:44	18:00	19:05	21:17	22:22	37 07:18 (1)	22:50	23	07:17 (1)	22:12	39 07:30 (1)	20:54		19:25	17:02	15:57	15:47
28	08:54	07:38	06:18	05:52	04:46	06:42 (1)	04:30		06:54 (1)	05:16	06:51 (1)	06:24		07:33	07:42	08:54	09:28
	16:47	18:02	19:08	21:19	22:24	36 07:18 (1)	22:50	23	07:17 (1)	22:10	40 07:31 (1)	20:51		19:22	16:59	15:55	15:48
29	08:52		07:16	05:49	04:44	06:43 (1)	04:31		06:54 (1)	05:18	06:52 (1)	06:27		07:35	07:44	08:56	09:28
	16:49		20:10	21:21	22:25	35 07:18 (1)	22:49	24	07:18 (1)	22:07	38 07:30 (1)	20:48		19:19	16:56	15:54	15:49
30	08:50		07:13	05:47	04:43	06:43 (1)	04:32		06:54 (1)	05:20	06:54 (1)	06:29		07:37	07:47	08:58	09:28
	16:51		20:12	21:24	22:27	35 07:18 (1)	22:49	24	07:18 (1)	22:05	35 07:29 (1)	20:45		19:16	16:54	15:53	15:50
31	08:48		07:10		04:41	06:43 (1)				05:22	06:56 (1)	06:31			07:49		09:28
	16:54		20:14		22:29	34 07:17 (1)				22:03	33 07:29 (1)	20:43			16:51		15:51
Potential sun hours	221	260	365	432	521		547		545		478		386	319	236	200	
Total, worst case						928		743		1069		202					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Multiconsult

Vedlegg 1.2

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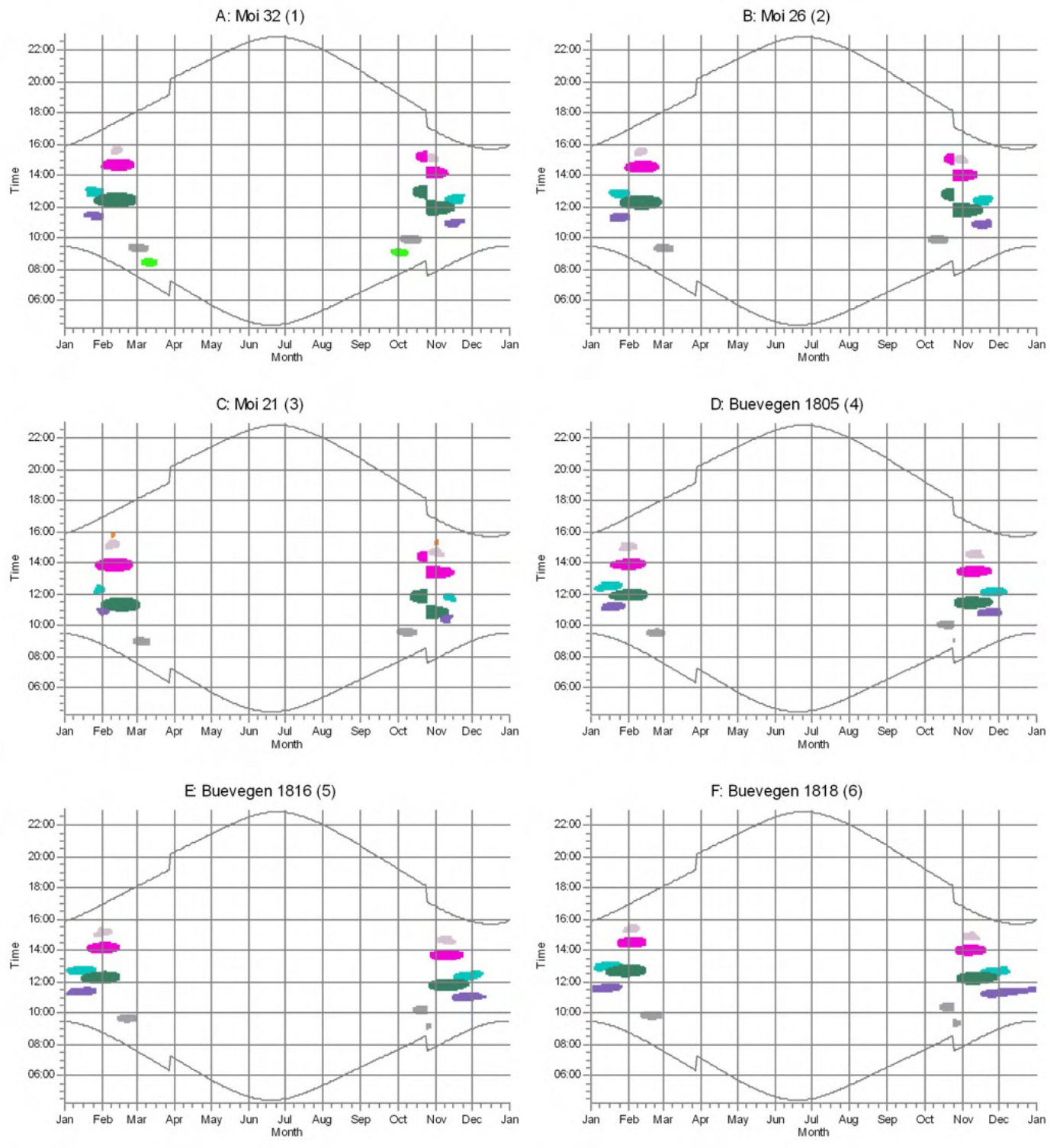
20.01.2025 16:14/4.0.540

SHADOW - Calendar, graphical

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker



WTGs

16: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2558
18: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2560
21: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2563
23: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2565
24: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2566
25: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2567
29: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2571
34: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2576

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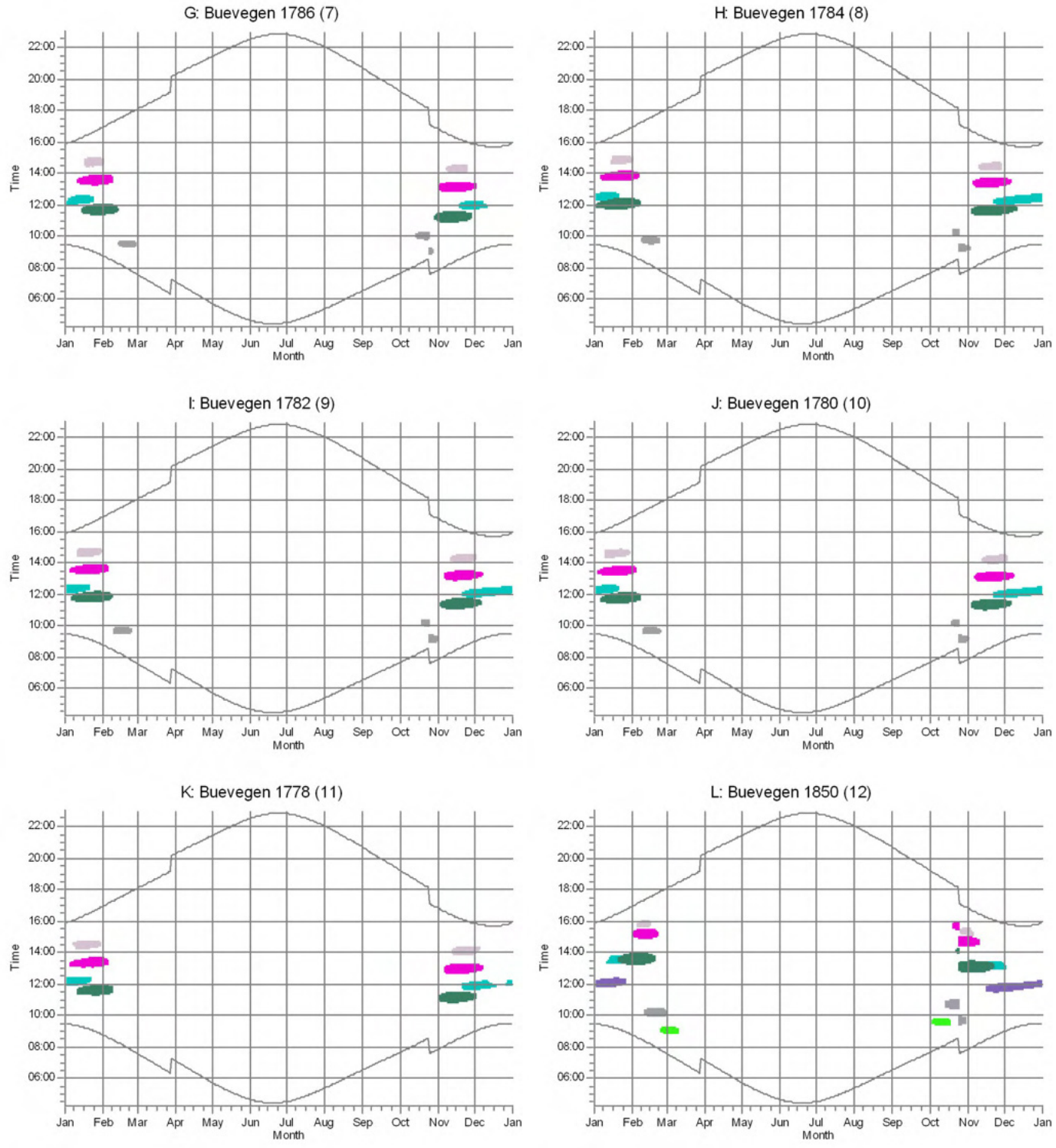
20.01.2025 16:14/4.0.540

SHADOW - Calendar, graphical

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker



WTGs

16: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2558
18: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2560
21: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2563
24: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2566
25: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2567
29: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2571
34: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2576

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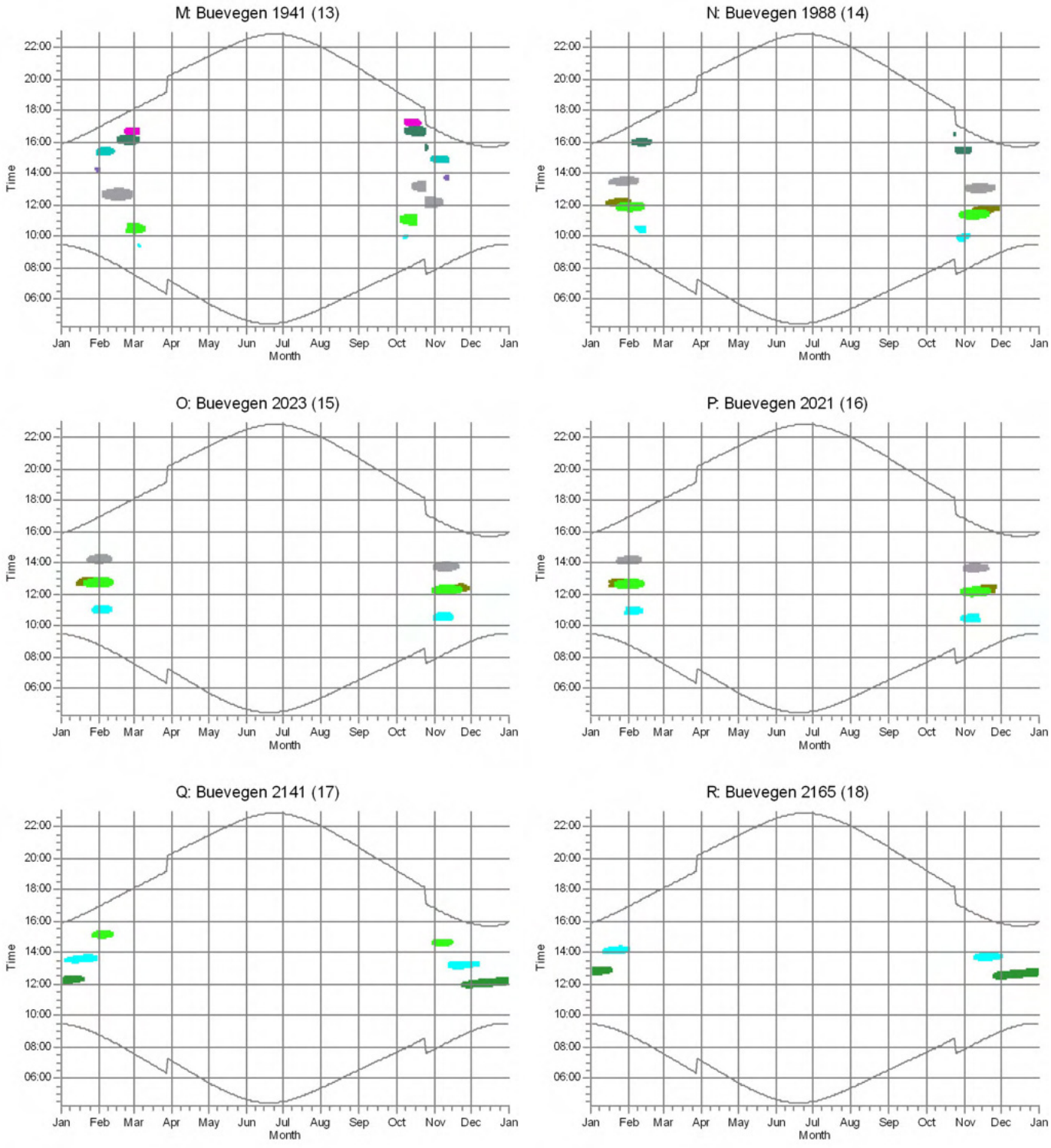
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar, graphical

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker



WTGs

10: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2552
13: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2555
16: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2558
18: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2560
21: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2563
24: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2566
27: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2569
29: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2571
34: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2576

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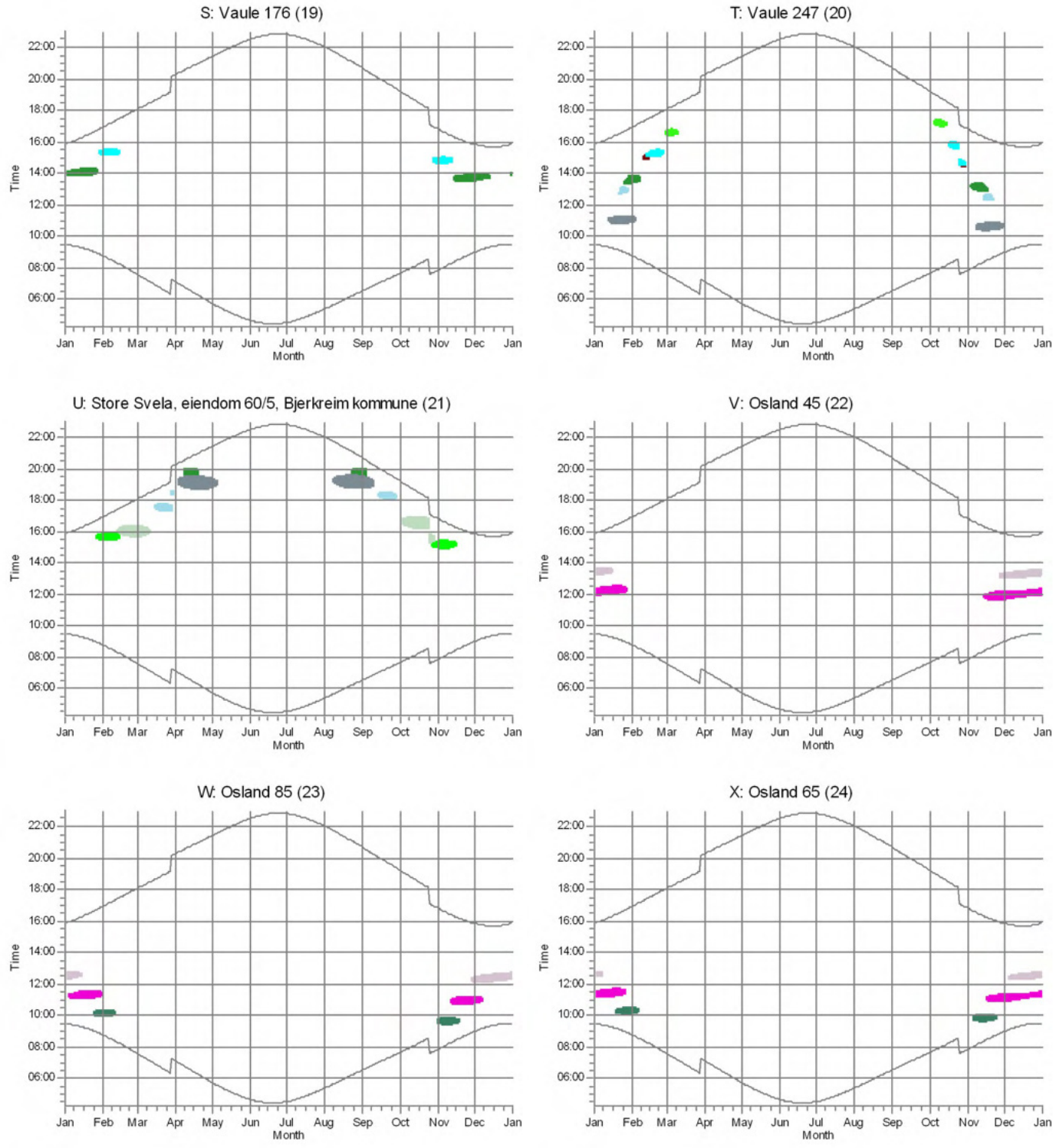
Calculated:
20.01.2025 16:14/4.0.540

SHADOW - Calendar, graphical

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker



WTGs

8: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2550
9: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2551
13: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2555
14: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2556
18: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2560
24: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2566
25: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2567
27: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2569
29: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2571
33: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2575
38: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2580

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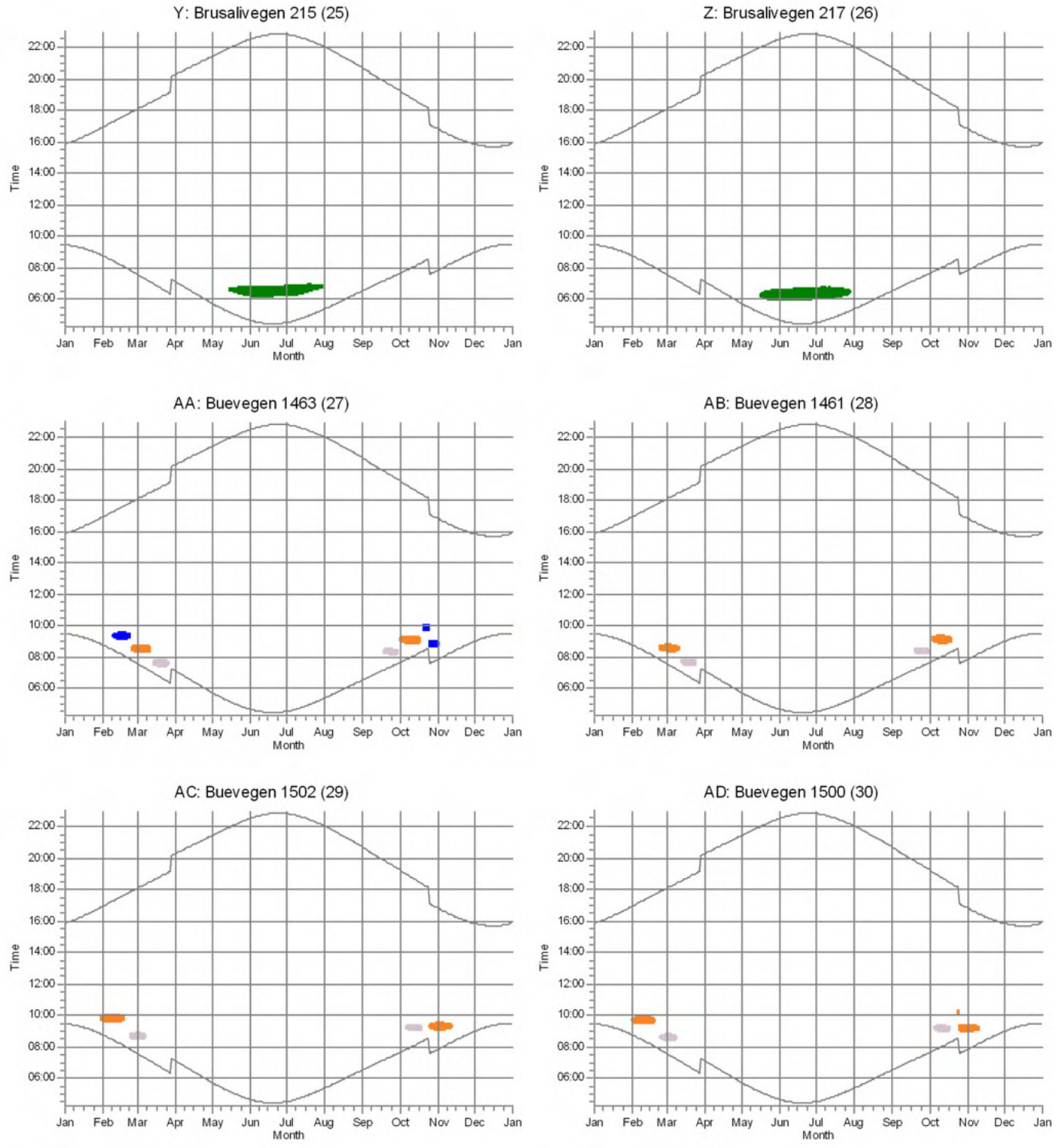
SHADOW - Calendar, graphical

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker



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Calculated:
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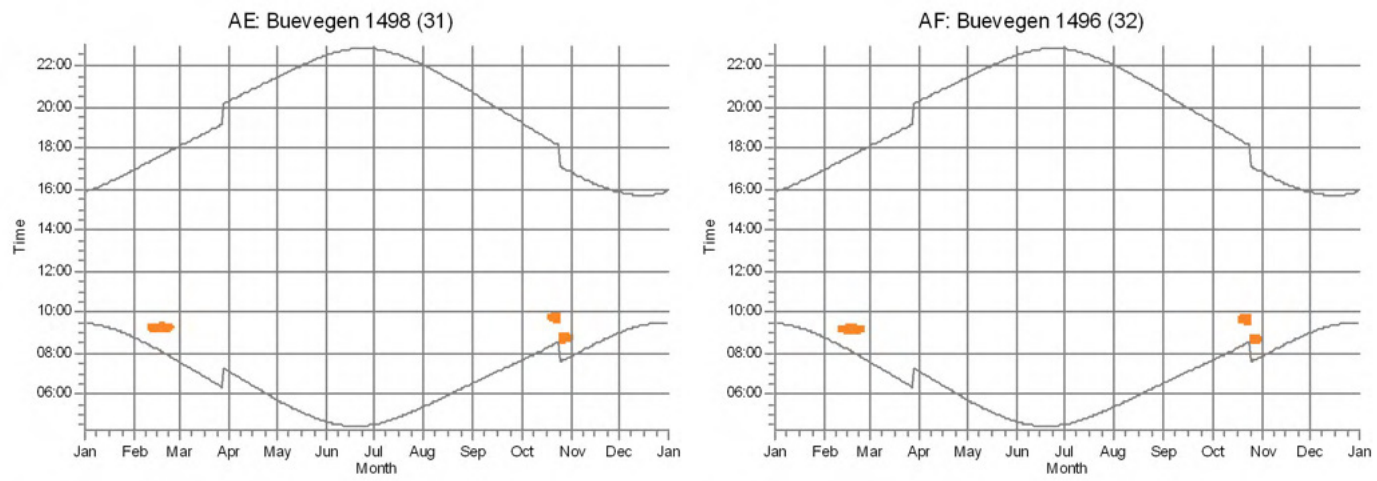
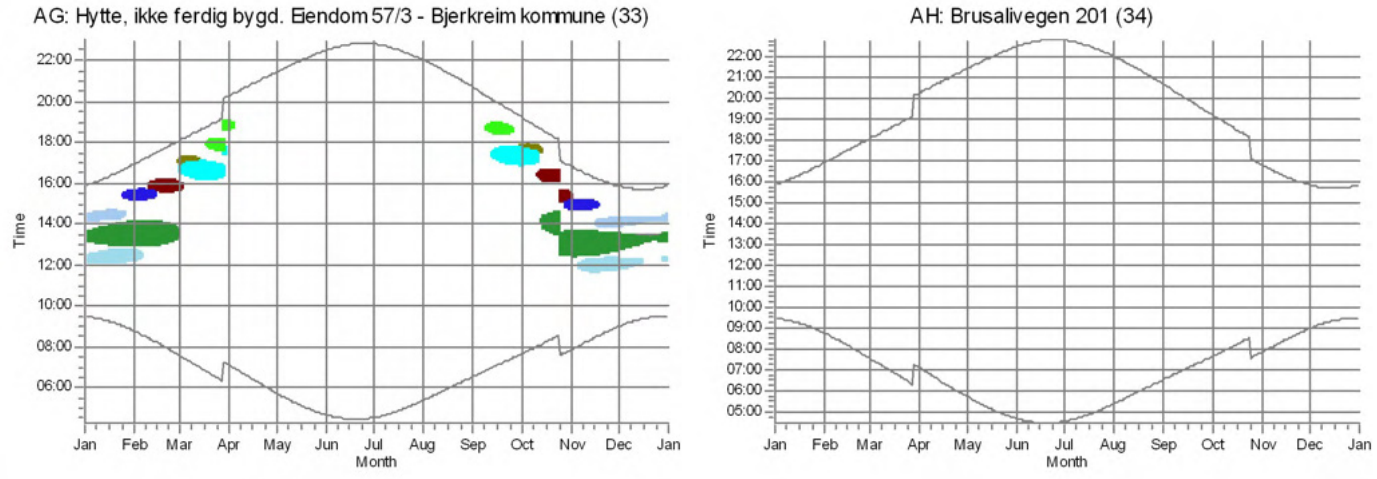
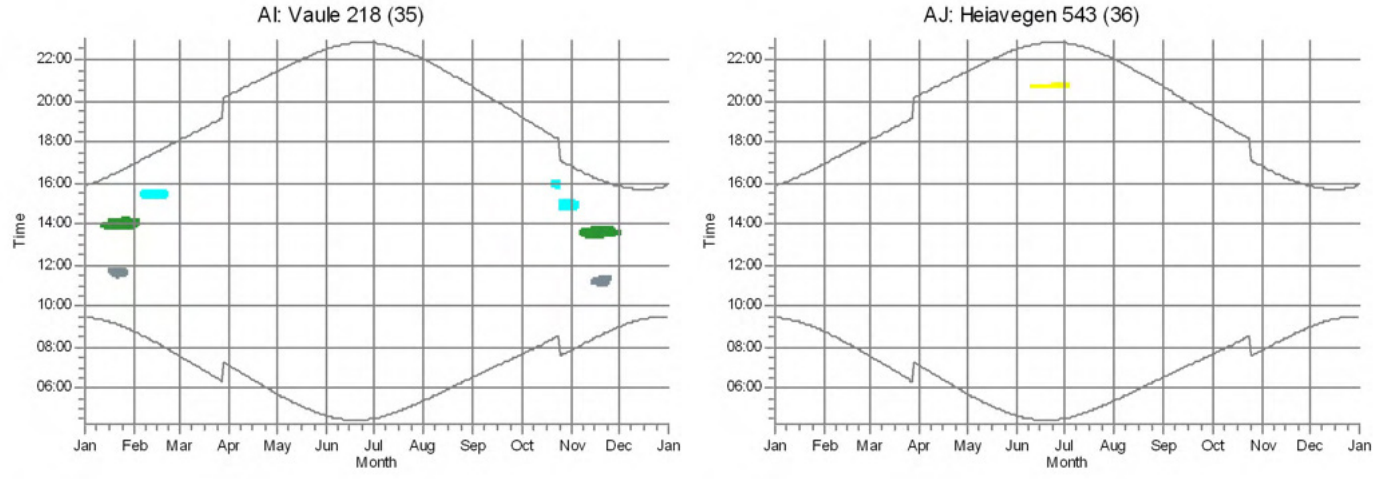
SHADOW - Calendar, graphical

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker







WTGs

2: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2544	13: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2555	27: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2569
4: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2546	15: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2557	33: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2575
8: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2550	18: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2560	36: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2578
10: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2552	23: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2565	38: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2580

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Calculated:
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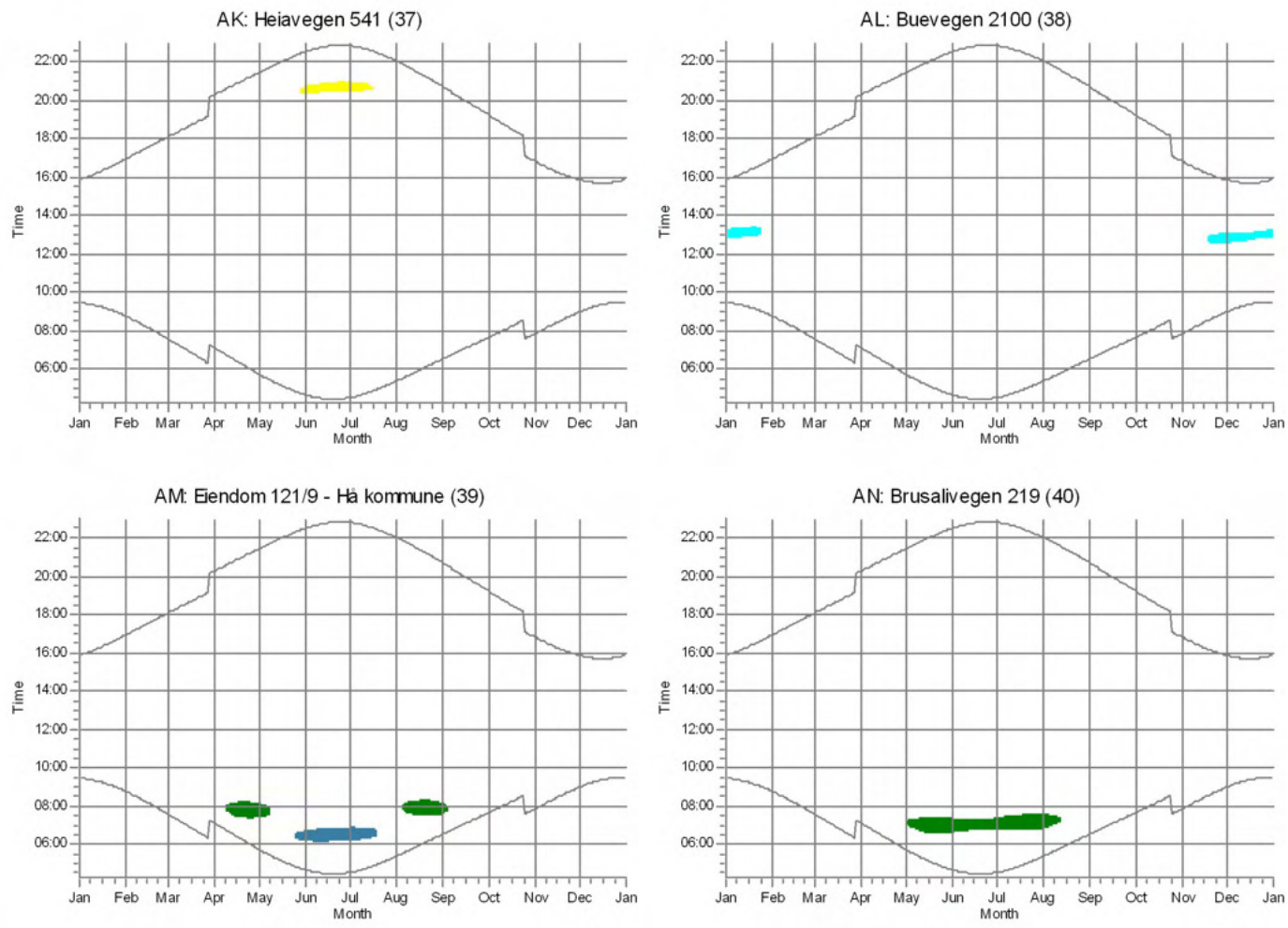
SHADOW - Calendar, graphical

Calculation: Oppdatert layout - kun Moifjellet - worst case - oppdatert mottaker



WTGs

1: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2543
2: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2544
13: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2555
37: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2579

Multiconsult

Vedlegg 2.1

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** A - Moi 32 (1)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March			April	May	June
1	09:28			08:46		11:21 (34)	07:35		09:10 (16)	07:07	05:44	04:40
	15:53			16:56	46	14:37 (24)	18:05	24	09:34 (16)	20:17	21:26	22:30
2	09:27			08:43		12:08 (29)	07:33		09:10 (16)	07:04	05:41	04:38
	15:54			16:58	46	14:44 (24)	18:07	24	09:34 (16)	20:19	21:28	22:32
3	09:27			08:41		12:06 (29)	07:30		09:10 (16)	07:01	05:39	04:37
	15:55			17:01	57	14:50 (24)	18:09	24	09:34 (16)	20:21	21:30	22:34
4	09:26			08:39		12:06 (29)	07:27		09:10 (16)	06:58	05:36	04:36
	15:57			17:03	62	14:52 (24)	18:12	23	09:33 (16)	20:24	21:33	22:35
5	09:26			08:37		12:05 (29)	07:24		09:10 (16)	06:55	05:34	04:35
	15:58			17:06	65	14:53 (24)	18:14	22	09:32 (16)	20:26	21:35	22:37
6	09:25			08:34		12:05 (29)	07:21		08:23 (18)	06:52	05:31	04:34
	16:00			17:08	69	14:55 (24)	18:17	29	09:31 (16)	20:28	21:37	22:38
7	09:24			08:32		12:04 (29)	07:19		08:20 (18)	06:50	05:29	04:33
	16:02			17:11	73	14:56 (24)	18:19	33	09:30 (16)	20:30	21:40	22:39
8	09:24			08:30		12:04 (29)	07:16		08:19 (18)	06:47	05:26	04:32
	16:03			17:13	75	14:57 (24)	18:21	31	09:28 (16)	20:33	21:42	22:40
9	09:23			08:27		12:04 (29)	07:13		08:18 (18)	06:44	05:24	04:31
	16:05			17:16	81	15:36 (25)	18:24	27	09:25 (16)	20:35	21:44	22:42
10	09:22			08:25		12:03 (29)	07:10		08:17 (18)	06:41	05:22	04:30
	16:07			17:18	95	15:42 (25)	18:26	18	08:35 (18)	20:37	21:46	22:43
11	09:21			08:23		12:04 (29)	07:07		08:16 (18)	06:38	05:19	04:29
	16:09			17:21	100	15:47 (25)	18:28	19	08:35 (18)	20:40	21:49	22:44
12	09:20			08:20		12:03 (29)	07:04		08:17 (18)	06:35	05:17	04:29
	16:11			17:23	103	15:49 (25)	18:31	19	08:36 (18)	20:42	21:51	22:45
13	09:18			08:18		12:03 (29)	07:01		08:17 (18)	06:32	05:15	04:28
	16:13			17:26	101	15:48 (25)	18:33	18	08:35 (18)	20:44	21:53	22:46
14	09:17			08:15		12:04 (29)	06:59		08:17 (18)	06:30	05:13	04:28
	16:15			17:28	98	15:48 (25)	18:35	17	08:34 (18)	20:47	21:55	22:47
15	09:16			08:13		12:04 (29)	06:56		08:18 (18)	06:27	05:10	04:27
	16:17			17:31	95	15:46 (25)	18:38	14	08:32 (18)	20:49	21:58	22:47
16	09:15			08:10		12:03 (29)	06:53		08:20 (18)	06:24	05:08	04:27
	16:19			17:33	90	15:43 (25)	18:40	10	08:30 (18)	20:51	22:00	22:48
17	09:13			08:07		12:04 (29)	06:50			06:21	05:06	04:27
	16:21			17:36	78	14:58 (24)	18:42			20:53	22:02	22:49
18	09:12		11:27 (34)	08:05		12:05 (29)	06:47			06:19	05:04	04:27
	16:23	6	11:33 (34)	17:38	76	14:58 (24)	18:45			20:56	22:04	22:49
19	09:10		11:28 (34)	08:02		12:05 (29)	06:44			06:16	05:02	04:27
	16:25	6	13:07 (21)	17:40	75	14:58 (24)	18:47			20:58	22:06	22:50
20	09:08		11:28 (34)	08:00		12:05 (29)	06:41			06:13	05:00	04:27
	16:28	23	13:08 (21)	17:43	72	14:57 (24)	18:49			21:00	22:08	22:50
21	09:07		11:26 (34)	07:57		12:06 (29)	06:38			06:10	04:58	04:27
	16:30	24	13:08 (21)	17:45	67	14:55 (24)	18:51			21:03	22:10	22:50
22	09:05		11:22 (34)	07:54		12:07 (29)	06:36			06:08	04:56	04:27
	16:32	38	13:07 (21)	17:48	62	14:54 (24)	18:54			21:05	22:12	22:50
23	09:03		11:17 (34)	07:52		09:18 (16)	06:33			06:05	04:54	04:27
	16:34	43	13:08 (21)	17:50	68	14:53 (24)	18:56			21:07	22:14	22:50
24	09:02		11:11 (34)	07:49		09:15 (16)	06:30			06:02	04:52	04:27
	16:37	48	13:08 (21)	17:53	66	14:51 (24)	18:58			21:10	22:16	22:51
25	09:00		11:12 (34)	07:46		09:14 (16)	06:27			05:59	04:51	04:28
	16:39	48	13:08 (21)	17:55	55	14:47 (24)	19:01			21:12	22:18	22:50
26	08:58		11:13 (34)	07:44		09:12 (16)	06:24			05:57	04:49	04:28
	16:41	48	13:08 (21)	17:57	41	12:35 (29)	19:03			21:14	22:20	22:50
27	08:56		11:13 (34)	07:41		09:11 (16)	06:21			05:54	04:47	04:29
	16:44	58	13:07 (21)	18:00	33	12:30 (29)	19:05			21:17	22:22	22:50
28	08:54		11:14 (34)	07:38		09:10 (16)	06:18			05:52	04:46	04:30
	16:46	61	13:07 (21)	18:02	23	09:33 (16)	19:07			21:19	22:24	22:50
29	08:52		11:15 (34)				07:15			05:49	04:44	04:30
	16:49	60	13:06 (21)				20:10			21:21	22:25	22:50
30	08:50		11:16 (34)				07:12			05:46	04:43	04:31
	16:51	59	13:04 (21)				20:12			21:24	22:27	22:49
31	08:48		11:18 (34)				07:10				04:41	
	16:54	55	13:03 (21)				20:14				22:29	
Potential sun hours	221			260			365			432	521	547
Total, worst case		577			1972			352				
Sun reduction		0,50			0,50			0,50				
Oper. time red.		0,80			0,80			0,80				
Wind dir. red.		0,65			0,61			0,73				
Total reduction		0,26			0,24			0,29				
Total, real		149			479			103				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** A - Moi 32 (1)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September			October		November			December
1	04:32	05:24	06:33			07:39		08:56 (18)	07:51		11:33 (29)	09:00
	22:49	22:01	20:40			19:13	18	09:14 (18)	16:49	91	15:09 (25)	15:51
2	04:33	05:26	06:35			07:42		08:55 (18)	07:54		11:33 (29)	09:02
	22:48	21:58	20:37			19:10	19	09:14 (18)	16:46	79	15:05 (25)	15:50
3	04:34	05:28	06:37			07:44		08:55 (18)	07:56		11:34 (29)	09:03
	22:47	21:56	20:34			19:07	18	09:13 (18)	16:44	73	14:26 (24)	15:49
4	04:35	05:31	06:40			07:46		08:55 (18)	07:59		11:34 (29)	09:05
	22:47	21:54	20:31			19:04	24	10:00 (16)	16:41	71	14:25 (24)	15:48
5	04:36	05:33	06:42			07:48		08:56 (18)	08:01		11:35 (29)	09:07
	22:46	21:51	20:28			19:02	29	10:04 (16)	16:39	68	14:24 (24)	15:47
6	04:37	05:35	06:44			07:51		08:56 (18)	08:03		11:36 (29)	09:09
	22:45	21:49	20:25			18:59	32	10:05 (16)	16:37	66	14:24 (24)	15:46
7	04:39	05:37	06:46			07:53		08:57 (18)	08:06		11:36 (29)	09:10
	22:44	21:47	20:22			18:56	32	10:06 (16)	16:34	61	14:22 (24)	15:45
8	04:40	05:39	06:49			07:55		09:00 (18)	08:08		11:37 (29)	09:12
	22:43	21:44	20:20			18:53	27	10:07 (16)	16:32	56	14:20 (24)	15:45
9	04:41	05:42	06:51			07:57		09:45 (16)	08:11		11:38 (29)	09:13
	22:42	21:42	20:17			18:50	22	10:07 (16)	16:30	46	14:15 (24)	15:44
10	04:43	05:44	06:53			08:00		09:45 (16)	08:13		10:52 (34)	09:15
	22:40	21:39	20:14			18:47	23	10:08 (16)	16:28	47	14:09 (24)	15:44
11	04:44	05:46	06:55			08:02		09:44 (16)	08:15		10:49 (34)	09:16
	22:39	21:37	20:11			18:45	24	10:08 (16)	16:25	55	12:34 (21)	15:43
12	04:46	05:48	06:57			08:04		09:43 (16)	08:18		10:48 (34)	09:18
	22:38	21:34	20:08			18:42	24	10:07 (16)	16:23	60	12:36 (21)	15:43
13	04:47	05:51	07:00			08:07		09:44 (16)	08:20		10:47 (34)	09:19
	22:37	21:31	20:05			18:39	23	10:07 (16)	16:21	60	12:38 (21)	15:42
14	04:49	05:53	07:02			08:09		09:43 (16)	08:22		10:46 (34)	09:20
	22:35	21:29	20:02			18:36	23	10:06 (16)	16:19	61	12:39 (21)	15:42
15	04:51	05:55	07:04			08:11		09:44 (16)	08:25		10:46 (34)	09:21
	22:34	21:26	19:59			18:33	37	13:05 (29)	16:17	58	12:40 (21)	15:42
16	04:52	05:57	07:06			08:13		09:45 (16)	08:27		10:46 (34)	09:22
	22:32	21:24	19:56			18:31	42	13:08 (29)	16:15	46	12:41 (21)	15:42
17	04:54	06:00	07:08			08:16		09:46 (16)	08:29		10:45 (34)	09:23
	22:30	21:21	19:54			18:28	61	15:21 (24)	16:13	48	12:41 (21)	15:42
18	04:56	06:02	07:11			08:18		09:47 (16)	08:32		10:45 (34)	09:24
	22:29	21:18	19:51			18:25	66	15:23 (24)	16:11	48	12:42 (21)	15:42
19	04:58	06:04	07:13			08:20		09:50 (16)	08:34		10:52 (34)	09:25
	22:27	21:16	19:48			18:22	68	15:25 (24)	16:09	43	12:43 (21)	15:42
20	05:00	06:06	07:15			08:23		12:38 (29)	08:36		10:57 (34)	09:26
	22:25	21:13	19:45			18:20	64	15:25 (24)	16:08	38	12:42 (21)	15:43
21	05:01	06:08	07:17			08:25		12:37 (29)	08:39		11:01 (34)	09:26
	22:24	21:10	19:42			18:17	68	15:27 (24)	16:06	24	12:43 (21)	15:43
22	05:03	06:11	07:19			08:27		12:35 (29)	08:41		11:04 (34)	09:27
	22:22	21:08	19:39			18:14	72	15:27 (24)	16:04	22	12:44 (21)	15:43
23	05:05	06:13	07:22			08:30		12:35 (29)	08:43		11:04 (34)	09:27
	22:20	21:05	19:36			18:12	75	15:28 (24)	16:02	9	12:44 (21)	15:44
24	05:07	06:15	07:24			08:32		12:34 (29)	08:45		11:04 (34)	09:28
	22:18	21:02	19:33			18:09	77	15:28 (24)	16:01	6	11:10 (34)	15:44
25	05:09	06:17	07:26			07:35		11:34 (29)	08:47			09:28
	22:16	20:59	19:30			17:06	78	14:28 (24)	15:59			15:45
26	05:11	06:20	07:28			07:37		11:33 (29)	08:50			09:28
	22:14	20:56	19:27			17:04	91	15:13 (25)	15:58			15:46
27	05:13	06:22	07:30		09:03 (18)	07:39		11:33 (29)	08:52			09:28
	22:12	20:54	19:25	8	09:11 (18)	17:01	97	15:16 (25)	15:56			15:47
28	05:16	06:24	07:33		09:00 (18)	07:42		11:33 (29)	08:54			09:28
	22:10	20:51	19:22	12	09:12 (18)	16:59	99	15:17 (25)	15:55			15:48
29	05:18	06:26	07:35		08:58 (18)	07:44		11:32 (29)	08:56			09:28
	22:07	20:48	19:19	15	09:13 (18)	16:56	102	15:18 (25)	15:54			15:49
30	05:20	06:29	07:37		08:56 (18)	07:47		11:33 (29)	08:58			09:28
	22:05	20:45	19:16	18	09:14 (18)	16:54	102	15:19 (25)	15:52			15:50
31	05:22	06:31				07:49		11:33 (29)				09:28
	22:03	20:42				16:51	98	15:16 (25)				15:51
Potential sun hours	546	478	386			319			236			199
Total, worst case				53			1635			1236		
Sun reduction				0,50			0,50			0,50		
Oper. time red.				0,80			0,80			0,80		
Wind dir. red.				0,72			0,63			0,62		
Total reduction				0,29			0,25			0,25		
Total, real				15			413			308		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** B - Moi 26 (2)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March			April	May	June
1	09:28			08:46		11:18 (34)	07:35		09:09 (16)	07:07	05:44	04:40
	15:53			16:56	58	14:41 (24)	18:05	23	09:32 (16)	20:17	21:26	22:30
2	09:27			08:43		11:58 (29)	07:33		09:09 (16)	07:04	05:41	04:38
	15:54			16:58	58	14:43 (24)	18:07	24	09:33 (16)	20:19	21:28	22:32
3	09:27			08:41		11:57 (29)	07:30		09:09 (16)	07:01	05:39	04:37
	15:55			17:01	63	14:44 (24)	18:09	23	09:32 (16)	20:21	21:30	22:34
4	09:26			08:39		11:57 (29)	07:27		09:09 (16)	06:58	05:36	04:36
	15:57			17:03	66	14:46 (24)	18:12	22	09:31 (16)	20:24	21:33	22:35
5	09:26			08:37		11:56 (29)	07:24		09:10 (16)	06:55	05:34	04:35
	15:58			17:06	70	14:47 (24)	18:14	20	09:30 (16)	20:26	21:35	22:37
6	09:25			08:34		11:56 (29)	07:21		09:10 (16)	06:52	05:31	04:34
	16:00			17:08	73	14:48 (24)	18:17	19	09:29 (16)	20:28	21:37	22:38
7	09:24			08:32		11:55 (29)	07:19		09:11 (16)	06:50	05:29	04:33
	16:02			17:11	85	15:29 (25)	18:19	16	09:27 (16)	20:30	21:40	22:39
8	09:24			08:30		11:56 (29)	07:16		09:13 (16)	06:47	05:26	04:32
	16:03			17:13	91	15:35 (25)	18:21	12	09:25 (16)	20:33	21:42	22:40
9	09:23			08:27		11:55 (29)	07:13			06:44	05:24	04:31
	16:05			17:16	97	15:40 (25)	18:24			20:35	21:44	22:42
10	09:22			08:25		11:55 (29)	07:10			06:41	05:22	04:30
	16:07			17:18	102	15:44 (25)	18:26			20:37	21:46	22:43
11	09:21			08:23		11:55 (29)	07:07			06:38	05:19	04:29
	16:09			17:21	101	15:44 (25)	18:28			20:40	21:49	22:44
12	09:20			08:20		11:55 (29)	07:04			06:35	05:17	04:29
	16:11			17:23	100	15:43 (25)	18:31			20:42	21:51	22:45
13	09:18			08:18		11:55 (29)	07:01			06:32	05:15	04:28
	16:13			17:26	96	15:41 (25)	18:33			20:44	21:53	22:46
14	09:17			08:15		11:55 (29)	06:59			06:30	05:13	04:28
	16:15			17:28	92	15:40 (25)	18:35			20:47	21:55	22:47
15	09:16			08:13		11:55 (29)	06:56			06:27	05:10	04:27
	16:17			17:31	86	15:37 (25)	18:38			20:49	21:58	22:47
16	09:15			08:10		11:55 (29)	06:53			06:24	05:08	04:27
	16:19			17:33	77	14:50 (24)	18:40			20:51	22:00	22:48
17	09:13		12:54 (21)	08:07		11:56 (29)	06:50			06:21	05:06	04:27
	16:21	1	12:55 (21)	17:36	75	14:49 (24)	18:42			20:53	22:02	22:49
18	09:12		11:10 (34)	08:05		11:57 (29)	06:47			06:19	05:04	04:27
	16:23	27	13:01 (21)	17:38	72	14:49 (24)	18:45			20:56	22:04	22:49
19	09:10		11:10 (34)	08:02		11:57 (29)	06:44			06:16	05:02	04:27
	16:25	34	13:02 (21)	17:40	70	14:48 (24)	18:47			20:58	22:06	22:50
20	09:08		11:10 (34)	08:00		11:58 (29)	06:41			06:13	05:00	04:27
	16:28	39	13:02 (21)	17:43	65	14:47 (24)	18:49			21:00	22:08	22:50
21	09:07		11:09 (34)	07:57		11:59 (29)	06:38			06:10	04:58	04:27
	16:30	47	13:02 (21)	17:45	59	14:45 (24)	18:51			21:03	22:10	22:50
22	09:05		11:07 (34)	07:54		09:19 (16)	06:36			06:08	04:56	04:27
	16:32	49	13:02 (21)	17:48	58	14:43 (24)	18:54			21:05	22:12	22:50
23	09:03		11:07 (34)	07:52		09:16 (16)	06:33			06:05	04:54	04:27
	16:34	48	13:02 (21)	17:50	56	14:41 (24)	18:56			21:07	22:14	22:50
24	09:02		11:08 (34)	07:49		09:14 (16)	06:30			06:02	04:52	04:27
	16:37	47	13:02 (21)	17:53	46	14:36 (24)	18:58			21:10	22:16	22:51
25	09:00		11:08 (34)	07:46		09:12 (16)	06:27			05:59	04:51	04:28
	16:39	47	13:02 (21)	17:55	37	12:25 (29)	19:01			21:12	22:18	22:50
26	08:58		11:09 (34)	07:44		09:11 (16)	06:24			05:57	04:49	04:28
	16:41	59	13:02 (21)	17:57	26	12:18 (29)	19:03			21:14	22:20	22:50
27	08:56		11:09 (34)	07:41		09:10 (16)	06:21			05:54	04:47	04:29
	16:44	61	13:01 (21)	18:00	22	09:32 (16)	19:05			21:17	22:22	22:50
28	08:54		11:10 (34)	07:38		09:09 (16)	06:18			05:52	04:46	04:30
	16:46	62	13:00 (21)	18:02	23	09:32 (16)	19:07			21:19	22:24	22:50
29	08:52		11:12 (34)				07:15			05:49	04:44	04:30
	16:49	61	13:00 (21)				20:10			21:21	22:25	22:50
30	08:50		11:13 (34)				07:12			05:46	04:43	04:31
	16:51	61	14:31 (24)				20:12			21:24	22:27	22:49
31	08:48		11:15 (34)				07:10				04:41	
	16:54	65	14:39 (24)				20:14				22:29	
Potential sun hours	221			260			365			432	521	547
Total, worst case		708			1924			159				
Sun reduction		0,50			0,50			0,50				
Oper. time red.		0,80			0,80			0,80				
Wind dir. red.		0,65			0,61			0,74				
Total reduction		0,26			0,24			0,29				
Total, real		183			468			47				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** B - Moi 26 (2)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October			November			December
1	04:32	05:24	06:33	07:39			07:51		11:24 (29)	09:00
	22:49	22:01	20:40	19:13			16:49	101	15:13 (25)	15:51
2	04:33	05:26	06:35	07:42			07:54		11:25 (29)	09:02
	22:48	21:58	20:37	19:10			16:46	96	15:09 (25)	15:50
3	04:34	05:28	06:37	07:44			07:56		11:25 (29)	09:03
	22:47	21:56	20:34	19:07			16:44	90	15:04 (25)	15:49
4	04:35	05:31	06:40	07:46			07:59		11:25 (29)	09:05
	22:47	21:54	20:31	19:04			16:41	81	14:58 (25)	15:48
5	04:36	05:33	06:42	07:48		09:52 (16)	08:01		11:26 (29)	09:07
	22:46	21:51	20:28	19:02	8	10:00 (16)	16:39	72	14:18 (24)	15:47
6	04:37	05:35	06:44	07:51		09:48 (16)	08:03		11:27 (29)	09:09
	22:45	21:49	20:25	18:59	15	10:03 (16)	16:37	69	14:17 (24)	15:46
7	04:39	05:37	06:46	07:53		09:46 (16)	08:06		11:27 (29)	09:10
	22:44	21:47	20:22	18:56	18	10:04 (16)	16:34	67	14:16 (24)	15:45
8	04:40	05:39	06:49	07:55		09:45 (16)	08:08		11:28 (29)	09:12
	22:43	21:44	20:20	18:53	20	10:05 (16)	16:32	62	14:15 (24)	15:45
9	04:41	05:42	06:51	07:57		09:44 (16)	08:11		11:29 (29)	09:13
	22:42	21:42	20:17	18:50	22	10:06 (16)	16:30	58	14:14 (24)	15:44
10	04:43	05:44	06:53	08:00		09:44 (16)	08:13		10:49 (34)	09:15
	22:40	21:39	20:14	18:47	22	10:06 (16)	16:28	59	14:13 (24)	15:44
11	04:44	05:46	06:55	08:02		09:43 (16)	08:15		10:46 (34)	09:16
	22:39	21:37	20:11	18:45	23	10:06 (16)	16:25	66	14:10 (24)	15:43
12	04:46	05:48	06:57	08:04		09:42 (16)	08:18		10:44 (34)	09:18
	22:38	21:34	20:08	18:42	24	10:06 (16)	16:23	61	14:02 (24)	15:43
13	04:47	05:51	07:00	08:07		09:42 (16)	08:20		10:44 (34)	09:19
	22:37	21:31	20:05	18:39	24	10:06 (16)	16:21	60	12:31 (21)	15:42
14	04:49	05:53	07:02	08:09		09:42 (16)	08:22		10:42 (34)	09:20
	22:35	21:29	20:02	18:36	23	10:05 (16)	16:19	62	12:32 (21)	15:42
15	04:51	05:55	07:04	08:11		09:43 (16)	08:25		10:42 (34)	09:21
	22:34	21:26	19:59	18:33	22	10:05 (16)	16:17	62	12:34 (21)	15:42
16	04:52	05:57	07:06	08:13		09:43 (16)	08:27		10:42 (34)	09:22
	22:32	21:24	19:56	18:31	32	12:54 (29)	16:15	59	12:35 (21)	15:42
17	04:54	06:00	07:08	08:16		09:44 (16)	08:29		10:41 (34)	09:23
	22:30	21:21	19:54	18:28	39	12:58 (29)	16:13	47	12:35 (21)	15:42
18	04:56	06:02	07:11	08:18		09:45 (16)	08:32		10:42 (34)	09:24
	22:29	21:18	19:51	18:25	53	15:09 (24)	16:11	47	12:36 (21)	15:42
19	04:58	06:04	07:13	08:20		09:48 (16)	08:34		10:42 (34)	09:25
	22:27	21:16	19:48	18:22	58	15:13 (24)	16:09	48	12:37 (21)	15:42
20	05:00	06:06	07:15	08:23		12:31 (29)	08:36		10:42 (34)	09:26
	22:25	21:13	19:45	18:20	55	15:15 (24)	16:08	49	12:37 (21)	15:43
21	05:01	06:08	07:17	08:25		12:30 (29)	08:39		10:44 (34)	09:26
	22:24	21:10	19:42	18:17	61	15:17 (24)	16:06	47	12:37 (21)	15:43
22	05:03	06:11	07:19	08:27		12:28 (29)	08:41		10:46 (34)	09:27
	22:22	21:08	19:39	18:14	66	15:17 (24)	16:04	39	12:38 (21)	15:43
23	05:05	06:13	07:22	08:30		12:27 (29)	08:43		10:46 (34)	09:27
	22:20	21:05	19:36	18:12	71	15:19 (24)	16:02	34	12:38 (21)	15:44
24	05:07	06:15	07:24	08:32		12:26 (29)	08:45		10:47 (34)	09:28
	22:18	21:02	19:33	18:09	73	15:19 (24)	16:01	27	12:38 (21)	15:44
25	05:09	06:17	07:26	07:35		11:26 (29)	08:47		12:32 (21)	09:28
	22:16	20:59	19:30	17:06	76	14:20 (24)	15:59	2	12:34 (21)	15:45
26	05:11	06:20	07:28	07:37		11:25 (29)	08:50			09:28
	22:14	20:56	19:27	17:04	77	14:19 (24)	15:58			15:46
27	05:13	06:22	07:30	07:39		11:25 (29)	08:52			09:28
	22:12	20:54	19:25	17:01	87	15:07 (25)	15:56			15:47
28	05:16	06:24	07:33	07:42		11:25 (29)	08:54			09:28
	22:10	20:51	19:22	16:59	93	15:10 (25)	15:55			15:48
29	05:18	06:26	07:35	07:44		11:24 (29)	08:56			09:28
	22:07	20:48	19:19	16:56	98	15:11 (25)	15:54			15:49
30	05:20	06:29	07:37	07:47		11:24 (29)	08:58			09:28
	22:05	20:45	19:16	16:54	100	15:12 (25)	15:52			15:50
31	05:22	06:31		07:49		11:25 (29)				09:28
	22:03	20:42		16:51	100	15:13 (25)				15:51
Potential sun hours	546	478	386	319			236			199
Total, worst case					1360			1465		
Sun reduction					0,50			0,50		
Oper. time red.					0,80			0,80		
Wind dir. red.					0,63			0,62		
Total reduction					0,25			0,25		
Total, real					342			365		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** C - Moi 21 (3)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March			April	May	June
1	09:28			08:46		10:42 (34)	07:35		08:50 (16)	07:07	05:44	04:40
	15:53			16:56	72	14:06 (24)	18:05	39	11:29 (29)	20:17	21:26	22:30
2	09:27			08:43		10:44 (34)	07:33		08:50 (16)	07:04	05:41	04:38
	15:54			16:58	70	14:08 (24)	18:07	31	11:25 (29)	20:19	21:28	22:32
3	09:27			08:41		10:46 (34)	07:30		08:49 (16)	07:01	05:39	04:37
	15:55			17:01	72	14:10 (24)	18:09	21	09:10 (16)	20:21	21:31	22:34
4	09:26			08:39		10:47 (34)	07:27		08:48 (16)	06:58	05:36	04:36
	15:57			17:03	77	15:02 (25)	18:12	22	09:10 (16)	20:24	21:33	22:35
5	09:26			08:37		10:50 (34)	07:24		08:48 (16)	06:55	05:34	04:35
	15:58			17:06	77	15:05 (25)	18:14	21	09:09 (16)	20:26	21:35	22:37
6	09:25			08:34		11:05 (29)	07:21		08:48 (16)	06:52	05:31	04:34
	16:00			17:08	82	15:12 (25)	18:17	21	09:09 (16)	20:28	21:37	22:38
7	09:24			08:32		11:03 (29)	07:19		08:48 (16)	06:50	05:29	04:33
	16:02			17:11	92	15:18 (25)	18:19	20	09:08 (16)	20:30	21:40	22:39
8	09:24			08:30		11:03 (29)	07:16		08:48 (16)	06:47	05:26	04:32
	16:03			17:13	101	15:25 (25)	18:21	19	09:07 (16)	20:33	21:42	22:40
9	09:23			08:27		11:02 (29)	07:13		08:48 (16)	06:44	05:24	04:31
	16:05			17:16	112	15:55 (23)	18:24	18	09:06 (16)	20:35	21:44	22:42
10	09:22			08:25		11:01 (29)	07:10		08:49 (16)	06:41	05:22	04:30
	16:07			17:18	104	15:51 (23)	18:26	15	09:04 (16)	20:37	21:46	22:43
11	09:21			08:23		11:01 (29)	07:07		08:51 (16)	06:38	05:19	04:29
	16:09			17:21	101	15:23 (25)	18:28	11	09:02 (16)	20:40	21:49	22:44
12	09:20			08:20		11:00 (29)	07:04			06:35	05:17	04:29
	16:11			17:23	98	15:21 (25)	18:31			20:42	21:51	22:45
13	09:18			08:18		10:59 (29)	07:02			06:33	05:15	04:28
	16:13			17:26	94	15:18 (25)	18:33			20:44	21:53	22:46
14	09:17			08:15		11:00 (29)	06:59			06:30	05:13	04:28
	16:15			17:28	83	14:14 (24)	18:35			20:47	21:55	22:47
15	09:16			08:13		10:59 (29)	06:56			06:27	05:10	04:27
	16:17			17:31	83	14:13 (24)	18:38			20:49	21:58	22:47
16	09:15			08:10		10:59 (29)	06:53			06:24	05:08	04:27
	16:19			17:33	81	14:12 (24)	18:40			20:51	22:00	22:48
17	09:13			08:07		10:59 (29)	06:50			06:21	05:06	04:27
	16:21			17:36	81	14:12 (24)	18:42			20:53	22:02	22:49
18	09:12			08:05		10:59 (29)	06:47			06:19	05:04	04:27
	16:23			17:38	80	14:12 (24)	18:45			20:56	22:04	22:49
19	09:10			08:02		10:59 (29)	06:44			06:16	05:02	04:27
	16:25			17:40	78	14:11 (24)	18:47			20:58	22:06	22:50
20	09:08			08:00		10:59 (29)	06:41			06:13	05:00	04:27
	16:28			17:43	74	14:09 (24)	18:49			21:00	22:08	22:50
21	09:07			07:57		10:59 (29)	06:39			06:10	04:58	04:27
	16:30			17:45	71	14:08 (24)	18:51			21:03	22:10	22:50
22	09:05			07:54		11:00 (29)	06:36			06:08	04:56	04:27
	16:32			17:48	66	14:06 (24)	18:54			21:05	22:12	22:50
23	09:03			07:52		11:01 (29)	06:33			06:05	04:54	04:27
	16:34			17:50	60	14:04 (24)	18:56			21:07	22:14	22:50
24	09:02			07:49		11:01 (29)	06:30			06:02	04:52	04:27
	16:37			17:53	50	14:00 (24)	18:58			21:10	22:16	22:51
25	09:00			07:46		11:02 (29)	06:27			06:00	04:51	04:28
	16:39			17:55	36	11:38 (29)	19:01			21:12	22:18	22:50
26	08:58		12:05 (21)	07:44		11:03 (29)	06:24			05:57	04:49	04:28
	16:41	5	12:10 (21)	17:57	33	11:36 (29)	19:03			21:14	22:20	22:50
27	08:56		12:05 (21)	07:41		08:54 (16)	06:21			05:54	04:47	04:29
	16:44	19	13:53 (24)	18:00	41	11:34 (29)	19:05			21:17	22:22	22:50
28	08:54		11:00 (34)	07:38		08:52 (16)	06:18			05:52	04:46	04:30
	16:46	40	13:59 (24)	18:02	41	11:32 (29)	19:08			21:19	22:24	22:50
29	08:52		10:56 (34)				07:15			05:49	04:44	04:30
	16:49	47	14:02 (24)				20:10			21:21	22:25	22:50
30	08:50		10:50 (34)				07:13			05:46	04:43	04:31
	16:51	55	14:03 (24)				20:12			21:24	22:27	22:49
31	08:48		10:44 (34)				07:10				04:41	
	16:54	61	14:05 (24)				20:14				22:29	
Potential sun hours	221			260			365			432	521	547
Total, worst case		227			2110			238				
Sun reduction		0,50			0,50			0,50				
Oper. time red.		0,80			0,80			0,80				
Wind dir. red.		0,62			0,63			0,73				
Total reduction		0,25			0,25			0,29				
Total, real		56			529			69				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** C - Moi 21 (3)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October			November			December
1	04:32	05:24	06:33	07:39			07:51		10:30 (29)	09:00
	22:49	22:01	20:40	19:13			16:49	107	15:21 (23)	15:51
2	04:33	05:26	06:35	07:42		09:32 (16)	07:54		10:31 (29)	09:02
	22:48	21:58	20:37	19:10	7	09:39 (16)	16:46	111	15:25 (23)	15:50
3	04:34	05:28	06:37	07:44		09:28 (16)	07:56		10:33 (29)	09:03
	22:47	21:56	20:34	19:07	14	09:42 (16)	16:44	97	14:53 (25)	15:49
4	04:35	05:31	06:40	07:46		09:26 (16)	07:59		10:33 (29)	09:05
	22:47	21:54	20:31	19:04	17	09:43 (16)	16:41	89	14:46 (25)	15:48
5	04:36	05:33	06:42	07:48		09:25 (16)	08:01		10:34 (29)	09:07
	22:46	21:51	20:28	19:02	19	09:44 (16)	16:39	82	14:41 (25)	15:47
6	04:37	05:35	06:44	07:51		09:24 (16)	08:03		10:20 (34)	09:09
	22:45	21:49	20:25	18:59	20	09:44 (16)	16:37	77	14:35 (25)	15:46
7	04:39	05:37	06:46	07:53		09:23 (16)	08:06		10:16 (34)	09:10
	22:44	21:47	20:22	18:56	21	09:44 (16)	16:34	78	14:32 (25)	15:45
8	04:40	05:39	06:49	07:55		09:23 (16)	08:08		10:15 (34)	09:12
	22:43	21:44	20:20	18:53	22	09:45 (16)	16:32	71	13:39 (24)	15:45
9	04:41	05:42	06:51	07:57		09:23 (16)	08:11		10:15 (34)	09:13
	22:42	21:42	20:17	18:50	21	09:44 (16)	16:30	71	13:39 (24)	15:44
10	04:43	05:44	06:53	08:00		09:23 (16)	08:13		10:14 (34)	09:15
	22:40	21:39	20:14	18:47	21	09:44 (16)	16:28	70	13:38 (24)	15:44
11	04:44	05:46	06:55	08:02		09:23 (16)	08:15		10:15 (34)	09:16
	22:39	21:37	20:11	18:45	20	09:43 (16)	16:25	61	13:36 (24)	15:43
12	04:46	05:48	06:57	08:04		09:23 (16)	08:18		10:24 (34)	09:18
	22:38	21:34	20:08	18:42	35	12:00 (29)	16:23	52	13:35 (24)	15:43
13	04:47	05:51	07:00	08:07		09:25 (16)	08:20		10:28 (34)	09:19
	22:37	21:31	20:05	18:39	39	12:04 (29)	16:21	46	13:33 (24)	15:42
14	04:49	05:53	07:02	08:09		09:25 (16)	08:22		10:32 (34)	09:20
	22:35	21:29	20:02	18:36	42	12:06 (29)	16:19	39	13:30 (24)	15:42
15	04:51	05:55	07:04	08:11		09:28 (16)	08:25		11:38 (21)	09:21
	22:34	21:26	19:59	18:33	40	12:08 (29)	16:17	19	13:26 (24)	15:42
16	04:52	05:57	07:06	08:13		11:35 (29)	08:27		11:38 (21)	09:22
	22:32	21:24	19:56	18:31	34	12:09 (29)	16:15	4	11:42 (21)	15:42
17	04:54	06:00	07:08	08:16		11:34 (29)	08:29			09:23
	22:30	21:21	19:54	18:28	36	12:10 (29)	16:13			15:42
18	04:56	06:02	07:11	08:18		11:32 (29)	08:32			09:24
	22:29	21:18	19:51	18:25	55	14:33 (24)	16:11			15:42
19	04:58	06:04	07:13	08:20		11:32 (29)	08:34			09:25
	22:27	21:16	19:48	18:22	62	14:36 (24)	16:09			15:42
20	05:00	06:06	07:15	08:23		11:31 (29)	08:36			09:26
	22:25	21:13	19:45	18:20	67	14:37 (24)	16:08			15:43
21	05:01	06:09	07:17	08:25		11:30 (29)	08:39			09:26
	22:24	21:10	19:42	18:17	72	14:39 (24)	16:06			15:43
22	05:03	06:11	07:19	08:27		11:29 (29)	08:41			09:27
	22:22	21:08	19:39	18:14	75	14:40 (24)	16:04			15:43
23	05:05	06:13	07:22	08:30		11:29 (29)	08:43			09:27
	22:20	21:05	19:36	18:12	78	14:41 (24)	16:02			15:44
24	05:07	06:15	07:24	08:32		11:29 (29)	08:45			09:28
	22:18	21:02	19:33	18:09	78	14:41 (24)	16:01			15:45
25	05:09	06:17	07:26	07:35		10:29 (29)	08:47			09:28
	22:16	20:59	19:30	17:07	81	13:42 (24)	15:59			15:45
26	05:11	06:20	07:28	07:37		10:29 (29)	08:50			09:28
	22:14	20:57	19:27	17:04	82	13:43 (24)	15:58			15:46
27	05:13	06:22	07:30	07:39		10:29 (29)	08:52			09:28
	22:12	20:54	19:25	17:01	81	13:42 (24)	15:56			15:47
28	05:16	06:24	07:33	07:42		10:29 (29)	08:54			09:28
	22:10	20:51	19:22	16:59	87	14:45 (25)	15:55			15:48
29	05:18	06:26	07:35	07:44		10:29 (29)	08:56			09:28
	22:07	20:48	19:19	16:56	95	14:48 (25)	15:54			15:49
30	05:20	06:29	07:37	07:47		10:30 (29)	08:58			09:28
	22:05	20:45	19:16	16:54	99	14:51 (25)	15:52			15:50
31	05:22	06:31		07:49		10:30 (29)				09:28
	22:03	20:42		16:51	100	14:52 (25)				15:51
Potential sun hours	546	478	386	319			236			199
Total, worst case					1520			1074		
Sun reduction					0,50			0,50		
Oper. time red.					0,80			0,80		
Wind dir. red.					0,65			0,62		
Total reduction					0,26			0,25		
Total, real					395			264		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** D - Buevegen 1805 (4)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March		April	May	June
1	09:28		08:46		11:39 (29)	07:35	09:25 (16)	07:07	05:44	04:40
	15:53		16:56	88	15:12 (25)	18:05	9 09:34 (16)	20:17	21:26	22:31
2	09:27		08:43		11:39 (29)	07:33		07:04	05:41	04:38
	15:54		16:58	88	15:13 (25)	18:07		20:19	21:28	22:32
3	09:27		08:41		11:40 (29)	07:30		07:01	05:39	04:37
	15:55		17:01	85	15:12 (25)	18:09		20:21	21:31	22:34
4	09:27		08:39		11:39 (29)	07:27		06:58	05:36	04:36
	15:57		17:03	83	15:11 (25)	18:12		20:24	21:33	22:35
5	09:26	12:20 (21)	08:37		11:39 (29)	07:24		06:55	05:34	04:35
	15:58	1 12:21 (21)	17:06	80	15:09 (25)	18:14		20:26	21:35	22:37
6	09:25	12:19 (21)	08:34		11:40 (29)	07:21		06:52	05:31	04:34
	16:00	5 12:24 (21)	17:08	74	15:08 (25)	18:17		20:28	21:37	22:38
7	09:24	12:17 (21)	08:32		11:40 (29)	07:19		06:50	05:29	04:33
	16:02	11 12:28 (21)	17:11	62	14:11 (24)	18:19		20:30	21:40	22:39
8	09:24	12:17 (21)	08:30		11:41 (29)	07:16		06:47	05:26	04:32
	16:03	13 12:30 (21)	17:13	61	14:11 (24)	18:21		20:33	21:42	22:40
9	09:23	12:18 (21)	08:27		11:42 (29)	07:13		06:44	05:24	04:31
	16:05	16 12:34 (21)	17:16	57	14:10 (24)	18:24		20:35	21:44	22:42
10	09:22	11:06 (34)	08:25		11:42 (29)	07:10		06:41	05:22	04:30
	16:07	25 12:39 (21)	17:18	54	14:09 (24)	18:26		20:37	21:46	22:43
11	09:21	11:02 (34)	08:23		11:44 (29)	07:07		06:38	05:19	04:29
	16:09	31 12:41 (21)	17:21	48	14:08 (24)	18:28		20:40	21:49	22:44
12	09:20	11:01 (34)	08:20		11:45 (29)	07:04		06:35	05:17	04:29
	16:11	40 12:41 (21)	17:23	42	14:06 (24)	18:31		20:42	21:51	22:45
13	09:18	11:02 (34)	08:18		11:46 (29)	07:02		06:32	05:15	04:28
	16:13	42 12:42 (21)	17:26	32	14:02 (24)	18:33		20:44	21:53	22:46
14	09:17	11:02 (34)	08:15		11:49 (29)	06:59		06:30	05:13	04:28
	16:15	42 12:42 (21)	17:28	18	12:07 (29)	18:35		20:47	21:55	22:47
15	09:16	11:02 (34)	08:13		11:52 (29)	06:56		06:27	05:10	04:27
	16:17	43 12:42 (21)	17:31	12	12:04 (29)	18:38		20:49	21:58	22:47
16	09:15	11:02 (34)	08:10		09:29 (16)	06:53		06:24	05:08	04:27
	16:19	43 12:42 (21)	17:33	5	09:34 (16)	18:40		20:51	22:00	22:48
17	09:13	11:02 (34)	08:07		09:26 (16)	06:50		06:21	05:06	04:27
	16:21	47 12:42 (21)	17:36	11	09:37 (16)	18:42		20:53	22:02	22:49
18	09:12	11:03 (34)	08:05		09:25 (16)	06:47		06:19	05:04	04:27
	16:23	58 13:55 (24)	17:38	14	09:39 (16)	18:45		20:56	22:04	22:49
19	09:10	11:03 (34)	08:02		09:23 (16)	06:44		06:16	05:02	04:27
	16:25	69 13:59 (24)	17:40	17	09:40 (16)	18:47		20:58	22:06	22:50
20	09:08	11:04 (34)	08:00		09:22 (16)	06:41		06:13	05:00	04:27
	16:28	75 14:01 (24)	17:43	19	09:41 (16)	18:49		21:00	22:08	22:50
21	09:07	11:04 (34)	07:57		09:21 (16)	06:39		06:10	04:58	04:27
	16:30	79 14:03 (24)	17:45	20	09:41 (16)	18:51		21:03	22:10	22:50
22	09:05	11:05 (34)	07:54		09:20 (16)	06:36		06:08	04:56	04:27
	16:32	82 14:05 (24)	17:48	21	09:41 (16)	18:54		21:05	22:12	22:50
23	09:03	11:05 (34)	07:52		09:21 (16)	06:33		06:05	04:54	04:27
	16:34	83 14:05 (24)	17:50	21	09:42 (16)	18:56		21:07	22:14	22:51
24	09:02	11:06 (34)	07:49		09:21 (16)	06:30		06:02	04:52	04:27
	16:37	84 14:07 (24)	17:53	21	09:42 (16)	18:58		21:10	22:16	22:51
25	09:00	11:07 (34)	07:46		09:21 (16)	06:27		05:59	04:51	04:28
	16:39	82 14:52 (25)	17:55	20	09:41 (16)	19:01		21:12	22:18	22:51
26	08:58	11:09 (34)	07:44		09:21 (16)	06:24		05:57	04:49	04:28
	16:41	78 14:57 (25)	17:57	19	09:40 (16)	19:03		21:14	22:20	22:50
27	08:56	11:10 (34)	07:41		09:22 (16)	06:21		05:54	04:47	04:29
	16:44	86 15:12 (25)	18:00	17	09:39 (16)	19:05		21:17	22:22	22:50
28	08:54	11:13 (34)	07:38		09:23 (16)	06:18		05:52	04:46	04:30
	16:46	90 15:13 (25)	18:02	14	09:37 (16)	19:08		21:19	22:24	22:50
29	08:52	11:40 (29)				07:15		05:49	04:44	04:30
	16:49	88 15:14 (25)				20:10		21:21	22:25	22:50
30	08:50	11:39 (29)				07:12		05:46	04:42	04:31
	16:51	88 15:13 (25)				20:12		21:24	22:27	22:49
31	08:48	11:39 (29)				07:10			04:41	
	16:54	88 15:13 (25)				20:14			22:29	
Potential sun hours	221		260		365		432	521	547	
Total, worst case		1489		1103		9				
Sun reduction		0,50		0,50		0,50				
Oper. time red.		0,80		0,80		0,80				
Wind dir. red.		0,62		0,63		0,73				
Total reduction		0,25		0,25		0,29				
Total, real		371		276		3				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** D - Buevegen 1805 (4)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October		November		December		
1	04:32	05:24	06:33	07:39		07:51		11:12 (29)	09:00	10:44 (34)
	22:49	22:01	20:40	19:13		16:49	53	13:38 (24)	15:51	31 12:23 (21)
2	04:33	05:26	06:35	07:42		07:54		11:11 (29)	09:02	10:48 (34)
	22:48	21:58	20:37	19:10		16:46	58	13:40 (24)	15:50	27 12:23 (21)
3	04:34	05:28	06:37	07:44		07:56		11:11 (29)	09:03	12:01 (21)
	22:47	21:56	20:34	19:07		16:44	60	13:41 (24)	15:49	17 12:18 (21)
4	04:35	05:31	06:40	07:46		07:59		11:10 (29)	09:05	12:01 (21)
	22:47	21:54	20:31	19:04		16:41	63	13:41 (24)	15:48	13 12:14 (21)
5	04:36	05:33	06:42	07:48		08:01		11:10 (29)	09:07	12:02 (21)
	22:46	21:51	20:28	19:02		16:39	75	14:38 (25)	15:47	11 12:13 (21)
6	04:37	05:35	06:44	07:51		08:03		11:10 (29)	09:09	12:05 (21)
	22:45	21:49	20:25	18:59		16:37	79	14:40 (25)	15:46	5 12:10 (21)
7	04:39	05:37	06:46	07:53		08:06		11:09 (29)	09:10	12:07 (21)
	22:44	21:47	20:22	18:56		16:34	84	14:41 (25)	15:45	2 12:09 (21)
8	04:40	05:39	06:49	07:55		08:08		11:09 (29)	09:12	
	22:43	21:44	20:20	18:53		16:32	87	14:42 (25)	15:45	
9	04:41	05:42	06:51	07:57		08:11		11:10 (29)	09:13	
	22:42	21:42	20:17	18:50		16:30	87	14:43 (25)	15:44	
10	04:43	05:44	06:53	08:00		08:13		11:10 (29)	09:15	
	22:41	21:39	20:14	18:47		16:28	88	14:44 (25)	15:43	
11	04:44	05:46	06:55	08:02		08:15		11:10 (29)	09:16	
	22:39	21:37	20:11	18:45		16:25	88	14:44 (25)	15:43	
12	04:46	05:48	06:57	08:04	10:01 (16)	08:18		11:11 (29)	09:18	
	22:38	21:34	20:08	18:42	4 10:05 (16)	16:23	88	14:45 (25)	15:43	
13	04:47	05:51	07:00	08:07	09:58 (16)	08:20		11:11 (29)	09:19	
	22:37	21:32	20:05	18:39	11 10:09 (16)	16:21	87	14:45 (25)	15:42	
14	04:49	05:53	07:02	08:09	09:55 (16)	08:22		10:45 (34)	09:20	
	22:35	21:29	20:02	18:36	16 10:11 (16)	16:19	89	14:45 (25)	15:42	
15	04:51	05:55	07:04	08:11	09:54 (16)	08:25		10:42 (34)	09:21	
	22:34	21:26	19:59	18:33	18 10:12 (16)	16:17	87	14:45 (25)	15:42	
16	04:52	05:57	07:06	08:13	09:53 (16)	08:27		10:41 (34)	09:22	
	22:32	21:24	19:56	18:31	19 10:12 (16)	16:15	79	14:30 (25)	15:42	
17	04:54	06:00	07:08	08:16	09:53 (16)	08:30		10:41 (34)	09:23	
	22:30	21:21	19:54	18:28	20 10:13 (16)	16:13	81	14:25 (25)	15:42	
18	04:56	06:02	07:11	08:18	09:52 (16)	08:32		10:40 (34)	09:24	
	22:29	21:18	19:51	18:25	21 10:13 (16)	16:11	84	13:41 (24)	15:42	
19	04:58	06:04	07:13	08:20	09:52 (16)	08:34		10:40 (34)	09:25	
	22:27	21:16	19:48	18:22	21 10:13 (16)	16:09	83	13:40 (24)	15:42	
20	05:00	06:06	07:15	08:23	09:52 (16)	08:36		10:39 (34)	09:26	
	22:25	21:13	19:45	18:20	20 10:12 (16)	16:08	82	13:39 (24)	15:43	
21	05:01	06:08	07:17	08:25	09:52 (16)	08:39		10:39 (34)	09:26	
	22:24	21:10	19:42	18:17	20 10:12 (16)	16:06	79	13:38 (24)	15:43	
22	05:03	06:11	07:19	08:27	09:52 (16)	08:41		10:40 (34)	09:27	
	22:22	21:08	19:39	18:14	19 10:11 (16)	16:04	75	13:37 (24)	15:43	
23	05:05	06:13	07:22	08:30	09:54 (16)	08:43		10:39 (34)	09:27	
	22:20	21:05	19:36	18:12	16 10:10 (16)	16:02	69	13:35 (24)	15:44	
24	05:07	06:15	07:24	08:32	09:54 (16)	08:45		10:40 (34)	09:28	
	22:18	21:02	19:33	18:09	14 10:08 (16)	16:01	58	13:32 (24)	15:44	
25	05:09	06:17	07:26	07:35	08:57 (16)	08:47		10:40 (34)	09:28	
	22:16	20:59	19:30	17:06	10 09:07 (16)	15:59	46	12:20 (21)	15:45	
26	05:11	06:20	07:28	07:37		08:50		10:41 (34)	09:28	
	22:14	20:57	19:27	17:04		15:58	43	12:21 (21)	15:46	
27	05:13	06:22	07:30	07:39	11:20 (29)	08:52		10:41 (34)	09:28	
	22:12	20:54	19:25	17:01	14 11:34 (29)	15:56	43	12:21 (21)	15:47	
28	05:16	06:24	07:33	07:42	11:18 (29)	08:54		10:42 (34)	09:28	
	22:10	20:51	19:22	16:59	19 11:37 (29)	15:55	42	12:22 (21)	15:48	
29	05:18	06:26	07:35	07:44	11:15 (29)	08:56		10:42 (34)	09:28	
	22:07	20:48	19:19	16:56	34 13:32 (24)	15:54	42	12:22 (21)	15:49	
30	05:20	06:29	07:37	07:47	11:14 (29)	08:58		10:42 (34)	09:28	
	22:05	20:45	19:16	16:54	42 13:35 (24)	15:52	40	12:22 (21)	15:50	
31	05:22	06:31		07:49	11:13 (29)				09:28	
	22:03	20:42		16:51	50 13:38 (24)				15:51	
Potential sun hours	546	478	386	319		236			199	
Total, worst case					388		2119			106
Sun reduction					0,50		0,50			0,50
Oper. time red.					0,80		0,80			0,80
Wind dir. red.					0,69		0,61			0,64
Total reduction					0,27		0,25			0,25
Total, real					106		519			27

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** E - Buevegen 1816 (5)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March	April	May	June
1	09:28		11:12 (34)	08:46		11:58 (29)	07:35	07:07	05:44	04:40
	15:53	2	11:14 (34)	16:56	87	15:21 (25)	18:05	20:17	21:26	22:30
2	09:27		11:12 (34)	08:43		11:59 (29)	07:33	07:04	05:41	04:38
	15:54	2	11:14 (34)	16:58	85	15:21 (25)	18:07	20:19	21:28	22:32
3	09:27		11:11 (34)	08:41		12:00 (29)	07:30	07:01	05:39	04:37
	15:55	4	12:42 (21)	17:01	84	15:21 (25)	18:09	20:21	21:31	22:34
4	09:27		11:11 (34)	08:39		11:59 (29)	07:27	06:58	05:36	04:36
	15:57	12	12:45 (21)	17:03	83	15:20 (25)	18:12	20:24	21:33	22:35
5	09:26		11:11 (34)	08:37		11:59 (29)	07:24	06:55	05:34	04:35
	15:58	18	12:46 (21)	17:06	81	15:19 (25)	18:14	20:26	21:35	22:37
6	09:25		11:11 (34)	08:34		12:00 (29)	07:21	06:52	05:31	04:34
	16:00	29	12:50 (21)	17:08	76	15:18 (25)	18:17	20:28	21:37	22:38
7	09:24		11:11 (34)	08:32		12:01 (29)	07:19	06:50	05:29	04:33
	16:02	35	12:50 (21)	17:11	67	15:15 (25)	18:19	20:30	21:40	22:39
8	09:24		11:12 (34)	08:30		12:02 (29)	07:16	06:47	05:26	04:32
	16:03	38	12:51 (21)	17:13	57	14:25 (24)	18:21	20:33	21:42	22:40
9	09:23		11:12 (34)	08:27		12:03 (29)	07:13	06:44	05:24	04:31
	16:05	40	12:52 (21)	17:16	54	14:24 (24)	18:24	20:35	21:44	22:42
10	09:22		11:11 (34)	08:25		12:03 (29)	07:10	06:41	05:22	04:30
	16:07	41	12:52 (21)	17:18	51	14:23 (24)	18:26	20:37	21:46	22:43
11	09:21		11:12 (34)	08:23		12:05 (29)	07:07	06:38	05:19	04:29
	16:09	42	12:53 (21)	17:21	45	14:22 (24)	18:28	20:40	21:49	22:44
12	09:20		11:12 (34)	08:20		12:07 (29)	07:04	06:35	05:17	04:29
	16:11	43	12:53 (21)	17:23	37	14:20 (24)	18:31	20:42	21:51	22:45
13	09:18		11:12 (34)	08:18		12:09 (29)	07:02	06:32	05:15	04:28
	16:13	44	12:54 (21)	17:26	26	14:17 (24)	18:33	20:44	21:53	22:46
14	09:17		11:12 (34)	08:15		09:39 (16)	06:59	06:30	05:13	04:28
	16:15	44	12:54 (21)	17:28	12	12:21 (29)	18:35	20:47	21:55	22:47
15	09:16		11:12 (34)	08:13		09:36 (16)	06:56	06:27	05:10	04:27
	16:17	51	12:54 (21)	17:31	11	09:47 (16)	18:38	20:49	21:58	22:47
16	09:15		11:13 (34)	08:10		09:33 (16)	06:53	06:24	05:08	04:27
	16:19	54	12:54 (21)	17:33	16	09:49 (16)	18:40	20:51	22:00	22:48
17	09:13		11:13 (34)	08:07		09:32 (16)	06:50	06:21	05:06	04:27
	16:21	58	12:54 (21)	17:36	17	09:49 (16)	18:42	20:53	22:02	22:49
18	09:12		11:14 (34)	08:05		09:32 (16)	06:47	06:19	05:04	04:27
	16:23	61	12:55 (21)	17:38	19	09:51 (16)	18:45	20:56	22:04	22:49
19	09:10		11:15 (34)	08:02		09:31 (16)	06:44	06:16	05:02	04:27
	16:25	63	12:55 (21)	17:40	20	09:51 (16)	18:47	20:58	22:06	22:50
20	09:08		11:15 (34)	08:00		09:30 (16)	06:41	06:13	05:00	04:27
	16:28	73	14:13 (24)	17:43	21	09:51 (16)	18:49	21:00	22:08	22:50
21	09:07		11:16 (34)	07:57		09:30 (16)	06:38	06:10	04:58	04:27
	16:30	76	14:15 (24)	17:45	21	09:51 (16)	18:51	21:03	22:10	22:50
22	09:05		11:16 (34)	07:54		09:30 (16)	06:36	06:08	04:56	04:27
	16:32	78	14:16 (24)	17:48	21	09:51 (16)	18:54	21:05	22:12	22:50
23	09:03		11:17 (34)	07:52		09:31 (16)	06:33	06:05	04:54	04:27
	16:34	79	14:18 (24)	17:50	20	09:51 (16)	18:56	21:07	22:14	22:51
24	09:02		11:18 (34)	07:49		09:31 (16)	06:30	06:02	04:52	04:27
	16:37	79	14:20 (24)	17:53	20	09:51 (16)	18:58	21:10	22:16	22:51
25	09:00		11:20 (34)	07:46		09:31 (16)	06:27	05:59	04:51	04:28
	16:39	73	14:21 (24)	17:55	18	09:49 (16)	19:01	21:12	22:18	22:51
26	08:58		11:23 (34)	07:44		09:32 (16)	06:24	05:57	04:49	04:28
	16:41	69	15:03 (25)	17:57	16	09:48 (16)	19:03	21:14	22:20	22:50
27	08:56		11:58 (29)	07:41		09:33 (16)	06:21	05:54	04:47	04:29
	16:44	66	15:04 (25)	18:00	13	09:46 (16)	19:05	21:17	22:22	22:50
28	08:54		11:58 (29)	07:38		09:36 (16)	06:18	05:52	04:46	04:30
	16:46	74	15:10 (25)	18:02	6	09:42 (16)	19:07	21:19	22:24	22:50
29	08:52		11:59 (29)				07:15	05:49	04:44	04:30
	16:49	82	15:17 (25)				20:10	21:21	22:25	22:50
30	08:50		11:58 (29)				07:12	05:46	04:42	04:31
	16:51	86	15:21 (25)				20:12	21:24	22:27	22:49
31	08:48		11:59 (29)				07:10		04:41	
	16:54	87	15:22 (25)				20:14		22:29	
Potential sun hours	221			260		365	432	521	547	
Total, worst case		1603			1084					
Sun reduction		0,50			0,50					
Oper. time red.		0,80			0,80					
Wind dir. red.		0,63			0,62					
Total reduction		0,25			0,25					
Total, real		401			270					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** E - Buevegen 1816 (5)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October			November			December		
1	04:32	05:24	06:33	07:39			07:51		11:33 (29)	09:00		10:54 (34)
	22:49	22:01	20:40	19:13			16:49	50	13:53 (24)	15:51	43	12:35 (21)
2	04:33	05:26	06:35	07:42			07:54		11:32 (29)	09:02		10:55 (34)
	22:48	21:58	20:37	19:10			16:46	55	13:54 (24)	15:50	40	12:35 (21)
3	04:34	05:28	06:37	07:44			07:56		11:31 (29)	09:03		10:55 (34)
	22:47	21:56	20:34	19:07			16:44	59	13:55 (24)	15:49	40	12:35 (21)
4	04:35	05:31	06:40	07:46			07:59		11:30 (29)	09:05		10:56 (34)
	22:47	21:54	20:31	19:04			16:41	69	14:45 (25)	15:48	39	12:35 (21)
5	04:36	05:33	06:42	07:48			08:01		11:30 (29)	09:07		10:56 (34)
	22:46	21:51	20:28	19:02			16:39	76	14:48 (25)	15:47	35	12:36 (21)
6	04:37	05:35	06:44	07:51			08:03		11:30 (29)	09:09		10:57 (34)
	22:45	21:49	20:25	18:59			16:37	79	14:50 (25)	15:46	29	12:36 (21)
7	04:39	05:37	06:46	07:53			08:06		11:29 (29)	09:10		10:58 (34)
	22:44	21:47	20:22	18:56			16:34	83	14:50 (25)	15:45	21	12:34 (21)
8	04:40	05:39	06:49	07:55			08:08		11:29 (29)	09:12		10:59 (34)
	22:43	21:44	20:20	18:53			16:32	87	14:51 (25)	15:45	12	12:33 (21)
9	04:41	05:42	06:51	07:57			08:11		11:30 (29)	09:13		11:00 (34)
	22:42	21:42	20:17	18:50			16:30	86	14:52 (25)	15:44	5	12:32 (21)
10	04:43	05:44	06:53	08:00			08:13		11:30 (29)	09:15		11:01 (34)
	22:41	21:39	20:14	18:47			16:28	88	14:53 (25)	15:43	2	11:03 (34)
11	04:44	05:46	06:55	08:02			08:15		11:29 (29)	09:16		11:02 (34)
	22:39	21:37	20:11	18:45			16:25	87	14:52 (25)	15:43	2	11:04 (34)
12	04:46	05:48	06:57	08:04			08:18		11:30 (29)	09:18		
	22:38	21:34	20:08	18:42			16:23	87	14:53 (25)	15:43		
13	04:47	05:51	07:00	08:07			08:20		11:31 (29)	09:19		
	22:37	21:31	20:05	18:39			16:21	81	14:49 (25)	15:42		
14	04:49	05:53	07:02	08:09		10:08 (16)	08:22		11:30 (29)	09:20		
	22:35	21:29	20:02	18:36	9	10:17 (16)	16:19	73	14:41 (25)	15:42		
15	04:51	05:55	07:04	08:11		10:06 (16)	08:25		11:31 (29)	09:21		
	22:34	21:26	19:59	18:33	14	10:20 (16)	16:17	67	14:37 (25)	15:42		
16	04:52	05:57	07:06	08:13		10:04 (16)	08:27		10:56 (34)	09:22		
	22:32	21:24	19:56	18:31	16	10:20 (16)	16:15	69	14:36 (25)	15:42		
17	04:54	06:00	07:08	08:16		10:03 (16)	08:30		10:54 (34)	09:23		
	22:30	21:21	19:54	18:28	19	10:22 (16)	16:13	73	13:55 (24)	15:42		
18	04:56	06:02	07:11	08:18		10:02 (16)	08:32		10:52 (34)	09:24		
	22:29	21:18	19:51	18:25	20	10:22 (16)	16:11	79	13:54 (24)	15:42		
19	04:58	06:04	07:13	08:20		10:02 (16)	08:34		10:52 (34)	09:25		
	22:27	21:16	19:48	18:22	21	10:23 (16)	16:09	79	13:53 (24)	15:42		
20	05:00	06:06	07:15	08:23		10:01 (16)	08:36		10:51 (34)	09:26		
	22:25	21:13	19:45	18:20	21	10:22 (16)	16:08	78	13:51 (24)	15:43		
21	05:01	06:08	07:17	08:25		10:01 (16)	08:39		10:51 (34)	09:26		
	22:24	21:10	19:42	18:17	21	10:22 (16)	16:06	76	13:50 (24)	15:43		
22	05:03	06:11	07:19	08:27		10:01 (16)	08:41		10:51 (34)	09:27		
	22:22	21:08	19:39	18:14	21	10:22 (16)	16:04	73	13:49 (24)	15:43		
23	05:05	06:13	07:22	08:30		10:01 (16)	08:43		10:51 (34)	09:27		
	22:20	21:05	19:36	18:12	20	10:21 (16)	16:02	63	12:31 (21)	15:44		
24	05:07	06:15	07:24	08:32		10:01 (16)	08:45		10:51 (34)	09:28		
	22:18	21:02	19:33	18:09	19	10:20 (16)	16:01	61	12:32 (21)	15:44		
25	05:09	06:17	07:26	07:35		09:02 (16)	08:47		10:51 (34)	09:28		
	22:16	20:59	19:30	17:06	17	09:19 (16)	15:59	59	12:32 (21)	15:45		
26	05:11	06:20	07:28	07:37		09:03 (16)	08:50		10:52 (34)	09:28		
	22:14	20:57	19:27	17:04	14	09:17 (16)	15:58	55	12:33 (21)	15:46		
27	05:13	06:22	07:30	07:39		09:06 (16)	08:52		10:52 (34)	09:28		
	22:12	20:54	19:25	17:01	10	09:16 (16)	15:56	51	12:33 (21)	15:47		
28	05:16	06:24	07:33	07:42		11:42 (29)	08:54		10:53 (34)	09:28		
	22:10	20:51	19:22	16:59	10	11:52 (29)	15:55	43	12:34 (21)	15:48		
29	05:18	06:26	07:35	07:44		11:38 (29)	08:56		10:53 (34)	09:28		
	22:07	20:48	19:19	16:56	28	13:47 (24)	15:54	43	12:34 (21)	15:49		
30	05:20	06:29	07:37	07:47		11:36 (29)	08:58		10:53 (34)	09:28		
	22:05	20:45	19:16	16:54	39	13:50 (24)	15:52	43	12:34 (21)	15:50		
31	05:22	06:31		07:49		11:35 (29)				09:28		
	22:03	20:42		16:51	45	13:52 (24)				15:51		
Potential sun hours	546	478	386	319			236			199		
Total, worst case					364			2072			268	
Sun reduction					0,50			0,50			0,50	
Oper. time red.					0,80			0,80			0,80	
Wind dir. red.					0,69			0,61			0,65	
Total reduction					0,27			0,24			0,26	
Total, real					100			505			70	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** F - Buevegen 1818 (6)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March	April	May	June
1	09:28		11:23 (34)	08:46		12:23 (29)	07:35	07:07	05:44	04:40
	15:53	17	11:40 (34)	16:56	82	15:30 (25)	18:05	20:17	21:26	22:30
2	09:27		11:23 (34)	08:43		12:24 (29)	07:33	07:04	05:41	04:38
	15:54	17	11:40 (34)	16:58	86	15:34 (25)	18:07	20:19	21:28	22:32
3	09:27		11:23 (34)	08:41		12:25 (29)	07:30	07:01	05:39	04:37
	15:55	18	11:41 (34)	17:01	84	15:34 (25)	18:09	20:21	21:31	22:34
4	09:26		11:23 (34)	08:39		12:25 (29)	07:27	06:58	05:36	04:36
	15:57	23	12:52 (21)	17:03	85	15:34 (25)	18:12	20:24	21:33	22:35
5	09:26		11:23 (34)	08:37		12:25 (29)	07:24	06:55	05:34	04:35
	15:58	25	12:53 (21)	17:06	82	15:33 (25)	18:14	20:26	21:35	22:37
6	09:25		11:24 (34)	08:34		12:26 (29)	07:21	06:52	05:31	04:34
	16:00	31	13:06 (21)	17:08	79	15:33 (25)	18:17	20:28	21:37	22:38
7	09:24		11:24 (34)	08:32		12:26 (29)	07:19	06:50	05:29	04:33
	16:02	34	13:07 (21)	17:11	74	15:31 (25)	18:19	20:30	21:40	22:39
8	09:24		11:24 (34)	08:30		12:28 (29)	07:16	06:47	05:26	04:32
	16:03	41	13:07 (21)	17:13	68	15:30 (25)	18:21	20:33	21:42	22:40
9	09:23		11:24 (34)	08:27		12:28 (29)	07:13	06:44	05:24	04:31
	16:05	42	13:07 (21)	17:16	60	15:26 (25)	18:24	20:35	21:44	22:42
10	09:22		11:25 (34)	08:25		12:29 (29)	07:10	06:41	05:22	04:30
	16:07	42	13:08 (21)	17:18	51	14:44 (24)	18:26	20:37	21:46	22:43
11	09:21		11:25 (34)	08:23		12:32 (29)	07:07	06:38	05:19	04:29
	16:09	43	13:09 (21)	17:21	44	14:43 (24)	18:28	20:40	21:49	22:44
12	09:20		11:25 (34)	08:20		09:50 (16)	07:04	06:35	05:17	04:29
	16:11	44	13:09 (21)	17:23	43	14:42 (24)	18:31	20:42	21:51	22:45
13	09:18		11:26 (34)	08:18		09:46 (16)	07:01	06:32	05:15	04:28
	16:13	44	13:10 (21)	17:26	41	14:40 (24)	18:33	20:44	21:53	22:46
14	09:17		11:26 (34)	08:15		09:45 (16)	06:59	06:30	05:13	04:28
	16:15	54	13:10 (21)	17:28	26	14:38 (24)	18:35	20:47	21:55	22:47
15	09:16		11:26 (34)	08:13		09:43 (16)	06:56	06:27	05:10	04:27
	16:17	57	13:10 (21)	17:31	18	10:01 (16)	18:38	20:49	21:58	22:47
16	09:15		11:27 (34)	08:10		09:42 (16)	06:53	06:24	05:08	04:27
	16:19	60	13:10 (21)	17:33	20	10:02 (16)	18:40	20:51	22:00	22:48
17	09:13		11:27 (34)	08:07		09:41 (16)	06:50	06:21	05:06	04:27
	16:21	63	13:10 (21)	17:35	21	10:02 (16)	18:42	20:53	22:02	22:49
18	09:12		11:28 (34)	08:05		09:41 (16)	06:47	06:19	05:04	04:27
	16:23	64	13:11 (21)	17:38	22	10:03 (16)	18:45	20:56	22:04	22:49
19	09:10		11:29 (34)	08:02		09:41 (16)	06:44	06:16	05:02	04:27
	16:25	63	13:11 (21)	17:40	22	10:03 (16)	18:47	20:58	22:06	22:50
20	09:08		11:30 (34)	08:00		09:40 (16)	06:41	06:13	05:00	04:27
	16:28	63	13:11 (21)	17:43	23	10:03 (16)	18:49	21:00	22:08	22:50
21	09:07		11:31 (34)	07:57		09:40 (16)	06:38	06:10	04:58	04:27
	16:30	62	13:10 (21)	17:45	22	10:02 (16)	18:51	21:03	22:10	22:50
22	09:05		11:31 (34)	07:54		09:40 (16)	06:36	06:08	04:56	04:27
	16:32	60	13:09 (21)	17:48	22	10:02 (16)	18:54	21:05	22:12	22:50
23	09:03		11:33 (34)	07:52		09:42 (16)	06:33	06:05	04:54	04:27
	16:34	66	14:33 (24)	17:50	20	10:02 (16)	18:56	21:07	22:14	22:50
24	09:02		11:35 (34)	07:49		09:42 (16)	06:30	06:02	04:52	04:27
	16:37	67	14:36 (24)	17:53	19	10:01 (16)	18:58	21:10	22:16	22:51
25	09:00		11:39 (34)	07:46		09:43 (16)	06:27	05:59	04:51	04:28
	16:39	58	14:38 (24)	17:55	16	09:59 (16)	19:01	21:12	22:18	22:50
26	08:58		12:24 (29)	07:44		09:45 (16)	06:24	05:57	04:49	04:28
	16:41	55	14:40 (24)	17:57	12	09:57 (16)	19:03	21:14	22:20	22:50
27	08:56		12:23 (29)	07:41		09:48 (16)	06:21	05:54	04:47	04:29
	16:44	57	14:40 (24)	18:00	5	09:53 (16)	19:05	21:17	22:22	22:50
28	08:54		12:23 (29)	07:38			06:18	05:52	04:46	04:30
	16:46	61	15:15 (25)	18:02			19:07	21:19	22:24	22:50
29	08:52		12:24 (29)				07:15	05:49	04:44	04:30
	16:49	67	15:19 (25)				20:10	21:21	22:25	22:50
30	08:50		12:23 (29)				07:12	05:46	04:42	04:31
	16:51	74	15:23 (25)				20:12	21:24	22:27	22:49
31	08:48		12:24 (29)				07:10		04:41	
	16:53	77	15:26 (25)				20:14		22:29	
Potential sun hours	221			260		365	432	521	547	
Total, worst case		1549			1147					
Sun reduction		0,50			0,50					
Oper. time red.		0,80			0,80					
Wind dir. red.		0,62			0,62					
Total reduction		0,25			0,25					
Total, real		386			283					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** F - Buevegen 1818 (6)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October		November		December		
1	04:32	05:24	06:33	07:39		07:51		11:59 (29)	09:00	11:07 (34)
	22:49	22:01	20:40	19:13		16:49	51	14:13 (24)	15:51	43 12:51 (21)
2	04:33	05:26	06:35	07:42		07:54		11:58 (29)	09:02	11:08 (34)
	22:48	21:58	20:37	19:10		16:46	61	14:57 (25)	15:50	42 12:51 (21)
3	04:34	05:28	06:37	07:44		07:56		11:57 (29)	09:03	11:08 (34)
	22:47	21:56	20:34	19:07		16:44	71	15:00 (25)	15:49	42 12:51 (21)
4	04:35	05:31	06:40	07:46		07:59		11:56 (29)	09:05	11:09 (34)
	22:47	21:54	20:31	19:04		16:41	76	15:01 (25)	15:48	41 12:52 (21)
5	04:36	05:33	06:42	07:48		08:01		11:55 (29)	09:07	11:09 (34)
	22:46	21:51	20:28	19:02		16:39	80	15:02 (25)	15:47	35 12:52 (21)
6	04:37	05:35	06:44	07:51		08:03		11:55 (29)	09:09	11:10 (34)
	22:45	21:49	20:25	18:59		16:37	82	15:03 (25)	15:46	31 12:52 (21)
7	04:38	05:37	06:46	07:53		08:06		11:54 (29)	09:10	11:11 (34)
	22:44	21:47	20:22	18:56		16:34	84	15:03 (25)	15:45	24 12:40 (21)
8	04:40	05:39	06:49	07:55		08:08		11:54 (29)	09:12	11:11 (34)
	22:43	21:44	20:20	18:53		16:32	87	15:04 (25)	15:45	24 12:41 (21)
9	04:41	05:42	06:51	07:57		08:11		11:55 (29)	09:13	11:12 (34)
	22:42	21:42	20:17	18:50		16:30	87	15:05 (25)	15:44	20 12:37 (21)
10	04:43	05:44	06:53	08:00		08:13		11:55 (29)	09:15	11:12 (34)
	22:40	21:39	20:14	18:47		16:28	81	15:01 (25)	15:43	17 11:29 (34)
11	04:44	05:46	06:55	08:02		08:15		11:54 (29)	09:16	11:14 (34)
	22:39	21:37	20:11	18:45		16:25	78	14:57 (25)	15:43	16 11:30 (34)
12	04:46	05:48	06:57	08:04		08:18		11:55 (29)	09:18	11:14 (34)
	22:38	21:34	20:08	18:42		16:23	74	14:55 (25)	15:43	15 11:29 (34)
13	04:47	05:51	07:00	08:07		08:20		11:55 (29)	09:19	11:15 (34)
	22:37	21:31	20:05	18:39		16:21	68	14:51 (25)	15:42	15 11:30 (34)
14	04:49	05:53	07:02	08:09		08:22		11:55 (29)	09:20	11:16 (34)
	22:35	21:29	20:02	18:36		16:19	62	14:47 (25)	15:42	14 11:30 (34)
15	04:51	05:55	07:04	08:11	10:19 (16)	08:25		11:56 (29)	09:21	11:16 (34)
	22:34	21:26	19:59	18:33	8 10:27 (16)	16:17	57	14:13 (24)	15:42	14 11:30 (34)
16	04:52	05:57	07:06	08:13	10:16 (16)	08:27		11:57 (29)	09:22	11:17 (34)
	22:32	21:24	19:56	18:31	14 10:30 (16)	16:15	54	14:12 (24)	15:42	12 11:29 (34)
17	04:54	06:00	07:08	08:16	10:15 (16)	08:29		11:12 (34)	09:23	11:17 (34)
	22:30	21:21	19:54	18:28	17 10:32 (16)	16:13	58	14:11 (24)	15:42	12 11:29 (34)
18	04:56	06:02	07:11	08:18	10:13 (16)	08:32		11:09 (34)	09:24	11:18 (34)
	22:29	21:18	19:51	18:25	19 10:32 (16)	16:11	67	14:10 (24)	15:42	11 11:29 (34)
19	04:58	06:04	07:13	08:20	10:12 (16)	08:34		11:08 (34)	09:25	11:19 (34)
	22:27	21:16	19:48	18:22	21 10:33 (16)	16:09	66	14:08 (24)	15:42	11 11:30 (34)
20	05:00	06:06	07:15	08:23	10:11 (16)	08:36		11:06 (34)	09:26	11:20 (34)
	22:25	21:13	19:45	18:20	22 10:33 (16)	16:08	60	12:44 (21)	15:43	10 11:30 (34)
21	05:01	06:08	07:17	08:25	10:11 (16)	08:39		11:06 (34)	09:26	11:20 (34)
	22:24	21:10	19:42	18:17	23 10:34 (16)	16:06	62	12:45 (21)	15:43	10 11:30 (34)
22	05:03	06:11	07:19	08:27	10:10 (16)	08:41		11:06 (34)	09:27	11:21 (34)
	22:22	21:08	19:39	18:14	23 10:33 (16)	16:04	63	12:47 (21)	15:43	10 11:31 (34)
23	05:05	06:13	07:22	08:30	10:11 (16)	08:43		11:05 (34)	09:27	11:21 (34)
	22:20	21:05	19:36	18:12	22 10:33 (16)	16:02	63	12:47 (21)	15:44	10 11:31 (34)
24	05:07	06:15	07:24	08:32	10:10 (16)	08:45		11:05 (34)	09:28	11:22 (34)
	22:18	21:02	19:33	18:09	22 10:32 (16)	16:01	64	12:48 (21)	15:44	10 11:32 (34)
25	05:09	06:17	07:26	07:35	09:11 (16)	08:47		11:05 (34)	09:28	11:22 (34)
	22:16	20:59	19:30	17:06	21 09:32 (16)	15:59	63	12:48 (21)	15:45	11 11:33 (34)
26	05:11	06:20	07:28	07:37	09:11 (16)	08:50		11:06 (34)	09:28	11:22 (34)
	22:14	20:56	19:27	17:04	20 09:31 (16)	15:58	60	12:49 (21)	15:46	12 11:34 (34)
27	05:13	06:22	07:30	07:39	09:13 (16)	08:52		11:05 (34)	09:28	11:23 (34)
	22:12	20:54	19:25	17:01	17 09:30 (16)	15:56	58	12:49 (21)	15:47	11 11:34 (34)
28	05:16	06:24	07:33	07:42	09:14 (16)	08:54		11:06 (34)	09:28	11:23 (34)
	22:10	20:51	19:22	16:59	28 14:08 (24)	15:55	53	12:50 (21)	15:48	13 11:36 (34)
29	05:18	06:26	07:35	07:44	09:16 (16)	08:56		11:06 (34)	09:28	11:22 (34)
	22:07	20:48	19:19	16:56	42 14:10 (24)	15:54	44	12:50 (21)	15:49	14 11:36 (34)
30	05:20	06:29	07:37	07:47	12:02 (29)	08:58		11:06 (34)	09:28	11:23 (34)
	22:05	20:45	19:16	16:54	40 14:11 (24)	15:52	43	12:50 (21)	15:50	15 11:38 (34)
31	05:22	06:31		07:49	12:01 (29)				09:28	11:23 (34)
	22:03	20:42		16:51	46 14:13 (24)				15:51	15 11:38 (34)
Potential sun hours	546	478	386	319		236			199	
Total, worst case					405		1977			580
Sun reduction					0,50		0,50			0,50
Oper. time red.					0,80		0,80			0,80
Wind dir. red.					0,68		0,61			0,65
Total reduction					0,27		0,24			0,26
Total, real					110		478			151

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** G - Buevegen 1786 (7)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March	April	May	June
1	09:28		08:46		11:27 (29)	07:35	07:07	05:44	04:40
	15:53		16:56	70	14:51 (25)	18:05	20:17	21:26	22:31
2	09:27	12:04 (21)	08:43		11:27 (29)	07:33	07:04	05:41	04:38
	15:54	1 12:05 (21)	16:58	60	13:50 (24)	18:07	20:19	21:28	22:32
3	09:27	12:04 (21)	08:41		11:28 (29)	07:30	07:01	05:39	04:37
	15:55	4 12:08 (21)	17:01	58	13:50 (24)	18:09	20:21	21:31	22:34
4	09:27	12:04 (21)	08:39		11:28 (29)	07:27	06:58	05:36	04:36
	15:57	7 12:11 (21)	17:03	54	13:48 (24)	18:12	20:24	21:33	22:35
5	09:26	12:04 (21)	08:37		11:28 (29)	07:24	06:55	05:34	04:35
	15:58	17 12:21 (21)	17:06	52	13:47 (24)	18:14	20:26	21:35	22:37
6	09:25	12:04 (21)	08:34		11:29 (29)	07:21	06:52	05:31	04:34
	16:00	17 12:21 (21)	17:08	49	13:47 (24)	18:17	20:28	21:37	22:38
7	09:24	12:05 (21)	08:32		11:29 (29)	07:19	06:50	05:29	04:33
	16:02	19 12:26 (21)	17:11	43	13:44 (24)	18:19	20:30	21:40	22:39
8	09:24	12:05 (21)	08:30		11:31 (29)	07:16	06:47	05:26	04:32
	16:03	22 12:27 (21)	17:13	35	13:42 (24)	18:21	20:33	21:42	22:40
9	09:23	12:06 (21)	08:27		11:32 (29)	07:13	06:44	05:24	04:31
	16:05	22 12:28 (21)	17:16	22	11:54 (29)	18:24	20:35	21:44	22:42
10	09:22	12:06 (21)	08:25		11:34 (29)	07:10	06:41	05:22	04:30
	16:07	22 12:28 (21)	17:18	18	11:52 (29)	18:26	20:37	21:46	22:43
11	09:21	12:07 (21)	08:23		11:37 (29)	07:07	06:38	05:19	04:29
	16:09	22 12:29 (21)	17:21	13	11:50 (29)	18:28	20:40	21:49	22:44
12	09:20	12:07 (21)	08:20		11:42 (29)	07:04	06:35	05:17	04:29
	16:11	28 13:33 (24)	17:23	2	11:44 (29)	18:31	20:42	21:51	22:45
13	09:18	12:08 (21)	08:18			07:02	06:32	05:15	04:28
	16:13	33 13:37 (24)	17:26			18:33	20:44	21:53	22:46
14	09:17	12:08 (21)	08:15		09:31 (16)	06:59	06:30	05:13	04:28
	16:15	36 13:38 (24)	17:28	3	09:34 (16)	18:35	20:47	21:55	22:47
15	09:16	11:34 (29)	08:13		09:27 (16)	06:56	06:27	05:10	04:27
	16:17	47 13:40 (24)	17:31	10	09:37 (16)	18:38	20:49	21:58	22:47
16	09:15	11:31 (29)	08:10		09:25 (16)	06:53	06:24	05:08	04:27
	16:19	55 13:41 (24)	17:33	14	09:39 (16)	18:40	20:51	22:00	22:48
17	09:13	11:31 (29)	08:07		09:23 (16)	06:50	06:21	05:06	04:27
	16:21	58 13:43 (24)	17:36	17	09:40 (16)	18:42	20:53	22:02	22:49
18	09:12	11:30 (29)	08:05		09:23 (16)	06:47	06:19	05:04	04:27
	16:23	72 14:53 (25)	17:38	18	09:41 (16)	18:45	20:56	22:04	22:49
19	09:10	11:29 (29)	08:02		09:23 (16)	06:44	06:16	05:02	04:27
	16:25	85 14:53 (25)	17:40	18	09:41 (16)	18:47	20:58	22:06	22:50
20	09:09	11:28 (29)	08:00		09:22 (16)	06:41	06:13	05:00	04:27
	16:28	88 14:54 (25)	17:43	19	09:41 (16)	18:49	21:00	22:08	22:50
21	09:07	11:28 (29)	07:57		09:22 (16)	06:39	06:10	04:58	04:27
	16:30	88 14:54 (25)	17:45	19	09:41 (16)	18:51	21:03	22:10	22:50
22	09:05	11:27 (29)	07:54		09:22 (16)	06:36	06:08	04:56	04:27
	16:32	89 14:55 (25)	17:48	19	09:41 (16)	18:54	21:05	22:12	22:50
23	09:03	11:26 (29)	07:52		09:23 (16)	06:33	06:05	04:54	04:27
	16:34	87 14:54 (25)	17:50	18	09:41 (16)	18:56	21:07	22:14	22:51
24	09:02	11:26 (29)	07:49		09:23 (16)	06:30	06:02	04:52	04:27
	16:37	81 14:55 (25)	17:53	17	09:40 (16)	18:58	21:10	22:16	22:51
25	09:00	11:26 (29)	07:46		09:24 (16)	06:27	05:59	04:51	04:28
	16:39	82 14:55 (25)	17:55	14	09:38 (16)	19:01	21:12	22:18	22:51
26	08:58	11:26 (29)	07:44		09:25 (16)	06:24	05:57	04:49	04:28
	16:41	83 14:55 (25)	17:57	11	09:36 (16)	19:03	21:14	22:20	22:50
27	08:56	11:25 (29)	07:41		09:29 (16)	06:21	05:54	04:47	04:29
	16:44	83 14:54 (25)	18:00	3	09:32 (16)	19:05	21:17	22:22	22:50
28	08:54	11:26 (29)	07:38			06:18	05:52	04:46	04:30
	16:46	82 14:54 (25)	18:02			19:08	21:19	22:24	22:50
29	08:52	11:26 (29)				07:15	05:49	04:44	04:30
	16:49	80 14:54 (25)				20:10	21:21	22:25	22:50
30	08:50	11:26 (29)				07:13	05:46	04:42	04:31
	16:51	79 14:53 (25)				20:12	21:24	22:27	22:49
31	08:48	11:26 (29)				07:10		04:41	
	16:54	76 14:52 (25)				20:14		22:29	
Potential sun hours	221		260			365	432	521	547
Total, worst case		1565		676					
Sun reduction		0,50		0,50					
Oper. time red.		0,80		0,80					
Wind dir. red.		0,61		0,66					
Total reduction		0,24		0,26					
Total, real		383		178					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** G - Buevegen 1786 (7)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October		November		December		
1	04:32	05:24	06:33	07:39		07:51		11:03 (29)	09:00	11:49 (21)
	22:49	22:01	20:40	19:13		16:49	19	11:22 (29)	15:51	22 12:11 (21)
2	04:33	05:26	06:35	07:42		07:54		11:01 (29)	09:02	11:49 (21)
	22:48	21:59	20:37	19:10		16:46	23	11:24 (29)	15:50	22 12:11 (21)
3	04:34	05:28	06:37	07:44		07:56		11:01 (29)	09:03	11:49 (21)
	22:47	21:56	20:34	19:07		16:44	36	13:12 (24)	15:49	22 12:11 (21)
4	04:35	05:31	06:40	07:46		07:59		10:59 (29)	09:05	11:50 (21)
	22:47	21:54	20:31	19:04		16:41	43	13:14 (24)	15:48	21 12:11 (21)
5	04:36	05:33	06:42	07:48		08:01		10:59 (29)	09:07	11:50 (21)
	22:46	21:51	20:28	19:02		16:39	48	13:16 (24)	15:47	21 12:11 (21)
6	04:37	05:35	06:44	07:51		08:03		10:58 (29)	09:09	11:51 (21)
	22:45	21:49	20:25	18:59		16:37	53	13:18 (24)	15:46	16 12:07 (21)
7	04:39	05:37	06:46	07:53		08:06		10:57 (29)	09:10	11:51 (21)
	22:44	21:47	20:23	18:56		16:34	55	13:18 (24)	15:45	17 12:08 (21)
8	04:40	05:39	06:49	07:55		08:08		10:57 (29)	09:12	11:52 (21)
	22:43	21:44	20:20	18:53		16:32	58	13:19 (24)	15:45	8 12:00 (21)
9	04:41	05:42	06:51	07:57		08:11		10:57 (29)	09:13	11:53 (21)
	22:42	21:42	20:17	18:50		16:30	63	14:18 (25)	15:44	4 11:57 (21)
10	04:43	05:44	06:53	08:00		08:13		10:58 (29)	09:15	11:53 (21)
	22:41	21:39	20:14	18:47		16:28	71	14:22 (25)	15:43	1 11:54 (21)
11	04:44	05:46	06:55	08:02		08:15		10:57 (29)	09:16	
	22:39	21:37	20:11	18:45		16:25	76	14:23 (25)	15:43	
12	04:46	05:48	06:57	08:04		08:18		10:57 (29)	09:18	
	22:38	21:34	20:08	18:42		16:23	80	14:25 (25)	15:43	
13	04:47	05:51	07:00	08:07		08:20		10:58 (29)	09:19	
	22:37	21:32	20:05	18:39		16:21	81	14:26 (25)	15:42	
14	04:49	05:53	07:02	08:09		08:22		10:58 (29)	09:20	
	22:35	21:29	20:02	18:36		16:19	82	14:26 (25)	15:42	
15	04:51	05:55	07:04	08:11	10:00 (16)	08:25		10:58 (29)	09:21	
	22:34	21:26	19:59	18:33	7 10:07 (16)	16:17	83	14:27 (25)	15:42	
16	04:52	05:57	07:06	08:13	09:57 (16)	08:27		10:59 (29)	09:22	
	22:32	21:24	19:56	18:31	12 10:09 (16)	16:15	83	14:28 (25)	15:42	
17	04:54	06:00	07:08	08:16	09:55 (16)	08:30		11:00 (29)	09:23	
	22:31	21:21	19:54	18:28	16 10:11 (16)	16:13	83	14:29 (25)	15:42	
18	04:56	06:02	07:11	08:18	09:54 (16)	08:32		11:00 (29)	09:24	
	22:29	21:18	19:51	18:25	17 10:11 (16)	16:11	81	14:29 (25)	15:42	
19	04:58	06:04	07:13	08:20	09:54 (16)	08:34		11:01 (29)	09:25	
	22:27	21:16	19:48	18:22	18 10:12 (16)	16:09	87	14:29 (25)	15:42	
20	05:00	06:06	07:15	08:23	09:53 (16)	08:36		11:01 (29)	09:26	
	22:25	21:13	19:45	18:20	19 10:12 (16)	16:08	89	14:29 (25)	15:43	
21	05:01	06:08	07:17	08:25	09:53 (16)	08:39		11:03 (29)	09:26	
	22:24	21:10	19:42	18:17	19 10:12 (16)	16:06	88	14:29 (25)	15:43	
22	05:03	06:11	07:19	08:27	09:52 (16)	08:41		11:04 (29)	09:27	
	22:22	21:08	19:39	18:14	20 10:12 (16)	16:04	88	14:30 (25)	15:43	
23	05:05	06:13	07:22	08:30	09:53 (16)	08:43		11:05 (29)	09:27	
	22:20	21:05	19:36	18:12	19 10:12 (16)	16:02	84	14:29 (25)	15:44	
24	05:07	06:15	07:24	08:32	09:53 (16)	08:45		11:07 (29)	09:28	
	22:18	21:02	19:33	18:09	17 10:10 (16)	16:01	72	14:30 (25)	15:44	
25	05:09	06:17	07:26	07:35	08:54 (16)	08:47		11:08 (29)	09:28	
	22:16	20:59	19:30	17:06	16 09:10 (16)	15:59	58	13:20 (24)	15:45	
26	05:11	06:20	07:28	07:37	08:56 (16)	08:50		11:10 (29)	09:28	
	22:14	20:57	19:27	17:04	13 09:09 (16)	15:58	54	13:20 (24)	15:46	
27	05:13	06:22	07:30	07:39	08:57 (16)	08:52		11:12 (29)	09:28	
	22:12	20:54	19:25	17:01	9 09:06 (16)	15:56	49	13:19 (24)	15:47	
28	05:16	06:24	07:33	07:42		08:54		11:48 (21)	09:28	
	22:10	20:51	19:22	16:59		15:55	35	13:18 (24)	15:48	
29	05:18	06:26	07:35	07:44		08:56		11:48 (21)	09:28	
	22:07	20:48	19:19	16:56		15:54	33	13:17 (24)	15:49	
30	05:20	06:29	07:37	07:47	11:09 (29)	08:58		11:48 (21)	09:28	
	22:05	20:45	19:16	16:54	7 11:16 (29)	15:52	30	13:15 (24)	15:50	
31	05:22	06:31		07:49	11:06 (29)				09:28	
	22:03	20:42		16:51	14 11:20 (29)				15:51	
Potential sun hours	546	478	386	319		236			199	
Total, worst case					223		1885			154
Sun reduction					0,50		0,50			0,50
Oper. time red.					0,80		0,80			0,80
Wind dir. red.					0,73		0,61			0,64
Total reduction					0,29		0,25			0,25
Total, real					65		462			39

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** H - Buevegen 1784 (8)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March	April	May	June
1	09:28		12:18 (21)	08:46	11:54 (29)	07:35	07:07	05:44	04:40
	15:53	21	12:39 (21)	16:56	47	14:04 (24)	18:05	20:17	21:26	22:31
2	09:27		11:56 (29)	08:43	11:54 (29)	07:33	07:04	05:41	04:38
	15:54	22	12:39 (21)	16:58	44	14:02 (24)	18:07	20:19	21:28	22:32
3	09:27		11:53 (29)	08:41	11:56 (29)	07:30	07:01	05:39	04:37
	15:55	28	12:39 (21)	17:01	38	14:01 (24)	18:09	20:21	21:31	22:34
4	09:27		11:52 (29)	08:39	11:57 (29)	07:27	06:58	05:36	04:36
	15:57	32	12:40 (21)	17:03	31	13:59 (24)	18:12	20:24	21:33	22:35
5	09:26		11:51 (29)	08:37	11:59 (29)	07:24	06:55	05:34	04:35
	15:58	34	12:40 (21)	17:06	18	13:54 (24)	18:14	20:26	21:35	22:37
6	09:25		11:50 (29)	08:34	12:05 (29)	07:21	06:52	05:31	04:34
	16:00	36	12:40 (21)	17:08	3	12:08 (29)	18:17	20:28	21:37	22:38
7	09:24		11:50 (29)	08:32		07:19	06:50	05:29	04:33
	16:02	43	13:47 (24)	17:11		18:19	20:30	21:40	22:39
8	09:24		11:50 (29)	08:30		07:16	06:47	05:26	04:32
	16:03	49	13:50 (24)	17:13		18:21	20:33	21:42	22:40
9	09:23		11:50 (29)	08:27	09:43 (16)	07:13	06:44	05:24	04:31
	16:05	54	13:52 (24)	17:16	6	09:49 (16)	18:24	20:35	21:44	22:42
10	09:22		11:49 (29)	08:25	09:40 (16)	07:10	06:41	05:22	04:30
	16:07	57	13:53 (24)	17:18	11	09:51 (16)	18:26	20:37	21:46	22:43
11	09:21		11:49 (29)	08:23	09:39 (16)	07:07	06:38	05:19	04:29
	16:09	60	13:55 (24)	17:21	15	09:54 (16)	18:28	20:40	21:49	22:44
12	09:20		11:48 (29)	08:20	09:38 (16)	07:04	06:35	05:17	04:29
	16:11	61	13:55 (24)	17:23	16	09:54 (16)	18:31	20:42	21:51	22:45
13	09:18		11:49 (29)	08:18	09:37 (16)	07:02	06:32	05:15	04:28
	16:13	64	13:57 (24)	17:26	18	09:55 (16)	18:33	20:44	21:53	22:46
14	09:17		11:48 (29)	08:15	09:37 (16)	06:59	06:30	05:13	04:28
	16:15	64	13:58 (24)	17:28	19	09:56 (16)	18:35	20:47	21:55	22:47
15	09:16		11:48 (29)	08:13	09:36 (16)	06:56	06:27	05:10	04:27
	16:17	74	14:47 (25)	17:31	20	09:56 (16)	18:38	20:49	21:58	22:47
16	09:15		11:47 (29)	08:10	09:36 (16)	06:53	06:24	05:08	04:27
	16:19	83	14:59 (25)	17:33	20	09:56 (16)	18:40	20:51	22:00	22:48
17	09:13		11:48 (29)	08:07	09:36 (16)	06:50	06:21	05:06	04:27
	16:21	88	15:01 (25)	17:36	19	09:55 (16)	18:42	20:53	22:02	22:49
18	09:12		11:48 (29)	08:05	09:37 (16)	06:47	06:19	05:04	04:27
	16:23	87	15:01 (25)	17:38	19	09:56 (16)	18:45	20:56	22:04	22:49
19	09:10		11:48 (29)	08:02	09:37 (16)	06:44	06:16	05:02	04:27
	16:25	84	15:02 (25)	17:40	18	09:55 (16)	18:47	20:58	22:06	22:50
20	09:08		11:48 (29)	08:00	09:38 (16)	06:41	06:13	05:00	04:27
	16:28	79	15:02 (25)	17:43	16	09:54 (16)	18:49	21:00	22:08	22:50
21	09:07		11:48 (29)	07:57	09:39 (16)	06:39	06:10	04:58	04:27
	16:30	80	15:02 (25)	17:45	13	09:52 (16)	18:51	21:03	22:10	22:50
22	09:05		11:48 (29)	07:54	09:41 (16)	06:36	06:08	04:56	04:27
	16:32	82	15:03 (25)	17:48	8	09:49 (16)	18:54	21:05	22:12	22:50
23	09:03		11:48 (29)	07:52		06:33	06:05	04:54	04:27
	16:34	80	15:02 (25)	17:50		18:56	21:07	22:14	22:51
24	09:02		11:48 (29)	07:49		06:30	06:02	04:52	04:27
	16:37	80	15:02 (25)	17:53		18:58	21:10	22:16	22:51
25	09:00		11:49 (29)	07:46		06:27	05:59	04:51	04:28
	16:39	80	15:02 (25)	17:55		19:01	21:12	22:18	22:51
26	08:58		11:49 (29)	07:44		06:24	05:57	04:49	04:28
	16:41	79	15:02 (25)	17:57		19:03	21:14	22:20	22:50
27	08:56		11:49 (29)	07:41		06:21	05:54	04:47	04:29
	16:44	75	15:01 (25)	18:00		19:05	21:17	22:22	22:50
28	08:54		11:50 (29)	07:38		06:18	05:52	04:46	04:30
	16:46	73	15:01 (25)	18:02		19:08	21:19	22:24	22:50
29	08:52		11:51 (29)			07:15	05:49	04:44	04:30
	16:49	69	15:00 (25)			20:10	21:21	22:25	22:50
30	08:50		11:51 (29)			07:12	05:46	04:42	04:31
	16:51	64	14:58 (25)			20:12	21:24	22:27	22:49
31	08:48		11:52 (29)			07:10		04:41	
	16:54	54	14:55 (25)			20:14		22:29	
Potential sun hours	221			260		365	432	521	547
Total, worst case		1936			399				
Sun reduction		0,50			0,50				
Oper. time red.		0,80			0,80				
Wind dir. red.		0,60			0,67				
Total reduction		0,24			0,27				
Total, real		466			107				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** H - Buevegen 1784 (8)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October			November			December		
1	04:32	05:24	06:33	07:39			07:51		09:10 (16)	09:00		11:31 (29)
	22:49	22:01	20:40	19:13			16:49	11	09:21 (16)	15:51	60	13:37 (24)
2	04:33	05:26	06:35	07:42			07:54		09:13 (16)	09:02		11:32 (29)
	22:48	21:59	20:37	19:10			16:46	5	09:18 (16)	15:50	56	13:36 (24)
3	04:34	05:28	06:37	07:44			07:56			09:03		11:33 (29)
	22:47	21:56	20:34	19:07			16:44			15:49	53	13:35 (24)
4	04:35	05:31	06:40	07:46			07:59			09:05		11:34 (29)
	22:47	21:54	20:31	19:04			16:41			15:48	49	13:34 (24)
5	04:36	05:33	06:42	07:48			08:01		11:33 (29)	09:07		11:35 (29)
	22:46	21:51	20:28	19:02			16:39	6	11:39 (29)	15:47	44	13:32 (24)
6	04:37	05:35	06:44	07:51			08:03		11:30 (29)	09:09		11:36 (29)
	22:45	21:49	20:25	18:59			16:37	20	13:26 (24)	15:46	37	12:27 (21)
7	04:38	05:37	06:46	07:53			08:06		11:27 (29)	09:10		11:38 (29)
	22:44	21:47	20:22	18:56			16:34	31	13:29 (24)	15:45	34	12:27 (21)
8	04:40	05:39	06:49	07:55			08:08		11:26 (29)	09:12		11:40 (29)
	22:43	21:44	20:20	18:53			16:32	38	13:31 (24)	15:45	32	12:28 (21)
9	04:41	05:42	06:51	07:57			08:11		11:25 (29)	09:13		11:42 (29)
	22:42	21:42	20:17	18:50			16:30	44	13:33 (24)	15:44	29	12:28 (21)
10	04:43	05:44	06:53	08:00			08:13		11:24 (29)	09:15		11:44 (29)
	22:41	21:39	20:14	18:47			16:28	48	13:34 (24)	15:43	24	12:28 (21)
11	04:44	05:46	06:55	08:02			08:15		11:23 (29)	09:16		12:08 (21)
	22:39	21:37	20:11	18:45			16:25	55	14:27 (25)	15:43	21	12:29 (21)
12	04:46	05:48	06:57	08:04			08:18		11:23 (29)	09:18		12:08 (21)
	22:38	21:34	20:08	18:42			16:23	63	14:30 (25)	15:43	21	12:29 (21)
13	04:47	05:51	07:00	08:07			08:20		11:23 (29)	09:19		12:09 (21)
	22:37	21:32	20:05	18:39			16:21	69	14:32 (25)	15:42	21	12:30 (21)
14	04:49	05:53	07:02	08:09			08:22		11:22 (29)	09:20		12:09 (21)
	22:35	21:29	20:02	18:36			16:19	73	14:33 (25)	15:42	21	12:30 (21)
15	04:51	05:55	07:04	08:11			08:25		11:22 (29)	09:21		12:09 (21)
	22:34	21:26	19:59	18:33			16:17	76	14:34 (25)	15:42	21	12:30 (21)
16	04:52	05:57	07:06	08:13			08:27		11:22 (29)	09:22		12:10 (21)
	22:32	21:24	19:56	18:31			16:15	79	14:35 (25)	15:42	20	12:30 (21)
17	04:54	06:00	07:08	08:16			08:30		11:23 (29)	09:23		12:10 (21)
	22:31	21:21	19:54	18:28			16:13	80	14:36 (25)	15:42	21	12:31 (21)
18	04:56	06:02	07:11	08:18			08:32		11:22 (29)	09:24		12:11 (21)
	22:29	21:18	19:51	18:25			16:11	80	14:36 (25)	15:42	20	12:31 (21)
19	04:58	06:04	07:13	08:20			08:34		11:23 (29)	09:25		12:12 (21)
	22:27	21:16	19:48	18:22			16:09	80	14:37 (25)	15:42	20	12:32 (21)
20	05:00	06:06	07:15	08:23		10:11 (16)	08:36		11:22 (29)	09:26		12:12 (21)
	22:25	21:13	19:45	18:20	10	10:21 (16)	16:08	82	14:37 (25)	15:43	20	12:32 (21)
21	05:01	06:08	07:17	08:25		10:09 (16)	08:39		11:23 (29)	09:26		12:12 (21)
	22:24	21:10	19:42	18:17	15	10:24 (16)	16:06	80	14:37 (25)	15:43	20	12:32 (21)
22	05:03	06:11	07:19	08:27		10:08 (16)	08:41		11:24 (29)	09:27		12:13 (21)
	22:22	21:08	19:39	18:14	16	10:24 (16)	16:04	79	14:38 (25)	15:43	20	12:33 (21)
23	05:05	06:13	07:22	08:30		10:07 (16)	08:43		11:24 (29)	09:27		12:13 (21)
	22:20	21:05	19:36	18:12	18	10:25 (16)	16:02	83	14:38 (25)	15:44	20	12:33 (21)
24	05:07	06:15	07:24	08:32		10:06 (16)	08:45		11:25 (29)	09:28		12:14 (21)
	22:18	21:02	19:33	18:09	19	10:25 (16)	16:01	87	14:38 (25)	15:44	21	12:35 (21)
25	05:09	06:17	07:26	07:35		09:06 (16)	08:47		11:25 (29)	09:28		12:15 (21)
	22:16	20:59	19:30	17:06	20	09:26 (16)	15:59	87	14:38 (25)	15:45	20	12:35 (21)
26	05:11	06:20	07:28	07:37		09:06 (16)	08:50		11:26 (29)	09:28		12:15 (21)
	22:14	20:57	19:27	17:04	20	09:26 (16)	15:58	83	14:38 (25)	15:46	20	12:35 (21)
27	05:13	06:22	07:30	07:39		09:06 (16)	08:52		11:27 (29)	09:28		12:16 (21)
	22:12	20:54	19:25	17:01	19	09:25 (16)	15:56	75	14:34 (25)	15:47	20	12:36 (21)
28	05:16	06:24	07:33	07:42		09:06 (16)	08:54		11:28 (29)	09:28		12:16 (21)
	22:10	20:51	19:22	16:59	19	09:25 (16)	15:55	65	13:38 (24)	15:48	21	12:37 (21)
29	05:18	06:26	07:35	07:44		09:06 (16)	08:56		11:29 (29)	09:28		12:16 (21)
	22:07	20:48	19:19	16:56	18	09:24 (16)	15:54	64	13:37 (24)	15:49	20	12:36 (21)
30	05:20	06:29	07:37	07:47		09:07 (16)	08:58		11:29 (29)	09:28		12:17 (21)
	22:05	20:45	19:16	16:54	17	09:24 (16)	15:52	62	13:37 (24)	15:50	20	12:37 (21)
31	05:22	06:31		07:49		09:09 (16)				09:28		12:16 (21)
	22:03	20:42		16:51	14	09:23 (16)				15:51	21	12:37 (21)
Potential sun hours	546	478	386	319			236			199		
Total, worst case					205			1705			847	
Sun reduction					0,50			0,50			0,50	
Oper. time red.					0,80			0,80			0,80	
Wind dir. red.					0,73			0,60			0,63	
Total reduction					0,29			0,24			0,25	
Total, real					60			408			212	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** I - Buevegen 1782 (9)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March	April	May	June
1	09:28		12:08 (21)	08:46	11:39 (29)	07:35	07:07	05:44	04:40
	15:53	21	12:29 (21)	16:56	48	13:50 (24)	18:05	20:17	21:26	22:31
2	09:27		12:08 (21)	08:43	11:40 (29)	07:33	07:04	05:41	04:38
	15:54	21	12:29 (21)	16:58	44	13:48 (24)	18:07	20:19	21:28	22:32
3	09:27		12:09 (21)	08:41	11:41 (29)	07:30	07:01	05:39	04:37
	15:55	20	12:29 (21)	17:01	39	13:47 (24)	18:09	20:21	21:31	22:34
4	09:27		12:09 (21)	08:39	11:42 (29)	07:27	06:58	05:36	04:36
	15:57	21	12:30 (21)	17:03	31	13:44 (24)	18:12	20:24	21:33	22:35
5	09:26		12:09 (21)	08:37	11:43 (29)	07:24	06:55	05:34	04:35
	15:58	21	12:30 (21)	17:06	18	12:01 (29)	18:14	20:26	21:35	22:37
6	09:25		12:10 (21)	08:34	11:46 (29)	07:21	06:52	05:31	04:34
	16:00	26	13:33 (24)	17:08	14	12:00 (29)	18:17	20:28	21:37	22:38
7	09:24		11:42 (29)	08:32	11:51 (29)	07:19	06:50	05:29	04:33
	16:02	37	13:36 (24)	17:11	3	11:54 (29)	18:19	20:30	21:40	22:39
8	09:24		11:40 (29)	08:30		07:16	06:47	05:26	04:32
	16:03	45	13:38 (24)	17:13		18:21	20:33	21:42	22:41
9	09:23		11:39 (29)	08:27		07:13	06:44	05:24	04:31
	16:05	50	13:40 (24)	17:16		18:24	20:35	21:44	22:42
10	09:22		11:38 (29)	08:25	09:40 (16)	07:10	06:41	05:22	04:30
	16:07	52	13:40 (24)	17:18	2	09:42 (16)	18:26	20:37	21:46	22:43
11	09:21		11:38 (29)	08:23	09:36 (16)	07:07	06:38	05:19	04:29
	16:09	56	13:42 (24)	17:21	10	09:46 (16)	18:28	20:40	21:49	22:44
12	09:20		11:37 (29)	08:20	09:34 (16)	07:04	06:35	05:17	04:29
	16:11	63	14:47 (25)	17:23	14	09:48 (16)	18:31	20:42	21:51	22:45
13	09:18		11:37 (29)	08:18	09:33 (16)	07:02	06:32	05:15	04:28
	16:13	74	14:49 (25)	17:26	16	09:49 (16)	18:33	20:44	21:53	22:46
14	09:17		11:36 (29)	08:15	09:33 (16)	06:59	06:30	05:13	04:28
	16:15	82	14:49 (25)	17:28	17	09:50 (16)	18:35	20:47	21:55	22:47
15	09:16		11:36 (29)	08:13	09:32 (16)	06:56	06:27	05:10	04:27
	16:17	87	14:50 (25)	17:31	18	09:50 (16)	18:38	20:49	21:58	22:47
16	09:15		11:35 (29)	08:10	09:31 (16)	06:53	06:24	05:08	04:27
	16:19	87	14:50 (25)	17:33	19	09:50 (16)	18:40	20:51	22:00	22:48
17	09:13		11:36 (29)	08:07	09:31 (16)	06:50	06:21	05:06	04:27
	16:21	87	14:52 (25)	17:36	19	09:50 (16)	18:42	20:53	22:02	22:49
18	09:12		11:36 (29)	08:05	09:32 (16)	06:47	06:19	05:04	04:27
	16:23	89	14:52 (25)	17:38	19	09:51 (16)	18:45	20:56	22:04	22:49
19	09:10		11:35 (29)	08:02	09:32 (16)	06:44	06:16	05:02	04:27
	16:25	86	14:52 (25)	17:40	18	09:50 (16)	18:47	20:58	22:06	22:50
20	09:09		11:35 (29)	08:00	09:32 (16)	06:41	06:13	05:00	04:27
	16:28	83	14:53 (25)	17:43	17	09:49 (16)	18:49	21:00	22:08	22:50
21	09:07		11:35 (29)	07:57	09:33 (16)	06:39	06:10	04:58	04:27
	16:30	79	14:53 (25)	17:45	15	09:48 (16)	18:51	21:03	22:10	22:50
22	09:05		11:35 (29)	07:54	09:34 (16)	06:36	06:08	04:56	04:27
	16:32	80	14:53 (25)	17:48	12	09:46 (16)	18:54	21:05	22:12	22:50
23	09:03		11:35 (29)	07:52	09:37 (16)	06:33	06:05	04:54	04:27
	16:34	79	14:52 (25)	17:50	7	09:44 (16)	18:56	21:07	22:14	22:51
24	09:02		11:35 (29)	07:49		06:30	06:02	04:52	04:27
	16:37	79	14:52 (25)	17:53		18:58	21:10	22:16	22:51
25	09:00		11:35 (29)	07:46		06:27	05:59	04:51	04:28
	16:39	78	14:52 (25)	17:55		19:01	21:12	22:18	22:51
26	08:58		11:36 (29)	07:44		06:24	05:57	04:49	04:28
	16:41	77	14:52 (25)	17:57		19:03	21:14	22:20	22:50
27	08:56		11:36 (29)	07:41		06:21	05:54	04:47	04:29
	16:44	73	14:51 (25)	18:00		19:05	21:17	22:22	22:50
28	08:54		11:36 (29)	07:38		06:18	05:52	04:46	04:30
	16:46	71	14:50 (25)	18:02		19:08	21:19	22:24	22:50
29	08:52		11:37 (29)			07:15	05:49	04:44	04:30
	16:49	66	14:49 (25)			20:10	21:21	22:25	22:50
30	08:50		11:37 (29)			07:13	05:46	04:42	04:31
	16:51	54	14:44 (25)			20:12	21:24	22:27	22:49
31	08:48		11:38 (29)			07:10		04:41	
	16:54	51	13:50 (24)			20:14		22:29	
Potential sun hours	221			260		365	432	521	547
Total, worst case		1895			400				
Sun reduction		0,50			0,50				
Oper. time red.		0,80			0,80				
Wind dir. red.		0,61			0,68				
Total reduction		0,24			0,27				
Total, real		460			108				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** I - Buevegen 1782 (9)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October			November			December		
1	04:32	05:24	06:33	07:39			07:51			09:00		11:20 (29)
	22:49	22:01	20:40	19:13			16:49			15:51	56	13:24 (24)
2	04:33	05:26	06:35	07:42			07:54			09:02		11:21 (29)
	22:48	21:59	20:37	19:10			16:46			15:50	52	13:23 (24)
3	04:34	05:28	06:37	07:44			07:56			09:03		11:22 (29)
	22:47	21:56	20:34	19:07			16:44			15:49	50	13:23 (24)
4	04:35	05:31	06:40	07:46			07:59		11:19 (29)	09:05		11:24 (29)
	22:47	21:54	20:31	19:04			16:41	6	11:25 (29)	15:48	45	13:22 (24)
5	04:36	05:33	06:42	07:48			08:01		11:16 (29)	09:07		11:26 (29)
	22:46	21:51	20:28	19:02			16:39	14	11:30 (29)	15:47	38	13:21 (24)
6	04:37	05:35	06:44	07:51			08:03		11:14 (29)	09:09		11:56 (21)
	22:45	21:49	20:25	18:59			16:37	18	11:32 (29)	15:46	26	13:19 (24)
7	04:38	05:37	06:46	07:53			08:06		11:12 (29)	09:10		11:56 (21)
	22:44	21:47	20:23	18:56			16:34	32	13:14 (24)	15:45	21	12:17 (21)
8	04:40	05:39	06:49	07:55			08:08		11:11 (29)	09:12		11:57 (21)
	22:43	21:44	20:20	18:53			16:32	40	13:17 (24)	15:45	21	12:18 (21)
9	04:41	05:42	06:51	07:57			08:11		11:10 (29)	09:13		11:58 (21)
	22:42	21:42	20:17	18:50			16:30	45	13:19 (24)	15:44	20	12:18 (21)
10	04:43	05:44	06:53	08:00			08:13		11:10 (29)	09:15		11:57 (21)
	22:41	21:39	20:14	18:47			16:28	49	13:21 (24)	15:43	21	12:18 (21)
11	04:44	05:46	06:55	08:02			08:15		11:09 (29)	09:16		11:58 (21)
	22:39	21:37	20:11	18:45			16:25	51	13:21 (24)	15:43	21	12:19 (21)
12	04:46	05:48	06:57	08:04			08:18		11:09 (29)	09:18		11:58 (21)
	22:38	21:34	20:08	18:42			16:23	57	14:17 (25)	15:43	21	12:19 (21)
13	04:47	05:51	07:00	08:07			08:20		11:09 (29)	09:19		12:00 (21)
	22:37	21:32	20:05	18:39			16:21	66	14:21 (25)	15:42	20	12:20 (21)
14	04:49	05:53	07:02	08:09			08:23		11:08 (29)	09:20		12:00 (21)
	22:35	21:29	20:02	18:36			16:19	72	14:22 (25)	15:42	20	12:20 (21)
15	04:51	05:55	07:04	08:11			08:25		11:08 (29)	09:21		12:00 (21)
	22:34	21:26	19:59	18:33			16:17	75	14:24 (25)	15:42	20	12:20 (21)
16	04:52	05:57	07:06	08:13			08:27		11:09 (29)	09:22		12:00 (21)
	22:32	21:24	19:56	18:31			16:15	77	14:25 (25)	15:42	20	12:20 (21)
17	04:54	06:00	07:08	08:16			08:30		11:09 (29)	09:23		12:01 (21)
	22:31	21:21	19:54	18:28			16:13	78	14:26 (25)	15:42	20	12:21 (21)
18	04:56	06:02	07:11	08:18			08:32		11:09 (29)	09:24		12:02 (21)
	22:29	21:18	19:51	18:25			16:11	79	14:26 (25)	15:42	19	12:21 (21)
19	04:58	06:04	07:13	08:20		10:07 (16)	08:34		11:10 (29)	09:25		12:02 (21)
	22:27	21:16	19:48	18:22	9	10:16 (16)	16:09	79	14:27 (25)	15:42	20	12:22 (21)
20	05:00	06:06	07:15	08:23		10:05 (16)	08:36		11:10 (29)	09:26		12:03 (21)
	22:25	21:13	19:45	18:20	13	10:18 (16)	16:08	79	14:27 (25)	15:43	19	12:22 (21)
21	05:01	06:08	07:17	08:25		10:04 (16)	08:39		11:10 (29)	09:26		12:03 (21)
	22:24	21:10	19:42	18:17	15	10:19 (16)	16:06	79	14:28 (25)	15:43	19	12:22 (21)
22	05:03	06:11	07:19	08:27		10:02 (16)	08:41		11:11 (29)	09:27		12:04 (21)
	22:22	21:08	19:39	18:14	18	10:20 (16)	16:04	83	14:29 (25)	15:43	19	12:23 (21)
23	05:05	06:13	07:22	08:30		10:02 (16)	08:43		11:11 (29)	09:27		12:04 (21)
	22:20	21:05	19:36	18:12	18	10:20 (16)	16:02	86	14:28 (25)	15:44	19	12:23 (21)
24	05:07	06:15	07:24	08:32		10:01 (16)	08:45		11:13 (29)	09:28		12:05 (21)
	22:18	21:02	19:33	18:09	19	10:20 (16)	16:01	88	14:29 (25)	15:44	20	12:25 (21)
25	05:09	06:17	07:26	07:35		09:01 (16)	08:47		11:13 (29)	09:28		12:05 (21)
	22:16	20:59	19:30	17:06	19	09:20 (16)	15:59	88	14:29 (25)	15:45	20	12:25 (21)
26	05:11	06:20	07:28	07:37		09:02 (16)	08:50		11:14 (29)	09:28		12:06 (21)
	22:14	20:57	19:27	17:04	19	09:21 (16)	15:58	87	14:29 (25)	15:46	19	12:25 (21)
27	05:13	06:22	07:30	07:39		09:01 (16)	08:52		11:15 (29)	09:28		12:06 (21)
	22:12	20:54	19:25	17:01	19	09:20 (16)	15:56	86	14:29 (25)	15:47	20	12:26 (21)
28	05:16	06:24	07:33	07:42		09:02 (16)	08:54		11:16 (29)	09:28		12:07 (21)
	22:10	20:51	19:22	16:59	17	09:19 (16)	15:55	82	14:29 (25)	15:48	20	12:27 (21)
29	05:18	06:26	07:35	07:44		09:02 (16)	08:56		11:17 (29)	09:28		12:06 (21)
	22:07	20:48	19:19	16:56	16	09:18 (16)	15:54	75	14:29 (25)	15:49	20	12:26 (21)
30	05:20	06:29	07:37	07:47		09:04 (16)	08:58		11:18 (29)	09:28		12:07 (21)
	22:05	20:45	19:16	16:54	13	09:17 (16)	15:52	62	14:28 (25)	15:50	20	12:27 (21)
31	05:22	06:31		07:49		09:06 (16)				09:28		12:07 (21)
	22:03	20:42		16:51	9	09:15 (16)				15:51	20	12:27 (21)
Potential sun hours	546	478	386	319			236			199		
Total, worst case					204			1733			766	
Sun reduction					0,50			0,50			0,50	
Oper. time red.					0,80			0,80			0,80	
Wind dir. red.					0,73			0,61			0,63	
Total reduction					0,29			0,24			0,25	
Total, real					59			420			193	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** J - Buevegen 1780 (10)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March	April	May	June
1	09:28	12:05 (21)	08:46	11:36 (29)	07:35	07:07	05:44	04:40
	15:53	21 12:26 (21)	16:56	45 13:44 (24)	18:05	20:17	21:26	22:31
2	09:27	12:06 (21)	08:43	11:37 (29)	07:33	07:04	05:41	04:38
	15:54	20 12:26 (21)	16:58	40 13:42 (24)	18:07	20:19	21:28	22:32
3	09:27	12:06 (21)	08:41	11:38 (29)	07:30	07:01	05:39	04:37
	15:55	20 12:26 (21)	17:01	34 13:40 (24)	18:09	20:21	21:31	22:34
4	09:27	12:06 (21)	08:39	11:39 (29)	07:27	06:58	05:36	04:36
	15:57	21 12:27 (21)	17:03	20 11:59 (29)	18:12	20:24	21:33	22:35
5	09:26	12:06 (21)	08:37	11:41 (29)	07:24	06:55	05:34	04:35
	15:58	28 13:28 (24)	17:06	16 11:57 (29)	18:14	20:26	21:35	22:37
6	09:25	12:07 (21)	08:34	11:44 (29)	07:21	06:52	05:31	04:34
	16:00	31 13:30 (24)	17:08	10 11:54 (29)	18:17	20:28	21:37	22:38
7	09:24	11:38 (29)	08:32		07:19	06:50	05:29	04:33
	16:02	39 13:32 (24)	17:11		18:19	20:30	21:40	22:39
8	09:24	11:37 (29)	08:30		07:16	06:47	05:26	04:32
	16:03	46 13:34 (24)	17:13		18:21	20:33	21:42	22:41
9	09:23	11:36 (29)	08:27		07:13	06:44	05:24	04:31
	16:05	50 13:36 (24)	17:16		18:24	20:35	21:44	22:42
10	09:22	11:35 (29)	08:25	09:38 (16)	07:10	06:41	05:22	04:30
	16:07	58 14:41 (25)	17:18	5 09:43 (16)	18:26	20:37	21:46	22:43
11	09:21	11:34 (29)	08:23	09:36 (16)	07:07	06:38	05:19	04:29
	16:09	71 14:43 (25)	17:21	10 09:46 (16)	18:28	20:40	21:49	22:44
12	09:20	11:33 (29)	08:20	09:34 (16)	07:04	06:35	05:17	04:29
	16:11	79 14:44 (25)	17:23	14 09:48 (16)	18:31	20:42	21:51	22:45
13	09:18	11:34 (29)	08:18	09:32 (16)	07:02	06:32	05:15	04:28
	16:13	81 14:45 (25)	17:26	16 09:48 (16)	18:33	20:44	21:53	22:46
14	09:17	11:33 (29)	08:15	09:32 (16)	06:59	06:30	05:13	04:28
	16:15	84 14:45 (25)	17:28	18 09:50 (16)	18:35	20:47	21:55	22:47
15	09:16	11:32 (29)	08:13	09:32 (16)	06:56	06:27	05:10	04:27
	16:17	86 14:46 (25)	17:31	18 09:50 (16)	18:38	20:49	21:58	22:47
16	09:15	11:32 (29)	08:10	09:31 (16)	06:53	06:24	05:08	04:27
	16:19	87 14:46 (25)	17:33	19 09:50 (16)	18:40	20:51	22:00	22:48
17	09:13	11:32 (29)	08:07	09:31 (16)	06:50	06:21	05:06	04:27
	16:21	87 14:47 (25)	17:36	19 09:50 (16)	18:42	20:53	22:02	22:49
18	09:12	11:32 (29)	08:05	09:32 (16)	06:47	06:19	05:04	04:27
	16:23	88 14:48 (25)	17:38	18 09:50 (16)	18:45	20:56	22:04	22:49
19	09:10	11:32 (29)	08:02	09:32 (16)	06:44	06:16	05:02	04:27
	16:25	86 14:48 (25)	17:40	17 09:49 (16)	18:47	20:58	22:06	22:50
20	09:09	11:32 (29)	08:00	09:32 (16)	06:41	06:13	05:00	04:27
	16:28	77 14:48 (25)	17:43	16 09:48 (16)	18:49	21:00	22:08	22:50
21	09:07	11:32 (29)	07:57	09:33 (16)	06:39	06:10	04:58	04:27
	16:30	77 14:48 (25)	17:45	14 09:47 (16)	18:51	21:03	22:10	22:50
22	09:05	11:32 (29)	07:54	09:35 (16)	06:36	06:08	04:56	04:27
	16:32	79 14:49 (25)	17:48	10 09:45 (16)	18:54	21:05	22:12	22:50
23	09:03	11:31 (29)	07:52	09:39 (16)	06:33	06:05	04:54	04:27
	16:34	78 14:48 (25)	17:50	2 09:41 (16)	18:56	21:07	22:14	22:51
24	09:02	11:32 (29)	07:49		06:30	06:02	04:52	04:27
	16:37	77 14:48 (25)	17:53		18:58	21:10	22:16	22:51
25	09:00	11:32 (29)	07:46		06:27	05:59	04:51	04:28
	16:39	75 14:47 (25)	17:55		19:01	21:12	22:18	22:51
26	08:58	11:33 (29)	07:44		06:24	05:57	04:49	04:28
	16:41	73 14:47 (25)	17:57		19:03	21:14	22:20	22:50
27	08:56	11:32 (29)	07:41		06:21	05:54	04:47	04:29
	16:44	70 14:45 (25)	18:00		19:05	21:17	22:22	22:50
28	08:54	11:33 (29)	07:38		06:18	05:52	04:46	04:30
	16:46	66 14:44 (25)	18:02		19:08	21:19	22:24	22:50
29	08:52	11:34 (29)			07:15	05:49	04:44	04:30
	16:49	57 14:41 (25)			20:10	21:21	22:25	22:50
30	08:50	11:34 (29)			07:13	05:46	04:42	04:31
	16:51	52 13:45 (24)			20:12	21:24	22:27	22:49
31	08:48	11:35 (29)			07:10		04:41	
	16:54	48 13:44 (24)			20:14		22:29	
Potential sun hours	221		260		365	432	521	547
Total, worst case		1912		361				
Sun reduction		0,50		0,50				
Oper. time red.		0,80		0,80				
Wind dir. red.		0,61		0,69				
Total reduction		0,24		0,27				
Total, real		466		99				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** J - Buevegen 1780 (10)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October			November			December		
1	04:32	05:24	06:33	07:39			07:51		09:09 (16)	09:00		11:16 (29)
	22:49	22:01	20:40	19:13			16:49	2	09:11 (16)	15:51	74	14:26 (25)
2	04:33	05:26	06:35	07:42			07:54			09:02		11:18 (29)
	22:48	21:59	20:37	19:10			16:46			15:50	58	14:24 (25)
3	04:34	05:28	06:37	07:44			07:56			09:03		11:19 (29)
	22:47	21:56	20:34	19:07			16:44			15:49	51	13:19 (24)
4	04:35	05:31	06:40	07:46			07:59			09:05		11:21 (29)
	22:47	21:54	20:31	19:04			16:41			15:48	46	13:18 (24)
5	04:36	05:33	06:42	07:48			08:01		11:13 (29)	09:07		11:23 (29)
	22:46	21:51	20:28	19:02			16:39	12	11:25 (29)	15:47	39	13:18 (24)
6	04:37	05:35	06:44	07:51			08:03		11:11 (29)	09:09		11:53 (21)
	22:45	21:49	20:25	18:59			16:37	17	11:28 (29)	15:46	32	13:17 (24)
7	04:38	05:37	06:46	07:53			08:06		11:10 (29)	09:10		11:54 (21)
	22:44	21:47	20:23	18:56			16:34	22	13:06 (24)	15:45	28	13:16 (24)
8	04:40	05:39	06:49	07:55			08:08		11:08 (29)	09:12		11:54 (21)
	22:43	21:44	20:20	18:53			16:32	34	13:10 (24)	15:45	22	13:13 (24)
9	04:41	05:42	06:51	07:57			08:11		11:07 (29)	09:13		11:55 (21)
	22:42	21:42	20:17	18:50			16:30	41	13:13 (24)	15:44	20	12:15 (21)
10	04:43	05:44	06:53	08:00			08:13		11:07 (29)	09:15		11:55 (21)
	22:41	21:39	20:14	18:47			16:28	46	13:15 (24)	15:43	20	12:15 (21)
11	04:44	05:46	06:55	08:02			08:15		11:06 (29)	09:16		11:56 (21)
	22:39	21:37	20:11	18:45			16:25	48	13:15 (24)	15:43	20	12:16 (21)
12	04:46	05:48	06:57	08:04			08:18		11:06 (29)	09:18		11:56 (21)
	22:38	21:34	20:08	18:42			16:23	52	13:17 (24)	15:43	20	12:16 (21)
13	04:47	05:51	07:00	08:07			08:20		11:06 (29)	09:19		11:57 (21)
	22:37	21:32	20:05	18:39			16:21	58	14:14 (25)	15:42	20	12:17 (21)
14	04:49	05:53	07:02	08:09			08:23		11:05 (29)	09:20		11:57 (21)
	22:35	21:29	20:02	18:36			16:19	66	14:16 (25)	15:42	20	12:17 (21)
15	04:51	05:55	07:04	08:11			08:25		11:05 (29)	09:21		11:57 (21)
	22:34	21:26	19:59	18:33			16:17	70	14:18 (25)	15:42	20	12:17 (21)
16	04:52	05:57	07:06	08:13			08:27		11:06 (29)	09:22		11:58 (21)
	22:32	21:24	19:56	18:31			16:15	73	14:20 (25)	15:42	19	12:17 (21)
17	04:54	06:00	07:08	08:16			08:30		11:06 (29)	09:23		11:58 (21)
	22:31	21:21	19:54	18:28			16:13	75	14:21 (25)	15:42	20	12:18 (21)
18	04:56	06:02	07:11	08:18			08:32		11:06 (29)	09:24		11:59 (21)
	22:29	21:18	19:51	18:25			16:11	77	14:22 (25)	15:42	19	12:18 (21)
19	04:58	06:04	07:13	08:20		10:08 (16)	08:34		11:06 (29)	09:25		11:59 (21)
	22:27	21:16	19:48	18:22	7	10:15 (16)	16:09	78	14:23 (25)	15:42	20	12:19 (21)
20	05:00	06:06	07:15	08:23		10:05 (16)	08:36		11:06 (29)	09:26		12:00 (21)
	22:25	21:13	19:45	18:20	12	10:17 (16)	16:08	79	14:23 (25)	15:43	19	12:19 (21)
21	05:01	06:08	07:17	08:25		10:04 (16)	08:39		11:07 (29)	09:26		12:00 (21)
	22:24	21:10	19:42	18:17	15	10:19 (16)	16:06	77	14:23 (25)	15:43	19	12:19 (21)
22	05:03	06:11	07:19	08:27		10:02 (16)	08:41		11:08 (29)	09:27		12:01 (21)
	22:22	21:08	19:39	18:14	17	10:19 (16)	16:04	77	14:24 (25)	15:43	19	12:20 (21)
23	05:05	06:13	07:22	08:30		10:02 (16)	08:43		11:08 (29)	09:27		12:01 (21)
	22:20	21:05	19:36	18:12	18	10:20 (16)	16:02	86	14:24 (25)	15:44	19	12:20 (21)
24	05:07	06:15	07:24	08:32		10:01 (16)	08:45		11:09 (29)	09:28		12:02 (21)
	22:18	21:02	19:33	18:09	19	10:20 (16)	16:01	87	14:25 (25)	15:44	19	12:21 (21)
25	05:09	06:17	07:26	07:35		09:01 (16)	08:47		11:09 (29)	09:28		12:03 (21)
	22:16	20:59	19:30	17:06	19	09:20 (16)	15:59	88	14:25 (25)	15:45	19	12:22 (21)
26	05:11	06:20	07:28	07:37		09:01 (16)	08:50		11:11 (29)	09:28		12:03 (21)
	22:14	20:57	19:27	17:04	19	09:20 (16)	15:58	87	14:25 (25)	15:46	19	12:22 (21)
27	05:13	06:22	07:30	07:39		09:01 (16)	08:52		11:11 (29)	09:28		12:03 (21)
	22:12	20:54	19:25	17:01	18	09:19 (16)	15:56	85	14:25 (25)	15:47	20	12:23 (21)
28	05:16	06:24	07:33	07:42		09:02 (16)	08:54		11:13 (29)	09:28		12:04 (21)
	22:10	20:51	19:22	16:59	17	09:19 (16)	15:55	85	14:26 (25)	15:48	20	12:24 (21)
29	05:18	06:26	07:35	07:44		09:02 (16)	08:56		11:14 (29)	09:28		12:04 (21)
	22:07	20:48	19:19	16:56	16	09:18 (16)	15:54	82	14:25 (25)	15:49	19	12:23 (21)
30	05:20	06:29	07:37	07:47		09:03 (16)	08:58		11:14 (29)	09:28		12:04 (21)
	22:05	20:45	19:16	16:54	14	09:17 (16)	15:52	80	14:25 (25)	15:50	20	12:24 (21)
31	05:22	06:31		07:49		09:06 (16)				09:28		12:04 (21)
	22:03	20:42		16:51	9	09:15 (16)				15:51	20	12:24 (21)
Potential sun hours	546	478	386	319			236			199		
Total, worst case					200			1684			800	
Sun reduction					0,50			0,50			0,50	
Oper. time red.					0,80			0,80			0,80	
Wind dir. red.					0,73			0,61			0,63	
Total reduction					0,29			0,24			0,25	
Total, real					58			410			201	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** K - Buevegen 1778 (11)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March	April	May	June	July	August	September	October	November		December		
1	09:28		11:58 (21)	08:46	11:24 (29)	07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:39	07:51		09:00		11:13 (29)
	15:53	16	12:14 (21)	16:56	49 13:35 (24)	18:05	20:17	21:26	22:31	22:49	22:01	20:40	19:13	16:49		15:51	59	14:20 (25)
2	09:28		11:58 (21)	08:43	11:24 (29)	07:33	07:04	05:41	04:38	04:33	05:26	06:35	07:42	07:54		09:02		11:44 (21)
	15:54	18	12:16 (21)	16:58	47 13:34 (24)	18:07	20:19	21:28	22:32	22:48	21:59	20:37	19:10	16:46		15:50	50	14:19 (25)
3	09:27		11:58 (21)	08:41	11:25 (29)	07:30	07:01	05:39	04:37	04:34	05:28	06:37	07:44	07:56	11:02 (29)	09:03		11:44 (21)
	15:55	20	12:18 (21)	17:01	42 13:33 (24)	18:09	20:21	21:31	22:34	22:47	21:56	20:34	19:07	16:44	12 11:14 (29)	15:49	40	14:19 (25)
4	09:27		11:58 (21)	08:39	11:26 (29)	07:27	06:58	05:36	04:36	04:35	05:31	06:40	07:46	07:59	10:59 (29)	09:05		11:44 (21)
	15:57	21	12:19 (21)	17:03	35 13:30 (24)	18:12	20:24	21:33	22:35	22:47	21:54	20:31	19:04	16:41	17 11:16 (29)	15:48	34	14:19 (25)
5	09:26		11:59 (21)	08:37	11:26 (29)	07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48	08:01	10:58 (29)	09:07		11:45 (21)
	15:58	20	12:19 (21)	17:06	23 11:49 (29)	18:14	20:26	21:35	22:37	22:46	21:51	20:28	19:02	16:39	20 11:18 (29)	15:47	31	13:06 (24)
6	09:25		11:59 (21)	08:34	11:28 (29)	07:21	06:52	05:31	04:34	04:37	05:35	06:44	07:51	08:03	10:57 (29)	09:09		11:45 (21)
	16:00	26	13:18 (24)	17:08	20 11:48 (29)	18:17	20:28	21:37	22:38	22:45	21:49	20:25	18:59	16:37	22 11:19 (29)	15:46	27	13:05 (24)
7	09:25		12:00 (21)	08:32	11:30 (29)	07:19	06:50	05:29	04:33	04:39	05:37	06:46	07:53	08:06	10:56 (29)	09:10		11:46 (21)
	16:02	30	13:21 (24)	17:11	16 11:46 (29)	18:19	20:30	21:40	22:39	22:44	21:47	20:23	18:56	16:34	37 13:01 (24)	15:45	20	12:06 (21)
8	09:24		12:00 (21)	08:30	11:33 (29)	07:16	06:47	05:26	04:32	04:40	05:39	06:49	07:55	08:08	10:55 (29)	09:12		11:47 (21)
	16:03	34	14:35 (25)	17:13	11 11:44 (29)	18:21	20:33	21:42	22:41	22:43	21:44	20:20	18:53	16:32	43 13:03 (24)	15:45	20	12:07 (21)
9	09:23		12:01 (21)	08:27		07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:57	08:11	10:55 (29)	09:13		11:47 (21)
	16:05	41	14:36 (25)	17:16		18:24	20:35	21:44	22:42	22:42	21:42	20:17	18:50	16:30	47 13:05 (24)	15:44	20	12:07 (21)
10	09:22		12:01 (21)	08:25		07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00	08:13	10:54 (29)	09:15		11:47 (21)
	16:07	50	14:36 (25)	17:18		18:26	20:37	21:46	22:43	22:41	21:39	20:14	18:47	16:28	51 13:06 (24)	15:43	19	12:07 (21)
11	09:21		12:02 (21)	08:23		07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02	08:15	10:54 (29)	09:16		11:48 (21)
	16:09	57	14:37 (25)	17:21		18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:45	16:25	52 13:06 (24)	15:43	16	12:04 (21)
12	09:20		11:27 (29)	08:20		07:04	06:35	05:17	04:29	04:46	05:48	06:57	08:04	08:18	10:54 (29)	09:18		11:48 (21)
	16:11	69	14:38 (25)	17:23		18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42	16:23	55 13:08 (24)	15:43	11	11:59 (21)
13	09:18		11:26 (29)	08:18		07:02	06:32	05:15	04:28	04:47	05:51	07:00	08:07	08:20	10:54 (29)	09:19		11:49 (21)
	16:13	75	14:39 (25)	17:26		18:33	20:44	21:53	22:46	22:37	21:32	20:05	18:39	16:21	62 14:08 (25)	15:42	11	12:00 (21)
14	09:17		11:25 (29)	08:15		06:59	06:30	05:13	04:28	04:49	05:53	07:02	08:09	08:23	10:53 (29)	09:20		11:50 (21)
	16:15	78	14:39 (25)	17:28		18:35	20:47	21:55	22:47	22:35	21:29	20:02	18:36	16:19	69 14:10 (25)	15:42	7	12:00 (21)
15	09:16		11:24 (29)	08:13		06:56	06:27	05:10	04:27	04:51	05:55	07:04	08:11	08:25	10:54 (29)	09:21		11:50 (21)
	16:17	82	14:40 (25)	17:31		18:38	20:49	21:58	22:47	22:34	21:26	19:59	18:33	16:17	71 14:12 (25)	15:42	3	11:53 (21)
16	09:15		11:23 (29)	08:10		06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13	08:27	10:54 (29)	09:22		11:50 (21)
	16:19	85	14:40 (25)	17:33		18:40	20:51	22:00	22:48	22:32	21:24	19:56	18:31	16:15	75 14:14 (25)	15:42	3	11:53 (21)
17	09:13		11:23 (29)	08:07		06:50	06:21	05:06	04:27	04:54	06:00	07:08	08:16	08:30	10:55 (29)	09:23		11:51 (21)
	16:21	86	14:41 (25)	17:36		18:42	20:54	22:02	22:49	22:31	21:21	19:54	18:28	16:13	77 14:15 (25)	15:42	1	11:52 (21)
18	09:12		11:23 (29)	08:05		06:47	06:19	05:04	04:27	04:56	06:02	07:11	08:18	08:32	10:55 (29)	09:24		
	16:23	87	14:42 (25)	17:38		18:45	20:56	22:04	22:49	22:29	21:18	19:51	18:25	16:11	76 14:15 (25)	15:42		
19	09:10		11:22 (29)	08:02		06:44	06:16	05:02	04:27	04:58	06:04	07:13	08:20	08:34	10:56 (29)	09:25		
	16:25	87	14:42 (25)	17:40		18:47	20:58	22:06	22:50	22:27	21:16	19:48	18:22	16:09	77 14:16 (25)	15:42		
20	09:09		11:22 (29)	08:00		06:41	06:13	05:00	04:27	05:00	06:06	07:15	08:23	08:36	10:56 (29)	09:26		
	16:28	85	14:42 (25)	17:43		18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20	16:08	77 14:16 (25)	15:43		
21	09:07		11:22 (29)	07:57		06:39	06:10	04:58	04:27	05:01	06:08	07:17	08:25	08:39	10:57 (29)	09:26		
	16:30	82	14:42 (25)	17:45		18:51	21:03	22:10	22:50	22:24	21:10	19:42	18:17	16:06	81 14:17 (25)	15:43		
22	09:05		11:22 (29)	07:54		06:36	06:08	04:56	04:27	05:03	06:11	07:19	08:27	08:41	10:58 (29)	09:27		
	16:32	77	14:42 (25)	17:48		18:54	21:05	22:12	22:50	22:22	21:08	19:39	18:14	16:04	85 14:18 (25)	15:43		
23	09:03		11:21 (29)	07:52		06:33	06:05	04:54	04:27	05:05	06:13	07:22	08:30	08:43	10:58 (29)	09:27		
	16:34	77	14:41 (25)	17:50		18:56	21:07	22:14	22:51	22:20	21:05	19:36	18:12	16:02	88 14:18 (25)	15:44		
24	09:02		11:21 (29)	07:49		06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32	08:45	11:00 (29)	09:28		
	16:37	76	14:41 (25)	17:53		18:58	21:10	22:16	22:51	22:18	21:02	19:33	18:09	16:01	87 14:19 (25)	15:44		
25	09:00		11:21 (29)	07:46		06:27	05:59	04:51	04:28	05:09	06:17	07:26	07:35	08:47	11:00 (29)	09:28		
	16:39	77	14:41 (25)	17:55		19:01	21:12	22:18	22:51	22:16	20:59	19:30	17:06	15:59	86 14:18 (25)	15:45		
26	08:58		11:21 (29)	07:44		06:24	05:57	04:49	04:28	05:11	06:20	07:28	07:37	08:50	11:02 (29)	09:28		
	16:41	75	14:41 (25)	17:57		19:03	21:14	22:20	22:50	22:14	20:57	19:27	17:04	15:58	85 14:19 (25)	15:46		
27	08:56		11:21 (29)	07:41		06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39	08:52	11:03 (29)	09:28		11:56 (21)
	16:44	71	14:39 (25)	18:00		19:05	21:17	22:22	22:50	22:12	20:54	19:25	17:01	15:56	82 14:19 (25)	15:47	3	11:59 (21)
28	08:54		11:21 (29)	07:38		06:18	05:52	04:46	04:30	05:16	06:24	07:33	07:42	08:54	11:05 (29)	09:28		11:57 (21)
	16:46	69	14:38 (25)	18:02		19:08	21:19	22:24	22:50	22:10	20:51	19:22	16:59	15:55	79 14:19 (25)	15:48	3	12:00 (21)
29	08:52		11:22 (29)			07:15	05:49	04:44	04:30	05:18	06:26	07:35	07:44	08:56	11:06 (29)	09:28		11:56 (21)
	16:49	61	14:36 (25)			20:10	21:21	22:25	22:50	22:07	20:48	19:19	16:56	15:54	74 14:19 (25)	15:49	5	12:07 (21)
30	08:50		11:22 (29)			07:13	05:46	04:42	04:31	05:20	06:29	07:37	07:47	08:58	11:08 (29)	09:28		11:57 (21)
	16:51	55	13:36 (24)			20:12	21:24	22:27	22:49	22:05	20:45	19:16	16:54	15:52	69 14:19 (25)	15:50	11	12:08 (21)
31	08:48		11:23 (29)			07:10		04:41		05:22	06:31		07:49			09:28		11:57 (21)
	16:54	53	13:36 (24)			20:14		22:29		22:03	20:42		16:51			15:51	11	12:08 (21)
Potential sun hours	221		260		365	432	521	547	546	478	386	319	236		199		
Total, worst case		1840		243										1756		405	
Sun reduction		0,50		0,50										0,50		0,50	
Oper. time red.		0,80		0,80										0,80		0,80	
Wind dir. red.		0,62		0,65										0,62		0,62	
Total reduction		0,25		0,26										0,25		0,25	
Total, real		452		63										434		101	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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NO-0276 Oslo
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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** L - Buevegen 1850 (12)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March		April	May	June
1	09:28	11:52 (34)	08:46	13:17 (29)	07:35	08:53 (18)	07:07	05:44	04:40
	15:53 17	12:09 (34)	16:56 36	13:53 (29)	18:05 19	09:12 (18)	20:17	21:26	22:30
2	09:27	11:51 (34)	08:43	13:18 (29)	07:32	08:53 (18)	07:04	05:41	04:38
	15:54 19	12:10 (34)	16:58 43	15:13 (24)	18:07 20	09:13 (18)	20:19	21:28	22:32
3	09:27	11:51 (34)	08:41	13:17 (29)	07:30	08:52 (18)	07:01	05:39	04:37
	15:55 19	12:10 (34)	17:01 52	15:18 (24)	18:09 21	09:13 (18)	20:21	21:30	22:34
4	09:26	11:51 (34)	08:39	13:18 (29)	07:27	08:52 (18)	06:58	05:36	04:36
	15:57 20	12:11 (34)	17:03 54	15:20 (24)	18:12 20	09:12 (18)	20:24	21:33	22:35
5	09:26	11:52 (34)	08:37	13:17 (29)	07:24	08:52 (18)	06:55	05:34	04:35
	15:58 20	12:12 (34)	17:06 58	15:21 (24)	18:14 20	09:12 (18)	20:26	21:35	22:37
6	09:25	11:52 (34)	08:34	13:18 (29)	07:21	08:52 (18)	06:52	05:31	04:34
	16:00 20	12:12 (34)	17:08 63	15:44 (25)	18:16 19	09:11 (18)	20:28	21:37	22:38
7	09:24	11:52 (34)	08:32	13:17 (29)	07:19	08:53 (18)	06:49	05:29	04:33
	16:02 21	12:13 (34)	17:11 68	15:46 (25)	18:19 17	09:10 (18)	20:30	21:40	22:39
8	09:24	11:53 (34)	08:30	13:18 (29)	07:16	08:54 (18)	06:47	05:26	04:32
	16:03 21	12:14 (34)	17:13 73	15:51 (25)	18:21 14	09:08 (18)	20:33	21:42	22:40
9	09:23	11:52 (34)	08:27	13:18 (29)	07:13	08:55 (18)	06:44	05:24	04:31
	16:05 22	12:14 (34)	17:16 79	15:59 (25)	18:24 10	09:05 (18)	20:35	21:44	22:42
10	09:22	11:53 (34)	08:25	13:18 (29)	07:10		06:41	05:22	04:30
	16:07 22	12:15 (34)	17:18 82	16:00 (25)	18:26		20:37	21:46	22:43
11	09:21	11:54 (34)	08:23	13:20 (29)	07:07		06:38	05:19	04:29
	16:09 22	12:16 (34)	17:21 80	16:00 (25)	18:28		20:40	21:49	22:44
12	09:20	11:53 (34)	08:20	10:07 (16)	07:04		06:35	05:17	04:29
	16:11 24	13:22 (21)	17:23 88	15:59 (25)	18:31		20:42	21:51	22:45
13	09:18	11:53 (34)	08:18	10:04 (16)	07:01		06:32	05:15	04:28
	16:13 30	13:28 (21)	17:26 90	15:58 (25)	18:33		20:44	21:53	22:46
14	09:17	11:54 (34)	08:15	10:03 (16)	06:59		06:30	05:13	04:28
	16:15 38	13:37 (21)	17:28 87	15:57 (25)	18:35		20:47	21:55	22:46
15	09:16	11:55 (34)	08:13	10:02 (16)	06:56		06:27	05:10	04:27
	16:17 44	13:43 (21)	17:31 80	15:54 (25)	18:38		20:49	21:57	22:47
16	09:15	11:55 (34)	08:10	10:01 (16)	06:53		06:24	05:08	04:27
	16:19 45	13:44 (21)	17:33 72	15:24 (24)	18:40		20:51	22:00	22:48
17	09:13	11:55 (34)	08:07	10:00 (16)	06:50		06:21	05:06	04:27
	16:21 45	13:44 (21)	17:35 66	15:23 (24)	18:42		20:53	22:02	22:49
18	09:12	11:57 (34)	08:05	10:00 (16)	06:47		06:19	05:04	04:27
	16:23 44	13:46 (21)	17:38 60	15:23 (24)	18:45		20:56	22:04	22:49
19	09:10	11:57 (34)	08:02	10:00 (16)	06:44		06:16	05:02	04:27
	16:25 44	13:46 (21)	17:40 43	15:21 (24)	18:47		20:58	22:06	22:50
20	09:08	11:58 (34)	08:00	09:59 (16)	06:41		06:13	05:00	04:27
	16:28 43	13:46 (21)	17:43 41	15:19 (24)	18:49		21:00	22:08	22:50
21	09:07	11:59 (34)	07:57	09:59 (16)	06:38		06:10	04:58	04:27
	16:30 40	13:46 (21)	17:45 33	15:15 (24)	18:51		21:03	22:10	22:50
22	09:05	11:59 (34)	07:54	09:59 (16)	06:36		06:08	04:56	04:27
	16:32 40	13:46 (21)	17:48 25	10:24 (16)	18:54		21:05	22:12	22:50
23	09:03	12:01 (34)	07:52	10:00 (16)	06:33		06:05	04:54	04:27
	16:34 36	13:46 (21)	17:50 24	10:24 (16)	18:56		21:07	22:14	22:50
24	09:02	12:03 (34)	07:49	10:01 (16)	06:30		06:02	04:52	04:27
	16:37 34	13:46 (21)	17:53 22	10:23 (16)	18:58		21:10	22:16	22:51
25	09:00	12:05 (34)	07:46	09:00 (18)	06:27		05:59	04:51	04:28
	16:39 32	13:46 (29)	17:55 27	10:22 (16)	19:01		21:12	22:18	22:50
26	08:58	13:21 (29)	07:43	08:57 (18)	06:24		05:57	04:49	04:28
	16:41 27	13:48 (29)	17:57 30	10:20 (16)	19:03		21:14	22:20	22:50
27	08:56	13:20 (29)	07:41	08:55 (18)	06:21		05:54	04:47	04:29
	16:44 28	13:48 (29)	18:00 29	10:18 (16)	19:05		21:17	22:22	22:50
28	08:54	13:19 (29)	07:38	08:54 (18)	06:18		05:52	04:46	04:30
	16:46 31	13:50 (29)	18:02 24	10:14 (16)	19:07		21:19	22:24	22:50
29	08:52	13:19 (29)			07:15		05:49	04:44	04:30
	16:49 32	13:51 (29)			20:10		21:21	22:25	22:50
30	08:50	13:18 (29)			07:12		05:46	04:42	04:31
	16:51 33	13:51 (29)			20:12		21:24	22:27	22:49
31	08:48	13:18 (29)			07:10			04:41	
	16:53 35	13:53 (29)			20:14			22:29	
Potential sun hours	221		260		365		432	521	547
Total, worst case	948		1529		160				
Sun reduction	0,50		0,50		0,50				
Oper. time red.	0,80		0,80		0,80				
Wind dir. red.	0,61		0,61		0,74				
Total reduction	0,24		0,24		0,29				
Total, real	231		369		47				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** L - Buevegen 1850 (12)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July		August		September		October			November			December		
1	04:32		05:24		06:33		07:39			07:51		12:48 (29)	09:00		11:36 (34)
	22:49		22:01		20:40		19:13			16:49	83	15:30 (25)	15:51	22	11:58 (34)
2	04:33		05:26		06:35		07:42			07:54		12:48 (29)	09:02		11:36 (34)
	22:48		21:58		20:37		19:10			16:46	76	15:28 (25)	15:50	22	11:58 (34)
3	04:34		05:28		06:37		07:44			07:56		12:48 (29)	09:03		11:36 (34)
	22:47		21:56		20:34		19:07			16:44	71	15:20 (25)	15:49	22	11:58 (34)
4	04:35		05:31		06:40		07:46		09:34 (18)	07:59		12:47 (29)	09:05		11:37 (34)
	22:47		21:54		20:31		19:04	7	09:41 (18)	16:41	66	15:15 (25)	15:48	21	11:58 (34)
5	04:36		05:33		06:42		07:48		09:32 (18)	08:01		12:47 (29)	09:07		11:37 (34)
	22:46		21:51		20:28		19:01	12	09:44 (18)	16:39	62	15:13 (25)	15:47	21	11:58 (34)
6	04:37		05:35		06:44		07:51		09:30 (18)	08:03		12:48 (29)	09:09		11:38 (34)
	22:45		21:49		20:25		18:59	15	09:45 (18)	16:37	58	14:52 (24)	15:46	21	11:59 (34)
7	04:38		05:37		06:46		07:53		09:28 (18)	08:06		12:47 (29)	09:10		11:39 (34)
	22:44		21:47		20:22		18:56	18	09:46 (18)	16:34	55	14:50 (24)	15:45	20	11:59 (34)
8	04:40		05:39		06:48		07:55		09:28 (18)	08:08		12:48 (29)	09:12		11:40 (34)
	22:43		21:44		20:20		18:53	19	09:47 (18)	16:32	50	14:48 (24)	15:45	19	11:59 (34)
9	04:41		05:42		06:51		07:57		09:27 (18)	08:11		12:48 (29)	09:13		11:41 (34)
	22:42		21:42		20:17		18:50	20	09:47 (18)	16:30	42	14:43 (24)	15:44	19	12:00 (34)
10	04:43		05:44		06:53		08:00		09:27 (18)	08:13		12:49 (29)	09:15		11:41 (34)
	22:40		21:39		20:14		18:47	20	09:47 (18)	16:28	35	13:24 (29)	15:43	18	11:59 (34)
11	04:44		05:46		06:55		08:02		09:26 (18)	08:15		12:49 (29)	09:16		11:42 (34)
	22:39		21:37		20:11		18:45	20	09:46 (18)	16:25	34	13:23 (29)	15:43	18	12:00 (34)
12	04:46		05:48		06:57		08:04		09:26 (18)	08:18		12:50 (29)	09:18		11:42 (34)
	22:38		21:34		20:08		18:42	19	09:45 (18)	16:23	33	13:23 (29)	15:43	17	11:59 (34)
13	04:47		05:51		07:00		08:06		09:27 (18)	08:20		12:51 (29)	09:19		11:43 (34)
	22:37		21:31		20:05		18:39	18	09:45 (18)	16:21	32	13:23 (29)	15:42	17	12:00 (34)
14	04:49		05:53		07:02		08:09		09:27 (18)	08:22		12:51 (29)	09:20		11:44 (34)
	22:35		21:29		20:02		18:36	28	10:49 (16)	16:19	31	13:22 (29)	15:42	16	12:00 (34)
15	04:51		05:55		07:04		08:11		09:29 (18)	08:25		12:53 (29)	09:21		11:44 (34)
	22:34		21:26		19:59		18:33	30	10:52 (16)	16:17	28	13:21 (29)	15:42	16	12:00 (34)
16	04:52		05:57		07:06		08:13		09:30 (18)	08:27		12:54 (29)	09:22		11:45 (34)
	22:32		21:24		19:56		18:31	29	10:53 (16)	16:15	27	13:21 (29)	15:42	15	12:00 (34)
17	04:54		05:59		07:08		08:16		10:33 (16)	08:29		11:38 (34)	09:23		11:45 (34)
	22:30		21:21		19:54		18:28	21	10:54 (16)	16:13	32	13:19 (29)	15:42	15	12:00 (34)
18	04:56		06:02		07:10		08:18		10:31 (16)	08:32		11:37 (34)	09:24		11:46 (34)
	22:29		21:18		19:51		18:25	24	10:55 (16)	16:11	34	13:20 (21)	15:42	15	12:01 (34)
19	04:58		06:04		07:13		08:20		10:31 (16)	08:34		11:36 (34)	09:25		11:47 (34)
	22:27		21:16		19:48		18:22	24	10:55 (16)	16:09	36	13:21 (21)	15:42	14	12:01 (34)
20	05:00		06:06		07:15		08:23		10:30 (16)	08:36		11:34 (34)	09:26		11:48 (34)
	22:25		21:13		19:45		18:20	25	10:55 (16)	16:08	39	13:21 (21)	15:42	14	12:02 (34)
21	05:01		06:08		07:17		08:25		10:30 (16)	08:39		11:34 (34)	09:26		11:48 (34)
	22:24		21:10		19:42		18:17	36	15:48 (24)	16:06	40	13:21 (21)	15:43	14	12:02 (34)
22	05:03		06:11		07:19		08:27		10:30 (16)	08:41		11:34 (34)	09:27		11:48 (34)
	22:22		21:08		19:39		18:14	41	15:50 (24)	16:04	43	13:22 (21)	15:43	15	12:03 (34)
23	05:05		06:13		07:22		08:30		10:30 (16)	08:43		11:33 (34)	09:27		11:49 (34)
	22:20		21:05		19:36		18:12	48	15:52 (24)	16:02	44	13:22 (21)	15:44	14	12:03 (34)
24	05:07		06:15		07:24		08:32		10:30 (16)	08:45		11:34 (34)	09:28		11:50 (34)
	22:18		21:02		19:33		18:09	61	15:52 (24)	16:01	44	13:23 (21)	15:44	14	12:04 (34)
25	05:09		06:17		07:26		07:35		09:30 (16)	08:47		11:33 (34)	09:28		11:50 (34)
	22:16		20:59		19:30		17:06	69	14:54 (24)	15:59	44	13:22 (21)	15:45	14	12:04 (34)
26	05:11		06:20		07:28		07:37		09:30 (16)	08:50		11:34 (34)	09:28		11:50 (34)
	22:14		20:56		19:27		17:04	73	14:54 (24)	15:58	44	13:23 (21)	15:46	15	12:05 (34)
27	05:13		06:22		07:30		07:39		09:32 (16)	08:52		11:34 (34)	09:28		11:50 (34)
	22:12		20:54		19:24		17:01	81	15:24 (25)	15:56	44	13:23 (21)	15:47	16	12:06 (34)
28	05:16		06:24		07:33		07:42		09:33 (16)	08:54		11:35 (34)	09:28		11:50 (34)
	22:10		20:51		19:22		16:59	88	15:27 (25)	15:55	38	13:18 (21)	15:48	16	12:06 (34)
29	05:18		06:26		07:35		07:44		09:34 (16)	08:56		11:35 (34)	09:28		11:50 (34)
	22:07		20:48		19:19		16:56	90	15:28 (25)	15:54	29	13:09 (21)	15:49	17	12:07 (34)
30	05:20		06:29		07:37		07:47		09:37 (16)	08:58		11:35 (34)	09:28		11:51 (34)
	22:05		20:45		19:16		16:54	89	15:29 (25)	15:52	23	13:03 (21)	15:50	17	12:08 (34)
31	05:22		06:31				07:49		12:49 (29)				09:28		11:51 (34)
	22:03		20:42				16:51	81	15:30 (25)				15:51	17	12:08 (34)
Potential sun hours	546		478		386		319			236			199		
Total, worst case								1106			1317			531	
Sun reduction								0,50			0,50			0,50	
Oper. time red.								0,80			0,80			0,80	
Wind dir. red.								0,64			0,59			0,64	
Total reduction								0,26			0,23			0,26	
Total, real								285			308			136	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** M - Buevegen 1941 (13)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March			April	May	June
1	09:28			08:46		14:11 (34)	07:35		10:14 (18)	07:07	05:44	04:40
	15:53			16:56	18	15:31 (21)	18:05	73	16:49 (24)	20:17	21:26	22:30
2	09:27			08:43		15:15 (21)	07:32		10:15 (18)	07:04	05:41	04:38
	15:54			16:58	17	15:32 (21)	18:07	70	16:50 (24)	20:19	21:28	22:32
3	09:27			08:41		15:14 (21)	07:30		10:16 (18)	07:01	05:39	04:37
	15:55			17:01	19	15:33 (21)	18:09	62	16:48 (24)	20:21	21:30	22:34
4	09:26			08:39		12:34 (16)	07:27		10:16 (18)	06:58	05:36	04:36
	15:57			17:03	30	15:33 (21)	18:12	54	16:47 (24)	20:23	21:33	22:35
5	09:26			08:37		12:30 (16)	07:24		09:25 (13)	06:55	05:34	04:35
	15:58			17:06	36	15:33 (21)	18:14	36	16:44 (24)	20:26	21:35	22:36
6	09:25			08:34		12:29 (16)	07:21		09:21 (13)	06:52	05:31	04:34
	16:00			17:08	40	15:34 (21)	18:16	27	10:42 (18)	20:28	21:37	22:38
7	09:24			08:32		12:27 (16)	07:18		10:19 (18)	06:49	05:29	04:33
	16:02			17:11	42	15:33 (21)	18:19	20	10:39 (18)	20:30	21:40	22:39
8	09:24			08:30		12:27 (16)	07:16		10:21 (18)	06:47	05:26	04:32
	16:03			17:13	44	15:34 (21)	18:21	15	10:36 (18)	20:33	21:42	22:40
9	09:23			08:27		12:25 (16)	07:13		10:25 (18)	06:44	05:24	04:31
	16:05			17:16	46	15:33 (21)	18:24	7	10:32 (18)	20:35	21:44	22:42
10	09:22			08:25		12:24 (16)	07:10			06:41	05:22	04:30
	16:07			17:18	45	15:31 (21)	18:26			20:37	21:46	22:43
11	09:21			08:22		12:24 (16)	07:07			06:38	05:19	04:29
	16:09			17:21	43	15:30 (21)	18:28			20:40	21:49	22:44
12	09:20			08:20		12:23 (16)	07:04			06:35	05:17	04:29
	16:11			17:23	38	15:27 (21)	18:31			20:42	21:51	22:45
13	09:18			08:18		12:22 (16)	07:01			06:32	05:15	04:28
	16:13			17:26	34	12:56 (16)	18:33			20:44	21:53	22:46
14	09:17			08:15		12:23 (16)	06:59			06:30	05:12	04:28
	16:15			17:28	34	12:57 (16)	18:35			20:46	21:55	22:46
15	09:16			08:12		12:22 (16)	06:56			06:27	05:10	04:27
	16:17			17:30	35	12:57 (16)	18:38			20:49	21:57	22:47
16	09:14			08:10		12:22 (16)	06:53			06:24	05:08	04:27
	16:19			17:33	43	16:12 (29)	18:40			20:51	22:00	22:48
17	09:13			08:07		12:22 (16)	06:50			06:21	05:06	04:27
	16:21			17:35	49	16:15 (29)	18:42			20:53	22:02	22:48
18	09:12			08:05		12:23 (16)	06:47			06:18	05:04	04:27
	16:23			17:38	51	16:17 (29)	18:44			20:56	22:04	22:49
19	09:10			08:02		12:23 (16)	06:44			06:16	05:02	04:27
	16:25			17:40	54	16:18 (29)	18:47			20:58	22:06	22:49
20	09:08			08:00		12:23 (16)	06:41			06:13	05:00	04:27
	16:28			17:43	55	16:19 (29)	18:49			21:00	22:08	22:50
21	09:07			07:57		12:23 (16)	06:38			06:10	04:58	04:27
	16:30			17:45	56	16:20 (29)	18:51			21:03	22:10	22:50
22	09:05			07:54		12:24 (16)	06:36			06:07	04:56	04:27
	16:32			17:48	61	16:42 (24)	18:54			21:05	22:12	22:50
23	09:03			07:52		12:26 (16)	06:33			06:05	04:54	04:27
	16:34			17:50	67	16:48 (24)	18:56			21:07	22:14	22:50
24	09:01			07:49		10:20 (18)	06:30			06:02	04:52	04:27
	16:37			17:52	68	16:49 (24)	18:58			21:10	22:16	22:50
25	09:00			07:46		10:16 (18)	06:27			05:59	04:51	04:28
	16:39			17:55	91	16:50 (24)	19:01			21:12	22:18	22:50
26	08:58			07:43		10:15 (18)	06:24			05:57	04:49	04:28
	16:41			17:57	92	16:50 (24)	19:03			21:14	22:20	22:50
27	08:56			07:41		10:15 (18)	06:21			05:54	04:47	04:29
	16:44			18:00	82	16:50 (24)	19:05			21:17	22:22	22:50
28	08:54			07:38		10:15 (18)	06:18			05:51	04:45	04:29
	16:46			18:02	75	16:50 (24)	19:07			21:19	22:24	22:50
29	08:52						07:15			05:49	04:44	04:30
	16:49						20:10			21:21	22:25	22:49
30	08:50		14:16 (34)				07:12			05:46	04:42	04:31
	16:51	3	14:19 (34)				20:12			21:23	22:27	22:49
31	08:48		14:08 (34)				07:10				04:41	
	16:53	21	15:27 (21)				20:14				22:29	
Potential sun hours	221			260			365			432	521	547
Total, worst case		24			1365			364				
Sun reduction		0,50			0,50			0,50				
Oper. time red.		0,80			0,80			0,80				
Wind dir. red.		0,55			0,60			0,65				
Total reduction		0,22			0,24			0,26				
Total, real		5			328			95				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** M - Buevegen 1941 (13)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October			November			December
1	04:32	05:24	06:33	07:39			07:51		11:54 (16)	09:00
	22:48	22:01	20:40	19:13			16:49	45	15:01 (21)	15:51
2	04:33	05:26	06:35	07:41			07:54		11:55 (16)	09:01
	22:48	21:58	20:37	19:10			16:46	44	15:02 (21)	15:50
3	04:34	05:28	06:37	07:44			07:56		11:56 (16)	09:03
	22:47	21:56	20:34	19:07			16:44	45	15:03 (21)	15:49
4	04:35	05:31	06:40	07:46			07:58		11:57 (16)	09:05
	22:46	21:54	20:31	19:04			16:41	43	15:03 (21)	15:48
5	04:36	05:33	06:42	07:48		10:59 (18)	08:01		11:59 (16)	09:07
	22:46	21:51	20:28	19:01	13	11:12 (18)	16:39	39	15:03 (21)	15:47
6	04:37	05:35	06:44	07:50		10:56 (18)	08:03		12:01 (16)	09:09
	22:45	21:49	20:25	18:59	19	11:15 (18)	16:37	36	15:04 (21)	15:46
7	04:38	05:37	06:46	07:53		09:54 (13)	08:06		12:04 (16)	09:10
	22:44	21:47	20:22	18:56	25	11:16 (18)	16:34	29	15:03 (21)	15:45
8	04:40	05:39	06:48	07:55		09:58 (13)	08:08		14:45 (21)	09:12
	22:43	21:44	20:20	18:53	33	17:18 (24)	16:32	18	15:03 (21)	15:45
9	04:41	05:42	06:51	07:57		10:01 (13)	08:10		14:46 (21)	09:13
	22:42	21:42	20:17	18:50	49	17:20 (24)	16:30	17	15:03 (21)	15:44
10	04:43	05:44	06:53	08:00		10:49 (18)	08:13		13:42 (34)	09:15
	22:40	21:39	20:14	18:47	59	17:21 (24)	16:28	20	15:03 (21)	15:43
11	04:44	05:46	06:55	08:02		10:49 (18)	08:15		13:39 (34)	09:16
	22:39	21:37	20:11	18:44	66	17:23 (24)	16:25	20	14:58 (21)	15:43
12	04:46	05:48	06:57	08:04		10:48 (18)	08:18		13:48 (34)	09:17
	22:38	21:34	20:08	18:42	71	17:23 (24)	16:23	3	13:51 (34)	15:43
13	04:47	05:50	06:59	08:06		10:48 (18)	08:20			09:19
	22:36	21:31	20:05	18:39	73	17:23 (24)	16:21			15:42
14	04:49	05:53	07:02	08:09		10:47 (18)	08:22			09:20
	22:35	21:29	20:02	18:36	77	17:23 (24)	16:19			15:42
15	04:50	05:55	07:04	08:11		10:48 (18)	08:25			09:21
	22:34	21:26	19:59	18:33	88	17:23 (24)	16:17			15:42
16	04:52	05:57	07:06	08:13		10:47 (18)	08:27			09:22
	22:32	21:24	19:56	18:31	94	17:22 (24)	16:15			15:42
17	04:54	05:59	07:08	08:16		10:48 (18)	08:29			09:23
	22:30	21:21	19:53	18:28	85	17:22 (24)	16:13			15:42
18	04:56	06:02	07:10	08:18		12:57 (16)	08:32			09:24
	22:29	21:18	19:51	18:25	67	17:20 (24)	16:11			15:42
19	04:58	06:04	07:13	08:20		12:56 (16)	08:34			09:25
	22:27	21:16	19:48	18:22	65	17:17 (24)	16:09			15:42
20	04:59	06:06	07:15	08:23		12:55 (16)	08:36			09:25
	22:25	21:13	19:45	18:20	58	17:12 (24)	16:07			15:42
21	05:01	06:08	07:17	08:25		12:54 (16)	08:39			09:26
	22:23	21:10	19:42	18:17	57	16:51 (29)	16:06			15:43
22	05:03	06:11	07:19	08:27		12:53 (16)	08:41			09:27
	22:22	21:07	19:39	18:14	55	16:49 (29)	16:04			15:43
23	05:05	06:13	07:21	08:30		12:53 (16)	08:43			09:27
	22:20	21:05	19:36	18:12	53	16:48 (29)	16:02			15:44
24	05:07	06:15	07:24	08:32		12:52 (16)	08:45			09:28
	22:18	21:02	19:33	18:09	52	16:46 (29)	16:01			15:44
25	05:09	06:17	07:26	07:34		11:52 (16)	08:47			09:28
	22:16	20:59	19:30	17:06	47	15:44 (29)	15:59			15:45
26	05:11	06:20	07:28	07:37		11:51 (16)	08:49			09:28
	22:14	20:56	19:27	17:04	40	15:40 (29)	15:58			15:46
27	05:13	06:22	07:30	07:39		11:52 (16)	08:52			09:28
	22:12	20:54	19:24	17:01	35	12:27 (16)	15:56			15:47
28	05:15	06:24	07:33	07:42		11:52 (16)	08:54			09:28
	22:10	20:51	19:22	16:59	35	12:27 (16)	15:55			15:48
29	05:18	06:26	07:35	07:44		11:52 (16)	08:56			09:28
	22:07	20:48	19:19	16:56	34	12:26 (16)	15:53			15:49
30	05:20	06:29	07:37	07:46		11:53 (16)	08:58			09:28
	22:05	20:45	19:16	16:54	39	14:57 (21)	15:52			15:50
31	05:22	06:31		07:49		11:54 (16)				09:28
	22:03	20:42		16:51	42	15:00 (21)				15:51
Potential sun hours	546	478	386	319			236			199
Total, worst case					1431			359		
Sun reduction					0,50			0,50		
Oper. time red.					0,80			0,80		
Wind dir. red.					0,62			0,58		
Total reduction					0,25			0,23		
Total, real					354			84		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** N - Buevegen 1988 (14)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March	April	May	June	July	August	September	October		November		December
1	09:28		08:46		11:38 (18)	07:07	05:44	04:40	04:32	05:24	06:33	07:39		07:51		09:44 (13)	09:00
	15:53		16:56	62	13:43 (16)	18:05	20:17	21:26	22:30	22:48	22:01	20:40	19:13		16:49	55	15:37 (29)	15:51
2	09:27		08:43		11:39 (18)	07:32	07:04	05:41	04:38	04:33	05:26	06:35	07:41		07:54		09:56 (13)	09:01
	15:54		16:58	57	13:43 (16)	18:07	20:19	21:28	22:32	22:48	21:58	20:37	19:10		16:46	51	15:37 (29)	15:50
3	09:27		08:41		11:38 (18)	07:30	07:01	05:39	04:37	04:34	05:28	06:37	07:44		07:56		09:57 (13)	09:03
	15:55		17:01	51	13:42 (16)	18:09	20:21	21:30	22:34	22:47	21:56	20:34	19:07		16:44	57	15:36 (29)	15:49
4	09:26		08:39		11:39 (18)	07:27	06:58	05:36	04:36	04:35	05:30	06:40	07:46		07:58		10:02 (13)	09:05
	15:57		17:03	51	15:59 (29)	18:12	20:23	21:33	22:35	22:46	21:54	20:31	19:04		16:41	58	15:35 (29)	15:48
5	09:26		08:37		11:39 (18)	07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48		08:01		11:09 (18)	09:07
	15:58		17:06	57	16:02 (29)	18:14	20:26	21:35	22:36	22:46	21:51	20:28	19:01		16:39	57	15:34 (29)	15:47
6	09:25		08:34		11:40 (18)	07:21	06:52	05:31	04:34	04:37	05:35	06:44	07:50		08:03		11:10 (18)	09:09
	16:00		17:08	57	16:05 (29)	18:16	20:28	21:37	22:38	22:45	21:49	20:25	18:59		16:37	56	15:33 (29)	15:46
7	09:24		08:32		10:32 (13)	07:18	06:49	05:29	04:33	04:38	05:37	06:46	07:53		08:06		11:09 (18)	09:10
	16:02		17:11	56	16:05 (29)	18:19	20:30	21:40	22:39	22:44	21:47	20:22	18:56		16:34	49	13:12 (16)	15:45
8	09:24		08:30		10:27 (13)	07:16	06:47	05:26	04:32	04:40	05:39	06:48	07:55		08:08		11:09 (18)	09:12
	16:03		17:13	56	16:07 (29)	18:21	20:33	21:42	22:40	22:43	21:44	20:20	18:53		16:32	50	13:13 (16)	15:45
9	09:23		08:27		10:26 (13)	07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:57		08:10		11:09 (18)	09:13
	16:05		17:16	49	16:07 (29)	18:23	20:35	21:44	22:42	22:42	21:42	20:17	18:50		16:30	59	13:14 (16)	15:44
10	09:22		08:25		10:15 (13)	07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00		08:13		11:10 (18)	09:15
	16:07		17:18	57	16:07 (29)	18:26	20:37	21:46	22:43	22:40	21:39	20:14	18:47		16:28	62	13:15 (16)	15:43
11	09:21		08:22		10:16 (13)	07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02		08:15		11:10 (18)	09:16
	16:09		17:21	55	16:08 (29)	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:44		16:25	63	13:14 (16)	15:43
12	09:20		08:20		10:17 (13)	07:04	06:35	05:17	04:29	04:46	05:48	06:57	08:04		08:18		11:10 (18)	09:17
	16:11		17:23	48	16:08 (29)	18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42		16:23	65	13:15 (16)	15:43
13	09:18		08:17		10:18 (13)	07:01	06:32	05:15	04:28	04:47	05:50	06:59	08:06		08:20		11:11 (18)	09:19
	16:13		17:26	33	16:07 (29)	18:33	20:44	21:53	22:46	22:36	21:31	20:05	18:39		16:21	65	13:15 (16)	15:42
14	09:17	12:03 (10)	08:15		10:21 (13)	06:59	06:30	05:12	04:28	04:49	05:53	07:02	08:09		08:22		11:11 (18)	09:20
	16:15	8 12:11 (10)	17:28	28	16:08 (29)	18:35	20:46	21:55	22:46	22:35	21:29	20:02	18:36		16:19	66	13:15 (16)	15:42
15	09:16	12:02 (10)	08:12		15:50 (29)	06:56	06:27	05:10	04:27	04:50	05:55	07:04	08:11		08:25		11:13 (18)	09:21
	16:17	10 12:12 (10)	17:30	17	16:07 (29)	18:37	20:49	21:57	22:47	22:34	21:26	19:59	18:33		16:17	64	13:15 (16)	15:42
16	09:14	12:02 (10)	08:10		15:51 (29)	06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13		08:27		11:14 (18)	09:22
	16:19	11 12:13 (10)	17:33	14	16:05 (29)	18:40	20:51	22:00	22:48	22:32	21:24	19:56	18:31		16:15	62	13:15 (16)	15:42
17	09:13	12:02 (10)	08:07		15:52 (29)	06:50	06:21	05:06	04:27	04:54	05:59	07:08	08:16		08:29		11:15 (18)	09:23
	16:21	18 13:29 (16)	17:35	12	16:04 (29)	18:42	20:53	22:02	22:48	22:30	21:21	19:53	18:28		16:13	61	13:14 (16)	15:42
18	09:12	11:58 (10)	08:05		15:56 (29)	06:47	06:18	05:04	04:27	04:56	06:02	07:10	08:18		08:32		11:17 (18)	09:24
	16:23	29 13:33 (16)	17:38	6	16:02 (29)	18:44	20:56	22:04	22:49	22:29	21:18	19:51	18:25		16:11	59	13:14 (16)	15:42
19	09:10	11:58 (10)	08:02			06:44	06:16	05:02	04:26	04:58	06:04	07:13	08:20		08:34		11:19 (18)	09:25
	16:25	32 13:35 (16)	17:40			18:47	20:58	22:06	22:49	22:27	21:16	19:48	18:22		16:09	54	13:14 (16)	15:42
20	09:08	11:57 (10)	08:00			06:41	06:13	05:00	04:26	04:59	06:06	07:15	08:23		08:36		11:21 (18)	09:25
	16:27	37 13:37 (16)	17:43			18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20		16:07	48	13:13 (16)	15:42
21	09:07	11:57 (10)	07:57			06:38	06:10	04:58	04:27	05:01	06:08	07:17	08:25		08:39		11:32 (10)	09:26
	16:30	40 13:38 (16)	17:45			18:51	21:03	22:10	22:50	22:23	21:10	19:42	18:17		16:06	40	13:13 (16)	15:43
22	09:05	11:46 (18)	07:54			06:36	06:07	04:56	04:27	05:03	06:11	07:19	08:27		08:41		11:33 (10)	09:27
	16:32	48 13:38 (16)	17:48			18:54	21:05	22:12	22:50	22:22	21:07	19:39	18:14		16:04	37	13:13 (16)	15:43
23	09:03	11:44 (18)	07:52			06:33	06:05	04:54	04:27	05:05	06:13	07:21	08:30		08:43		11:34 (10)	09:27
	16:34	54 13:39 (16)	17:50			18:56	21:07	22:14	22:50	22:20	21:05	19:36	18:12		16:02	33	13:11 (16)	15:44
24	09:01	11:43 (18)	07:49			06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32	16:24 (29)	08:45		11:35 (10)	09:28
	16:37	59 13:40 (16)	17:52			18:58	21:10	22:16	22:50	22:18	21:02	19:33	18:09	8 16:32 (29)	16:01	29	13:10 (16)	15:44
25	09:00	11:42 (18)	07:46			06:27	05:59	04:50	04:28	05:09	06:17	07:26	07:34	15:22 (29)	08:47		11:41 (10)	09:28
	16:39	60 13:41 (16)	17:55			19:01	21:12	22:18	22:50	22:16	20:59	19:30	17:06	12 15:34 (29)	15:59	18	13:08 (16)	15:45
26	08:58	11:41 (18)	07:43			06:24	05:57	04:49	04:28	05:11	06:20	07:28	07:37	15:20 (29)	08:49		11:41 (10)	09:28
	16:41	62 13:42 (16)	17:57			19:03	21:14	22:20	22:50	22:14	20:56	19:27	17:04	15 15:35 (29)	15:58	11	11:52 (10)	15:46
27	08:56	11:40 (18)	07:41			06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39	09:53 (13)	08:52		11:41 (10)	09:28
	16:44	64 13:42 (16)	18:00			19:05	21:17	22:22	22:50	22:12	20:54	19:24	17:01	20 15:36 (29)	15:56	10	11:51 (10)	15:47
28	08:54	11:40 (18)	07:38			06:18	05:51	04:45	04:29	05:15	06:24	07:33	07:42	09:49 (13)	08:54		11:43 (10)	09:28
	16:46	65 13:43 (16)	18:02			19:07	21:19	22:24	22:50	22:10	20:51	19:22	16:59	29 15:37 (29)	15:55	8	11:51 (10)	15:48
29	08:52	11:40 (18)				07:15	05:49	04:44	04:30	05:18	06:26	07:35	07:44	09:47 (13)	08:56			09:28
	16:49	64 13:43 (16)				20:10	21:21	22:25	22:49	22:07	20:48	19:19	16:56	38 15:37 (29)	15:53			15:49
30	08:50	11:39 (18)				07:12	05:46	04:42	04:31	05:20	06:28	07:37	07:46	09:46 (13)	08:58			09:28
	16:51	65 13:43 (16)				20:12	21:23	22:27	22:49	22:05	20:45	19:16	16:54	49 15:37 (29)	15:52			15:50
31	08:48	11:39 (18)				07:09		04:41		05:22	06:31		07:49	09:46 (13)				09:28
	16:53	63 13:43 (16)				20:14		22:29		22:03	20:42		16:51	56 15:38 (29)				15:51
Potential sun hours	221		260		365	432	521	547	546	478	386	319		236				199
Total, worst case		789		766									227		1347			
Sun reduction		0,50		0,50									0,50		0,50			
Oper. time red.		0,80		0,80									0,80		0,80			
Wind dir. red.		0,62		0,61									0,60		0,62			
Total reduction		0,25		0,24									0,24		0,25			
Total, real		196		187									54		334			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** O - Buevegen 2023 (15)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March	April	May	June	July	August	September	October		November		December
1	09:28		08:46		10:50 (13)	07:07	05:44	04:39	04:32	05:24	06:33	07:39		07:51		10:26 (13)	09:00
	15:53		16:56	74	14:26 (16)	18:04	20:17	21:26	22:30	22:48	22:01	20:40	19:13		16:49	35	13:50 (16)	15:51
2	09:27		08:43		10:51 (13)	07:32	07:04	05:41	04:38	04:33	05:26	06:35	07:41		07:54		10:25 (13)	09:01
	15:54		16:58	73	14:27 (16)	18:07	20:19	21:28	22:32	22:48	21:58	20:37	19:10		16:46	48	13:53 (16)	15:50
3	09:27		08:41		10:50 (13)	07:30	07:01	05:39	04:37	04:34	05:28	06:37	07:44		07:56		10:24 (13)	09:03
	15:55		17:01	74	14:27 (16)	18:09	20:21	21:30	22:34	22:47	21:56	20:34	19:07		16:44	57	13:55 (16)	15:49
4	09:26		08:39		10:51 (13)	07:27	06:58	05:36	04:36	04:35	05:30	06:40	07:46		07:58		10:22 (13)	09:05
	15:57		17:03	73	14:27 (16)	18:12	20:23	21:33	22:35	22:46	21:54	20:31	19:04		16:41	62	13:55 (16)	15:48
5	09:26		08:37		10:51 (13)	07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48		08:01		10:22 (13)	09:07
	15:58		17:06	69	14:26 (16)	18:14	20:26	21:35	22:36	22:46	21:51	20:28	19:01		16:39	67	13:56 (16)	15:47
6	09:25		08:34		10:52 (13)	07:21	06:52	05:31	04:34	04:37	05:35	06:44	07:50		08:03		10:22 (13)	09:09
	16:00		17:08	65	14:26 (16)	18:16	20:28	21:37	22:38	22:45	21:49	20:25	18:59		16:37	70	13:57 (16)	15:46
7	09:24		08:32		10:53 (13)	07:18	06:49	05:29	04:33	04:38	05:37	06:46	07:53		08:06		10:21 (13)	09:10
	16:02		17:11	61	14:25 (16)	18:19	20:30	21:40	22:39	22:44	21:46	20:22	18:56		16:34	72	13:57 (16)	15:45
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	16:03		17:13	55	14:25 (16)	18:21	20:33	21:42	22:40	22:43	21:44	20:19	18:53		16:32	73	13:57 (16)	15:45
9	09:23		08:27		10:56 (13)	07:13	06:44	05:24	04:31	04:41	05:41	06:51	07:57		08:10		10:22 (13)	09:13
	16:05		17:16	46	14:23 (16)	18:23	20:35	21:44	22:42	22:42	21:42	20:17	18:50		16:30	74	13:58 (16)	15:44
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	16:07		17:18	32	14:20 (16)	18:26	20:37	21:46	22:43	22:40	21:39	20:14	18:47		16:28	72	13:58 (16)	15:43
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	16:09		17:21	8	12:51 (18)	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:44		16:25	73	13:57 (16)	15:43
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	16:11		17:23			18:30	20:42	21:51	22:45	22:38	21:34	20:08	18:42		16:23	72	13:58 (16)	15:42
13	09:18		08:17			07:01	06:32	05:15	04:28	04:47	05:50	06:59	08:06		08:20		10:23 (13)	09:19
	16:13		17:25			18:33	20:44	21:53	22:46	22:36	21:31	20:05	18:39		16:21	70	13:58 (16)	15:42
14	09:17	12:39 (10)	08:15			06:59	06:30	05:12	04:28	04:49	05:53	07:02	08:09		08:22		10:23 (13)	09:20
	16:15	6 12:45 (10)	17:28			18:35	20:46	21:55	22:46	22:35	21:29	20:02	18:36		16:19	68	13:57 (16)	15:42
15	09:16	12:39 (10)	08:12			06:56	06:27	05:10	04:27	04:50	05:55	07:04	08:11		08:25		10:27 (13)	09:21
	16:17	7 12:46 (10)	17:30			18:37	20:49	21:57	22:47	22:34	21:26	19:59	18:33		16:17	53	13:56 (16)	15:42
16	09:14	12:38 (10)	08:10			06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13		08:27		12:05 (18)	09:22
	16:19	17 12:55 (10)	17:33			18:40	20:51	22:00	22:48	22:32	21:24	19:56	18:31		16:15	46	13:56 (16)	15:42
17	09:13	12:38 (10)	08:07			06:50	06:21	05:06	04:27	04:54	05:59	07:08	08:16		08:29		12:06 (18)	09:23
	16:21	18 12:56 (10)	17:35			18:42	20:53	22:02	22:48	22:30	21:21	19:53	18:28		16:13	44	13:55 (16)	15:42
18	09:12	12:37 (10)	08:05			06:47	06:18	05:04	04:27	04:56	06:02	07:10	08:18		08:32		12:07 (18)	09:24
	16:23	19 12:56 (10)	17:38			18:44	20:56	22:04	22:49	22:29	21:18	19:51	18:25		16:11	41	13:54 (16)	15:42
19	09:10	12:38 (10)	08:02			06:44	06:16	05:02	04:26	04:58	06:04	07:13	08:20		08:34		12:09 (18)	09:25
	16:25	20 12:58 (10)	17:40			18:47	20:58	22:06	22:49	22:27	21:16	19:48	18:22		16:09	36	13:53 (16)	15:42
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	16:27	21 12:59 (10)	17:43			18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20		16:07	29	13:49 (16)	15:42
21	09:07	12:35 (18)	07:57			06:38	06:10	04:58	04:27	05:01	06:08	07:17	08:25		08:39		12:11 (18)	09:26
	16:30	23 12:58 (10)	17:45			18:51	21:03	22:10	22:50	22:23	21:10	19:42	18:17		16:06	23	12:34 (10)	15:43
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	16:32	29 14:14 (16)	17:48			18:54	21:05	22:12	22:50	22:22	21:07	19:39	18:14		16:04	21	12:35 (10)	15:43
23	09:03	12:34 (18)	07:52			06:33	06:05	04:54	04:27	05:05	06:13	07:21	08:30		08:43		12:14 (10)	09:27
	16:34	36 14:18 (16)	17:50			18:56	21:07	22:14	22:50	22:20	21:05	19:36	18:12		16:02	20	12:34 (10)	15:44
24	09:01	12:33 (18)	07:49			06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32		08:45		12:15 (10)	09:28
	16:37	41 14:20 (16)	17:52			18:58	21:10	22:16	22:50	22:18	21:02	19:33	18:09		16:01	20	12:35 (10)	15:44
25	09:00	12:33 (18)	07:46			06:27	05:59	04:50	04:28	05:09	06:17	07:26	07:34		08:47		12:16 (10)	09:28
	16:39	44 14:22 (16)	17:55			19:00	21:12	22:18	22:50	22:16	20:59	19:30	17:06		15:59	18	12:34 (10)	15:45
26	08:58	12:32 (18)	07:43			06:24	05:57	04:49	04:28	05:11	06:20	07:28	07:37		08:49		12:17 (10)	09:28
	16:41	46 14:23 (16)	17:57			19:03	21:14	22:20	22:50	22:14	20:56	19:27	17:04		15:58	17	12:34 (10)	15:46
27	08:56	10:54 (13)	07:41			06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39		08:52		12:18 (10)	09:28
	16:44	54 14:24 (16)	18:00			19:05	21:17	22:22	22:50	22:12	20:54	19:24	17:01		15:56	7	12:25 (10)	15:47
28	08:54	10:52 (13)	07:38			06:18	05:51	04:45	04:29	05:15	06:24	07:32	07:42		08:54		12:19 (10)	09:28
	16:46	67 14:25 (16)	18:02			19:07	21:19	22:24	22:50	22:09	20:51	19:21	16:59		15:55	6	12:25 (10)	15:48
29	08:52	10:51 (13)				07:15	05:49	04:44	04:30	05:18	06:26	07:35	07:44		08:56			09:28
	16:49	70 14:26 (16)				20:10	21:21	22:25	22:49	22:07	20:48	19:19	16:56		15:53			15:49
30	08:50	10:51 (13)				07:12	05:46	04:42	04:31	05:20	06:28	07:37	07:46		08:58			09:28
	16:51	71 14:26 (16)				20:12	21:23	22:27	22:49	22:05	20:45	19:16	16:54		15:52			15:50
31	08:48	10:51 (13)				07:09		04:41		05:22	06:31		07:49	12:11 (18)				09:28
	16:53	74 14:27 (16)				20:14		22:29		22:03	20:42		16:51	10 12:21 (18)				15:51
Potential sun hours	221		260		365	432	521	547	546	478	386	319		236			199
Total, worst case		663		630									10		1294			
Sun reduction		0,50		0,50									0,50		0,50			
Oper. time red.		0,80		0,80									0,80		0,80			
Wind dir. red.		0,62		0,63									0,63		0,62			
Total reduction		0,25		0,25									0,25		0,25			
Total, real		164		158									3		321			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** P - Buevegen 2021 (16)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March	April	May	June	July	August	September	October		November		December
1	09:28		08:46		10:45 (13)	07:07	05:44	04:40	04:32	05:24	06:33	07:39		07:51		10:19 (13)	09:00
	15:53		16:56	73	14:22 (16)	18:04	20:17	21:26	22:30	22:48	22:01	20:40	19:13		16:49	44	13:46 (16)	15:51
2	09:27		08:43		10:46 (13)	07:32	07:04	05:41	04:38	04:33	05:26	06:35	07:41		07:54		10:18 (13)	09:01
	15:54		16:58	74	14:23 (16)	18:07	20:19	21:28	22:32	22:48	21:58	20:37	19:10		16:46	55	13:49 (16)	15:50
3	09:27		08:41		10:45 (13)	07:30	07:01	05:39	04:37	04:34	05:28	06:37	07:44		07:56		10:18 (13)	09:03
	15:55		17:01	74	14:22 (16)	18:09	20:21	21:30	22:34	22:47	21:56	20:34	19:07		16:44	60	13:50 (16)	15:49
4	09:26		08:39		10:46 (13)	07:27	06:58	05:36	04:36	04:35	05:30	06:40	07:46		07:58		10:16 (13)	09:05
	15:57		17:03	73	14:23 (16)	18:12	20:23	21:33	22:35	22:46	21:54	20:31	19:04		16:41	65	13:51 (16)	15:48
5	09:26		08:37		10:46 (13)	07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48		08:01		10:16 (13)	09:07
	15:58		17:06	71	14:22 (16)	18:14	20:26	21:35	22:36	22:46	21:51	20:28	19:01		16:39	70	13:52 (16)	15:47
6	09:25		08:34		10:47 (13)	07:21	06:52	05:31	04:34	04:37	05:35	06:44	07:50		08:03		10:16 (13)	09:09
	16:00		17:08	68	14:22 (16)	18:16	20:28	21:37	22:38	22:45	21:49	20:25	18:59		16:37	73	13:53 (16)	15:46
7	09:24		08:32		10:47 (13)	07:18	06:49	05:29	04:33	04:38	05:37	06:46	07:53		08:06		10:16 (13)	09:10
	16:02		17:11	65	14:21 (16)	18:19	20:30	21:40	22:39	22:44	21:46	20:22	18:56		16:34	73	13:52 (16)	15:45
8	09:24		08:30		10:48 (13)	07:16	06:47	05:26	04:32	04:40	05:39	06:48	07:55		08:08		10:16 (13)	09:12
	16:03		17:13	59	14:21 (16)	18:21	20:33	21:42	22:40	22:43	21:44	20:19	18:53		16:32	73	13:53 (16)	15:45
9	09:23		08:27		10:49 (13)	07:13	06:44	05:24	04:31	04:41	05:41	06:51	07:57		08:10		10:16 (13)	09:13
	16:05		17:16	52	14:19 (16)	18:23	20:35	21:44	22:42	22:42	21:42	20:17	18:50		16:30	75	13:53 (16)	15:44
10	09:22		08:25		10:50 (13)	07:10	06:41	05:22	04:30	04:42	05:44	06:53	08:00		08:13		10:17 (13)	09:15
	16:07		17:18	41	14:16 (16)	18:26	20:37	21:46	22:43	22:40	21:39	20:14	18:47		16:28	74	13:54 (16)	15:43
11	09:21		08:22		10:53 (13)	07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02		08:15		10:17 (13)	09:16
	16:09		17:21	23	12:47 (18)	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:44		16:25	69	13:53 (16)	15:43
12	09:20		08:20		12:38 (18)	07:04	06:35	05:17	04:29	04:46	05:48	06:57	08:04		08:18		10:18 (13)	09:17
	16:11		17:23	3	12:41 (18)	18:30	20:42	21:51	22:45	22:38	21:34	20:08	18:42		16:23	53	13:53 (16)	15:42
13	09:18		08:17			07:01	06:32	05:15	04:28	04:47	05:50	06:59	08:06		08:20		10:20 (13)	09:19
	16:13		17:25			18:33	20:44	21:53	22:46	22:36	21:31	20:05	18:39		16:21	53	13:53 (16)	15:42
14	09:17		08:15			06:59	06:30	05:12	04:28	04:49	05:53	07:02	08:09		08:22		11:57 (18)	09:20
	16:15		17:28			18:35	20:46	21:55	22:46	22:35	21:29	20:02	18:36		16:19	51	13:52 (16)	15:42
15	09:16		08:12			06:56	06:27	05:10	04:27	04:50	05:55	07:04	08:11		08:25		11:58 (18)	09:21
	16:17		17:30			18:37	20:49	21:57	22:47	22:34	21:26	19:59	18:33		16:17	50	13:52 (16)	15:42
16	09:14		12:49 (10)	08:10		06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13		08:27		11:59 (18)	09:22
	16:19	1	12:50 (10)	17:33		18:40	20:51	22:00	22:48	22:32	21:24	19:56	18:31		16:15	49	13:52 (16)	15:42
17	09:13		12:33 (10)	08:07		06:50	06:21	05:06	04:27	04:54	05:59	07:08	08:16		08:29		12:00 (18)	09:23
	16:21	5	12:50 (10)	17:35		18:42	20:53	22:02	22:48	22:30	21:21	19:53	18:28		16:13	44	13:50 (16)	15:42
18	09:12		12:33 (10)	08:05		06:47	06:18	05:04	04:27	04:56	06:02	07:10	08:18		08:32		12:01 (18)	09:24
	16:23	18	12:51 (10)	17:38		18:44	20:56	22:04	22:49	22:29	21:18	19:51	18:25		16:11	42	13:49 (16)	15:42
19	09:10		12:34 (10)	08:02		06:44	06:16	05:02	04:26	04:58	06:04	07:13	08:20		08:34		12:03 (18)	09:25
	16:25	19	12:53 (10)	17:40		18:47	20:58	22:06	22:49	22:27	21:16	19:48	18:22		16:09	36	13:48 (16)	15:42
20	09:08		12:33 (10)	07:59		06:41	06:13	05:00	04:26	04:59	06:06	07:15	08:23		08:36		12:04 (18)	09:25
	16:27	21	12:54 (10)	17:43		18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20		16:07	26	13:41 (16)	15:42
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25	09:00		12:27 (18)	07:46		06:27	05:59	04:50	04:28	05:09	06:17	07:26	07:34		08:47		12:11 (10)	09:28
	16:39	44	14:17 (16)	17:55		19:00	21:12	22:18	22:50	22:16	20:59	19:30	17:06		15:59	7	12:29 (10)	15:45
26	08:58		12:26 (18)	07:43		06:24	05:57	04:49	04:28	05:11	06:20	07:28	07:37		08:49		12:28 (10)	09:28
	16:41	49	14:19 (16)	17:57		19:03	21:14	22:20	22:50	22:14	20:56	19:27	17:04		15:58	1	12:29 (10)	15:46
27	08:56		12:25 (18)	07:41		06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39		08:52			09:28
	16:44	50	14:19 (16)	18:00		19:05	21:17	22:22	22:50	22:12	20:54	19:24	17:01		15:56			15:47
28	08:54		12:25 (18)	07:38		06:18	05:51	04:45	04:29	05:15	06:24	07:32	07:42		08:54			09:28
	16:46	51	14:20 (16)	18:02		19:07	21:19	22:24	22:50	22:09	20:51	19:22	16:59		15:55			15:48
29	08:52		10:48 (13)			07:15	05:49	04:44	04:30	05:18	06:26	07:35	07:44		08:56			09:28
	16:49	53	14:21 (16)			20:10	21:21	22:25	22:49	22:07	20:48	19:19	16:56		15:53			15:49
30	08:50		10:46 (13)			07:12	05:46	04:42	04:31	05:20	06:28	07:37	07:46	10:26 (13)	08:58			09:28
	16:51	55	14:21 (16)			20:12	21:23	22:27	22:49	22:05	20:45	19:16	16:54	8 12:13 (18)	15:52			15:50
31	08:48		10:46 (13)			07:09		04:41		05:22	06:31		07:49	10:22 (13)				09:28
	16:53	69	14:22 (16)			20:14		22:29		22:03	20:42		16:51	25 12:17 (18)				15:51
Potential sun hours	221			260		365	432	521	547	546	478	386	319		236			199
Total, worst case		561		676										33		1222		
Sun reduction		0,50		0,50										0,50		0,50		
Oper. time red.		0,80		0,80										0,80		0,80		
Wind dir. red.		0,61		0,63										0,66		0,62		
Total reduction		0,24		0,25										0,26		0,25		
Total, real		137		170										9		303		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** Q - Buevegen 2141 (17)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March	April	May	June
1	09:28	12:03 (27)	08:45	14:59 (18)	07:35	07:07	05:44	04:39
	15:52 20	12:23 (27)	16:56 18	15:17 (18)	18:04	20:16	21:26	22:30
2	09:27	12:03 (27)	08:43	14:59 (18)	07:32	07:04	05:41	04:38
	15:54 20	12:23 (27)	16:58 19	15:18 (18)	18:07	20:19	21:28	22:32
3	09:27	12:03 (27)	08:41	14:58 (18)	07:30	07:01	05:38	04:37
	15:55 20	12:23 (27)	17:01 19	15:17 (18)	18:09	20:21	21:30	22:33
4	09:26	12:03 (27)	08:39	14:59 (18)	07:27	06:58	05:36	04:36
	15:57 21	12:24 (27)	17:03 19	15:18 (18)	18:12	20:23	21:33	22:35
5	09:26	12:04 (27)	08:37	14:59 (18)	07:24	06:55	05:33	04:34
	15:58 25	13:33 (13)	17:06 19	15:18 (18)	18:14	20:26	21:35	22:36
6	09:25	12:04 (27)	08:34	15:00 (18)	07:21	06:52	05:31	04:33
	16:00 29	13:35 (13)	17:08 18	15:18 (18)	18:16	20:28	21:37	22:38
7	09:24	12:05 (27)	08:32	15:00 (18)	07:18	06:49	05:29	04:32
	16:01 31	13:37 (13)	17:11 17	15:17 (18)	18:19	20:30	21:39	22:39
8	09:23	12:06 (27)	08:30	15:00 (18)	07:16	06:46	05:26	04:31
	16:03 32	13:38 (13)	17:13 16	15:16 (18)	18:21	20:33	21:42	22:40
9	09:23	12:06 (27)	08:27	15:02 (18)	07:13	06:44	05:24	04:31
	16:05 33	13:39 (13)	17:15 14	15:16 (18)	18:23	20:35	21:44	22:42
10	09:22	12:07 (27)	08:25	15:03 (18)	07:10	06:41	05:21	04:30
	16:07 34	13:40 (13)	17:18 11	15:14 (18)	18:26	20:37	21:46	22:43
11	09:21	12:07 (27)	08:22	15:07 (18)	07:07	06:38	05:19	04:29
	16:09 35	13:41 (13)	17:20 5	15:12 (18)	18:28	20:39	21:49	22:44
12	09:19	12:08 (27)	08:20		07:04	06:35	05:17	04:29
	16:11 35	13:42 (13)	17:23		18:30	20:42	21:51	22:45
13	09:18	12:08 (27)	08:17		07:01	06:32	05:15	04:28
	16:12 36	13:43 (13)	17:25		18:33	20:44	21:53	22:46
14	09:17	12:10 (27)	08:15		06:58	06:29	05:12	04:28
	16:14 35	13:44 (13)	17:28		18:35	20:46	21:55	22:46
15	09:16	12:11 (27)	08:12		06:56	06:27	05:10	04:27
	16:17 34	13:45 (13)	17:30		18:37	20:49	21:57	22:47
16	09:14	12:12 (27)	08:10		06:53	06:24	05:08	04:27
	16:19 32	13:45 (13)	17:33		18:40	20:51	22:00	22:48
17	09:13	12:14 (27)	08:07		06:50	06:21	05:06	04:27
	16:21 29	13:45 (13)	17:35		18:42	20:53	22:02	22:48
18	09:11	12:16 (27)	08:05		06:47	06:18	05:04	04:26
	16:23 26	13:46 (13)	17:38		18:44	20:56	22:04	22:49
19	09:10	13:25 (13)	08:02		06:44	06:16	05:02	04:26
	16:25 21	13:46 (13)	17:40		18:47	20:58	22:06	22:49
20	09:08	13:25 (13)	07:59		06:41	06:13	05:00	04:26
	16:27 22	13:47 (13)	17:43		18:49	21:00	22:08	22:50
21	09:07	13:26 (13)	07:57		06:38	06:10	04:58	04:26
	16:30 21	13:47 (13)	17:45		18:51	21:03	22:10	22:50
22	09:05	13:26 (13)	07:54		06:35	06:07	04:56	04:27
	16:32 21	13:47 (13)	17:48		18:54	21:05	22:12	22:50
23	09:03	13:27 (13)	07:51		06:33	06:05	04:54	04:27
	16:34 20	13:47 (13)	17:50		18:56	21:07	22:14	22:50
24	09:01	13:28 (13)	07:49		06:30	06:02	04:52	04:27
	16:37 19	13:47 (13)	17:52		18:58	21:09	22:16	22:50
25	09:00	13:29 (13)	07:46		06:27	05:59	04:50	04:28
	16:39 18	13:47 (13)	17:55		19:00	21:12	22:18	22:50
26	08:58	13:30 (13)	07:43		06:24	05:57	04:49	04:28
	16:41 17	13:47 (13)	17:57		19:03	21:14	22:20	22:50
27	08:56	13:30 (13)	07:41		06:21	05:54	04:47	04:29
	16:44 21	15:09 (18)	18:00		19:05	21:16	22:22	22:50
28	08:54	13:32 (13)	07:38		06:18	05:51	04:45	04:29
	16:46 23	15:12 (18)	18:02		19:07	21:19	22:23	22:50
29	08:52	13:35 (13)			07:15	05:49	04:44	04:30
	16:48 21	15:14 (18)			20:10	21:21	22:25	22:49
30	08:50	15:00 (18)			07:12	05:46	04:42	04:31
	16:51 15	15:15 (18)			20:12	21:23	22:27	22:49
31	08:48	15:00 (18)			07:09		04:41	
	16:53 16	15:16 (18)			20:14		22:29	
Potential sun hours	221		260		365	432	521	547
Total, worst case	782		175					
Sun reduction	0,50		0,50					
Oper. time red.	0,80		0,80					
Wind dir. red.	0,60		0,55					
Total reduction	0,24		0,22					
Total, real	187		39					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** Q - Buevegen 2141 (17)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October			November			December		
1	04:32	05:24	06:33	07:39			07:51		14:32 (18)	08:59		11:49 (27)
	22:48	22:01	20:39	19:13			16:48	12	14:44 (18)	15:51	34	13:23 (13)
2	04:33	05:26	06:35	07:41			07:54		14:31 (18)	09:01		11:50 (27)
	22:48	21:58	20:37	19:10			16:46	15	14:46 (18)	15:50	35	13:24 (13)
3	04:34	05:28	06:37	07:44			07:56		14:31 (18)	09:03		11:50 (27)
	22:47	21:56	20:34	19:07			16:44	16	14:47 (18)	15:49	33	13:23 (13)
4	04:35	05:30	06:39	07:46			07:58		14:29 (18)	09:05		11:50 (27)
	22:46	21:54	20:31	19:04			16:41	18	14:47 (18)	15:48	33	13:23 (13)
5	04:36	05:33	06:42	07:48			08:01		14:29 (18)	09:07		11:50 (27)
	22:46	21:51	20:28	19:01			16:39	19	14:48 (18)	15:47	31	13:22 (13)
6	04:37	05:35	06:44	07:50			08:03		14:29 (18)	09:08		11:50 (27)
	22:45	21:49	20:25	18:58			16:36	19	14:48 (18)	15:46	29	13:21 (13)
7	04:38	05:37	06:46	07:53			08:06		14:29 (18)	09:10		11:51 (27)
	22:44	21:46	20:22	18:56			16:34	19	14:48 (18)	15:45	25	13:20 (13)
8	04:40	05:39	06:48	07:55			08:08		14:29 (18)	09:12		11:51 (27)
	22:43	21:44	20:19	18:53			16:32	19	14:48 (18)	15:44	21	12:12 (27)
9	04:41	05:41	06:51	07:57			08:10		14:30 (18)	09:13		11:51 (27)
	22:42	21:41	20:17	18:50			16:30	18	14:48 (18)	15:44	21	12:12 (27)
10	04:42	05:44	06:53	07:59			08:13		14:29 (18)	09:15		11:52 (27)
	22:40	21:39	20:14	18:47			16:27	18	14:47 (18)	15:43	20	12:12 (27)
11	04:44	05:46	06:55	08:02			08:15		14:30 (18)	09:16		11:53 (27)
	22:39	21:36	20:11	18:44			16:25	17	14:47 (18)	15:43	20	12:13 (27)
12	04:45	05:48	06:57	08:04			08:18		14:32 (18)	09:17		11:53 (27)
	22:38	21:34	20:08	18:42			16:23	15	14:47 (18)	15:42	20	12:13 (27)
13	04:47	05:50	06:59	08:06			08:20		13:07 (13)	09:19		11:54 (27)
	22:36	21:31	20:05	18:39			16:21	21	14:46 (18)	15:42	20	12:14 (27)
14	04:49	05:53	07:02	08:09			08:22		13:04 (13)	09:20		11:54 (27)
	22:35	21:29	20:02	18:36			16:19	23	14:44 (18)	15:42	20	12:14 (27)
15	04:50	05:55	07:04	08:11			08:25		13:03 (13)	09:21		11:54 (27)
	22:33	21:26	19:59	18:33			16:17	21	14:42 (18)	15:42	20	12:14 (27)
16	04:52	05:57	07:06	08:13			08:27		13:03 (13)	09:22		11:55 (27)
	22:32	21:23	19:56	18:30			16:15	17	13:20 (13)	15:42	20	12:15 (27)
17	04:54	05:59	07:08	08:16			08:29		13:02 (13)	09:23		11:55 (27)
	22:30	21:21	19:53	18:28			16:13	18	13:20 (13)	15:42	20	12:15 (27)
18	04:56	06:02	07:10	08:18			08:32		13:02 (13)	09:24		11:56 (27)
	22:29	21:18	19:50	18:25			16:11	19	13:21 (13)	15:42	19	12:15 (27)
19	04:57	06:04	07:13	08:20			08:34		13:02 (13)	09:25		11:56 (27)
	22:27	21:15	19:48	18:22			16:09	20	13:22 (13)	15:42	20	12:16 (27)
20	04:59	06:06	07:15	08:23			08:36		13:01 (13)	09:25		11:57 (27)
	22:25	21:13	19:45	18:20			16:07	21	13:22 (13)	15:42	20	12:17 (27)
21	05:01	06:08	07:17	08:25			08:38		13:02 (13)	09:26		11:57 (27)
	22:23	21:10	19:42	18:17			16:06	21	13:23 (13)	15:43	20	12:17 (27)
22	05:03	06:10	07:19	08:27			08:41		13:02 (13)	09:27		11:58 (27)
	22:22	21:07	19:39	18:14			16:04	22	13:24 (13)	15:43	20	12:18 (27)
23	05:05	06:13	07:21	08:30			08:43		13:02 (13)	09:27		11:58 (27)
	22:20	21:05	19:36	18:12			16:02	21	13:23 (13)	15:44	20	12:18 (27)
24	05:07	06:15	07:24	08:32			08:45		11:54 (27)	09:27		11:58 (27)
	22:18	21:02	19:33	18:09			16:01	26	13:24 (13)	15:44	20	12:18 (27)
25	05:09	06:17	07:26	07:34			08:47		11:52 (27)	09:28		11:59 (27)
	22:16	20:59	19:30	17:06			15:59	30	13:24 (13)	15:45	20	12:19 (27)
26	05:11	06:19	07:28	07:37			08:49		11:51 (27)	09:28		12:00 (27)
	22:14	20:56	19:27	17:04			15:57	32	13:24 (13)	15:46	20	12:20 (27)
27	05:13	06:22	07:30	07:39			08:51		11:50 (27)	09:28		12:00 (27)
	22:12	20:54	19:24	17:01			15:56	34	13:24 (13)	15:47	20	12:20 (27)
28	05:15	06:24	07:32	07:42			08:54		11:49 (27)	09:28		12:00 (27)
	22:09	20:51	19:21	16:59			15:55	35	13:23 (13)	15:48	20	12:20 (27)
29	05:17	06:26	07:35	07:44			08:56		11:50 (27)	09:28		12:01 (27)
	22:07	20:48	19:19	16:56			15:53	35	13:24 (13)	15:49	20	12:21 (27)
30	05:20	06:28	07:37	07:46			08:58		11:49 (27)	09:28		12:01 (27)
	22:05	20:45	19:16	16:53			15:52	35	13:23 (13)	15:50	21	12:22 (27)
31	05:22	06:31		07:49		14:35 (18)				09:28		12:01 (27)
	22:03	20:42		16:51	6	14:41 (18)				15:51	21	12:22 (27)
Potential sun hours	546	478	386	319			236			199		
Total, worst case					6			656			703	
Sun reduction					0,50			0,50			0,50	
Oper. time red.					0,80			0,80			0,80	
Wind dir. red.					0,55			0,58			0,63	
Total reduction					0,22			0,23			0,25	
Total, real					1			151			177	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** R - Buevegen 2165 (18)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March	April	May	June	July	August	September	October	November			December		
1	09:28		12:35 (27)	08:45		14:09 (13)	07:35	07:06	05:44	04:39	04:32	05:24	06:33	07:39	07:51			08:59		12:22 (27)
	15:52	20	12:55 (27)	16:56	5	14:14 (13)	18:04	20:16	21:26	22:30	22:48	22:01	20:39	19:13	16:48			15:51	19	12:41 (27)
2	09:27		12:36 (27)	08:43			07:32	07:04	05:41	04:38	04:33	05:26	06:35	07:41	07:54			09:01		12:23 (27)
	15:54	21	12:57 (27)	16:58			18:07	20:19	21:28	22:32	22:48	21:58	20:37	19:10	16:46			15:50	19	12:42 (27)
3	09:27		12:36 (27)	08:41			07:30	07:01	05:38	04:37	04:34	05:28	06:37	07:44	07:56			09:03		12:23 (27)
	15:55	21	12:57 (27)	17:01			18:09	20:21	21:30	22:33	22:47	21:56	20:34	19:07	16:44			15:49	20	12:43 (27)
4	09:26		12:37 (27)	08:39			07:27	06:58	05:36	04:36	04:35	05:30	06:39	07:46	07:58			09:05		12:23 (27)
	15:57	20	12:57 (27)	17:03			18:12	20:23	21:33	22:35	22:46	21:54	20:31	19:04	16:41			15:48	20	12:43 (27)
5	09:26		12:37 (27)	08:37			07:24	06:55	05:33	04:34	04:36	05:33	06:42	07:48	08:01			09:07		12:24 (27)
	15:58	20	12:57 (27)	17:06			18:14	20:26	21:35	22:36	22:46	21:51	20:28	19:01	16:39			15:47	20	12:44 (27)
6	09:25		12:38 (27)	08:34			07:21	06:52	05:31	04:33	04:37	05:35	06:44	07:50	08:03			09:08		12:24 (27)
	16:00	20	12:58 (27)	17:08			18:16	20:28	21:37	22:38	22:45	21:49	20:25	18:58	16:36			15:46	20	12:44 (27)
7	09:24		12:38 (27)	08:32			07:18	06:49	05:29	04:32	04:38	05:37	06:46	07:53	08:06			09:10		12:24 (27)
	16:01	20	12:58 (27)	17:11			18:19	20:30	21:39	22:39	22:44	21:46	20:22	18:56	16:34			15:45	21	12:45 (27)
8	09:23		12:39 (27)	08:30			07:16	06:46	05:26	04:31	04:40	05:39	06:48	07:55	08:08			09:12		12:25 (27)
	16:03	20	12:59 (27)	17:13			18:21	20:33	21:42	22:40	22:43	21:44	20:19	18:53	16:32			15:44	20	12:45 (27)
9	09:23		12:39 (27)	08:27			07:13	06:44	05:24	04:31	04:41	05:41	06:50	07:57	08:10			09:13		12:24 (27)
	16:05	19	12:58 (27)	17:15			18:23	20:35	21:44	22:41	22:42	21:41	20:17	18:50	16:30			15:44	21	12:45 (27)
10	09:22		12:40 (27)	08:25			07:10	06:41	05:21	04:30	04:42	05:44	06:53	07:59	08:13		13:39 (13)	09:15		12:25 (27)
	16:07	19	12:59 (27)	17:18			18:26	20:37	21:46	22:43	22:40	21:39	20:14	18:47	16:27	7	13:46 (13)	15:43	21	12:46 (27)
11	09:21		12:40 (27)	08:22			07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02	08:15		13:37 (13)	09:16		12:26 (27)
	16:09	19	12:59 (27)	17:20			18:28	20:39	21:49	22:44	22:39	21:36	20:11	18:44	16:25	11	13:48 (13)	15:43	21	12:47 (27)
12	09:19		12:42 (27)	08:20			07:04	06:35	05:17	04:29	04:45	05:48	06:57	08:04	08:18		13:36 (13)	09:17		12:26 (27)
	16:10	23	14:09 (13)	17:23			18:30	20:42	21:51	22:45	22:38	21:34	20:08	18:42	16:23	14	13:50 (13)	15:42	20	12:46 (27)
13	09:18		12:42 (27)	08:17			07:01	06:32	05:15	04:28	04:47	05:50	06:59	08:06	08:20		13:35 (13)	09:19		12:27 (27)
	16:12	27	14:11 (13)	17:25			18:33	20:44	21:53	22:46	22:36	21:31	20:05	18:39	16:21	17	13:52 (13)	15:42	20	12:47 (27)
14	09:17		12:44 (27)	08:15			06:58	06:29	05:12	04:27	04:49	05:53	07:01	08:09	08:22		13:34 (13)	09:20		12:27 (27)
	16:14	27	14:13 (13)	17:28			18:35	20:46	21:55	22:46	22:35	21:29	20:02	18:36	16:19	18	13:52 (13)	15:42	21	12:48 (27)
15	09:16		12:45 (27)	08:12			06:56	06:27	05:10	04:27	04:50	05:55	07:04	08:11	08:25		13:34 (13)	09:21		12:27 (27)
	16:17	27	14:14 (13)	17:30			18:37	20:49	21:57	22:47	22:33	21:26	19:59	18:33	16:17	19	13:53 (13)	15:42	21	12:48 (27)
16	09:14		12:46 (27)	08:10			06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13	08:27		13:34 (13)	09:22		12:28 (27)
	16:19	26	14:15 (13)	17:33			18:40	20:51	21:59	22:48	22:32	21:23	19:56	18:30	16:15	20	13:54 (13)	15:42	20	12:48 (27)
17	09:13		12:48 (27)	08:07			06:50	06:21	05:06	04:27	04:54	05:59	07:08	08:16	08:29		13:33 (13)	09:23		12:28 (27)
	16:21	25	14:16 (13)	17:35			18:42	20:53	22:02	22:48	22:30	21:21	19:53	18:28	16:13	20	13:53 (13)	15:42	20	12:48 (27)
18	09:11		13:59 (13)	08:05			06:47	06:18	05:04	04:26	04:56	06:02	07:10	08:18	08:32		13:34 (13)	09:24		12:29 (27)
	16:23	18	14:17 (13)	17:38			18:44	20:56	22:04	22:49	22:29	21:18	19:50	18:25	16:11	20	13:54 (13)	15:42	20	12:49 (27)
19	09:10		13:59 (13)	08:02			06:44	06:16	05:02	04:26	04:57	06:04	07:12	08:20	08:34		13:34 (13)	09:25		12:30 (27)
	16:25	18	14:17 (13)	17:40			18:47	20:58	22:06	22:49	22:27	21:15	19:48	18:22	16:09	21	13:55 (13)	15:42	20	12:50 (27)
20	09:08		13:59 (13)	07:59			06:41	06:13	05:00	04:26	04:59	06:06	07:15	08:23	08:36		13:34 (13)	09:25		12:30 (27)
	16:27	19	14:18 (13)	17:43			18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20	16:07	20	13:54 (13)	15:42	20	12:50 (27)
21	09:07		13:59 (13)	07:57			06:38	06:10	04:58	04:26	05:01	06:08	07:17	08:25	08:38		13:35 (13)	09:26		12:30 (27)
	16:30	20	14:19 (13)	17:45			18:51	21:03	22:10	22:50	22:23	21:10	19:42	18:17	16:06	20	13:55 (13)	15:43	20	12:50 (27)
22	09:05		13:59 (13)	07:54			06:35	06:07	04:56	04:27	05:03	06:10	07:19	08:27	08:41		13:35 (13)	09:27		12:31 (27)
	16:32	20	14:19 (13)	17:47			18:54	21:05	22:12	22:50	22:21	21:07	19:39	18:14	16:04	19	13:54 (13)	15:43	20	12:51 (27)
23	09:03		13:59 (13)	07:51			06:32	06:05	04:54	04:27	05:05	06:13	07:21	08:30	08:43		13:36 (13)	09:27		12:31 (27)
	16:34	21	14:20 (13)	17:50			18:56	21:07	22:14	22:50	22:20	21:05	19:36	18:11	16:02	19	13:55 (13)	15:44	20	12:51 (27)
24	09:01		14:00 (13)	07:49			06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32	08:45		13:37 (13)	09:27		12:31 (27)
	16:36	20	14:20 (13)	17:52			18:58	21:09	22:16	22:50	22:18	21:02	19:33	18:09	16:01	18	13:55 (13)	15:44	21	12:52 (27)
25	09:00		14:00 (13)	07:46			06:27	05:59	04:50	04:28	05:09	06:17	07:26	08:34	08:47		12:26 (27)	09:28		12:33 (27)
	16:39	21	14:21 (13)	17:55			19:00	21:12	22:18	22:50	22:16	20:59	19:30	17:06	15:59	25	13:54 (13)	15:45	20	12:53 (27)
26	08:58		14:01 (13)	07:43			06:24	05:57	04:49	04:28	05:11	06:19	07:28	07:37	08:49		12:25 (27)	09:28		12:33 (27)
	16:41	20	14:21 (13)	17:57			19:03	21:14	22:20	22:50	22:14	20:56	19:27	17:04	15:57	26	13:54 (13)	15:46	20	12:53 (27)
27	08:56		14:01 (13)	07:41			06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39	08:51		12:24 (27)	09:28		12:34 (27)
	16:44	19	14:20 (13)	18:00			19:05	21:16	22:22	22:50	22:12	20:54	19:24	17:01	15:56	27	13:53 (13)	15:47	20	12:54 (27)
28	08:54		14:02 (13)	07:38			06:18	05:51	04:45	04:29	05:15	06:24	07:32	07:42	08:54		12:23 (27)	09:28		12:33 (27)
	16:46	18	14:20 (13)	18:02			19:07	21:19	22:23	22:50	22:09	20:51	19:21	16:58	15:55	27	13:52 (13)	15:47	20	12:53 (27)
29	08:52		14:04 (13)				07:15	05:49	04:44	04:30	05:17	06:26	07:35	07:44	08:56		12:23 (27)	09:28		12:34 (27)
	16:48	16	14:20 (13)				20:10	21:21	22:25	22:49	22:07	20:48	19:19	16:56	15:53	27	13:52 (13)	15:49	20	12:54 (27)
30	08:50		14:04 (13)				07:12	05:46	04:42	04:31	05:20	06:28	07:37	07:46	08:58		12:23 (27)	09:28		12:35 (27)
	16:51	14	14:18 (13)				20:12	21:23	22:27	22:49	22:05	20:45	19:16	16:53	15:52	24	13:51 (13)	15:50	20	12:55 (27)
31	08:48		14:06 (13)				07:09		04:41		05:22	06:31		07:49				09:28		12:35 (27)
	16:53	11	14:17 (13)				20:14		22:29		22:03	20:42		16:51				15:51	20	12:55 (27)
Potential sun hours	221			260			365	432	521	547	546	478	386	319	236			199		
Total, worst case		629			5											419			625	
Sun reduction		0,50			0,50											0,50			0,50	
Oper. time red.		0,80			0,80											0,80			0,80	
Wind dir. red.		0,58			0,55											0,56			0,62	
Total reduction		0,23			0,22											0,23			0,25	
Total, real		146			1											94			154	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** S - Vaule 176 (19)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March	April	May	June
1	09:28	13:54 (27)	08:45	15:13 (13)	07:35	07:06	05:43	04:39
	15:52 8	14:02 (27)	16:56 13	15:26 (13)	18:04	20:16	21:26	22:30
2	09:27	13:55 (27)	08:43	15:12 (13)	07:32	07:04	05:41	04:38
	15:54 9	14:04 (27)	16:58 16	15:28 (13)	18:07	20:19	21:28	22:32
3	09:27	13:54 (27)	08:41	15:11 (13)	07:29	07:01	05:38	04:37
	15:55 11	14:05 (27)	17:01 17	15:28 (13)	18:09	20:21	21:30	22:33
4	09:26	13:54 (27)	08:39	15:11 (13)	07:27	06:58	05:36	04:36
	15:57 12	14:06 (27)	17:03 18	15:29 (13)	18:12	20:23	21:33	22:35
5	09:26	13:54 (27)	08:37	15:11 (13)	07:24	06:55	05:33	04:34
	15:58 13	14:07 (27)	17:06 18	15:29 (13)	18:14	20:26	21:35	22:36
6	09:25	13:54 (27)	08:34	15:11 (13)	07:21	06:52	05:31	04:33
	16:00 14	14:08 (27)	17:08 19	15:30 (13)	18:16	20:28	21:37	22:38
7	09:24	13:54 (27)	08:32	15:11 (13)	07:18	06:49	05:29	04:32
	16:01 15	14:09 (27)	17:10 19	15:30 (13)	18:19	20:30	21:39	22:39
8	09:23	13:54 (27)	08:30	15:11 (13)	07:15	06:46	05:26	04:31
	16:03 17	14:11 (27)	17:13 18	15:29 (13)	18:21	20:32	21:42	22:40
9	09:23	13:53 (27)	08:27	15:12 (13)	07:13	06:44	05:24	04:31
	16:05 18	14:11 (27)	17:15 18	15:30 (13)	18:23	20:35	21:44	22:41
10	09:22	13:54 (27)	08:25	15:12 (13)	07:10	06:41	05:21	04:30
	16:07 18	14:12 (27)	17:18 17	15:29 (13)	18:26	20:37	21:46	22:43
11	09:20	13:53 (27)	08:22	15:13 (13)	07:07	06:38	05:19	04:29
	16:09 19	14:12 (27)	17:20 15	15:28 (13)	18:28	20:39	21:48	22:44
12	09:19	13:54 (27)	08:20	15:15 (13)	07:04	06:35	05:17	04:28
	16:10 19	14:13 (27)	17:23 12	15:27 (13)	18:30	20:42	21:51	22:45
13	09:18	13:53 (27)	08:17	15:17 (13)	07:01	06:32	05:14	04:28
	16:12 21	14:14 (27)	17:25 7	15:24 (13)	18:33	20:44	21:53	22:45
14	09:17	13:54 (27)	08:15		06:58	06:29	05:12	04:27
	16:14 21	14:15 (27)	17:28		18:35	20:46	21:55	22:46
15	09:16	13:54 (27)	08:12		06:56	06:27	05:10	04:27
	16:16 21	14:15 (27)	17:30		18:37	20:49	21:57	22:47
16	09:14	13:54 (27)	08:10		06:53	06:24	05:08	04:27
	16:19 21	14:15 (27)	17:33		18:40	20:51	21:59	22:48
17	09:13	13:54 (27)	08:07		06:50	06:21	05:06	04:27
	16:21 22	14:16 (27)	17:35		18:42	20:53	22:02	22:48
18	09:11	13:55 (27)	08:05		06:47	06:18	05:04	04:26
	16:23 21	14:16 (27)	17:38		18:44	20:56	22:04	22:49
19	09:10	13:55 (27)	08:02		06:44	06:15	05:02	04:26
	16:25 21	14:16 (27)	17:40		18:47	20:58	22:06	22:49
20	09:08	13:56 (27)	07:59		06:41	06:13	05:00	04:26
	16:27 20	14:16 (27)	17:43		18:49	21:00	22:08	22:50
21	09:07	13:56 (27)	07:57		06:38	06:10	04:58	04:26
	16:30 20	14:16 (27)	17:45		18:51	21:02	22:10	22:50
22	09:05	13:57 (27)	07:54		06:35	06:07	04:56	04:27
	16:32 19	14:16 (27)	17:47		18:53	21:05	22:12	22:50
23	09:03	13:58 (27)	07:51		06:32	06:05	04:54	04:27
	16:34 18	14:16 (27)	17:50		18:56	21:07	22:14	22:50
24	09:01	13:59 (27)	07:49		06:30	06:02	04:52	04:27
	16:36 17	14:16 (27)	17:52		18:58	21:09	22:16	22:50
25	08:59	14:01 (27)	07:46		06:27	05:59	04:50	04:28
	16:39 14	14:15 (27)	17:55		19:00	21:12	22:18	22:50
26	08:58	14:01 (27)	07:43		06:24	05:57	04:49	04:28
	16:41 13	14:14 (27)	17:57		19:03	21:14	22:20	22:50
27	08:56	14:04 (27)	07:41		06:21	05:54	04:47	04:29
	16:44 8	14:12 (27)	18:00		19:05	21:16	22:22	22:50
28	08:54		07:38		06:18	05:51	04:45	04:29
	16:46		18:02		19:07	21:19	22:23	22:50
29	08:52				07:15	05:49	04:44	04:30
	16:48				20:10	21:21	22:25	22:49
30	08:50	15:16 (13)			07:12	05:46	04:42	04:31
	16:51 6	15:22 (13)			20:12	21:23	22:27	22:49
31	08:48	15:14 (13)			07:09		04:41	
	16:53 11	15:25 (13)			20:14		22:29	
Potential sun hours	221		260		365	432	521	547
Total, worst case	467		207					
Sun reduction	0,50		0,50					
Oper. time red.	0,80		0,80					
Wind dir. red.	0,55		0,55					
Total reduction	0,22		0,22					
Total, real	102		45					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** S - Vaule 176 (19)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October			November			December		
1	04:32	05:24	06:33	07:39			07:51		14:42 (13)	08:59		13:35 (27)
	22:48	22:01	20:39	19:13			16:48	16	14:58 (13)	15:51	19	13:54 (27)
2	04:33	05:26	06:35	07:41			07:53		14:41 (13)	09:01		13:37 (27)
	22:48	21:58	20:37	19:10			16:46	18	14:59 (13)	15:50	18	13:55 (27)
3	04:34	05:28	06:37	07:44			07:56		14:40 (13)	09:03		13:37 (27)
	22:47	21:56	20:34	19:07			16:44	19	14:59 (13)	15:49	18	13:55 (27)
4	04:35	05:30	06:39	07:46			07:58		14:40 (13)	09:05		13:38 (27)
	22:46	21:54	20:31	19:04			16:41	19	14:59 (13)	15:48	17	13:55 (27)
5	04:36	05:32	06:42	07:48			08:01		14:41 (13)	09:07		13:39 (27)
	22:45	21:51	20:28	19:01			16:39	19	15:00 (13)	15:47	16	13:55 (27)
6	04:37	05:35	06:44	07:50			08:03		14:41 (13)	09:08		13:40 (27)
	22:45	21:49	20:25	18:58			16:36	19	15:00 (13)	15:46	14	13:54 (27)
7	04:38	05:37	06:46	07:53			08:06		14:41 (13)	09:10		13:41 (27)
	22:44	21:46	20:22	18:56			16:34	18	14:59 (13)	15:45	13	13:54 (27)
8	04:40	05:39	06:48	07:55			08:08		14:42 (13)	09:12		13:42 (27)
	22:43	21:44	20:19	18:53			16:32	17	14:59 (13)	15:44	12	13:54 (27)
9	04:41	05:41	06:50	07:57			08:10		14:43 (13)	09:13		13:42 (27)
	22:41	21:41	20:16	18:50			16:30	15	14:58 (13)	15:44	11	13:53 (27)
10	04:42	05:44	06:53	07:59			08:13		14:43 (13)	09:15		13:44 (27)
	22:40	21:39	20:14	18:47			16:27	14	14:57 (13)	15:43	9	13:53 (27)
11	04:44	05:46	06:55	08:02			08:15		14:45 (13)	09:16		13:45 (27)
	22:39	21:36	20:11	18:44			16:25	11	14:56 (13)	15:43	8	13:53 (27)
12	04:45	05:48	06:57	08:04			08:18		14:48 (13)	09:17		13:46 (27)
	22:38	21:34	20:08	18:41			16:23	5	14:53 (13)	15:42	6	13:52 (27)
13	04:47	05:50	06:59	08:06			08:20			09:19		13:49 (27)
	22:36	21:31	20:05	18:39			16:21			15:42	3	13:52 (27)
14	04:49	05:53	07:01	08:09			08:22			09:20		
	22:35	21:29	20:02	18:36			16:19			15:42		
15	04:50	05:55	07:04	08:11			08:25		13:37 (27)	09:21		
	22:33	21:26	19:59	18:33			16:17	8	13:45 (27)	15:42		
16	04:52	05:57	07:06	08:13			08:27		13:35 (27)	09:22		
	22:32	21:23	19:56	18:30			16:15	12	13:47 (27)	15:42		
17	04:54	05:59	07:08	08:16			08:29		13:33 (27)	09:23		
	22:30	21:21	19:53	18:28			16:13	15	13:48 (27)	15:42		
18	04:56	06:01	07:10	08:18			08:32		13:33 (27)	09:24		
	22:29	21:18	19:50	18:25			16:11	17	13:50 (27)	15:42		
19	04:57	06:04	07:12	08:20			08:34		13:33 (27)	09:25		
	22:27	21:15	19:47	18:22			16:09	18	13:51 (27)	15:42		
20	04:59	06:06	07:15	08:23			08:36		13:32 (27)	09:25		
	22:25	21:13	19:45	18:19			16:07	19	13:51 (27)	15:42		
21	05:01	06:08	07:17	08:25			08:38		13:32 (27)	09:26		
	22:23	21:10	19:42	18:17			16:06	20	13:52 (27)	15:43		
22	05:03	06:10	07:19	08:27			08:41		13:32 (27)	09:27		
	22:21	21:07	19:39	18:14			16:04	20	13:52 (27)	15:43		
23	05:05	06:13	07:21	08:30			08:43		13:32 (27)	09:27		
	22:20	21:05	19:36	18:11			16:02	21	13:53 (27)	15:44		
24	05:07	06:15	07:23	08:32			08:45		13:33 (27)	09:27		
	22:18	21:02	19:33	18:09			16:00	21	13:54 (27)	15:44		
25	05:09	06:17	07:26	07:34			08:47		13:32 (27)	09:28		
	22:16	20:59	19:30	17:06			15:59	22	13:54 (27)	15:45		
26	05:11	06:19	07:28	07:37			08:49		13:33 (27)	09:28		
	22:14	20:56	19:27	17:04			15:57	21	13:54 (27)	15:46		
27	05:13	06:22	07:30	07:39			08:51		13:33 (27)	09:28		
	22:11	20:53	19:24	17:01			15:56	21	13:54 (27)	15:47		
28	05:15	06:24	07:32	07:41			08:53		13:33 (27)	09:28		
	22:09	20:51	19:21	16:58			15:55	21	13:54 (27)	15:47		
29	05:17	06:26	07:35	07:44		14:46 (13)	08:55		13:35 (27)	09:28		
	22:07	20:48	19:18	16:56	8	14:54 (13)	15:53	20	13:55 (27)	15:48		
30	05:19	06:28	07:37	07:46		14:44 (13)	08:57		13:35 (27)	09:28		
	22:05	20:45	19:16	16:53	13	14:57 (13)	15:52	19	13:54 (27)	15:50		
31	05:22	06:31		07:49		14:42 (13)				09:28		13:56 (27)
	22:03	20:42		16:51	15	14:57 (13)				15:51	4	14:00 (27)
Potential sun hours	546	478	386	319			236			199		
Total, worst case					36			485			168	
Sun reduction					0,50			0,50			0,50	
Oper. time red.					0,80			0,80			0,80	
Wind dir. red.					0,55			0,55			0,55	
Total reduction					0,22			0,22			0,22	
Total, real					8			106			37	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** T - Vaule 247 (20)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March			April	May	June
1	09:28			08:45		10:57 (38)	07:35		16:28 (18)	07:06	05:44	04:39
	15:52			16:56	41	13:51 (27)	18:04	11	16:39 (18)	20:16	21:26	22:30
2	09:27			08:43		10:59 (38)	07:32		16:27 (18)	07:04	05:41	04:38
	15:54			16:58	37	13:51 (27)	18:07	14	16:41 (18)	20:19	21:28	22:32
3	09:27			08:41		11:02 (38)	07:30		16:27 (18)	07:01	05:38	04:37
	15:55			17:01	27	13:49 (27)	18:09	15	16:42 (18)	20:21	21:30	22:33
4	09:26			08:39		13:29 (27)	07:27		16:27 (18)	06:58	05:36	04:36
	15:57			17:03	20	13:49 (27)	18:12	18	16:45 (18)	20:23	21:33	22:35
5	09:26			08:37		13:30 (27)	07:24		16:28 (18)	06:55	05:33	04:34
	15:58			17:06	17	13:47 (27)	18:14	18	16:46 (18)	20:26	21:35	22:36
6	09:25			08:34		13:34 (27)	07:21		16:28 (18)	06:52	05:31	04:33
	16:00			17:08	11	13:45 (27)	18:16	17	16:45 (18)	20:28	21:37	22:38
7	09:24			08:32			07:18		16:29 (18)	06:49	05:29	04:32
	16:01			17:11			18:19	15	16:44 (18)	20:30	21:39	22:39
8	09:23			08:30			07:15		16:30 (18)	06:46	05:26	04:32
	16:03			17:13			18:21	12	16:42 (18)	20:32	21:42	22:40
9	09:23			08:27			07:13		16:33 (18)	06:44	05:24	04:31
	16:05			17:15			18:23	5	16:38 (18)	20:35	21:44	22:41
10	09:22			08:25			07:10			06:41	05:21	04:30
	16:07			17:18			18:26			20:37	21:46	22:43
11	09:20			08:22		14:55 (8)	07:07			06:38	05:19	04:29
	16:09			17:20	7	15:02 (8)	18:28			20:39	21:48	22:44
12	09:19			08:20		14:57 (8)	07:04			06:35	05:17	04:29
	16:11			17:23	10	15:07 (8)	18:30			20:42	21:51	22:45
13	09:18		11:01 (38)	08:17		14:59 (8)	07:01			06:32	05:15	04:28
	16:12	5	11:06 (38)	17:25	12	15:11 (13)	18:33			20:44	21:53	22:45
14	09:17		10:57 (38)	08:15		15:02 (8)	06:58			06:29	05:12	04:28
	16:14	11	11:08 (38)	17:28	12	15:15 (13)	18:35			20:46	21:55	22:46
15	09:16		10:52 (38)	08:12		15:06 (13)	06:56			06:27	05:10	04:27
	16:17	17	11:09 (38)	17:30	13	15:19 (13)	18:37			20:49	21:57	22:47
16	09:14		10:52 (38)	08:10		15:06 (13)	06:53			06:24	05:08	04:27
	16:19	18	11:10 (38)	17:33	16	15:22 (13)	18:40			20:51	21:59	22:48
17	09:13		10:51 (38)	08:07		15:05 (13)	06:50			06:21	05:06	04:27
	16:21	19	11:10 (38)	17:35	16	15:21 (13)	18:42			20:53	22:02	22:48
18	09:11		10:51 (38)	08:05		15:05 (13)	06:47			06:18	05:04	04:26
	16:23	20	11:11 (38)	17:38	15	15:20 (13)	18:44			20:56	22:04	22:49
19	09:10		10:51 (38)	08:02		15:06 (13)	06:44			06:16	05:02	04:26
	16:25	21	11:12 (38)	17:40	17	15:23 (13)	18:47			20:58	22:06	22:49
20	09:08		10:51 (38)	07:59		15:07 (13)	06:41			06:13	05:00	04:26
	16:27	22	11:13 (38)	17:43	18	15:25 (13)	18:49			21:00	22:08	22:50
21	09:07		10:51 (38)	07:57		15:07 (13)	06:38			06:10	04:58	04:26
	16:30	23	12:45 (33)	17:45	21	15:28 (13)	18:51			21:02	22:10	22:50
22	09:05		10:51 (38)	07:54		15:08 (13)	06:35			06:07	04:56	04:27
	16:32	35	12:57 (33)	17:47	20	15:28 (13)	18:53			21:05	22:12	22:50
23	09:03		10:51 (38)	07:51		15:09 (13)	06:32			06:05	04:54	04:27
	16:34	41	13:04 (33)	17:50	18	15:27 (13)	18:56			21:07	22:14	22:50
24	09:01		10:52 (38)	07:49		15:12 (13)	06:30			06:02	04:52	04:27
	16:37	40	13:04 (33)	17:52	14	15:26 (13)	18:58			21:09	22:16	22:50
25	08:59		10:52 (38)	07:46		15:16 (13)	06:27			05:59	04:50	04:28
	16:39	39	13:04 (33)	17:55	6	15:22 (13)	19:00			21:12	22:18	22:50
26	08:58		10:52 (38)	07:43			06:24			05:57	04:49	04:28
	16:41	40	13:25 (27)	17:57			19:03			21:14	22:20	22:50
27	08:56		10:53 (38)	07:41			06:21			05:54	04:47	04:29
	16:44	42	13:31 (27)	18:00			19:05			21:16	22:22	22:50
28	08:54		10:53 (38)	07:38		16:29 (18)	06:18			05:51	04:45	04:29
	16:46	46	13:41 (27)	18:02	6	16:37 (18)	19:07			21:19	22:23	22:50
29	08:52		10:54 (38)				07:15			05:49	04:44	04:30
	16:48	42	13:45 (27)				20:10			21:21	22:25	22:49
30	08:50		10:55 (38)				07:12			05:46	04:42	04:31
	16:51	43	13:48 (27)				20:12			21:23	22:27	22:49
31	08:48		10:56 (38)				07:09				04:41	
	16:53	43	13:50 (27)				20:14				22:29	
Potential sun hours	221			260			365			432	521	547
Total, worst case		567			374			125				
Sun reduction		0,50			0,50			0,50				
Oper. time red.		0,80			0,80			0,80				
Wind dir. red.		0,66			0,57			0,57				
Total reduction		0,26			0,23			0,23				
Total, real		150			85			28				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** T - Vaule 247 (20)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October		November		December
1	04:32	05:24	06:33	07:39		07:51		08:59
	22:48	22:01	20:39	19:13		16:48		15:51
2	04:33	05:26	06:35	07:41		07:54		09:01
	22:48	21:58	20:37	19:10		16:46		15:50
3	04:34	05:28	06:37	07:44		07:56		09:03
	22:47	21:56	20:34	19:07		16:44		15:49
4	04:35	05:30	06:39	07:46		07:58	13:08 (27)	09:05
	22:46	21:54	20:31	19:04		16:41	2 13:10 (27)	15:48
5	04:36	05:33	06:42	07:48	17:09 (18)	08:01	13:03 (27)	09:07
	22:45	21:51	20:28	19:01	9 17:18 (18)	16:39	12 13:15 (27)	15:47
6	04:37	05:35	06:44	07:50	17:06 (18)	08:03	13:01 (27)	09:08
	22:45	21:49	20:25	18:58	14 17:20 (18)	16:36	17 13:18 (27)	15:46
7	04:38	05:37	06:46	07:53	17:04 (18)	08:06	12:59 (27)	09:10
	22:44	21:46	20:22	18:56	16 17:20 (18)	16:34	20 13:19 (27)	15:45
8	04:40	05:39	06:48	07:55	17:03 (18)	08:08	10:32 (38)	09:12
	22:43	21:44	20:19	18:53	18 17:21 (18)	16:32	29 13:20 (27)	15:44
9	04:41	05:41	06:50	07:57	17:02 (18)	08:10	10:30 (38)	09:13
	22:41	21:41	20:16	18:50	18 17:20 (18)	16:30	37 13:22 (27)	15:44
10	04:42	05:44	06:53	07:59	17:01 (18)	08:13	10:28 (38)	09:15
	22:40	21:39	20:14	18:47	16 17:17 (18)	16:27	41 13:22 (27)	15:43
11	04:44	05:46	06:55	08:02	17:01 (18)	08:15	10:27 (38)	09:16
	22:39	21:36	20:11	18:44	15 17:16 (18)	16:25	42 13:20 (27)	15:43
12	04:45	05:48	06:57	08:04	17:01 (18)	08:18	10:27 (38)	09:17
	22:38	21:34	20:08	18:41	13 17:14 (18)	16:23	42 13:19 (27)	15:42
13	04:47	05:50	06:59	08:06	17:02 (18)	08:20	10:25 (38)	09:19
	22:36	21:31	20:05	18:39	10 17:12 (18)	16:21	43 13:17 (27)	15:42
14	04:49	05:53	07:01	08:09	17:06 (18)	08:22	10:25 (38)	09:20
	22:35	21:29	20:02	18:36	2 17:08 (18)	16:19	46 13:12 (27)	15:42
15	04:50	05:55	07:04	08:11		08:25	10:25 (38)	09:21
	22:33	21:26	19:59	18:33		16:17	43 13:04 (27)	15:42
16	04:52	05:57	07:06	08:13		08:27	10:26 (38)	09:22
	22:32	21:23	19:56	18:30		16:15	40 12:59 (27)	15:42
17	04:54	05:59	07:08	08:16	15:45 (13)	08:29	10:25 (38)	09:23
	22:30	21:21	19:53	18:28	9 15:54 (13)	16:13	39 12:37 (33)	15:42
18	04:56	06:02	07:10	08:18	15:42 (13)	08:32	10:26 (38)	09:24
	22:29	21:18	19:50	18:25	15 15:57 (13)	16:11	40 12:38 (33)	15:42
19	04:57	06:04	07:12	08:20	15:40 (13)	08:34	10:26 (38)	09:25
	22:27	21:15	19:47	18:22	18 15:58 (13)	16:09	41 12:39 (33)	15:42
20	04:59	06:06	07:15	08:23	15:39 (13)	08:36	10:26 (38)	09:25
	22:25	21:13	19:45	18:20	21 16:00 (13)	16:07	35 12:32 (33)	15:42
21	05:01	06:08	07:17	08:25	15:37 (13)	08:38	10:27 (38)	09:26
	22:23	21:10	19:42	18:17	20 15:57 (13)	16:06	23 12:21 (33)	15:43
22	05:03	06:10	07:19	08:27	15:37 (13)	08:41	10:27 (38)	09:27
	22:21	21:07	19:39	18:14	17 15:54 (13)	16:04	22 10:49 (38)	15:43
23	05:05	06:13	07:21	08:30	15:36 (13)	08:43	10:28 (38)	09:27
	22:20	21:05	19:36	18:12	16 15:52 (13)	16:02	21 10:49 (38)	15:44
24	05:07	06:15	07:24	08:32	15:35 (13)	08:45	10:29 (38)	09:27
	22:18	21:02	19:33	18:09	16 15:51 (13)	16:01	20 10:49 (38)	15:44
25	05:09	06:17	07:26	07:34	14:36 (13)	08:47	10:29 (38)	09:28
	22:16	20:59	19:30	17:06	15 14:51 (13)	15:59	20 10:49 (38)	15:45
26	05:11	06:19	07:28	07:37	14:35 (13)	08:49	10:31 (38)	09:28
	22:14	20:56	19:27	17:04	16 14:51 (13)	15:57	18 10:49 (38)	15:46
27	05:13	06:22	07:30	07:39	14:35 (13)	08:51	10:32 (38)	09:28
	22:11	20:53	19:24	17:01	13 14:48 (13)	15:56	16 10:48 (38)	15:47
28	05:15	06:24	07:32	07:41	14:30 (8)	08:53	10:36 (38)	09:28
	22:09	20:51	19:21	16:58	14 14:44 (13)	15:55	11 10:47 (38)	15:48
29	05:17	06:26	07:35	07:44	14:28 (8)	08:55	10:42 (38)	09:28
	22:07	20:48	19:19	16:56	12 14:40 (13)	15:53	5 10:47 (38)	15:49
30	05:20	06:28	07:37	07:46	14:26 (8)	08:57		09:28
	22:05	20:45	19:16	16:53	10 14:36 (8)	15:52		15:50
31	05:22	06:31		07:49				09:28
	22:03	20:42		16:51				15:51
Potential sun hours	546	478	386	319		236		199
Total, worst case					343		725	
Sun reduction					0,50		0,50	
Oper. time red.					0,80		0,80	
Wind dir. red.					0,56		0,65	
Total reduction					0,22		0,26	
Total, real					76		188	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** U - Store Svela, eiendom 60/5, Bjerkreim kommune (21)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March			April			May			June
1	09:27			08:45		15:29 (9)	07:35		15:43 (14)	07:06			05:43		18:53 (38)	04:39
	15:52			16:56	21	15:50 (9)	18:04	38	16:21 (14)	20:16			21:25	26	19:19 (38)	22:30
2	09:27			08:43		15:29 (9)	07:32		15:43 (14)	07:04			05:41		18:54 (38)	04:38
	15:54			16:58	23	15:52 (9)	18:07	37	16:20 (14)	20:19			21:28	23	19:17 (38)	22:32
3	09:27			08:41		15:29 (9)	07:29		15:43 (14)	07:01			05:38		18:56 (38)	04:37
	15:55			17:01	23	15:52 (9)	18:09	36	16:19 (14)	20:21			21:30	19	19:15 (38)	22:33
4	09:26			08:39		15:29 (9)	07:27		15:44 (14)	06:58		19:04 (38)	05:36		19:00 (38)	04:36
	15:57			17:03	23	15:52 (9)	18:11	34	16:18 (14)	20:23	15	19:19 (38)	21:32	12	19:12 (38)	22:35
5	09:25			08:36		15:29 (9)	07:24		15:46 (14)	06:55		19:00 (38)	05:33			04:35
	15:58			17:06	23	15:52 (9)	18:14	32	16:18 (14)	20:25	22	19:22 (38)	21:35			22:36
6	09:25			08:34		15:28 (9)	07:21		15:47 (14)	06:52		18:57 (38)	05:31			04:33
	16:00			17:08	24	15:52 (9)	18:16	29	16:16 (14)	20:28	27	19:24 (38)	21:37			22:37
7	09:24			08:32		15:29 (9)	07:18		15:48 (14)	06:49		18:55 (38)	05:29			04:32
	16:01			17:10	23	15:52 (9)	18:19	27	16:15 (14)	20:30	30	19:25 (38)	21:39			22:39
8	09:23			08:29		15:29 (9)	07:15		15:50 (14)	06:46		18:53 (38)	05:26			04:32
	16:03			17:13	23	15:52 (9)	18:21	22	16:12 (14)	20:32	33	19:26 (38)	21:42			22:40
9	09:22			08:27		15:30 (9)	07:13		15:52 (14)	06:43		18:52 (38)	05:24			04:31
	16:05			17:15	22	15:52 (9)	18:23	18	16:10 (14)	20:35	47	19:57 (27)	21:44			22:41
10	09:21			08:25		15:31 (9)	07:10		15:57 (14)	06:41		18:51 (38)	05:21			04:30
	16:07			17:18	20	15:51 (9)	18:26	8	16:05 (14)	20:37	55	19:58 (27)	21:46			22:42
11	09:20			08:22		15:31 (9)	07:07			06:38		18:49 (38)	05:19			04:29
	16:09			17:20	19	15:50 (9)	18:28			20:39	60	19:58 (27)	21:48			22:43
12	09:19			08:20		15:33 (9)	07:04			06:35		18:48 (38)	05:17			04:29
	16:11			17:23	16	15:49 (9)	18:30			20:42	61	19:58 (27)	21:50			22:44
13	09:18			08:17		15:35 (9)	07:01			06:32		18:48 (38)	05:15			04:28
	16:12			17:25	16	16:05 (14)	18:33			20:44	63	19:59 (27)	21:53			22:45
14	09:17			08:15		15:38 (9)	06:58			06:29		18:47 (38)	05:12			04:28
	16:14			17:28	21	16:10 (14)	18:35			20:46	63	19:58 (27)	21:55			22:46
15	09:15			08:12		15:52 (14)	06:55			06:27		18:46 (38)	05:10			04:27
	16:17			17:30	21	16:13 (14)	18:37			20:48	64	19:57 (27)	21:57			22:47
16	09:14			08:10		15:51 (14)	06:53		17:31 (33)	06:24		18:46 (38)	05:08			04:27
	16:19			17:33	25	16:16 (14)	18:40	6	17:37 (33)	20:51	63	19:57 (27)	21:59			22:47
17	09:13			08:07		15:49 (14)	06:50		17:27 (33)	06:21		18:45 (38)	05:06			04:27
	16:21			17:35	28	16:17 (14)	18:42	13	17:40 (33)	20:53	61	19:55 (27)	22:01			22:48
18	09:11			08:04		15:48 (14)	06:47		17:25 (33)	06:18		18:45 (38)	05:04			04:26
	16:23			17:38	30	16:18 (14)	18:44	16	17:41 (33)	20:55	58	19:54 (27)	22:04			22:49
19	09:10			08:02		15:46 (14)	06:44		17:23 (33)	06:15		18:45 (38)	05:02			04:26
	16:25			17:40	33	16:19 (14)	18:46	19	17:42 (33)	20:58	55	19:52 (27)	22:06			22:49
20	09:08			07:59		15:46 (14)	06:41		17:22 (33)	06:13		18:45 (38)	05:00			04:26
	16:27			17:43	34	16:20 (14)	18:49	20	17:42 (33)	21:00	44	19:29 (38)	22:08			22:49
21	09:06			07:57		15:45 (14)	06:38		17:21 (33)	06:10		18:45 (38)	04:58			04:26
	16:30			17:45	36	16:21 (14)	18:51	22	17:43 (33)	21:02	43	19:28 (38)	22:10			22:50
22	09:05			07:54		15:44 (14)	06:35		17:20 (33)	06:07		18:45 (38)	04:56			04:27
	16:32			17:47	37	16:21 (14)	18:53	22	17:42 (33)	21:05	43	19:28 (38)	22:12			22:50
23	09:03			07:51		15:44 (14)	06:32		17:20 (33)	06:05		18:45 (38)	04:54			04:27
	16:34			17:50	37	16:21 (14)	18:56	22	17:42 (33)	21:07	42	19:27 (38)	22:14			22:50
24	09:01			07:49		15:43 (14)	06:29		17:20 (33)	06:02		18:46 (38)	04:52			04:27
	16:36			17:52	38	16:21 (14)	18:58	22	17:42 (33)	21:09	41	19:27 (38)	22:16			22:50
25	08:59			07:46		15:44 (14)	06:27		17:20 (33)	05:59		18:46 (38)	04:50			04:28
	16:39			17:55	38	16:22 (14)	19:00	21	17:41 (33)	21:12	40	19:26 (38)	22:18			22:50
26	08:57			07:43		15:43 (14)	06:24		17:20 (33)	05:57		18:47 (38)	04:49			04:28
	16:41			17:57	39	16:22 (14)	19:03	20	17:40 (33)	21:14	38	19:25 (38)	22:20			22:50
27	08:55		15:35 (9)	07:40		15:43 (14)	06:21		17:22 (33)	05:54		18:47 (38)	04:47			04:29
	16:44	8	15:43 (9)	18:00	39	16:22 (14)	19:05	17	17:39 (33)	21:16	37	19:24 (38)	22:21			22:50
28	08:54		15:33 (9)	07:38		15:43 (14)	06:18		17:23 (33)	05:51		18:49 (38)	04:45			04:29
	16:46	13	15:46 (9)	18:02	38	16:21 (14)	19:07	14	17:37 (33)	21:19	34	19:23 (38)	22:23			22:49
29	08:51		15:31 (9)				07:15		18:25 (33)	05:49		18:49 (38)	04:44			04:30
	16:48	16	15:47 (9)				20:09	10	18:35 (33)	21:21	33	19:22 (38)	22:25			22:49
30	08:49		15:31 (9)				07:12			05:46		18:51 (38)	04:42			04:31
	16:51	17	15:48 (9)				20:12			21:23	30	19:21 (38)	22:27			22:49
31	08:47		15:29 (9)				07:09						04:41			
	16:53	20	15:49 (9)				20:14						22:28			
Potential sun hours	221			260			365			432			521			547
Total, worst case		74			770			525			1202			80		
Sun reduction		0,50			0,50			0,50			0,50			0,50		
Oper. time red.		0,80			0,80			0,80			0,80			0,80		
Wind dir. red.		0,53			0,54			0,58			0,68			0,68		
Total reduction		0,21			0,22			0,23			0,27			0,27		
Total, real		16			167			122			327			22		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** U - Store Svela, eiendom 60/5, Bjerkreim kommune (21)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July		August			September			October			November			December	
1	04:32		05:24			06:33			18:48 (38)	07:39			07:51		15:00 (9)	08:59
	22:48		22:00			20:39	60		19:57 (27)	19:13			16:48	21	15:21 (9)	15:51
2	04:33		05:26			06:35			18:49 (38)	07:41			07:53		15:00 (9)	09:01
	22:47		21:58			20:36	56		19:56 (27)	19:10			16:46	22	15:22 (9)	15:50
3	04:34		05:28			06:37			18:49 (38)	07:43			07:56		14:59 (9)	09:03
	22:47		21:56			20:34	47		19:54 (27)	19:07			16:44	22	15:21 (9)	15:49
4	04:35		05:30			06:39			18:51 (38)	07:46		16:31 (14)	07:58		14:59 (9)	09:05
	22:46		21:53			20:31	33		19:24 (38)	19:04	14	16:45 (14)	16:41	23	15:22 (9)	15:48
5	04:36		05:33			06:42			18:52 (38)	07:48		16:27 (14)	08:01		14:59 (9)	09:07
	22:45		21:51			20:28	30		19:22 (38)	19:01	21	16:48 (14)	16:39	24	15:23 (9)	15:47
6	04:37		05:35			06:44			18:53 (38)	07:50		16:25 (14)	08:03		14:58 (9)	09:08
	22:44		21:49			20:25	27		19:20 (38)	18:58	25	16:50 (14)	16:36	24	15:22 (9)	15:46
7	04:38		05:37			06:46			18:55 (38)	07:52		16:23 (14)	08:05		14:59 (9)	09:10
	22:43		21:46			20:22	22		19:17 (38)	18:55	28	16:51 (14)	16:34	23	15:22 (9)	15:45
8	04:40		05:39		19:13 (38)	06:48			18:58 (38)	07:55		16:21 (14)	08:08		14:59 (9)	09:11
	22:42		21:44	3	19:16 (38)	20:19	15		19:13 (38)	18:53	31	16:52 (14)	16:32	23	15:22 (9)	15:44
9	04:41		05:41		19:07 (38)	06:50				07:57		16:20 (14)	08:10		14:59 (9)	09:13
	22:41		21:41	15	19:22 (38)	20:16				18:50	33	16:53 (14)	16:30	22	15:21 (9)	15:44
10	04:42		05:44		19:05 (38)	06:53				07:59		16:18 (14)	08:13		15:00 (9)	09:14
	22:40		21:39	20	19:25 (38)	20:13				18:47	35	16:53 (14)	16:27	21	15:21 (9)	15:43
11	04:44		05:46		19:03 (38)	06:55				08:02		16:18 (14)	08:15		15:01 (9)	09:16
	22:39		21:36	24	19:27 (38)	20:11				18:44	36	16:54 (14)	16:25	20	15:21 (9)	15:43
12	04:45		05:48		19:01 (38)	06:57				08:04		16:17 (14)	08:17		15:03 (9)	09:17
	22:37		21:34	27	19:28 (38)	20:08				18:41	37	16:54 (14)	16:23	17	15:20 (9)	15:42
13	04:47		05:50		18:59 (38)	06:59				08:06		16:16 (14)	08:20		15:03 (9)	09:18
	22:36		21:31	30	19:29 (38)	20:05				18:39	38	16:54 (14)	16:21	16	15:19 (9)	15:42
14	04:49		05:53		18:57 (38)	07:01			18:16 (33)	08:08		16:16 (14)	08:22		15:05 (9)	09:20
	22:35		21:28	33	19:30 (38)	20:02	8		18:24 (33)	18:36	38	16:54 (14)	16:19	12	15:17 (9)	15:42
15	04:50		05:55		18:56 (38)	07:04			18:13 (33)	08:11		16:15 (14)	08:24		15:08 (9)	09:21
	22:33		21:26	35	19:31 (38)	19:59	13		18:26 (33)	18:33	39	16:54 (14)	16:17	7	15:15 (9)	15:42
16	04:52		05:57		18:55 (38)	07:06			18:11 (33)	08:13		16:15 (14)	08:27			09:22
	22:32		21:23	37	19:32 (38)	19:56	16		18:27 (33)	18:30	39	16:54 (14)	16:15			15:42
17	04:54		05:59		18:53 (38)	07:08			18:09 (33)	08:15		16:15 (14)	08:29			09:23
	22:30		21:21	39	19:32 (38)	19:53	19		18:28 (33)	18:28	38	16:53 (14)	16:13			15:42
18	04:56		06:01		18:52 (38)	07:10			18:08 (33)	08:18		16:15 (14)	08:31			09:24
	22:28		21:18	40	19:32 (38)	19:50	20		18:28 (33)	18:25	38	16:53 (14)	16:11			15:42
19	04:57		06:04		18:51 (38)	07:12			18:07 (33)	08:20		16:15 (14)	08:34			09:24
	22:27		21:15	42	19:33 (38)	19:47	22		18:29 (33)	18:22	37	16:52 (14)	16:09			15:42
20	04:59		06:06		18:51 (38)	07:15			18:07 (33)	08:22		16:16 (14)	08:36			09:25
	22:25		21:13	42	19:33 (38)	19:44	22		18:29 (33)	18:19	36	16:52 (14)	16:07			15:42
21	05:01		06:08		18:50 (38)	07:17			18:06 (33)	08:25		16:16 (14)	08:38			09:26
	22:23		21:10	43	19:33 (38)	19:42	22		18:28 (33)	18:17	35	16:51 (14)	16:06			15:43
22	05:03		06:10		18:49 (38)	07:19			18:06 (33)	08:27		16:17 (14)	08:40			09:26
	22:21		21:07	44	19:33 (38)	19:39	21		18:27 (33)	18:14	33	16:50 (14)	16:04			15:43
23	05:05		06:13		18:49 (38)	07:21			18:06 (33)	08:29		16:17 (14)	08:43			09:27
	22:19		21:04	48	19:52 (27)	19:36	20		18:26 (33)	18:11	32	16:49 (14)	16:02			15:44
24	05:07		06:15		18:48 (38)	07:23			18:07 (33)	08:32		16:18 (14)	08:45			09:27
	22:17		21:02	55	19:55 (27)	19:33	19		18:26 (33)	18:09	30	16:48 (14)	16:01			15:44
25	05:09		06:17		18:49 (38)	07:26			18:07 (33)	07:34		15:19 (14)	08:47			09:28
	22:15		20:59	58	19:57 (27)	19:30	17		18:24 (33)	17:06	27	15:46 (14)	15:59			15:45
26	05:11		06:19		18:48 (38)	07:28			18:08 (33)	07:37		15:21 (14)	08:49			09:28
	22:13		20:56	62	19:58 (27)	19:27	14		18:22 (33)	17:04	23	15:44 (14)	15:57			15:46
27	05:13		06:22		18:48 (38)	07:30			18:10 (33)	07:39		15:23 (14)	08:51			09:28
	22:11		20:53	63	19:59 (27)	19:24	9		18:19 (33)	17:01	20	15:43 (14)	15:56			15:47
28	05:15		06:24		18:48 (38)	07:32				07:41		15:07 (9)	08:53			09:28
	22:09		20:51	63	19:59 (27)	19:21				16:58	21	15:39 (14)	15:55			15:48
29	05:17		06:26		18:48 (38)	07:34				07:44		15:04 (9)	08:55			09:28
	22:07		20:48	64	19:59 (27)	19:18				16:56	13	15:17 (9)	15:53			15:49
30	05:20		06:28		18:48 (38)	07:37				07:46		15:03 (9)	08:57			09:28
	22:05		20:45	63	19:59 (27)	19:16				16:53	16	15:19 (9)	15:52			15:50
31	05:22		06:30		18:48 (38)					07:49		15:01 (9)				09:28
	22:03		20:42	61	19:58 (27)					16:51	19	15:20 (9)				15:51
Potential sun hours	545		478			386			319				236			200
Total, worst case				1011			532				832			297		
Sun reduction				0,50			0,50				0,50			0,50		
Oper. time red.				0,80			0,80				0,80			0,80		
Wind dir. red.				0,68			0,65				0,55			0,53		
Total reduction				0,27			0,26				0,22			0,21		
Total, real				275			138				183			62		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** V - Osland 45 (22)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February	March	April	May	June	July	August	September	October	November			December		
1	09:28		12:02 (24)	08:46	07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:39	07:51			09:00		11:45 (24)
	15:53	39	13:36 (25)	16:56	18:05	20:17	21:26	22:31	22:49	22:01	20:40	19:13	16:49			15:51	40	13:20 (25)
2	09:28		12:01 (24)	08:44	07:33	07:04	05:41	04:38	04:33	05:26	06:35	07:42	07:54			09:02		11:46 (24)
	15:54	41	13:36 (25)	16:58	18:07	20:19	21:28	22:32	22:48	21:59	20:37	19:10	16:46			15:50	40	13:20 (25)
3	09:27		12:01 (24)	08:41	07:30	07:01	05:39	04:37	04:34	05:28	06:37	07:44	07:56			09:03		11:46 (24)
	15:55	41	13:36 (25)	17:01	18:09	20:21	21:31	22:34	22:47	21:56	20:34	19:07	16:44			15:49	41	13:21 (25)
4	09:27		12:01 (24)	08:39	07:27	06:58	05:36	04:36	04:35	05:31	06:40	07:46	07:59			09:05		11:47 (24)
	15:57	41	13:36 (25)	17:03	18:12	20:24	21:33	22:35	22:47	21:54	20:31	19:04	16:41			15:48	41	13:22 (25)
5	09:26		12:01 (24)	08:37	07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48	08:01			09:07		11:47 (24)
	15:58	43	13:37 (25)	17:06	18:14	20:26	21:35	22:37	22:46	21:52	20:28	19:02	16:39			15:47	41	13:22 (25)
6	09:25		12:02 (24)	08:35	07:21	06:52	05:31	04:34	04:37	05:35	06:44	07:51	08:03			09:09		11:48 (24)
	16:00	41	13:37 (25)	17:08	18:17	20:28	21:37	22:38	22:45	21:49	20:25	18:59	16:37			15:46	42	13:23 (25)
7	09:25		12:02 (24)	08:32	07:19	06:50	05:29	04:33	04:39	05:37	06:46	07:53	08:06			09:10		11:49 (24)
	16:02	41	13:37 (25)	17:11	18:19	20:30	21:40	22:39	22:44	21:47	20:23	18:56	16:34			15:45	41	13:24 (25)
8	09:24		12:02 (24)	08:30	07:16	06:47	05:26	04:32	04:40	05:39	06:49	07:55	08:08			09:12		11:49 (24)
	16:03	42	13:38 (25)	17:13	18:21	20:33	21:42	22:41	22:43	21:44	20:20	18:53	16:32			15:45	41	13:24 (25)
9	09:23		12:03 (24)	08:27	07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:57	08:11			09:13		11:50 (24)
	16:05	41	13:38 (25)	17:16	18:24	20:35	21:44	22:42	22:42	21:42	20:17	18:50	16:30			15:44	41	13:25 (25)
10	09:22		12:03 (24)	08:25	07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00	08:13			09:15		11:50 (24)
	16:07	40	13:37 (25)	17:18	18:26	20:37	21:47	22:43	22:41	21:39	20:14	18:47	16:28			15:43	41	13:25 (25)
11	09:21		12:03 (24)	08:23	07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02	08:15			09:16		11:52 (24)
	16:09	41	13:38 (25)	17:21	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:45	16:25			15:43	40	13:26 (25)
12	09:20		12:03 (24)	08:20	07:04	06:35	05:17	04:29	04:46	05:48	06:57	08:04	08:18			09:18		11:52 (24)
	16:11	39	13:37 (25)	17:23	18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42	16:23			15:43	39	13:26 (25)
13	09:19		12:04 (24)	08:18	07:02	06:33	05:15	04:28	04:47	05:51	07:00	08:07	08:20			09:19		11:53 (24)
	16:13	37	13:37 (25)	17:26	18:33	20:44	21:53	22:46	22:37	21:32	20:05	18:39	16:21			15:42	39	13:27 (25)
14	09:17		12:04 (24)	08:15	06:59	06:30	05:13	04:28	04:49	05:53	07:02	08:09	08:23			09:20		11:54 (24)
	16:15	35	13:36 (25)	17:28	18:35	20:47	21:55	22:47	22:35	21:29	20:02	18:36	16:19			15:42	38	13:27 (25)
15	09:16		12:04 (24)	08:13	06:56	06:27	05:10	04:27	04:51	05:55	07:04	08:11	08:25		11:50 (24)	09:21		11:54 (24)
	16:17	32	13:35 (25)	17:31	18:38	20:49	21:58	22:47	22:34	21:26	19:59	18:33	16:17	5	11:55 (24)	15:42	38	13:27 (25)
16	09:15		12:04 (24)	08:10	06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13	08:27		11:47 (24)	09:22		11:55 (24)
	16:19	24	12:28 (24)	17:33	18:40	20:51	22:00	22:48	22:32	21:24	19:56	18:31	16:15	11	11:58 (24)	15:42	37	13:28 (25)
17	09:13		12:06 (24)	08:07	06:50	06:21	05:06	04:27	04:54	06:00	07:08	08:16	08:30		11:46 (24)	09:23		11:55 (24)
	16:21	24	12:30 (24)	17:36	18:42	20:54	22:02	22:49	22:31	21:21	19:54	18:28	16:13	15	12:01 (24)	15:42	37	13:28 (25)
18	09:12		12:06 (24)	08:05	06:47	06:19	05:04	04:27	04:56	06:02	07:11	08:18	08:32		11:44 (24)	09:24		11:56 (24)
	16:23	24	12:30 (24)	17:38	18:45	20:56	22:04	22:49	22:29	21:18	19:51	18:25	16:11	17	12:01 (24)	15:42	36	13:29 (25)
19	09:10		12:06 (24)	08:02	06:44	06:16	05:02	04:27	04:58	06:04	07:13	08:20	08:34		11:44 (24)	09:25		11:57 (24)
	16:25	24	12:30 (24)	17:40	18:47	20:58	22:06	22:50	22:27	21:16	19:48	18:22	16:09	19	12:03 (24)	15:42	36	13:29 (25)
20	09:09		12:07 (24)	08:00	06:41	06:13	05:00	04:27	05:00	06:06	07:15	08:23	08:36		11:44 (24)	09:26		11:58 (24)
	16:28	23	12:30 (24)	17:43	18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20	16:08	20	12:04 (24)	15:43	36	13:30 (25)
21	09:07		12:08 (24)	07:57	06:39	06:10	04:58	04:27	05:01	06:09	07:17	08:25	08:39		11:43 (24)	09:26		11:59 (24)
	16:30	21	12:29 (24)	17:45	18:51	21:03	22:10	22:50	22:24	21:10	19:42	18:17	16:06	22	12:05 (24)	15:43	35	13:31 (25)
22	09:05		12:09 (24)	07:54	06:36	06:08	04:56	04:27	05:03	06:11	07:19	08:28	08:41		11:43 (24)	09:27		11:58 (24)
	16:32	20	12:29 (24)	17:48	18:54	21:05	22:12	22:50	22:22	21:08	19:39	18:14	16:04	23	12:06 (24)	15:43	36	13:31 (25)
23	09:03		12:09 (24)	07:52	06:33	06:05	04:54	04:27	05:05	06:13	07:22	08:30	08:43		11:43 (24)	09:27		11:59 (24)
	16:34	19	12:28 (24)	17:50	18:56	21:07	22:14	22:51	22:20	21:05	19:36	18:12	16:02	23	12:06 (24)	15:44	36	13:31 (25)
24	09:02		12:10 (24)	07:49	06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32	08:45		11:43 (24)	09:28		12:00 (24)
	16:37	17	12:27 (24)	17:53	18:58	21:10	22:16	22:51	22:18	21:02	19:33	18:09	16:01	24	12:07 (24)	15:44	36	13:32 (25)
25	09:00		12:12 (24)	07:46	06:27	06:00	04:51	04:28	05:09	06:17	07:26	07:35	08:48		11:43 (24)	09:28		12:00 (24)
	16:39	15	12:27 (24)	17:55	19:01	21:12	22:18	22:51	22:16	20:59	19:30	17:07	15:59	24	12:07 (24)	15:45	37	13:33 (25)
26	08:58		12:14 (24)	07:44	06:24	05:57	04:49	04:28	05:11	06:20	07:28	07:37	08:50		11:43 (24)	09:28		12:00 (24)
	16:41	11	12:25 (24)	17:57	19:03	21:14	22:20	22:50	22:14	20:57	19:27	17:04	15:58	25	12:08 (24)	15:46	37	13:33 (25)
27	08:56		12:17 (24)	07:41	06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39	08:52		11:43 (24)	09:28		12:00 (24)
	16:44	4	12:21 (24)	18:00	19:05	21:17	22:22	22:50	22:12	20:54	19:25	17:01	15:56	32	13:14 (25)	15:47	38	13:33 (25)
28	08:54			07:38	06:18	05:52	04:46	04:30	05:16	06:24	07:33	07:42	08:54		11:44 (24)	09:29		12:01 (24)
	16:46			18:02	19:08	21:19	22:24	22:50	22:10	20:51	19:22	16:59	15:55	35	13:16 (25)	15:48	37	13:34 (25)
29	08:52				07:15	05:49	04:44	04:30	05:18	06:26	07:35	07:44	08:56		11:44 (24)	09:28		12:00 (24)
	16:49				20:10	21:21	22:26	22:50	22:08	20:48	19:19	16:56	15:54	37	13:17 (25)	15:49	38	13:34 (25)
30	08:50				07:13	05:46	04:42	04:31	05:20	06:29	07:37	07:47	08:58		11:44 (24)	09:28		12:01 (24)
	16:51				20:12	21:24	22:27	22:49	22:05	20:45	19:16	16:54	15:52	39	13:18 (25)	15:50	39	13:35 (25)
31	08:48				07:10		04:41		05:22	06:31		07:49				09:28		12:01 (24)
	16:54				20:14		22:29		22:03	20:43		16:51				15:51	39	13:35 (25)
Potential sun hours	221			260	365	432	521	547	546	478	386	319	236			199		
Total, worst case		820												371			1193	
Sun reduction		0,50												0,50			0,50	
Oper. time red.		0,80												0,80			0,80	
Wind dir. red.		0,62												0,63			0,61	
Total reduction		0,25												0,25			0,24	
Total, real		203												93			290	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** W - Osland 85 (23)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March	April	May	June	July	August	September	October	November		December		
1	09:28		12:21 (25)	08:46		10:00 (29)	07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:39	07:51		09:35 (29)	09:00		10:51 (24)
	15:53	20	12:41 (25)	16:56	20	10:20 (29)	18:05	20:17	21:26	22:31	22:49	22:01	20:40	19:13	16:49	8	09:43 (29)	15:51	29	12:24 (25)
2	09:28		12:21 (25)	08:44		09:59 (29)	07:33	07:04	05:41	04:38	04:33	05:26	06:35	07:42	07:54		09:33 (29)	09:02		10:51 (24)
	15:54	20	12:41 (25)	16:58	20	10:19 (29)	18:07	20:19	21:28	22:32	22:48	21:59	20:37	19:10	16:46	13	09:46 (29)	15:50	31	12:25 (25)
3	09:27		12:22 (25)	08:41		10:00 (29)	07:30	07:01	05:39	04:37	04:34	05:28	06:38	07:44	07:56		09:32 (29)	09:04		10:52 (24)
	15:55	19	12:41 (25)	17:01	20	10:20 (29)	18:09	20:21	21:31	22:34	22:47	21:56	20:34	19:07	16:44	15	09:47 (29)	15:49	31	12:26 (25)
4	09:27		12:22 (25)	08:39		10:00 (29)	07:27	06:58	05:36	04:36	04:35	05:31	06:40	07:46	07:59		09:31 (29)	09:05		10:53 (24)
	15:57	20	12:42 (25)	17:03	20	10:20 (29)	18:12	20:24	21:33	22:35	22:47	21:54	20:31	19:04	16:41	17	09:48 (29)	15:48	30	12:26 (25)
5	09:26		11:11 (24)	08:37		10:01 (29)	07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48	08:01		09:30 (29)	09:07		10:55 (24)
	15:58	25	12:42 (25)	17:06	19	10:20 (29)	18:14	20:26	21:35	22:37	22:46	21:52	20:28	19:02	16:39	19	09:49 (29)	15:47	28	12:27 (25)
6	09:25		11:10 (24)	08:35		10:01 (29)	07:21	06:52	05:31	04:34	04:37	05:35	06:44	07:51	08:03		09:30 (29)	09:09		10:56 (24)
	16:00	27	12:42 (25)	17:08	18	10:19 (29)	18:17	20:28	21:37	22:38	22:45	21:49	20:25	18:59	16:37	20	09:50 (29)	15:46	27	12:28 (25)
7	09:25		11:10 (24)	08:32		10:01 (29)	07:19	06:50	05:29	04:33	04:39	05:37	06:46	07:53	08:06		09:30 (29)	09:10		10:58 (24)
	16:02	28	12:42 (25)	17:11	17	10:18 (29)	18:19	20:31	21:40	22:39	22:44	21:47	20:23	18:56	16:34	20	09:50 (29)	15:45	26	12:29 (25)
8	09:24		11:09 (24)	08:30		10:03 (29)	07:16	06:47	05:26	04:32	04:40	05:39	06:49	07:55	08:08		09:29 (29)	09:12		12:11 (25)
	16:03	29	12:42 (25)	17:13	15	10:18 (29)	18:21	20:33	21:42	22:41	22:43	21:44	20:20	18:53	16:32	21	09:50 (29)	15:45	19	12:30 (25)
9	09:23		11:09 (24)	08:27		10:04 (29)	07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:57	08:11		09:30 (29)	09:13		12:11 (25)
	16:05	30	12:42 (25)	17:16	12	10:16 (29)	18:24	20:35	21:44	22:42	22:42	21:42	20:17	18:50	16:30	20	09:50 (29)	15:44	20	12:31 (25)
10	09:22		11:08 (24)	08:25		10:07 (29)	07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00	08:13		09:30 (29)	09:15		12:11 (25)
	16:07	30	12:42 (25)	17:18	5	10:12 (29)	18:26	20:37	21:47	22:43	22:41	21:39	20:14	18:47	16:28	20	09:50 (29)	15:44	20	12:31 (25)
11	09:21		11:09 (24)	08:23			07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02	08:15		09:30 (29)	09:16		12:11 (25)
	16:09	29	12:42 (25)	17:21			18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:45	16:26	19	09:49 (29)	15:43	20	12:31 (25)
12	09:20		11:08 (24)	08:20			07:04	06:35	05:17	04:29	04:46	05:48	06:57	08:04	08:18		09:31 (29)	09:18		12:11 (25)
	16:11	27	12:40 (25)	17:23			18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42	16:23	28	10:59 (24)	15:43	21	12:32 (25)
13	09:19		11:08 (24)	08:18			07:02	06:33	05:15	04:28	04:47	05:51	07:00	08:07	08:20		09:32 (29)	09:19		12:12 (25)
	16:13	25	12:39 (25)	17:26			18:33	20:44	21:53	22:46	22:37	21:32	20:05	18:39	16:21	30	11:01 (24)	15:42	21	12:33 (25)
14	09:17		11:08 (24)	08:15			06:59	06:30	05:13	04:28	04:49	05:53	07:02	08:09	08:23		09:33 (29)	09:20		12:12 (25)
	16:15	20	11:28 (24)	17:28			18:35	20:47	21:55	22:47	22:35	21:29	20:02	18:36	16:19	32	11:03 (24)	15:42	21	12:33 (25)
15	09:16		11:08 (24)	08:13			06:56	06:27	05:10	04:27	04:51	05:55	07:04	08:11	08:25		09:34 (29)	09:21		12:12 (25)
	16:17	21	11:29 (24)	17:31			18:38	20:49	21:58	22:47	22:34	21:26	19:59	18:33	16:17	31	11:03 (24)	15:42	21	12:33 (25)
16	09:15		11:08 (24)	08:10			06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:14	08:27		09:36 (29)	09:22		12:13 (25)
	16:19	21	11:29 (24)	17:33			18:40	20:51	22:00	22:48	22:32	21:24	19:57	18:31	16:15	31	11:05 (24)	15:42	21	12:34 (25)
17	09:13		11:09 (24)	08:08			06:50	06:21	05:06	04:27	04:54	06:00	07:08	08:16	08:30		09:39 (29)	09:23		12:14 (25)
	16:21	22	11:31 (24)	17:36			18:42	20:54	22:02	22:49	22:31	21:21	19:54	18:28	16:13	27	11:06 (24)	15:42	21	12:35 (25)
18	09:12		11:09 (24)	08:05			06:47	06:19	05:04	04:27	04:56	06:02	07:11	08:18	08:32		10:44 (24)	09:24		12:14 (25)
	16:23	22	11:31 (24)	17:38			18:45	20:56	22:04	22:49	22:29	21:18	19:51	18:25	16:11	22	11:06 (24)	15:42	21	12:35 (25)
19	09:10		11:09 (24)	08:02			06:44	06:16	05:02	04:27	04:58	06:04	07:13	08:21	08:34		10:45 (24)	09:25		12:14 (25)
	16:25	22	11:31 (24)	17:40			18:47	20:58	22:06	22:50	22:27	21:16	19:48	18:23	16:09	22	11:07 (24)	15:42	21	12:35 (25)
20	09:09		11:09 (24)	08:00			06:41	06:13	05:00	04:27	05:00	06:06	07:15	08:23	08:36		10:45 (24)	09:26		12:15 (25)
	16:28	23	11:32 (24)	17:43			18:49	21:01	22:08	22:50	22:25	21:13	19:45	18:20	16:08	22	11:07 (24)	15:43	21	12:36 (25)
21	09:07		11:09 (24)	07:57			06:39	06:10	04:58	04:27	05:02	06:09	07:17	08:25	08:39		10:44 (24)	09:26		12:16 (25)
	16:30	23	11:32 (24)	17:45			18:52	21:03	22:10	22:50	22:24	21:10	19:42	18:17	16:06	23	11:07 (24)	15:43	21	12:37 (25)
22	09:05		11:10 (24)	07:54			06:36	06:08	04:56	04:27	05:03	06:11	07:19	08:28	08:41		10:45 (24)	09:27		12:16 (25)
	16:32	22	11:32 (24)	17:48			18:54	21:05	22:12	22:50	22:22	21:08	19:39	18:14	16:04	23	11:08 (24)	15:43	21	12:37 (25)
23	09:03		11:10 (24)	07:52			06:33	06:05	04:54	04:27	05:05	06:13	07:22	08:30	08:43		10:45 (24)	09:27		12:16 (25)
	16:34	22	11:32 (24)	17:50			18:56	21:07	22:14	22:51	22:20	21:05	19:36	18:12	16:02	22	11:07 (24)	15:44	21	12:37 (25)
24	09:02		11:10 (24)	07:49			06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32	08:45		10:46 (24)	09:28		12:17 (25)
	16:37	22	11:32 (24)	17:53			18:58	21:10	22:16	22:51	22:18	21:02	19:33	18:09	16:01	22	11:08 (24)	15:45	21	12:38 (25)
25	09:00		10:05 (29)	07:46			06:27	06:00	04:51	04:28	05:09	06:17	07:26	07:35	08:48		10:46 (24)	09:28		12:17 (25)
	16:39	27	11:32 (24)	17:55			19:01	21:12	22:18	22:51	22:16	20:59	19:30	17:07	15:59	22	11:08 (24)	15:45	21	12:38 (25)
26	08:58		10:03 (29)	07:44			06:24	05:57	04:49	04:28	05:11	06:20	07:28	07:37	08:50		10:47 (24)	09:28		12:18 (25)
	16:42	31	11:32 (24)	17:57			19:03	21:14	22:20	22:50	22:14	20:57	19:27	17:04	15:58	21	11:08 (24)	15:46	21	12:39 (25)
27	08:56		10:02 (29)	07:41			06:21	05:54	04:47	04:29	05:14	06:22	07:30	07:39	08:52		10:47 (24)	09:28		12:18 (25)
	16:44	32	11:31 (24)	18:00			19:05	21:17	22:22	22:50	22:12	20:54	19:25	17:01	15:56	21	11:08 (24)	15:47	21	12:39 (25)
28	08:54		10:00 (29)	07:38			06:18	05:52	04:46	04:30	05:16	06:24	07:33	07:42	08:54		10:48 (24)	09:29		12:19 (25)
	16:46	32	11:30 (24)	18:02			19:08	21:19	22:24	22:50	22:10	20:51	19:22	16:59	15:55	20	11:08 (24)	15:48	21	12:40 (25)
29	08:52		10:00 (29)				07:15	05:49	04:44	04:30	05:18	06:26	07:35	07:44	08:56		10:49 (24)	09:29		12:19 (25)
	16:49	30	11:29 (24)				20:10	21:21	22:26	22:50	22:08	20:48	19:19	16:56	15:54	24	12:19 (25)	15:49	21	12:40 (25)
30	08:50		09:59 (29)				07:13	05:46	04:43	04:31	05:20	06:29	07:37	07:47	08:58		10:49 (24)	09:28		12:20 (25)
	16:51	29	11:27 (24)				20:12	21:24	22:27	22:49	22:05	20:45	19:16	16:54	15:52	28	12:21 (25)	15:50	20	12:40 (25)
31	08:48		09:59 (29)				07:10		04:41		05:22	06:31		07:49				09:28		12:21 (25)
	16:54	20	10:19 (29)				20:14		22:29		22:03	20:43		16:51				15:51	20	12:41 (25)
Potential sun hours	221			260			365	432	521	547	546	478	386	319	236			199		
Total, worst case		770			166											663			699	
Sun reduction		0,50			0,50											0,50			0,50	
Oper. time red.		0,80			0,80											0,80			0,80	
Wind dir. red.		0,67			0,72											0,70			0,64	
Total reduction		0,27			0,29											0,28			0,25	
Total, real		207			48											185			177	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Project:
Moifjellet vindkraftverk

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** X - Osland 65 (24)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March	April	May	June	July	August	September	October	November			December		
1	09:28		11:14 (24)	08:46		10:11 (29)	07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:39	07:51			09:00		10:57 (24)
	15:53	31	12:43 (25)	16:56	18	10:29 (29)	18:05	20:17	21:26	22:31	22:49	22:01	20:40	19:13	16:49			15:51	22	11:19 (24)
2	09:28		11:14 (24)	08:44		10:11 (29)	07:33	07:04	05:41	04:38	04:33	05:26	06:35	07:42	07:54			09:02		10:58 (24)
	15:54	30	12:43 (25)	16:58	17	10:28 (29)	18:07	20:19	21:28	22:32	22:48	21:59	20:37	19:10	16:46			15:50	21	11:19 (24)
3	09:27		11:13 (24)	08:41		10:13 (29)	07:30	07:01	05:39	04:37	04:34	05:28	06:38	07:44	07:56			09:04		10:58 (24)
	15:55	31	12:43 (25)	17:01	14	10:27 (29)	18:09	20:21	21:31	22:34	22:47	21:56	20:34	19:07	16:44			15:49	21	11:19 (24)
4	09:27		11:13 (24)	08:39		10:14 (29)	07:27	06:58	05:36	04:36	04:35	05:31	06:40	07:46	07:59			09:05		10:59 (24)
	15:57	31	12:43 (25)	17:03	11	10:25 (29)	18:12	20:24	21:33	22:35	22:47	21:54	20:31	19:04	16:41			15:48	20	11:19 (24)
5	09:26		11:14 (24)	08:37		10:17 (29)	07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48	08:01			09:07		10:59 (24)
	15:58	29	12:43 (25)	17:06	6	10:23 (29)	18:14	20:26	21:35	22:37	22:46	21:52	20:28	19:02	16:39			15:47	26	12:26 (25)
6	09:25		11:14 (24)	08:35			07:21	06:52	05:31	04:34	04:37	05:35	06:44	07:51	08:03		09:47 (29)	09:09		11:00 (24)
	16:00	28	12:42 (25)	17:08			18:17	20:28	21:37	22:38	22:45	21:49	20:25	18:59	16:37	7	09:54 (29)	15:46	28	12:28 (25)
7	09:25		11:14 (24)	08:32			07:19	06:50	05:29	04:33	04:39	05:37	06:46	07:53	08:06		09:45 (29)	09:10		11:01 (24)
	16:02	26	12:41 (25)	17:11			18:19	20:31	21:40	22:39	22:44	21:47	20:23	18:56	16:34	11	09:56 (29)	15:45	29	12:30 (25)
8	09:24		11:15 (24)	08:30			07:16	06:47	05:26	04:32	04:40	05:39	06:49	07:55	08:08		09:43 (29)	09:12		11:02 (24)
	16:03	20	11:35 (24)	17:13			18:21	20:33	21:42	22:41	22:43	21:44	20:20	18:53	16:32	14	09:57 (29)	15:45	30	12:31 (25)
9	09:23		11:15 (24)	08:27			07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:57	08:11		09:42 (29)	09:14		11:03 (24)
	16:05	21	11:36 (24)	17:16			18:24	20:35	21:44	22:42	22:42	21:42	20:17	18:50	16:30	17	09:59 (29)	15:44	30	12:32 (25)
10	09:22		11:15 (24)	08:25			07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00	08:13		09:42 (29)	09:15		11:03 (24)
	16:07	21	11:36 (24)	17:18			18:26	20:37	21:47	22:43	22:41	21:39	20:14	18:47	16:28	18	10:00 (29)	15:44	30	12:32 (25)
11	09:21		11:15 (24)	08:23			07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02	08:15		09:41 (29)	09:16		11:04 (24)
	16:09	22	11:37 (24)	17:21			18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:45	16:26	19	10:00 (29)	15:43	31	12:34 (25)
12	09:20		11:15 (24)	08:20			07:04	06:35	05:17	04:29	04:46	05:48	06:57	08:04	08:18		09:41 (29)	09:18		11:04 (24)
	16:11	22	11:37 (24)	17:23			18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42	16:23	19	10:00 (29)	15:43	31	12:34 (25)
13	09:19		11:16 (24)	08:18			07:02	06:33	05:15	04:28	04:47	05:51	07:00	08:07	08:20		09:41 (29)	09:19		11:05 (24)
	16:13	22	11:38 (24)	17:26			18:33	20:44	21:53	22:46	22:37	21:32	20:05	18:39	16:21	20	10:01 (29)	15:42	31	12:35 (25)
14	09:17		11:16 (24)	08:15			06:59	06:30	05:13	04:28	04:49	05:53	07:02	08:09	08:23		09:42 (29)	09:20		11:06 (24)
	16:15	22	11:38 (24)	17:28			18:35	20:47	21:55	22:47	22:35	21:29	20:02	18:36	16:19	19	10:01 (29)	15:42	30	12:35 (25)
15	09:16		11:16 (24)	08:13			06:56	06:27	05:10	04:27	04:51	05:55	07:04	08:11	08:25		09:41 (29)	09:21		11:06 (24)
	16:17	22	11:38 (24)	17:31			18:38	20:49	21:58	22:47	22:34	21:26	19:59	18:33	16:17	20	10:01 (29)	15:42	31	12:36 (25)
16	09:15		11:16 (24)	08:10			06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:14	08:27		09:42 (29)	09:22		11:08 (24)
	16:19	22	11:38 (24)	17:33			18:40	20:51	22:00	22:48	22:32	21:24	19:57	18:31	16:15	19	10:01 (29)	15:42	30	12:37 (25)
17	09:13		11:18 (24)	08:08			06:50	06:21	05:06	04:27	04:54	06:00	07:08	08:16	08:30		09:43 (29)	09:23		11:09 (24)
	16:21	21	11:39 (24)	17:36			18:42	20:54	22:02	22:49	22:31	21:21	19:54	18:28	16:13	26	11:08 (24)	15:42	30	12:38 (25)
18	09:12		11:18 (24)	08:05			06:47	06:19	05:04	04:27	04:56	06:02	07:11	08:18	08:32		09:43 (29)	09:24		11:09 (24)
	16:23	21	11:39 (24)	17:38			18:45	20:56	22:04	22:49	22:29	21:18	19:51	18:25	16:11	30	11:10 (24)	15:42	28	12:37 (25)
19	09:10		10:13 (29)	08:02			06:44	06:16	05:02	04:27	04:58	06:04	07:13	08:21	08:34		09:44 (29)	09:25		11:09 (24)
	16:25	27	11:39 (24)	17:40			18:47	20:58	22:06	22:50	22:27	21:16	19:48	18:23	16:09	31	11:12 (24)	15:42	30	12:38 (25)
20	09:09		10:12 (29)	08:00			06:41	06:13	05:00	04:27	05:00	06:06	07:15	08:23	08:36		09:45 (29)	09:26		11:10 (24)
	16:28	30	11:39 (24)	17:43			18:49	21:01	22:08	22:50	22:25	21:13	19:45	18:20	16:08	32	11:13 (24)	15:43	30	12:39 (25)
21	09:07		10:11 (29)	07:57			06:39	06:10	04:58	04:27	05:01	06:09	07:17	08:25	08:39		09:46 (29)	09:26		11:11 (24)
	16:30	32	11:39 (24)	17:45			18:52	21:03	22:10	22:50	22:24	21:10	19:42	18:17	16:06	32	11:14 (24)	15:43	29	12:40 (25)
22	09:05		10:10 (29)	07:54			06:36	06:08	04:56	04:27	05:03	06:11	07:19	08:28	08:41		09:48 (29)	09:27		11:11 (24)
	16:32	32	11:38 (24)	17:48			18:54	21:05	22:12	22:51	22:22	21:08	19:39	18:14	16:04	29	11:15 (24)	15:43	29	12:40 (25)
23	09:03		10:09 (29)	07:52			06:33	06:05	04:54	04:27	05:05	06:13	07:22	08:30	08:43		09:49 (29)	09:27		11:11 (24)
	16:34	31	11:37 (24)	17:50			18:56	21:07	22:14	22:51	22:20	21:05	19:36	18:12	16:02	27	11:15 (24)	15:44	30	12:40 (25)
24	09:02		10:09 (29)	07:49			06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32	08:45		10:55 (24)	09:28		11:12 (24)
	16:37	29	11:36 (24)	17:53			18:58	21:10	22:16	22:51	22:18	21:02	19:33	18:09	16:01	21	11:16 (24)	15:45	30	12:41 (25)
25	09:00		10:09 (29)	07:46			06:27	06:00	04:51	04:28	05:09	06:17	07:26	07:35	08:48		10:55 (24)	09:28		11:12 (24)
	16:39	26	11:34 (24)	17:55			19:01	21:12	22:18	22:51	22:16	20:59	19:30	17:07	15:59	21	11:16 (24)	15:45	29	12:41 (25)
26	08:58		10:09 (29)	07:44			06:24	05:57	04:49	04:28	05:11	06:20	07:28	07:37	08:50		10:55 (24)	09:28		11:13 (24)
	16:41	19	10:28 (29)	17:57			19:03	21:14	22:20	22:51	22:14	20:57	19:27	17:04	15:58	22	11:17 (24)	15:46	30	12:42 (25)
27	08:56		10:09 (29)	07:41			06:21	05:54	04:47	04:29	05:14	06:22	07:30	07:39	08:52		10:55 (24)	09:28		11:13 (24)
	16:44	20	10:29 (29)	18:00			19:05	21:17	22:22	22:50	22:12	20:54	19:25	17:01	15:56	22	11:17 (24)	15:47	30	12:42 (25)
28	08:54		10:09 (29)	07:38			06:18	05:52	04:46	04:30	05:16	06:24	07:33	07:42	08:54		10:56 (24)	09:29		11:13 (24)
	16:46	19	10:28 (29)	18:02			19:08	21:19	22:24	22:50	22:10	20:51	19:22	16:59	15:55	22	11:18 (24)	15:48	31	12:43 (25)
29	08:52		10:09 (29)				07:15	05:49	04:44	04:30	05:18	06:26	07:35	07:44	08:56		10:56 (24)	09:29		11:13 (24)
	16:49	20	10:29 (29)				20:10	21:21	22:26	22:50	22:08	20:48	19:19	16:56	15:54	22	11:18 (24)	15:49	31	12:42 (25)
30	08:50		10:09 (29)				07:13	05:46	04:43	04:31	05:20	06:29	07:37	07:47	08:58		10:56 (24)	09:28		11:13 (24)
	16:51	19	10:28 (29)				20:12	21:24	22:27	22:49	22:05	20:45	19:16	16:54	15:52	22	11:18 (24)	15:50	31	12:43 (25)
31	08:48		10:10 (29)				07:10		04:41		05:22	06:31		07:49				09:28		11:14 (24)
	16:54	19	10:29 (29)				20:14		22:29		22:03	20:43		16:51				15:51	30	12:43 (25)
Potential sun hours	221			260			365	432	521	547	546	478	386	319	236			199		
Total, worst case		765			66											542			889	
Sun reduction		0,50			0,50											0,50			0,50	
Oper. time red.		0,80			0,80											0,80			0,80	
Wind dir. red.		0,68			0,72											0,70			0,65	
Total reduction		0,27			0,29											0,28			0,26	
Total, real		208			19											151			231	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** Y - Brusalivegen 215 (25)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February	March	April	May		June		July		August	September	October	November	December
1	09:28	08:46	07:35	07:07	05:44		04:40		04:32		05:24	06:33	07:39	07:51	09:00
	15:53	16:56	18:05	20:17	21:26		22:30	29	06:45 (1)	22:48 33	06:51 (1)	20:40	19:13	16:49	15:52
2	09:27	08:43	07:33	07:04	05:42		04:39		06:15 (1)	04:33	06:18 (1)	05:27	06:35	07:42	07:54	09:01
	15:54	16:59	18:07	20:19	21:28		22:32	31	06:46 (1)	22:48 33	06:51 (1)	21:58	20:37	19:10	16:47	15:50
3	09:27	08:41	07:30	07:01	05:39		04:38		06:14 (1)	04:34	06:17 (1)	05:29	06:38	07:44	07:56	09:03
	15:56	17:01	18:10	20:21	21:31		22:33	32	06:46 (1)	22:47 34	06:51 (1)	21:56	20:34	19:07	16:44	15:49
4	09:26	08:39	07:27	06:58	05:37		04:36		06:14 (1)	04:35	06:18 (1)	05:31	06:40	07:46	07:59	09:05
	15:57	17:04	18:12	20:24	21:33		22:35	32	06:46 (1)	22:46 33	06:51 (1)	21:54	20:31	19:05	16:42	15:48
5	09:26	08:37	07:24	06:55	05:34		04:35		06:14 (1)	04:37	06:18 (1)	05:33	06:42	07:48	08:01	09:07
	15:59	17:06	18:14	20:26	21:35		22:36	32	06:46 (1)	22:46 33	06:51 (1)	21:51	20:28	19:02	16:39	15:47
6	09:25	08:34	07:21	06:53	05:32		04:34		06:13 (1)	04:38	06:19 (1)	05:35	06:44	07:51	08:03	09:09
	16:00	17:09	18:17	20:28	21:37		22:38	33	06:46 (1)	22:45 34	06:53 (1)	21:49	20:25	18:59	16:37	15:47
7	09:24	08:32	07:19	06:50	05:29		04:33		06:12 (1)	04:39	06:20 (1)	05:38	06:47	07:53	08:06	09:10
	16:02	17:11	18:19	20:31	21:40		22:39	34	06:46 (1)	22:44 33	06:53 (1)	21:47	20:23	18:56	16:35	15:46
8	09:24	08:30	07:16	06:47	05:27		04:32		06:12 (1)	04:40	06:21 (1)	05:40	06:49	07:55	08:08	09:12
	16:04	17:14	18:21	20:33	21:42		22:40	34	06:46 (1)	22:43 32	06:53 (1)	21:44	20:20	18:53	16:32	15:45
9	09:23	08:27	07:13	06:44	05:24		04:31		06:13 (1)	04:42	06:21 (1)	05:42	06:51	07:57	08:11	09:13
	16:06	17:16	18:24	20:35	21:44		22:41	34	06:47 (1)	22:42 32	06:53 (1)	21:42	20:17	18:50	16:30	15:44
10	09:22	08:25	07:10	06:41	05:22		04:31		06:13 (1)	04:43	06:22 (1)	05:44	06:53	08:00	08:13	09:15
	16:07	17:19	18:26	20:37	21:46		22:43	33	06:46 (1)	22:40 31	06:53 (1)	21:39	20:14	18:48	16:28	15:44
11	09:21	08:23	07:07	06:38	05:20		04:30		06:14 (1)	04:45	06:24 (1)	05:46	06:55	08:02	08:15	09:16
	16:09	17:21	18:28	20:40	21:49		22:44	33	06:47 (1)	22:39 30	06:54 (1)	21:37	20:11	18:45	16:26	15:43
12	09:20	08:20	07:04	06:36	05:17		04:29		06:13 (1)	04:46	06:25 (1)	05:49	06:58	08:04	08:18	09:17
	16:11	17:23	18:31	20:42	21:51		22:45	33	06:46 (1)	22:38 29	06:54 (1)	21:34	20:08	18:42	16:24	15:43
13	09:18	08:18	07:02	06:33	05:15		04:29		06:14 (1)	04:48	06:26 (1)	05:51	07:00	08:07	08:20	09:19
	16:13	17:26	18:33	20:44	21:53		22:46	33	06:47 (1)	22:36 28	06:54 (1)	21:32	20:05	18:39	16:22	15:43
14	09:17	08:15	06:59	06:30	05:13		04:28		06:15 (1)	04:49	06:28 (1)	05:53	07:02	08:09	08:22	09:20
	16:15	17:28	18:35	20:47	21:55		22:46	32	06:47 (1)	22:35 26	06:54 (1)	21:29	20:02	18:36	16:19	15:43
15	09:16	08:13	06:56	06:27	05:11	06:38 (1)	04:28		06:14 (1)	04:51	06:28 (1)	05:55	07:04	08:11	08:25	09:21
	16:17	17:31	18:38	20:49	21:57	2 06:40 (1)	22:47	32	06:46 (1)	22:34 26	06:54 (1)	21:26	19:59	18:34	16:17	15:42
16	09:14	08:10	06:53	06:24	05:09	06:37 (1)	04:28		06:15 (1)	04:53	06:30 (1)	05:58	07:06	08:14	08:27	09:22
	16:19	17:33	18:40	20:51	22:00	4 06:41 (1)	22:48	32	06:47 (1)	22:32 24	06:54 (1)	21:24	19:57	18:31	16:15	15:42
17	09:13	08:07	06:50	06:22	05:06	06:35 (1)	04:27		06:15 (1)	04:54	06:31 (1)	06:00	07:09	08:16	08:29	09:23
	16:21	17:36	18:42	20:54	22:02	6 06:41 (1)	22:48	32	06:47 (1)	22:30 23	06:54 (1)	21:21	19:54	18:28	16:14	15:42
18	09:12	08:05	06:47	06:19	05:04	06:34 (1)	04:27		06:15 (1)	04:56	06:33 (1)	06:02	07:11	08:18	08:32	09:24
	16:24	17:38	18:45	20:56	22:04	9 06:43 (1)	22:49	32	06:47 (1)	22:29 21	06:54 (1)	21:18	19:51	18:25	16:12	15:42
19	09:10	08:02	06:44	06:16	05:02	06:32 (1)	04:27		06:16 (1)	04:58	06:35 (1)	06:04	07:13	08:21	08:34	09:25
	16:26	17:41	18:47	20:58	22:06	11 06:43 (1)	22:49	31	06:47 (1)	22:27 20	06:55 (1)	21:16	19:48	18:23	16:10	15:43
20	09:08	08:00	06:42	06:13	05:00	06:31 (1)	04:27		06:16 (1)	05:00	06:35 (1)	06:07	07:15	08:23	08:36	09:25
	16:28	17:43	18:49	21:00	22:08	12 06:43 (1)	22:50	31	06:47 (1)	22:25 19	06:54 (1)	21:13	19:45	18:20	16:08	15:43
21	09:07	07:57	06:39	06:11	04:58	06:29 (1)	04:27		06:16 (1)	05:02	06:37 (1)	06:09	07:17	08:25	08:39	09:26
	16:30	17:46	18:52	21:03	22:10	14 06:43 (1)	22:50	31	06:47 (1)	22:23 17	06:54 (1)	21:10	19:42	18:17	16:06	15:43
22	09:05	07:54	06:36	06:08	04:56	06:28 (1)	04:27		06:17 (1)	05:04	06:39 (1)	06:11	07:20	08:28	08:41	09:27
	16:32	17:48	18:54	21:05	22:12	16 06:44 (1)	22:50	31	06:48 (1)	22:22 15	06:54 (1)	21:08	19:39	18:15	16:04	15:44
23	09:03	07:52	06:33	06:05	04:55	06:26 (1)	04:28		06:17 (1)	05:06	06:40 (1)	06:13	07:22	08:30	08:43	09:27
	16:35	17:50	18:56	21:07	22:14	18 06:44 (1)	22:50	31	06:48 (1)	22:20 13	06:53 (1)	21:05	19:36	18:12	16:03	15:44
24	09:02	07:49	06:30	06:02	04:53	06:26 (1)	04:28		06:16 (1)	05:08	06:42 (1)	06:15	07:24	08:32	08:45	09:28
	16:37	17:53	18:58	21:10	22:16	19 06:45 (1)	22:50	32	06:48 (1)	22:18 11	06:53 (1)	21:02	19:33	18:09	16:01	15:45
25	09:00	07:46	06:27	06:00	04:51	06:24 (1)	04:28		06:17 (1)	05:10	06:43 (1)	06:18	07:26	07:35	08:47	09:28
	16:39	17:55	19:01	21:12	22:18	21 06:45 (1)	22:50	32	06:49 (1)	22:16 10	06:53 (1)	20:59	19:30	17:07	16:00	15:46
26	08:58	07:44	06:24	05:57	04:49	06:23 (1)	04:29		06:17 (1)	05:12	06:45 (1)	06:20	07:28	07:37	08:49	09:28
	16:42	17:58	19:03	21:14	22:20	22 06:45 (1)	22:50	32	06:49 (1)	22:14 7	06:52 (1)	20:57	19:28	17:04	15:58	15:46
27	08:56	07:41	06:21	05:54	04:48	06:21 (1)	04:29		06:17 (1)	05:14	06:47 (1)	06:22	07:31	07:39	08:52	09:28
	16:44	18:00	19:05	21:17	22:22	24 06:45 (1)	22:50	32	06:49 (1)	22:12 5	06:52 (1)	20:54	19:25	17:02	15:57	15:47
28	08:54	07:38	06:18	05:52	04:46	06:20 (1)	04:30		06:17 (1)	05:16	06:49 (1)	06:24	07:33	07:42	08:54	09:28
	16:47	18:02	19:08	21:19	22:24	25 06:45 (1)	22:50	32	06:49 (1)	22:10 2	06:51 (1)	20:51	19:22	16:59	15:55	15:48
29	08:52		07:16	05:49	04:44	06:20 (1)	04:31		06:17 (1)	05:18	06:49 (1)	06:27	07:35	07:44	08:56	09:28
	16:49		20:10	21:21	22:25	26 06:46 (1)	22:49	33	06:50 (1)	22:07 1	06:50 (1)	20:48	19:19	16:56	15:54	15:49
30	08:50		07:13	05:47	04:43	06:19 (1)	04:32		06:18 (1)	05:20		06:29	07:37	07:47	08:58	09:28
	16:51		20:12	21:24	22:27	27 06:46 (1)	22:49	32	06:50 (1)	22:05		20:45	19:16	16:54	15:53	15:50
31	08:48		07:10		04:41	06:17 (1)				05:22		06:31		07:49		09:28
	16:54		20:14		22:29	28 06:45 (1)				22:03		20:43		16:51		15:51
Potential sun hours	221	260	365	432	521		547		545		478	386	319	236	200
Total, worst case						284		963		655					
Sun reduction						0,50		0,50		0,50					
Oper. time red.						0,80		0,80		0,80					
Wind dir. red.						0,58		0,58		0,58					
Total reduction						0,23		0,23		0,23					
Total, real						66		225		153					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** Z - Brusalivegen 217 (26)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February	March	April	May		June		July		August	September	October	November	December
1	09:28	08:46	07:35	07:07	05:44		04:40	06:00 (1)	04:32	06:06 (1)	05:24	06:33	07:39	07:51	09:00
	15:53	16:56	18:05	20:17	21:26		22:30 35	06:35 (1)	22:48 37	06:43 (1)	22:01	20:40	19:13	16:49	15:52
2	09:27	08:43	07:33	07:04	05:42		04:39	06:00 (1)	04:33	06:06 (1)	05:27	06:35	07:42	07:54	09:01
	15:54	16:59	18:07	20:19	21:28		22:32 35	06:35 (1)	22:48 37	06:43 (1)	21:58	20:37	19:10	16:47	15:50
3	09:27	08:41	07:30	07:01	05:39		04:38	06:00 (1)	04:34	06:06 (1)	05:29	06:38	07:44	07:56	09:03
	15:56	17:01	18:10	20:21	21:30		22:33 36	06:36 (1)	22:47 36	06:42 (1)	21:56	20:34	19:07	16:44	15:49
4	09:26	08:39	07:27	06:58	05:37		04:36	06:00 (1)	04:35	06:06 (1)	05:31	06:40	07:46	07:59	09:05
	15:57	17:04	18:12	20:24	21:33		22:35 36	06:36 (1)	22:46 36	06:42 (1)	21:54	20:31	19:05	16:42	15:48
5	09:26	08:37	07:24	06:55	05:34		04:35	06:01 (1)	04:37	06:06 (1)	05:33	06:42	07:48	08:01	09:07
	15:59	17:06	18:14	20:26	21:35		22:36 36	06:37 (1)	22:46 37	06:43 (1)	21:51	20:28	19:02	16:39	15:47
6	09:25	08:34	07:21	06:53	05:32		04:34	06:01 (1)	04:38	06:07 (1)	05:35	06:44	07:51	08:03	09:09
	16:00	17:09	18:17	20:28	21:37		22:38 36	06:37 (1)	22:45 37	06:44 (1)	21:49	20:25	18:59	16:37	15:47
7	09:24	08:32	07:19	06:50	05:29		04:33	06:01 (1)	04:39	06:08 (1)	05:38	06:47	07:53	08:06	09:10
	16:02	17:11	18:19	20:31	21:40		22:39 36	06:37 (1)	22:44 36	06:44 (1)	21:47	20:23	18:56	16:35	15:46
8	09:24	08:30	07:16	06:47	05:27		04:32	06:01 (1)	04:40	06:08 (1)	05:40	06:49	07:55	08:08	09:12
	16:04	17:14	18:21	20:33	21:42		22:40 36	06:37 (1)	22:43 35	06:43 (1)	21:44	20:20	18:53	16:32	15:45
9	09:23	08:27	07:13	06:44	05:24		04:31	06:01 (1)	04:42	06:08 (1)	05:42	06:51	07:57	08:11	09:13
	16:06	17:16	18:24	20:35	21:44		22:41 37	06:38 (1)	22:42 35	06:43 (1)	21:42	20:17	18:50	16:30	15:44
10	09:22	08:25	07:10	06:41	05:22		04:31	06:01 (1)	04:43	06:08 (1)	05:44	06:53	08:00	08:13	09:15
	16:07	17:19	18:26	20:37	21:46		22:43 37	06:38 (1)	22:40 35	06:43 (1)	21:39	20:14	18:48	16:28	15:44
11	09:21	08:23	07:07	06:38	05:20		04:30	06:02 (1)	04:45	06:09 (1)	05:46	06:55	08:02	08:15	09:16
	16:09	17:21	18:28	20:40	21:49		22:44 36	06:38 (1)	22:39 35	06:44 (1)	21:37	20:11	18:45	16:26	15:43
12	09:20	08:20	07:04	06:36	05:17		04:29	06:01 (1)	04:46	06:09 (1)	05:49	06:58	08:04	08:18	09:17
	16:11	17:23	18:31	20:42	21:51		22:45 37	06:38 (1)	22:38 34	06:43 (1)	21:34	20:08	18:42	16:24	15:43
13	09:18	08:18	07:02	06:33	05:15		04:29	06:02 (1)	04:48	06:09 (1)	05:51	07:00	08:07	08:20	09:19
	16:13	17:26	18:33	20:44	21:53		22:46 37	06:39 (1)	22:36 34	06:43 (1)	21:31	20:05	18:39	16:22	15:43
14	09:17	08:15	06:59	06:30	05:13		04:28	06:02 (1)	04:49	06:10 (1)	05:53	07:02	08:09	08:22	09:20
	16:15	17:28	18:35	20:47	21:55		22:46 37	06:39 (1)	22:35 33	06:43 (1)	21:29	20:02	18:36	16:19	15:43
15	09:16	08:13	06:56	06:27	05:11		04:28	06:02 (1)	04:51	06:10 (1)	05:55	07:04	08:11	08:25	09:21
	16:17	17:31	18:38	20:49	21:57		22:47 37	06:39 (1)	22:34 32	06:42 (1)	21:26	19:59	18:34	16:17	15:42
16	09:14	08:10	06:53	06:24	05:09		04:28	06:02 (1)	04:53	06:11 (1)	05:58	07:06	08:14	08:27	09:22
	16:19	17:33	18:40	20:51	22:00		22:48 37	06:39 (1)	22:32 32	06:43 (1)	21:24	19:57	18:31	16:15	15:42
17	09:13	08:07	06:50	06:22	05:06	06:13 (1)	04:27	06:03 (1)	04:54	06:11 (1)	06:00	07:09	08:16	08:29	09:23
	16:21	17:36	18:42	20:54	22:02 7	06:20 (1)	22:48 36	06:39 (1)	22:30 31	06:42 (1)	21:21	19:54	18:28	16:14	15:42
18	09:12	08:05	06:47	06:19	05:04	06:11 (1)	04:27	06:03 (1)	04:56	06:12 (1)	06:02	07:11	08:18	08:32	09:24
	16:24	17:38	18:45	20:56	22:04 13	06:24 (1)	22:49 37	06:40 (1)	22:29 30	06:42 (1)	21:18	19:51	18:25	16:12	15:42
19	09:10	08:02	06:44	06:16	05:02	06:10 (1)	04:27	06:03 (1)	04:58	06:13 (1)	06:04	07:13	08:20	08:34	09:25
	16:26	17:41	18:47	20:58	22:06 16	06:26 (1)	22:49 37	06:40 (1)	22:27 29	06:42 (1)	21:16	19:48	18:23	16:10	15:43
20	09:08	08:00	06:42	06:13	05:00	06:08 (1)	04:27	06:03 (1)	05:00	06:13 (1)	06:07	07:15	08:23	08:36	09:25
	16:28	17:43	18:49	21:00	22:08 19	06:27 (1)	22:50 37	06:40 (1)	22:25 27	06:40 (1)	21:13	19:45	18:20	16:08	15:43
21	09:07	07:57	06:39	06:11	04:58	06:06 (1)	04:27	06:03 (1)	05:02	06:15 (1)	06:09	07:17	08:25	08:39	09:26
	16:30	17:46	18:52	21:03	22:10 22	06:28 (1)	22:50 37	06:40 (1)	22:23 25	06:40 (1)	21:10	19:42	18:17	16:06	15:43
22	09:05	07:54	06:36	06:08	04:56	06:05 (1)	04:27	06:04 (1)	05:04	06:16 (1)	06:11	07:20	08:28	08:41	09:27
	16:32	17:48	18:54	21:05	22:12 25	06:30 (1)	22:50 37	06:41 (1)	22:22 24	06:40 (1)	21:08	19:39	18:15	16:04	15:44
23	09:03	07:52	06:33	06:05	04:55	06:04 (1)	04:28	06:04 (1)	05:06	06:17 (1)	06:13	07:22	08:30	08:43	09:27
	16:35	17:50	18:56	21:07	22:14 26	06:30 (1)	22:50 37	06:41 (1)	22:20 21	06:38 (1)	21:05	19:36	18:12	16:03	15:44
24	09:02	07:49	06:30	06:02	04:53	06:03 (1)	04:28	06:04 (1)	05:08	06:19 (1)	06:15	07:24	08:32	08:45	09:28
	16:37	17:53	18:58	21:10	22:16 29	06:32 (1)	22:50 37	06:41 (1)	22:18 18	06:37 (1)	21:02	19:33	18:09	16:01	15:45
25	09:00	07:46	06:27	06:00	04:51	06:02 (1)	04:28	06:05 (1)	05:10	06:20 (1)	06:18	07:26	07:35	08:47	09:28
	16:39	17:55	19:01	21:12	22:18 30	06:32 (1)	22:50 36	06:41 (1)	22:16 15	06:35 (1)	20:59	19:30	17:07	16:00	15:46
26	08:58	07:44	06:24	05:57	04:49	06:02 (1)	04:29	06:04 (1)	05:12	06:22 (1)	06:20	07:28	07:37	08:49	09:28
	16:42	17:58	19:03	21:14	22:20 31	06:33 (1)	22:50 37	06:41 (1)	22:14 11	06:33 (1)	20:57	19:28	17:04	15:58	15:46
27	08:56	07:41	06:21	05:54	04:48	06:01 (1)	04:29	06:05 (1)	05:14	06:27 (1)	06:22	07:31	07:39	08:52	09:28
	16:44	18:00	19:05	21:17	22:22 32	06:33 (1)	22:50 37	06:42 (1)	22:12 2	06:29 (1)	20:54	19:25	17:02	15:57	15:47
28	08:54	07:38	06:18	05:52	04:46	06:01 (1)	04:30	06:05 (1)	05:16		06:24	07:33	07:42	08:54	09:28
	16:47	18:02	19:08	21:19	22:24 33	06:34 (1)	22:50 36	06:41 (1)	22:10		20:51	19:22	16:59	15:55	15:48
29	08:52		07:16	05:49	04:44	06:01 (1)	04:31	06:05 (1)	05:18		06:27	07:35	07:44	08:56	09:28
	16:49		20:10	21:21	22:25 33	06:34 (1)	22:49 37	06:42 (1)	22:07		20:48	19:19	16:56	15:54	15:49
30	08:50		07:13	05:47	04:43	06:01 (1)	04:32	06:06 (1)	05:20		06:29	07:37	07:47	08:58	09:28
	16:51		20:12	21:24	22:27 34	06:35 (1)	22:49 36	06:42 (1)	22:05		20:45	19:16	16:54	15:53	15:50
31	08:48		07:10		04:41	06:00 (1)			05:22		06:31		07:49		09:28
	16:54		20:14		22:29 35	06:35 (1)			22:03		20:43		16:51		15:51
Potential sun hours	221	260	365	432	521		547		545		478	386	319	236	200
Total, worst case					385		1095		794						
Sun reduction					0,50		0,50		0,50						
Oper. time red.					0,80		0,80		0,80						
Wind dir. red.					0,58		0,58		0,58						
Total reduction					0,23		0,23		0,23						
Total, real					89		253		183						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** AA - Buevegen 1463 (27)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February		March		April	May	June
1	09:28	08:46		07:35		08:22 (23)	07:07	05:44	04:40
	15:53	16:56		18:05	22	08:44 (23)	20:17	21:26	22:31
2	09:28	08:44		07:33		08:21 (23)	07:04	05:41	04:39
	15:54	16:59		18:07	24	08:45 (23)	20:19	21:28	22:32
3	09:27	08:41		07:30		08:20 (23)	07:01	05:39	04:37
	15:56	17:01		18:10	25	08:45 (23)	20:21	21:31	22:34
4	09:27	08:39		07:27		08:20 (23)	06:58	05:36	04:36
	15:57	17:04		18:12	24	08:44 (23)	20:24	21:33	22:35
5	09:26	08:37		07:24		08:20 (23)	06:55	05:34	04:35
	15:59	17:06		18:14	24	08:44 (23)	20:26	21:35	22:37
6	09:25	08:35		07:22		08:20 (23)	06:53	05:31	04:34
	16:00	17:09		18:17	23	08:43 (23)	20:28	21:38	22:38
7	09:25	08:32		07:19		08:20 (23)	06:50	05:29	04:33
	16:02	17:11		18:19	22	08:42 (23)	20:31	21:40	22:39
8	09:24	08:30		07:16		08:20 (23)	06:47	05:27	04:32
	16:04	17:13		18:21	21	08:41 (23)	20:33	21:42	22:41
9	09:23	08:28	09:21 (3)	07:13		08:22 (23)	06:44	05:24	04:31
	16:05	17:16	1 09:22 (3)	18:24	19	08:41 (23)	20:35	21:44	22:42
10	09:22	08:25	09:18 (3)	07:10		08:23 (23)	06:41	05:22	04:30
	16:07	17:18	9 09:27 (3)	18:26	16	08:39 (23)	20:38	21:47	22:43
11	09:21	08:23	09:15 (3)	07:07		08:25 (23)	06:38	05:20	04:30
	16:09	17:21	14 09:29 (3)	18:28	11	08:36 (23)	20:40	21:49	22:44
12	09:20	08:20	09:14 (3)	07:05			06:36	05:17	04:29
	16:11	17:23	16 09:30 (3)	18:31			20:42	21:51	22:45
13	09:19	08:18	09:13 (3)	07:02			06:33	05:15	04:29
	16:13	17:26	17 09:30 (3)	18:33			20:44	21:53	22:46
14	09:17	08:15	09:13 (3)	06:59		07:38 (25)	06:30	05:13	04:28
	16:15	17:28	18 09:31 (3)	18:35	1	07:39 (25)	20:47	21:55	22:47
15	09:16	08:13	09:12 (3)	06:56		07:33 (25)	06:27	05:11	04:28
	16:17	17:31	19 09:31 (3)	18:38	11	07:44 (25)	20:49	21:58	22:47
16	09:15	08:10	09:12 (3)	06:53		07:31 (25)	06:24	05:08	04:27
	16:19	17:33	19 09:31 (3)	18:40	14	07:45 (25)	20:51	22:00	22:48
17	09:13	08:08	09:13 (3)	06:50		07:29 (25)	06:22	05:06	04:27
	16:21	17:36	19 09:32 (3)	18:42	17	07:46 (25)	20:54	22:02	22:49
18	09:12	08:05	09:13 (3)	06:47		07:28 (25)	06:19	05:04	04:27
	16:23	17:38	18 09:31 (3)	18:45	18	07:46 (25)	20:56	22:04	22:49
19	09:10	08:02	09:13 (3)	06:44		07:28 (25)	06:16	05:02	04:27
	16:26	17:41	17 09:30 (3)	18:47	18	07:46 (25)	20:58	22:06	22:50
20	09:09	08:00	09:14 (3)	06:42		07:27 (25)	06:13	05:00	04:27
	16:28	17:43	15 09:29 (3)	18:49	19	07:46 (25)	21:01	22:08	22:50
21	09:07	07:57	09:15 (3)	06:39		07:28 (25)	06:11	04:58	04:27
	16:30	17:46	12 09:27 (3)	18:52	19	07:47 (25)	21:03	22:10	22:50
22	09:05	07:54	09:18 (3)	06:36		07:28 (25)	06:08	04:56	04:27
	16:32	17:48	8 09:26 (3)	18:54	18	07:46 (25)	21:05	22:12	22:50
23	09:04	07:52		06:33		07:28 (25)	06:05	04:54	04:27
	16:35	17:50		18:56	17	07:45 (25)	21:08	22:14	22:51
24	09:02	07:49		06:30		07:29 (25)	06:02	04:53	04:28
	16:37	17:53		18:59	14	07:43 (25)	21:10	22:16	22:51
25	09:00	07:46	08:28 (23)	06:27		07:30 (25)	06:00	04:51	04:28
	16:39	17:55	11 08:39 (23)	19:01	11	07:41 (25)	21:12	22:18	22:51
26	08:58	07:44	08:25 (23)	06:24		07:34 (25)	05:57	04:49	04:29
	16:42	17:58	16 08:41 (23)	19:03	2	07:36 (25)	21:14	22:20	22:50
27	08:56	07:41	08:23 (23)	06:21			05:54	04:47	04:29
	16:44	18:00	19 08:42 (23)	19:05			21:17	22:22	22:50
28	08:54	07:38	08:23 (23)	06:18			05:52	04:46	04:30
	16:46	18:02	21 08:44 (23)	19:08			21:19	22:24	22:50
29	08:52			07:16			05:49	04:44	04:31
	16:49			20:10			21:21	22:26	22:50
30	08:50			07:13			05:47	04:43	04:31
	16:51			20:12			21:24	22:27	22:49
31	08:48			07:10				04:41	
	16:54			20:15				22:29	
Potential sun hours	221	260		365			432	521	547
Total, worst case			269		410				
Sun reduction			0,50		0,50				
Oper. time red.			0,80		0,80				
Wind dir. red.			0,73		0,71				
Total reduction			0,29		0,28				
Total, real			79		117				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** AA - Buevegen 1463 (27)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September			October			November			December
1	04:32	05:24	06:33			07:40			07:52		08:47 (3)	09:00
	22:49	22:01	20:40			19:13			16:49	8	08:55 (3)	15:51
2	04:33	05:26	06:35			07:42		09:05 (23)	07:54			09:02
	22:48	21:59	20:37			19:10	7	09:12 (23)	16:46			15:50
3	04:34	05:29	06:38			07:44		09:01 (23)	07:56			09:04
	22:47	21:56	20:34			19:07	14	09:15 (23)	16:44			15:49
4	04:35	05:31	06:40			07:46		09:00 (23)	07:59			09:05
	22:47	21:54	20:31			19:05	17	09:17 (23)	16:42			15:48
5	04:36	05:33	06:42			07:48		08:58 (23)	08:01			09:07
	22:46	21:52	20:28			19:02	20	09:18 (23)	16:39			15:47
6	04:38	05:35	06:44			07:51		08:56 (23)	08:04			09:09
	22:45	21:49	20:26			18:59	22	09:18 (23)	16:37			15:46
7	04:39	05:37	06:47			07:53		08:56 (23)	08:06			09:10
	22:44	21:47	20:23			18:56	23	09:19 (23)	16:35			15:46
8	04:40	05:40	06:49			07:55		08:55 (23)	08:08			09:12
	22:43	21:44	20:20			18:53	24	09:19 (23)	16:32			15:45
9	04:41	05:42	06:51			07:58		08:54 (23)	08:11			09:14
	22:42	21:42	20:17			18:50	25	09:19 (23)	16:30			15:44
10	04:43	05:44	06:53			08:00		08:55 (23)	08:13			09:15
	22:41	21:39	20:14			18:48	24	09:19 (23)	16:28			15:44
11	04:44	05:46	06:55			08:02		08:54 (23)	08:16			09:16
	22:39	21:37	20:11			18:45	24	09:18 (23)	16:26			15:43
12	04:46	05:49	06:58			08:04		08:55 (23)	08:18			09:18
	22:38	21:34	20:08			18:42	23	09:18 (23)	16:24			15:43
13	04:48	05:51	07:00			08:07		08:55 (23)	08:20			09:19
	22:37	21:32	20:05			18:39	22	09:17 (23)	16:21			15:43
14	04:49	05:53	07:02			08:09		08:55 (23)	08:23			09:20
	22:35	21:29	20:02			18:36	20	09:15 (23)	16:19			15:42
15	04:51	05:55	07:04			08:11		08:57 (23)	08:25			09:21
	22:34	21:26	20:00			18:34	18	09:15 (23)	16:17			15:42
16	04:53	05:58	07:06			08:14		08:58 (23)	08:27			09:22
	22:32	21:24	19:57			18:31	14	09:12 (23)	16:15			15:42
17	04:54	06:00	07:09			08:16		09:01 (23)	08:30			09:23
	22:31	21:21	19:54			18:28	9	09:10 (23)	16:13			15:42
18	04:56	06:02	07:11		08:18 (25)	08:18			08:32			09:24
	22:29	21:19	19:51	10	08:28 (25)	18:25			16:11			15:42
19	04:58	06:04	07:13		08:16 (25)	08:21			08:34			09:25
	22:27	21:16	19:48	13	08:29 (25)	18:23			16:10			15:43
20	05:00	06:06	07:15		08:14 (25)	08:23		09:47 (3)	08:37			09:26
	22:25	21:13	19:45	16	08:30 (25)	18:20	10	09:57 (3)	16:08			15:43
21	05:02	06:09	07:17		08:14 (25)	08:25		09:46 (3)	08:39			09:26
	22:24	21:10	19:42	17	08:31 (25)	18:17	13	09:59 (3)	16:06			15:43
22	05:04	06:11	07:20		08:13 (25)	08:28		09:44 (3)	08:41			09:27
	22:22	21:08	19:39	18	08:31 (25)	18:15	16	10:00 (3)	16:04			15:44
23	05:06	06:13	07:22		08:12 (25)	08:30		09:43 (3)	08:43			09:27
	22:20	21:05	19:36	19	08:31 (25)	18:12	18	10:01 (3)	16:03			15:44
24	05:08	06:15	07:24		08:11 (25)	08:32		09:42 (3)	08:45			09:28
	22:18	21:02	19:33	19	08:30 (25)	18:09	19	10:01 (3)	16:01			15:45
25	05:10	06:18	07:26		08:11 (25)	07:35		08:42 (3)	08:48			09:28
	22:16	20:59	19:31	18	08:29 (25)	17:07	19	09:01 (3)	15:59			15:45
26	05:12	06:20	07:28		08:12 (25)	07:37		08:42 (3)	08:50			09:28
	22:14	20:57	19:28	17	08:29 (25)	17:04	20	09:02 (3)	15:58			15:46
27	05:14	06:22	07:31		08:12 (25)	07:40		08:42 (3)	08:52			09:28
	22:12	20:54	19:25	16	08:28 (25)	17:02	19	09:01 (3)	15:57			15:47
28	05:16	06:24	07:33		08:13 (25)	07:42		08:43 (3)	08:54			09:29
	22:10	20:51	19:22	12	08:25 (25)	16:59	18	09:01 (3)	15:55			15:48
29	05:18	06:27	07:35		08:16 (25)	07:44		08:43 (3)	08:56			09:29
	22:08	20:48	19:19	6	08:22 (25)	16:56	17	09:00 (3)	15:54			15:49
30	05:20	06:29	07:37			07:47		08:44 (3)	08:58			09:28
	22:05	20:45	19:16			16:54	15	08:59 (3)	15:53			15:50
31	05:22	06:31				07:49		08:45 (3)				09:28
	22:03	20:43				16:51	13	08:58 (3)				15:51
Potential sun hours	545	478	386			319			236			200
Total, worst case				181			503			8		
Sun reduction				0,50			0,50			0,50		
Oper. time red.				0,80			0,80			0,80		
Wind dir. red.				0,70			0,73			0,74		
Total reduction				0,28			0,29			0,29		
Total, real				50			147			2		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** AB - Buevegen 1461 (28)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February		March		April	May	June	July	August	September		October		November	December
1	09:28	08:46		07:35	08:24 (23)	07:07	05:44	04:40	04:32	05:24	06:33		07:40		07:52	09:00
	15:53	16:56		18:05 23	08:47 (23)	20:17	21:26	22:31	22:49	22:01	20:40		19:13		16:49	15:51
2	09:28	08:44		07:33	08:23 (23)	07:04	05:41	04:39	04:33	05:26	06:35		07:42		07:54	09:02
	15:54	16:59		18:07 24	08:47 (23)	20:19	21:28	22:32	22:48	21:59	20:37		19:10		16:46	15:50
3	09:27	08:41		07:30	08:23 (23)	07:01	05:39	04:37	04:34	05:29	06:38		07:44		07:56	09:04
	15:56	17:01		18:10 24	08:47 (23)	20:21	21:31	22:34	22:47	21:56	20:34		19:07		16:44	15:49
4	09:27	08:39		07:27	08:23 (23)	06:58	05:36	04:36	04:35	05:31	06:40		07:46	09:05 (23)	07:59	09:05
	15:57	17:04		18:12 23	08:46 (23)	20:24	21:33	22:35	22:47	21:54	20:31		19:05 11	09:16 (23)	16:42	15:48
5	09:26	08:37		07:24	08:23 (23)	06:55	05:34	04:35	04:36	05:33	06:42		07:48	09:02 (23)	08:01	09:07
	15:59	17:06		18:14 22	08:45 (23)	20:26	21:35	22:37	22:46	21:52	20:28		19:02 16	09:18 (23)	16:39	15:47
6	09:25	08:35		07:22	08:23 (23)	06:53	05:31	04:34	04:38	05:35	06:44		07:51	09:00 (23)	08:04	09:09
	16:00	17:09		18:17 21	08:44 (23)	20:28	21:38	22:38	22:45	21:49	20:26		18:59 19	09:19 (23)	16:37	15:46
7	09:25	08:32		07:19	08:23 (23)	06:50	05:29	04:33	04:39	05:37	06:47		07:53	09:00 (23)	08:06	09:10
	16:02	17:11		18:19 20	08:43 (23)	20:31	21:40	22:39	22:44	21:47	20:23		18:56 20	09:20 (23)	16:35	15:46
8	09:24	08:30		07:16	08:24 (23)	06:47	05:27	04:32	04:40	05:40	06:49		07:55	08:58 (23)	08:08	09:12
	16:04	17:13		18:21 18	08:42 (23)	20:33	21:42	22:41	22:43	21:44	20:20		18:53 22	09:20 (23)	16:32	15:45
9	09:23	08:28		07:13	08:27 (23)	06:44	05:24	04:31	04:41	05:42	06:51		07:58	08:57 (23)	08:11	09:14
	16:05	17:16		18:24 13	08:40 (23)	20:35	21:44	22:42	22:42	21:42	20:17		18:50 23	09:20 (23)	16:30	15:44
10	09:22	08:25		07:10	08:30 (23)	06:41	05:22	04:30	04:43	05:44	06:53		08:00	08:57 (23)	08:13	09:15
	16:07	17:18		18:26 7	08:37 (23)	20:38	21:47	22:43	22:41	21:39	20:14		18:48 24	09:21 (23)	16:28	15:44
11	09:21	08:23		07:07		06:38	05:20	04:30	04:44	05:46	06:55		08:02	08:57 (23)	08:16	09:16
	16:09	17:21		18:28		20:40	21:49	22:44	22:39	21:37	20:11		18:45 23	09:20 (23)	16:26	15:43
12	09:20	08:20		07:05		06:36	05:17	04:29	04:46	05:49	06:58		08:04	08:57 (23)	08:18	09:18
	16:11	17:23		18:31		20:42	21:51	22:45	22:38	21:34	20:08		18:42 23	09:20 (23)	16:24	15:43
13	09:19	08:18		07:02	07:40 (25)	06:33	05:15	04:29	04:48	05:51	07:00		08:07	08:57 (23)	08:20	09:19
	16:13	17:26		18:33 5	07:45 (25)	20:44	21:53	22:46	22:37	21:32	20:05		18:39 22	09:19 (23)	16:21	15:43
14	09:17	08:15		06:59	07:36 (25)	06:30	05:13	04:28	04:49	05:53	07:02		08:09	08:57 (23)	08:23	09:20
	16:15	17:28		18:35 11	07:47 (25)	20:47	21:55	22:47	22:35	21:29	20:02		18:36 21	09:18 (23)	16:19	15:42
15	09:16	08:13		06:56	07:34 (25)	06:27	05:11	04:28	04:51	05:55	07:04		08:11	08:58 (23)	08:25	09:21
	16:17	17:31		18:38 15	07:49 (25)	20:49	21:58	22:47	22:34	21:26	20:00		18:34 20	09:18 (23)	16:17	15:42
16	09:15	08:10		06:53	07:33 (25)	06:24	05:08	04:27	04:53	05:58	07:06		08:14	08:58 (23)	08:27	09:22
	16:19	17:33		18:40 16	07:49 (25)	20:51	22:00	22:48	22:32	21:24	19:57		18:31 18	09:16 (23)	16:15	15:42
17	09:13	08:08		06:50	07:32 (25)	06:22	05:06	04:27	04:54	06:00	07:09		08:16	09:00 (23)	08:30	09:23
	16:21	17:36		18:42 18	07:50 (25)	20:54	22:02	22:49	22:31	21:21	19:54		18:28 15	09:15 (23)	16:13	15:42
18	09:12	08:05		06:47	07:31 (25)	06:19	05:04	04:27	04:56	06:02	07:11		08:18	09:02 (23)	08:32	09:24
	16:23	17:38		18:45 19	07:50 (25)	20:56	22:04	22:49	22:29	21:19	19:51		18:25 9	09:11 (23)	16:11	15:42
19	09:10	08:02		06:44	07:31 (25)	06:16	05:02	04:27	04:58	06:04	07:13	08:22 (25)	08:21		08:34	09:25
	16:26	17:41		18:47 18	07:49 (25)	20:58	22:06	22:50	22:27	21:16	19:48 6	08:28 (25)	18:23		16:10	15:43
20	09:09	08:00		06:42	07:30 (25)	06:13	05:00	04:27	05:00	06:06	07:15	08:19 (25)	08:23		08:37	09:26
	16:28	17:43		18:49 19	07:49 (25)	21:01	22:08	22:50	22:25	21:13	19:45 12	08:31 (25)	18:20		16:08	15:43
21	09:07	07:57		06:39	07:32 (25)	06:11	04:58	04:27	05:02	06:09	07:17	08:18 (25)	08:25		08:39	09:26
	16:30	17:46		18:52 17	07:49 (25)	21:03	22:10	22:50	22:24	21:10	19:42 15	08:33 (25)	18:17		16:06	15:43
22	09:05	07:54		06:36	07:32 (25)	06:08	04:56	04:27	05:04	06:11	07:20	08:16 (25)	08:28		08:41	09:27
	16:32	17:48		18:54 15	07:47 (25)	21:05	22:12	22:50	22:22	21:08	19:39 17	08:33 (25)	18:15		16:04	15:44
23	09:04	07:52		06:33	07:33 (25)	06:05	04:54	04:27	05:06	06:13	07:22	08:15 (25)	08:30		08:43	09:27
	16:35	17:50		18:56 13	07:46 (25)	21:08	22:14	22:51	22:20	21:05	19:36 18	08:33 (25)	18:12		16:03	15:44
24	09:02	07:49	08:30 (23)	06:30	07:35 (25)	06:02	04:53	04:28	05:08	06:15	07:24	08:14 (25)	08:32		08:45	09:28
	16:37	17:53 11	08:41 (23)	18:59 8	07:43 (25)	21:10	22:16	22:51	22:18	21:02	19:33 19	08:33 (25)	18:09		16:01	15:45
25	09:00	07:46	08:28 (23)	06:27		06:00	04:51	04:28	05:10	06:18	07:26	08:14 (25)	07:35		08:48	09:28
	16:39	17:55 15	08:43 (23)	19:01		21:12	22:18	22:51	22:16	20:59	19:31 18	08:32 (25)	17:07		15:59	15:45
26	08:58	07:44	08:26 (23)	06:24		05:57	04:49	04:29	05:12	06:20	07:28	08:14 (25)	07:37		08:50	09:28
	16:42	17:58 18	08:44 (23)	19:03		21:14	22:20	22:50	22:14	20:57	19:28 19	08:33 (25)	17:04		15:58	15:46
27	08:56	07:41	08:25 (23)	06:21		05:54	04:47	04:29	05:14	06:22	07:31	08:14 (25)	07:40		08:52	09:28
	16:44	18:00 20	08:45 (23)	19:05		21:17	22:22	22:50	22:12	20:54	19:25 18	08:32 (25)	17:02		15:57	15:47
28	08:54	07:38	08:25 (23)	06:18		05:52	04:46	04:30	05:16	06:24	07:33	08:15 (25)	07:42		08:54	09:29
	16:46	18:02 22	08:47 (23)	19:08		21:19	22:24	22:50	22:10	20:51	19:22 15	08:30 (25)	16:59		15:55	15:48
29	08:52			07:16		05:49	04:44	04:31	05:18	06:27	07:35	08:15 (25)	07:44		08:56	09:29
	16:49			20:10		21:21	22:26	22:50	22:08	20:48	19:19 13	08:28 (25)	16:56		15:54	15:49
30	08:50			07:13		05:47	04:43	04:31	05:20	06:29	07:37	08:18 (25)	07:47		08:58	09:28
	16:51			20:12		21:24	22:27	22:49	22:05	20:45	19:16 8	08:26 (25)	16:54		15:53	15:50
31	08:48			07:10			04:41		05:22	06:31			07:49			09:28
	16:54			20:15			22:29		22:03	20:43			16:51			15:51
Potential sun hours	221	260		365		432	521	547	545	478	386		319		236	200
Total, worst case			86		369							178		286		
Sun reduction			0,50		0,50							0,50		0,50		
Oper. time red.			0,80		0,80							0,80		0,80		
Wind dir. red.			0,73		0,71							0,70		0,73		
Total reduction			0,29		0,29							0,28		0,29		
Total, real			25		105							50		83		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** AC - Buevegen 1502 (29)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March		April	May	June
1	09:28		08:46		09:42 (23)		07:35	08:32 (25)	07:07	05:44	04:40
	15:53		16:56	14	09:56 (23)		18:05	20	08:52 (25)	20:17	21:26	22:31
2	09:28		08:44		09:40 (23)		07:33	08:32 (25)	07:04	05:41	04:39
	15:54		16:59	17	09:57 (23)		18:07	20	08:52 (25)	20:19	21:28	22:32
3	09:27		08:41		09:40 (23)		07:30	08:32 (25)	07:01	05:39	04:37
	15:56		17:01	19	09:59 (23)		18:10	19	08:51 (25)	20:21	21:31	22:34
4	09:27		08:39		09:38 (23)		07:27	08:32 (25)	06:58	05:36	04:36
	15:57		17:04	21	09:59 (23)		18:12	18	08:50 (25)	20:24	21:33	22:35
5	09:26		08:37		09:38 (23)		07:24	08:32 (25)	06:55	05:34	04:35
	15:59		17:06	22	10:00 (23)		18:14	17	08:49 (25)	20:26	21:35	22:37
6	09:25		08:35		09:38 (23)		07:22	08:33 (25)	06:53	05:31	04:34
	16:00		17:08	22	10:00 (23)		18:17	14	08:47 (25)	20:28	21:38	22:38
7	09:25		08:32		09:37 (23)		07:19	08:35 (25)	06:50	05:29	04:33
	16:02		17:11	24	10:01 (23)		18:19	10	08:45 (25)	20:31	21:40	22:39
8	09:24		08:30		09:37 (23)		07:16		06:47	05:27	04:32
	16:04		17:13	24	10:01 (23)		18:21		20:33	21:42	22:41
9	09:23		08:28		09:37 (23)		07:13		06:44	05:24	04:31
	16:05		17:16	24	10:01 (23)		18:24		20:35	21:44	22:42
10	09:22		08:25		09:38 (23)		07:10		06:41	05:22	04:30
	16:07		17:18	24	10:02 (23)		18:26		20:38	21:47	22:43
11	09:21		08:23		09:38 (23)		07:07		06:38	05:20	04:30
	16:09		17:21	23	10:01 (23)		18:28		20:40	21:49	22:44
12	09:20		08:20		09:38 (23)		07:05		06:36	05:17	04:29
	16:11		17:23	22	10:00 (23)		18:31		20:42	21:51	22:45
13	09:19		08:18		09:38 (23)		07:02		06:33	05:15	04:28
	16:13		17:26	21	09:59 (23)		18:33		20:44	21:53	22:46
14	09:17		08:15		09:40 (23)		06:59		06:30	05:13	04:28
	16:15		17:28	19	09:59 (23)		18:35		20:47	21:55	22:47
15	09:16		08:13		09:41 (23)		06:56		06:27	05:11	04:28
	16:17		17:31	17	09:58 (23)		18:38		20:49	21:58	22:47
16	09:15		08:10		09:43 (23)		06:53		06:24	05:08	04:27
	16:19		17:33	12	09:55 (23)		18:40		20:51	22:00	22:48
17	09:13		08:08		09:46 (23)		06:50		06:21	05:06	04:27
	16:21		17:36	7	09:53 (23)		18:42		20:54	22:02	22:49
18	09:12		08:05				06:47		06:19	05:04	04:27
	16:23		17:38				18:45		20:56	22:04	22:49
19	09:10		08:02				06:44		06:16	05:02	04:27
	16:26		17:41				18:47		20:58	22:06	22:50
20	09:09		08:00				06:42		06:13	05:00	04:27
	16:28		17:43				18:49		21:01	22:08	22:50
21	09:07		07:57				06:39		06:10	04:58	04:27
	16:30		17:45				18:52		21:03	22:10	22:50
22	09:05		07:54				06:36		06:08	04:56	04:27
	16:32		17:48				18:54		21:05	22:12	22:51
23	09:04		07:52		08:40 (25)		06:33		06:05	04:54	04:27
	16:35		17:50	6	08:46 (25)		18:56		21:08	22:14	22:51
24	09:02		07:49		08:36 (25)		06:30		06:02	04:53	04:28
	16:37		17:53	12	08:48 (25)		18:59		21:10	22:16	22:51
25	09:00		07:46		08:34 (25)		06:27		06:00	04:51	04:28
	16:39		17:55	16	08:50 (25)		19:01		21:12	22:18	22:51
26	08:58		07:44		08:33 (25)		06:24		05:57	04:49	04:29
	16:42		17:58	17	08:50 (25)		19:03		21:14	22:20	22:51
27	08:56		07:41		08:32 (25)		06:21		05:54	04:47	04:29
	16:44		18:00	19	08:51 (25)		19:05		21:17	22:22	22:50
28	08:54		07:38		08:32 (25)		06:18		05:52	04:46	04:30
	16:46		18:02	20	08:52 (25)		19:08		21:19	22:24	22:50
29	08:52						07:16		05:49	04:44	04:30
	16:49						20:10		21:21	22:26	22:50
30	08:50						07:13		05:47	04:43	04:31
	16:51						20:12		21:24	22:27	22:49
31	08:48	09:43 (23)					07:10			04:41	
	16:54	10	09:53 (23)				20:15			22:29	
Potential sun hours	221		260		365		432	521	547
Total, worst case	10		422		118				
Sun reduction	0,50		0,50		0,50				
Oper. time red.	0,80		0,80		0,80				
Wind dir. red.	0,72		0,73		0,73				
Total reduction	0,29		0,29		0,29				
Total, real	3		122		34				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** AC - Buevegen 1502 (29)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October		November		December
1	04:32	05:24	06:33	07:39		07:51	09:06 (23)	09:00
	22:49	22:01	20:40	19:13		16:49	24 09:30 (23)	15:51
2	04:33	05:26	06:35	07:42		07:54	09:07 (23)	09:02
	22:48	21:59	20:37	19:10		16:46	24 09:31 (23)	15:50
3	04:34	05:29	06:38	07:44		07:56	09:07 (23)	09:04
	22:47	21:56	20:34	19:07		16:44	24 09:31 (23)	15:49
4	04:35	05:31	06:40	07:46		07:59	09:08 (23)	09:05
	22:47	21:54	20:31	19:05		16:42	23 09:31 (23)	15:48
5	04:36	05:33	06:42	07:48		08:01	09:07 (23)	09:07
	22:46	21:52	20:28	19:02		16:39	23 09:30 (23)	15:47
6	04:37	05:35	06:44	07:51	09:13 (25)	08:04	09:08 (23)	09:09
	22:45	21:49	20:26	18:59	6 09:19 (25)	16:37	22 09:30 (23)	15:46
7	04:39	05:37	06:47	07:53	09:11 (25)	08:06	09:09 (23)	09:10
	22:44	21:47	20:23	18:56	11 09:22 (25)	16:35	21 09:30 (23)	15:46
8	04:40	05:40	06:49	07:55	09:08 (25)	08:08	09:09 (23)	09:12
	22:43	21:44	20:20	18:53	16 09:24 (25)	16:32	19 09:28 (23)	15:45
9	04:41	05:42	06:51	07:58	09:07 (25)	08:11	09:11 (23)	09:14
	22:42	21:42	20:17	18:50	17 09:24 (25)	16:30	16 09:27 (23)	15:44
10	04:43	05:44	06:53	08:00	09:06 (25)	08:13	09:13 (23)	09:15
	22:41	21:39	20:14	18:48	19 09:25 (25)	16:28	13 09:26 (23)	15:44
11	04:44	05:46	06:55	08:02	09:05 (25)	08:16	09:14 (23)	09:16
	22:39	21:37	20:11	18:45	20 09:25 (25)	16:26	10 09:24 (23)	15:43
12	04:46	05:49	06:58	08:04	09:05 (25)	08:18		09:18
	22:38	21:34	20:08	18:42	20 09:25 (25)	16:24		15:43
13	04:47	05:51	07:00	08:07	09:05 (25)	08:20		09:19
	22:37	21:32	20:05	18:39	20 09:25 (25)	16:21		15:43
14	04:49	05:53	07:02	08:09	09:04 (25)	08:23		09:20
	22:35	21:29	20:02	18:36	20 09:24 (25)	16:19		15:42
15	04:51	05:55	07:04	08:11	09:05 (25)	08:25		09:21
	22:34	21:26	20:00	18:34	19 09:24 (25)	16:17		15:42
16	04:53	05:57	07:06	08:14	09:05 (25)	08:27		09:22
	22:32	21:24	19:57	18:31	17 09:22 (25)	16:15		15:42
17	04:54	06:00	07:09	08:16	09:07 (25)	08:30		09:23
	22:31	21:21	19:54	18:28	14 09:21 (25)	16:13		15:42
18	04:56	06:02	07:11	08:18	09:08 (25)	08:32		09:24
	22:29	21:19	19:51	18:25	11 09:19 (25)	16:11		15:42
19	04:58	06:04	07:13	08:21		08:34		09:25
	22:27	21:16	19:48	18:23		16:10		15:42
20	05:00	06:06	07:15	08:23		08:37		09:26
	22:25	21:13	19:45	18:20		16:08		15:43
21	05:02	06:09	07:17	08:25		08:39		09:26
	22:24	21:10	19:42	18:17		16:06		15:43
22	05:04	06:11	07:20	08:28		08:41		09:27
	22:22	21:08	19:39	18:15		16:04		15:44
23	05:06	06:13	07:22	08:30		08:43		09:27
	22:20	21:05	19:36	18:12		16:03		15:44
24	05:08	06:15	07:24	08:32		08:45		09:28
	22:18	21:02	19:33	18:09		16:01		15:45
25	05:10	06:18	07:26	07:35	09:15 (23)	08:48		09:28
	22:16	20:59	19:30	17:07	8 09:23 (23)	15:59		15:45
26	05:12	06:20	07:28	07:37	09:12 (23)	08:50		09:28
	22:14	20:57	19:28	17:04	14 09:26 (23)	15:58		15:46
27	05:14	06:22	07:31	07:40	09:10 (23)	08:52		09:28
	22:12	20:54	19:25	17:01	17 09:27 (23)	15:56		15:47
28	05:16	06:24	07:33	07:42	09:09 (23)	08:54		09:29
	22:10	20:51	19:22	16:59	20 09:29 (23)	15:55		15:48
29	05:18	06:27	07:35	07:44	09:09 (23)	08:56		09:29
	22:08	20:48	19:19	16:56	21 09:30 (23)	15:54		15:49
30	05:20	06:29	07:37	07:47	09:07 (23)	08:58		09:28
	22:05	20:45	19:16	16:54	23 09:30 (23)	15:53		15:50
31	05:22	06:31		07:49	09:07 (23)			09:28
	22:03	20:43		16:51	24 09:31 (23)			15:51
Potential sun hours	546	478	386	319		236		199
Total, worst case					337		219	
Sun reduction					0,50		0,50	
Oper. time red.					0,80		0,80	
Wind dir. red.					0,73		0,72	
Total reduction					0,29		0,29	
Total, real					98		63	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** AD - Buevegen 1500 (30)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February			March			April	May	June	July	August	September	October			November			December
1	09:28	08:46		09:42 (23)	07:35		08:28 (25)	07:07	05:44	04:40	04:32	05:24	06:33	07:39			07:52		09:00 (23)	09:00
	15:53	16:56	1	09:43 (23)	18:05	19	08:47 (25)	20:17	21:26	22:31	22:49	22:01	20:40	19:13			16:49	24	09:24 (23)	15:51
2	09:28	08:44		09:37 (23)	07:33		08:27 (25)	07:04	05:41	04:39	04:33	05:26	06:35	07:42			07:54		09:01 (23)	09:02
	15:54	16:59	10	09:47 (23)	18:07	20	08:47 (25)	20:19	21:28	22:32	22:48	21:59	20:37	19:10			16:46	23	09:24 (23)	15:50
3	09:27	08:41		09:36 (23)	07:30		08:27 (25)	07:01	05:39	04:37	04:34	05:29	06:38	07:44			07:56		09:01 (23)	09:04
	15:56	17:01	14	09:50 (23)	18:10	20	08:47 (25)	20:21	21:31	22:34	22:47	21:56	20:34	19:07			16:44	23	09:24 (23)	15:49
4	09:27	08:39		09:34 (23)	07:27		08:27 (25)	06:58	05:36	04:36	04:35	05:31	06:40	07:46			07:59		09:02 (23)	09:05
	15:57	17:04	17	09:51 (23)	18:12	19	08:46 (25)	20:24	21:33	22:35	22:47	21:54	20:31	19:05			16:42	22	09:24 (23)	15:48
5	09:26	08:37		09:33 (23)	07:24		08:27 (25)	06:55	05:34	04:35	04:36	05:33	06:42	07:48		09:10 (25)	08:01		09:02 (23)	09:07
	15:59	17:06	20	09:53 (23)	18:14	18	08:45 (25)	20:26	21:35	22:37	22:46	21:52	20:28	19:02	4	09:14 (25)	16:39	21	09:23 (23)	15:47
6	09:25	08:35		09:32 (23)	07:22		08:28 (25)	06:53	05:31	04:34	04:37	05:35	06:44	07:51		09:06 (25)	08:04		09:03 (23)	09:09
	16:00	17:08	21	09:53 (23)	18:17	16	08:44 (25)	20:28	21:38	22:38	22:45	21:49	20:26	18:59	12	09:18 (25)	16:37	19	09:22 (23)	15:46
7	09:25	08:32		09:31 (23)	07:19		08:29 (25)	06:50	05:29	04:33	04:39	05:37	06:47	07:53		09:05 (25)	08:06		09:05 (23)	09:10
	16:02	17:11	22	09:53 (23)	18:19	13	08:42 (25)	20:31	21:40	22:39	22:44	21:47	20:23	18:56	15	09:20 (25)	16:35	16	09:21 (23)	15:46
8	09:24	08:30		09:32 (23)	07:16		08:31 (25)	06:47	05:27	04:32	04:40	05:40	06:49	07:55		09:03 (25)	08:08		09:05 (23)	09:12
	16:04	17:13	22	09:54 (23)	18:21	8	08:39 (25)	20:33	21:42	22:41	22:43	21:44	20:20	18:53	17	09:20 (25)	16:32	14	09:19 (23)	15:45
9	09:23	08:28		09:31 (23)	07:13			06:44	05:24	04:31	04:41	05:42	06:51	07:58		09:02 (25)	08:11		09:08 (23)	09:14
	16:05	17:16	23	09:54 (23)	18:24			20:35	21:44	22:42	22:42	21:42	20:17	18:50	18	09:20 (25)	16:30	10	09:18 (23)	15:44
10	09:22	08:25		09:32 (23)	07:10			06:41	05:22	04:30	04:43	05:44	06:53	08:00		09:02 (25)	08:13			09:15
	16:07	17:18	23	09:55 (23)	18:26			20:38	21:47	22:43	22:41	21:39	20:14	18:48	19	09:21 (25)	16:28			15:44
11	09:21	08:23		09:31 (23)	07:07			06:38	05:20	04:30	04:44	05:46	06:55	08:02		09:01 (25)	08:16			09:16
	16:09	17:21	24	09:55 (23)	18:28			20:40	21:49	22:44	22:39	21:37	20:11	18:45	20	09:21 (25)	16:26			15:43
12	09:20	08:20		09:31 (23)	07:05			06:36	05:17	04:29	04:46	05:49	06:58	08:04		09:01 (25)	08:18			09:18
	16:11	17:23	23	09:54 (23)	18:31			20:42	21:51	22:45	22:38	21:34	20:08	18:42	20	09:21 (25)	16:24			15:43
13	09:19	08:18		09:31 (23)	07:02			06:33	05:15	04:28	04:47	05:51	07:00	08:07		09:01 (25)	08:20			09:19
	16:13	17:26	23	09:54 (23)	18:33			20:44	21:53	22:46	22:37	21:32	20:05	18:39	19	09:20 (25)	16:21			15:43
14	09:17	08:15		09:33 (23)	06:59			06:30	05:13	04:28	04:49	05:53	07:02	08:09		09:01 (25)	08:23			09:20
	16:15	17:28	21	09:54 (23)	18:35			20:47	21:55	22:47	22:35	21:29	20:02	18:36	18	09:19 (25)	16:19			15:42
15	09:16	08:13		09:33 (23)	06:56			06:27	05:11	04:28	04:51	05:55	07:04	08:11		09:02 (25)	08:25			09:21
	16:17	17:31	20	09:53 (23)	18:38			20:49	21:58	22:47	22:34	21:26	20:00	18:34	16	09:18 (25)	16:17			15:42
16	09:15	08:10		09:34 (23)	06:53			06:24	05:08	04:27	04:53	05:57	07:06	08:14		09:03 (25)	08:27			09:22
	16:19	17:33	17	09:51 (23)	18:40			20:51	22:00	22:48	22:32	21:24	19:57	18:31	13	09:16 (25)	16:15			15:42
17	09:13	08:08		09:36 (23)	06:50			06:22	05:06	04:27	04:54	06:00	07:09	08:16		09:05 (25)	08:30			09:23
	16:21	17:36	14	09:50 (23)	18:42			20:54	22:02	22:49	22:31	21:21	19:54	18:28	10	09:15 (25)	16:13			15:42
18	09:12	08:05		09:39 (23)	06:47			06:19	05:04	04:27	04:56	06:02	07:11	08:18			08:32			09:24
	16:23	17:38	8	09:47 (23)	18:45			20:56	22:04	22:49	22:29	21:19	19:51	18:25			16:11			15:42
19	09:10	08:02			06:44			06:16	05:02	04:27	04:58	06:04	07:13	08:21			08:34			09:25
	16:26	17:41			18:47			20:58	22:06	22:50	22:27	21:16	19:48	18:23			16:10			15:42
20	09:09	08:00			06:42			06:13	05:00	04:27	05:00	06:06	07:15	08:23			08:37			09:26
	16:28	17:43			18:49			21:01	22:08	22:50	22:25	21:13	19:45	18:20			16:08			15:43
21	09:07	07:57			06:39			06:10	04:58	04:27	05:02	06:09	07:17	08:25			08:39			09:26
	16:30	17:45			18:52			21:03	22:10	22:50	22:24	21:10	19:42	18:17			16:06			15:43
22	09:05	07:54			06:36			06:08	04:56	04:27	05:04	06:11	07:20	08:28			08:41			09:27
	16:32	17:48			18:54			21:05	22:12	22:51	22:22	21:08	19:39	18:15			16:04			15:44
23	09:04	07:52			06:33			06:05	04:54	04:27	05:06	06:13	07:22	08:30			08:43			09:27
	16:35	17:50			18:56			21:08	22:14	22:51	22:20	21:05	19:36	18:12			16:03			15:44
24	09:02	07:49		08:36 (25)	06:30			06:02	04:53	04:28	05:08	06:15	07:24	08:32		10:07 (23)	08:45			09:28
	16:37	17:53	4	08:40 (25)	18:59			21:10	22:16	22:51	22:18	21:02	19:33	18:09	11	10:18 (23)	16:01			15:45
25	09:00	07:46		08:32 (25)	06:27			06:00	04:51	04:28	05:10	06:18	07:26	07:35		09:05 (23)	08:48			09:28
	16:39	17:55	11	08:43 (25)	19:01			21:12	22:18	22:51	22:16	20:59	19:30	17:07	15	09:20 (23)	15:59			15:45
26	08:58	07:44		08:30 (25)	06:24			05:57	04:49	04:29	05:12	06:20	07:28	07:37		09:04 (23)	08:50			09:28
	16:42	17:58	15	08:45 (25)	19:03			21:14	22:20	22:51	22:14	20:57	19:28	17:04	18	09:22 (23)	15:58			15:46
27	08:56	07:41		08:29 (25)	06:21			05:54	04:47	04:29	05:14	06:22	07:31	07:40		09:02 (23)	08:52			09:28
	16:44	18:00	17	08:46 (25)	19:05			21:17	22:22	22:50	22:12	20:54	19:25	17:02	20	09:22 (23)	15:56			15:47
28	08:54	07:38		08:29 (25)	06:18			05:52	04:46	04:30	05:16	06:24	07:33	07:42		09:02 (23)	08:54			09:29
	16:46	18:02	18	08:47 (25)	19:08			21:19	22:24	22:50	22:10	20:51	19:22	16:59	21	09:23 (23)	15:55			15:48
29	08:52				07:16			05:49	04:44	04:30	05:18	06:27	07:35	07:44		09:02 (23)	08:56			09:29
	16:49				20:10			21:21	22:26	22:50	22:08	20:48	19:19	16:56	22	09:24 (23)	15:54			15:49
30	08:50				07:13			05:47	04:43	04:31	05:20	06:29	07:37	07:47		09:01 (23)	08:58			09:28
	16:51				20:12			21:24	22:27	22:49	22:05	20:45	19:16	16:54	23	09:24 (23)	15:53			15:50
31	08:48				07:10				04:41		05:22	06:31		07:49		09:01 (23)				09:28
	16:54				20:15				22:29		22:03	20:43		16:51	23	09:24 (23)				15:51
Potential sun hours	221	260			365			432	521	547	546	478	386	319			236			199
Total, worst case			388			133									354			172		
Sun reduction			0,50			0,50									0,50			0,50		
Oper. time red.			0,80			0,80									0,80			0,80		
Wind dir. red.			0,73			0,73									0,73			0,73		
Total reduction			0,29			0,29									0,29			0,29		
Total, real			113			39									103			50		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** AE - Buevegen 1498 (31)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February		March	April	May	June	July	August	September	October		November		December
1	09:28	08:46		07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:40		07:52	08:41 (23)	09:00
	15:53	16:56		18:05	20:17	21:26	22:31	22:49	22:01	20:40	19:13		16:49	8 08:49 (23)	15:51
2	09:28	08:44		07:33	07:04	05:41	04:39	04:33	05:26	06:35	07:42		07:54		09:02
	15:54	16:59		18:07	20:19	21:28	22:32	22:48	21:59	20:37	19:10		16:46		15:50
3	09:27	08:41		07:30	07:01	05:39	04:37	04:34	05:29	06:38	07:44		07:56		09:04
	15:56	17:01		18:10	20:21	21:31	22:34	22:47	21:56	20:34	19:07		16:44		15:49
4	09:27	08:39		07:27	06:58	05:36	04:36	04:35	05:31	06:40	07:46		07:59		09:05
	15:57	17:04		18:12	20:24	21:33	22:35	22:47	21:54	20:31	19:05		16:42		15:48
5	09:26	08:37		07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48		08:01		09:07
	15:59	17:06		18:14	20:26	21:35	22:37	22:46	21:52	20:28	19:02		16:39		15:47
6	09:25	08:35		07:22	06:53	05:31	04:34	04:37	05:35	06:44	07:51		08:04		09:09
	16:00	17:09		18:17	20:28	21:38	22:38	22:45	21:49	20:26	18:59		16:37		15:46
7	09:25	08:32		07:19	06:50	05:29	04:33	04:39	05:37	06:47	07:53		08:06		09:10
	16:02	17:11		18:19	20:31	21:40	22:39	22:44	21:47	20:23	18:56		16:35		15:46
8	09:24	08:30		07:16	06:47	05:27	04:32	04:40	05:40	06:49	07:55		08:08		09:12
	16:04	17:13		18:21	20:33	21:42	22:41	22:43	21:44	20:20	18:53		16:32		15:45
9	09:23	08:28		07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:58		08:11		09:14
	16:05	17:16		18:24	20:35	21:44	22:42	22:42	21:42	20:17	18:50		16:30		15:44
10	09:22	08:25	09:11 (23)	07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00		08:13		09:15
	16:07	17:18	9 09:20 (23)	18:26	20:38	21:47	22:43	22:41	21:39	20:14	18:48		16:28		15:44
11	09:21	08:23	09:09 (23)	07:07	06:38	05:20	04:30	04:44	05:46	06:55	08:02		08:16		09:16
	16:09	17:21	13 09:22 (23)	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:45		16:26		15:43
12	09:20	08:20	09:07 (23)	07:05	06:36	05:17	04:29	04:46	05:49	06:58	08:04		08:18		09:18
	16:11	17:23	16 09:23 (23)	18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42		16:24		15:43
13	09:19	08:18	09:07 (23)	07:02	06:33	05:15	04:28	04:48	05:51	07:00	08:07		08:20		09:19
	16:13	17:26	18 09:25 (23)	18:33	20:44	21:53	22:46	22:37	21:32	20:05	18:39		16:21		15:43
14	09:17	08:15	09:06 (23)	06:59	06:30	05:13	04:28	04:49	05:53	07:02	08:09		08:23		09:20
	16:15	17:28	19 09:25 (23)	18:35	20:47	21:56	22:47	22:35	21:29	20:02	18:36		16:19		15:42
15	09:16	08:13	09:05 (23)	06:56	06:27	05:11	04:28	04:51	05:55	07:04	08:11		08:25		09:21
	16:17	17:31	20 09:25 (23)	18:38	20:49	21:58	22:47	22:34	21:26	20:00	18:34		16:17		15:42
16	09:15	08:10	09:04 (23)	06:53	06:24	05:08	04:27	04:53	05:58	07:06	08:14		08:27		09:22
	16:19	17:33	21 09:25 (23)	18:40	20:51	22:00	22:48	22:32	21:24	19:57	18:31		16:15		15:42
17	09:13	08:08	09:05 (23)	06:50	06:22	05:06	04:27	04:54	06:00	07:09	08:16		08:30		09:23
	16:21	17:36	21 09:26 (23)	18:42	20:54	22:02	22:49	22:31	21:21	19:54	18:28		16:13		15:42
18	09:12	08:05	09:05 (23)	06:47	06:19	05:04	04:27	04:56	06:02	07:11	08:18	09:42 (23)	08:32		09:24
	16:23	17:38	21 09:26 (23)	18:45	20:56	22:04	22:49	22:29	21:19	19:51	18:25	7 09:49 (23)	16:11		15:42
19	09:10	08:02	09:05 (23)	06:44	06:16	05:02	04:27	04:58	06:04	07:13	08:21	09:40 (23)	08:34		09:25
	16:26	17:41	20 09:25 (23)	18:47	20:58	22:06	22:50	22:27	21:16	19:48	18:23	12 09:52 (23)	16:10		15:42
20	09:09	08:00	09:05 (23)	06:42	06:13	05:00	04:27	05:00	06:06	07:15	08:23	09:37 (23)	08:37		09:26
	16:28	17:43	19 09:24 (23)	18:49	21:01	22:08	22:50	22:26	21:13	19:45	18:20	16 09:53 (23)	16:08		15:43
21	09:07	07:57	09:06 (23)	06:39	06:11	04:58	04:27	05:02	06:09	07:17	08:25	09:37 (23)	08:39		09:26
	16:30	17:46	17 09:23 (23)	18:52	21:03	22:10	22:50	22:24	21:10	19:42	18:17	18 09:55 (23)	16:06		15:43
22	09:05	07:54	09:08 (23)	06:36	06:08	04:56	04:27	05:04	06:11	07:20	08:28	09:35 (23)	08:41		09:27
	16:32	17:48	14 09:22 (23)	18:54	21:05	22:12	22:51	22:22	21:08	19:39	18:15	20 09:55 (23)	16:04		15:44
23	09:04	07:52	09:09 (23)	06:33	06:05	04:54	04:27	05:06	06:13	07:22	08:30	09:35 (23)	08:43		09:27
	16:35	17:50	11 09:20 (23)	18:56	21:08	22:14	22:51	22:20	21:05	19:36	18:12	20 09:55 (23)	16:03		15:44
24	09:02	07:49	09:14 (23)	06:30	06:02	04:53	04:28	05:08	06:15	07:24	08:32	09:34 (23)	08:45		09:28
	16:37	17:53	1 09:15 (23)	18:59	21:10	22:16	22:51	22:18	21:02	19:33	18:09	21 09:55 (23)	16:01		15:45
25	09:00	07:46		06:27	06:00	04:51	04:28	05:10	06:18	07:26	07:35	08:34 (23)	08:48		09:28
	16:39	17:55		19:01	21:12	22:18	22:51	22:16	20:59	19:31	17:07	21 08:55 (23)	15:59		15:45
26	08:58	07:44		06:24	05:57	04:49	04:29	05:12	06:20	07:28	07:37	08:35 (23)	08:50		09:28
	16:42	17:58		19:03	21:15	22:20	22:51	22:14	20:57	19:28	17:04	21 08:56 (23)	15:58		15:46
27	08:56	07:41		06:21	05:54	04:47	04:29	05:14	06:22	07:31	07:40	08:34 (23)	08:52		09:29
	16:44	18:00		19:05	21:17	22:22	22:50	22:12	20:54	19:25	17:02	21 08:55 (23)	15:57		15:47
28	08:54	07:38		06:18	05:52	04:46	04:30	05:16	06:24	07:33	07:42	08:35 (23)	08:54		09:29
	16:46	18:02		19:08	21:19	22:24	22:50	22:10	20:51	19:22	16:59	19 08:54 (23)	15:55		15:48
29	08:52			07:16	05:49	04:44	04:30	05:18	06:27	07:35	07:44	08:36 (23)	08:56		09:29
	16:49			20:10	21:21	22:26	22:50	22:08	20:48	19:19	16:56	18 08:54 (23)	15:54		15:49
30	08:50			07:13	05:47	04:43	04:31	05:20	06:29	07:37	07:47	08:37 (23)	08:58		09:28
	16:51			20:12	21:24	22:27	22:49	22:05	20:45	19:16	16:54	15 08:52 (23)	15:53		15:50
31	08:48			07:10		04:41		05:22	06:31		07:49	08:39 (23)			09:28
	16:54			20:15		22:29		22:03	20:43		16:51	12 08:51 (23)			15:51
Potential sun hours	221	260		365	432	521	547	546	478	386	319		236		199
Total, worst case			240									241		8	
Sun reduction			0,50									0,50		0,50	
Oper. time red.			0,80									0,80		0,80	
Wind dir. red.			0,74									0,74		0,74	
Total reduction			0,29									0,29		0,29	
Total, real			71									71		2	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** AF - Buevegen 1496 (32)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February		March	April	May	June	July	August	September	October		November	December
1	09:28	08:46		07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:40		07:52	09:00
	15:53	16:56		18:05	20:17	21:26	22:31	22:49	22:01	20:40	19:13		16:49	15:51
2	09:28	08:44		07:33	07:04	05:41	04:39	04:33	05:26	06:35	07:42		07:54	09:02
	15:54	16:59		18:07	20:19	21:28	22:32	22:48	21:59	20:37	19:10		16:46	15:50
3	09:27	08:41		07:30	07:01	05:39	04:37	04:34	05:29	06:38	07:44		07:56	09:04
	15:56	17:01		18:10	20:21	21:31	22:34	22:47	21:56	20:34	19:07		16:44	15:49
4	09:27	08:39		07:27	06:58	05:36	04:36	04:35	05:31	06:40	07:46		07:59	09:05
	15:57	17:04		18:12	20:24	21:33	22:35	22:47	21:54	20:31	19:05		16:42	15:48
5	09:26	08:37		07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:49		08:01	09:07
	15:59	17:06		18:14	20:26	21:35	22:37	22:46	21:52	20:28	19:02		16:39	15:47
6	09:25	08:35		07:22	06:53	05:31	04:34	04:38	05:35	06:44	07:51		08:04	09:09
	16:00	17:09		18:17	20:28	21:38	22:38	22:45	21:49	20:26	18:59		16:37	15:46
7	09:25	08:32		07:19	06:50	05:29	04:33	04:39	05:37	06:47	07:53		08:06	09:10
	16:02	17:11		18:19	20:31	21:40	22:39	22:44	21:47	20:23	18:56		16:35	15:46
8	09:24	08:30		07:16	06:47	05:27	04:32	04:40	05:40	06:49	07:55		08:08	09:12
	16:04	17:13		18:21	20:33	21:42	22:41	22:43	21:44	20:20	18:53		16:32	15:45
9	09:23	08:28		07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:58		08:11	09:14
	16:05	17:16		18:24	20:35	21:44	22:42	22:42	21:42	20:17	18:50		16:30	15:44
10	09:22	08:25		07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00		08:13	09:15
	16:07	17:18		18:26	20:38	21:47	22:43	22:41	21:39	20:14	18:48		16:28	15:44
11	09:21	08:23	09:07 (23)	07:07	06:38	05:20	04:30	04:44	05:46	06:55	08:02		08:16	09:16
	16:09	17:21	7 09:14 (23)	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:45		16:26	15:43
12	09:20	08:20	09:04 (23)	07:05	06:36	05:17	04:29	04:46	05:49	06:58	08:04		08:18	09:18
	16:11	17:23	12 09:16 (23)	18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42		16:24	15:43
13	09:19	08:18	09:03 (23)	07:02	06:33	05:15	04:28	04:48	05:51	07:00	08:07		08:20	09:19
	16:13	17:26	15 09:18 (23)	18:33	20:44	21:53	22:46	22:37	21:32	20:05	18:39		16:21	15:43
14	09:17	08:15	09:02 (23)	06:59	06:30	05:13	04:28	04:49	05:53	07:02	08:09		08:23	09:20
	16:15	17:28	17 09:19 (23)	18:35	20:47	21:56	22:47	22:35	21:29	20:02	18:36		16:19	15:42
15	09:16	08:13	09:01 (23)	06:56	06:27	05:11	04:28	04:51	05:55	07:04	08:11		08:25	09:21
	16:17	17:31	19 09:20 (23)	18:38	20:49	21:58	22:47	22:34	21:26	20:00	18:34		16:17	15:42
16	09:15	08:10	09:00 (23)	06:53	06:24	05:08	04:27	04:53	05:58	07:06	08:14		08:27	09:22
	16:19	17:33	20 09:20 (23)	18:40	20:51	22:00	22:48	22:32	21:24	19:57	18:31		16:15	15:42
17	09:13	08:08	09:01 (23)	06:50	06:22	05:06	04:27	04:54	06:00	07:09	08:16		08:30	09:23
	16:21	17:36	20 09:21 (23)	18:42	20:54	22:02	22:49	22:31	21:21	19:54	18:28		16:13	15:42
18	09:12	08:05	09:00 (23)	06:47	06:19	05:04	04:27	04:56	06:02	07:11	08:18	09:36 (23)	08:32	09:24
	16:23	17:38	20 09:20 (23)	18:45	20:56	22:04	22:49	22:29	21:19	19:51	18:25	10 09:46 (23)	16:11	15:42
19	09:10	08:02	09:00 (23)	06:44	06:16	05:02	04:27	04:58	06:04	07:13	08:21	09:34 (23)	08:34	09:25
	16:26	17:41	20 09:20 (23)	18:47	20:58	22:06	22:50	22:27	21:16	19:48	18:23	14 09:48 (23)	16:10	15:42
20	09:09	08:00	09:00 (23)	06:42	06:13	05:00	04:27	05:00	06:06	07:15	08:23	09:32 (23)	08:37	09:26
	16:28	17:43	19 09:19 (23)	18:49	21:01	22:08	22:50	22:26	21:13	19:45	18:20	17 09:49 (23)	16:08	15:43
21	09:07	07:57	09:01 (23)	06:39	06:11	04:58	04:27	05:02	06:09	07:17	08:25	09:32 (23)	08:39	09:26
	16:30	17:46	17 09:18 (23)	18:52	21:03	22:10	22:50	22:24	21:10	19:42	18:17	18 09:50 (23)	16:06	15:43
22	09:05	07:55	09:02 (23)	06:36	06:08	04:56	04:27	05:04	06:11	07:20	08:28	09:30 (23)	08:41	09:27
	16:32	17:48	16 09:18 (23)	18:54	21:05	22:12	22:51	22:22	21:08	19:39	18:15	20 09:50 (23)	16:04	15:44
23	09:04	07:52	09:03 (23)	06:33	06:05	04:54	04:27	05:06	06:13	07:22	08:30	09:30 (23)	08:43	09:27
	16:35	17:50	13 09:16 (23)	18:56	21:08	22:14	22:51	22:20	21:05	19:36	18:12	20 09:50 (23)	16:03	15:44
24	09:02	07:49	09:06 (23)	06:30	06:02	04:53	04:28	05:08	06:15	07:24	08:32	09:30 (23)	08:45	09:28
	16:37	17:53	8 09:14 (23)	18:59	21:10	22:16	22:51	22:18	21:02	19:33	18:09	21 09:51 (23)	16:01	15:45
25	09:00	07:46		06:27	06:00	04:51	04:28	05:10	06:18	07:26	07:35	08:30 (23)	08:48	09:28
	16:39	17:55		19:01	21:12	22:18	22:51	22:16	20:59	19:31	17:07	20 08:50 (23)	15:59	15:45
26	08:58	07:44		06:24	05:57	04:49	04:29	05:12	06:20	07:28	07:37	08:30 (23)	08:50	09:28
	16:42	17:58		19:03	21:15	22:20	22:51	22:14	20:57	19:28	17:04	20 08:50 (23)	15:58	15:46
27	08:56	07:41		06:21	05:54	04:47	04:29	05:14	06:22	07:31	07:40	08:30 (23)	08:52	09:29
	16:44	18:00		19:05	21:17	22:22	22:50	22:12	20:54	19:25	17:02	19 08:49 (23)	15:57	15:47
28	08:54	07:38		06:18	05:52	04:46	04:30	05:16	06:24	07:33	07:42	08:31 (23)	08:54	09:29
	16:46	18:02		19:08	21:19	22:24	22:50	22:10	20:51	19:22	16:59	17 08:48 (23)	15:55	15:48
29	08:52			07:16	05:49	04:44	04:31	05:18	06:27	07:35	07:44	08:33 (23)	08:56	09:29
	16:49			20:10	21:21	22:26	22:50	22:08	20:48	19:19	16:56	15 08:48 (23)	15:54	15:49
30	08:50			07:13	05:47	04:43	04:31	05:20	06:29	07:37	07:47	08:34 (23)	08:58	09:28
	16:51			20:12	21:24	22:27	22:49	22:05	20:45	19:16	16:54	11 08:45 (23)	15:53	15:50
31	08:48			07:10		04:41		05:22	06:31		07:49	08:37 (23)		09:28
	16:54			20:15		22:29		22:03	20:43		16:51	6 08:43 (23)		15:51
Potential sun hours	221	260		365	432	521	547	546	478	386	319		236	199
Total, worst case			223									228		
Sun reduction			0,50									0,50		
Oper. time red.			0,80									0,80		
Wind dir. red.			0,74									0,74		
Total reduction			0,29									0,29		
Total, real			66									67		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** AG - Hytte, ikke ferdig bygd. Eiendom 57/3 - Bjerkreim kommune (33)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March		April		May	June
1	09:28		12:11 (33)	08:45		12:16 (33)	07:35		15:43 (8)	07:07		18:42 (18)	05:44	04:39
	15:52	49	14:26 (15)	16:56	112	15:37 (36)	18:04	25	17:06 (10)	20:16	18	19:00 (18)	21:26	22:30
2	09:27		12:12 (33)	08:43		12:17 (33)	07:32		15:46 (8)	07:04		18:43 (18)	05:41	04:38
	15:54	54	14:28 (15)	16:58	113	15:38 (36)	18:07	35	17:10 (10)	20:19	14	18:57 (18)	21:28	22:32
3	09:27		12:11 (33)	08:41		12:19 (33)	07:30		16:31 (13)	07:01		18:47 (18)	05:38	04:37
	15:55	58	14:29 (15)	17:01	110	15:38 (36)	18:09	38	17:13 (10)	20:21	8	18:55 (18)	21:30	22:33
4	09:26		12:11 (33)	08:39		12:21 (33)	07:27		16:29 (13)	06:58			05:36	04:36
	15:57	61	14:29 (15)	17:03	107	15:39 (36)	18:12	46	17:15 (10)	20:23			21:33	22:35
5	09:26		12:10 (33)	08:36		12:25 (33)	07:24		16:27 (13)	06:55			05:34	04:35
	15:58	66	14:30 (15)	17:06	99	15:39 (36)	18:14	48	17:15 (10)	20:26			21:35	22:36
6	09:25		12:10 (33)	08:34		12:59 (27)	07:21		16:25 (13)	06:52			05:31	04:34
	16:00	70	14:31 (15)	17:08	92	15:39 (36)	18:16	50	17:15 (10)	20:28			21:37	22:38
7	09:24		12:10 (33)	08:32		12:59 (27)	07:18		16:23 (13)	06:49			05:29	04:33
	16:01	73	14:32 (15)	17:11	91	15:38 (36)	18:19	52	17:15 (10)	20:30			21:39	22:39
8	09:23		12:10 (33)	08:30		12:59 (27)	07:15		16:22 (13)	06:46			05:26	04:32
	16:03	78	14:33 (15)	17:13	90	15:38 (36)	18:21	52	17:14 (10)	20:32			21:42	22:40
9	09:22		12:09 (33)	08:27		13:00 (27)	07:13		16:20 (13)	06:44			05:24	04:31
	16:05	81	14:33 (15)	17:16	88	15:38 (36)	18:23	54	17:14 (10)	20:35			21:44	22:41
10	09:21		12:09 (33)	08:25		12:59 (27)	07:10		16:19 (13)	06:41			05:21	04:30
	16:07	84	14:34 (15)	17:18	97	15:58 (8)	18:26	54	17:13 (10)	20:37			21:46	22:42
11	09:20		12:09 (33)	08:22		12:59 (27)	07:07		16:18 (13)	06:38			05:19	04:29
	16:09	87	14:34 (15)	17:20	99	16:00 (8)	18:28	54	17:12 (10)	20:39			21:48	22:44
12	09:19		12:09 (33)	08:20		13:00 (27)	07:04		16:17 (13)	06:35			05:17	04:29
	16:11	91	14:35 (15)	17:23	100	16:03 (8)	18:30	54	17:11 (10)	20:42			21:51	22:44
13	09:18		12:09 (33)	08:17		13:00 (27)	07:01		16:16 (13)	06:32			05:15	04:28
	16:13	93	14:35 (15)	17:25	95	16:04 (8)	18:33	53	17:09 (10)	20:44			21:53	22:45
14	09:17		12:09 (33)	08:15		13:01 (27)	06:58		16:16 (13)	06:29			05:12	04:28
	16:15	96	14:36 (15)	17:28	90	16:05 (8)	18:35	50	17:06 (10)	20:46			21:55	22:46
15	09:16		12:09 (33)	08:12		13:02 (27)	06:56		16:16 (13)	06:27			05:10	04:27
	16:17	99	14:37 (15)	17:30	91	16:07 (8)	18:37	46	17:02 (13)	20:49			21:57	22:47
16	09:14		12:09 (33)	08:10		13:02 (27)	06:53		16:16 (13)	06:24			05:08	04:27
	16:19	101	14:37 (15)	17:33	91	16:07 (8)	18:40	46	17:02 (13)	20:51			21:59	22:48
17	09:13		12:09 (33)	08:07		13:03 (27)	06:50		16:16 (13)	06:21			05:06	04:27
	16:21	103	14:37 (15)	17:35	91	16:08 (8)	18:42	45	17:01 (13)	20:53			22:02	22:48
18	09:11		12:09 (33)	08:05		13:03 (27)	06:47		16:15 (13)	06:18			05:04	04:27
	16:23	104	14:37 (15)	17:38	91	16:08 (8)	18:44	48	17:56 (18)	20:56			22:04	22:49
19	09:10		12:09 (33)	08:02		13:05 (27)	06:44		16:15 (13)	06:16			05:02	04:26
	16:25	105	14:37 (15)	17:40	89	16:09 (8)	18:47	57	18:01 (18)	20:58			22:06	22:49
20	09:08		12:09 (33)	07:59		13:06 (27)	06:41		16:16 (13)	06:13			05:00	04:26
	16:27	107	14:37 (15)	17:43	88	16:09 (8)	18:49	60	18:03 (18)	21:00			22:08	22:50
21	09:07		12:09 (33)	07:57		13:07 (27)	06:38		16:16 (13)	06:10			04:58	04:27
	16:30	106	14:36 (15)	17:45	84	16:08 (8)	18:51	63	18:04 (18)	21:02			22:10	22:50
22	09:05		12:10 (33)	07:54		13:08 (27)	06:35		16:16 (13)	06:07			04:56	04:27
	16:32	106	14:36 (15)	17:48	82	16:08 (8)	18:54	63	18:05 (18)	21:05			22:12	22:50
23	09:03		12:10 (33)	07:51		13:09 (27)	06:32		16:17 (13)	06:05			04:54	04:27
	16:34	105	14:36 (15)	17:50	78	16:07 (8)	18:56	63	18:05 (18)	21:07			22:14	22:50
24	09:01		12:10 (33)	07:49		13:12 (27)	06:30		16:17 (13)	06:02			04:52	04:27
	16:37	106	14:35 (15)	17:52	74	16:08 (8)	18:58	63	18:05 (18)	21:09			22:16	22:50
25	08:59		12:11 (33)	07:46		13:14 (27)	06:27		16:18 (13)	05:59			04:50	04:28
	16:39	104	15:26 (36)	17:55	68	16:07 (8)	19:00	61	18:05 (18)	21:12			22:18	22:50
26	08:58		12:11 (33)	07:43		13:16 (27)	06:24		16:20 (13)	05:57			04:49	04:28
	16:41	103	15:28 (36)	17:57	62	16:06 (8)	19:03	59	18:06 (18)	21:14			22:20	22:50
27	08:56		12:12 (33)	07:41		13:19 (27)	06:21		16:22 (13)	05:54			04:47	04:29
	16:44	108	15:31 (36)	18:00	52	16:04 (8)	19:05	55	18:06 (18)	21:16			22:22	22:50
28	08:54		12:12 (33)	07:38		13:24 (27)	06:18		16:24 (13)	05:51			04:45	04:29
	16:46	111	15:33 (36)	18:02	40	17:03 (10)	19:07	49	18:05 (18)	21:19			22:23	22:50
29	08:52		12:13 (33)				07:15		17:27 (13)	05:49			04:44	04:30
	16:48	112	15:34 (36)				20:10	42	19:04 (18)	21:21			22:25	22:49
30	08:50		12:14 (33)				07:12		17:31 (13)	05:46			04:42	04:31
	16:51	115	15:36 (36)				20:12	32	19:03 (18)	21:23			22:27	22:49
31	08:47		12:15 (33)				07:09		18:41 (18)				04:41	
	16:53	116	15:37 (36)				20:14	20	19:01 (18)				22:29	
Potential sun hours	221			260			365			432			521	547
Total, worst case		2852			2464			1537			40			
Sun reduction		0,50			0,50			0,50			0,50			
Oper. time red.		0,80			0,80			0,80			0,80			
Wind dir. red.		0,59			0,57			0,58			0,61			
Total reduction		0,24			0,23			0,23			0,25			
Total, real		672			561			358			10			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** AG - Hytte, ikke ferdig bygd. Eiendom 57/3 - Bjerkreim kommune (33)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September			October		November		December		
1	04:32	05:24	06:33			07:39		16:56 (13)	07:51	12:29 (27)	08:59	11:51 (33)
	22:48	22:01	20:39			19:13	53	17:49 (10)	16:49 96	15:27 (8)	15:51 87	14:16 (15)
2	04:33	05:26	06:35			07:41		16:57 (13)	07:53	12:29 (27)	09:01	11:52 (33)
	22:48	21:58	20:37			19:10	54	17:51 (10)	16:46 89	15:07 (36)	15:50 84	14:16 (15)
3	04:34	05:28	06:37			07:44		16:57 (13)	07:56	12:28 (27)	09:03	11:53 (33)
	22:47	21:56	20:34			19:07	54	17:51 (10)	16:44 90	15:07 (36)	15:49 82	14:17 (15)
4	04:35	05:30	06:39			07:46		16:57 (13)	07:58	12:29 (27)	09:05	11:54 (33)
	22:46	21:54	20:31			19:04	54	17:51 (10)	16:41 91	15:08 (36)	15:48 78	14:17 (15)
5	04:36	05:33	06:42			07:48		16:58 (13)	08:01	12:29 (27)	09:07	11:55 (33)
	22:45	21:51	20:28			19:01	54	17:52 (10)	16:39 92	15:09 (36)	15:47 73	14:17 (15)
6	04:37	05:35	06:44			07:50		16:59 (13)	08:03	11:55 (33)	09:08	11:56 (33)
	22:45	21:49	20:25			18:58	52	17:51 (10)	16:37 101	15:09 (36)	15:46 71	14:17 (15)
7	04:38	05:37	06:46			07:53		16:59 (13)	08:06	11:51 (33)	09:10	11:57 (33)
	22:44	21:46	20:22			18:56	51	17:50 (10)	16:34 107	15:09 (36)	15:45 66	14:17 (15)
8	04:40	05:39	06:48			07:55		17:01 (13)	08:08	11:49 (33)	09:12	11:58 (33)
	22:43	21:44	20:19			18:53	49	17:50 (10)	16:32 112	15:09 (36)	15:44 62	14:17 (15)
9	04:41	05:41	06:51		18:41 (18)	07:57		17:02 (13)	08:10	11:48 (33)	09:13	11:59 (33)
	22:41	21:41	20:16	6	18:47 (18)	18:50	47	17:49 (10)	16:30 113	15:09 (36)	15:44 58	14:17 (15)
10	04:42	05:44	06:53		18:37 (18)	07:59		17:04 (13)	08:13	11:46 (33)	09:15	12:01 (33)
	22:40	21:39	20:14	13	18:50 (18)	18:47	43	17:48 (10)	16:27 115	15:08 (36)	15:43 54	14:17 (15)
11	04:44	05:46	06:55		18:35 (18)	08:02		16:24 (8)	08:15	11:46 (33)	09:16	12:01 (33)
	22:39	21:36	20:11	18	18:53 (18)	18:44	37	17:46 (10)	16:25 114	15:08 (36)	15:43 50	14:17 (15)
12	04:45	05:48	06:57		18:33 (18)	08:04		16:18 (8)	08:17	11:46 (33)	09:17	12:03 (33)
	22:38	21:34	20:08	21	18:54 (18)	18:42	26	17:42 (10)	16:23 114	15:08 (36)	15:42 46	14:17 (15)
13	04:47	05:50	06:59		17:24 (13)	08:06		14:04 (27)	08:20	11:44 (33)	09:19	12:04 (33)
	22:36	21:31	20:05	27	18:54 (18)	18:39	30	17:38 (10)	16:21 113	15:06 (36)	15:42 41	14:17 (15)
14	04:49	05:53	07:02		17:18 (13)	08:09		13:55 (27)	08:22	11:44 (33)	09:20	12:06 (33)
	22:35	21:29	20:02	41	18:54 (18)	18:36	44	16:36 (8)	16:19 111	15:05 (36)	15:42 37	14:17 (15)
15	04:50	05:55	07:04		17:14 (13)	08:11		13:50 (27)	08:25	11:44 (33)	09:21	12:08 (33)
	22:33	21:26	19:59	48	18:54 (18)	18:33	57	16:37 (8)	16:17 108	15:03 (36)	15:42 31	14:17 (15)
16	04:52	05:57	07:06		17:11 (13)	08:13		13:47 (27)	08:27	11:45 (33)	09:22	13:08 (27)
	22:32	21:23	19:56	54	18:54 (18)	18:30	64	16:38 (8)	16:15 103	15:02 (36)	15:42 23	14:16 (15)
17	04:54	05:59	07:08		17:08 (13)	08:16		13:44 (27)	08:29	11:44 (33)	09:23	13:09 (27)
	22:30	21:21	19:53	58	18:54 (18)	18:28	70	16:38 (8)	16:13 104	14:59 (36)	15:42 21	14:16 (15)
18	04:56	06:02	07:10		17:07 (13)	08:18		13:42 (27)	08:32	11:44 (33)	09:24	13:11 (27)
	22:29	21:18	19:50	61	18:54 (18)	18:25	76	16:39 (8)	16:11 106	14:09 (15)	15:42 19	14:15 (15)
19	04:58	06:04	07:12		17:05 (13)	08:20		13:39 (27)	08:34	11:45 (33)	09:25	13:12 (27)
	22:27	21:15	19:47	62	18:53 (18)	18:22	81	16:39 (8)	16:09 105	14:11 (15)	15:42 18	14:16 (15)
20	04:59	06:06	07:15		17:04 (13)	08:23		13:38 (27)	08:36	11:45 (33)	09:25	13:13 (27)
	22:25	21:13	19:45	63	18:52 (18)	18:20	83	16:39 (8)	16:07 106	14:11 (15)	15:42 16	14:15 (15)
21	05:01	06:08	07:17		17:02 (13)	08:25		13:36 (27)	08:38	11:45 (33)	09:26	13:15 (27)
	22:23	21:10	19:42	64	18:51 (18)	18:17	86	16:38 (8)	16:06 107	14:13 (15)	15:43 14	14:16 (15)
22	05:03	06:11	07:19		17:01 (13)	08:27		13:35 (27)	08:41	11:45 (33)	09:26	13:16 (27)
	22:21	21:07	19:39	63	18:49 (18)	18:14	89	16:39 (8)	16:04 107	14:13 (15)	15:43 14	14:17 (15)
23	05:05	06:13	07:21		16:59 (13)	08:30		13:34 (27)	08:43	11:46 (33)	09:27	13:15 (27)
	22:19	21:05	19:36	62	18:47 (18)	18:12	89	16:38 (8)	16:02 105	14:14 (15)	15:44 15	14:17 (15)
24	05:07	06:15	07:24		16:59 (13)	08:32		13:33 (27)	08:45	11:46 (33)	09:27	13:15 (27)
	22:18	21:02	19:33	59	18:46 (18)	18:09	92	16:38 (8)	16:01 104	14:14 (15)	15:44 16	14:17 (15)
25	05:09	06:17	07:26		16:58 (13)	07:34		12:33 (27)	08:47	11:47 (33)	09:28	13:14 (27)
	22:16	20:59	19:30	54	18:42 (18)	17:06	92	15:38 (8)	15:59 102	14:15 (15)	15:45 18	14:18 (15)
26	05:11	06:19	07:28		16:58 (13)	07:37		12:31 (27)	08:49	11:47 (33)	09:28	13:13 (27)
	22:14	20:56	19:27	45	17:43 (13)	17:04	92	15:36 (8)	15:58 101	14:15 (15)	15:46 21	14:19 (15)
27	05:13	06:22	07:30		16:57 (13)	07:39		12:31 (27)	08:51	11:48 (33)	09:28	13:13 (27)
	22:11	20:53	19:24	46	17:43 (13)	17:01	91	15:36 (8)	15:56 99	14:16 (15)	15:47 22	14:20 (15)
28	05:15	06:24	07:32		16:57 (13)	07:41		12:30 (27)	08:53	11:48 (33)	09:28	12:15 (33)
	22:09	20:51	19:21	46	17:43 (13)	16:59	90	15:34 (8)	15:55 97	14:16 (15)	15:48 27	14:22 (15)
29	05:17	06:26	07:35		16:57 (13)	07:44		12:30 (27)	08:55	11:50 (33)	09:28	12:13 (33)
	22:07	20:48	19:19	48	17:45 (10)	16:56	96	15:33 (8)	15:53 94	14:16 (15)	15:49 36	14:24 (15)
30	05:20	06:28	07:37		16:56 (13)	07:46		12:30 (27)	08:57	11:50 (33)	09:28	12:13 (33)
	22:05	20:45	19:16	52	17:48 (10)	16:53	99	15:32 (8)	15:52 91	14:16 (15)	15:50 41	14:25 (15)
31	05:22	06:31				07:49		12:29 (27)			09:28	12:12 (33)
	22:03	20:42				16:51	99	15:29 (8)			15:51 45	14:26 (15)
Potential sun hours	546	478	386			319		236		199		
Total, worst case				1011			2094		3097		1286	
Sun reduction				0,50			0,50		0,50		0,50	
Oper. time red.				0,80			0,80		0,80		0,80	
Wind dir. red.				0,59			0,57		0,59		0,59	
Total reduction				0,24			0,23		0,23		0,23	
Total, real				238			474		726		301	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** AH - Brusalivegen 201 (34)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February	March	April	May	June	July	August	September	October	November	December
1	09:28	08:46	07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:39	07:51	09:00
	15:53	16:56	18:05	20:17	21:26	22:30	22:48	22:01	20:40	19:13	16:49	15:52
2	09:27	08:43	07:33	07:04	05:42	04:39	04:33	05:27	06:35	07:42	07:54	09:01
	15:54	16:59	18:07	20:19	21:28	22:32	22:48	21:58	20:37	19:10	16:47	15:50
3	09:27	08:41	07:30	07:01	05:39	04:38	04:34	05:29	06:38	07:44	07:56	09:03
	15:56	17:01	18:10	20:21	21:30	22:33	22:47	21:56	20:34	19:07	16:44	15:49
4	09:26	08:39	07:27	06:58	05:36	04:36	04:35	05:31	06:40	07:46	07:59	09:05
	15:57	17:04	18:12	20:24	21:33	22:35	22:46	21:54	20:31	19:05	16:42	15:48
5	09:26	08:37	07:24	06:55	05:34	04:35	04:37	05:33	06:42	07:48	08:01	09:07
	15:59	17:06	18:14	20:26	21:35	22:36	22:45	21:51	20:28	19:02	16:39	15:47
6	09:25	08:34	07:21	06:53	05:32	04:34	04:38	05:35	06:44	07:51	08:03	09:08
	16:00	17:09	18:17	20:28	21:37	22:38	22:45	21:49	20:25	18:59	16:37	15:47
7	09:24	08:32	07:19	06:50	05:29	04:33	04:39	05:38	06:47	07:53	08:06	09:10
	16:02	17:11	18:19	20:30	21:40	22:39	22:44	21:47	20:23	18:56	16:35	15:46
8	09:23	08:30	07:16	06:47	05:27	04:32	04:40	05:40	06:49	07:55	08:08	09:12
	16:04	17:14	18:21	20:33	21:42	22:40	22:43	21:44	20:20	18:53	16:32	15:45
9	09:23	08:27	07:13	06:44	05:24	04:31	04:42	05:42	06:51	07:57	08:11	09:13
	16:06	17:16	18:24	20:35	21:44	22:41	22:41	21:42	20:17	18:50	16:30	15:44
10	09:22	08:25	07:10	06:41	05:22	04:31	04:43	05:44	06:53	08:00	08:13	09:15
	16:07	17:18	18:26	20:37	21:46	22:43	22:40	21:39	20:14	18:48	16:28	15:44
11	09:21	08:23	07:07	06:38	05:20	04:30	04:45	05:46	06:55	08:02	08:15	09:16
	16:09	17:21	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:45	16:26	15:43
12	09:19	08:20	07:04	06:36	05:17	04:29	04:46	05:49	06:58	08:04	08:18	09:17
	16:11	17:23	18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42	16:24	15:43
13	09:18	08:18	07:02	06:33	05:15	04:29	04:48	05:51	07:00	08:07	08:20	09:19
	16:13	17:26	18:33	20:44	21:53	22:45	22:36	21:31	20:05	18:39	16:22	15:43
14	09:17	08:15	06:59	06:30	05:13	04:28	04:49	05:53	07:02	08:09	08:22	09:20
	16:15	17:28	18:35	20:47	21:55	22:46	22:35	21:29	20:02	18:36	16:19	15:43
15	09:16	08:13	06:56	06:27	05:11	04:28	04:51	05:55	07:04	08:11	08:25	09:21
	16:17	17:31	18:38	20:49	21:57	22:47	22:33	21:26	19:59	18:34	16:17	15:42
16	09:14	08:10	06:53	06:24	05:09	04:28	04:53	05:58	07:06	08:13	08:27	09:22
	16:19	17:33	18:40	20:51	22:00	22:48	22:32	21:24	19:57	18:31	16:15	15:42
17	09:13	08:07	06:50	06:22	05:06	04:27	04:54	06:00	07:08	08:16	08:29	09:23
	16:21	17:36	18:42	20:53	22:02	22:48	22:30	21:21	19:54	18:28	16:13	15:42
18	09:12	08:05	06:47	06:19	05:04	04:27	04:56	06:02	07:11	08:18	08:32	09:24
	16:24	17:38	18:45	20:56	22:04	22:49	22:29	21:18	19:51	18:25	16:12	15:42
19	09:10	08:02	06:44	06:16	05:02	04:27	04:58	06:04	07:13	08:20	08:34	09:25
	16:26	17:41	18:47	20:58	22:06	22:49	22:27	21:16	19:48	18:23	16:10	15:43
20	09:08	08:00	06:42	06:13	05:00	04:27	05:00	06:07	07:15	08:23	08:36	09:25
	16:28	17:43	18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20	16:08	15:43
21	09:07	07:57	06:39	06:11	04:58	04:27	05:02	06:09	07:17	08:25	08:39	09:26
	16:30	17:46	18:52	21:03	22:10	22:50	22:23	21:10	19:42	18:17	16:06	15:43
22	09:05	07:54	06:36	06:08	04:56	04:27	05:04	06:11	07:19	08:27	08:41	09:27
	16:32	17:48	18:54	21:05	22:12	22:50	22:22	21:08	19:39	18:15	16:04	15:44
23	09:03	07:52	06:33	06:05	04:55	04:28	05:06	06:13	07:22	08:30	08:43	09:27
	16:35	17:50	18:56	21:07	22:14	22:50	22:20	21:05	19:36	18:12	16:03	15:44
24	09:01	07:49	06:30	06:02	04:53	04:28	05:08	06:15	07:24	08:32	08:45	09:27
	16:37	17:53	18:58	21:10	22:16	22:50	22:18	21:02	19:33	18:09	16:01	15:45
25	09:00	07:46	06:27	06:00	04:51	04:28	05:10	06:18	07:26	07:35	08:47	09:28
	16:39	17:55	19:01	21:12	22:18	22:50	22:16	20:59	19:30	17:07	16:00	15:46
26	08:58	07:44	06:24	05:57	04:49	04:29	05:12	06:20	07:28	07:37	08:49	09:28
	16:42	17:58	19:03	21:14	22:20	22:50	22:14	20:57	19:28	17:04	15:58	15:46
27	08:56	07:41	06:21	05:54	04:48	04:29	05:14	06:22	07:31	07:39	08:52	09:28
	16:44	18:00	19:05	21:17	22:22	22:50	22:12	20:54	19:25	17:02	15:57	15:47
28	08:54	07:38	06:18	05:52	04:46	04:30	05:16	06:24	07:33	07:42	08:54	09:28
	16:47	18:02	19:08	21:19	22:23	22:50	22:09	20:51	19:22	16:59	15:55	15:48
29	08:52		07:16	05:49	04:44	04:31	05:18	06:27	07:35	07:44	08:56	09:28
	16:49		20:10	21:21	22:25	22:49	22:07	20:48	19:19	16:56	15:54	15:49
30	08:50		07:13	05:47	04:43	04:32	05:20	06:29	07:37	07:47	08:58	09:28
	16:51		20:12	21:24	22:27	22:49	22:05	20:45	19:16	16:54	15:53	15:50
31	08:48		07:10		04:41		05:22	06:31		07:49		09:28
	16:54		20:14		22:29		22:03	20:43		16:51		15:51
Potential sun hours	222	260	365	432	521	547	545	478	386	319	236	200
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** AI - Vaule 218 (35)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March	April	May	June	July	August	September	October		November		December
1	09:28		08:45	13:54 (27)	07:35	07:06	05:44	04:39	04:32	05:24	06:33	07:39		07:51	14:47 (13)	08:59
	15:52		16:56	18 14:12 (27)	18:04	20:16	21:26	22:30	22:48	22:01	20:39	19:13		16:48	19 15:06 (13)	15:51
2	09:27		08:43	13:56 (27)	07:32	07:04	05:41	04:38	04:33	05:26	06:35	07:41		07:53	14:48 (13)	09:01
	15:54		16:58	16 14:12 (27)	18:07	20:19	21:28	22:32	22:48	21:58	20:37	19:10		16:46	17 15:05 (13)	15:50
3	09:27		08:41	13:58 (27)	07:29	07:01	05:38	04:37	04:34	05:28	06:37	07:44		07:56	14:48 (13)	09:03
	15:55		17:01	11 14:09 (27)	18:09	20:21	21:30	22:33	22:47	21:56	20:34	19:07		16:44	16 15:04 (13)	15:49
4	09:26		08:39		07:27	06:58	05:36	04:36	04:35	05:30	06:39	07:46		07:58	14:50 (13)	09:05
	15:57		17:03		18:12	20:23	21:33	22:35	22:46	21:54	20:31	19:04		16:41	12 15:02 (13)	15:48
5	09:26		08:37		07:24	06:55	05:33	04:34	04:36	05:33	06:42	07:48		08:01	14:54 (13)	09:07
	15:58		17:06		18:14	20:26	21:35	22:36	22:45	21:51	20:28	19:01		16:39	5 14:59 (13)	15:47
6	09:25		08:34	15:24 (13)	07:21	06:52	05:31	04:33	04:37	05:35	06:44	07:50		08:03		09:08
	16:00		17:08	6 15:30 (13)	18:16	20:28	21:37	22:38	22:45	21:49	20:25	18:58		16:36		15:46
7	09:24		08:32	15:21 (13)	07:18	06:49	05:29	04:32	04:38	05:37	06:46	07:53		08:06	13:33 (27)	09:10
	16:01		17:11	12 15:33 (13)	18:19	20:30	21:39	22:39	22:44	21:46	20:22	18:56		16:34	3 13:36 (27)	15:45
8	09:23		08:30	15:19 (13)	07:15	06:46	05:26	04:31	04:40	05:39	06:48	07:55		08:08	13:29 (27)	09:12
	16:03		17:13	15 15:34 (13)	18:21	20:32	21:42	22:40	22:43	21:44	20:19	18:53		16:32	11 13:40 (27)	15:44
9	09:23		08:27	15:18 (13)	07:13	06:44	05:24	04:31	04:41	05:41	06:50	07:57		08:10	13:27 (27)	09:13
	16:05		17:15	18 15:36 (13)	18:23	20:35	21:44	22:41	22:41	21:41	20:16	18:50		16:30	15 13:42 (27)	15:44
10	09:22		08:25	15:17 (13)	07:10	06:41	05:21	04:30	04:42	05:44	06:53	07:59		08:13	13:25 (27)	09:15
	16:07		17:18	20 15:37 (13)	18:26	20:37	21:46	22:43	22:40	21:39	20:14	18:47		16:27	18 13:43 (27)	15:43
11	09:20		08:22	15:16 (13)	07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02		08:15	13:24 (27)	09:16
	16:09		17:20	21 15:37 (13)	18:28	20:39	21:48	22:44	22:39	21:36	20:11	18:44		16:25	21 13:45 (27)	15:43
12	09:19	13:53 (27)	08:20	15:17 (13)	07:04	06:35	05:17	04:29	04:45	05:48	06:57	08:04		08:17	13:24 (27)	09:17
	16:10	2 13:55 (27)	17:23	21 15:38 (13)	18:30	20:42	21:51	22:45	22:38	21:34	20:08	18:41		16:23	22 13:46 (27)	15:42
13	09:18	13:53 (27)	08:17	15:16 (13)	07:01	06:32	05:15	04:28	04:47	05:50	06:59	08:06		08:20	13:23 (27)	09:19
	16:12	5 13:58 (27)	17:25	22 15:38 (13)	18:33	20:44	21:53	22:45	22:36	21:31	20:05	18:39		16:21	23 13:46 (27)	15:42
14	09:17	13:51 (27)	08:15	15:16 (13)	06:58	06:29	05:12	04:27	04:49	05:53	07:01	08:09		08:22	13:23 (27)	09:20
	16:14	8 13:59 (27)	17:28	22 15:38 (13)	18:35	20:46	21:55	22:46	22:35	21:29	20:02	18:36		16:19	24 13:47 (27)	15:42
15	09:16	13:50 (27)	08:12	15:17 (13)	06:56	06:27	05:10	04:27	04:50	05:55	07:04	08:11		08:25	11:08 (38)	09:21
	16:17	13 14:03 (27)	17:30	21 15:38 (13)	18:37	20:49	21:57	22:47	22:33	21:26	19:59	18:33		16:17	31 13:47 (27)	15:42
16	09:14	13:49 (27)	08:10	15:17 (13)	06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13		08:27	11:06 (38)	09:22
	16:19	19 14:08 (27)	17:33	21 15:38 (13)	18:40	20:51	21:59	22:48	22:32	21:23	19:56	18:30		16:15	37 13:48 (27)	15:42
17	09:13	11:39 (38)	08:07	15:17 (13)	06:50	06:21	05:06	04:27	04:54	05:59	07:08	08:16		08:29	11:05 (38)	09:23
	16:21	27 14:10 (27)	17:35	20 15:37 (13)	18:42	20:53	22:02	22:48	22:30	21:21	19:53	18:28		16:13	39 13:48 (27)	15:42
18	09:11	11:35 (38)	08:05	15:17 (13)	06:47	06:18	05:04	04:26	04:56	06:01	07:10	08:18		08:32	11:04 (38)	09:24
	16:23	33 14:11 (27)	17:38	19 15:36 (13)	18:44	20:56	22:04	22:49	22:29	21:18	19:50	18:25		16:11	42 13:48 (27)	15:42
19	09:10	11:32 (38)	08:02	15:19 (13)	06:44	06:16	05:02	04:26	04:57	06:04	07:12	08:20		08:34	11:04 (38)	09:25
	16:25	36 14:11 (27)	17:40	17 15:36 (13)	18:47	20:58	22:06	22:49	22:27	21:15	19:47	18:22		16:09	43 13:49 (27)	15:42
20	09:08	11:28 (38)	07:59	15:21 (13)	06:41	06:13	05:00	04:26	04:59	06:06	07:15	08:23		08:36	11:03 (38)	09:25
	16:27	43 14:12 (27)	17:43	13 15:34 (13)	18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:19		16:07	43 13:48 (27)	15:42
21	09:07	11:27 (38)	07:57	15:24 (13)	06:38	06:10	04:58	04:26	05:01	06:08	07:17	08:25	15:53 (13)	08:38	11:03 (38)	09:26
	16:30	44 14:13 (27)	17:45	6 15:30 (13)	18:51	21:02	22:10	22:50	22:23	21:10	19:42	18:17	9 16:02 (13)	16:06	44 13:49 (27)	15:43
22	09:05	11:28 (38)	07:54		06:35	06:07	04:56	04:27	05:03	06:10	07:19	08:27	15:51 (13)	08:41	11:04 (38)	09:27
	16:32	43 14:13 (27)	17:47		18:53	21:05	22:12	22:50	22:21	21:07	19:39	18:14	13 16:04 (13)	16:04	43 13:48 (27)	15:43
23	09:03	11:29 (38)	07:51		06:32	06:05	04:54	04:27	05:05	06:13	07:21	08:30	15:48 (13)	08:43	11:09 (38)	09:27
	16:34	43 14:14 (27)	17:50		18:56	21:07	22:14	22:50	22:20	21:05	19:36	18:11	17 16:05 (13)	16:02	36 13:48 (27)	15:44
24	09:01	11:30 (38)	07:49		06:30	06:02	04:52	04:27	05:07	06:15	07:23	08:32	15:47 (13)	08:45	11:13 (38)	09:27
	16:36	42 14:14 (27)	17:52		18:58	21:09	22:16	22:50	22:18	21:02	19:33	18:09	19 16:06 (13)	16:01	33 13:49 (27)	15:44
25	08:59	11:32 (38)	07:46		06:27	05:59	04:50	04:28	05:09	06:17	07:26	07:34	14:47 (13)	08:47	11:17 (38)	09:28
	16:39	39 14:15 (27)	17:55		19:00	21:12	22:18	22:50	22:16	20:59	19:30	17:06	20 15:07 (13)	15:59	27 13:48 (27)	15:45
26	08:58	11:33 (38)	07:43		06:24	05:57	04:49	04:28	05:11	06:19	07:28	07:37	14:46 (13)	08:49	13:28 (27)	09:28
	16:41	36 14:14 (27)	17:57		19:03	21:14	22:20	22:50	22:14	20:56	19:27	17:04	21 15:07 (13)	15:57	20 13:48 (27)	15:46
27	08:56	11:36 (38)	07:41		06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39	14:46 (13)	08:51	13:29 (27)	09:28
	16:44	30 14:14 (27)	18:00		19:05	21:16	22:22	22:50	22:11	20:53	19:24	17:01	22 15:08 (13)	15:56	13 13:42 (27)	15:47
28	08:54	13:51 (27)	07:38		06:18	05:51	04:45	04:29	05:15	06:24	07:32	07:41	14:45 (13)	08:53	13:30 (27)	09:28
	16:46	24 14:15 (27)	18:02		19:07	21:19	22:23	22:50	22:09	20:51	19:21	16:58	22 15:07 (13)	15:55	9 13:39 (27)	15:47
29	08:52	13:51 (27)			07:15	05:49	04:44	04:30	05:17	06:26	07:35	07:44	14:45 (13)	08:55	13:34 (27)	09:28
	16:48	23 14:14 (27)			20:10	21:21	22:25	22:49	22:07	20:48	19:18	16:56	22 15:07 (13)	15:53	5 13:39 (27)	15:49
30	08:50	13:52 (27)			07:12	05:46	04:42	04:31	05:20	06:28	07:37	07:46	14:46 (13)	08:57	13:34 (27)	09:28
	16:51	22 14:14 (27)			20:12	21:23	22:27	22:49	22:05	20:45	19:16	16:53	21 15:07 (13)	15:52	2 13:36 (27)	15:50
31	08:48	13:54 (27)			07:09		04:41		05:22	06:31		07:49	14:46 (13)			09:28
	16:53	20 14:14 (27)			20:14		22:29		22:03	20:42		16:51	20 15:06 (13)			15:51
Potential sun hours	221		260		365	432	521	547	546	478	386	319		236		199
Total, worst case		552		319									206		673	
Sun reduction		0,50		0,50									0,50		0,50	
Oper. time red.		0,80		0,80									0,80		0,80	
Wind dir. red.		0,58		0,55									0,55		0,57	
Total reduction		0,23		0,22									0,22		0,23	
Total, real		128		69									45		154	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** AJ - Heiavegen 543 (36)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February	March	April	May	June		July		August	September	October	November	December
1	09:27	08:45	07:35	07:06	05:44	04:40		04:32	20:43 (2)	05:24	06:33	07:39	07:51	08:59
	15:53	16:56	18:04	20:16	21:25	22:30		22:48	2 20:45 (2)	22:00	20:39	19:13	16:49	15:51
2	09:27	08:43	07:32	07:04	05:41	04:38		04:33	20:44 (2)	05:26	06:35	07:41	07:53	09:01
	15:54	16:58	18:07	20:19	21:28	22:31		22:47	1 20:45 (2)	21:58	20:36	19:10	16:46	15:50
3	09:26	08:41	07:29	07:01	05:39	04:37		04:34	20:44 (2)	05:28	06:37	07:43	07:56	09:03
	15:55	17:01	18:09	20:21	21:30	22:33		22:47	1 20:45 (2)	21:56	20:33	19:07	16:44	15:49
4	09:26	08:38	07:27	06:58	05:36	04:36		04:35		05:30	06:39	07:46	07:58	09:05
	15:57	17:03	18:11	20:23	21:32	22:34		22:46		21:53	20:31	19:04	16:41	15:48
5	09:25	08:36	07:24	06:55	05:34	04:35		04:36		05:33	06:42	07:48	08:00	09:06
	15:58	17:06	18:14	20:25	21:35	22:36		22:45		21:51	20:28	19:01	16:39	15:47
6	09:25	08:34	07:21	06:52	05:31	04:34		04:37		05:35	06:44	07:50	08:03	09:08
	16:00	17:08	18:16	20:28	21:37	22:37		22:44		21:48	20:25	18:58	16:37	15:46
7	09:24	08:32	07:18	06:49	05:29	04:33		04:39		05:37	06:46	07:52	08:05	09:10
	16:02	17:11	18:19	20:30	21:39	22:38		22:43		21:46	20:22	18:56	16:34	15:45
8	09:23	08:29	07:15	06:46	05:26	04:32		04:40		05:39	06:48	07:55	08:08	09:11
	16:03	17:13	18:21	20:32	21:41	22:40		22:42		21:44	20:19	18:53	16:32	15:45
9	09:22	08:27	07:12	06:44	05:24	04:31		04:41		05:41	06:50	07:57	08:10	09:13
	16:05	17:16	18:23	20:35	21:44	22:41		22:41		21:41	20:16	18:50	16:30	15:44
10	09:21	08:24	07:10	06:41	05:22	04:30		04:43		05:44	06:53	07:59	08:12	09:14
	16:07	17:18	18:26	20:37	21:46	22:42		22:40		21:39	20:13	18:47	16:27	15:43
11	09:20	08:22	07:07	06:38	05:19	04:29		20:39 (2)	04:44	05:46	06:55	08:01	08:15	09:16
	16:09	17:20	18:28	20:39	21:48	22:43	1	20:40 (2)	22:39	21:36	20:11	18:44	16:25	15:43
12	09:19	08:20	07:04	06:35	05:17	04:29		20:40 (2)	04:46	05:48	06:57	08:04	08:17	09:17
	16:11	17:23	18:30	20:41	21:50	22:44	1	20:41 (2)	22:37	21:34	20:08	18:41	16:23	15:43
13	09:18	08:17	07:01	06:32	05:15	04:28		20:39 (2)	04:47	05:50	06:59	08:06	08:20	09:18
	16:13	17:25	18:33	20:44	21:53	22:45	2	20:41 (2)	22:36	21:31	20:05	18:39	16:21	15:42
14	09:17	08:15	06:58	06:29	05:12	04:28		20:40 (2)	04:49	05:53	07:01	08:08	08:22	09:19
	16:15	17:28	18:35	20:46	21:55	22:46	2	20:42 (2)	22:34	21:28	20:02	18:36	16:19	15:42
15	09:15	08:12	06:55	06:27	05:10	04:27		20:40 (2)	04:51	05:55	07:04	08:11	08:24	09:20
	16:17	17:30	18:37	20:48	21:57	22:47	2	20:42 (2)	22:33	21:26	19:59	18:33	16:17	15:42
16	09:14	08:10	06:53	06:24	05:08	04:27		20:40 (2)	04:52	05:57	07:06	08:13	08:27	09:21
	16:19	17:33	18:40	20:51	21:59	22:47	3	20:43 (2)	22:31	21:23	19:56	18:30	16:15	15:42
17	09:12	08:07	06:50	06:21	05:06	04:27		20:40 (2)	04:54	05:59	07:08	08:15	08:29	09:22
	16:21	17:35	18:42	20:53	22:01	22:48	4	20:44 (2)	22:30	21:20	19:53	18:28	16:13	15:42
18	09:11	08:04	06:47	06:18	05:04	04:27		20:41 (2)	04:56	06:02	07:10	08:18	08:31	09:23
	16:23	17:38	18:44	20:55	22:03	22:48	3	20:44 (2)	22:28	21:18	19:50	18:25	16:11	15:42
19	09:09	08:02	06:44	06:16	05:02	04:27		20:41 (2)	04:58	06:04	07:12	08:20	08:33	09:24
	16:25	17:40	18:46	20:58	22:05	22:49	3	20:44 (2)	22:26	21:15	19:47	18:22	16:09	15:42
20	09:08	07:59	06:41	06:13	05:00	04:27		20:41 (2)	05:00	06:06	07:15	08:22	08:36	09:25
	16:27	17:43	18:49	21:00	22:07	22:49	3	20:44 (2)	22:25	21:12	19:44	18:20	16:07	15:43
21	09:06	07:56	06:38	06:10	04:58	04:27		20:41 (2)	05:01	06:08	07:17	08:25	08:38	09:25
	16:30	17:45	18:51	21:02	22:10	22:49	3	20:44 (2)	22:23	21:10	19:42	18:17	16:06	15:43
22	09:05	07:54	06:35	06:07	04:56	04:27		20:41 (2)	05:03	06:11	07:19	08:27	08:40	09:26
	16:32	17:47	18:53	21:05	22:12	22:50	3	20:44 (2)	22:21	21:07	19:39	18:14	16:04	15:43
23	09:03	07:51	06:32	06:05	04:54	04:27		20:42 (2)	05:05	06:13	07:21	08:29	08:42	09:27
	16:34	17:50	18:56	21:07	22:14	22:50	3	20:45 (2)	22:19	21:04	19:36	18:12	16:02	15:44
24	09:01	07:48	06:29	06:02	04:52	04:27		20:42 (2)	05:07	06:15	07:23	08:32	08:45	09:27
	16:37	17:52	18:58	21:09	22:15	22:50	3	20:45 (2)	22:17	21:02	19:33	18:09	16:01	15:44
25	08:59	07:46	06:27	05:59	04:51	04:28		20:42 (2)	05:09	06:17	07:26	07:34	08:47	09:27
	16:39	17:55	19:00	21:11	22:17	22:50	3	20:45 (2)	22:15	20:59	19:30	17:06	15:59	15:45
26	08:57	07:43	06:24	05:57	04:49	04:28		20:42 (2)	05:11	06:19	07:28	07:36	08:49	09:27
	16:41	17:57	19:03	21:14	22:19	22:50	3	20:45 (2)	22:13	20:56	19:27	17:04	15:58	15:46
27	08:55	07:40	06:21	05:54	04:47	04:29		20:42 (2)	05:13	06:22	07:30	07:39	08:51	09:28
	16:44	18:00	19:05	21:16	22:21	22:49	3	20:45 (2)	22:11	20:53	19:24	17:01	15:56	15:47
28	08:53	07:38	06:18	05:51	04:46	04:30		20:43 (2)	05:15	06:24	07:32	07:41	08:53	09:28
	16:46	18:02	19:07	21:18	22:23	22:49	2	20:45 (2)	22:09	20:50	19:21	16:59	15:55	15:48
29	08:51		07:15	05:49	04:44	04:30		20:43 (2)	05:18	06:26	07:34	07:44	08:55	09:28
	16:49		20:09	21:21	22:25	22:49	2	20:45 (2)	22:07	20:48	19:18	16:56	15:54	15:49
30	08:49		07:12	05:46	04:42	04:31		20:43 (2)	05:20	06:28	07:37	07:46	08:57	09:28
	16:51		20:12	21:23	22:26	22:48	2	20:45 (2)	22:05	20:45	19:16	16:53	15:52	15:50
31	08:47		07:09		04:41				05:22	06:31		07:48		09:27
	16:53		20:14		22:28				22:02	20:42		16:51		15:51
Potential sun hours	222	260	365	432	521	547			545	478	386	319	236	200
Total, worst case							51		4					
Sun reduction							0,50		0,50					
Oper. time red.							0,80		0,80					
Wind dir. red.							0,74		0,74					
Total reduction							0,29		0,29					
Total, real							15		1					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** AK - Heiavegen 541 (37)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February	March	April	May	June	July	August	September	October	November	December
1	09:27	08:45	07:35	07:06	05:44	04:40	20:27 (2) 04:32	20:32 (2) 05:24	06:33	07:39	07:51	08:59
	15:53	16:56	18:04	20:16	21:25	22:30 9	20:36 (2) 22:48 17	20:49 (2) 22:00	20:39	19:13	16:49	15:51
2	09:27	08:43	07:32	07:04	05:41	04:38	20:27 (2) 04:33	20:32 (2) 05:26	06:35	07:41	07:53	09:01
	15:54	16:58	18:07	20:19	21:28	22:31 11	20:38 (2) 22:47 16	20:48 (2) 21:58	20:36	19:10	16:46	15:50
3	09:26	08:41	07:29	07:01	05:39	04:37	20:27 (2) 04:34	20:33 (2) 05:28	06:37	07:43	07:56	09:03
	15:55	17:01	18:09	20:21	21:30	22:33 12	20:39 (2) 22:47 15	20:48 (2) 21:56	20:33	19:07	16:44	15:49
4	09:26	08:38	07:27	06:58	05:36	04:36	20:27 (2) 04:35	20:33 (2) 05:30	06:39	07:46	07:58	09:05
	15:57	17:03	18:11	20:23	21:32	22:34 12	20:39 (2) 22:46 14	20:47 (2) 21:53	20:31	19:04	16:41	15:48
5	09:25	08:36	07:24	06:55	05:34	04:35	20:27 (2) 04:36	20:33 (2) 05:33	06:42	07:48	08:00	09:06
	15:58	17:06	18:14	20:25	21:35	22:36 13	20:40 (2) 22:45 14	20:47 (2) 21:51	20:28	19:01	16:39	15:47
6	09:25	08:34	07:21	06:52	05:31	04:34	20:27 (2) 04:37	20:33 (2) 05:35	06:44	07:50	08:03	09:08
	16:00	17:08	18:16	20:28	21:37	22:37 13	20:40 (2) 22:44 14	20:47 (2) 21:48	20:25	18:58	16:37	15:46
7	09:24	08:32	07:18	06:49	05:29	04:33	20:28 (2) 04:39	20:33 (2) 05:37	06:46	07:52	08:05	09:10
	16:02	17:11	18:19	20:30	21:39	22:38 14	20:42 (2) 22:43 13	20:46 (2) 21:46	20:22	18:56	16:34	15:45
8	09:23	08:29	07:15	06:46	05:26	04:32	20:27 (2) 04:40	20:33 (2) 05:39	06:48	07:55	08:08	09:11
	16:03	17:13	18:21	20:32	21:41	22:40 15	20:42 (2) 22:42 13	20:46 (2) 21:44	20:19	18:53	16:32	15:45
9	09:22	08:27	07:12	06:44	05:24	04:31	20:27 (2) 04:41	20:34 (2) 05:41	06:50	07:57	08:10	09:13
	16:05	17:16	18:23	20:35	21:44	22:41 15	20:42 (2) 22:41 12	20:46 (2) 21:41	20:16	18:50	16:30	15:44
10	09:21	08:24	07:10	06:41	05:22	04:30	20:28 (2) 04:43	20:34 (2) 05:44	06:53	07:59	08:12	09:14
	16:07	17:18	18:26	20:37	21:46	22:42 15	20:43 (2) 22:40 12	20:46 (2) 21:39	20:13	18:47	16:27	15:43
11	09:20	08:22	07:07	06:38	05:19	04:29	20:28 (2) 04:44	20:34 (2) 05:46	06:55	08:01	08:15	09:16
	16:09	17:20	18:28	20:39	21:48	22:43 16	20:44 (2) 22:39 11	20:45 (2) 21:36	20:11	18:44	16:25	15:43
12	09:19	08:20	07:04	06:35	05:17	04:29	20:29 (2) 04:46	20:35 (2) 05:48	06:57	08:04	08:17	09:17
	16:11	17:23	18:30	20:41	21:50	22:44 16	20:45 (2) 22:37 5	20:42 (2) 21:34	20:08	18:41	16:23	15:43
13	09:18	08:17	07:01	06:32	05:15	04:28	20:28 (2) 04:47	20:35 (2) 05:50	06:59	08:06	08:20	09:18
	16:13	17:25	18:33	20:44	21:53	22:45 17	20:45 (2) 22:36 3	20:38 (2) 21:31	20:05	18:39	16:21	15:42
14	09:17	08:15	06:58	06:29	05:12	04:28	20:29 (2) 04:49	20:35 (2) 05:53	07:01	08:08	08:22	09:19
	16:15	17:28	18:35	20:46	21:55	22:46 17	20:46 (2) 22:34 2	20:37 (2) 21:28	20:02	18:36	16:19	15:42
15	09:15	08:12	06:55	06:27	05:10	04:27	20:29 (2) 04:51	05:55	07:04	08:11	08:24	09:20
	16:17	17:30	18:37	20:48	21:57	22:47 18	20:47 (2) 22:33	21:26	19:59	18:33	16:17	15:42
16	09:14	08:10	06:53	06:24	05:08	04:27	20:30 (2) 04:52	05:57	07:06	08:13	08:27	09:21
	16:19	17:33	18:40	20:51	21:59	22:47 17	20:47 (2) 22:31	21:23	19:56	18:30	16:15	15:42
17	09:12	08:07	06:50	06:21	05:06	04:27	20:30 (2) 04:54	05:59	07:08	08:15	08:29	09:22
	16:21	17:35	18:42	20:53	22:01	22:48 18	20:48 (2) 22:30	21:20	19:53	18:28	16:13	15:42
18	09:11	08:04	06:47	06:18	05:04	04:27	20:30 (2) 04:56	06:02	07:10	08:18	08:31	09:23
	16:23	17:38	18:44	20:55	22:03	22:48 18	20:48 (2) 22:28	21:18	19:50	18:25	16:11	15:42
19	09:09	08:02	06:44	06:16	05:02	04:27	20:30 (2) 04:58	06:04	07:12	08:20	08:34	09:24
	16:25	17:40	18:46	20:58	22:05	22:49 19	20:49 (2) 22:26	21:15	19:47	18:22	16:09	15:42
20	09:08	07:59	06:41	06:13	05:00	04:27	20:31 (2) 05:00	06:06	07:15	08:22	08:36	09:25
	16:27	17:43	18:49	21:00	22:07	22:49 18	20:49 (2) 22:25	21:12	19:44	18:19	16:07	15:42
21	09:06	07:56	06:38	06:10	04:58	04:27	20:31 (2) 05:01	06:08	07:17	08:25	08:38	09:25
	16:30	17:45	18:51	21:02	22:10	22:49 18	20:49 (2) 22:23	21:10	19:42	18:17	16:06	15:43
22	09:05	07:54	06:35	06:07	04:56	04:27	20:31 (2) 05:03	06:11	07:19	08:27	08:40	09:26
	16:32	17:47	18:53	21:05	22:12	22:50 18	20:49 (2) 22:21	21:07	19:39	18:14	16:04	15:43
23	09:03	07:51	06:32	06:05	04:54	04:27	20:30 (2) 05:05	06:13	07:21	08:29	08:42	09:27
	16:34	17:50	18:56	21:07	22:14	22:50 19	20:49 (2) 22:19	21:04	19:36	18:11	16:02	15:44
24	09:01	07:48	06:29	06:02	04:52	04:27	20:31 (2) 05:07	06:15	07:23	08:32	08:45	09:27
	16:37	17:52	18:58	21:09	22:15	22:50 19	20:50 (2) 22:17	21:02	19:33	18:09	16:01	15:44
25	08:59	07:46	06:27	05:59	04:51	04:28	20:31 (2) 05:09	06:17	07:26	07:34	08:47	09:27
	16:39	17:55	19:00	21:11	22:17	22:50 18	20:49 (2) 22:15	20:59	19:30	17:06	15:59	15:45
26	08:57	07:43	06:24	05:57	04:49	04:28	20:32 (2) 05:11	06:19	07:28	07:36	08:49	09:27
	16:41	17:57	19:03	21:14	22:19	22:50 18	20:50 (2) 22:13	20:56	19:27	17:04	15:58	15:46
27	08:55	07:40	06:21	05:54	04:47	04:29	20:31 (2) 05:13	06:22	07:30	07:39	08:51	09:28
	16:44	18:00	19:05	21:16	22:21	22:49 18	20:49 (2) 22:11	20:53	19:24	17:01	15:56	15:47
28	08:53	07:38	06:18	05:51	04:46	04:30	20:32 (2) 05:15	06:24	07:32	07:41	08:53	09:28
	16:46	18:02	19:07	21:18	22:23	22:49 17	20:49 (2) 22:09	20:50	19:21	16:59	15:55	15:48
29	08:51		07:15	05:49	04:44	04:30	20:32 (2) 05:18	06:26	07:34	07:44	08:55	09:28
	16:49		20:09	21:21	22:25	22:49 18	20:50 (2) 22:07	20:48	19:18	16:56	15:53	15:49
30	08:49		07:12	05:46	04:42 20:27 (2)	04:31	20:32 (2) 05:20	06:28	07:37	07:46	08:57	09:28
	16:51		20:12	21:23	22:26 2 20:29 (2)	22:48 17	20:49 (2) 22:05	20:45	19:16	16:53	15:52	15:50
31	08:47		07:09		04:41 20:27 (2)		05:22	06:31		07:48		09:27
	16:53		20:14		22:28 3 20:30 (2)		22:02	20:42		16:51		15:51
Potential sun hours	222	260	365	432	521	547	545	478	386	319	236	200
Total, worst case					5	483	161					
Sun reduction					0,50	0,50	0,50					
Oper. time red.					0,80	0,80	0,80					
Wind dir. red.					0,73	0,73	0,73					
Total reduction					0,29	0,29	0,29					
Total, real					1	142	47					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** AL - Buevegen 2100 (38)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February	March	April	May	June	July	August	September	October	November			December		
1	09:28		12:55 (13)	08:45	07:35	07:07	05:44	04:39	04:32	05:24	06:33	07:39	07:51			09:00		12:38 (13)
	15:52	16	13:11 (13)	16:56	18:04	20:16	21:26	22:30	22:48	22:01	20:39	19:13	16:48			15:51	20	12:58 (13)
2	09:27		12:55 (13)	08:43	07:32	07:04	05:41	04:38	04:33	05:26	06:35	07:41	07:54			09:01		12:39 (13)
	15:54	16	13:11 (13)	16:58	18:07	20:19	21:28	22:32	22:48	21:58	20:37	19:10	16:46			15:50	20	12:59 (13)
3	09:27		12:55 (13)	08:41	07:30	07:01	05:38	04:37	04:34	05:28	06:37	07:44	07:56			09:03		12:40 (13)
	15:55	17	13:12 (13)	17:01	18:09	20:21	21:30	22:33	22:47	21:56	20:34	19:07	16:44			15:49	20	13:00 (13)
4	09:26		12:55 (13)	08:39	07:27	06:58	05:36	04:36	04:35	05:30	06:39	07:46	07:58			09:05		12:40 (13)
	15:57	17	13:12 (13)	17:03	18:12	20:23	21:33	22:35	22:46	21:54	20:31	19:04	16:41			15:48	20	13:00 (13)
5	09:26		12:55 (13)	08:37	07:24	06:55	05:33	04:34	04:36	05:33	06:42	07:48	08:01			09:07		12:41 (13)
	15:58	18	13:13 (13)	17:06	18:14	20:26	21:35	22:36	22:46	21:51	20:28	19:01	16:39			15:47	19	13:00 (13)
6	09:25		12:55 (13)	08:34	07:21	06:52	05:31	04:33	04:37	05:35	06:44	07:50	08:03			09:09		12:41 (13)
	16:00	19	13:14 (13)	17:08	18:16	20:28	21:37	22:38	22:45	21:49	20:25	18:58	16:36			15:46	19	13:00 (13)
7	09:24		12:55 (13)	08:32	07:18	06:49	05:29	04:32	04:38	05:37	06:46	07:53	08:06			09:10		12:42 (13)
	16:01	20	13:15 (13)	17:11	18:19	20:30	21:40	22:39	22:44	21:46	20:22	18:56	16:34			15:45	18	13:00 (13)
8	09:24		12:56 (13)	08:30	07:16	06:46	05:26	04:31	04:40	05:39	06:48	07:55	08:08			09:12		12:43 (13)
	16:03	19	13:15 (13)	17:13	18:21	20:33	21:42	22:40	22:43	21:44	20:19	18:53	16:32			15:44	18	13:01 (13)
9	09:23		12:55 (13)	08:27	07:13	06:44	05:24	04:31	04:41	05:41	06:51	07:57	08:10			09:13		12:43 (13)
	16:05	20	13:15 (13)	17:16	18:23	20:35	21:44	22:42	22:42	21:42	20:17	18:50	16:30			15:44	17	13:00 (13)
10	09:22		12:56 (13)	08:25	07:10	06:41	05:21	04:30	04:42	05:44	06:53	07:59	08:13			09:15		12:44 (13)
	16:07	20	13:16 (13)	17:18	18:26	20:37	21:46	22:43	22:40	21:39	20:14	18:47	16:27			15:43	16	13:00 (13)
11	09:21		12:57 (13)	08:22	07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02	08:15			09:16		12:45 (13)
	16:09	20	13:17 (13)	17:20	18:28	20:39	21:49	22:44	22:39	21:36	20:11	18:44	16:25			15:43	16	13:01 (13)
12	09:19		12:57 (13)	08:20	07:04	06:35	05:17	04:29	04:45	05:48	06:57	08:04	08:18			09:17		12:45 (13)
	16:11	20	13:17 (13)	17:23	18:30	20:42	21:51	22:45	22:38	21:34	20:08	18:42	16:23			15:42	16	13:01 (13)
13	09:18		12:57 (13)	08:17	07:01	06:32	05:15	04:28	04:47	05:50	06:59	08:06	08:20			09:19		12:46 (13)
	16:12	20	13:17 (13)	17:25	18:33	20:44	21:53	22:46	22:36	21:31	20:05	18:39	16:21			15:42	15	13:01 (13)
14	09:17		12:58 (13)	08:15	06:58	06:29	05:12	04:28	04:49	05:53	07:02	08:09	08:22			09:20		12:47 (13)
	16:14	20	13:18 (13)	17:28	18:35	20:46	21:55	22:46	22:35	21:29	20:02	18:36	16:19			15:42	14	13:01 (13)
15	09:16		12:58 (13)	08:12	06:56	06:27	05:10	04:27	04:50	05:55	07:04	08:11	08:25			09:21		12:47 (13)
	16:17	20	13:18 (13)	17:30	18:37	20:49	21:57	22:47	22:34	21:26	19:59	18:33	16:17			15:42	14	13:01 (13)
16	09:14		12:58 (13)	08:10	06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13	08:27			09:22		12:48 (13)
	16:19	20	13:18 (13)	17:33	18:40	20:51	22:00	22:48	22:32	21:23	19:56	18:30	16:15			15:42	13	13:01 (13)
17	09:13		12:59 (13)	08:07	06:50	06:21	05:06	04:27	04:54	05:59	07:08	08:16	08:29			09:23		12:48 (13)
	16:21	19	13:18 (13)	17:35	18:42	20:53	22:02	22:48	22:30	21:21	19:53	18:28	16:13			15:42	14	13:02 (13)
18	09:11		12:59 (13)	08:05	06:47	06:18	05:04	04:26	04:56	06:02	07:10	08:18	08:32			09:24		12:49 (13)
	16:23	19	13:18 (13)	17:38	18:44	20:56	22:04	22:49	22:29	21:18	19:50	18:25	16:11			15:42	13	13:02 (13)
19	09:10		13:01 (13)	08:02	06:44	06:16	05:02	04:26	04:57	06:04	07:13	08:20	08:34		12:41 (13)	09:25		12:50 (13)
	16:25	18	13:19 (13)	17:40	18:47	20:58	22:06	22:49	22:27	21:15	19:48	18:22	16:09	9	12:50 (13)	15:42	12	13:02 (13)
20	09:08		13:02 (13)	07:59	06:41	06:13	05:00	04:26	04:59	06:06	07:15	08:23	08:36		12:39 (13)	09:25		12:51 (13)
	16:27	16	13:18 (13)	17:43	18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20	16:07	12	12:51 (13)	15:42	12	13:03 (13)
21	09:07		13:02 (13)	07:57	06:38	06:10	04:58	04:26	05:01	06:08	07:17	08:25	08:38		12:38 (13)	09:26		12:51 (13)
	16:30	15	13:17 (13)	17:45	18:51	21:03	22:10	22:50	22:23	21:10	19:42	18:17	16:06	15	12:53 (13)	15:43	12	13:03 (13)
22	09:05		13:04 (13)	07:54	06:35	06:07	04:56	04:27	05:03	06:11	07:19	08:27	08:41		12:38 (13)	09:27		12:52 (13)
	16:32	12	13:16 (13)	17:48	18:54	21:05	22:12	22:50	22:22	21:07	19:39	18:14	16:04	16	12:54 (13)	15:43	12	13:04 (13)
23	09:03		13:06 (13)	07:51	06:33	06:05	04:54	04:27	05:05	06:13	07:21	08:30	08:43		12:37 (13)	09:27		12:52 (13)
	16:34	9	13:15 (13)	17:50	18:56	21:07	22:14	22:50	22:20	21:05	19:36	18:12	16:02	18	12:55 (13)	15:44	12	13:04 (13)
24	09:01			07:49	06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32	08:45		12:38 (13)	09:28		12:52 (13)
	16:37			17:52	18:58	21:10	22:16	22:50	22:18	21:02	19:33	18:09	16:01	18	12:56 (13)	15:44	12	13:04 (13)
25	09:00			07:46	06:27	05:59	04:50	04:28	05:09	06:17	07:26	07:34	08:47		12:37 (13)	09:28		12:53 (13)
	16:39			17:55	19:00	21:12	22:18	22:50	22:16	20:59	19:30	17:06	15:59	19	12:56 (13)	15:45	13	13:06 (13)
26	08:58			07:43	06:24	05:57	04:49	04:28	05:11	06:19	07:28	07:37	08:49		12:38 (13)	09:28		12:53 (13)
	16:41			17:57	19:03	21:14	22:20	22:50	22:14	20:56	19:27	17:04	15:57	19	12:57 (13)	15:46	13	13:06 (13)
27	08:56			07:41	06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39	08:52		12:37 (13)	09:28		12:54 (13)
	16:44			18:00	19:05	21:16	22:22	22:50	22:12	20:54	19:24	17:01	15:56	20	12:57 (13)	15:47	13	13:07 (13)
28	08:54			07:38	06:18	05:51	04:45	04:29	05:15	06:24	07:32	07:42	08:54		12:37 (13)	09:28		12:53 (13)
	16:46			18:02	19:07	21:19	22:24	22:50	22:09	20:51	19:21	16:59	15:55	20	12:57 (13)	15:48	14	13:07 (13)
29	08:52				07:15	05:49	04:44	04:30	05:17	06:26	07:35	07:44	08:56		12:38 (13)	09:28		12:54 (13)
	16:48				20:10	21:21	22:25	22:49	22:07	20:48	19:19	16:56	15:53	20	12:58 (13)	15:49	14	13:08 (13)
30	08:50				07:12	05:46	04:42	04:31	05:20	06:28	07:37	07:46	08:58		12:38 (13)	09:28		12:54 (13)
	16:51				20:12	21:23	22:27	22:49	22:05	20:45	19:16	16:53	15:52	20	12:58 (13)	15:50	15	13:09 (13)
31	08:48				07:09		04:41		05:22	06:31		07:49				09:28		12:54 (13)
	16:53				20:14		22:29		22:03	20:42		16:51				15:51	15	13:09 (13)
Potential sun hours	221			260	365	432	521	547	546	478	386	319	236			199		
Total, worst case		410												206			471	
Sun reduction		0,50												0,50			0,50	
Oper. time red.		0,80												0,80			0,80	
Wind dir. red.		0,61												0,61			0,61	
Total reduction		0,24												0,24			0,24	
Total, real		99												50			114	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** AM - Eiendom 121/9 - Hå kommune (39)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February	March	April			May			June		
1	09:28	08:46	07:35	07:07			05:44		07:30 (1)	04:40		06:17 (37)
	15:53	16:56	18:05	20:17			21:26	32	08:02 (1)	22:30	22	06:39 (37)
2	09:27	08:43	07:33	07:04			05:42		07:32 (1)	04:39		06:16 (37)
	15:54	16:59	18:07	20:19			21:28	29	08:01 (1)	22:32	24	06:40 (37)
3	09:27	08:41	07:30	07:01			05:39		07:32 (1)	04:37		06:16 (37)
	15:56	17:01	18:10	20:21			21:31	27	07:59 (1)	22:34	25	06:41 (37)
4	09:26	08:39	07:27	06:58			05:36		07:33 (1)	04:36		06:16 (37)
	15:57	17:04	18:12	20:24			21:33	25	07:58 (1)	22:35	25	06:41 (37)
5	09:26	08:37	07:24	06:55			05:34		07:35 (1)	04:35		06:16 (37)
	15:59	17:06	18:14	20:26			21:35	21	07:56 (1)	22:36	27	06:43 (37)
6	09:25	08:34	07:21	06:53			05:32		07:37 (1)	04:34		06:16 (37)
	16:00	17:09	18:17	20:28			21:37	18	07:55 (1)	22:38	27	06:43 (37)
7	09:24	08:32	07:19	06:50			05:29		07:39 (1)	04:33		06:15 (37)
	16:02	17:11	18:19	20:31			21:40	12	07:51 (1)	22:39	28	06:43 (37)
8	09:24	08:30	07:16	06:47			05:27			04:32		06:15 (37)
	16:04	17:14	18:21	20:33			21:42			22:40	28	06:43 (37)
9	09:23	08:27	07:13	06:44			05:24			04:31		06:16 (37)
	16:06	17:16	18:24	20:35			21:44			22:42	28	06:44 (37)
10	09:22	08:25	07:10	06:41		07:48 (1)	05:22			04:31		06:15 (37)
	16:07	17:18	18:26	20:37	9	07:57 (1)	21:46			22:43	29	06:44 (37)
11	09:21	08:23	07:07	06:38		07:46 (1)	05:20			04:30		06:16 (37)
	16:09	17:21	18:28	20:40	15	08:01 (1)	21:49			22:44	29	06:45 (37)
12	09:20	08:20	07:04	06:36		07:42 (1)	05:17			04:29		06:15 (37)
	16:11	17:23	18:31	20:42	21	08:03 (1)	21:51			22:45	30	06:45 (37)
13	09:18	08:18	07:02	06:33		07:38 (1)	05:15			04:29		06:16 (37)
	16:13	17:26	18:33	20:44	26	08:04 (1)	21:53			22:46	30	06:46 (37)
14	09:17	08:15	06:59	06:30		07:35 (1)	05:13			04:28		06:16 (37)
	16:15	17:28	18:35	20:47	30	08:05 (1)	21:55			22:46	30	06:46 (37)
15	09:16	08:13	06:56	06:27		07:34 (1)	05:11			04:28		06:15 (37)
	16:17	17:31	18:38	20:49	32	08:06 (1)	21:57			22:47	31	06:46 (37)
16	09:14	08:10	06:53	06:24		07:33 (1)	05:09			04:28		06:16 (37)
	16:19	17:33	18:40	20:51	34	08:07 (1)	22:00			22:48	30	06:46 (37)
17	09:13	08:07	06:50	06:22		07:32 (1)	05:06			04:27		06:16 (37)
	16:21	17:36	18:42	20:54	35	08:07 (1)	22:02			22:48	30	06:46 (37)
18	09:12	08:05	06:47	06:19		07:31 (1)	05:04			04:27		06:16 (37)
	16:24	17:38	18:45	20:56	37	08:08 (1)	22:04			22:49	31	06:47 (37)
19	09:10	08:02	06:44	06:16		07:30 (1)	05:02			04:27		06:16 (37)
	16:26	17:41	18:47	20:58	38	08:08 (1)	22:06			22:49	31	06:47 (37)
20	09:08	08:00	06:42	06:13		07:30 (1)	05:00			04:27		06:16 (37)
	16:28	17:43	18:49	21:00	38	08:08 (1)	22:08			22:50	31	06:47 (37)
21	09:07	07:57	06:39	06:11		07:29 (1)	04:58			04:27		06:16 (37)
	16:30	17:46	18:52	21:03	39	08:08 (1)	22:10			22:50	31	06:47 (37)
22	09:05	07:54	06:36	06:08		07:29 (1)	04:56			04:27		06:17 (37)
	16:32	17:48	18:54	21:05	38	08:07 (1)	22:12			22:50	31	06:48 (37)
23	09:03	07:52	06:33	06:05		07:29 (1)	04:55			04:28		06:17 (37)
	16:35	17:50	18:56	21:07	39	08:08 (1)	22:14			22:50	31	06:48 (37)
24	09:02	07:49	06:30	06:02		07:28 (1)	04:53			04:28		06:17 (37)
	16:37	17:53	18:58	21:10	39	08:07 (1)	22:16			22:50	31	06:48 (37)
25	09:00	07:46	06:27	06:00		07:29 (1)	04:51			04:28		06:18 (37)
	16:39	17:55	19:01	21:12	38	08:07 (1)	22:18			22:50	31	06:49 (37)
26	08:58	07:44	06:24	05:57		07:28 (1)	04:49		06:25 (37)	04:29		06:18 (37)
	16:42	17:58	19:03	21:14	38	08:06 (1)	22:20	6	06:31 (37)	22:50	30	06:48 (37)
27	08:56	07:41	06:21	05:54		07:29 (1)	04:48		06:22 (37)	04:29		06:18 (37)
	16:44	18:00	19:05	21:17	37	08:06 (1)	22:22	11	06:33 (37)	22:50	31	06:49 (37)
28	08:54	07:38	06:18	05:52		07:29 (1)	04:46		06:20 (37)	04:30		06:18 (37)
	16:47	18:02	19:08	21:19	36	08:05 (1)	22:24	15	06:35 (37)	22:50	30	06:48 (37)
29	08:52		07:16	05:49		07:30 (1)	04:44		06:20 (37)	04:31		06:19 (37)
	16:49		20:10	21:21	34	08:04 (1)	22:25	17	06:37 (37)	22:49	30	06:49 (37)
30	08:50		07:13	05:47		07:29 (1)	04:43		06:19 (37)	04:31		06:19 (37)
	16:51		20:12	21:24	34	08:03 (1)	22:27	19	06:38 (37)	22:49	30	06:49 (37)
31	08:48		07:10				04:41		06:17 (37)			
	16:54		20:14				22:29	21	06:38 (37)			
Potential sun hours	221	260	365	432			521			547		
Total, worst case					687			253			872	
Sun reduction					0,50			0,50			0,50	
Oper. time red.					0,80			0,80			0,80	
Wind dir. red.					0,65			0,62			0,58	
Total reduction					0,26			0,25			0,23	
Total, real					177			63			202	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Project:
Moifjellet vindkraftverk

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** AM - Eiendom 121/9 - Hå kommune (39)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July			August			September			October	November	December
1	04:32		06:20 (37)	05:24			06:33		07:45 (1)	07:39	07:51	09:00
	22:48	29	06:49 (37)	22:01			20:40	15	08:00 (1)	19:13	16:49	15:51
2	04:33		06:20 (37)	05:27			06:35		07:47 (1)	07:42	07:54	09:01
	22:48	30	06:50 (37)	21:58			20:37	9	07:56 (1)	19:10	16:47	15:50
3	04:34		06:20 (37)	05:29			06:38			07:44	07:56	09:03
	22:47	29	06:49 (37)	21:56			20:34			19:07	16:44	15:49
4	04:35		06:20 (37)	05:31			06:40			07:46	07:59	09:05
	22:46	29	06:49 (37)	21:54			20:31			19:05	16:42	15:48
5	04:36		06:21 (37)	05:33		07:52 (1)	06:42			07:48	08:01	09:07
	22:46	28	06:49 (37)	21:51	6	07:58 (1)	20:28			19:02	16:39	15:47
6	04:38		06:21 (37)	05:35		07:48 (1)	06:44			07:51	08:03	09:09
	22:45	27	06:48 (37)	21:49	14	08:02 (1)	20:25			18:59	16:37	15:47
7	04:39		06:22 (37)	05:38		07:46 (1)	06:47			07:53	08:06	09:10
	22:44	27	06:49 (37)	21:47	19	08:05 (1)	20:23			18:56	16:35	15:46
8	04:40		06:23 (37)	05:40		07:44 (1)	06:49			07:55	08:08	09:12
	22:43	26	06:49 (37)	21:44	22	08:06 (1)	20:20			18:53	16:32	15:45
9	04:42		06:23 (37)	05:42		07:42 (1)	06:51			07:57	08:11	09:13
	22:42	25	06:48 (37)	21:42	26	08:08 (1)	20:17			18:50	16:30	15:44
10	04:43		06:24 (37)	05:44		07:41 (1)	06:53			08:00	08:13	09:15
	22:40	24	06:48 (37)	21:39	28	08:09 (1)	20:14			18:48	16:28	15:44
11	04:45		06:25 (37)	05:46		07:40 (1)	06:55			08:02	08:15	09:16
	22:39	23	06:48 (37)	21:37	30	08:10 (1)	20:11			18:45	16:26	15:43
12	04:46		06:25 (37)	05:49		07:39 (1)	06:58			08:04	08:18	09:17
	22:38	22	06:47 (37)	21:34	32	08:11 (1)	20:08			18:42	16:24	15:43
13	04:48		06:26 (37)	05:51		07:38 (1)	07:00			08:07	08:20	09:19
	22:36	20	06:46 (37)	21:32	33	08:11 (1)	20:05			18:39	16:22	15:43
14	04:49		06:28 (37)	05:53		07:37 (1)	07:02			08:09	08:22	09:20
	22:35	18	06:46 (37)	21:29	35	08:12 (1)	20:02			18:36	16:19	15:43
15	04:51		06:28 (37)	05:55		07:36 (1)	07:04			08:11	08:25	09:21
	22:34	16	06:44 (37)	21:26	36	08:12 (1)	19:59			18:34	16:17	15:42
16	04:53		06:30 (37)	05:58		07:35 (1)	07:06			08:14	08:27	09:22
	22:32	14	06:44 (37)	21:24	37	08:12 (1)	19:57			18:31	16:15	15:42
17	04:54		06:32 (37)	06:00		07:35 (1)	07:09			08:16	08:29	09:23
	22:30	9	06:41 (37)	21:21	38	08:13 (1)	19:54			18:28	16:13	15:42
18	04:56			06:02		07:35 (1)	07:11			08:18	08:32	09:24
	22:29			21:18	39	08:14 (1)	19:51			18:25	16:12	15:42
19	04:58			06:04		07:35 (1)	07:13			08:21	08:34	09:25
	22:27			21:16	38	08:13 (1)	19:48			18:23	16:10	15:43
20	05:00			06:07		07:35 (1)	07:15			08:23	08:36	09:25
	22:25			21:13	38	08:13 (1)	19:45			18:20	16:08	15:43
21	05:02			06:09		07:34 (1)	07:17			08:25	08:39	09:26
	22:23			21:10	39	08:13 (1)	19:42			18:17	16:06	15:43
22	05:04			06:11		07:34 (1)	07:20			08:28	08:41	09:27
	22:22			21:08	38	08:12 (1)	19:39			18:15	16:04	15:44
23	05:06			06:13		07:34 (1)	07:22			08:30	08:43	09:27
	22:20			21:05	38	08:12 (1)	19:36			18:12	16:03	15:44
24	05:08			06:15		07:34 (1)	07:24			08:32	08:45	09:28
	22:18			21:02	37	08:11 (1)	19:33			18:09	16:01	15:45
25	05:10			06:18		07:34 (1)	07:26			07:35	08:47	09:28
	22:16			20:59	36	08:10 (1)	19:30			17:07	16:00	15:46
26	05:12			06:20		07:34 (1)	07:28			07:37	08:50	09:28
	22:14			20:57	35	08:09 (1)	19:28			17:04	15:58	15:46
27	05:14			06:22		07:35 (1)	07:31			07:39	08:52	09:28
	22:12			20:54	33	08:08 (1)	19:25			17:02	15:57	15:47
28	05:16			06:24		07:35 (1)	07:33			07:42	08:54	09:28
	22:10			20:51	32	08:07 (1)	19:22			16:59	15:55	15:48
29	05:18			06:27		07:36 (1)	07:35			07:44	08:56	09:28
	22:07			20:48	30	08:06 (1)	19:19			16:56	15:54	15:49
30	05:20			06:29		07:39 (1)	07:37			07:47	08:58	09:28
	22:05			20:45	26	08:05 (1)	19:16			16:54	15:53	15:50
31	05:22			06:31		07:42 (1)				07:49		09:28
	22:03			20:43	21	08:03 (1)				16:51		15:51
Potential sun hours	545			478			386			319	236	200
Total, worst case		396			836			24				
Sun reduction		0,50			0,50			0,50				
Oper. time red.		0,80			0,80			0,80				
Wind dir. red.		0,58			0,65			0,65				
Total reduction		0,23			0,26			0,26				
Total, real		92			216			6				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker **Shadow receptor:** AN - Brusalivegen 219 (40)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February	March	April	May	June	July	August	September	October	November	December
1	09:28	08:46	07:35	07:07	05:44	04:40	06:44 (1)	04:32	06:54 (1)	05:24	06:57 (1)	06:33	07:39	07:51	09:00
	15:53	16:56	18:05	20:17	21:26	22:30 33	07:17 (1)	22:48 25	07:19 (1)	22:01 32	07:29 (1)	20:40	19:13	16:49	15:52
2	09:27	08:43	07:33	07:04	05:42	07:06 (1)	04:39	06:44 (1)	04:33	06:54 (1)	05:27	06:59 (1)	06:35	07:42	07:54	09:01
	15:54	16:59	18:07	20:19	21:28 4	07:10 (1)	22:32 33	07:17 (1)	22:48 26	07:20 (1)	21:58 30	07:29 (1)	20:37	19:10	16:47	15:50
3	09:27	08:41	07:30	07:01	05:39	07:04 (1)	04:38	06:45 (1)	04:34	06:53 (1)	05:29	07:01 (1)	06:38	07:44	07:56	09:03
	15:56	17:01	18:10	20:21	21:31 7	07:11 (1)	22:33 31	07:16 (1)	22:47 27	07:20 (1)	21:56 27	07:28 (1)	20:34	19:07	16:44	15:49
4	09:26	08:39	07:27	06:58	05:37	07:02 (1)	04:36	06:45 (1)	04:35	06:53 (1)	05:31	07:03 (1)	06:40	07:46	07:59	09:05
	15:57	17:04	18:12	20:24	21:33 11	07:13 (1)	22:35 31	07:16 (1)	22:46 27	07:20 (1)	21:54 24	07:27 (1)	20:31	19:05	16:42	15:48
5	09:26	08:37	07:24	06:55	05:34	07:00 (1)	04:35	06:47 (1)	04:37	06:53 (1)	05:33	07:05 (1)	06:42	07:48	08:01	09:07
	15:59	17:06	18:14	20:26	21:35 15	07:15 (1)	22:36 30	07:17 (1)	22:46 28	07:21 (1)	21:51 22	07:27 (1)	20:28	19:02	16:39	15:47
6	09:25	08:34	07:21	06:53	05:32	06:59 (1)	04:34	06:47 (1)	04:38	06:54 (1)	05:35	07:07 (1)	06:44	07:51	08:03	09:09
	16:00	17:09	18:17	20:28	21:37 17	07:16 (1)	22:38 29	07:16 (1)	22:45 28	07:22 (1)	21:49 19	07:26 (1)	20:25	18:59	16:37	15:47
7	09:24	08:32	07:19	06:50	05:29	06:56 (1)	04:33	06:47 (1)	04:39	06:53 (1)	05:38	07:09 (1)	06:47	07:53	08:06	09:10
	16:02	17:11	18:19	20:31	21:40 20	07:16 (1)	22:39 29	07:16 (1)	22:44 30	07:23 (1)	21:47 16	07:25 (1)	20:23	18:56	16:35	15:46
8	09:24	08:30	07:16	06:47	05:27	06:54 (1)	04:32	06:48 (1)	04:40	06:53 (1)	05:40	07:10 (1)	06:49	07:55	08:08	09:12
	16:04	17:14	18:21	20:33	21:42 23	07:17 (1)	22:40 27	07:15 (1)	22:43 30	07:23 (1)	21:44 13	07:23 (1)	20:20	18:53	16:32	15:45
9	09:23	08:27	07:13	06:44	05:24	06:52 (1)	04:31	06:49 (1)	04:42	06:52 (1)	05:42	07:12 (1)	06:51	07:57	08:11	09:13
	16:06	17:16	18:24	20:35	21:44 25	07:17 (1)	22:42 27	07:16 (1)	22:42 32	07:24 (1)	21:42 10	07:22 (1)	20:17	18:50	16:30	15:44
10	09:22	08:25	07:10	06:41	05:22	06:50 (1)	04:31	06:49 (1)	04:43	06:52 (1)	05:44	07:14 (1)	06:53	08:00	08:13	09:15
	16:07	17:18	18:26	20:37	21:46 28	07:18 (1)	22:43 26	07:15 (1)	22:40 32	07:24 (1)	21:39 6	07:20 (1)	20:14	18:48	16:28	15:44
11	09:21	08:23	07:07	06:38	05:20	06:48 (1)	04:30	06:50 (1)	04:45	06:52 (1)	05:46	07:15 (1)	06:55	08:02	08:15	09:16
	16:09	17:21	18:28	20:40	21:49 30	07:18 (1)	22:44 25	07:15 (1)	22:39 33	07:25 (1)	21:37 3	07:18 (1)	20:11	18:45	16:26	15:43
12	09:20	08:20	07:04	06:36	05:17	06:46 (1)	04:29	06:50 (1)	04:46	06:52 (1)	05:49		06:58	08:04	08:18	09:17
	16:11	17:23	18:31	20:42	21:51 33	07:19 (1)	22:45 24	07:14 (1)	22:38 34	07:26 (1)	21:34		20:08	18:42	16:24	15:43
13	09:18	08:18	07:02	06:33	05:15	06:45 (1)	04:29	06:51 (1)	04:48	06:51 (1)	05:51		07:00	08:07	08:20	09:19
	16:13	17:26	18:33	20:44	21:53 34	07:19 (1)	22:46 24	07:15 (1)	22:36 35	07:26 (1)	21:32		20:05	18:39	16:22	15:43
14	09:17	08:15	06:59	06:30	05:13	06:43 (1)	04:28	06:52 (1)	04:49	06:52 (1)	05:53		07:02	08:09	08:22	09:20
	16:15	17:28	18:35	20:47	21:55 36	07:19 (1)	22:46 23	07:15 (1)	22:35 35	07:27 (1)	21:29		20:02	18:36	16:19	15:43
15	09:16	08:13	06:56	06:27	05:11	06:41 (1)	04:28	06:51 (1)	04:51	06:51 (1)	05:55		07:04	08:11	08:25	09:21
	16:17	17:31	18:38	20:49	21:57 38	07:19 (1)	22:47 23	07:14 (1)	22:34 36	07:27 (1)	21:26		19:59	18:34	16:17	15:42
16	09:14	08:10	06:53	06:24	05:09	06:40 (1)	04:28	06:52 (1)	04:53	06:51 (1)	05:58		07:06	08:14	08:27	09:22
	16:19	17:33	18:40	20:51	22:00 39	07:19 (1)	22:48 22	07:14 (1)	22:32 37	07:28 (1)	21:24		19:57	18:31	16:15	15:42
17	09:13	08:07	06:50	06:22	05:06	06:39 (1)	04:27	06:52 (1)	04:54	06:50 (1)	06:00		07:09	08:16	08:29	09:23
	16:21	17:36	18:42	20:54	22:02 40	07:19 (1)	22:48 22	07:14 (1)	22:30 38	07:28 (1)	21:21		19:54	18:28	16:13	15:42
18	09:12	08:05	06:47	06:19	05:04	06:40 (1)	04:27	06:53 (1)	04:56	06:51 (1)	06:02		07:11	08:18	08:32	09:24
	16:24	17:38	18:45	20:56	22:04 40	07:20 (1)	22:49 21	07:14 (1)	22:29 37	07:28 (1)	21:18		19:51	18:25	16:12	15:42
19	09:10	08:02	06:44	06:16	05:02	06:40 (1)	04:27	06:53 (1)	04:58	06:51 (1)	06:04		07:13	08:21	08:34	09:25
	16:26	17:41	18:47	20:58	22:06 40	07:20 (1)	22:49 21	07:14 (1)	22:27 38	07:29 (1)	21:16		19:48	18:23	16:10	15:43
20	09:08	08:00	06:42	06:13	05:00	06:40 (1)	04:27	06:53 (1)	05:00	06:50 (1)	06:07		07:15	08:23	08:36	09:25
	16:28	17:43	18:49	21:00	22:08 40	07:20 (1)	22:50 21	07:14 (1)	22:25 39	07:29 (1)	21:13		19:45	18:20	16:08	15:43
21	09:07	07:57	06:39	06:11	04:58	06:40 (1)	04:27	06:53 (1)	05:02	06:50 (1)	06:09		07:17	08:25	08:39	09:26
	16:30	17:46	18:52	21:03	22:10 39	07:19 (1)	22:50 21	07:14 (1)	22:23 39	07:29 (1)	21:10		19:42	18:17	16:06	15:43
22	09:05	07:54	06:36	06:08	04:56	06:40 (1)	04:27	06:54 (1)	05:04	06:51 (1)	06:11		07:19	08:28	08:41	09:27
	16:32	17:48	18:54	21:05	22:12 40	07:20 (1)	22:50 21	07:15 (1)	22:22 39	07:30 (1)	21:08		19:39	18:15	16:04	15:44
23	09:03	07:52	06:33	06:05	04:55	06:40 (1)	04:28	06:54 (1)	05:06	06:50 (1)	06:13		07:22	08:30	08:43	09:27
	16:35	17:50	18:56	21:07	22:14 39	07:19 (1)	22:50 21	07:15 (1)	22:20 39	07:29 (1)	21:05		19:36	18:12	16:03	15:44
24	09:02	07:49	06:30	06:02	04:53	06:41 (1)	04:28	06:54 (1)	05:08	06:50 (1)	06:15		07:24	08:32	08:45	09:28
	16:37	17:53	18:58	21:10	22:16 38	07:19 (1)	22:50 21	07:15 (1)	22:18 40	07:30 (1)	21:02		19:33	18:09	16:01	15:45
25	09:00	07:46	06:27	06:00	04:51	06:41 (1)	04:28	06:55 (1)	05:10	06:50 (1)	06:18		07:26	07:35	08:47	09:28
	16:39	17:55	19:01	21:12	22:18 38	07:19 (1)	22:50 21	07:16 (1)	22:16 40	07:30 (1)	20:59		19:30	17:07	16:00	15:46
26	08:58	07:44	06:24	05:57	04:49	06:42 (1)	04:29	06:54 (1)	05:12	06:50 (1)	06:20		07:28	07:37	08:49	09:28
	16:42	17:58	19:03	21:14	22:20 37	07:19 (1)	22:50 22	07:16 (1)	22:14 40	07:30 (1)	20:57		19:28	17:04	15:58	15:46
27	08:56	07:41	06:21	05:54	04:48	06:41 (1)	04:29	06:54 (1)	05:14	06:51 (1)	06:22		07:31	07:39	08:52	09:28
	16:44	18:00	19:05	21:17	22:22 37	07:18 (1)	22:50 23	07:17 (1)	22:12 39	07:30 (1)	20:54		19:25	17:02	15:57	15:47
28	08:54	07:38	06:18	05:52	04:46	06:42 (1)	04:30	06:54 (1)	05:16	06:51 (1)	06:24		07:33	07:42	08:54	09:28
	16:47	18:02	19:08	21:19	22:24 36	07:18 (1)	22:50 23	07:17 (1)	22:10 40	07:31 (1)	20:51		19:22	16:59	15:55	15:48
29	08:52		07:16	05:49	04:44	06:43 (1)	04:31	06:54 (1)	05:18	06:52 (1)	06:27		07:35	07:44	08:56	09:28
	16:49		20:10	21:21	22:25 35	07:18 (1)	22:49 24	07:18 (1)	22:07 38	07:30 (1)	20:48		19:19	16:56	15:54	15:49
30	08:50		07:13	05:47	04:43	06:43 (1)	04:32	06:54 (1)	05:20	06:54 (1)	06:29		07:37	07:47	08:58	09:28
	16:51		20:12	21:24	22:27 35	07:18 (1)	22:49 24	07:18 (1)	22:05 35	07:29 (1)	20:45		19:16	16:54	15:53	15:50
31	08:48		07:10		04:41	06:43 (1)			05:22	06:56 (1)	06:31			07:49		09:28
	16:54		20:14		22:29 34	07:17 (1)			22:03 33	07:29 (1)	20:43			16:51		15:51
Potential sun hours	221	260	365	432	521	547	545	478	386	319	236	200
Total, worst case					928	743	1069	202				
Sun reduction					0,50	0,50	0,50	0,50				
Oper. time red.					0,80	0,80	0,80	0,80				
Wind dir. red.					0,59	0,59	0,59	0,59				
Total reduction					0,24	0,24	0,24	0,24				
Total, real					220	176	254	48				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Multiconsult

Vedlegg 2.2

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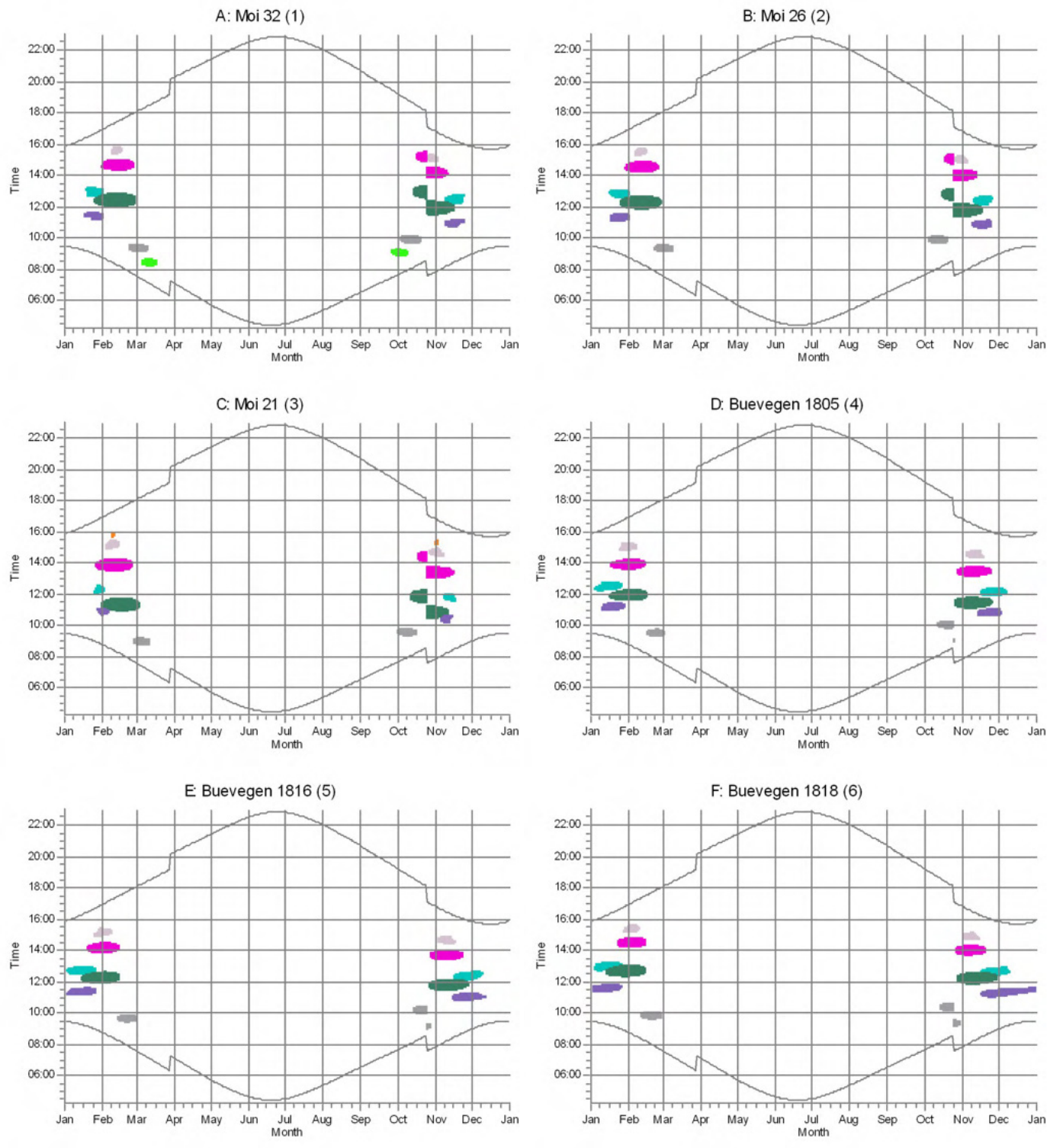
20.01.2025 16:28/4.0.540

SHADOW - Calendar, graphical

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker



WTGs

16: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2558
18: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2560
21: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2563
23: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2565
24: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2566
25: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2567
29: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2571
34: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2576

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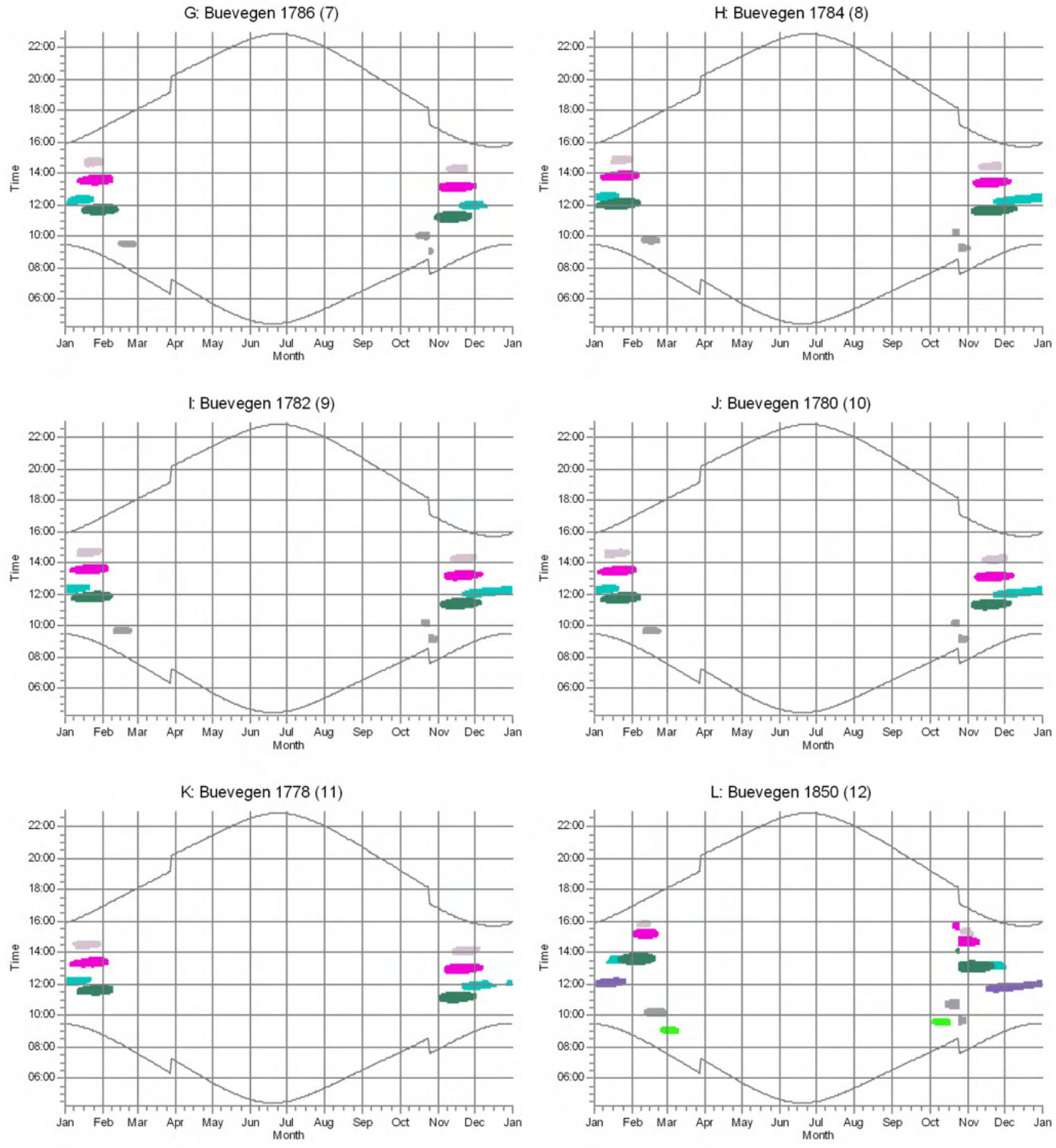
SHADOW - Calendar, graphical

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker



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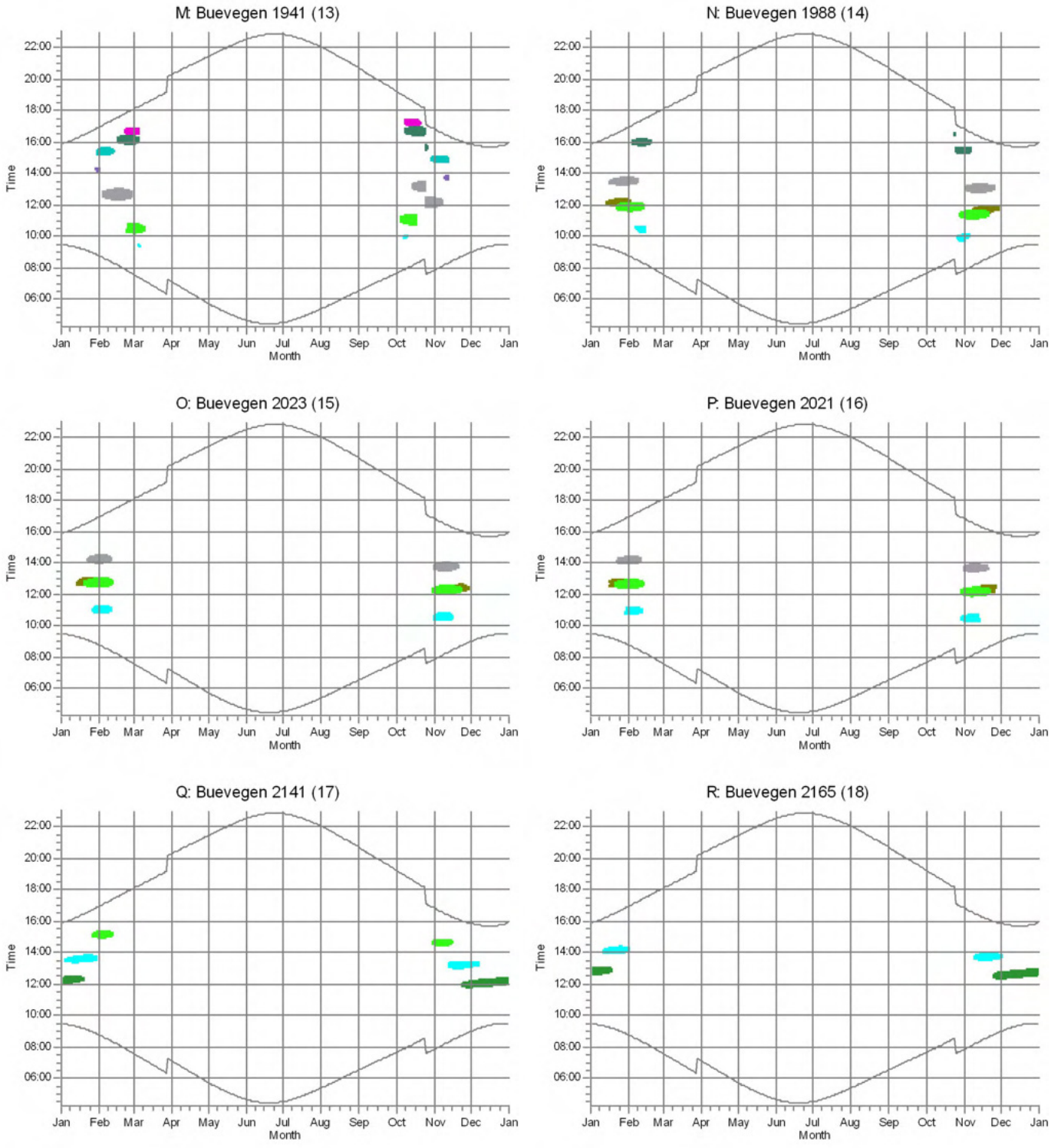
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar, graphical

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker



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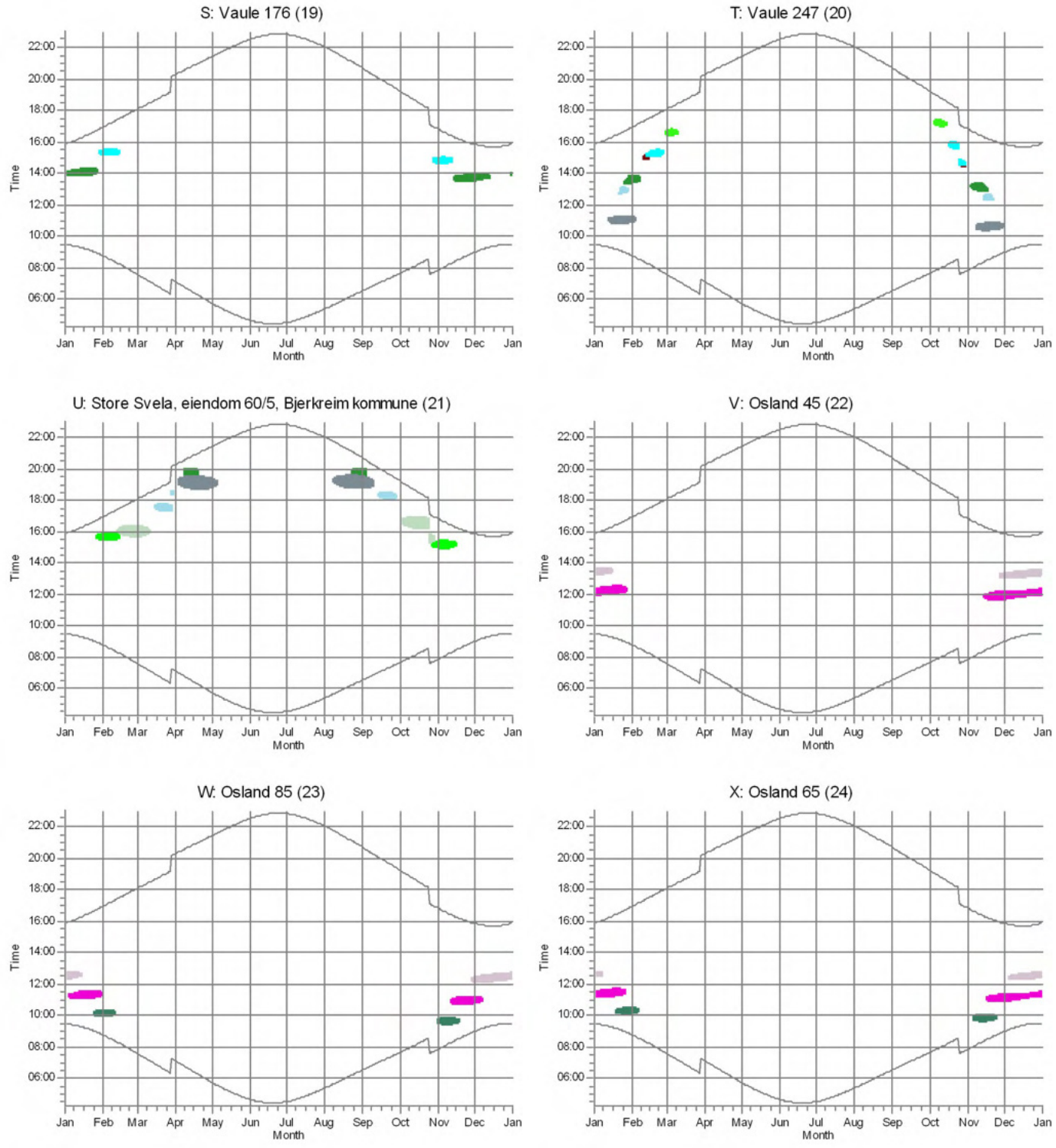
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar, graphical

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker



WTGs

8: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2550
9: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2551
13: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2555
14: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2556
18: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2560
24: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2566
25: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2567
27: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2569
29: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2571
33: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2575
38: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2580

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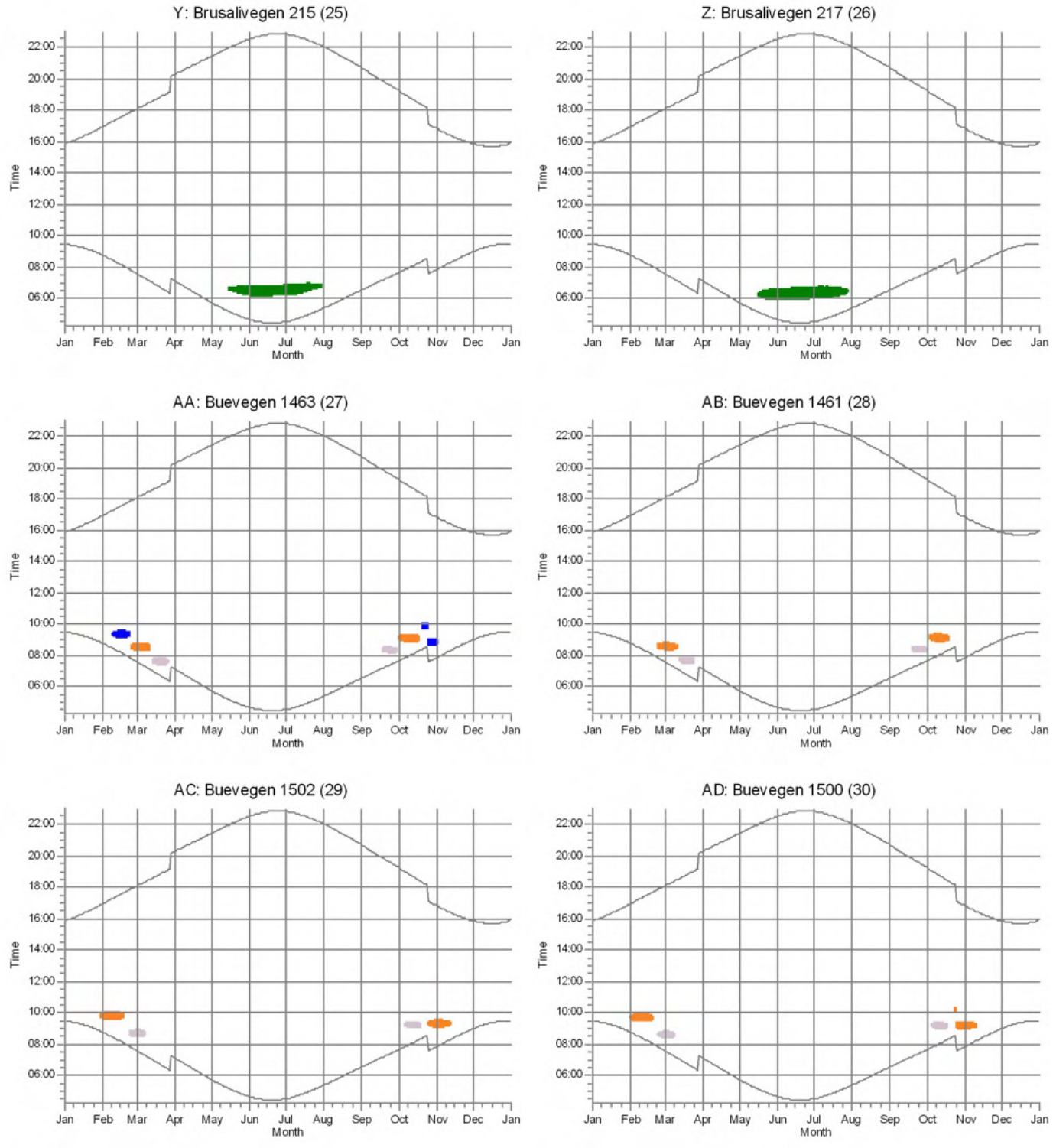
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar, graphical

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker



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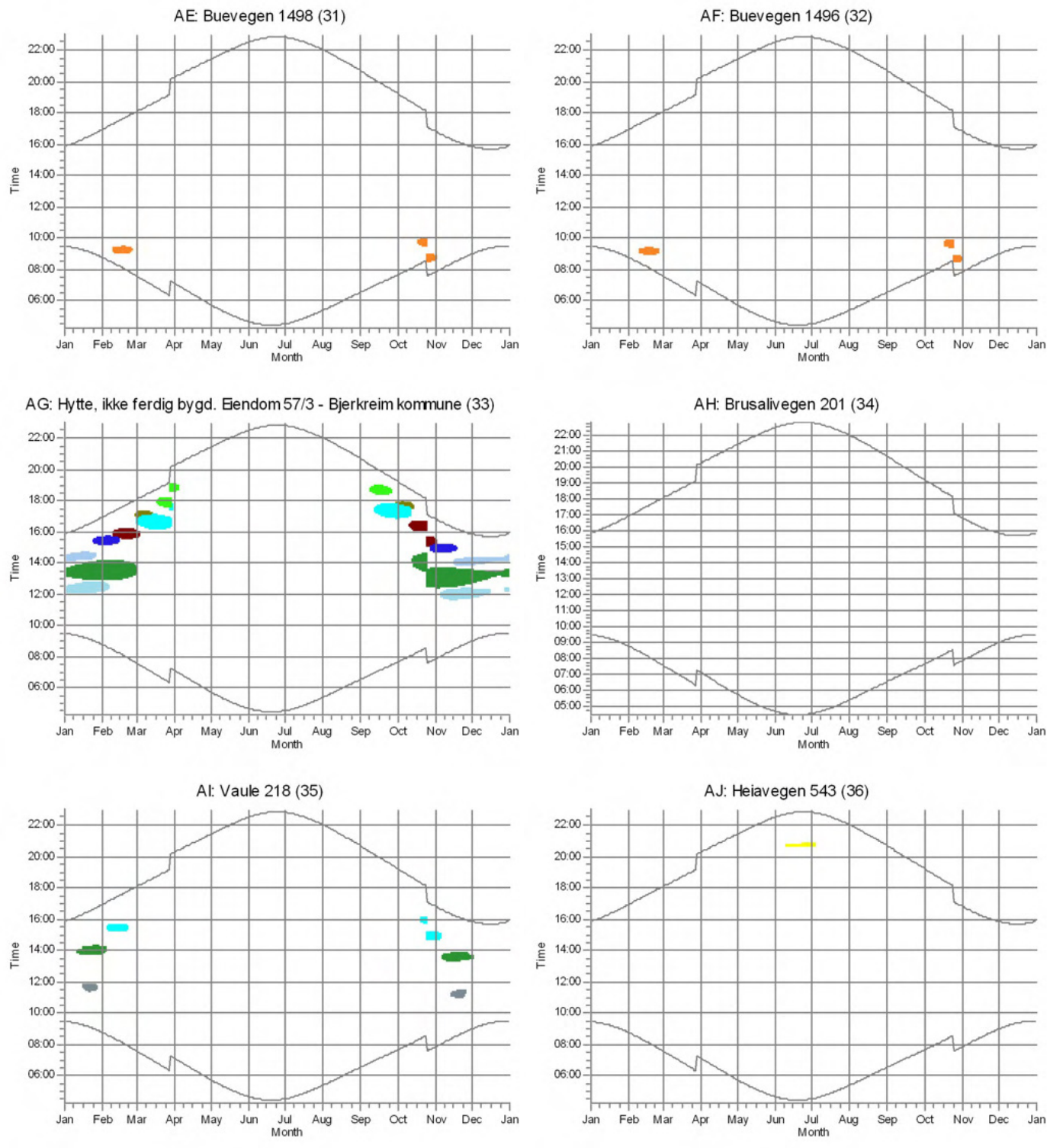
Calculated:
20.01.2025 16:28/4.0.540

SHADOW - Calendar, graphical

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker



WTGs

2: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2544
4: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2546
8: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2550
10: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2552
13: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2555
15: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2557
18: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2560
23: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2565
27: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2569
33: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2575
36: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2578
38: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2580

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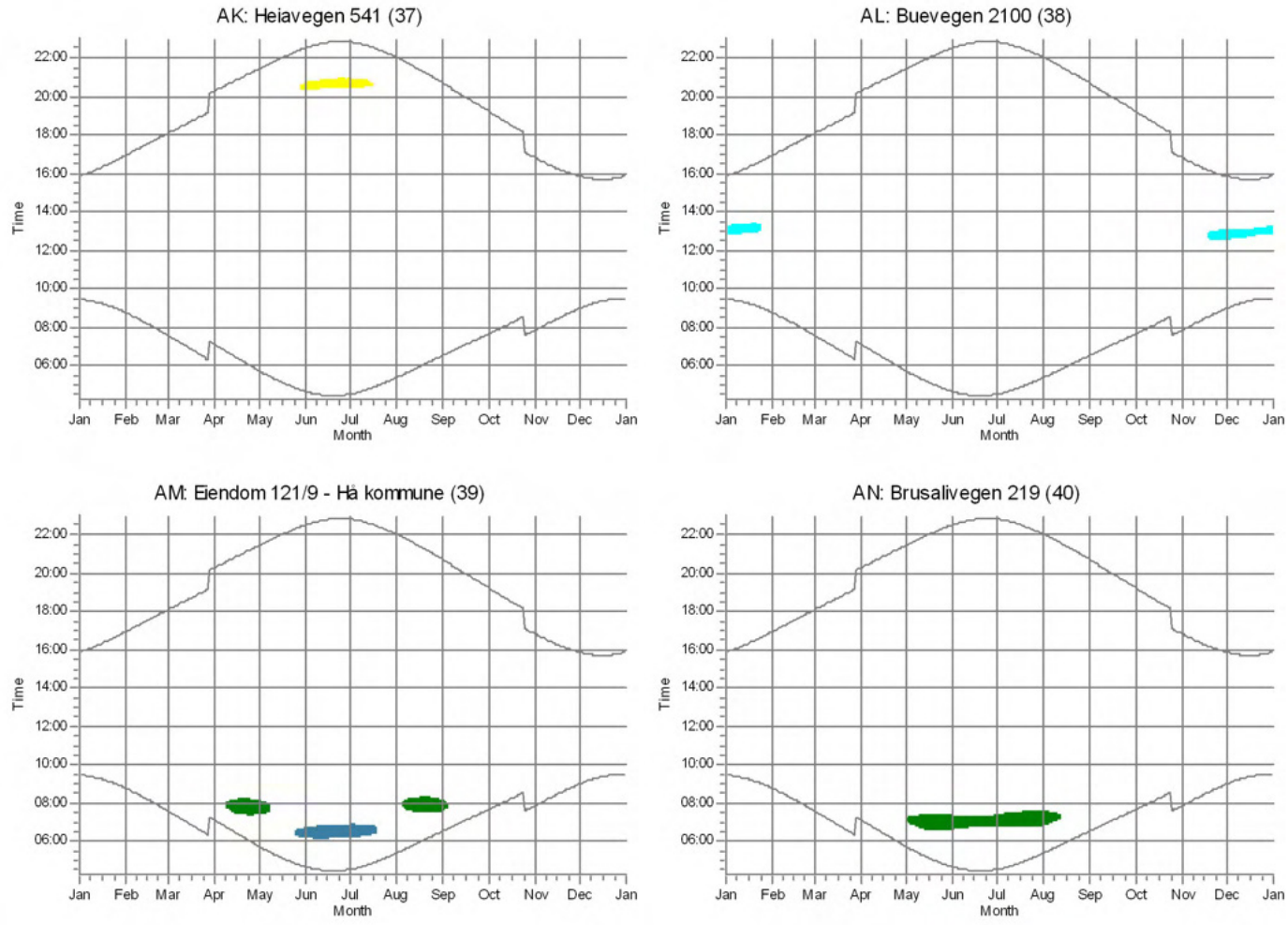
SHADOW - Calendar, graphical

Calculation: Oppdatert layout - real case med vindrose - kun Moifjellet - oppdatert mottaker



WTGs

1: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2543
2: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2544
13: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2555
37: VESTAS V162-7.2 7200 162.0 !O! hub: 119.0 m (TOT: 200.0 m) (2579

Multiconsult

Vedlegg 3.1

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** A - Moi 32 (1)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March			April		May	June
1	09:28			08:46		11:21 (34)	07:35		09:10 (16)	07:07		05:44	04:40
	15:53			16:56	46	14:37 (24)	18:05	24	09:34 (16)	20:17		21:26	22:30
2	09:27			08:43		12:08 (29)	07:33		09:10 (16)	07:04		05:41	04:38
	15:54			16:58	46	14:44 (24)	18:07	24	09:34 (16)	20:19		21:28	22:32
3	09:27			08:41		12:06 (29)	07:30		09:10 (16)	07:01		05:39	04:37
	15:55			17:01	57	14:50 (24)	18:09	24	09:34 (16)	20:21		21:30	22:34
4	09:26			08:39		12:06 (29)	07:27		09:10 (16)	06:58		05:36	04:36
	15:57			17:03	62	14:52 (24)	18:12	23	09:33 (16)	20:24		21:33	22:35
5	09:26			08:37		12:05 (29)	07:24		09:10 (16)	06:55		05:34	04:35
	15:58			17:06	65	14:53 (24)	18:14	22	09:32 (16)	20:26		21:35	22:37
6	09:25			08:34		12:05 (29)	07:21		08:23 (18)	06:52		05:31	04:34
	16:00			17:08	69	14:55 (24)	18:17	29	09:31 (16)	20:28		21:37	22:38
7	09:24			08:32		12:04 (29)	07:19		08:20 (18)	06:50		05:29	04:33
	16:02			17:11	73	14:56 (24)	18:19	33	09:30 (16)	20:30		21:40	22:39
8	09:24			08:30		12:04 (29)	07:16		08:19 (18)	06:47		05:26	04:32
	16:03			17:13	75	14:57 (24)	18:21	31	09:28 (16)	20:33		21:42	22:40
9	09:23			08:27		12:04 (29)	07:13		08:18 (18)	06:44		05:24	04:31
	16:05			17:16	81	15:36 (25)	18:24	27	09:25 (16)	20:35		21:44	22:42
10	09:22			08:25		12:03 (29)	07:10		08:17 (18)	06:41		05:22	04:30
	16:07			17:18	95	15:42 (25)	18:26	18	08:35 (18)	20:37		21:46	22:43
11	09:21			08:23		12:04 (29)	07:07		08:16 (18)	06:38		05:19	04:29
	16:09			17:21	100	15:47 (25)	18:28	19	08:35 (18)	20:40		21:49	22:44
12	09:20			08:20		12:03 (29)	07:04		08:17 (18)	06:35		05:17	04:29
	16:11			17:23	103	15:49 (25)	18:31	19	08:36 (18)	20:42		21:51	22:45
13	09:18			08:18		12:03 (29)	07:01		08:17 (18)	06:32		05:15	04:28
	16:13			17:26	101	15:48 (25)	18:33	18	08:35 (18)	20:44		21:53	22:46
14	09:17			08:15		12:04 (29)	06:59		08:17 (18)	06:30		05:13	04:28
	16:15			17:28	98	15:48 (25)	18:35	17	08:34 (18)	20:47		21:55	22:47
15	09:16			08:13		12:04 (29)	06:56		08:18 (18)	06:27		05:10	04:27
	16:17			17:31	95	15:46 (25)	18:38	14	08:32 (18)	20:49		21:58	22:47
16	09:15			08:10		12:03 (29)	06:53		08:20 (18)	06:24		05:08	04:27
	16:19			17:33	90	15:43 (25)	18:40	10	08:30 (18)	20:51		22:00	22:48
17	09:13			08:07		12:04 (29)	06:50			06:21		05:06	04:27
	16:21			17:36	78	14:58 (24)	18:42			20:53		22:02	22:49
18	09:12		11:27 (34)	08:05		12:05 (29)	06:47			06:19		05:04	04:27
	16:23	6	11:33 (34)	17:38	76	14:58 (24)	18:45			20:56		22:04	22:49
19	09:10		11:28 (34)	08:02		12:05 (29)	06:44			06:16		05:02	04:27
	16:25	6	13:07 (21)	17:40	75	14:58 (24)	18:47			20:58		22:06	22:50
20	09:08		11:28 (34)	08:00		12:05 (29)	06:41			06:13		05:00	04:27
	16:28	23	13:08 (21)	17:43	72	14:57 (24)	18:49			21:00		22:08	22:50
21	09:07		11:26 (34)	07:57		12:06 (29)	06:38			06:10		04:58	04:27
	16:30	24	13:08 (21)	17:45	67	14:55 (24)	18:51			21:03		22:10	22:50
22	09:05		11:22 (34)	07:54		12:07 (29)	06:36			06:08		04:56	04:27
	16:32	38	13:07 (21)	17:48	62	14:54 (24)	18:54			21:05		22:12	22:50
23	09:03		11:17 (34)	07:52		09:18 (16)	06:33			06:05		04:54	04:27
	16:34	43	13:08 (21)	17:50	68	14:53 (24)	18:56			21:07		22:14	22:50
24	09:02		11:11 (34)	07:49		09:15 (16)	06:30			06:02		04:52	04:27
	16:37	48	13:08 (21)	17:53	66	14:51 (24)	18:58			21:10		22:16	22:51
25	09:00		11:12 (34)	07:46		09:14 (16)	06:27			05:59		04:51	04:28
	16:39	48	13:08 (21)	17:55	55	14:47 (24)	19:01			21:12		22:18	22:50
26	08:58		11:13 (34)	07:44		09:12 (16)	06:24			05:57		04:49	04:28
	16:41	48	13:08 (21)	17:57	41	12:35 (29)	19:03			21:14		22:20	22:50
27	08:56		11:13 (34)	07:41		09:11 (16)	06:21			05:54		04:47	04:29
	16:44	58	13:07 (21)	18:00	33	12:30 (29)	19:05			21:17		22:22	22:50
28	08:54		11:14 (34)	07:38		09:10 (16)	06:18			05:52		04:46	04:30
	16:46	61	13:07 (21)	18:02	23	09:33 (16)	19:07			21:19		22:24	22:50
29	08:52		11:15 (34)				07:15			05:49		04:44	04:30
	16:49	60	13:06 (21)				20:10			21:21		22:25	22:50
30	08:50		11:16 (34)				07:12			05:46		04:43	04:31
	16:51	59	13:04 (21)				20:12			21:24		22:27	22:49
31	08:48		11:18 (34)				07:10					04:41	
	16:54	55	13:03 (21)				20:14					22:29	
Potential sun hours	221			260			365			432		521	547
Total, worst case		577			1972			352					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** A - Moi 32 (1)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September			October		November			December
1	04:32	05:24	06:33			07:39		08:56 (18)	07:51		11:33 (29)	09:00
	22:49	22:01	20:40			19:13	18	09:14 (18)	16:49	91	15:09 (25)	15:51
2	04:33	05:26	06:35			07:42		08:55 (18)	07:54		11:33 (29)	09:02
	22:48	21:58	20:37			19:10	19	09:14 (18)	16:46	79	15:05 (25)	15:50
3	04:34	05:28	06:37			07:44		08:55 (18)	07:56		11:34 (29)	09:03
	22:47	21:56	20:34			19:07	18	09:13 (18)	16:44	73	14:26 (24)	15:49
4	04:35	05:31	06:40			07:46		08:55 (18)	07:59		11:34 (29)	09:05
	22:47	21:54	20:31			19:04	24	10:00 (16)	16:41	71	14:25 (24)	15:48
5	04:36	05:33	06:42			07:48		08:56 (18)	08:01		11:35 (29)	09:07
	22:46	21:51	20:28			19:02	29	10:04 (16)	16:39	68	14:24 (24)	15:47
6	04:37	05:35	06:44			07:51		08:56 (18)	08:03		11:36 (29)	09:09
	22:45	21:49	20:25			18:59	32	10:05 (16)	16:37	66	14:24 (24)	15:46
7	04:39	05:37	06:46			07:53		08:57 (18)	08:06		11:36 (29)	09:10
	22:44	21:47	20:22			18:56	32	10:06 (16)	16:34	61	14:22 (24)	15:45
8	04:40	05:39	06:49			07:55		09:00 (18)	08:08		11:37 (29)	09:12
	22:43	21:44	20:20			18:53	27	10:07 (16)	16:32	56	14:20 (24)	15:45
9	04:41	05:42	06:51			07:57		09:45 (16)	08:11		11:38 (29)	09:13
	22:42	21:42	20:17			18:50	22	10:07 (16)	16:30	46	14:15 (24)	15:44
10	04:43	05:44	06:53			08:00		09:45 (16)	08:13		10:52 (34)	09:15
	22:40	21:39	20:14			18:47	23	10:08 (16)	16:28	47	14:09 (24)	15:44
11	04:44	05:46	06:55			08:02		09:44 (16)	08:15		10:49 (34)	09:16
	22:39	21:37	20:11			18:45	24	10:08 (16)	16:25	55	12:34 (21)	15:43
12	04:46	05:48	06:57			08:04		09:43 (16)	08:18		10:48 (34)	09:18
	22:38	21:34	20:08			18:42	24	10:07 (16)	16:23	60	12:36 (21)	15:43
13	04:47	05:51	07:00			08:07		09:44 (16)	08:20		10:47 (34)	09:19
	22:37	21:31	20:05			18:39	23	10:07 (16)	16:21	60	12:38 (21)	15:42
14	04:49	05:53	07:02			08:09		09:43 (16)	08:22		10:46 (34)	09:20
	22:35	21:29	20:02			18:36	23	10:06 (16)	16:19	61	12:39 (21)	15:42
15	04:51	05:55	07:04			08:11		09:44 (16)	08:25		10:46 (34)	09:21
	22:34	21:26	19:59			18:33	37	13:05 (29)	16:17	58	12:40 (21)	15:42
16	04:52	05:57	07:06			08:13		09:45 (16)	08:27		10:46 (34)	09:22
	22:32	21:24	19:56			18:31	42	13:08 (29)	16:15	46	12:41 (21)	15:42
17	04:54	06:00	07:08			08:16		09:46 (16)	08:29		10:45 (34)	09:23
	22:30	21:21	19:54			18:28	61	15:21 (24)	16:13	48	12:41 (21)	15:42
18	04:56	06:02	07:11			08:18		09:47 (16)	08:32		10:45 (34)	09:24
	22:29	21:18	19:51			18:25	66	15:23 (24)	16:11	48	12:42 (21)	15:42
19	04:58	06:04	07:13			08:20		09:50 (16)	08:34		10:52 (34)	09:25
	22:27	21:16	19:48			18:22	68	15:25 (24)	16:09	43	12:43 (21)	15:42
20	05:00	06:06	07:15			08:23		12:38 (29)	08:36		10:57 (34)	09:26
	22:25	21:13	19:45			18:20	64	15:25 (24)	16:08	38	12:42 (21)	15:43
21	05:01	06:08	07:17			08:25		12:37 (29)	08:39		11:01 (34)	09:26
	22:24	21:10	19:42			18:17	68	15:27 (24)	16:06	24	12:43 (21)	15:43
22	05:03	06:11	07:19			08:27		12:35 (29)	08:41		11:04 (34)	09:27
	22:22	21:08	19:39			18:14	72	15:27 (24)	16:04	22	12:44 (21)	15:43
23	05:05	06:13	07:22			08:30		12:35 (29)	08:43		11:04 (34)	09:27
	22:20	21:05	19:36			18:12	75	15:28 (24)	16:02	9	12:44 (21)	15:44
24	05:07	06:15	07:24			08:32		12:34 (29)	08:45		11:04 (34)	09:28
	22:18	21:02	19:33			18:09	77	15:28 (24)	16:01	6	11:10 (34)	15:44
25	05:09	06:17	07:26			07:35		11:34 (29)	08:47			09:28
	22:16	20:59	19:30			17:06	78	14:28 (24)	15:59			15:45
26	05:11	06:20	07:28			07:37		11:33 (29)	08:50			09:28
	22:14	20:56	19:27			17:04	91	15:13 (25)	15:58			15:46
27	05:13	06:22	07:30		09:03 (18)	07:39		11:33 (29)	08:52			09:28
	22:12	20:54	19:25	8	09:11 (18)	17:01	97	15:16 (25)	15:56			15:47
28	05:16	06:24	07:33		09:00 (18)	07:42		11:33 (29)	08:54			09:28
	22:10	20:51	19:22	12	09:12 (18)	16:59	99	15:17 (25)	15:55			15:48
29	05:18	06:26	07:35		08:58 (18)	07:44		11:32 (29)	08:56			09:28
	22:07	20:48	19:19	15	09:13 (18)	16:56	102	15:18 (25)	15:54			15:49
30	05:20	06:29	07:37		08:56 (18)	07:47		11:33 (29)	08:58			09:28
	22:05	20:45	19:16	18	09:14 (18)	16:54	102	15:19 (25)	15:52			15:50
31	05:22	06:31				07:49		11:33 (29)				09:28
	22:03	20:42				16:51	98	15:16 (25)				15:51
Potential sun hours	546	478	386			319			236			199
Total, worst case				53			1635			1236		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** B - Moi 26 (2)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March			April	May	June
1	09:28			08:46		11:18 (34)	07:35		09:09 (16)	07:07	05:44	04:40
	15:53			16:56	58	14:41 (24)	18:05	23	09:32 (16)	20:17	21:26	22:30
2	09:27			08:43		11:58 (29)	07:33		09:09 (16)	07:04	05:41	04:38
	15:54			16:58	58	14:43 (24)	18:07	24	09:33 (16)	20:19	21:28	22:32
3	09:27			08:41		11:57 (29)	07:30		09:09 (16)	07:01	05:39	04:37
	15:55			17:01	63	14:44 (24)	18:09	23	09:32 (16)	20:21	21:30	22:34
4	09:26			08:39		11:57 (29)	07:27		09:09 (16)	06:58	05:36	04:36
	15:57			17:03	66	14:46 (24)	18:12	22	09:31 (16)	20:24	21:33	22:35
5	09:26			08:37		11:56 (29)	07:24		09:10 (16)	06:55	05:34	04:35
	15:58			17:06	70	14:47 (24)	18:14	20	09:30 (16)	20:26	21:35	22:37
6	09:25			08:34		11:56 (29)	07:21		09:10 (16)	06:52	05:31	04:34
	16:00			17:08	73	14:48 (24)	18:17	19	09:29 (16)	20:28	21:37	22:38
7	09:24			08:32		11:55 (29)	07:19		09:11 (16)	06:50	05:29	04:33
	16:02			17:11	85	15:29 (25)	18:19	16	09:27 (16)	20:30	21:40	22:39
8	09:24			08:30		11:56 (29)	07:16		09:13 (16)	06:47	05:26	04:32
	16:03			17:13	91	15:35 (25)	18:21	12	09:25 (16)	20:33	21:42	22:40
9	09:23			08:27		11:55 (29)	07:13			06:44	05:24	04:31
	16:05			17:16	97	15:40 (25)	18:24			20:35	21:44	22:42
10	09:22			08:25		11:55 (29)	07:10			06:41	05:22	04:30
	16:07			17:18	102	15:44 (25)	18:26			20:37	21:46	22:43
11	09:21			08:23		11:55 (29)	07:07			06:38	05:19	04:29
	16:09			17:21	101	15:44 (25)	18:28			20:40	21:49	22:44
12	09:20			08:20		11:55 (29)	07:04			06:35	05:17	04:29
	16:11			17:23	100	15:43 (25)	18:31			20:42	21:51	22:45
13	09:18			08:18		11:55 (29)	07:01			06:32	05:15	04:28
	16:13			17:26	96	15:41 (25)	18:33			20:44	21:53	22:46
14	09:17			08:15		11:55 (29)	06:59			06:30	05:13	04:28
	16:15			17:28	92	15:40 (25)	18:35			20:47	21:55	22:47
15	09:16			08:13		11:55 (29)	06:56			06:27	05:10	04:27
	16:17			17:31	86	15:37 (25)	18:38			20:49	21:58	22:47
16	09:15			08:10		11:55 (29)	06:53			06:24	05:08	04:27
	16:19			17:33	77	14:50 (24)	18:40			20:51	22:00	22:48
17	09:13		12:54 (21)	08:07		11:56 (29)	06:50			06:21	05:06	04:27
	16:21	1	12:55 (21)	17:36	75	14:49 (24)	18:42			20:53	22:02	22:49
18	09:12		11:10 (34)	08:05		11:57 (29)	06:47			06:19	05:04	04:27
	16:23	27	13:01 (21)	17:38	72	14:49 (24)	18:45			20:56	22:04	22:49
19	09:10		11:10 (34)	08:02		11:57 (29)	06:44			06:16	05:02	04:27
	16:25	34	13:02 (21)	17:40	70	14:48 (24)	18:47			20:58	22:06	22:50
20	09:08		11:10 (34)	08:00		11:58 (29)	06:41			06:13	05:00	04:27
	16:28	39	13:02 (21)	17:43	65	14:47 (24)	18:49			21:00	22:08	22:50
21	09:07		11:09 (34)	07:57		11:59 (29)	06:38			06:10	04:58	04:27
	16:30	47	13:02 (21)	17:45	59	14:45 (24)	18:51			21:03	22:10	22:50
22	09:05		11:07 (34)	07:54		09:19 (16)	06:36			06:08	04:56	04:27
	16:32	49	13:02 (21)	17:48	58	14:43 (24)	18:54			21:05	22:12	22:50
23	09:03		11:07 (34)	07:52		09:16 (16)	06:33			06:05	04:54	04:27
	16:34	48	13:02 (21)	17:50	56	14:41 (24)	18:56			21:07	22:14	22:50
24	09:02		11:08 (34)	07:49		09:14 (16)	06:30			06:02	04:52	04:27
	16:37	47	13:02 (21)	17:53	46	14:36 (24)	18:58			21:10	22:16	22:51
25	09:00		11:08 (34)	07:46		09:12 (16)	06:27			05:59	04:51	04:28
	16:39	47	13:02 (21)	17:55	37	12:25 (29)	19:01			21:12	22:18	22:50
26	08:58		11:09 (34)	07:44		09:11 (16)	06:24			05:57	04:49	04:28
	16:41	59	13:02 (21)	17:57	26	12:18 (29)	19:03			21:14	22:20	22:50
27	08:56		11:09 (34)	07:41		09:10 (16)	06:21			05:54	04:47	04:29
	16:44	61	13:01 (21)	18:00	22	09:32 (16)	19:05			21:17	22:22	22:50
28	08:54		11:10 (34)	07:38		09:09 (16)	06:18			05:52	04:46	04:30
	16:46	62	13:00 (21)	18:02	23	09:32 (16)	19:07			21:19	22:24	22:50
29	08:52		11:12 (34)				07:15			05:49	04:44	04:30
	16:49	61	13:00 (21)				20:10			21:21	22:25	22:50
30	08:50		11:13 (34)				07:12			05:46	04:43	04:31
	16:51	61	14:31 (24)				20:12			21:24	22:27	22:49
31	08:48		11:15 (34)				07:10				04:41	
	16:54	65	14:39 (24)				20:14				22:29	
Potential sun hours	221			260			365			432	521	547
Total, worst case		708			1924			159				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** B - Moi 26 (2)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September	October		November		December
1	04:32	05:24	06:33	07:39		07:51		11:24 (29)	09:00
	22:49	22:01	20:40	19:13		16:49	101	15:13 (25)	15:51
2	04:33	05:26	06:35	07:42		07:54		11:25 (29)	09:02
	22:48	21:58	20:37	19:10		16:46	96	15:09 (25)	15:50
3	04:34	05:28	06:37	07:44		07:56		11:25 (29)	09:03
	22:47	21:56	20:34	19:07		16:44	90	15:04 (25)	15:49
4	04:35	05:31	06:40	07:46		07:59		11:25 (29)	09:05
	22:47	21:54	20:31	19:04		16:41	81	14:58 (25)	15:48
5	04:36	05:33	06:42	07:48	09:52 (16)	08:01		11:26 (29)	09:07
	22:46	21:51	20:28	19:02	8 10:00 (16)	16:39	72	14:18 (24)	15:47
6	04:37	05:35	06:44	07:51	09:48 (16)	08:03		11:27 (29)	09:09
	22:45	21:49	20:25	18:59	15 10:03 (16)	16:37	69	14:17 (24)	15:46
7	04:39	05:37	06:46	07:53	09:46 (16)	08:06		11:27 (29)	09:10
	22:44	21:47	20:22	18:56	18 10:04 (16)	16:34	67	14:16 (24)	15:45
8	04:40	05:39	06:49	07:55	09:45 (16)	08:08		11:28 (29)	09:12
	22:43	21:44	20:20	18:53	20 10:05 (16)	16:32	62	14:15 (24)	15:45
9	04:41	05:42	06:51	07:57	09:44 (16)	08:11		11:29 (29)	09:13
	22:42	21:42	20:17	18:50	22 10:06 (16)	16:30	58	14:14 (24)	15:44
10	04:43	05:44	06:53	08:00	09:44 (16)	08:13		10:49 (34)	09:15
	22:40	21:39	20:14	18:47	22 10:06 (16)	16:28	59	14:13 (24)	15:44
11	04:44	05:46	06:55	08:02	09:43 (16)	08:15		10:46 (34)	09:16
	22:39	21:37	20:11	18:45	23 10:06 (16)	16:25	66	14:10 (24)	15:43
12	04:46	05:48	06:57	08:04	09:42 (16)	08:18		10:44 (34)	09:18
	22:38	21:34	20:08	18:42	24 10:06 (16)	16:23	61	14:02 (24)	15:43
13	04:47	05:51	07:00	08:07	09:42 (16)	08:20		10:44 (34)	09:19
	22:37	21:31	20:05	18:39	24 10:06 (16)	16:21	60	12:31 (21)	15:42
14	04:49	05:53	07:02	08:09	09:42 (16)	08:22		10:42 (34)	09:20
	22:35	21:29	20:02	18:36	23 10:05 (16)	16:19	62	12:32 (21)	15:42
15	04:51	05:55	07:04	08:11	09:43 (16)	08:25		10:42 (34)	09:21
	22:34	21:26	19:59	18:33	22 10:05 (16)	16:17	62	12:34 (21)	15:42
16	04:52	05:57	07:06	08:13	09:43 (16)	08:27		10:42 (34)	09:22
	22:32	21:24	19:56	18:31	32 12:54 (29)	16:15	59	12:35 (21)	15:42
17	04:54	06:00	07:08	08:16	09:44 (16)	08:29		10:41 (34)	09:23
	22:30	21:21	19:54	18:28	39 12:58 (29)	16:13	47	12:35 (21)	15:42
18	04:56	06:02	07:11	08:18	09:45 (16)	08:32		10:42 (34)	09:24
	22:29	21:18	19:51	18:25	53 15:09 (24)	16:11	47	12:36 (21)	15:42
19	04:58	06:04	07:13	08:20	09:48 (16)	08:34		10:42 (34)	09:25
	22:27	21:16	19:48	18:22	58 15:13 (24)	16:09	48	12:37 (21)	15:42
20	05:00	06:06	07:15	08:23	12:31 (29)	08:36		10:42 (34)	09:26
	22:25	21:13	19:45	18:20	55 15:15 (24)	16:08	49	12:37 (21)	15:43
21	05:01	06:08	07:17	08:25	12:30 (29)	08:39		10:44 (34)	09:26
	22:24	21:10	19:42	18:17	61 15:17 (24)	16:06	47	12:37 (21)	15:43
22	05:03	06:11	07:19	08:27	12:28 (29)	08:41		10:46 (34)	09:27
	22:22	21:08	19:39	18:14	66 15:17 (24)	16:04	39	12:38 (21)	15:43
23	05:05	06:13	07:22	08:30	12:27 (29)	08:43		10:46 (34)	09:27
	22:20	21:05	19:36	18:12	71 15:19 (24)	16:02	34	12:38 (21)	15:44
24	05:07	06:15	07:24	08:32	12:26 (29)	08:45		10:47 (34)	09:28
	22:18	21:02	19:33	18:09	73 15:19 (24)	16:01	27	12:38 (21)	15:44
25	05:09	06:17	07:26	07:35	11:26 (29)	08:47		12:32 (21)	09:28
	22:16	20:59	19:30	17:06	76 14:20 (24)	15:59	2	12:34 (21)	15:45
26	05:11	06:20	07:28	07:37	11:25 (29)	08:50			09:28
	22:14	20:56	19:27	17:04	77 14:19 (24)	15:58			15:46
27	05:13	06:22	07:30	07:39	11:25 (29)	08:52			09:28
	22:12	20:54	19:25	17:01	87 15:07 (25)	15:56			15:47
28	05:16	06:24	07:33	07:42	11:25 (29)	08:54			09:28
	22:10	20:51	19:22	16:59	93 15:10 (25)	15:55			15:48
29	05:18	06:26	07:35	07:44	11:24 (29)	08:56			09:28
	22:07	20:48	19:19	16:56	98 15:11 (25)	15:54			15:49
30	05:20	06:29	07:37	07:47	11:24 (29)	08:58			09:28
	22:05	20:45	19:16	16:54	100 15:12 (25)	15:52			15:50
31	05:22	06:31		07:49	11:25 (29)				09:28
	22:03	20:42		16:51	100 15:13 (25)				15:51
Potential sun hours	546	478	386	319		236			199
Total, worst case					1360		1465		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** C - Moi 21 (3)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March			April	May	June
1	09:28			08:46		10:42 (34)	07:35		08:50 (16)	07:07	05:44	04:40
	15:53			16:56	72	14:06 (24)	18:05	39	11:29 (29)	20:17	21:26	22:30
2	09:27			08:43		10:44 (34)	07:33		08:50 (16)	07:04	05:41	04:38
	15:54			16:58	70	14:08 (24)	18:07	31	11:25 (29)	20:19	21:28	22:32
3	09:27			08:41		10:46 (34)	07:30		08:49 (16)	07:01	05:39	04:37
	15:55			17:01	72	14:10 (24)	18:09	21	09:10 (16)	20:21	21:31	22:34
4	09:26			08:39		10:47 (34)	07:27		08:48 (16)	06:58	05:36	04:36
	15:57			17:03	77	15:02 (25)	18:12	22	09:10 (16)	20:24	21:33	22:35
5	09:26			08:37		10:50 (34)	07:24		08:48 (16)	06:55	05:34	04:35
	15:58			17:06	77	15:05 (25)	18:14	21	09:09 (16)	20:26	21:35	22:37
6	09:25			08:34		11:05 (29)	07:21		08:48 (16)	06:52	05:31	04:34
	16:00			17:08	82	15:12 (25)	18:17	21	09:09 (16)	20:28	21:37	22:38
7	09:24			08:32		11:03 (29)	07:19		08:48 (16)	06:50	05:29	04:33
	16:02			17:11	92	15:18 (25)	18:19	20	09:08 (16)	20:30	21:40	22:39
8	09:24			08:30		11:03 (29)	07:16		08:48 (16)	06:47	05:26	04:32
	16:03			17:13	101	15:25 (25)	18:21	19	09:07 (16)	20:33	21:42	22:40
9	09:23			08:27		11:02 (29)	07:13		08:48 (16)	06:44	05:24	04:31
	16:05			17:16	112	15:55 (23)	18:24	18	09:06 (16)	20:35	21:44	22:42
10	09:22			08:25		11:01 (29)	07:10		08:49 (16)	06:41	05:22	04:30
	16:07			17:18	104	15:51 (23)	18:26	15	09:04 (16)	20:37	21:46	22:43
11	09:21			08:23		11:01 (29)	07:07		08:51 (16)	06:38	05:19	04:29
	16:09			17:21	101	15:23 (25)	18:28	11	09:02 (16)	20:40	21:49	22:44
12	09:20			08:20		11:00 (29)	07:04			06:35	05:17	04:29
	16:11			17:23	98	15:21 (25)	18:31			20:42	21:51	22:45
13	09:18			08:18		10:59 (29)	07:02			06:33	05:15	04:28
	16:13			17:26	94	15:18 (25)	18:33			20:44	21:53	22:46
14	09:17			08:15		11:00 (29)	06:59			06:30	05:13	04:28
	16:15			17:28	83	14:14 (24)	18:35			20:47	21:55	22:47
15	09:16			08:13		10:59 (29)	06:56			06:27	05:10	04:27
	16:17			17:31	83	14:13 (24)	18:38			20:49	21:58	22:47
16	09:15			08:10		10:59 (29)	06:53			06:24	05:08	04:27
	16:19			17:33	81	14:12 (24)	18:40			20:51	22:00	22:48
17	09:13			08:07		10:59 (29)	06:50			06:21	05:06	04:27
	16:21			17:36	81	14:12 (24)	18:42			20:53	22:02	22:49
18	09:12			08:05		10:59 (29)	06:47			06:19	05:04	04:27
	16:23			17:38	80	14:12 (24)	18:45			20:56	22:04	22:49
19	09:10			08:02		10:59 (29)	06:44			06:16	05:02	04:27
	16:25			17:40	78	14:11 (24)	18:47			20:58	22:06	22:50
20	09:08			08:00		10:59 (29)	06:41			06:13	05:00	04:27
	16:28			17:43	74	14:09 (24)	18:49			21:00	22:08	22:50
21	09:07			07:57		10:59 (29)	06:39			06:10	04:58	04:27
	16:30			17:45	71	14:08 (24)	18:51			21:03	22:10	22:50
22	09:05			07:54		11:00 (29)	06:36			06:08	04:56	04:27
	16:32			17:48	66	14:06 (24)	18:54			21:05	22:12	22:50
23	09:03			07:52		11:01 (29)	06:33			06:05	04:54	04:27
	16:34			17:50	60	14:04 (24)	18:56			21:07	22:14	22:50
24	09:02			07:49		11:01 (29)	06:30			06:02	04:52	04:27
	16:37			17:53	50	14:00 (24)	18:58			21:10	22:16	22:51
25	09:00			07:46		11:02 (29)	06:27			06:00	04:51	04:28
	16:39			17:55	36	11:38 (29)	19:01			21:12	22:18	22:50
26	08:58		12:05 (21)	07:44		11:03 (29)	06:24			05:57	04:49	04:28
	16:41	5	12:10 (21)	17:57	33	11:36 (29)	19:03			21:14	22:20	22:50
27	08:56		12:05 (21)	07:41		08:54 (16)	06:21			05:54	04:47	04:29
	16:44	19	13:53 (24)	18:00	41	11:34 (29)	19:05			21:17	22:22	22:50
28	08:54		11:00 (34)	07:38		08:52 (16)	06:18			05:52	04:46	04:30
	16:46	40	13:59 (24)	18:02	41	11:32 (29)	19:08			21:19	22:24	22:50
29	08:52		10:56 (34)				07:15			05:49	04:44	04:30
	16:49	47	14:02 (24)				20:10			21:21	22:25	22:50
30	08:50		10:50 (34)				07:13			05:46	04:43	04:31
	16:51	55	14:03 (24)				20:12			21:24	22:27	22:49
31	08:48		10:44 (34)				07:10				04:41	
	16:54	61	14:05 (24)				20:14				22:29	
Potential sun hours	221			260			365			432	521	547
Total, worst case		227			2110			238				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** C - Moi 21 (3)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September	October		November		December
1	04:32	05:24	06:33	07:39		07:51	10:30 (29)	09:00
	22:49	22:01	20:40	19:13		16:49	107 15:21 (23)	15:51
2	04:33	05:26	06:35	07:42	09:32 (16)	07:54	10:31 (29)	09:02
	22:48	21:58	20:37	19:10	7 09:39 (16)	16:46	111 15:25 (23)	15:50
3	04:34	05:28	06:37	07:44	09:28 (16)	07:56	10:33 (29)	09:03
	22:47	21:56	20:34	19:07	14 09:42 (16)	16:44	97 14:53 (25)	15:49
4	04:35	05:31	06:40	07:46	09:26 (16)	07:59	10:33 (29)	09:05
	22:47	21:54	20:31	19:04	17 09:43 (16)	16:41	89 14:46 (25)	15:48
5	04:36	05:33	06:42	07:48	09:25 (16)	08:01	10:34 (29)	09:07
	22:46	21:51	20:28	19:02	19 09:44 (16)	16:39	82 14:41 (25)	15:47
6	04:37	05:35	06:44	07:51	09:24 (16)	08:03	10:20 (34)	09:09
	22:45	21:49	20:25	18:59	20 09:44 (16)	16:37	77 14:35 (25)	15:46
7	04:39	05:37	06:46	07:53	09:23 (16)	08:06	10:16 (34)	09:10
	22:44	21:47	20:22	18:56	21 09:44 (16)	16:34	78 14:32 (25)	15:45
8	04:40	05:39	06:49	07:55	09:23 (16)	08:08	10:15 (34)	09:12
	22:43	21:44	20:20	18:53	22 09:45 (16)	16:32	71 13:39 (24)	15:45
9	04:41	05:42	06:51	07:57	09:23 (16)	08:11	10:15 (34)	09:13
	22:42	21:42	20:17	18:50	21 09:44 (16)	16:30	71 13:39 (24)	15:44
10	04:43	05:44	06:53	08:00	09:23 (16)	08:13	10:14 (34)	09:15
	22:40	21:39	20:14	18:47	21 09:44 (16)	16:28	70 13:38 (24)	15:44
11	04:44	05:46	06:55	08:02	09:23 (16)	08:15	10:15 (34)	09:16
	22:39	21:37	20:11	18:45	20 09:43 (16)	16:25	61 13:36 (24)	15:43
12	04:46	05:48	06:57	08:04	09:23 (16)	08:18	10:24 (34)	09:18
	22:38	21:34	20:08	18:42	35 12:00 (29)	16:23	52 13:35 (24)	15:43
13	04:47	05:51	07:00	08:07	09:25 (16)	08:20	10:28 (34)	09:19
	22:37	21:31	20:05	18:39	39 12:04 (29)	16:21	46 13:33 (24)	15:42
14	04:49	05:53	07:02	08:09	09:25 (16)	08:22	10:32 (34)	09:20
	22:35	21:29	20:02	18:36	42 12:06 (29)	16:19	39 13:30 (24)	15:42
15	04:51	05:55	07:04	08:11	09:28 (16)	08:25	11:38 (21)	09:21
	22:34	21:26	19:59	18:33	40 12:08 (29)	16:17	19 13:26 (24)	15:42
16	04:52	05:57	07:06	08:13	11:35 (29)	08:27	11:38 (21)	09:22
	22:32	21:24	19:56	18:31	34 12:09 (29)	16:15	4 11:42 (21)	15:42
17	04:54	06:00	07:08	08:16	11:34 (29)	08:29		09:23
	22:30	21:21	19:54	18:28	36 12:10 (29)	16:13		15:42
18	04:56	06:02	07:11	08:18	11:32 (29)	08:32		09:24
	22:29	21:18	19:51	18:25	55 14:33 (24)	16:11		15:42
19	04:58	06:04	07:13	08:20	11:32 (29)	08:34		09:25
	22:27	21:16	19:48	18:22	62 14:36 (24)	16:09		15:42
20	05:00	06:06	07:15	08:23	11:31 (29)	08:36		09:26
	22:25	21:13	19:45	18:20	67 14:37 (24)	16:08		15:43
21	05:01	06:09	07:17	08:25	11:30 (29)	08:39		09:26
	22:24	21:10	19:42	18:17	72 14:39 (24)	16:06		15:43
22	05:03	06:11	07:19	08:27	11:29 (29)	08:41		09:27
	22:22	21:08	19:39	18:14	75 14:40 (24)	16:04		15:43
23	05:05	06:13	07:22	08:30	11:29 (29)	08:43		09:27
	22:20	21:05	19:36	18:12	78 14:41 (24)	16:02		15:44
24	05:07	06:15	07:24	08:32	11:29 (29)	08:45		09:28
	22:18	21:02	19:33	18:09	78 14:41 (24)	16:01		15:45
25	05:09	06:17	07:26	07:35	10:29 (29)	08:47		09:28
	22:16	20:59	19:30	17:07	81 13:42 (24)	15:59		15:45
26	05:11	06:20	07:28	07:37	10:29 (29)	08:50		09:28
	22:14	20:57	19:27	17:04	82 13:43 (24)	15:58		15:46
27	05:13	06:22	07:30	07:39	10:29 (29)	08:52		09:28
	22:12	20:54	19:25	17:01	81 13:42 (24)	15:56		15:47
28	05:16	06:24	07:33	07:42	10:29 (29)	08:54		09:28
	22:10	20:51	19:22	16:59	87 14:45 (25)	15:55		15:48
29	05:18	06:26	07:35	07:44	10:29 (29)	08:56		09:28
	22:07	20:48	19:19	16:56	95 14:48 (25)	15:54		15:49
30	05:20	06:29	07:37	07:47	10:30 (29)	08:58		09:28
	22:05	20:45	19:16	16:54	99 14:51 (25)	15:52		15:50
31	05:22	06:31		07:49	10:30 (29)			09:28
	22:03	20:42		16:51	100 14:52 (25)			15:51
Potential sun hours	546	478	386	319		236		199
Total, worst case				1520		1074		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** D - Buevegen 1805 (4)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January		February		March		April	May	June
1	09:28		08:46		11:39 (29)	07:35	09:25 (16)	07:07	05:44	04:40
	15:53		16:56	88	15:12 (25)	18:05	9 09:34 (16)	20:17	21:26	22:31
2	09:27		08:43		11:39 (29)	07:33		07:04	05:41	04:38
	15:54		16:58	88	15:13 (25)	18:07		20:19	21:28	22:32
3	09:27		08:41		11:40 (29)	07:30		07:01	05:39	04:37
	15:55		17:01	85	15:12 (25)	18:09		20:21	21:31	22:34
4	09:27		08:39		11:39 (29)	07:27		06:58	05:36	04:36
	15:57		17:03	83	15:11 (25)	18:12		20:24	21:33	22:35
5	09:26	12:20 (21)	08:37		11:39 (29)	07:24		06:55	05:34	04:35
	15:58	1 12:21 (21)	17:06	80	15:09 (25)	18:14		20:26	21:35	22:37
6	09:25	12:19 (21)	08:34		11:40 (29)	07:21		06:52	05:31	04:34
	16:00	5 12:24 (21)	17:08	74	15:08 (25)	18:17		20:28	21:37	22:38
7	09:24	12:17 (21)	08:32		11:40 (29)	07:19		06:50	05:29	04:33
	16:02	11 12:28 (21)	17:11	62	14:11 (24)	18:19		20:30	21:40	22:39
8	09:24	12:17 (21)	08:30		11:41 (29)	07:16		06:47	05:26	04:32
	16:03	13 12:30 (21)	17:13	61	14:11 (24)	18:21		20:33	21:42	22:40
9	09:23	12:18 (21)	08:27		11:42 (29)	07:13		06:44	05:24	04:31
	16:05	16 12:34 (21)	17:16	57	14:10 (24)	18:24		20:35	21:44	22:42
10	09:22	11:06 (34)	08:25		11:42 (29)	07:10		06:41	05:22	04:30
	16:07	25 12:39 (21)	17:18	54	14:09 (24)	18:26		20:37	21:46	22:43
11	09:21	11:02 (34)	08:23		11:44 (29)	07:07		06:38	05:19	04:29
	16:09	31 12:41 (21)	17:21	48	14:08 (24)	18:28		20:40	21:49	22:44
12	09:20	11:01 (34)	08:20		11:45 (29)	07:04		06:35	05:17	04:29
	16:11	40 12:41 (21)	17:23	42	14:06 (24)	18:31		20:42	21:51	22:45
13	09:18	11:02 (34)	08:18		11:46 (29)	07:02		06:32	05:15	04:28
	16:13	42 12:42 (21)	17:26	32	14:02 (24)	18:33		20:44	21:53	22:46
14	09:17	11:02 (34)	08:15		11:49 (29)	06:59		06:30	05:13	04:28
	16:15	42 12:42 (21)	17:28	18	12:07 (29)	18:35		20:47	21:55	22:47
15	09:16	11:02 (34)	08:13		11:52 (29)	06:56		06:27	05:10	04:27
	16:17	43 12:42 (21)	17:31	12	12:04 (29)	18:38		20:49	21:58	22:47
16	09:15	11:02 (34)	08:10		09:29 (16)	06:53		06:24	05:08	04:27
	16:19	43 12:42 (21)	17:33	5	09:34 (16)	18:40		20:51	22:00	22:48
17	09:13	11:02 (34)	08:07		09:26 (16)	06:50		06:21	05:06	04:27
	16:21	47 12:42 (21)	17:36	11	09:37 (16)	18:42		20:53	22:02	22:49
18	09:12	11:03 (34)	08:05		09:25 (16)	06:47		06:19	05:04	04:27
	16:23	58 13:55 (24)	17:38	14	09:39 (16)	18:45		20:56	22:04	22:49
19	09:10	11:03 (34)	08:02		09:23 (16)	06:44		06:16	05:02	04:27
	16:25	69 13:59 (24)	17:40	17	09:40 (16)	18:47		20:58	22:06	22:50
20	09:08	11:04 (34)	08:00		09:22 (16)	06:41		06:13	05:00	04:27
	16:28	75 14:01 (24)	17:43	19	09:41 (16)	18:49		21:00	22:08	22:50
21	09:07	11:04 (34)	07:57		09:21 (16)	06:39		06:10	04:58	04:27
	16:30	79 14:03 (24)	17:45	20	09:41 (16)	18:51		21:03	22:10	22:50
22	09:05	11:05 (34)	07:54		09:20 (16)	06:36		06:08	04:56	04:27
	16:32	82 14:05 (24)	17:48	21	09:41 (16)	18:54		21:05	22:12	22:50
23	09:03	11:05 (34)	07:52		09:21 (16)	06:33		06:05	04:54	04:27
	16:34	83 14:05 (24)	17:50	21	09:42 (16)	18:56		21:07	22:14	22:51
24	09:02	11:06 (34)	07:49		09:21 (16)	06:30		06:02	04:52	04:27
	16:37	84 14:07 (24)	17:53	21	09:42 (16)	18:58		21:10	22:16	22:51
25	09:00	11:07 (34)	07:46		09:21 (16)	06:27		05:59	04:51	04:28
	16:39	82 14:52 (25)	17:55	20	09:41 (16)	19:01		21:12	22:18	22:51
26	08:58	11:09 (34)	07:44		09:21 (16)	06:24		05:57	04:49	04:28
	16:41	78 14:57 (25)	17:57	19	09:40 (16)	19:03		21:14	22:20	22:50
27	08:56	11:10 (34)	07:41		09:22 (16)	06:21		05:54	04:47	04:29
	16:44	86 15:12 (25)	18:00	17	09:39 (16)	19:05		21:17	22:22	22:50
28	08:54	11:13 (34)	07:38		09:23 (16)	06:18		05:52	04:46	04:30
	16:46	90 15:13 (25)	18:02	14	09:37 (16)	19:08		21:19	22:24	22:50
29	08:52	11:40 (29)				07:15		05:49	04:44	04:30
	16:49	88 15:14 (25)				20:10		21:21	22:25	22:50
30	08:50	11:39 (29)				07:12		05:46	04:42	04:31
	16:51	88 15:13 (25)				20:12		21:24	22:27	22:49
31	08:48	11:39 (29)				07:10			04:41	
	16:54	88 15:13 (25)				20:14			22:29	
Potential sun hours	221		260			365		432	521	547
Total, worst case		1489		1103			9			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** D - Buevegen 1805 (4)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September	October			November			December		
1	04:32	05:24	06:33	07:39			07:51		11:12 (29)	09:00		10:44 (34)
	22:49	22:01	20:40	19:13			16:49	53	13:38 (24)	15:51	31	12:23 (21)
2	04:33	05:26	06:35	07:42			07:54		11:11 (29)	09:02		10:48 (34)
	22:48	21:58	20:37	19:10			16:46	58	13:40 (24)	15:50	27	12:23 (21)
3	04:34	05:28	06:37	07:44			07:56		11:11 (29)	09:03		12:01 (21)
	22:47	21:56	20:34	19:07			16:44	60	13:41 (24)	15:49	17	12:18 (21)
4	04:35	05:31	06:40	07:46			07:59		11:10 (29)	09:05		12:01 (21)
	22:47	21:54	20:31	19:04			16:41	63	13:41 (24)	15:48	13	12:14 (21)
5	04:36	05:33	06:42	07:48			08:01		11:10 (29)	09:07		12:02 (21)
	22:46	21:51	20:28	19:02			16:39	75	14:38 (25)	15:47	11	12:13 (21)
6	04:37	05:35	06:44	07:51			08:03		11:10 (29)	09:09		12:05 (21)
	22:45	21:49	20:25	18:59			16:37	79	14:40 (25)	15:46	5	12:10 (21)
7	04:39	05:37	06:46	07:53			08:06		11:09 (29)	09:10		12:07 (21)
	22:44	21:47	20:22	18:56			16:34	84	14:41 (25)	15:45	2	12:09 (21)
8	04:40	05:39	06:49	07:55			08:08		11:09 (29)	09:12		
	22:43	21:44	20:20	18:53			16:32	87	14:42 (25)	15:45		
9	04:41	05:42	06:51	07:57			08:11		11:10 (29)	09:13		
	22:42	21:42	20:17	18:50			16:30	87	14:43 (25)	15:44		
10	04:43	05:44	06:53	08:00			08:13		11:10 (29)	09:15		
	22:41	21:39	20:14	18:47			16:28	88	14:44 (25)	15:43		
11	04:44	05:46	06:55	08:02			08:15		11:10 (29)	09:16		
	22:39	21:37	20:11	18:45			16:25	88	14:44 (25)	15:43		
12	04:46	05:48	06:57	08:04		10:01 (16)	08:18		11:11 (29)	09:18		
	22:38	21:34	20:08	18:42	4	10:05 (16)	16:23	88	14:45 (25)	15:43		
13	04:47	05:51	07:00	08:07		09:58 (16)	08:20		11:11 (29)	09:19		
	22:37	21:32	20:05	18:39	11	10:09 (16)	16:21	87	14:45 (25)	15:42		
14	04:49	05:53	07:02	08:09		09:55 (16)	08:22		10:45 (34)	09:20		
	22:35	21:29	20:02	18:36	16	10:11 (16)	16:19	89	14:45 (25)	15:42		
15	04:51	05:55	07:04	08:11		09:54 (16)	08:25		10:42 (34)	09:21		
	22:34	21:26	19:59	18:33	18	10:12 (16)	16:17	87	14:45 (25)	15:42		
16	04:52	05:57	07:06	08:13		09:53 (16)	08:27		10:41 (34)	09:22		
	22:32	21:24	19:56	18:31	19	10:12 (16)	16:15	79	14:30 (25)	15:42		
17	04:54	06:00	07:08	08:16		09:53 (16)	08:30		10:41 (34)	09:23		
	22:30	21:21	19:54	18:28	20	10:13 (16)	16:13	81	14:25 (25)	15:42		
18	04:56	06:02	07:11	08:18		09:52 (16)	08:32		10:40 (34)	09:24		
	22:29	21:18	19:51	18:25	21	10:13 (16)	16:11	84	13:41 (24)	15:42		
19	04:58	06:04	07:13	08:20		09:52 (16)	08:34		10:40 (34)	09:25		
	22:27	21:16	19:48	18:22	21	10:13 (16)	16:09	83	13:40 (24)	15:42		
20	05:00	06:06	07:15	08:23		09:52 (16)	08:36		10:39 (34)	09:26		
	22:25	21:13	19:45	18:20	20	10:12 (16)	16:08	82	13:39 (24)	15:43		
21	05:01	06:08	07:17	08:25		09:52 (16)	08:39		10:39 (34)	09:26		
	22:24	21:10	19:42	18:17	20	10:12 (16)	16:06	79	13:38 (24)	15:43		
22	05:03	06:11	07:19	08:27		09:52 (16)	08:41		10:40 (34)	09:27		
	22:22	21:08	19:39	18:14	19	10:11 (16)	16:04	75	13:37 (24)	15:43		
23	05:05	06:13	07:22	08:30		09:54 (16)	08:43		10:39 (34)	09:27		
	22:20	21:05	19:36	18:12	16	10:10 (16)	16:02	69	13:35 (24)	15:44		
24	05:07	06:15	07:24	08:32		09:54 (16)	08:45		10:40 (34)	09:28		
	22:18	21:02	19:33	18:09	14	10:08 (16)	16:01	58	13:32 (24)	15:44		
25	05:09	06:17	07:26	07:35		08:57 (16)	08:47		10:40 (34)	09:28		
	22:16	20:59	19:30	17:06	10	09:07 (16)	15:59	46	12:20 (21)	15:45		
26	05:11	06:20	07:28	07:37			08:50		10:41 (34)	09:28		
	22:14	20:57	19:27	17:04			15:58	43	12:21 (21)	15:46		
27	05:13	06:22	07:30	07:39		11:20 (29)	08:52		10:41 (34)	09:28		
	22:12	20:54	19:25	17:01	14	11:34 (29)	15:56	43	12:21 (21)	15:47		
28	05:16	06:24	07:33	07:42		11:18 (29)	08:54		10:42 (34)	09:28		
	22:10	20:51	19:22	16:59	19	11:37 (29)	15:55	42	12:22 (21)	15:48		
29	05:18	06:26	07:35	07:44		11:15 (29)	08:56		10:42 (34)	09:28		
	22:07	20:48	19:19	16:56	34	13:32 (24)	15:54	42	12:22 (21)	15:49		
30	05:20	06:29	07:37	07:47		11:14 (29)	08:58		10:42 (34)	09:28		
	22:05	20:45	19:16	16:54	42	13:35 (24)	15:52	40	12:22 (21)	15:50		
31	05:22	06:31		07:49		11:13 (29)				09:28		
	22:03	20:42		16:51	50	13:38 (24)				15:51		
Potential sun hours	546	478	386	319			236			199		
Total, worst case					388			2119			106	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** E - Buevegen 1816 (5)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January		February		March	April	May	June
1	09:28		11:12 (34)	08:46	11:58 (29)	07:35	07:07	05:44	04:40
	15:53	2	11:14 (34)	16:56	87	15:21 (25)	18:05	20:17	21:26	22:30
2	09:27		11:12 (34)	08:43	11:59 (29)	07:33	07:04	05:41	04:38
	15:54	2	11:14 (34)	16:58	85	15:21 (25)	18:07	20:19	21:28	22:32
3	09:27		11:11 (34)	08:41	12:00 (29)	07:30	07:01	05:39	04:37
	15:55	4	12:42 (21)	17:01	84	15:21 (25)	18:09	20:21	21:31	22:34
4	09:27		11:11 (34)	08:39	11:59 (29)	07:27	06:58	05:36	04:36
	15:57	12	12:45 (21)	17:03	83	15:20 (25)	18:12	20:24	21:33	22:35
5	09:26		11:11 (34)	08:37	11:59 (29)	07:24	06:55	05:34	04:35
	15:58	18	12:46 (21)	17:06	81	15:19 (25)	18:14	20:26	21:35	22:37
6	09:25		11:11 (34)	08:34	12:00 (29)	07:21	06:52	05:31	04:34
	16:00	29	12:50 (21)	17:08	76	15:18 (25)	18:17	20:28	21:37	22:38
7	09:24		11:11 (34)	08:32	12:01 (29)	07:19	06:50	05:29	04:33
	16:02	35	12:50 (21)	17:11	67	15:15 (25)	18:19	20:30	21:40	22:39
8	09:24		11:12 (34)	08:30	12:02 (29)	07:16	06:47	05:26	04:32
	16:03	38	12:51 (21)	17:13	57	14:25 (24)	18:21	20:33	21:42	22:40
9	09:23		11:12 (34)	08:27	12:03 (29)	07:13	06:44	05:24	04:31
	16:05	40	12:52 (21)	17:16	54	14:24 (24)	18:24	20:35	21:44	22:42
10	09:22		11:11 (34)	08:25	12:03 (29)	07:10	06:41	05:22	04:30
	16:07	41	12:52 (21)	17:18	51	14:23 (24)	18:26	20:37	21:46	22:43
11	09:21		11:12 (34)	08:23	12:05 (29)	07:07	06:38	05:19	04:29
	16:09	42	12:53 (21)	17:21	45	14:22 (24)	18:28	20:40	21:49	22:44
12	09:20		11:12 (34)	08:20	12:07 (29)	07:04	06:35	05:17	04:29
	16:11	43	12:53 (21)	17:23	37	14:20 (24)	18:31	20:42	21:51	22:45
13	09:18		11:12 (34)	08:18	12:09 (29)	07:02	06:32	05:15	04:28
	16:13	44	12:54 (21)	17:26	26	14:17 (24)	18:33	20:44	21:53	22:46
14	09:17		11:12 (34)	08:15	09:39 (16)	06:59	06:30	05:13	04:28
	16:15	44	12:54 (21)	17:28	12	12:21 (29)	18:35	20:47	21:55	22:47
15	09:16		11:12 (34)	08:13	09:36 (16)	06:56	06:27	05:10	04:27
	16:17	51	12:54 (21)	17:31	11	09:47 (16)	18:38	20:49	21:58	22:47
16	09:15		11:13 (34)	08:10	09:33 (16)	06:53	06:24	05:08	04:27
	16:19	54	12:54 (21)	17:33	16	09:49 (16)	18:40	20:51	22:00	22:48
17	09:13		11:13 (34)	08:07	09:32 (16)	06:50	06:21	05:06	04:27
	16:21	58	12:54 (21)	17:36	17	09:49 (16)	18:42	20:53	22:02	22:49
18	09:12		11:14 (34)	08:05	09:32 (16)	06:47	06:19	05:04	04:27
	16:23	61	12:55 (21)	17:38	19	09:51 (16)	18:45	20:56	22:04	22:49
19	09:10		11:15 (34)	08:02	09:31 (16)	06:44	06:16	05:02	04:27
	16:25	63	12:55 (21)	17:40	20	09:51 (16)	18:47	20:58	22:06	22:50
20	09:08		11:15 (34)	08:00	09:30 (16)	06:41	06:13	05:00	04:27
	16:28	73	14:13 (24)	17:43	21	09:51 (16)	18:49	21:00	22:08	22:50
21	09:07		11:16 (34)	07:57	09:30 (16)	06:38	06:10	04:58	04:27
	16:30	76	14:15 (24)	17:45	21	09:51 (16)	18:51	21:03	22:10	22:50
22	09:05		11:16 (34)	07:54	09:30 (16)	06:36	06:08	04:56	04:27
	16:32	78	14:16 (24)	17:48	21	09:51 (16)	18:54	21:05	22:12	22:50
23	09:03		11:17 (34)	07:52	09:31 (16)	06:33	06:05	04:54	04:27
	16:34	79	14:18 (24)	17:50	20	09:51 (16)	18:56	21:07	22:14	22:51
24	09:02		11:18 (34)	07:49	09:31 (16)	06:30	06:02	04:52	04:27
	16:37	79	14:20 (24)	17:53	20	09:51 (16)	18:58	21:10	22:16	22:51
25	09:00		11:20 (34)	07:46	09:31 (16)	06:27	05:59	04:51	04:28
	16:39	73	14:21 (24)	17:55	18	09:49 (16)	19:01	21:12	22:18	22:51
26	08:58		11:23 (34)	07:44	09:32 (16)	06:24	05:57	04:49	04:28
	16:41	69	15:03 (25)	17:57	16	09:48 (16)	19:03	21:14	22:20	22:50
27	08:56		11:58 (29)	07:41	09:33 (16)	06:21	05:54	04:47	04:29
	16:44	66	15:04 (25)	18:00	13	09:46 (16)	19:05	21:17	22:22	22:50
28	08:54		11:58 (29)	07:38	09:36 (16)	06:18	05:52	04:46	04:30
	16:46	74	15:10 (25)	18:02	6	09:42 (16)	19:07	21:19	22:24	22:50
29	08:52		11:59 (29)			07:15	05:49	04:44	04:30
	16:49	82	15:17 (25)			20:10	21:21	22:25	22:50
30	08:50		11:58 (29)			07:12	05:46	04:42	04:31
	16:51	86	15:21 (25)			20:12	21:24	22:27	22:49
31	08:48		11:59 (29)			07:10		04:41	
	16:54	87	15:22 (25)			20:14		22:29	
Potential sun hours	221			260		365	432	521	547
Total, worst case		1603			1084				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** E - Buevegen 1816 (5)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September	October			November			December		
1	04:32	05:24	06:33	07:39			07:51		11:33 (29)	09:00		10:54 (34)
	22:49	22:01	20:40	19:13			16:49	50	13:53 (24)	15:51	43	12:35 (21)
2	04:33	05:26	06:35	07:42			07:54		11:32 (29)	09:02		10:55 (34)
	22:48	21:58	20:37	19:10			16:46	55	13:54 (24)	15:50	40	12:35 (21)
3	04:34	05:28	06:37	07:44			07:56		11:31 (29)	09:03		10:55 (34)
	22:47	21:56	20:34	19:07			16:44	59	13:55 (24)	15:49	40	12:35 (21)
4	04:35	05:31	06:40	07:46			07:59		11:30 (29)	09:05		10:56 (34)
	22:47	21:54	20:31	19:04			16:41	69	14:45 (25)	15:48	39	12:35 (21)
5	04:36	05:33	06:42	07:48			08:01		11:30 (29)	09:07		10:56 (34)
	22:46	21:51	20:28	19:02			16:39	76	14:48 (25)	15:47	35	12:36 (21)
6	04:37	05:35	06:44	07:51			08:03		11:30 (29)	09:09		10:57 (34)
	22:45	21:49	20:25	18:59			16:37	79	14:50 (25)	15:46	29	12:36 (21)
7	04:39	05:37	06:46	07:53			08:06		11:29 (29)	09:10		10:58 (34)
	22:44	21:47	20:22	18:56			16:34	83	14:50 (25)	15:45	21	12:34 (21)
8	04:40	05:39	06:49	07:55			08:08		11:29 (29)	09:12		10:59 (34)
	22:43	21:44	20:20	18:53			16:32	87	14:51 (25)	15:45	12	12:33 (21)
9	04:41	05:42	06:51	07:57			08:11		11:30 (29)	09:13		11:00 (34)
	22:42	21:42	20:17	18:50			16:30	86	14:52 (25)	15:44	5	12:32 (21)
10	04:43	05:44	06:53	08:00			08:13		11:30 (29)	09:15		11:01 (34)
	22:41	21:39	20:14	18:47			16:28	88	14:53 (25)	15:43	2	11:03 (34)
11	04:44	05:46	06:55	08:02			08:15		11:29 (29)	09:16		11:02 (34)
	22:39	21:37	20:11	18:45			16:25	87	14:52 (25)	15:43	2	11:04 (34)
12	04:46	05:48	06:57	08:04			08:18		11:30 (29)	09:18		
	22:38	21:34	20:08	18:42			16:23	87	14:53 (25)	15:43		
13	04:47	05:51	07:00	08:07			08:20		11:31 (29)	09:19		
	22:37	21:31	20:05	18:39			16:21	81	14:49 (25)	15:42		
14	04:49	05:53	07:02	08:09		10:08 (16)	08:22		11:30 (29)	09:20		
	22:35	21:29	20:02	18:36	9	10:17 (16)	16:19	73	14:41 (25)	15:42		
15	04:51	05:55	07:04	08:11		10:06 (16)	08:25		11:31 (29)	09:21		
	22:34	21:26	19:59	18:33	14	10:20 (16)	16:17	67	14:37 (25)	15:42		
16	04:52	05:57	07:06	08:13		10:04 (16)	08:27		10:56 (34)	09:22		
	22:32	21:24	19:56	18:31	16	10:20 (16)	16:15	69	14:36 (25)	15:42		
17	04:54	06:00	07:08	08:16		10:03 (16)	08:30		10:54 (34)	09:23		
	22:30	21:21	19:54	18:28	19	10:22 (16)	16:13	73	13:55 (24)	15:42		
18	04:56	06:02	07:11	08:18		10:02 (16)	08:32		10:52 (34)	09:24		
	22:29	21:18	19:51	18:25	20	10:22 (16)	16:11	79	13:54 (24)	15:42		
19	04:58	06:04	07:13	08:20		10:02 (16)	08:34		10:52 (34)	09:25		
	22:27	21:16	19:48	18:22	21	10:23 (16)	16:09	79	13:53 (24)	15:42		
20	05:00	06:06	07:15	08:23		10:01 (16)	08:36		10:51 (34)	09:26		
	22:25	21:13	19:45	18:20	21	10:22 (16)	16:08	78	13:51 (24)	15:43		
21	05:01	06:08	07:17	08:25		10:01 (16)	08:39		10:51 (34)	09:26		
	22:24	21:10	19:42	18:17	21	10:22 (16)	16:06	76	13:50 (24)	15:43		
22	05:03	06:11	07:19	08:27		10:01 (16)	08:41		10:51 (34)	09:27		
	22:22	21:08	19:39	18:14	21	10:22 (16)	16:04	73	13:49 (24)	15:43		
23	05:05	06:13	07:22	08:30		10:01 (16)	08:43		10:51 (34)	09:27		
	22:20	21:05	19:36	18:12	20	10:21 (16)	16:02	63	12:31 (21)	15:44		
24	05:07	06:15	07:24	08:32		10:01 (16)	08:45		10:51 (34)	09:28		
	22:18	21:02	19:33	18:09	19	10:20 (16)	16:01	61	12:32 (21)	15:44		
25	05:09	06:17	07:26	07:35		09:02 (16)	08:47		10:51 (34)	09:28		
	22:16	20:59	19:30	17:06	17	09:19 (16)	15:59	59	12:32 (21)	15:45		
26	05:11	06:20	07:28	07:37		09:03 (16)	08:50		10:52 (34)	09:28		
	22:14	20:57	19:27	17:04	14	09:17 (16)	15:58	55	12:33 (21)	15:46		
27	05:13	06:22	07:30	07:39		09:06 (16)	08:52		10:52 (34)	09:28		
	22:12	20:54	19:25	17:01	10	09:16 (16)	15:56	51	12:33 (21)	15:47		
28	05:16	06:24	07:33	07:42		11:42 (29)	08:54		10:53 (34)	09:28		
	22:10	20:51	19:22	16:59	10	11:52 (29)	15:55	43	12:34 (21)	15:48		
29	05:18	06:26	07:35	07:44		11:38 (29)	08:56		10:53 (34)	09:28		
	22:07	20:48	19:19	16:56	28	13:47 (24)	15:54	43	12:34 (21)	15:49		
30	05:20	06:29	07:37	07:47		11:36 (29)	08:58		10:53 (34)	09:28		
	22:05	20:45	19:16	16:54	39	13:50 (24)	15:52	43	12:34 (21)	15:50		
31	05:22	06:31		07:49		11:35 (29)				09:28		
	22:03	20:42		16:51	45	13:52 (24)				15:51		
Potential sun hours	546	478	386	319			236			199		
Total, worst case					364			2072			268	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** F - Buevegen 1818 (6)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April	May	June
1	09:28		11:23 (34)	08:46		12:23 (29)	07:35	07:07	05:44	04:40
	15:53	17	11:40 (34)	16:56	82	15:30 (25)	18:05	20:17	21:26	22:30
2	09:27		11:23 (34)	08:43		12:24 (29)	07:33	07:04	05:41	04:38
	15:54	17	11:40 (34)	16:58	86	15:34 (25)	18:07	20:19	21:28	22:32
3	09:27		11:23 (34)	08:41		12:25 (29)	07:30	07:01	05:39	04:37
	15:55	18	11:41 (34)	17:01	84	15:34 (25)	18:09	20:21	21:31	22:34
4	09:26		11:23 (34)	08:39		12:25 (29)	07:27	06:58	05:36	04:36
	15:57	23	12:52 (21)	17:03	85	15:34 (25)	18:12	20:24	21:33	22:35
5	09:26		11:23 (34)	08:37		12:25 (29)	07:24	06:55	05:34	04:35
	15:58	25	12:53 (21)	17:06	82	15:33 (25)	18:14	20:26	21:35	22:37
6	09:25		11:24 (34)	08:34		12:26 (29)	07:21	06:52	05:31	04:34
	16:00	31	13:06 (21)	17:08	79	15:33 (25)	18:17	20:28	21:37	22:38
7	09:24		11:24 (34)	08:32		12:26 (29)	07:19	06:50	05:29	04:33
	16:02	34	13:07 (21)	17:11	74	15:31 (25)	18:19	20:30	21:40	22:39
8	09:24		11:24 (34)	08:30		12:28 (29)	07:16	06:47	05:26	04:32
	16:03	41	13:07 (21)	17:13	68	15:30 (25)	18:21	20:33	21:42	22:40
9	09:23		11:24 (34)	08:27		12:28 (29)	07:13	06:44	05:24	04:31
	16:05	42	13:07 (21)	17:16	60	15:26 (25)	18:24	20:35	21:44	22:42
10	09:22		11:25 (34)	08:25		12:29 (29)	07:10	06:41	05:22	04:30
	16:07	42	13:08 (21)	17:18	51	14:44 (24)	18:26	20:37	21:46	22:43
11	09:21		11:25 (34)	08:23		12:32 (29)	07:07	06:38	05:19	04:29
	16:09	43	13:09 (21)	17:21	44	14:43 (24)	18:28	20:40	21:49	22:44
12	09:20		11:25 (34)	08:20		09:50 (16)	07:04	06:35	05:17	04:29
	16:11	44	13:09 (21)	17:23	43	14:42 (24)	18:31	20:42	21:51	22:45
13	09:18		11:26 (34)	08:18		09:46 (16)	07:01	06:32	05:15	04:28
	16:13	44	13:10 (21)	17:26	41	14:40 (24)	18:33	20:44	21:53	22:46
14	09:17		11:26 (34)	08:15		09:45 (16)	06:59	06:30	05:13	04:28
	16:15	54	13:10 (21)	17:28	26	14:38 (24)	18:35	20:47	21:55	22:47
15	09:16		11:26 (34)	08:13		09:43 (16)	06:56	06:27	05:10	04:27
	16:17	57	13:10 (21)	17:31	18	10:01 (16)	18:38	20:49	21:58	22:47
16	09:15		11:27 (34)	08:10		09:42 (16)	06:53	06:24	05:08	04:27
	16:19	60	13:10 (21)	17:33	20	10:02 (16)	18:40	20:51	22:00	22:48
17	09:13		11:27 (34)	08:07		09:41 (16)	06:50	06:21	05:06	04:27
	16:21	63	13:10 (21)	17:35	21	10:02 (16)	18:42	20:53	22:02	22:49
18	09:12		11:28 (34)	08:05		09:41 (16)	06:47	06:19	05:04	04:27
	16:23	64	13:11 (21)	17:38	22	10:03 (16)	18:45	20:56	22:04	22:49
19	09:10		11:29 (34)	08:02		09:41 (16)	06:44	06:16	05:02	04:27
	16:25	63	13:11 (21)	17:40	22	10:03 (16)	18:47	20:58	22:06	22:50
20	09:08		11:30 (34)	08:00		09:40 (16)	06:41	06:13	05:00	04:27
	16:28	63	13:11 (21)	17:43	23	10:03 (16)	18:49	21:00	22:08	22:50
21	09:07		11:31 (34)	07:57		09:40 (16)	06:38	06:10	04:58	04:27
	16:30	62	13:10 (21)	17:45	22	10:02 (16)	18:51	21:03	22:10	22:50
22	09:05		11:31 (34)	07:54		09:40 (16)	06:36	06:08	04:56	04:27
	16:32	60	13:09 (21)	17:48	22	10:02 (16)	18:54	21:05	22:12	22:50
23	09:03		11:33 (34)	07:52		09:42 (16)	06:33	06:05	04:54	04:27
	16:34	66	14:33 (24)	17:50	20	10:02 (16)	18:56	21:07	22:14	22:50
24	09:02		11:35 (34)	07:49		09:42 (16)	06:30	06:02	04:52	04:27
	16:37	67	14:36 (24)	17:53	19	10:01 (16)	18:58	21:10	22:16	22:51
25	09:00		11:39 (34)	07:46		09:43 (16)	06:27	05:59	04:51	04:28
	16:39	58	14:38 (24)	17:55	16	09:59 (16)	19:01	21:12	22:18	22:50
26	08:58		12:24 (29)	07:44		09:45 (16)	06:24	05:57	04:49	04:28
	16:41	55	14:40 (24)	17:57	12	09:57 (16)	19:03	21:14	22:20	22:50
27	08:56		12:23 (29)	07:41		09:48 (16)	06:21	05:54	04:47	04:29
	16:44	57	14:40 (24)	18:00	5	09:53 (16)	19:05	21:17	22:22	22:50
28	08:54		12:23 (29)	07:38			06:18	05:52	04:46	04:30
	16:46	61	15:15 (25)	18:02			19:07	21:19	22:24	22:50
29	08:52		12:24 (29)				07:15	05:49	04:44	04:30
	16:49	67	15:19 (25)				20:10	21:21	22:25	22:50
30	08:50		12:23 (29)				07:12	05:46	04:42	04:31
	16:51	74	15:23 (25)				20:12	21:24	22:27	22:49
31	08:48		12:24 (29)				07:10		04:41	
	16:53	77	15:26 (25)				20:14		22:29	
Potential sun hours	221			260			365	432	521	547
Total, worst case		1549			1147					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** F - Buevegen 1818 (6)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September	October			November			December		
1	04:32	05:24	06:33	07:39			07:51		11:59 (29)	09:00		11:07 (34)
	22:49	22:01	20:40	19:13			16:49	51	14:13 (24)	15:51	43	12:51 (21)
2	04:33	05:26	06:35	07:42			07:54		11:58 (29)	09:02		11:08 (34)
	22:48	21:58	20:37	19:10			16:46	61	14:57 (25)	15:50	42	12:51 (21)
3	04:34	05:28	06:37	07:44			07:56		11:57 (29)	09:03		11:08 (34)
	22:47	21:56	20:34	19:07			16:44	71	15:00 (25)	15:49	42	12:51 (21)
4	04:35	05:31	06:40	07:46			07:59		11:56 (29)	09:05		11:09 (34)
	22:47	21:54	20:31	19:04			16:41	76	15:01 (25)	15:48	41	12:52 (21)
5	04:36	05:33	06:42	07:48			08:01		11:55 (29)	09:07		11:09 (34)
	22:46	21:51	20:28	19:02			16:39	80	15:02 (25)	15:47	35	12:52 (21)
6	04:37	05:35	06:44	07:51			08:03		11:55 (29)	09:09		11:10 (34)
	22:45	21:49	20:25	18:59			16:37	82	15:03 (25)	15:46	31	12:52 (21)
7	04:38	05:37	06:46	07:53			08:06		11:54 (29)	09:10		11:11 (34)
	22:44	21:47	20:22	18:56			16:34	84	15:03 (25)	15:45	24	12:40 (21)
8	04:40	05:39	06:49	07:55			08:08		11:54 (29)	09:12		11:11 (34)
	22:43	21:44	20:20	18:53			16:32	87	15:04 (25)	15:45	24	12:41 (21)
9	04:41	05:42	06:51	07:57			08:11		11:55 (29)	09:13		11:12 (34)
	22:42	21:42	20:17	18:50			16:30	87	15:05 (25)	15:44	20	12:37 (21)
10	04:43	05:44	06:53	08:00			08:13		11:55 (29)	09:15		11:12 (34)
	22:40	21:39	20:14	18:47			16:28	81	15:01 (25)	15:43	17	11:29 (34)
11	04:44	05:46	06:55	08:02			08:15		11:54 (29)	09:16		11:14 (34)
	22:39	21:37	20:11	18:45			16:25	78	14:57 (25)	15:43	16	11:30 (34)
12	04:46	05:48	06:57	08:04			08:18		11:55 (29)	09:18		11:14 (34)
	22:38	21:34	20:08	18:42			16:23	74	14:55 (25)	15:43	15	11:29 (34)
13	04:47	05:51	07:00	08:07			08:20		11:55 (29)	09:19		11:15 (34)
	22:37	21:31	20:05	18:39			16:21	68	14:51 (25)	15:42	15	11:30 (34)
14	04:49	05:53	07:02	08:09			08:22		11:55 (29)	09:20		11:16 (34)
	22:35	21:29	20:02	18:36			16:19	62	14:47 (25)	15:42	14	11:30 (34)
15	04:51	05:55	07:04	08:11		10:19 (16)	08:25		11:56 (29)	09:21		11:16 (34)
	22:34	21:26	19:59	18:33	8	10:27 (16)	16:17	57	14:13 (24)	15:42	14	11:30 (34)
16	04:52	05:57	07:06	08:13		10:16 (16)	08:27		11:57 (29)	09:22		11:17 (34)
	22:32	21:24	19:56	18:31	14	10:30 (16)	16:15	54	14:12 (24)	15:42	12	11:29 (34)
17	04:54	06:00	07:08	08:16		10:15 (16)	08:29		11:12 (34)	09:23		11:17 (34)
	22:30	21:21	19:54	18:28	17	10:32 (16)	16:13	58	14:11 (24)	15:42	12	11:29 (34)
18	04:56	06:02	07:11	08:18		10:13 (16)	08:32		11:09 (34)	09:24		11:18 (34)
	22:29	21:18	19:51	18:25	19	10:32 (16)	16:11	67	14:10 (24)	15:42	11	11:29 (34)
19	04:58	06:04	07:13	08:20		10:12 (16)	08:34		11:08 (34)	09:25		11:19 (34)
	22:27	21:16	19:48	18:22	21	10:33 (16)	16:09	66	14:08 (24)	15:42	11	11:30 (34)
20	05:00	06:06	07:15	08:23		10:11 (16)	08:36		11:06 (34)	09:26		11:20 (34)
	22:25	21:13	19:45	18:20	22	10:33 (16)	16:08	60	12:44 (21)	15:43	10	11:30 (34)
21	05:01	06:08	07:17	08:25		10:11 (16)	08:39		11:06 (34)	09:26		11:20 (34)
	22:24	21:10	19:42	18:17	23	10:34 (16)	16:06	62	12:45 (21)	15:43	10	11:30 (34)
22	05:03	06:11	07:19	08:27		10:10 (16)	08:41		11:06 (34)	09:27		11:21 (34)
	22:22	21:08	19:39	18:14	23	10:33 (16)	16:04	63	12:47 (21)	15:43	10	11:31 (34)
23	05:05	06:13	07:22	08:30		10:11 (16)	08:43		11:05 (34)	09:27		11:21 (34)
	22:20	21:05	19:36	18:12	22	10:33 (16)	16:02	63	12:47 (21)	15:44	10	11:31 (34)
24	05:07	06:15	07:24	08:32		10:10 (16)	08:45		11:05 (34)	09:28		11:22 (34)
	22:18	21:02	19:33	18:09	22	10:32 (16)	16:01	64	12:48 (21)	15:44	10	11:32 (34)
25	05:09	06:17	07:26	07:35		09:11 (16)	08:47		11:05 (34)	09:28		11:22 (34)
	22:16	20:59	19:30	17:06	21	09:32 (16)	15:59	63	12:48 (21)	15:45	11	11:33 (34)
26	05:11	06:20	07:28	07:37		09:11 (16)	08:50		11:06 (34)	09:28		11:22 (34)
	22:14	20:56	19:27	17:04	20	09:31 (16)	15:58	60	12:49 (21)	15:46	12	11:34 (34)
27	05:13	06:22	07:30	07:39		09:13 (16)	08:52		11:05 (34)	09:28		11:23 (34)
	22:12	20:54	19:25	17:01	17	09:30 (16)	15:56	58	12:49 (21)	15:47	11	11:34 (34)
28	05:16	06:24	07:33	07:42		09:14 (16)	08:54		11:06 (34)	09:28		11:23 (34)
	22:10	20:51	19:22	16:59	28	14:08 (24)	15:55	53	12:50 (21)	15:48	13	11:36 (34)
29	05:18	06:26	07:35	07:44		09:16 (16)	08:56		11:06 (34)	09:28		11:22 (34)
	22:07	20:48	19:19	16:56	42	14:10 (24)	15:54	44	12:50 (21)	15:49	14	11:36 (34)
30	05:20	06:29	07:37	07:47		12:02 (29)	08:58		11:06 (34)	09:28		11:23 (34)
	22:05	20:45	19:16	16:54	40	14:11 (24)	15:52	43	12:50 (21)	15:50	15	11:38 (34)
31	05:22	06:31		07:49		12:01 (29)				09:28		11:23 (34)
	22:03	20:42		16:51	46	14:13 (24)				15:51	15	11:38 (34)
Potential sun hours	546	478	386	319			236			199		
Total, worst case					405			1977			580	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** G - Buevegen 1786 (7)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April	May	June		
1	09:28			08:46		11:27 (29)	07:35	07:07	05:44	04:40		
	15:53			16:56	70	14:51 (25)	18:05	20:17	21:26	22:31		
2	09:27		12:04 (21)	08:43		11:27 (29)	07:33	07:04	05:41	04:38		
	15:54	1	12:05 (21)	16:58	60	13:50 (24)	18:07	20:19	21:28	22:32		
3	09:27		12:04 (21)	08:41		11:28 (29)	07:30	07:01	05:39	04:37		
	15:55	4	12:08 (21)	17:01	58	13:50 (24)	18:09	20:21	21:31	22:34		
4	09:27		12:04 (21)	08:39		11:28 (29)	07:27	06:58	05:36	04:36		
	15:57	7	12:11 (21)	17:03	54	13:48 (24)	18:12	20:24	21:33	22:35		
5	09:26		12:04 (21)	08:37		11:28 (29)	07:24	06:55	05:34	04:35		
	15:58	17	12:21 (21)	17:06	52	13:47 (24)	18:14	20:26	21:35	22:37		
6	09:25		12:04 (21)	08:34		11:29 (29)	07:21	06:52	05:31	04:34		
	16:00	17	12:21 (21)	17:08	49	13:47 (24)	18:17	20:28	21:37	22:38		
7	09:24		12:05 (21)	08:32		11:29 (29)	07:19	06:50	05:29	04:33		
	16:02	19	12:26 (21)	17:11	43	13:44 (24)	18:19	20:30	21:40	22:39		
8	09:24		12:05 (21)	08:30		11:31 (29)	07:16	06:47	05:26	04:32		
	16:03	22	12:27 (21)	17:13	35	13:42 (24)	18:21	20:33	21:42	22:40		
9	09:23		12:06 (21)	08:27		11:32 (29)	07:13	06:44	05:24	04:31		
	16:05	22	12:28 (21)	17:16	22	11:54 (29)	18:24	20:35	21:44	22:42		
10	09:22		12:06 (21)	08:25		11:34 (29)	07:10	06:41	05:22	04:30		
	16:07	22	12:28 (21)	17:18	18	11:52 (29)	18:26	20:37	21:46	22:43		
11	09:21		12:07 (21)	08:23		11:37 (29)	07:07	06:38	05:19	04:29		
	16:09	22	12:29 (21)	17:21	13	11:50 (29)	18:28	20:40	21:49	22:44		
12	09:20		12:07 (21)	08:20		11:42 (29)	07:04	06:35	05:17	04:29		
	16:11	28	13:33 (24)	17:23	2	11:44 (29)	18:31	20:42	21:51	22:45		
13	09:18		12:08 (21)	08:18			07:02	06:32	05:15	04:28		06:00 (77)
	16:13	33	13:37 (24)	17:26			18:33	20:44	21:53	22:46	4	06:04 (77)
14	09:17		12:08 (21)	08:15		09:31 (16)	06:59	06:30	05:13	04:28		06:00 (77)
	16:15	36	13:38 (24)	17:28	3	09:34 (16)	18:35	20:47	21:55	22:47	4	06:04 (77)
15	09:16		11:34 (29)	08:13		09:27 (16)	06:56	06:27	05:10	04:27		06:00 (77)
	16:17	47	13:40 (24)	17:31	10	09:37 (16)	18:38	20:49	21:58	22:47	5	06:05 (77)
16	09:15		11:31 (29)	08:10		09:25 (16)	06:53	06:24	05:08	04:27		06:00 (77)
	16:19	55	13:41 (24)	17:33	14	09:39 (16)	18:40	20:51	22:00	22:48	6	06:06 (77)
17	09:13		11:31 (29)	08:07		09:23 (16)	06:50	06:21	05:06	04:27		06:00 (77)
	16:21	58	13:43 (24)	17:36	17	09:40 (16)	18:42	20:53	22:02	22:49	7	06:07 (77)
18	09:12		11:30 (29)	08:05		09:23 (16)	06:47	06:19	05:04	04:27		06:00 (77)
	16:23	72	14:53 (25)	17:38	18	09:41 (16)	18:45	20:56	22:04	22:49	7	06:07 (77)
19	09:10		11:29 (29)	08:02		09:23 (16)	06:44	06:16	05:02	04:27		06:00 (77)
	16:25	85	14:53 (25)	17:40	18	09:41 (16)	18:47	20:58	22:06	22:50	8	06:08 (77)
20	09:09		11:28 (29)	08:00		09:22 (16)	06:41	06:13	05:00	04:27		06:00 (77)
	16:28	88	14:54 (25)	17:43	19	09:41 (16)	18:49	21:00	22:08	22:50	8	06:08 (77)
21	09:07		11:28 (29)	07:57		09:22 (16)	06:39	06:10	04:58	04:27		06:00 (77)
	16:30	88	14:54 (25)	17:45	19	09:41 (16)	18:51	21:03	22:10	22:50	8	06:08 (77)
22	09:05		11:27 (29)	07:54		09:22 (16)	06:36	06:08	04:56	04:27		06:00 (77)
	16:32	89	14:55 (25)	17:48	19	09:41 (16)	18:54	21:05	22:12	22:50	8	06:08 (77)
23	09:03		11:26 (29)	07:52		09:23 (16)	06:33	06:05	04:54	04:27		06:01 (77)
	16:34	87	14:54 (25)	17:50	18	09:41 (16)	18:56	21:07	22:14	22:51	8	06:09 (77)
24	09:02		11:26 (29)	07:49		09:23 (16)	06:30	06:02	04:52	04:27		06:01 (77)
	16:37	81	14:55 (25)	17:53	17	09:40 (16)	18:58	21:10	22:16	22:51	8	06:09 (77)
25	09:00		11:26 (29)	07:46		09:24 (16)	06:27	05:59	04:51	04:28		06:01 (77)
	16:39	82	14:55 (25)	17:55	14	09:38 (16)	19:01	21:12	22:18	22:51	7	06:08 (77)
26	08:58		11:26 (29)	07:44		09:25 (16)	06:24	05:57	04:49	04:28		06:02 (77)
	16:41	83	14:55 (25)	17:57	11	09:36 (16)	19:03	21:14	22:20	22:50	7	06:09 (77)
27	08:56		11:25 (29)	07:41		09:29 (16)	06:21	05:54	04:47	04:29		06:02 (77)
	16:44	83	14:54 (25)	18:00	3	09:32 (16)	19:05	21:17	22:22	22:50	6	06:08 (77)
28	08:54		11:26 (29)	07:38			06:18	05:52	04:46	04:30		06:03 (77)
	16:46	82	14:54 (25)	18:02			19:08	21:19	22:24	22:50	5	06:08 (77)
29	08:52		11:26 (29)				07:15	05:49	04:44	04:30		06:03 (77)
	16:49	80	14:54 (25)				20:10	21:21	22:25	22:50	5	06:08 (77)
30	08:50		11:26 (29)				07:13	05:46	04:42	04:31		06:04 (77)
	16:51	79	14:53 (25)				20:12	21:24	22:27	22:49	1	06:05 (77)
31	08:48		11:26 (29)				07:10		04:41			
	16:54	76	14:52 (25)				20:14		22:29			
Potential sun hours	221			260			365	432	521	547		
Total, worst case		1565			676						112	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** G - Buevegen 1786 (7)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September	October			November			December		
1	04:32	05:24	06:33	07:39			07:51		11:03 (29)	09:00		11:49 (21)
	22:49	22:01	20:40	19:13			16:49	19	11:22 (29)	15:51	22	12:11 (21)
2	04:33	05:26	06:35	07:42			07:54		11:01 (29)	09:02		11:49 (21)
	22:48	21:59	20:37	19:10			16:46	23	11:24 (29)	15:50	22	12:11 (21)
3	04:34	05:28	06:37	07:44			07:56		11:01 (29)	09:03		11:49 (21)
	22:47	21:56	20:34	19:07			16:44	36	13:12 (24)	15:49	22	12:11 (21)
4	04:35	05:31	06:40	07:46			07:59		10:59 (29)	09:05		11:50 (21)
	22:47	21:54	20:31	19:04			16:41	43	13:14 (24)	15:48	21	12:11 (21)
5	04:36	05:33	06:42	07:48			08:01		10:59 (29)	09:07		11:50 (21)
	22:46	21:51	20:28	19:02			16:39	48	13:16 (24)	15:47	21	12:11 (21)
6	04:37	05:35	06:44	07:51			08:03		10:58 (29)	09:09		11:51 (21)
	22:45	21:49	20:25	18:59			16:37	53	13:18 (24)	15:46	16	12:07 (21)
7	04:39	05:37	06:46	07:53			08:06		10:57 (29)	09:10		11:51 (21)
	22:44	21:47	20:23	18:56			16:34	55	13:18 (24)	15:45	17	12:08 (21)
8	04:40	05:39	06:49	07:55			08:08		10:57 (29)	09:12		11:52 (21)
	22:43	21:44	20:20	18:53			16:32	58	13:19 (24)	15:45	8	12:00 (21)
9	04:41	05:42	06:51	07:57			08:11		10:57 (29)	09:13		11:53 (21)
	22:42	21:42	20:17	18:50			16:30	63	14:18 (25)	15:44	4	11:57 (21)
10	04:43	05:44	06:53	08:00			08:13		10:58 (29)	09:15		11:53 (21)
	22:41	21:39	20:14	18:47			16:28	71	14:22 (25)	15:43	1	11:54 (21)
11	04:44	05:46	06:55	08:02			08:15		10:57 (29)	09:16		
	22:39	21:37	20:11	18:45			16:25	76	14:23 (25)	15:43		
12	04:46	05:48	06:57	08:04			08:18		10:57 (29)	09:18		
	22:38	21:34	20:08	18:42			16:23	80	14:25 (25)	15:43		
13	04:47	05:51	07:00	08:07			08:20		10:58 (29)	09:19		
	22:37	21:32	20:05	18:39			16:21	81	14:26 (25)	15:42		
14	04:49	05:53	07:02	08:09			08:22		10:58 (29)	09:20		
	22:35	21:29	20:02	18:36			16:19	82	14:26 (25)	15:42		
15	04:51	05:55	07:04	08:11		10:00 (16)	08:25		10:58 (29)	09:21		
	22:34	21:26	19:59	18:33	7	10:07 (16)	16:17	83	14:27 (25)	15:42		
16	04:52	05:57	07:06	08:13		09:57 (16)	08:27		10:59 (29)	09:22		
	22:32	21:24	19:56	18:31	12	10:09 (16)	16:15	83	14:28 (25)	15:42		
17	04:54	06:00	07:08	08:16		09:55 (16)	08:30		11:00 (29)	09:23		
	22:31	21:21	19:54	18:28	16	10:11 (16)	16:13	83	14:29 (25)	15:42		
18	04:56	06:02	07:11	08:18		09:54 (16)	08:32		11:00 (29)	09:24		
	22:29	21:18	19:51	18:25	17	10:11 (16)	16:11	81	14:29 (25)	15:42		
19	04:58	06:04	07:13	08:20		09:54 (16)	08:34		11:01 (29)	09:25		
	22:27	21:16	19:48	18:22	18	10:12 (16)	16:09	87	14:29 (25)	15:42		
20	05:00	06:06	07:15	08:23		09:53 (16)	08:36		11:01 (29)	09:26		
	22:25	21:13	19:45	18:20	19	10:12 (16)	16:08	89	14:29 (25)	15:43		
21	05:01	06:08	07:17	08:25		09:53 (16)	08:39		11:03 (29)	09:26		
	22:24	21:10	19:42	18:17	19	10:12 (16)	16:06	88	14:29 (25)	15:43		
22	05:03	06:11	07:19	08:27		09:52 (16)	08:41		11:04 (29)	09:27		
	22:22	21:08	19:39	18:14	20	10:12 (16)	16:04	88	14:30 (25)	15:43		
23	05:05	06:13	07:22	08:30		09:53 (16)	08:43		11:05 (29)	09:27		
	22:20	21:05	19:36	18:12	19	10:12 (16)	16:02	84	14:29 (25)	15:44		
24	05:07	06:15	07:24	08:32		09:53 (16)	08:45		11:07 (29)	09:28		
	22:18	21:02	19:33	18:09	17	10:10 (16)	16:01	72	14:30 (25)	15:44		
25	05:09	06:17	07:26	07:35		08:54 (16)	08:47		11:08 (29)	09:28		
	22:16	20:59	19:30	17:06	16	09:10 (16)	15:59	58	13:20 (24)	15:45		
26	05:11	06:20	07:28	07:37		08:56 (16)	08:50		11:10 (29)	09:28		
	22:14	20:57	19:27	17:04	13	09:09 (16)	15:58	54	13:20 (24)	15:46		
27	05:13	06:22	07:30	07:39		08:57 (16)	08:52		11:12 (29)	09:28		
	22:12	20:54	19:25	17:01	9	09:06 (16)	15:56	49	13:19 (24)	15:47		
28	05:16	06:24	07:33	07:42			08:54		11:48 (21)	09:28		
	22:10	20:51	19:22	16:59			15:55	35	13:18 (24)	15:48		
29	05:18	06:26	07:35	07:44			08:56		11:48 (21)	09:28		
	22:07	20:48	19:19	16:56			15:54	33	13:17 (24)	15:49		
30	05:20	06:29	07:37	07:47		11:09 (29)	08:58		11:48 (21)	09:28		
	22:05	20:45	19:16	16:54	7	11:16 (29)	15:52	30	13:15 (24)	15:50		
31	05:22	06:31		07:49		11:06 (29)				09:28		
	22:03	20:42		16:51	14	11:20 (29)				15:51		
Potential sun hours	546	478	386	319			236			199		
Total, worst case					223			1885			154	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** H - Buevegen 1784 (8)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April	May	June		
1	09:28		12:18 (21)	08:46		11:54 (29)	07:35	07:07	05:44	04:40		
	15:53	21	12:39 (21)	16:56	47	14:04 (24)	18:05	20:17	21:26	22:31		
2	09:27		11:56 (29)	08:43		11:54 (29)	07:33	07:04	05:41	04:38		
	15:54	22	12:39 (21)	16:58	44	14:02 (24)	18:07	20:19	21:28	22:32		
3	09:27		11:53 (29)	08:41		11:56 (29)	07:30	07:01	05:39	04:37		
	15:55	28	12:39 (21)	17:01	38	14:01 (24)	18:09	20:21	21:31	22:34		
4	09:27		11:52 (29)	08:39		11:57 (29)	07:27	06:58	05:36	04:36		
	15:57	32	12:40 (21)	17:03	31	13:59 (24)	18:12	20:24	21:33	22:35		
5	09:26		11:51 (29)	08:37		11:59 (29)	07:24	06:55	05:34	04:35		
	15:58	34	12:40 (21)	17:06	18	13:54 (24)	18:14	20:26	21:35	22:37		
6	09:25		11:50 (29)	08:34		12:05 (29)	07:21	06:52	05:31	04:34		
	16:00	36	12:40 (21)	17:08	3	12:08 (29)	18:17	20:28	21:37	22:38		
7	09:24		11:50 (29)	08:32			07:19	06:50	05:29	04:33		
	16:02	43	13:47 (24)	17:11			18:19	20:30	21:40	22:39		
8	09:24		11:50 (29)	08:30			07:16	06:47	05:26	04:32		
	16:03	49	13:50 (24)	17:13			18:21	20:33	21:42	22:40		
9	09:23		11:50 (29)	08:27		09:43 (16)	07:13	06:44	05:24	04:31		
	16:05	54	13:52 (24)	17:16	6	09:49 (16)	18:24	20:35	21:44	22:42		
10	09:22		11:49 (29)	08:25		09:40 (16)	07:10	06:41	05:22	04:30		
	16:07	57	13:53 (24)	17:18	11	09:51 (16)	18:26	20:37	21:46	22:43		
11	09:21		11:49 (29)	08:23		09:39 (16)	07:07	06:38	05:19	04:29		
	16:09	60	13:55 (24)	17:21	15	09:54 (16)	18:28	20:40	21:49	22:44		
12	09:20		11:48 (29)	08:20		09:38 (16)	07:04	06:35	05:17	04:29		
	16:11	61	13:55 (24)	17:23	16	09:54 (16)	18:31	20:42	21:51	22:45		
13	09:18		11:49 (29)	08:18		09:37 (16)	07:02	06:32	05:15	04:28		
	16:13	64	13:57 (24)	17:26	18	09:55 (16)	18:33	20:44	21:53	22:46		
14	09:17		11:48 (29)	08:15		09:37 (16)	06:59	06:30	05:13	04:28		06:03 (77)
	16:15	64	13:58 (24)	17:28	19	09:56 (16)	18:35	20:47	21:55	22:47	2	06:05 (77)
15	09:16		11:48 (29)	08:13		09:36 (16)	06:56	06:27	05:10	04:27		06:03 (77)
	16:17	74	14:47 (25)	17:31	20	09:56 (16)	18:38	20:49	21:58	22:47	3	06:06 (77)
16	09:15		11:47 (29)	08:10		09:36 (16)	06:53	06:24	05:08	04:27		06:03 (77)
	16:19	83	14:59 (25)	17:33	20	09:56 (16)	18:40	20:51	22:00	22:48	4	06:07 (77)
17	09:13		11:48 (29)	08:07		09:36 (16)	06:50	06:21	05:06	04:27		06:04 (77)
	16:21	88	15:01 (25)	17:36	19	09:55 (16)	18:42	20:53	22:02	22:49	4	06:08 (77)
18	09:12		11:48 (29)	08:05		09:37 (16)	06:47	06:19	05:04	04:27		06:04 (77)
	16:23	87	15:01 (25)	17:38	19	09:56 (16)	18:45	20:56	22:04	22:49	5	06:09 (77)
19	09:10		11:48 (29)	08:02		09:37 (16)	06:44	06:16	05:02	04:27		06:04 (77)
	16:25	84	15:02 (25)	17:40	18	09:55 (16)	18:47	20:58	22:06	22:50	5	06:09 (77)
20	09:08		11:48 (29)	08:00		09:38 (16)	06:41	06:13	05:00	04:27		06:04 (77)
	16:28	79	15:02 (25)	17:43	16	09:54 (16)	18:49	21:00	22:08	22:50	5	06:09 (77)
21	09:07		11:48 (29)	07:57		09:39 (16)	06:39	06:10	04:58	04:27		06:04 (77)
	16:30	80	15:02 (25)	17:45	13	09:52 (16)	18:51	21:03	22:10	22:50	6	06:10 (77)
22	09:05		11:48 (29)	07:54		09:41 (16)	06:36	06:08	04:56	04:27		06:04 (77)
	16:32	82	15:03 (25)	17:48	8	09:49 (16)	18:54	21:05	22:12	22:50	6	06:10 (77)
23	09:03		11:48 (29)	07:52			06:33	06:05	04:54	04:27		06:05 (77)
	16:34	80	15:02 (25)	17:50			18:56	21:07	22:14	22:51	5	06:10 (77)
24	09:02		11:48 (29)	07:49			06:30	06:02	04:52	04:27		06:05 (77)
	16:37	80	15:02 (25)	17:53			18:58	21:10	22:16	22:51	5	06:10 (77)
25	09:00		11:49 (29)	07:46			06:27	05:59	04:51	04:28		06:05 (77)
	16:39	80	15:02 (25)	17:55			19:01	21:12	22:18	22:51	5	06:10 (77)
26	08:58		11:49 (29)	07:44			06:24	05:57	04:49	04:28		06:05 (77)
	16:41	79	15:02 (25)	17:57			19:03	21:14	22:20	22:50	5	06:10 (77)
27	08:56		11:49 (29)	07:41			06:21	05:54	04:47	04:29		06:05 (77)
	16:44	75	15:01 (25)	18:00			19:05	21:17	22:22	22:50	4	06:09 (77)
28	08:54		11:50 (29)	07:38			06:18	05:52	04:46	04:30		06:06 (77)
	16:46	73	15:01 (25)	18:02			19:08	21:19	22:24	22:50	3	06:09 (77)
29	08:52		11:51 (29)				07:15	05:49	04:44	04:30		
	16:49	69	15:00 (25)				20:10	21:21	22:25	22:50		
30	08:50		11:51 (29)				07:12	05:46	04:42	04:31		
	16:51	64	14:58 (25)				20:12	21:24	22:27	22:49		
31	08:48		11:52 (29)				07:10		04:41			
	16:54	54	14:55 (25)				20:14		22:29			
Potential sun hours	221			260			365	432	521	547		
Total, worst case		1936			399						67	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** H - Buevegen 1784 (8)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September	October			November			December		
1	04:32	05:24	06:33	07:39			07:51		09:10 (16)	09:00		11:31 (29)
	22:49	22:01	20:40	19:13			16:49	11	09:21 (16)	15:51	60	13:37 (24)
2	04:33	05:26	06:35	07:42			07:54		09:13 (16)	09:02		11:32 (29)
	22:48	21:59	20:37	19:10			16:46	5	09:18 (16)	15:50	56	13:36 (24)
3	04:34	05:28	06:37	07:44			07:56			09:03		11:33 (29)
	22:47	21:56	20:34	19:07			16:44			15:49	53	13:35 (24)
4	04:35	05:31	06:40	07:46			07:59			09:05		11:34 (29)
	22:47	21:54	20:31	19:04			16:41			15:48	49	13:34 (24)
5	04:36	05:33	06:42	07:48			08:01		11:33 (29)	09:07		11:35 (29)
	22:46	21:51	20:28	19:02			16:39	6	11:39 (29)	15:47	44	13:32 (24)
6	04:37	05:35	06:44	07:51			08:03		11:30 (29)	09:09		11:36 (29)
	22:45	21:49	20:25	18:59			16:37	20	13:26 (24)	15:46	37	12:27 (21)
7	04:38	05:37	06:46	07:53			08:06		11:27 (29)	09:10		11:38 (29)
	22:44	21:47	20:22	18:56			16:34	31	13:29 (24)	15:45	34	12:27 (21)
8	04:40	05:39	06:49	07:55			08:08		11:26 (29)	09:12		11:40 (29)
	22:43	21:44	20:20	18:53			16:32	38	13:31 (24)	15:45	32	12:28 (21)
9	04:41	05:42	06:51	07:57			08:11		11:25 (29)	09:13		11:42 (29)
	22:42	21:42	20:17	18:50			16:30	44	13:33 (24)	15:44	29	12:28 (21)
10	04:43	05:44	06:53	08:00			08:13		11:24 (29)	09:15		11:44 (29)
	22:41	21:39	20:14	18:47			16:28	48	13:34 (24)	15:43	24	12:28 (21)
11	04:44	05:46	06:55	08:02			08:15		11:23 (29)	09:16		12:08 (21)
	22:39	21:37	20:11	18:45			16:25	55	14:27 (25)	15:43	21	12:29 (21)
12	04:46	05:48	06:57	08:04			08:18		11:23 (29)	09:18		12:08 (21)
	22:38	21:34	20:08	18:42			16:23	63	14:30 (25)	15:43	21	12:29 (21)
13	04:47	05:51	07:00	08:07			08:20		11:23 (29)	09:19		12:09 (21)
	22:37	21:32	20:05	18:39			16:21	69	14:32 (25)	15:42	21	12:30 (21)
14	04:49	05:53	07:02	08:09			08:22		11:22 (29)	09:20		12:09 (21)
	22:35	21:29	20:02	18:36			16:19	73	14:33 (25)	15:42	21	12:30 (21)
15	04:51	05:55	07:04	08:11			08:25		11:22 (29)	09:21		12:09 (21)
	22:34	21:26	19:59	18:33			16:17	76	14:34 (25)	15:42	21	12:30 (21)
16	04:52	05:57	07:06	08:13			08:27		11:22 (29)	09:22		12:10 (21)
	22:32	21:24	19:56	18:31			16:15	79	14:35 (25)	15:42	20	12:30 (21)
17	04:54	06:00	07:08	08:16			08:30		11:23 (29)	09:23		12:10 (21)
	22:31	21:21	19:54	18:28			16:13	80	14:36 (25)	15:42	21	12:31 (21)
18	04:56	06:02	07:11	08:18			08:32		11:22 (29)	09:24		12:11 (21)
	22:29	21:18	19:51	18:25			16:11	80	14:36 (25)	15:42	20	12:31 (21)
19	04:58	06:04	07:13	08:20			08:34		11:23 (29)	09:25		12:12 (21)
	22:27	21:16	19:48	18:22			16:09	80	14:37 (25)	15:42	20	12:32 (21)
20	05:00	06:06	07:15	08:23		10:11 (16)	08:36		11:22 (29)	09:26		12:12 (21)
	22:25	21:13	19:45	18:20	10	10:21 (16)	16:08	82	14:37 (25)	15:43	20	12:32 (21)
21	05:01	06:08	07:17	08:25		10:09 (16)	08:39		11:23 (29)	09:26		12:12 (21)
	22:24	21:10	19:42	18:17	15	10:24 (16)	16:06	80	14:37 (25)	15:43	20	12:32 (21)
22	05:03	06:11	07:19	08:27		10:08 (16)	08:41		11:24 (29)	09:27		12:13 (21)
	22:22	21:08	19:39	18:14	16	10:24 (16)	16:04	79	14:38 (25)	15:43	20	12:33 (21)
23	05:05	06:13	07:22	08:30		10:07 (16)	08:43		11:24 (29)	09:27		12:13 (21)
	22:20	21:05	19:36	18:12	18	10:25 (16)	16:02	83	14:38 (25)	15:44	20	12:33 (21)
24	05:07	06:15	07:24	08:32		10:06 (16)	08:45		11:25 (29)	09:28		12:14 (21)
	22:18	21:02	19:33	18:09	19	10:25 (16)	16:01	87	14:38 (25)	15:44	21	12:35 (21)
25	05:09	06:17	07:26	07:35		09:06 (16)	08:47		11:25 (29)	09:28		12:15 (21)
	22:16	20:59	19:30	17:06	20	09:26 (16)	15:59	87	14:38 (25)	15:45	20	12:35 (21)
26	05:11	06:20	07:28	07:37		09:06 (16)	08:50		11:26 (29)	09:28		12:15 (21)
	22:14	20:57	19:27	17:04	20	09:26 (16)	15:58	83	14:38 (25)	15:46	20	12:35 (21)
27	05:13	06:22	07:30	07:39		09:06 (16)	08:52		11:27 (29)	09:28		12:16 (21)
	22:12	20:54	19:25	17:01	19	09:25 (16)	15:56	75	14:34 (25)	15:47	20	12:36 (21)
28	05:16	06:24	07:33	07:42		09:06 (16)	08:54		11:28 (29)	09:28		12:16 (21)
	22:10	20:51	19:22	16:59	19	09:25 (16)	15:55	65	13:38 (24)	15:48	21	12:37 (21)
29	05:18	06:26	07:35	07:44		09:06 (16)	08:56		11:29 (29)	09:28		12:16 (21)
	22:07	20:48	19:19	16:56	18	09:24 (16)	15:54	64	13:37 (24)	15:49	20	12:36 (21)
30	05:20	06:29	07:37	07:47		09:07 (16)	08:58		11:29 (29)	09:28		12:17 (21)
	22:05	20:45	19:16	16:54	17	09:24 (16)	15:52	62	13:37 (24)	15:50	20	12:37 (21)
31	05:22	06:31		07:49		09:09 (16)				09:28		12:16 (21)
	22:03	20:42		16:51	14	09:23 (16)				15:51	21	12:37 (21)
Potential sun hours	546	478	386	319			236			199		
Total, worst case					205			1705			847	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** I - Buevegen 1782 (9)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April	May	June		
1	09:28		12:08 (21)	08:46		11:39 (29)	07:35	07:07	05:44	04:40		
	15:53	21	12:29 (21)	16:56	48	13:50 (24)	18:05	20:17	21:26	22:31		
2	09:27		12:08 (21)	08:43		11:40 (29)	07:33	07:04	05:41	04:38		06:09 (77)
	15:54	21	12:29 (21)	16:58	44	13:48 (24)	18:07	20:19	21:28	22:32	2	06:11 (77)
3	09:27		12:09 (21)	08:41		11:41 (29)	07:30	07:01	05:39	04:37		06:09 (77)
	15:55	20	12:29 (21)	17:01	39	13:47 (24)	18:09	20:21	21:31	22:34	4	06:13 (77)
4	09:27		12:09 (21)	08:39		11:42 (29)	07:27	06:58	05:36	04:36		06:09 (77)
	15:57	21	12:30 (21)	17:03	31	13:44 (24)	18:12	20:24	21:33	22:35	6	06:15 (77)
5	09:26		12:09 (21)	08:37		11:43 (29)	07:24	06:55	05:34	04:35		06:09 (77)
	15:58	21	12:30 (21)	17:06	18	12:01 (29)	18:14	20:26	21:35	22:37	7	06:16 (77)
6	09:25		12:10 (21)	08:34		11:46 (29)	07:21	06:52	05:31	04:34		06:08 (77)
	16:00	26	13:33 (24)	17:08	14	12:00 (29)	18:17	20:28	21:37	22:38	8	06:16 (77)
7	09:24		11:42 (29)	08:32		11:51 (29)	07:19	06:50	05:29	04:33		06:09 (77)
	16:02	37	13:36 (24)	17:11	3	11:54 (29)	18:19	20:30	21:40	22:39	9	06:18 (77)
8	09:24		11:40 (29)	08:30			07:16	06:47	05:26	04:32		06:08 (77)
	16:03	45	13:38 (24)	17:13			18:21	20:33	21:42	22:41	10	06:18 (77)
9	09:23		11:39 (29)	08:27			07:13	06:44	05:24	04:31		06:07 (77)
	16:05	50	13:40 (24)	17:16			18:24	20:35	21:44	22:42	11	06:18 (77)
10	09:22		11:38 (29)	08:25		09:40 (16)	07:10	06:41	05:22	04:30		06:08 (77)
	16:07	52	13:40 (24)	17:18	2	09:42 (16)	18:26	20:37	21:46	22:43	11	06:19 (77)
11	09:21		11:38 (29)	08:23		09:36 (16)	07:07	06:38	05:19	04:29		06:07 (77)
	16:09	56	13:42 (24)	17:21	10	09:46 (16)	18:28	20:40	21:49	22:44	12	06:19 (77)
12	09:20		11:37 (29)	08:20		09:34 (16)	07:04	06:35	05:17	04:29		06:07 (77)
	16:11	63	14:47 (25)	17:23	14	09:48 (16)	18:31	20:42	21:51	22:45	13	06:20 (77)
13	09:18		11:37 (29)	08:18		09:33 (16)	07:02	06:32	05:15	04:28		06:07 (77)
	16:13	74	14:49 (25)	17:26	16	09:49 (16)	18:33	20:44	21:53	22:46	13	06:20 (77)
14	09:17		11:36 (29)	08:15		09:33 (16)	06:59	06:30	05:13	04:28		06:07 (77)
	16:15	82	14:49 (25)	17:28	17	09:50 (16)	18:35	20:47	21:55	22:47	14	06:21 (77)
15	09:16		11:36 (29)	08:13		09:32 (16)	06:56	06:27	05:10	04:27		06:07 (77)
	16:17	87	14:50 (25)	17:31	18	09:50 (16)	18:38	20:49	21:58	22:47	14	06:21 (77)
16	09:15		11:35 (29)	08:10		09:31 (16)	06:53	06:24	05:08	04:27		06:07 (77)
	16:19	87	14:50 (25)	17:33	19	09:50 (16)	18:40	20:51	22:00	22:48	15	06:22 (77)
17	09:13		11:36 (29)	08:07		09:31 (16)	06:50	06:21	05:06	04:27		06:07 (77)
	16:21	87	14:52 (25)	17:36	19	09:50 (16)	18:42	20:53	22:02	22:49	15	06:22 (77)
18	09:12		11:36 (29)	08:05		09:32 (16)	06:47	06:19	05:04	04:27		06:07 (77)
	16:23	89	14:52 (25)	17:38	19	09:51 (16)	18:45	20:56	22:04	22:49	16	06:23 (77)
19	09:10		11:35 (29)	08:02		09:32 (16)	06:44	06:16	05:02	04:27		06:07 (77)
	16:25	86	14:52 (25)	17:40	18	09:50 (16)	18:47	20:58	22:06	22:50	16	06:23 (77)
20	09:09		11:35 (29)	08:00		09:32 (16)	06:41	06:13	05:00	04:27		06:07 (77)
	16:28	83	14:53 (25)	17:43	17	09:49 (16)	18:49	21:00	22:08	22:50	16	06:23 (77)
21	09:07		11:35 (29)	07:57		09:33 (16)	06:39	06:10	04:58	04:27		06:08 (77)
	16:30	79	14:53 (25)	17:45	15	09:48 (16)	18:51	21:03	22:10	22:50	15	06:23 (77)
22	09:05		11:35 (29)	07:54		09:34 (16)	06:36	06:08	04:56	04:27		06:08 (77)
	16:32	80	14:53 (25)	17:48	12	09:46 (16)	18:54	21:05	22:12	22:50	15	06:23 (77)
23	09:03		11:35 (29)	07:52		09:37 (16)	06:33	06:05	04:54	04:27		06:08 (77)
	16:34	79	14:52 (25)	17:50	7	09:44 (16)	18:56	21:07	22:14	22:51	16	06:24 (77)
24	09:02		11:35 (29)	07:49			06:30	06:02	04:52	04:27		06:08 (77)
	16:37	79	14:52 (25)	17:53			18:58	21:10	22:16	22:51	16	06:24 (77)
25	09:00		11:35 (29)	07:46			06:27	05:59	04:51	04:28		06:08 (77)
	16:39	78	14:52 (25)	17:55			19:01	21:12	22:18	22:51	15	06:23 (77)
26	08:58		11:36 (29)	07:44			06:24	05:57	04:49	04:28		06:09 (77)
	16:41	77	14:52 (25)	17:57			19:03	21:14	22:20	22:50	15	06:24 (77)
27	08:56		11:36 (29)	07:41			06:21	05:54	04:47	04:29		06:09 (77)
	16:44	73	14:51 (25)	18:00			19:05	21:17	22:22	22:50	15	06:24 (77)
28	08:54		11:36 (29)	07:38			06:18	05:52	04:46	04:30		06:10 (77)
	16:46	71	14:50 (25)	18:02			19:08	21:19	22:24	22:50	14	06:24 (77)
29	08:52		11:37 (29)				07:15	05:49	04:44	04:30		06:11 (77)
	16:49	66	14:49 (25)				20:10	21:21	22:25	22:50	13	06:24 (77)
30	08:50		11:37 (29)				07:13	05:46	04:42	04:31		06:10 (77)
	16:51	54	14:44 (25)				20:12	21:24	22:27	22:49	14	06:24 (77)
31	08:48		11:38 (29)				07:10		04:41			
	16:54	51	13:50 (24)				20:14		22:29			
Potential sun hours	221			260			365	432	521	547		
Total, worst case		1895			400						360	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** I - Buevegen 1782 (9)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July			August		September		October			November			December		
1	04:32		06:11 (77)	05:24		06:33		07:39			07:51			09:00		11:20 (29)
	22:49	13	06:24 (77)	22:01		20:40		19:13			16:49			15:51	56	13:24 (24)
2	04:33		06:12 (77)	05:26		06:35		07:42			07:54			09:02		11:21 (29)
	22:48	12	06:24 (77)	21:59		20:37		19:10			16:46			15:50	52	13:23 (24)
3	04:34		06:13 (77)	05:28		06:37		07:44			07:56			09:03		11:22 (29)
	22:47	11	06:24 (77)	21:56		20:34		19:07			16:44			15:49	50	13:23 (24)
4	04:35		06:13 (77)	05:31		06:40		07:46			07:59		11:19 (29)	09:05		11:24 (29)
	22:47	11	06:24 (77)	21:54		20:31		19:04			16:41	6	11:25 (29)	15:48	45	13:22 (24)
5	04:36		06:14 (77)	05:33		06:42		07:48			08:01		11:16 (29)	09:07		11:26 (29)
	22:46	9	06:23 (77)	21:51		20:28		19:02			16:39	14	11:30 (29)	15:47	38	13:21 (24)
6	04:37		06:14 (77)	05:35		06:44		07:51			08:03		11:14 (29)	09:09		11:56 (21)
	22:45	9	06:23 (77)	21:49		20:25		18:59			16:37	18	11:32 (29)	15:46	26	13:19 (24)
7	04:38		06:15 (77)	05:37		06:46		07:53			08:06		11:12 (29)	09:10		11:56 (21)
	22:44	7	06:22 (77)	21:47		20:23		18:56			16:34	32	13:14 (24)	15:45	21	12:17 (21)
8	04:40		06:15 (77)	05:39		06:49		07:55			08:08		11:11 (29)	09:12		11:57 (21)
	22:43	7	06:22 (77)	21:44		20:20		18:53			16:32	40	13:17 (24)	15:45	21	12:18 (21)
9	04:41		06:16 (77)	05:42		06:51		07:57			08:11		11:10 (29)	09:13		11:58 (21)
	22:42	6	06:22 (77)	21:42		20:17		18:50			16:30	45	13:19 (24)	15:44	20	12:18 (21)
10	04:43		06:16 (77)	05:44		06:53		08:00			08:13		11:10 (29)	09:15		11:57 (21)
	22:41	4	06:20 (77)	21:39		20:14		18:47			16:28	49	13:21 (24)	15:43	21	12:18 (21)
11	04:44			05:46		06:55		08:02			08:15		11:09 (29)	09:16		11:58 (21)
	22:39			21:37		20:11		18:45			16:25	51	13:21 (24)	15:43	21	12:19 (21)
12	04:46			05:48		06:57		08:04			08:18		11:09 (29)	09:18		11:58 (21)
	22:38			21:34		20:08		18:42			16:23	57	14:17 (25)	15:43	21	12:19 (21)
13	04:47			05:51		07:00		08:07			08:20		11:09 (29)	09:19		12:00 (21)
	22:37			21:32		20:05		18:39			16:21	66	14:21 (25)	15:42	20	12:20 (21)
14	04:49			05:53		07:02		08:09			08:23		11:08 (29)	09:20		12:00 (21)
	22:35			21:29		20:02		18:36			16:19	72	14:22 (25)	15:42	20	12:20 (21)
15	04:51			05:55		07:04		08:11			08:25		11:08 (29)	09:21		12:00 (21)
	22:34			21:26		19:59		18:33			16:17	75	14:24 (25)	15:42	20	12:20 (21)
16	04:52			05:57		07:06		08:13			08:27		11:09 (29)	09:22		12:00 (21)
	22:32			21:24		19:56		18:31			16:15	77	14:25 (25)	15:42	20	12:20 (21)
17	04:54			06:00		07:08		08:16			08:30		11:09 (29)	09:23		12:01 (21)
	22:31			21:21		19:54		18:28			16:13	78	14:26 (25)	15:42	20	12:21 (21)
18	04:56			06:02		07:11		08:18			08:32		11:09 (29)	09:24		12:02 (21)
	22:29			21:18		19:51		18:25			16:11	79	14:26 (25)	15:42	19	12:21 (21)
19	04:58			06:04		07:13		08:20		10:07 (16)	08:34		11:10 (29)	09:25		12:02 (21)
	22:27			21:16		19:48		18:22	9	10:16 (16)	16:09	79	14:27 (25)	15:42	20	12:22 (21)
20	05:00			06:06		07:15		08:23		10:05 (16)	08:36		11:10 (29)	09:26		12:03 (21)
	22:25			21:13		19:45		18:20	13	10:18 (16)	16:08	79	14:27 (25)	15:43	19	12:22 (21)
21	05:01			06:08		07:17		08:25		10:04 (16)	08:39		11:10 (29)	09:26		12:03 (21)
	22:24			21:10		19:42		18:17	15	10:19 (16)	16:06	79	14:28 (25)	15:43	19	12:22 (21)
22	05:03			06:11		07:19		08:27		10:02 (16)	08:41		11:11 (29)	09:27		12:04 (21)
	22:22			21:08		19:39		18:14	18	10:20 (16)	16:04	83	14:29 (25)	15:43	19	12:23 (21)
23	05:05			06:13		07:22		08:30		10:02 (16)	08:43		11:11 (29)	09:27		12:04 (21)
	22:20			21:05		19:36		18:12	18	10:20 (16)	16:02	86	14:28 (25)	15:44	19	12:23 (21)
24	05:07			06:15		07:24		08:32		10:01 (16)	08:45		11:13 (29)	09:28		12:05 (21)
	22:18			21:02		19:33		18:09	19	10:20 (16)	16:01	88	14:29 (25)	15:44	20	12:25 (21)
25	05:09			06:17		07:26		07:35		09:01 (16)	08:47		11:13 (29)	09:28		12:05 (21)
	22:16			20:59		19:30		17:06	19	09:20 (16)	15:59	88	14:29 (25)	15:45	20	12:25 (21)
26	05:11			06:20		07:28		07:37		09:02 (16)	08:50		11:14 (29)	09:28		12:06 (21)
	22:14			20:57		19:27		17:04	19	09:21 (16)	15:58	87	14:29 (25)	15:46	19	12:25 (21)
27	05:13			06:22		07:30		07:39		09:01 (16)	08:52		11:15 (29)	09:28		12:06 (21)
	22:12			20:54		19:25		17:01	19	09:20 (16)	15:56	86	14:29 (25)	15:47	20	12:26 (21)
28	05:16			06:24		07:33		07:42		09:02 (16)	08:54		11:16 (29)	09:28		12:07 (21)
	22:10			20:51		19:22		16:59	17	09:19 (16)	15:55	82	14:29 (25)	15:48	20	12:27 (21)
29	05:18			06:26		07:35		07:44		09:02 (16)	08:56		11:17 (29)	09:28		12:06 (21)
	22:07			20:48		19:19		16:56	16	09:18 (16)	15:54	75	14:29 (25)	15:49	20	12:26 (21)
30	05:20			06:29		07:37		07:47		09:04 (16)	08:58		11:18 (29)	09:28		12:07 (21)
	22:05			20:45		19:16		16:54	13	09:17 (16)	15:52	62	14:28 (25)	15:50	20	12:27 (21)
31	05:22			06:31				07:49		09:06 (16)				09:28		12:07 (21)
	22:03			20:42				16:51	9	09:15 (16)				15:51	20	12:27 (21)
Potential sun hours	546			478		386		319			236			199		
Total, worst case		89							204			1733			766	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** J - Buevegen 1780 (10)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April	May			June		
1	09:28		12:05 (21)	08:46		11:36 (29)	07:35	07:07	05:44			04:40		06:13 (77)
	15:53	21	12:26 (21)	16:56	45	13:44 (24)	18:05	20:17	21:26			22:31	8	06:21 (77)
2	09:27		12:06 (21)	08:43		11:37 (29)	07:33	07:04	05:41			04:38		06:13 (77)
	15:54	20	12:26 (21)	16:58	40	13:42 (24)	18:07	20:19	21:28			22:32	9	06:22 (77)
3	09:27		12:06 (21)	08:41		11:38 (29)	07:30	07:01	05:39			04:37		06:12 (77)
	15:55	20	12:26 (21)	17:01	34	13:40 (24)	18:09	20:21	21:31			22:34	11	06:23 (77)
4	09:27		12:06 (21)	08:39		11:39 (29)	07:27	06:58	05:36			04:36		06:12 (77)
	15:57	21	12:27 (21)	17:03	20	11:59 (29)	18:12	20:24	21:33			22:35	11	06:23 (77)
5	09:26		12:06 (21)	08:37		11:41 (29)	07:24	06:55	05:34			04:35		06:11 (77)
	15:58	28	13:28 (24)	17:06	16	11:57 (29)	18:14	20:26	21:35			22:37	13	06:24 (77)
6	09:25		12:07 (21)	08:34		11:44 (29)	07:21	06:52	05:31			04:34		06:10 (77)
	16:00	31	13:30 (24)	17:08	10	11:54 (29)	18:17	20:28	21:37			22:38	14	06:24 (77)
7	09:24		11:38 (29)	08:32			07:19	06:50	05:29			04:33		06:11 (77)
	16:02	39	13:32 (24)	17:11			18:19	20:30	21:40			22:39	14	06:25 (77)
8	09:24		11:37 (29)	08:30			07:16	06:47	05:26			04:32		06:10 (77)
	16:03	46	13:34 (24)	17:13			18:21	20:33	21:42			22:41	15	06:25 (77)
9	09:23		11:36 (29)	08:27			07:13	06:44	05:24			04:31		06:10 (77)
	16:05	50	13:36 (24)	17:16			18:24	20:35	21:44			22:42	15	06:25 (77)
10	09:22		11:35 (29)	08:25		09:38 (16)	07:10	06:41	05:22			04:30		06:10 (77)
	16:07	58	14:41 (25)	17:18	5	09:43 (16)	18:26	20:37	21:46			22:43	16	06:26 (77)
11	09:21		11:34 (29)	08:23		09:36 (16)	07:07	06:38	05:19			04:29		06:09 (77)
	16:09	71	14:43 (25)	17:21	10	09:46 (16)	18:28	20:40	21:49			22:44	17	06:26 (77)
12	09:20		11:33 (29)	08:20		09:34 (16)	07:04	06:35	05:17			04:29		06:09 (77)
	16:11	79	14:44 (25)	17:23	14	09:48 (16)	18:31	20:42	21:51			22:45	18	06:27 (77)
13	09:18		11:34 (29)	08:18		09:32 (16)	07:02	06:32	05:15			04:28		06:09 (77)
	16:13	81	14:45 (25)	17:26	16	09:48 (16)	18:33	20:44	21:53			22:46	17	06:26 (77)
14	09:17		11:33 (29)	08:15		09:32 (16)	06:59	06:30	05:13			04:28		06:09 (77)
	16:15	84	14:45 (25)	17:28	18	09:50 (16)	18:35	20:47	21:55			22:47	18	06:27 (77)
15	09:16		11:32 (29)	08:13		09:32 (16)	06:56	06:27	05:10			04:27		06:09 (77)
	16:17	86	14:46 (25)	17:31	18	09:50 (16)	18:38	20:49	21:58			22:47	19	06:28 (77)
16	09:15		11:32 (29)	08:10		09:31 (16)	06:53	06:24	05:08			04:27		06:09 (77)
	16:19	87	14:46 (25)	17:33	19	09:50 (16)	18:40	20:51	22:00			22:48	19	06:28 (77)
17	09:13		11:32 (29)	08:07		09:31 (16)	06:50	06:21	05:06			04:27		06:10 (77)
	16:21	87	14:47 (25)	17:36	19	09:50 (16)	18:42	20:53	22:02			22:49	18	06:28 (77)
18	09:12		11:32 (29)	08:05		09:32 (16)	06:47	06:19	05:04			04:27		06:10 (77)
	16:23	88	14:48 (25)	17:38	18	09:50 (16)	18:45	20:56	22:04			22:49	19	06:29 (77)
19	09:10		11:32 (29)	08:02		09:32 (16)	06:44	06:16	05:02			04:27		06:10 (77)
	16:25	86	14:48 (25)	17:40	17	09:49 (16)	18:47	20:58	22:06			22:50	19	06:29 (77)
20	09:09		11:32 (29)	08:00		09:32 (16)	06:41	06:13	05:00			04:27		06:10 (77)
	16:28	77	14:48 (25)	17:43	16	09:48 (16)	18:49	21:00	22:08			22:50	19	06:29 (77)
21	09:07		11:32 (29)	07:57		09:33 (16)	06:39	06:10	04:58			04:27		06:10 (77)
	16:30	77	14:48 (25)	17:45	14	09:47 (16)	18:51	21:03	22:10			22:50	19	06:29 (77)
22	09:05		11:32 (29)	07:54		09:35 (16)	06:36	06:08	04:56			04:27		06:10 (77)
	16:32	79	14:49 (25)	17:48	10	09:45 (16)	18:54	21:05	22:12			22:50	19	06:29 (77)
23	09:03		11:31 (29)	07:52		09:39 (16)	06:33	06:05	04:54			04:27		06:11 (77)
	16:34	78	14:48 (25)	17:50	2	09:41 (16)	18:56	21:07	22:14			22:51	19	06:30 (77)
24	09:02		11:32 (29)	07:49			06:30	06:02	04:52			04:27		06:11 (77)
	16:37	77	14:48 (25)	17:53			18:58	21:10	22:16			22:51	19	06:30 (77)
25	09:00		11:32 (29)	07:46			06:27	05:59	04:51			04:28		06:11 (77)
	16:39	75	14:47 (25)	17:55			19:01	21:12	22:18			22:51	18	06:29 (77)
26	08:58		11:33 (29)	07:44			06:24	05:57	04:49			04:28		06:12 (77)
	16:41	73	14:47 (25)	17:57			19:03	21:14	22:20			22:50	18	06:30 (77)
27	08:56		11:32 (29)	07:41			06:21	05:54	04:47			04:29		06:11 (77)
	16:44	70	14:45 (25)	18:00			19:05	21:17	22:22			22:50	19	06:30 (77)
28	08:54		11:33 (29)	07:38			06:18	05:52	04:46			04:30		06:12 (77)
	16:46	66	14:44 (25)	18:02			19:08	21:19	22:24			22:50	18	06:30 (77)
29	08:52		11:34 (29)				07:15	05:49	04:44		06:14 (77)	04:30		06:13 (77)
	16:49	57	14:41 (25)				20:10	21:21	22:25	2	06:16 (77)	22:50	18	06:31 (77)
30	08:50		11:34 (29)				07:13	05:46	04:42		06:14 (77)	04:31		06:13 (77)
	16:51	52	13:45 (24)				20:12	21:24	22:27	4	06:18 (77)	22:49	17	06:30 (77)
31	08:48		11:35 (29)				07:10		04:41		06:14 (77)			
	16:54	48	13:44 (24)				20:14		22:29	6	06:20 (77)			
Potential sun hours	221			260			365	432	521			547		
Total, worst case		1912			361					12			493	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** J - Buevegen 1780 (10)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July			August			September			October			November			December		
1	04:32		06:13 (77)	05:24			06:33			07:39			07:51		09:09 (16)	09:00		11:16 (29)
	22:49	17	06:30 (77)	22:01			20:40			19:13			16:49	2	09:11 (16)	15:51	74	14:26 (25)
2	04:33		06:14 (77)	05:26			06:35			07:42			07:54			09:02		11:18 (29)
	22:48	17	06:31 (77)	21:59			20:37			19:10			16:46			15:50	58	14:24 (25)
3	04:34		06:15 (77)	05:28			06:37			07:44			07:56			09:03		11:19 (29)
	22:47	16	06:31 (77)	21:56			20:34			19:07			16:44			15:49	51	13:19 (24)
4	04:35		06:15 (77)	05:31			06:40			07:46			07:59			09:05		11:21 (29)
	22:47	16	06:31 (77)	21:54			20:31			19:04			16:41			15:48	46	13:18 (24)
5	04:36		06:16 (77)	05:33			06:42			07:48			08:01		11:13 (29)	09:07		11:23 (29)
	22:46	15	06:31 (77)	21:51			20:28			19:02			16:39	12	11:25 (29)	15:47	39	13:18 (24)
6	04:37		06:17 (77)	05:35			06:44			07:51			08:03		11:11 (29)	09:09		11:53 (21)
	22:45	13	06:30 (77)	21:49			20:25			18:59			16:37	17	11:28 (29)	15:46	32	13:17 (24)
7	04:38		06:17 (77)	05:37			06:46			07:53			08:06		11:10 (29)	09:10		11:54 (21)
	22:44	13	06:30 (77)	21:47			20:23			18:56			16:34	22	13:06 (24)	15:45	28	13:16 (24)
8	04:40		06:18 (77)	05:39			06:49			07:55			08:08		11:08 (29)	09:12		11:54 (21)
	22:43	12	06:30 (77)	21:44			20:20			18:53			16:32	34	13:10 (24)	15:45	22	13:13 (24)
9	04:41		06:19 (77)	05:42			06:51			07:57			08:11		11:07 (29)	09:13		11:55 (21)
	22:42	11	06:30 (77)	21:42			20:17			18:50			16:30	41	13:13 (24)	15:44	20	12:15 (21)
10	04:43		06:20 (77)	05:44			06:53			08:00			08:13		11:07 (29)	09:15		11:55 (21)
	22:41	10	06:30 (77)	21:39			20:14			18:47			16:28	46	13:15 (24)	15:43	20	12:15 (21)
11	04:44		06:20 (77)	05:46			06:55			08:02			08:15		11:06 (29)	09:16		11:56 (21)
	22:39	9	06:29 (77)	21:37			20:11			18:45			16:25	48	13:15 (24)	15:43	20	12:16 (21)
12	04:46		06:22 (77)	05:48			06:57			08:04			08:18		11:06 (29)	09:18		11:56 (21)
	22:38	7	06:29 (77)	21:34			20:08			18:42			16:23	52	13:17 (24)	15:43	20	12:16 (21)
13	04:47		06:22 (77)	05:51			07:00			08:07			08:20		11:06 (29)	09:19		11:57 (21)
	22:37	6	06:28 (77)	21:32			20:05			18:39			16:21	58	14:14 (25)	15:42	20	12:17 (21)
14	04:49		06:23 (77)	05:53			07:02			08:09			08:23		11:05 (29)	09:20		11:57 (21)
	22:35	3	06:26 (77)	21:29			20:02			18:36			16:19	66	14:16 (25)	15:42	20	12:17 (21)
15	04:51			05:55			07:04			08:11			08:25		11:05 (29)	09:21		11:57 (21)
	22:34			21:26			19:59			18:33			16:17	70	14:18 (25)	15:42	20	12:17 (21)
16	04:52			05:57			07:06			08:13			08:27		11:06 (29)	09:22		11:58 (21)
	22:32			21:24			19:56			18:31			16:15	73	14:20 (25)	15:42	19	12:17 (21)
17	04:54			06:00			07:08			08:16			08:30		11:06 (29)	09:23		11:58 (21)
	22:31			21:21			19:54			18:28			16:13	75	14:21 (25)	15:42	20	12:18 (21)
18	04:56			06:02			07:11			08:18			08:32		11:06 (29)	09:24		11:59 (21)
	22:29			21:18			19:51			18:25			16:11	77	14:22 (25)	15:42	19	12:18 (21)
19	04:58			06:04			07:13			08:20		10:08 (16)	08:34		11:06 (29)	09:25		11:59 (21)
	22:27			21:16			19:48			18:22	7	10:15 (16)	16:09	78	14:23 (25)	15:42	20	12:19 (21)
20	05:00			06:06			07:15			08:23		10:05 (16)	08:36		11:06 (29)	09:26		12:00 (21)
	22:25			21:13			19:45			18:20	12	10:17 (16)	16:08	79	14:23 (25)	15:43	19	12:19 (21)
21	05:01			06:08			07:17			08:25		10:04 (16)	08:39		11:07 (29)	09:26		12:00 (21)
	22:24			21:10			19:42			18:17	15	10:19 (16)	16:06	77	14:23 (25)	15:43	19	12:19 (21)
22	05:03			06:11			07:19			08:27		10:02 (16)	08:41		11:08 (29)	09:27		12:01 (21)
	22:22			21:08			19:39			18:14	17	10:19 (16)	16:04	77	14:24 (25)	15:43	19	12:20 (21)
23	05:05			06:13			07:22			08:30		10:02 (16)	08:43		11:08 (29)	09:27		12:01 (21)
	22:20			21:05			19:36			18:12	18	10:20 (16)	16:02	86	14:24 (25)	15:44	19	12:20 (21)
24	05:07			06:15			07:24			08:32		10:01 (16)	08:45		11:09 (29)	09:28		12:02 (21)
	22:18			21:02			19:33			18:09	19	10:20 (16)	16:01	87	14:25 (25)	15:44	19	12:21 (21)
25	05:09			06:17			07:26			07:35		09:01 (16)	08:47		11:09 (29)	09:28		12:03 (21)
	22:16			20:59			19:30			17:06	19	09:20 (16)	15:59	88	14:25 (25)	15:45	19	12:22 (21)
26	05:11			06:20			07:28			07:37		09:01 (16)	08:50		11:11 (29)	09:28		12:03 (21)
	22:14			20:57			19:27			17:04	19	09:20 (16)	15:58	87	14:25 (25)	15:46	19	12:22 (21)
27	05:13			06:22			07:30			07:39		09:01 (16)	08:52		11:11 (29)	09:28		12:03 (21)
	22:12			20:54			19:25			17:01	18	09:19 (16)	15:56	85	14:25 (25)	15:47	20	12:23 (21)
28	05:16			06:24			07:33			07:42		09:02 (16)	08:54		11:13 (29)	09:28		12:04 (21)
	22:10			20:51			19:22			16:59	17	09:19 (16)	15:55	85	14:26 (25)	15:48	20	12:24 (21)
29	05:18			06:26			07:35			07:44		09:02 (16)	08:56		11:14 (29)	09:28		12:04 (21)
	22:07			20:48			19:19			16:56	16	09:18 (16)	15:54	82	14:25 (25)	15:49	19	12:23 (21)
30	05:20			06:29			07:37			07:47		09:03 (16)	08:58		11:14 (29)	09:28		12:04 (21)
	22:05			20:45			19:16			16:54	14	09:17 (16)	15:52	80	14:25 (25)	15:50	20	12:24 (21)
31	05:22			06:31						07:49		09:06 (16)				09:28		12:04 (21)
	22:03			20:42						16:51	9	09:15 (16)				15:51	20	12:24 (21)
Potential sun hours	546			478			386			319			236			199		
Total, worst case		165									200			1684			800	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** K - Buevegen 1778 (11)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April	May			June		
1	09:28		11:58 (21)	08:46		11:24 (29)	07:35	07:07	05:44			04:40		06:12 (77)
	15:53	16	12:14 (21)	16:56	49	13:35 (24)	18:05	20:17	21:26			22:31	12	06:24 (77)
2	09:28		11:58 (21)	08:43		11:24 (29)	07:33	07:04	05:41			04:38		06:12 (77)
	15:54	18	12:16 (21)	16:58	47	13:34 (24)	18:07	20:19	21:28			22:32	13	06:25 (77)
3	09:27		11:58 (21)	08:41		11:25 (29)	07:30	07:01	05:39			04:37		06:11 (77)
	15:55	20	12:18 (21)	17:01	42	13:33 (24)	18:09	20:21	21:31			22:34	14	06:25 (77)
4	09:27		11:58 (21)	08:39		11:26 (29)	07:27	06:58	05:36			04:36		06:11 (77)
	15:57	21	12:19 (21)	17:03	35	13:30 (24)	18:12	20:24	21:33			22:35	14	06:25 (77)
5	09:26		11:59 (21)	08:37		11:26 (29)	07:24	06:55	05:34			04:35		06:10 (77)
	15:58	20	12:19 (21)	17:06	23	11:49 (29)	18:14	20:26	21:35			22:37	16	06:26 (77)
6	09:25		11:59 (21)	08:34		11:28 (29)	07:21	06:52	05:31			04:34		06:10 (77)
	16:00	26	13:18 (24)	17:08	20	11:48 (29)	18:17	20:28	21:37			22:38	16	06:26 (77)
7	09:25		12:00 (21)	08:32		11:30 (29)	07:19	06:50	05:29			04:33		06:10 (77)
	16:02	30	13:21 (24)	17:11	16	11:46 (29)	18:19	20:30	21:40			22:39	17	06:27 (77)
8	09:24		12:00 (21)	08:30		11:33 (29)	07:16	06:47	05:26			04:32		06:10 (77)
	16:03	34	14:35 (25)	17:13	11	11:44 (29)	18:21	20:33	21:42			22:41	17	06:27 (77)
9	09:23		12:01 (21)	08:27			07:13	06:44	05:24			04:31		06:09 (77)
	16:05	41	14:36 (25)	17:16			18:24	20:35	21:44			22:42	18	06:27 (77)
10	09:22		12:01 (21)	08:25			07:10	06:41	05:22			04:30		06:09 (77)
	16:07	50	14:36 (25)	17:18			18:26	20:37	21:46			22:43	19	06:28 (77)
11	09:21		12:02 (21)	08:23			07:07	06:38	05:19			04:29		06:09 (77)
	16:09	57	14:37 (25)	17:21			18:28	20:40	21:49			22:44	19	06:28 (77)
12	09:20		11:27 (29)	08:20			07:04	06:35	05:17			04:29		06:09 (77)
	16:11	69	14:38 (25)	17:23			18:31	20:42	21:51			22:45	19	06:28 (77)
13	09:18		11:26 (29)	08:18			07:02	06:32	05:15			04:28		06:08 (77)
	16:13	75	14:39 (25)	17:26			18:33	20:44	21:53			22:46	20	06:28 (77)
14	09:17		11:25 (29)	08:15			06:59	06:30	05:13			04:28		06:08 (77)
	16:15	78	14:39 (25)	17:28			18:35	20:47	21:55			22:47	21	06:29 (77)
15	09:16		11:24 (29)	08:13			06:56	06:27	05:10			04:27		06:07 (77)
	16:17	82	14:40 (25)	17:31			18:38	20:49	21:58			22:47	22	06:29 (77)
16	09:15		11:23 (29)	08:10			06:53	06:24	05:08			04:27		06:07 (77)
	16:19	85	14:40 (25)	17:33			18:40	20:51	22:00			22:48	22	06:29 (77)
17	09:13		11:23 (29)	08:07			06:50	06:21	05:06			04:27		06:07 (77)
	16:21	86	14:41 (25)	17:36			18:42	20:54	22:02			22:49	23	06:30 (77)
18	09:12		11:23 (29)	08:05			06:47	06:19	05:04			04:27		06:07 (77)
	16:23	87	14:42 (25)	17:38			18:45	20:56	22:04			22:49	23	06:30 (77)
19	09:10		11:22 (29)	08:02			06:44	06:16	05:02			04:27		06:08 (77)
	16:25	87	14:42 (25)	17:40			18:47	20:58	22:06			22:50	22	06:30 (77)
20	09:09		11:22 (29)	08:00			06:41	06:13	05:00			04:27		06:08 (77)
	16:28	85	14:42 (25)	17:43			18:49	21:00	22:08			22:50	22	06:30 (77)
21	09:07		11:22 (29)	07:57			06:39	06:10	04:58			04:27		06:08 (77)
	16:30	82	14:42 (25)	17:45			18:51	21:03	22:10			22:50	22	06:30 (77)
22	09:05		11:22 (29)	07:54			06:36	06:08	04:56			04:27		06:08 (77)
	16:32	77	14:42 (25)	17:48			18:54	21:05	22:12			22:50	22	06:30 (77)
23	09:03		11:21 (29)	07:52			06:33	06:05	04:54			04:27		06:09 (77)
	16:34	77	14:41 (25)	17:50			18:56	21:07	22:14			22:51	22	06:31 (77)
24	09:02		11:21 (29)	07:49			06:30	06:02	04:52			04:27		06:08 (77)
	16:37	76	14:41 (25)	17:53			18:58	21:10	22:16			22:51	23	06:31 (77)
25	09:00		11:21 (29)	07:46			06:27	05:59	04:51			04:28		06:08 (77)
	16:39	77	14:41 (25)	17:55			19:01	21:12	22:18			22:51	23	06:31 (77)
26	08:58		11:21 (29)	07:44			06:24	05:57	04:49			04:28		06:09 (77)
	16:41	75	14:41 (25)	17:57			19:03	21:14	22:20			22:50	23	06:32 (77)
27	08:56		11:21 (29)	07:41			06:21	05:54	04:47		06:15 (77)	04:29		06:09 (77)
	16:44	71	14:39 (25)	18:00			19:05	21:17	22:22	4	06:19 (77)	22:50	22	06:31 (77)
28	08:54		11:21 (29)	07:38			06:18	05:52	04:46		06:15 (77)	04:30		06:11 (77)
	16:46	69	14:38 (25)	18:02			19:08	21:19	22:24	6	06:21 (77)	22:50	21	06:32 (77)
29	08:52		11:22 (29)				07:15	05:49	04:44		06:14 (77)	04:30		06:12 (77)
	16:49	61	14:36 (25)				20:10	21:21	22:25	7	06:21 (77)	22:50	20	06:32 (77)
30	08:50		11:22 (29)				07:13	05:46	04:42		06:13 (77)	04:31		06:12 (77)
	16:51	55	13:36 (24)				20:12	21:24	22:27	9	06:22 (77)	22:49	20	06:32 (77)
31	08:48		11:23 (29)				07:10		04:41		06:13 (77)			
	16:54	53	13:36 (24)				20:14		22:29	10	06:23 (77)			
Potential sun hours	221			260			365	432	521			547		
Total, worst case		1840			243					36			587	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** K - Buevegen 1778 (11)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July			August	September	October	November			December		
1	04:32		06:13 (77)	05:24	06:33	07:39	07:51			09:00		11:13 (29)
	22:49	19	06:32 (77)	22:01	20:40	19:13	16:49			15:51	59	14:20 (25)
2	04:33		06:14 (77)	05:26	06:35	07:42	07:54			09:02		11:44 (21)
	22:48	18	06:32 (77)	21:59	20:37	19:10	16:46			15:50	50	14:19 (25)
3	04:34		06:14 (77)	05:28	06:37	07:44	07:56		11:02 (29)	09:03		11:44 (21)
	22:47	18	06:32 (77)	21:56	20:34	19:07	16:44	12	11:14 (29)	15:49	40	14:19 (25)
4	04:35		06:15 (77)	05:31	06:40	07:46	07:59		10:59 (29)	09:05		11:44 (21)
	22:47	18	06:33 (77)	21:54	20:31	19:04	16:41	17	11:16 (29)	15:48	34	14:19 (25)
5	04:36		06:15 (77)	05:33	06:42	07:48	08:01		10:58 (29)	09:07		11:45 (21)
	22:46	18	06:33 (77)	21:51	20:28	19:02	16:39	20	11:18 (29)	15:47	31	13:06 (24)
6	04:37		06:16 (77)	05:35	06:44	07:51	08:03		10:57 (29)	09:09		11:45 (21)
	22:45	16	06:32 (77)	21:49	20:25	18:59	16:37	22	11:19 (29)	15:46	27	13:05 (24)
7	04:39		06:16 (77)	05:37	06:46	07:53	08:06		10:56 (29)	09:10		11:46 (21)
	22:44	16	06:32 (77)	21:47	20:23	18:56	16:34	37	13:01 (24)	15:45	20	12:06 (21)
8	04:40		06:17 (77)	05:39	06:49	07:55	08:08		10:55 (29)	09:12		11:47 (21)
	22:43	15	06:32 (77)	21:44	20:20	18:53	16:32	43	13:03 (24)	15:45	20	12:07 (21)
9	04:41		06:18 (77)	05:42	06:51	07:57	08:11		10:55 (29)	09:13		11:47 (21)
	22:42	15	06:33 (77)	21:42	20:17	18:50	16:30	47	13:05 (24)	15:44	20	12:07 (21)
10	04:43		06:19 (77)	05:44	06:53	08:00	08:13		10:54 (29)	09:15		11:47 (21)
	22:41	13	06:32 (77)	21:39	20:14	18:47	16:28	51	13:06 (24)	15:43	19	12:07 (21)
11	04:44		06:19 (77)	05:46	06:55	08:02	08:15		10:54 (29)	09:16		11:48 (21)
	22:39	13	06:32 (77)	21:37	20:11	18:45	16:25	52	13:06 (24)	15:43	16	12:04 (21)
12	04:46		06:21 (77)	05:48	06:57	08:04	08:18		10:54 (29)	09:18		11:48 (21)
	22:38	11	06:32 (77)	21:34	20:08	18:42	16:23	55	13:08 (24)	15:43	11	11:59 (21)
13	04:47		06:21 (77)	05:51	07:00	08:07	08:20		10:54 (29)	09:19		11:49 (21)
	22:37	10	06:31 (77)	21:32	20:05	18:39	16:21	62	14:08 (25)	15:42	11	12:00 (21)
14	04:49		06:22 (77)	05:53	07:02	08:09	08:23		10:53 (29)	09:20		11:50 (21)
	22:35	8	06:30 (77)	21:29	20:02	18:36	16:19	69	14:10 (25)	15:42	7	12:00 (21)
15	04:51		06:23 (77)	05:55	07:04	08:11	08:25		10:54 (29)	09:21		11:50 (21)
	22:34	7	06:30 (77)	21:26	19:59	18:33	16:17	71	14:12 (25)	15:42	3	11:53 (21)
16	04:52		06:24 (77)	05:57	07:06	08:13	08:27		10:54 (29)	09:22		11:50 (21)
	22:32	4	06:28 (77)	21:24	19:56	18:31	16:15	75	14:14 (25)	15:42	3	11:53 (21)
17	04:54		06:25 (77)	06:00	07:08	08:16	08:30		10:55 (29)	09:23		11:51 (21)
	22:31	2	06:27 (77)	21:21	19:54	18:28	16:13	77	14:15 (25)	15:42	1	11:52 (21)
18	04:56			06:02	07:11	08:18	08:32		10:55 (29)	09:24		
	22:29			21:18	19:51	18:25	16:11	76	14:15 (25)	15:42		
19	04:58			06:04	07:13	08:20	08:34		10:56 (29)	09:25		
	22:27			21:16	19:48	18:22	16:09	77	14:16 (25)	15:42		
20	05:00			06:06	07:15	08:23	08:36		10:56 (29)	09:26		
	22:25			21:13	19:45	18:20	16:08	77	14:16 (25)	15:43		
21	05:01			06:08	07:17	08:25	08:39		10:57 (29)	09:26		
	22:24			21:10	19:42	18:17	16:06	81	14:17 (25)	15:43		
22	05:03			06:11	07:19	08:27	08:41		10:58 (29)	09:27		
	22:22			21:08	19:39	18:14	16:04	85	14:18 (25)	15:43		
23	05:05			06:13	07:22	08:30	08:43		10:58 (29)	09:27		
	22:20			21:05	19:36	18:12	16:02	88	14:18 (25)	15:44		
24	05:07			06:15	07:24	08:32	08:45		11:00 (29)	09:28		
	22:18			21:02	19:33	18:09	16:01	87	14:19 (25)	15:44		
25	05:09			06:17	07:26	07:35	08:47		11:00 (29)	09:28		
	22:16			20:59	19:30	17:06	15:59	86	14:18 (25)	15:45		
26	05:11			06:20	07:28	07:37	08:50		11:02 (29)	09:28		
	22:14			20:57	19:27	17:04	15:58	85	14:19 (25)	15:46		
27	05:13			06:22	07:30	07:39	08:52		11:03 (29)	09:28		11:56 (21)
	22:12			20:54	19:25	17:01	15:56	82	14:19 (25)	15:47	3	11:59 (21)
28	05:16			06:24	07:33	07:42	08:54		11:05 (29)	09:28		11:57 (21)
	22:10			20:51	19:22	16:59	15:55	79	14:19 (25)	15:48	3	12:00 (21)
29	05:18			06:26	07:35	07:44	08:56		11:06 (29)	09:28		11:56 (21)
	22:07			20:48	19:19	16:56	15:54	74	14:19 (25)	15:49	5	12:07 (21)
30	05:20			06:29	07:37	07:47	08:58		11:08 (29)	09:28		11:57 (21)
	22:05			20:45	19:16	16:54	15:52	69	14:19 (25)	15:50	11	12:08 (21)
31	05:22			06:31		07:49				09:28		11:57 (21)
	22:03			20:42		16:51				15:51	11	12:08 (21)
Potential sun hours	546			478	386	319	236			199		
Total, worst case		221						1756			405	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** L - Buevegen 1850 (12)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January		February		March		April	May	June
1	09:28		11:52 (34)	08:46		13:17 (29)	07:35	08:53 (18)	07:07	05:44	04:40
	15:53	17	12:09 (34)	16:56	36	13:53 (29)	18:05	19	09:12 (18)	20:17	21:26	22:30
2	09:27		11:51 (34)	08:43		13:18 (29)	07:32	08:53 (18)	07:04	05:41	04:38
	15:54	19	12:10 (34)	16:58	43	15:13 (24)	18:07	20	09:13 (18)	20:19	21:28	22:32
3	09:27		11:51 (34)	08:41		13:17 (29)	07:30	08:52 (18)	07:01	05:39	04:37
	15:55	19	12:10 (34)	17:01	52	15:18 (24)	18:09	21	09:13 (18)	20:21	21:30	22:34
4	09:26		11:51 (34)	08:39		13:18 (29)	07:27	08:52 (18)	06:58	05:36	04:36
	15:57	20	12:11 (34)	17:03	54	15:20 (24)	18:12	20	09:12 (18)	20:24	21:33	22:35
5	09:26		11:52 (34)	08:37		13:17 (29)	07:24	08:52 (18)	06:55	05:34	04:35
	15:58	20	12:12 (34)	17:06	58	15:21 (24)	18:14	20	09:12 (18)	20:26	21:35	22:37
6	09:25		11:52 (34)	08:34		13:18 (29)	07:21	08:52 (18)	06:52	05:31	04:34
	16:00	20	12:12 (34)	17:08	63	15:44 (25)	18:16	19	09:11 (18)	20:28	21:37	22:38
7	09:24		11:52 (34)	08:32		13:17 (29)	07:19	08:53 (18)	06:49	05:29	04:33
	16:02	21	12:13 (34)	17:11	68	15:46 (25)	18:19	17	09:10 (18)	20:30	21:40	22:39
8	09:24		11:53 (34)	08:30		13:18 (29)	07:16	08:54 (18)	06:47	05:26	04:32
	16:03	21	12:14 (34)	17:13	73	15:51 (25)	18:21	14	09:08 (18)	20:33	21:42	22:40
9	09:23		11:52 (34)	08:27		13:18 (29)	07:13	08:55 (18)	06:44	05:24	04:31
	16:05	22	12:14 (34)	17:16	79	15:59 (25)	18:24	10	09:05 (18)	20:35	21:44	22:42
10	09:22		11:53 (34)	08:25		13:18 (29)	07:10		06:41	05:22	04:30
	16:07	22	12:15 (34)	17:18	82	16:00 (25)	18:26		20:37	21:46	22:43
11	09:21		11:54 (34)	08:23		13:20 (29)	07:07		06:38	05:19	04:29
	16:09	22	12:16 (34)	17:21	80	16:00 (25)	18:28		20:40	21:49	22:44
12	09:20		11:53 (34)	08:20		10:07 (16)	07:04		06:35	05:17	04:29
	16:11	24	13:22 (21)	17:23	88	15:59 (25)	18:31		20:42	21:51	22:45
13	09:18		11:53 (34)	08:18		10:04 (16)	07:01		06:32	05:15	04:28
	16:13	30	13:28 (21)	17:26	90	15:58 (25)	18:33		20:44	21:53	22:46
14	09:17		11:54 (34)	08:15		10:03 (16)	06:59		06:30	05:13	04:28
	16:15	38	13:37 (21)	17:28	87	15:57 (25)	18:35		20:47	21:55	22:46
15	09:16		11:55 (34)	08:13		10:02 (16)	06:56		06:27	05:10	04:27
	16:17	44	13:43 (21)	17:31	80	15:54 (25)	18:38		20:49	21:57	22:47
16	09:15		11:55 (34)	08:10		10:01 (16)	06:53		06:24	05:08	04:27
	16:19	45	13:44 (21)	17:33	72	15:24 (24)	18:40		20:51	22:00	22:48
17	09:13		11:55 (34)	08:07		10:00 (16)	06:50		06:21	05:06	04:27
	16:21	45	13:44 (21)	17:35	66	15:23 (24)	18:42		20:53	22:02	22:49
18	09:12		11:57 (34)	08:05		10:00 (16)	06:47		06:19	05:04	04:27
	16:23	44	13:46 (21)	17:38	60	15:23 (24)	18:45		20:56	22:04	22:49
19	09:10		11:57 (34)	08:02		10:00 (16)	06:44		06:16	05:02	04:27
	16:25	44	13:46 (21)	17:40	43	15:21 (24)	18:47		20:58	22:06	22:50
20	09:08		11:58 (34)	08:00		09:59 (16)	06:41		06:13	05:00	04:27
	16:28	43	13:46 (21)	17:43	41	15:19 (24)	18:49		21:00	22:08	22:50
21	09:07		11:59 (34)	07:57		09:59 (16)	06:38		06:10	04:58	04:27
	16:30	40	13:46 (21)	17:45	33	15:15 (24)	18:51		21:03	22:10	22:50
22	09:05		11:59 (34)	07:54		09:59 (16)	06:36		06:08	04:56	04:27
	16:32	40	13:46 (21)	17:48	25	10:24 (16)	18:54		21:05	22:12	22:50
23	09:03		12:01 (34)	07:52		10:00 (16)	06:33		06:05	04:54	04:27
	16:34	36	13:46 (21)	17:50	24	10:24 (16)	18:56		21:07	22:14	22:50
24	09:02		12:03 (34)	07:49		10:01 (16)	06:30		06:02	04:52	04:27
	16:37	34	13:46 (21)	17:53	22	10:23 (16)	18:58		21:10	22:16	22:51
25	09:00		12:05 (34)	07:46		09:00 (18)	06:27		05:59	04:51	04:28
	16:39	32	13:46 (29)	17:55	27	10:22 (16)	19:01		21:12	22:18	22:50
26	08:58		13:21 (29)	07:43		08:57 (18)	06:24		05:57	04:49	04:28
	16:41	27	13:48 (29)	17:57	30	10:20 (16)	19:03		21:14	22:20	22:50
27	08:56		13:20 (29)	07:41		08:55 (18)	06:21		05:54	04:47	04:29
	16:44	28	13:48 (29)	18:00	29	10:18 (16)	19:05		21:17	22:22	22:50
28	08:54		13:19 (29)	07:38		08:54 (18)	06:18		05:52	04:46	04:30
	16:46	31	13:50 (29)	18:02	24	10:14 (16)	19:07		21:19	22:24	22:50
29	08:52		13:19 (29)				07:15		05:49	04:44	04:30
	16:49	32	13:51 (29)				20:10		21:21	22:25	22:50
30	08:50		13:18 (29)				07:12		05:46	04:42	04:31
	16:51	33	13:51 (29)				20:12		21:24	22:27	22:49
31	08:48		13:18 (29)				07:10			04:41	
	16:53	35	13:53 (29)				20:14			22:29	
Potential sun hours	221			260			365		432	521	547
Total, worst case		948			1529			160			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** L - Buevegen 1850 (12)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September	October			November			December		
1	04:32	05:24	06:33	07:39			07:51		12:48 (29)	09:00		11:36 (34)
	22:49	22:01	20:40	19:13			16:49	83	15:30 (25)	15:51	22	11:58 (34)
2	04:33	05:26	06:35	07:42			07:54		12:48 (29)	09:02		11:36 (34)
	22:48	21:58	20:37	19:10			16:46	76	15:28 (25)	15:50	22	11:58 (34)
3	04:34	05:28	06:37	07:44			07:56		12:48 (29)	09:03		11:36 (34)
	22:47	21:56	20:34	19:07			16:44	71	15:20 (25)	15:49	22	11:58 (34)
4	04:35	05:31	06:40	07:46		09:34 (18)	07:59		12:47 (29)	09:05		11:37 (34)
	22:47	21:54	20:31	19:04	7	09:41 (18)	16:41	66	15:15 (25)	15:48	21	11:58 (34)
5	04:36	05:33	06:42	07:48		09:32 (18)	08:01		12:47 (29)	09:07		11:37 (34)
	22:46	21:51	20:28	19:01	12	09:44 (18)	16:39	62	15:13 (25)	15:47	21	11:58 (34)
6	04:37	05:35	06:44	07:51		09:30 (18)	08:03		12:48 (29)	09:09		11:38 (34)
	22:45	21:49	20:25	18:59	15	09:45 (18)	16:37	58	14:52 (24)	15:46	21	11:59 (34)
7	04:38	05:37	06:46	07:53		09:28 (18)	08:06		12:47 (29)	09:10		11:39 (34)
	22:44	21:47	20:22	18:56	18	09:46 (18)	16:34	55	14:50 (24)	15:45	20	11:59 (34)
8	04:40	05:39	06:48	07:55		09:28 (18)	08:08		12:48 (29)	09:12		11:40 (34)
	22:43	21:44	20:20	18:53	19	09:47 (18)	16:32	50	14:48 (24)	15:45	19	11:59 (34)
9	04:41	05:42	06:51	07:57		09:27 (18)	08:11		12:48 (29)	09:13		11:41 (34)
	22:42	21:42	20:17	18:50	20	09:47 (18)	16:30	42	14:43 (24)	15:44	19	12:00 (34)
10	04:43	05:44	06:53	08:00		09:27 (18)	08:13		12:49 (29)	09:15		11:41 (34)
	22:40	21:39	20:14	18:47	20	09:47 (18)	16:28	35	13:24 (29)	15:43	18	11:59 (34)
11	04:44	05:46	06:55	08:02		09:26 (18)	08:15		12:49 (29)	09:16		11:42 (34)
	22:39	21:37	20:11	18:45	20	09:46 (18)	16:25	34	13:23 (29)	15:43	18	12:00 (34)
12	04:46	05:48	06:57	08:04		09:26 (18)	08:18		12:50 (29)	09:18		11:42 (34)
	22:38	21:34	20:08	18:42	19	09:45 (18)	16:23	33	13:23 (29)	15:43	17	11:59 (34)
13	04:47	05:51	07:00	08:06		09:27 (18)	08:20		12:51 (29)	09:19		11:43 (34)
	22:37	21:31	20:05	18:39	18	09:45 (18)	16:21	32	13:23 (29)	15:42	17	12:00 (34)
14	04:49	05:53	07:02	08:09		09:27 (18)	08:22		12:51 (29)	09:20		11:44 (34)
	22:35	21:29	20:02	18:36	28	10:49 (16)	16:19	31	13:22 (29)	15:42	16	12:00 (34)
15	04:51	05:55	07:04	08:11		09:29 (18)	08:25		12:53 (29)	09:21		11:44 (34)
	22:34	21:26	19:59	18:33	30	10:52 (16)	16:17	28	13:21 (29)	15:42	16	12:00 (34)
16	04:52	05:57	07:06	08:13		09:30 (18)	08:27		12:54 (29)	09:22		11:45 (34)
	22:32	21:24	19:56	18:31	29	10:53 (16)	16:15	27	13:21 (29)	15:42	15	12:00 (34)
17	04:54	05:59	07:08	08:16		10:33 (16)	08:29		11:38 (34)	09:23		11:45 (34)
	22:30	21:21	19:54	18:28	21	10:54 (16)	16:13	32	13:19 (29)	15:42	15	12:00 (34)
18	04:56	06:02	07:10	08:18		10:31 (16)	08:32		11:37 (34)	09:24		11:46 (34)
	22:29	21:18	19:51	18:25	24	10:55 (16)	16:11	34	13:20 (21)	15:42	15	12:01 (34)
19	04:58	06:04	07:13	08:20		10:31 (16)	08:34		11:36 (34)	09:25		11:47 (34)
	22:27	21:16	19:48	18:22	24	10:55 (16)	16:09	36	13:21 (21)	15:42	14	12:01 (34)
20	05:00	06:06	07:15	08:23		10:30 (16)	08:36		11:34 (34)	09:26		11:48 (34)
	22:25	21:13	19:45	18:20	25	10:55 (16)	16:08	39	13:21 (21)	15:42	14	12:02 (34)
21	05:01	06:08	07:17	08:25		10:30 (16)	08:39		11:34 (34)	09:26		11:48 (34)
	22:24	21:10	19:42	18:17	36	15:48 (24)	16:06	40	13:21 (21)	15:43	14	12:02 (34)
22	05:03	06:11	07:19	08:27		10:30 (16)	08:41		11:34 (34)	09:27		11:48 (34)
	22:22	21:08	19:39	18:14	41	15:50 (24)	16:04	43	13:22 (21)	15:43	15	12:03 (34)
23	05:05	06:13	07:22	08:30		10:30 (16)	08:43		11:33 (34)	09:27		11:49 (34)
	22:20	21:05	19:36	18:12	48	15:52 (24)	16:02	44	13:22 (21)	15:44	14	12:03 (34)
24	05:07	06:15	07:24	08:32		10:30 (16)	08:45		11:34 (34)	09:28		11:50 (34)
	22:18	21:02	19:33	18:09	61	15:52 (24)	16:01	44	13:23 (21)	15:44	14	12:04 (34)
25	05:09	06:17	07:26	07:35		09:30 (16)	08:47		11:33 (34)	09:28		11:50 (34)
	22:16	20:59	19:30	17:06	69	14:54 (24)	15:59	44	13:22 (21)	15:45	14	12:04 (34)
26	05:11	06:20	07:28	07:37		09:30 (16)	08:50		11:34 (34)	09:28		11:50 (34)
	22:14	20:56	19:27	17:04	73	14:54 (24)	15:58	44	13:23 (21)	15:46	15	12:05 (34)
27	05:13	06:22	07:30	07:39		09:32 (16)	08:52		11:34 (34)	09:28		11:50 (34)
	22:12	20:54	19:24	17:01	81	15:24 (25)	15:56	44	13:23 (21)	15:47	16	12:06 (34)
28	05:16	06:24	07:33	07:42		09:33 (16)	08:54		11:35 (34)	09:28		11:50 (34)
	22:10	20:51	19:22	16:59	88	15:27 (25)	15:55	38	13:18 (21)	15:48	16	12:06 (34)
29	05:18	06:26	07:35	07:44		09:34 (16)	08:56		11:35 (34)	09:28		11:50 (34)
	22:07	20:48	19:19	16:56	90	15:28 (25)	15:54	29	13:09 (21)	15:49	17	12:07 (34)
30	05:20	06:29	07:37	07:47		09:37 (16)	08:58		11:35 (34)	09:28		11:51 (34)
	22:05	20:45	19:16	16:54	89	15:29 (25)	15:52	23	13:03 (21)	15:50	17	12:08 (34)
31	05:22	06:31		07:49		12:49 (29)				09:28		11:51 (34)
	22:03	20:42		16:51	81	15:30 (25)				15:51	17	12:08 (34)
Potential sun hours	546	478	386	319			236			199		
Total, worst case					1106			1317			531	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** M - Buevegen 1941 (13)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March			April	May	June
1	09:28			08:46		14:11 (34)	07:35		10:14 (18)	07:07	05:44	04:40
	15:53			16:56	18	15:31 (21)	18:05	73	16:49 (24)	20:17	21:26	22:30
2	09:27			08:43		15:15 (21)	07:32		10:15 (18)	07:04	05:41	04:38
	15:54			16:58	17	15:32 (21)	18:07	70	16:50 (24)	20:19	21:28	22:32
3	09:27			08:41		15:14 (21)	07:30		10:16 (18)	07:01	05:39	04:37
	15:55			17:01	19	15:33 (21)	18:09	62	16:48 (24)	20:21	21:30	22:34
4	09:26			08:39		12:34 (16)	07:27		10:16 (18)	06:58	05:36	04:36
	15:57			17:03	30	15:33 (21)	18:12	54	16:47 (24)	20:23	21:33	22:35
5	09:26			08:37		12:30 (16)	07:24		09:25 (13)	06:55	05:34	04:35
	15:58			17:06	36	15:33 (21)	18:14	36	16:44 (24)	20:26	21:35	22:36
6	09:25			08:34		12:29 (16)	07:21		09:21 (13)	06:52	05:31	04:34
	16:00			17:08	40	15:34 (21)	18:16	27	10:42 (18)	20:28	21:37	22:38
7	09:24			08:32		12:27 (16)	07:18		10:19 (18)	06:49	05:29	04:33
	16:02			17:11	42	15:33 (21)	18:19	20	10:39 (18)	20:30	21:40	22:39
8	09:24			08:30		12:27 (16)	07:16		10:21 (18)	06:47	05:26	04:32
	16:03			17:13	44	15:34 (21)	18:21	15	10:36 (18)	20:33	21:42	22:40
9	09:23			08:27		12:25 (16)	07:13		10:25 (18)	06:44	05:24	04:31
	16:05			17:16	46	15:33 (21)	18:24	7	10:32 (18)	20:35	21:44	22:42
10	09:22			08:25		12:24 (16)	07:10			06:41	05:22	04:30
	16:07			17:18	45	15:31 (21)	18:26			20:37	21:46	22:43
11	09:21			08:22		12:24 (16)	07:07			06:38	05:19	04:29
	16:09			17:21	43	15:30 (21)	18:28			20:40	21:49	22:44
12	09:20			08:20		12:23 (16)	07:04			06:35	05:17	04:29
	16:11			17:23	38	15:27 (21)	18:31			20:42	21:51	22:45
13	09:18			08:18		12:22 (16)	07:01			06:32	05:15	04:28
	16:13			17:26	34	12:56 (16)	18:33			20:44	21:53	22:46
14	09:17			08:15		12:23 (16)	06:59			06:30	05:12	04:28
	16:15			17:28	34	12:57 (16)	18:35			20:46	21:55	22:46
15	09:16			08:12		12:22 (16)	06:56			06:27	05:10	04:27
	16:17			17:30	35	12:57 (16)	18:38			20:49	21:57	22:47
16	09:14			08:10		12:22 (16)	06:53			06:24	05:08	04:27
	16:19			17:33	43	16:12 (29)	18:40			20:51	22:00	22:48
17	09:13			08:07		12:22 (16)	06:50			06:21	05:06	04:27
	16:21			17:35	49	16:15 (29)	18:42			20:53	22:02	22:48
18	09:12			08:05		12:23 (16)	06:47			06:18	05:04	04:27
	16:23			17:38	51	16:17 (29)	18:44			20:56	22:04	22:49
19	09:10			08:02		12:23 (16)	06:44			06:16	05:02	04:27
	16:25			17:40	54	16:18 (29)	18:47			20:58	22:06	22:49
20	09:08			08:00		12:23 (16)	06:41			06:13	05:00	04:27
	16:28			17:43	55	16:19 (29)	18:49			21:00	22:08	22:50
21	09:07			07:57		12:23 (16)	06:38			06:10	04:58	04:27
	16:30			17:45	56	16:20 (29)	18:51			21:03	22:10	22:50
22	09:05			07:54		12:24 (16)	06:36			06:07	04:56	04:27
	16:32			17:48	61	16:42 (24)	18:54			21:05	22:12	22:50
23	09:03			07:52		12:26 (16)	06:33			06:05	04:54	04:27
	16:34			17:50	67	16:48 (24)	18:56			21:07	22:14	22:50
24	09:01			07:49		10:20 (18)	06:30			06:02	04:52	04:27
	16:37			17:52	68	16:49 (24)	18:58			21:10	22:16	22:50
25	09:00			07:46		10:16 (18)	06:27			05:59	04:51	04:28
	16:39			17:55	91	16:50 (24)	19:01			21:12	22:18	22:50
26	08:58			07:43		10:15 (18)	06:24			05:57	04:49	04:28
	16:41			17:57	92	16:50 (24)	19:03			21:14	22:20	22:50
27	08:56			07:41		10:15 (18)	06:21			05:54	04:47	04:29
	16:44			18:00	82	16:50 (24)	19:05			21:17	22:22	22:50
28	08:54			07:38		10:15 (18)	06:18			05:51	04:45	04:29
	16:46			18:02	75	16:50 (24)	19:07			21:19	22:24	22:50
29	08:52						07:15			05:49	04:44	04:30
	16:49						20:10			21:21	22:25	22:49
30	08:50		14:16 (34)				07:12			05:46	04:42	04:31
	16:51	3	14:19 (34)				20:12			21:23	22:27	22:49
31	08:48		14:08 (34)				07:10				04:41	
	16:53	21	15:27 (21)				20:14				22:29	
Potential sun hours	221			260			365			432	521	547
Total, worst case		24			1365			364				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** M - Buevegen 1941 (13)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September	October		November		December
1	04:32	05:24	06:33	07:39		07:51		11:54 (16)	09:00
	22:48	22:01	20:40	19:13		16:49	45	15:01 (21)	15:51
2	04:33	05:26	06:35	07:41		07:54		11:55 (16)	09:01
	22:48	21:58	20:37	19:10		16:46	44	15:02 (21)	15:50
3	04:34	05:28	06:37	07:44		07:56		11:56 (16)	09:03
	22:47	21:56	20:34	19:07		16:44	45	15:03 (21)	15:49
4	04:35	05:31	06:40	07:46		07:58		11:57 (16)	09:05
	22:46	21:54	20:31	19:04		16:41	43	15:03 (21)	15:48
5	04:36	05:33	06:42	07:48	10:59 (18)	08:01		11:59 (16)	09:07
	22:46	21:51	20:28	19:01	13	11:12 (18)	16:39	39	15:03 (21)	15:47
6	04:37	05:35	06:44	07:50	10:56 (18)	08:03		12:01 (16)	09:09
	22:45	21:49	20:25	18:59	19	11:15 (18)	16:37	36	15:04 (21)	15:46
7	04:38	05:37	06:46	07:53	09:54 (13)	08:06		12:04 (16)	09:10
	22:44	21:47	20:22	18:56	25	11:16 (18)	16:34	29	15:03 (21)	15:45
8	04:40	05:39	06:48	07:55	09:58 (13)	08:08		14:45 (21)	09:12
	22:43	21:44	20:20	18:53	33	17:18 (24)	16:32	18	15:03 (21)	15:45
9	04:41	05:42	06:51	07:57	10:01 (13)	08:10		14:46 (21)	09:13
	22:42	21:42	20:17	18:50	49	17:20 (24)	16:30	17	15:03 (21)	15:44
10	04:43	05:44	06:53	08:00	10:49 (18)	08:13		13:42 (34)	09:15
	22:40	21:39	20:14	18:47	59	17:21 (24)	16:28	20	15:03 (21)	15:43
11	04:44	05:46	06:55	08:02	10:49 (18)	08:15		13:39 (34)	09:16
	22:39	21:37	20:11	18:44	66	17:23 (24)	16:25	20	14:58 (21)	15:43
12	04:46	05:48	06:57	08:04	10:48 (18)	08:18		13:48 (34)	09:17
	22:38	21:34	20:08	18:42	71	17:23 (24)	16:23	3	13:51 (34)	15:43
13	04:47	05:50	06:59	08:06	10:48 (18)	08:20			09:19
	22:36	21:31	20:05	18:39	73	17:23 (24)	16:21			15:42
14	04:49	05:53	07:02	08:09	10:47 (18)	08:22			09:20
	22:35	21:29	20:02	18:36	77	17:23 (24)	16:19			15:42
15	04:50	05:55	07:04	08:11	10:48 (18)	08:25			09:21
	22:34	21:26	19:59	18:33	88	17:23 (24)	16:17			15:42
16	04:52	05:57	07:06	08:13	10:47 (18)	08:27			09:22
	22:32	21:24	19:56	18:31	94	17:22 (24)	16:15			15:42
17	04:54	05:59	07:08	08:16	10:48 (18)	08:29			09:23
	22:30	21:21	19:53	18:28	85	17:22 (24)	16:13			15:42
18	04:56	06:02	07:10	08:18	12:57 (16)	08:32			09:24
	22:29	21:18	19:51	18:25	67	17:20 (24)	16:11			15:42
19	04:58	06:04	07:13	08:20	12:56 (16)	08:34			09:25
	22:27	21:16	19:48	18:22	65	17:17 (24)	16:09			15:42
20	04:59	06:06	07:15	08:23	12:55 (16)	08:36			09:25
	22:25	21:13	19:45	18:20	58	17:12 (24)	16:07			15:42
21	05:01	06:08	07:17	08:25	12:54 (16)	08:39			09:26
	22:23	21:10	19:42	18:17	57	16:51 (29)	16:06			15:43
22	05:03	06:11	07:19	08:27	12:53 (16)	08:41			09:27
	22:22	21:07	19:39	18:14	55	16:49 (29)	16:04			15:43
23	05:05	06:13	07:21	08:30	12:53 (16)	08:43			09:27
	22:20	21:05	19:36	18:12	53	16:48 (29)	16:02			15:44
24	05:07	06:15	07:24	08:32	12:52 (16)	08:45			09:28
	22:18	21:02	19:33	18:09	52	16:46 (29)	16:01			15:44
25	05:09	06:17	07:26	07:34	11:52 (16)	08:47			09:28
	22:16	20:59	19:30	17:06	47	15:44 (29)	15:59			15:45
26	05:11	06:20	07:28	07:37	11:51 (16)	08:49			09:28
	22:14	20:56	19:27	17:04	40	15:40 (29)	15:58			15:46
27	05:13	06:22	07:30	07:39	11:52 (16)	08:52			09:28
	22:12	20:54	19:24	17:01	35	12:27 (16)	15:56			15:47
28	05:15	06:24	07:33	07:42	11:52 (16)	08:54			09:28
	22:10	20:51	19:22	16:59	35	12:27 (16)	15:55			15:48
29	05:18	06:26	07:35	07:44	11:52 (16)	08:56			09:28
	22:07	20:48	19:19	16:56	34	12:26 (16)	15:53			15:49
30	05:20	06:29	07:37	07:46	11:53 (16)	08:58			09:28
	22:05	20:45	19:16	16:54	39	14:57 (21)	15:52			15:50
31	05:22	06:31		07:49	11:54 (16)				09:28
	22:03	20:42		16:51	42	15:00 (21)				15:51
Potential sun hours	546	478	386	319		236			199
Total, worst case					1431			359		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** N - Buevegen 1988 (14)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January		February		March	April	May	June	July	August	September	October		November		December
1	09:28		08:46		11:38 (18)	07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:39		07:51		09:44 (13)	09:00
	15:53		16:56	62	13:43 (16)	18:05	20:17	21:26	22:30	22:48	22:01	20:40	19:13		16:49	55	15:37 (29)	15:51
2	09:27		08:43		11:39 (18)	07:32	07:04	05:41	04:38	04:33	05:26	06:35	07:41		07:54		09:56 (13)	09:01
	15:54		16:58	57	13:43 (16)	18:07	20:19	21:28	22:32	22:48	21:58	20:37	19:10		16:46	51	15:37 (29)	15:50
3	09:27		08:41		11:38 (18)	07:30	07:01	05:39	04:37	04:34	05:28	06:37	07:44		07:56		09:57 (13)	09:03
	15:55		17:01	51	13:42 (16)	18:09	20:21	21:30	22:34	22:47	21:56	20:34	19:07		16:44	57	15:36 (29)	15:49
4	09:26		08:39		11:39 (18)	07:27	06:58	05:36	04:36	04:35	05:30	06:40	07:46		07:58		10:02 (13)	09:05
	15:57		17:03	51	15:59 (29)	18:12	20:23	21:33	22:35	22:46	21:54	20:31	19:04		16:41	58	15:35 (29)	15:48
5	09:26		08:37		11:39 (18)	07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48		08:01		11:09 (18)	09:07
	15:58		17:06	57	16:02 (29)	18:14	20:26	21:35	22:36	22:46	21:51	20:28	19:01		16:39	57	15:34 (29)	15:47
6	09:25		08:34		11:40 (18)	07:21	06:52	05:31	04:34	04:37	05:35	06:44	07:50		08:03		11:10 (18)	09:09
	16:00		17:08	57	16:05 (29)	18:16	20:28	21:37	22:38	22:45	21:49	20:25	18:59		16:37	56	15:33 (29)	15:46
7	09:24		08:32		10:32 (13)	07:18	06:49	05:29	04:33	04:38	05:37	06:46	07:53		08:06		11:09 (18)	09:10
	16:02		17:11	56	16:05 (29)	18:19	20:30	21:40	22:39	22:44	21:47	20:22	18:56		16:34	49	13:12 (16)	15:45
8	09:24		08:30		10:27 (13)	07:16	06:47	05:26	04:32	04:40	05:39	06:48	07:55		08:08		11:09 (18)	09:12
	16:03		17:13	56	16:07 (29)	18:21	20:33	21:42	22:40	22:43	21:44	20:20	18:53		16:32	50	13:13 (16)	15:45
9	09:23		08:27		10:26 (13)	07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:57		08:10		11:09 (18)	09:13
	16:05		17:16	49	16:07 (29)	18:23	20:35	21:44	22:42	22:42	21:42	20:17	18:50		16:30	59	13:14 (16)	15:44
10	09:22		08:25		10:15 (13)	07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00		08:13		11:10 (18)	09:15
	16:07		17:18	57	16:07 (29)	18:26	20:37	21:46	22:43	22:40	21:39	20:14	18:47		16:28	62	13:15 (16)	15:43
11	09:21		08:22		10:16 (13)	07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02		08:15		11:10 (18)	09:16
	16:09		17:21	55	16:08 (29)	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:44		16:25	63	13:14 (16)	15:43
12	09:20		08:20		10:17 (13)	07:04	06:35	05:17	04:29	04:46	05:48	06:57	08:04		08:18		11:10 (18)	09:17
	16:11		17:23	48	16:08 (29)	18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42		16:23	65	13:15 (16)	15:43
13	09:18		08:17		10:18 (13)	07:01	06:32	05:15	04:28	04:47	05:50	06:59	08:06		08:20		11:11 (18)	09:19
	16:13		17:26	33	16:07 (29)	18:33	20:44	21:53	22:46	22:36	21:31	20:05	18:39		16:21	65	13:15 (16)	15:42
14	09:17	12:03 (10)	08:15		10:21 (13)	06:59	06:30	05:12	04:28	04:49	05:53	07:02	08:09		08:22		11:11 (18)	09:20
	16:15	8 12:11 (10)	17:28	28	16:08 (29)	18:35	20:46	21:55	22:46	22:35	21:29	20:02	18:36		16:19	66	13:15 (16)	15:42
15	09:16	12:02 (10)	08:12		15:50 (29)	06:56	06:27	05:10	04:27	04:50	05:55	07:04	08:11		08:25		11:13 (18)	09:21
	16:17	10 12:12 (10)	17:30	17	16:07 (29)	18:37	20:49	21:57	22:47	22:34	21:26	19:59	18:33		16:17	64	13:15 (16)	15:42
16	09:14	12:02 (10)	08:10		15:51 (29)	06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13		08:27		11:14 (18)	09:22
	16:19	11 12:13 (10)	17:33	14	16:05 (29)	18:40	20:51	22:00	22:48	22:32	21:24	19:56	18:31		16:15	62	13:15 (16)	15:42
17	09:13	12:02 (10)	08:07		15:52 (29)	06:50	06:21	05:06	04:27	04:54	05:59	07:08	08:16		08:29		11:15 (18)	09:23
	16:21	18 13:29 (16)	17:35	12	16:04 (29)	18:42	20:53	22:02	22:48	22:30	21:21	19:53	18:28		16:13	61	13:14 (16)	15:42
18	09:12	11:58 (10)	08:05		15:56 (29)	06:47	06:18	05:04	04:27	04:56	06:02	07:10	08:18		08:32		11:17 (18)	09:24
	16:23	29 13:33 (16)	17:38	6	16:02 (29)	18:44	20:56	22:04	22:49	22:29	21:18	19:51	18:25		16:11	59	13:14 (16)	15:42
19	09:10	11:58 (10)	08:02			06:44	06:16	05:02	04:26	04:58	06:04	07:13	08:20		08:34		11:19 (18)	09:25
	16:25	32 13:35 (16)	17:40			18:47	20:58	22:06	22:49	22:27	21:16	19:48	18:22		16:09	54	13:14 (16)	15:42
20	09:08	11:57 (10)	08:00			06:41	06:13	05:00	04:26	04:59	06:06	07:15	08:23		08:36		11:21 (18)	09:25
	16:27	37 13:37 (16)	17:43			18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20		16:07	48	13:13 (16)	15:42
21	09:07	11:57 (10)	07:57			06:38	06:10	04:58	04:27	05:01	06:08	07:17	08:25		08:39		11:32 (10)	09:26
	16:30	40 13:38 (16)	17:45			18:51	21:03	22:10	22:50	22:23	21:10	19:42	18:17		16:06	40	13:13 (16)	15:43
22	09:05	11:46 (18)	07:54			06:36	06:07	04:56	04:27	05:03	06:11	07:19	08:27		08:41		11:33 (10)	09:27
	16:32	48 13:38 (16)	17:48			18:54	21:05	22:12	22:50	22:22	21:07	19:39	18:14		16:04	37	13:13 (16)	15:43
23	09:03	11:44 (18)	07:52			06:33	06:05	04:54	04:27	05:05	06:13	07:21	08:30		08:43		11:34 (10)	09:27
	16:34	54 13:39 (16)	17:50			18:56	21:07	22:14	22:50	22:20	21:05	19:36	18:12		16:02	33	13:11 (16)	15:44
24	09:01	11:43 (18)	07:49			06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32	16:24 (29)	08:45		11:35 (10)	09:28
	16:37	59 13:40 (16)	17:52			18:58	21:10	22:16	22:50	22:18	21:02	19:33	18:09	8 16:32 (29)	16:01	29	13:10 (16)	15:44
25	09:00	11:42 (18)	07:46			06:27	05:59	04:50	04:28	05:09	06:17	07:26	07:34	15:22 (29)	08:47		11:41 (10)	09:28
	16:39	60 13:41 (16)	17:55			19:01	21:12	22:18	22:50	22:16	20:59	19:30	17:06	12 15:34 (29)	15:59	18	13:08 (16)	15:45
26	08:58	11:41 (18)	07:43			06:24	05:57	04:49	04:28	05:11	06:20	07:28	07:37	15:20 (29)	08:49		11:41 (10)	09:28
	16:41	62 13:42 (16)	17:57			19:03	21:14	22:20	22:50	22:14	20:56	19:27	17:04	15 15:35 (29)	15:58	11	11:52 (10)	15:46
27	08:56	11:40 (18)	07:41			06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39	09:53 (13)	08:52		11:41 (10)	09:28
	16:44	64 13:42 (16)	18:00			19:05	21:17	22:22	22:50	22:12	20:54	19:24	17:01	20 15:36 (29)	15:56	10	11:51 (10)	15:47
28	08:54	11:40 (18)	07:38			06:18	05:51	04:45	04:29	05:15	06:24	07:33	07:42	09:49 (13)	08:54		11:43 (10)	09:28
	16:46	65 13:43 (16)	18:02			19:07	21:19	22:24	22:50	22:10	20:51	19:22	16:59	29 15:37 (29)	15:55	8	11:51 (10)	15:48
29	08:52	11:40 (18)				07:15	05:49	04:44	04:30	05:18	06:26	07:35	07:44	09:47 (13)	08:56			09:28
	16:49	64 13:43 (16)				20:10	21:21	22:25	22:49	22:07	20:48	19:19	16:56	38 15:37 (29)	15:53			15:49
30	08:50	11:39 (18)				07:12	05:46	04:42	04:31	05:20	06:28	07:37	07:46	09:46 (13)	08:58			09:28
	16:51	65 13:43 (16)				20:12	21:23	22:27	22:49	22:05	20:45	19:16	16:54	49 15:37 (29)	15:52			15:50
31	08:48	11:39 (18)				07:09		04:41		05:22	06:31		07:49	09:46 (13)				09:28
	16:53	63 13:43 (16)				20:14		22:29		22:03	20:42		16:51	56 15:38 (29)				15:51
Potential sun hours	221		260		365	432	521	547	546	478	386	319			236		199	
Total, worst case		789		766									227			1347		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** O - Buevegen 2023 (15)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April	May			June		
1	09:28			08:46		10:50 (13)	07:35	07:07	05:44			04:39		20:01 (76)
	15:53			16:56	74	14:26 (16)	18:04	20:17	21:26			22:30	25	20:26 (76)
2	09:27			08:43		10:51 (13)	07:32	07:04	05:41			04:38		20:02 (76)
	15:54			16:58	73	14:27 (16)	18:07	20:19	21:28			22:32	24	20:26 (76)
3	09:27			08:41		10:50 (13)	07:30	07:01	05:39			04:37		20:02 (76)
	15:55			17:01	74	14:27 (16)	18:09	20:21	21:30			22:34	24	20:26 (76)
4	09:26			08:39		10:51 (13)	07:27	06:58	05:36			04:36		20:02 (76)
	15:57			17:03	73	14:27 (16)	18:12	20:23	21:33			22:35	23	20:25 (76)
5	09:26			08:37		10:51 (13)	07:24	06:55	05:34			04:35		20:02 (76)
	15:58			17:06	69	14:26 (16)	18:14	20:26	21:35			22:36	23	20:25 (76)
6	09:25			08:34		10:52 (13)	07:21	06:52	05:31			04:34		20:03 (76)
	16:00			17:08	65	14:26 (16)	18:16	20:28	21:37			22:38	22	20:25 (76)
7	09:24			08:32		10:53 (13)	07:18	06:49	05:29			04:33		20:03 (76)
	16:02			17:11	61	14:25 (16)	18:19	20:30	21:40			22:39	22	20:25 (76)
8	09:24			08:30		10:55 (13)	07:16	06:47	05:26			04:32		20:04 (76)
	16:03			17:13	55	14:25 (16)	18:21	20:33	21:42			22:40	21	20:25 (76)
9	09:23			08:27		10:56 (13)	07:13	06:44	05:24			04:31		20:04 (76)
	16:05			17:16	46	14:23 (16)	18:23	20:35	21:44			22:42	21	20:25 (76)
10	09:22			08:25		10:57 (13)	07:10	06:41	05:22			04:30		20:05 (76)
	16:07			17:18	32	14:20 (16)	18:26	20:37	21:46			22:43	21	20:26 (76)
11	09:21			08:22		12:43 (18)	07:07	06:38	05:19			04:29		20:05 (76)
	16:09			17:21	8	12:51 (18)	18:28	20:40	21:49			22:44	20	20:25 (76)
12	09:20			08:20			07:04	06:35	05:17			04:29		20:06 (76)
	16:11			17:23			18:30	20:42	21:51			22:45	19	20:25 (76)
13	09:18			08:17			07:01	06:32	05:15			04:28		20:06 (76)
	16:13			17:25			18:33	20:44	21:53			22:46	19	20:25 (76)
14	09:17		12:39 (10)	08:15			06:59	06:30	05:12		20:08 (76)	04:28		20:06 (76)
	16:15	6	12:45 (10)	17:28			18:35	20:46	21:55	4	20:12 (76)	22:46	19	20:25 (76)
15	09:16		12:39 (10)	08:12			06:56	06:27	05:10		20:06 (76)	04:27		20:07 (76)
	16:17	7	12:46 (10)	17:30			18:37	20:49	21:57	7	20:13 (76)	22:47	18	20:25 (76)
16	09:14		12:38 (10)	08:10			06:53	06:24	05:08		20:04 (76)	04:27		20:08 (76)
	16:19	17	12:55 (10)	17:33			18:40	20:51	22:00	9	20:13 (76)	22:48	18	20:26 (76)
17	09:13		12:38 (10)	08:07			06:50	06:21	05:06		20:03 (76)	04:27		20:08 (76)
	16:21	18	12:56 (10)	17:35			18:42	20:53	22:02	11	20:14 (76)	22:48	18	20:26 (76)
18	09:12		12:37 (10)	08:05			06:47	06:18	05:04		20:02 (76)	04:27		20:08 (76)
	16:23	19	12:56 (10)	17:38			18:44	20:56	22:04	13	20:15 (76)	22:49	18	20:26 (76)
19	09:10		12:38 (10)	08:02			06:44	06:16	05:02		20:01 (76)	04:26		20:09 (76)
	16:25	20	12:58 (10)	17:40			18:47	20:58	22:06	14	20:15 (76)	22:49	17	20:26 (76)
20	09:08		12:38 (18)	07:59			06:41	06:13	05:00		20:01 (76)	04:26		20:09 (76)
	16:27	21	12:59 (10)	17:43			18:49	21:00	22:08	16	20:17 (76)	22:50	17	20:26 (76)
21	09:07		12:35 (18)	07:57			06:38	06:10	04:58		20:01 (76)	04:27		20:09 (76)
	16:30	23	12:58 (10)	17:45			18:51	21:03	22:10	16	20:17 (76)	22:50	17	20:26 (76)
22	09:05		12:34 (18)	07:54			06:35	06:07	04:56		20:00 (76)	04:27		20:09 (76)
	16:32	29	14:14 (16)	17:48			18:54	21:05	22:12	18	20:18 (76)	22:50	17	20:26 (76)
23	09:03		12:34 (18)	07:52			06:33	06:05	04:54		20:00 (76)	04:27		20:09 (76)
	16:34	36	14:18 (16)	17:50			18:56	21:07	22:14	20	20:20 (76)	22:50	17	20:26 (76)
24	09:01		12:33 (18)	07:49			06:30	06:02	04:52		20:00 (76)	04:27		20:09 (76)
	16:37	41	14:20 (16)	17:52			18:58	21:10	22:16	20	20:20 (76)	22:50	18	20:27 (76)
25	09:00		12:33 (18)	07:46			06:27	05:59	04:50		20:00 (76)	04:28		20:09 (76)
	16:39	44	14:22 (16)	17:55			19:00	21:12	22:18	22	20:22 (76)	22:50	18	20:27 (76)
26	08:58		12:32 (18)	07:43			06:24	05:57	04:49		20:00 (76)	04:28		20:10 (76)
	16:41	46	14:23 (16)	17:57			19:03	21:14	22:20	22	20:22 (76)	22:50	18	20:28 (76)
27	08:56		10:54 (13)	07:41			06:21	05:54	04:47		20:00 (76)	04:29		20:09 (76)
	16:44	54	14:24 (16)	18:00			19:05	21:17	22:22	23	20:23 (76)	22:50	18	20:27 (76)
28	08:54		10:52 (13)	07:38			06:18	05:51	04:45		20:00 (76)	04:29		20:10 (76)
	16:46	67	14:25 (16)	18:02			19:07	21:19	22:24	24	20:24 (76)	22:50	18	20:28 (76)
29	08:52		10:51 (13)				07:15	05:49	04:44		20:00 (76)	04:30		20:10 (76)
	16:49	70	14:26 (16)				20:10	21:21	22:25	25	20:25 (76)	22:49	19	20:29 (76)
30	08:50		10:51 (13)				07:12	05:46	04:42		20:00 (76)	04:31		20:09 (76)
	16:51	71	14:26 (16)				20:12	21:23	22:27	25	20:25 (76)	22:49	20	20:29 (76)
31	08:48		10:51 (13)				07:09		04:41		20:01 (76)			
	16:53	74	14:27 (16)				20:14		22:29	24	20:25 (76)			
Potential sun hours	221			260			365	432	521			547		
Total, worst case		663			630					313			589	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** O - Buevegen 2023 (15)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July			August		September		October			November			December
1	04:32		20:09 (76)	05:24		06:33		07:39			07:51		10:26 (13)	09:00
	22:48	20	20:29 (76)	22:01		20:40		19:13			16:49	35	13:50 (16)	15:51
2	04:33		20:09 (76)	05:26		06:35		07:41			07:54		10:25 (13)	09:01
	22:48	21	20:30 (76)	21:58		20:37		19:10			16:46	48	13:53 (16)	15:50
3	04:34		20:10 (76)	05:28		06:37		07:44			07:56		10:24 (13)	09:03
	22:47	20	20:30 (76)	21:56		20:34		19:07			16:44	57	13:55 (16)	15:49
4	04:35		20:09 (76)	05:30		06:40		07:46			07:58		10:22 (13)	09:05
	22:46	22	20:31 (76)	21:54		20:31		19:04			16:41	62	13:55 (16)	15:48
5	04:36		20:09 (76)	05:33		06:42		07:48			08:01		10:22 (13)	09:07
	22:46	22	20:31 (76)	21:51		20:28		19:01			16:39	67	13:56 (16)	15:47
6	04:37		20:09 (76)	05:35		06:44		07:50			08:03		10:22 (13)	09:09
	22:45	22	20:31 (76)	21:49		20:25		18:59			16:37	70	13:57 (16)	15:46
7	04:38		20:09 (76)	05:37		06:46		07:53			08:06		10:21 (13)	09:10
	22:44	23	20:32 (76)	21:46		20:22		18:56			16:34	72	13:57 (16)	15:45
8	04:40		20:09 (76)	05:39		06:48		07:55			08:08		10:21 (13)	09:12
	22:43	23	20:32 (76)	21:44		20:19		18:53			16:32	73	13:57 (16)	15:45
9	04:41		20:10 (76)	05:41		06:51		07:57			08:10		10:22 (13)	09:13
	22:42	23	20:33 (76)	21:42		20:17		18:50			16:30	74	13:58 (16)	15:44
10	04:42		20:09 (76)	05:44		06:53		08:00			08:13		10:22 (13)	09:15
	22:40	24	20:33 (76)	21:39		20:14		18:47			16:28	72	13:58 (16)	15:43
11	04:44		20:09 (76)	05:46		06:55		08:02			08:15		10:22 (13)	09:16
	22:39	24	20:33 (76)	21:37		20:11		18:44			16:25	73	13:57 (16)	15:43
12	04:46		20:08 (76)	05:48		06:57		08:04			08:18		10:22 (13)	09:17
	22:38	25	20:33 (76)	21:34		20:08		18:42			16:23	72	13:58 (16)	15:42
13	04:47		20:09 (76)	05:50		06:59		08:06			08:20		10:23 (13)	09:19
	22:36	25	20:34 (76)	21:31		20:05		18:39			16:21	70	13:58 (16)	15:42
14	04:49		20:09 (76)	05:53		07:02		08:09			08:22		10:23 (13)	09:20
	22:35	25	20:34 (76)	21:29		20:02		18:36			16:19	68	13:57 (16)	15:42
15	04:50		20:09 (76)	05:55		07:04		08:11			08:25		10:27 (13)	09:21
	22:34	24	20:33 (76)	21:26		19:59		18:33			16:17	53	13:56 (16)	15:42
16	04:52		20:09 (76)	05:57		07:06		08:13			08:27		12:05 (18)	09:22
	22:32	23	20:32 (76)	21:24		19:56		18:31			16:15	46	13:56 (16)	15:42
17	04:54		20:09 (76)	05:59		07:08		08:16			08:29		12:06 (18)	09:23
	22:30	23	20:32 (76)	21:21		19:53		18:28			16:13	44	13:55 (16)	15:42
18	04:56		20:10 (76)	06:02		07:10		08:18			08:32		12:07 (18)	09:24
	22:29	22	20:32 (76)	21:18		19:51		18:25			16:11	41	13:54 (16)	15:42
19	04:58		20:09 (76)	06:04		07:13		08:20			08:34		12:09 (18)	09:25
	22:27	21	20:30 (76)	21:16		19:48		18:22			16:09	36	13:53 (16)	15:42
20	04:59		20:10 (76)	06:06		07:15		08:23			08:36		12:09 (18)	09:25
	22:25	20	20:30 (76)	21:13		19:45		18:20			16:07	29	13:49 (16)	15:42
21	05:01		20:10 (76)	06:08		07:17		08:25			08:39		12:11 (18)	09:26
	22:23	18	20:28 (76)	21:10		19:42		18:17			16:06	23	12:34 (10)	15:43
22	05:03		20:10 (76)	06:11		07:19		08:27			08:41		12:14 (18)	09:27
	22:22	18	20:28 (76)	21:07		19:39		18:14			16:04	21	12:35 (10)	15:43
23	05:05		20:11 (76)	06:13		07:21		08:30			08:43		12:14 (10)	09:27
	22:20	16	20:27 (76)	21:05		19:36		18:12			16:02	20	12:34 (10)	15:44
24	05:07		20:12 (76)	06:15		07:24		08:32			08:45		12:15 (10)	09:28
	22:18	15	20:27 (76)	21:02		19:33		18:09			16:01	20	12:35 (10)	15:44
25	05:09		20:13 (76)	06:17		07:26		07:34			08:47		12:16 (10)	09:28
	22:16	13	20:26 (76)	20:59		19:30		17:06			15:59	18	12:34 (10)	15:45
26	05:11		20:12 (76)	06:20		07:28		07:37			08:49		12:17 (10)	09:28
	22:14	13	20:25 (76)	20:56		19:27		17:04			15:58	17	12:34 (10)	15:46
27	05:13		20:14 (76)	06:22		07:30		07:39			08:52		12:18 (10)	09:28
	22:12	10	20:24 (76)	20:54		19:24		17:01			15:56	7	12:25 (10)	15:47
28	05:15		20:15 (76)	06:24		07:32		07:42			08:54		12:19 (10)	09:28
	22:09	8	20:23 (76)	20:51		19:21		16:59			15:55	6	12:25 (10)	15:48
29	05:18		20:17 (76)	06:26		07:35		07:44			08:56			09:28
	22:07	6	20:23 (76)	20:48		19:19		16:56			15:53			15:49
30	05:20		20:20 (76)	06:28		07:37		07:46			08:58			09:28
	22:05	2	20:22 (76)	20:45		19:16		16:54			15:52			15:50
31	05:22			06:31				07:49		12:11 (18)				09:28
	22:03			20:42				16:51	10	12:21 (18)				15:51
Potential sun hours	546			478		386		319			236			199
Total, worst case		571					10					1294		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** P - Buevegen 2021 (16)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April	May			June		
1	09:28			08:46		10:45 (13)	07:35	07:07	05:44			04:40		20:04 (76)
	15:53			16:56	73	14:22 (16)	18:04	20:17	21:26			22:30	22	20:26 (76)
2	09:27			08:43		10:46 (13)	07:32	07:04	05:41			04:38		20:04 (76)
	15:54			16:58	74	14:23 (16)	18:07	20:19	21:28			22:32	23	20:27 (76)
3	09:27			08:41		10:45 (13)	07:30	07:01	05:39			04:37		20:04 (76)
	15:55			17:01	74	14:22 (16)	18:09	20:21	21:30			22:34	24	20:28 (76)
4	09:26			08:39		10:46 (13)	07:27	06:58	05:36			04:36		20:04 (76)
	15:57			17:03	73	14:23 (16)	18:12	20:23	21:33			22:35	24	20:28 (76)
5	09:26			08:37		10:46 (13)	07:24	06:55	05:34			04:35		20:04 (76)
	15:58			17:06	71	14:22 (16)	18:14	20:26	21:35			22:36	25	20:29 (76)
6	09:25			08:34		10:47 (13)	07:21	06:52	05:31			04:34		20:04 (76)
	16:00			17:08	68	14:22 (16)	18:16	20:28	21:37			22:38	25	20:29 (76)
7	09:24			08:32		10:47 (13)	07:18	06:49	05:29			04:33		20:04 (76)
	16:02			17:11	65	14:21 (16)	18:19	20:30	21:40			22:39	25	20:29 (76)
8	09:24			08:30		10:48 (13)	07:16	06:47	05:26			04:32		20:05 (76)
	16:03			17:13	59	14:21 (16)	18:21	20:33	21:42			22:40	26	20:31 (76)
9	09:23			08:27		10:49 (13)	07:13	06:44	05:24			04:31		20:05 (76)
	16:05			17:16	52	14:19 (16)	18:23	20:35	21:44			22:42	25	20:30 (76)
10	09:22			08:25		10:50 (13)	07:10	06:41	05:22			04:30		20:06 (76)
	16:07			17:18	41	14:16 (16)	18:26	20:37	21:46			22:43	25	20:31 (76)
11	09:21			08:22		10:53 (13)	07:07	06:38	05:19			04:29		20:06 (76)
	16:09			17:21	23	12:47 (18)	18:28	20:40	21:49			22:44	25	20:31 (76)
12	09:20			08:20		12:38 (18)	07:04	06:35	05:17			04:29		20:06 (76)
	16:11			17:23	3	12:41 (18)	18:30	20:42	21:51			22:45	25	20:31 (76)
13	09:18			08:17			07:01	06:32	05:15			04:28		20:06 (76)
	16:13			17:25			18:33	20:44	21:53			22:46	25	20:31 (76)
14	09:17			08:15			06:59	06:30	05:12			04:28		20:07 (76)
	16:15			17:28			18:35	20:46	21:55			22:46	24	20:31 (76)
15	09:16			08:12			06:56	06:27	05:10			04:27		20:07 (76)
	16:17			17:30			18:37	20:49	21:57			22:47	24	20:31 (76)
16	09:14		12:49 (10)	08:10			06:53	06:24	05:08			04:27		20:08 (76)
	16:19	1	12:50 (10)	17:33			18:40	20:51	22:00			22:48	24	20:32 (76)
17	09:13		12:33 (10)	08:07			06:50	06:21	05:06			04:27		20:08 (76)
	16:21	5	12:50 (10)	17:35			18:42	20:53	22:02			22:48	24	20:32 (76)
18	09:12		12:33 (10)	08:05			06:47	06:18	05:04		20:10 (76)	04:27		20:08 (76)
	16:23	18	12:51 (10)	17:38			18:44	20:56	22:04	5	20:15 (76)	22:49	24	20:32 (76)
19	09:10		12:34 (10)	08:02			06:44	06:16	05:02		20:08 (76)	04:26		20:08 (76)
	16:25	19	12:53 (10)	17:40			18:47	20:58	22:06	8	20:16 (76)	22:49	24	20:32 (76)
20	09:08		12:33 (10)	07:59			06:41	06:13	05:00		20:07 (76)	04:26		20:09 (76)
	16:27	21	12:54 (10)	17:43			18:49	21:00	22:08	10	20:17 (76)	22:50	23	20:32 (76)
21	09:07		12:31 (18)	07:57			06:38	06:10	04:58		20:06 (76)	04:27		20:09 (76)
	16:30	22	12:53 (10)	17:45			18:51	21:03	22:10	12	20:18 (76)	22:50	23	20:32 (76)
22	09:05		12:29 (18)	07:54			06:35	06:07	04:56		20:05 (76)	04:27		20:09 (76)
	16:32	26	14:06 (16)	17:48			18:54	21:05	22:12	13	20:18 (76)	22:50	23	20:32 (76)
23	09:03		12:28 (18)	07:52			06:33	06:05	04:54		20:05 (76)	04:27		20:09 (76)
	16:34	36	14:13 (16)	17:50			18:56	21:07	22:14	15	20:20 (76)	22:50	23	20:32 (76)
24	09:01		12:27 (18)	07:49			06:30	06:02	04:52		20:04 (76)	04:27		20:09 (76)
	16:37	42	14:15 (16)	17:52			18:58	21:10	22:16	16	20:20 (76)	22:50	24	20:33 (76)
25	09:00		12:27 (18)	07:46			06:27	05:59	04:50		20:04 (76)	04:28		20:09 (76)
	16:39	44	14:17 (16)	17:55			19:00	21:12	22:18	17	20:21 (76)	22:50	24	20:33 (76)
26	08:58		12:26 (18)	07:43			06:24	05:57	04:49		20:03 (76)	04:28		20:10 (76)
	16:41	49	14:19 (16)	17:57			19:03	21:14	22:20	18	20:21 (76)	22:50	24	20:34 (76)
27	08:56		12:25 (18)	07:41			06:21	05:54	04:47		20:04 (76)	04:29		20:09 (76)
	16:44	50	14:19 (16)	18:00			19:05	21:17	22:22	18	20:22 (76)	22:50	24	20:33 (76)
28	08:54		12:25 (18)	07:38			06:18	05:51	04:45		20:04 (76)	04:29		20:10 (76)
	16:46	51	14:20 (16)	18:02			19:07	21:19	22:24	20	20:24 (76)	22:50	24	20:34 (76)
29	08:52		10:48 (13)				07:15	05:49	04:44		20:03 (76)	04:30		20:10 (76)
	16:49	53	14:21 (16)				20:10	21:21	22:25	21	20:24 (76)	22:49	25	20:35 (76)
30	08:50		10:46 (13)				07:12	05:46	04:42		20:03 (76)	04:31		20:10 (76)
	16:51	55	14:21 (16)				20:12	21:23	22:27	22	20:25 (76)	22:49	24	20:34 (76)
31	08:48		10:46 (13)				07:09		04:41		20:03 (76)			
	16:53	69	14:22 (16)				20:14		22:29	22	20:25 (76)			
Potential sun hours	221			260			365	432	521			547		
Total, worst case		561			676					217			724	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** P - Buevegen 2021 (16)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July			August			September			October			November			December		
1	04:32		20:10 (76)	05:24			06:33			07:39			07:51			10:19 (13)		09:00
	22:48	25	20:35 (76)	22:01			20:40			19:13			16:49	44		13:46 (16)		15:51
2	04:33		20:10 (76)	05:26			06:35			07:41			07:54			10:18 (13)		09:01
	22:48	25	20:35 (76)	21:58			20:37			19:10			16:46	55		13:49 (16)		15:50
3	04:34		20:10 (76)	05:28			06:37			07:44			07:56			10:18 (13)		09:03
	22:47	26	20:36 (76)	21:56			20:34			19:07			16:44	60		13:50 (16)		15:49
4	04:35		20:11 (76)	05:30			06:40			07:46			07:58			10:16 (13)		09:05
	22:46	25	20:36 (76)	21:54			20:31			19:04			16:41	65		13:51 (16)		15:48
5	04:36		20:11 (76)	05:33			06:42			07:48			08:01			10:16 (13)		09:07
	22:46	25	20:36 (76)	21:51			20:28			19:01			16:39	70		13:52 (16)		15:47
6	04:37		20:11 (76)	05:35			06:44			07:50			08:03			10:16 (13)		09:09
	22:45	25	20:36 (76)	21:49			20:25			18:59			16:37	73		13:53 (16)		15:46
7	04:38		20:11 (76)	05:37			06:46			07:53			08:06			10:16 (13)		09:10
	22:44	24	20:35 (76)	21:46			20:22			18:56			16:34	73		13:52 (16)		15:45
8	04:40		20:11 (76)	05:39			06:48			07:55			08:08			10:16 (13)		09:12
	22:43	24	20:35 (76)	21:44			20:19			18:53			16:32	73		13:53 (16)		15:45
9	04:41		20:11 (76)	05:41			06:51			07:57			08:10			10:16 (13)		09:13
	22:42	24	20:35 (76)	21:42			20:17			18:50			16:30	75		13:53 (16)		15:44
10	04:42		20:11 (76)	05:44			06:53			08:00			08:13			10:17 (13)		09:15
	22:40	24	20:35 (76)	21:39			20:14			18:47			16:28	74		13:54 (16)		15:43
11	04:44		20:11 (76)	05:46			06:55			08:02			08:15			10:17 (13)		09:16
	22:39	23	20:34 (76)	21:37			20:11			18:44			16:25	69		13:53 (16)		15:43
12	04:46		20:11 (76)	05:48			06:57			08:04			08:18			10:18 (13)		09:17
	22:38	22	20:33 (76)	21:34			20:08			18:42			16:23	53		13:53 (16)		15:42
13	04:47		20:12 (76)	05:50			06:59			08:06			08:20			10:20 (13)		09:19
	22:36	21	20:33 (76)	21:31			20:05			18:39			16:21	53		13:53 (16)		15:42
14	04:49		20:12 (76)	05:53			07:02			08:09			08:22			11:57 (18)		09:20
	22:35	21	20:33 (76)	21:29			20:02			18:36			16:19	51		13:52 (16)		15:42
15	04:50		20:12 (76)	05:55			07:04			08:11			08:25			11:58 (18)		09:21
	22:34	21	20:33 (76)	21:26			19:59			18:33			16:17	50		13:52 (16)		15:42
16	04:52		20:12 (76)	05:57			07:06			08:13			08:27			11:59 (18)		09:22
	22:32	20	20:32 (76)	21:24			19:56			18:31			16:15	49		13:52 (16)		15:42
17	04:54		20:13 (76)	05:59			07:08			08:16			08:29			12:00 (18)		09:23
	22:30	18	20:31 (76)	21:21			19:53			18:28			16:13	44		13:50 (16)		15:42
18	04:56		20:14 (76)	06:02			07:10			08:18			08:32			12:01 (18)		09:24
	22:29	17	20:31 (76)	21:18			19:51			18:25			16:11	42		13:49 (16)		15:42
19	04:58		20:14 (76)	06:04			07:13			08:20			08:34			12:03 (18)		09:25
	22:27	16	20:30 (76)	21:16			19:48			18:22			16:09	36		13:48 (16)		15:42
20	04:59		20:15 (76)	06:06			07:15			08:23			08:36			12:04 (18)		09:25
	22:25	15	20:30 (76)	21:13			19:45			18:20			16:07	26		13:41 (16)		15:42
21	05:01		20:15 (76)	06:08			07:17			08:25			08:39			12:07 (18)		09:26
	22:23	13	20:28 (76)	21:10			19:42			18:17			16:06	22		12:29 (10)		15:43
22	05:03		20:16 (76)	06:11			07:19			08:27			08:41			12:10 (10)		09:27
	22:22	12	20:28 (76)	21:07			19:39			18:14			16:04	20		12:30 (10)		15:43
23	05:05		20:17 (76)	06:13			07:21			08:30			08:43			12:10 (10)		09:27
	22:20	10	20:27 (76)	21:05			19:36			18:12			16:02	19		12:29 (10)		15:44
24	05:07		20:18 (76)	06:15			07:24			08:32			08:45			12:11 (10)		09:28
	22:18	9	20:27 (76)	21:02			19:33			18:09			16:01	18		12:29 (10)		15:44
25	05:09		20:20 (76)	06:17			07:26			07:34			08:47			12:11 (10)		09:28
	22:16	6	20:26 (76)	20:59			19:30			17:06			15:59	7		12:29 (10)		15:45
26	05:11		20:21 (76)	06:20			07:28			07:37			08:49			12:28 (10)		09:28
	22:14	4	20:25 (76)	20:56			19:27			17:04			15:58	1		12:29 (10)		15:46
27	05:13			06:22			07:30			07:39			08:52					09:28
	22:12			20:54			19:24			17:01			15:56					15:47
28	05:15			06:24			07:32			07:42			08:54					09:28
	22:09			20:51			19:22			16:59			15:55					15:48
29	05:18			06:26			07:35			07:44			08:56					09:28
	22:07			20:48			19:19			16:56			15:53					15:49
30	05:20			06:28			07:37			07:46		10:26 (13)	08:58					09:28
	22:05			20:45			19:16			16:54	8	12:13 (18)	15:52					15:50
31	05:22			06:31						07:49		10:22 (13)						09:28
	22:03			20:42						16:51	25	12:17 (18)						15:51
Potential sun hours	546			478			386			319			236					199
Total, worst case		495									33			1222				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** Q - Buevegen 2141 (17)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April			May			June		
1	09:28		12:03 (27)	08:45		14:59 (18)	07:35	07:07			05:44			04:39		20:33 (78)
	15:52	20	12:23 (27)	16:56	18	15:17 (18)	18:04	20:16			21:26			22:30	8	20:41 (78)
2	09:27		12:03 (27)	08:43		14:59 (18)	07:32	07:04			05:41			04:38		20:33 (78)
	15:54	20	12:23 (27)	16:58	19	15:18 (18)	18:07	20:19			21:28			22:32	9	20:42 (78)
3	09:27		12:03 (27)	08:41		14:58 (18)	07:30	07:01			05:38			04:37		20:33 (78)
	15:55	20	12:23 (27)	17:01	19	15:17 (18)	18:09	20:21			21:30			22:33	9	20:42 (78)
4	09:26		12:03 (27)	08:39		14:59 (18)	07:27	06:58			05:36			04:36		20:33 (78)
	15:57	21	12:24 (27)	17:03	19	15:18 (18)	18:12	20:23			21:33			22:35	10	20:43 (78)
5	09:26		12:04 (27)	08:37		14:59 (18)	07:24	06:55			05:33			04:34		20:33 (78)
	15:58	25	13:33 (13)	17:06	19	15:18 (18)	18:14	20:26			21:35			22:36	11	20:44 (78)
6	09:25		12:04 (27)	08:34		15:00 (18)	07:21	06:52		19:35 (76)	05:31			04:33		20:33 (78)
	16:00	29	13:35 (13)	17:08	18	15:18 (18)	18:16	20:28	2	19:37 (76)	21:37			22:38	11	20:44 (78)
7	09:24		12:05 (27)	08:32		15:00 (18)	07:18	06:49		19:31 (76)	05:29			04:32		20:33 (78)
	16:01	31	13:37 (13)	17:11	17	15:17 (18)	18:19	20:30	9	19:40 (76)	21:39			22:39	12	20:45 (78)
8	09:23		12:06 (27)	08:30		15:00 (18)	07:16	06:46		19:31 (76)	05:26			04:31		20:34 (78)
	16:03	32	13:38 (13)	17:13	16	15:16 (18)	18:21	20:33	11	19:42 (76)	21:42			22:40	12	20:46 (78)
9	09:23		12:06 (27)	08:27		15:02 (18)	07:13	06:44		19:29 (76)	05:24			04:31		20:34 (78)
	16:05	33	13:39 (13)	17:15	14	15:16 (18)	18:23	20:35	13	19:42 (76)	21:44			22:42	12	20:46 (78)
10	09:22		12:07 (27)	08:25		15:03 (18)	07:10	06:41		19:29 (76)	05:21			04:30		20:35 (78)
	16:07	34	13:40 (13)	17:18	11	15:14 (18)	18:26	20:37	13	19:42 (76)	21:46			22:43	12	20:47 (78)
11	09:21		12:07 (27)	08:22		15:07 (18)	07:07	06:38		19:28 (76)	05:19			04:29		20:35 (78)
	16:09	35	13:41 (13)	17:20	5	15:12 (18)	18:28	20:39	13	19:41 (76)	21:49			22:44	13	20:48 (78)
12	09:19		12:08 (27)	08:20			07:04	06:35		19:28 (76)	05:17			04:29		20:35 (78)
	16:11	35	13:42 (13)	17:23			18:30	20:42	12	19:40 (76)	21:51			22:45	13	20:48 (78)
13	09:18		12:08 (27)	08:17			07:01	06:32		19:29 (76)	05:15		20:19 (79)	04:28		20:35 (78)
	16:12	36	13:43 (13)	17:25			18:33	20:44	16	19:46 (77)	21:53	1	20:20 (79)	22:46	13	20:48 (78)
14	09:17		12:10 (27)	08:15			06:58	06:29		19:30 (76)	05:12		20:20 (79)	04:28		20:36 (78)
	16:14	35	13:44 (13)	17:28			18:35	20:46	16	19:47 (77)	21:55	1	20:21 (79)	22:46	13	20:49 (78)
15	09:16		12:11 (27)	08:12			06:56	06:27		19:37 (77)	05:10		20:21 (79)	04:27		20:36 (78)
	16:17	34	13:45 (13)	17:30			18:37	20:49	10	19:47 (77)	21:57	2	20:23 (79)	22:47	14	20:50 (78)
16	09:14		12:12 (27)	08:10			06:53	06:24		19:37 (77)	05:08		20:22 (79)	04:27		20:37 (78)
	16:19	32	13:45 (13)	17:33			18:40	20:51	12	19:49 (77)	22:00	2	20:24 (79)	22:48	13	20:50 (78)
17	09:13		12:14 (27)	08:07			06:50	06:21		19:36 (77)	05:06		20:22 (79)	04:27		20:36 (78)
	16:21	29	13:45 (13)	17:35			18:42	20:53	14	19:50 (77)	22:02	3	20:25 (79)	22:48	14	20:50 (78)
18	09:11		12:16 (27)	08:05			06:47	06:18		19:35 (77)	05:04		20:24 (79)	04:26		20:36 (78)
	16:23	26	13:46 (13)	17:38			18:44	20:56	16	19:51 (77)	22:04	3	20:27 (79)	22:49	14	20:50 (78)
19	09:10		13:25 (13)	08:02			06:44	06:16		19:35 (77)	05:02		20:25 (79)	04:26		20:37 (78)
	16:25	21	13:46 (13)	17:40			18:47	20:58	16	19:51 (77)	22:06	3	20:28 (79)	22:49	14	20:51 (78)
20	09:08		13:25 (13)	07:59			06:41	06:13		19:35 (77)	05:00			04:26		20:38 (78)
	16:27	22	13:47 (13)	17:43			18:49	21:00	15	19:50 (77)	22:08			22:50	14	20:52 (78)
21	09:07		13:26 (13)	07:57			06:38	06:10		19:35 (77)	04:58			04:26		20:38 (78)
	16:30	21	13:47 (13)	17:45			18:51	21:03	13	19:48 (77)	22:10			22:50	14	20:52 (78)
22	09:05		13:26 (13)	07:54			06:35	06:07		19:37 (77)	04:56			04:27		20:38 (78)
	16:32	21	13:47 (13)	17:48			18:54	21:05	11	19:48 (77)	22:12			22:50	14	20:52 (78)
23	09:03		13:27 (13)	07:51			06:33	06:05		19:38 (77)	04:54			04:27		20:38 (78)
	16:34	20	13:47 (13)	17:50			18:56	21:07	7	19:45 (77)	22:14			22:50	14	20:52 (78)
24	09:01		13:28 (13)	07:49			06:30	06:02			04:52			04:27		20:38 (78)
	16:37	19	13:47 (13)	17:52			18:58	21:09			22:16			22:50	14	20:52 (78)
25	09:00		13:29 (13)	07:46			06:27	05:59			04:50		20:33 (78)	04:28		20:38 (78)
	16:39	18	13:47 (13)	17:55			19:00	21:12			22:18	2	20:35 (78)	22:50	14	20:52 (78)
26	08:58		13:30 (13)	07:43			06:24	05:57			04:49		20:32 (78)	04:28		20:39 (78)
	16:41	17	13:47 (13)	17:57			19:03	21:14			22:20	3	20:35 (78)	22:50	14	20:53 (78)
27	08:56		13:30 (13)	07:41			06:21	05:54			04:47		20:33 (78)	04:29		20:38 (78)
	16:44	21	15:09 (18)	18:00			19:05	21:16			22:22	3	20:36 (78)	22:50	14	20:52 (78)
28	08:54		13:32 (13)	07:38			06:18	05:51			04:45		20:33 (78)	04:29		20:39 (78)
	16:46	23	15:12 (18)	18:02			19:07	21:19			22:23	4	20:37 (78)	22:50	13	20:52 (78)
29	08:52		13:35 (13)				07:15	05:49			04:44		20:32 (78)	04:30		20:38 (78)
	16:48	21	15:14 (18)				20:10	21:21			22:25	5	20:37 (78)	22:49	14	20:52 (78)
30	08:50		15:00 (18)				07:12	05:46			04:42		20:32 (78)	04:31		20:39 (78)
	16:51	15	15:15 (18)				20:12	21:23			22:27	7	20:39 (78)	22:49	13	20:52 (78)
31	08:48		15:00 (18)				07:09				04:41		20:32 (78)			
	16:53	16	15:16 (18)				20:14				22:29	8	20:40 (78)			
Potential sun hours	221			260			365	432			521			547		
Total, worst case		782			175				219			47			379	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** Q - Buevegen 2141 (17)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July			August			September			October			November			December		
1	04:32		20:39 (78)	05:24			06:33		19:27 (76)	07:39			07:51		14:32 (18)	08:59		11:49 (27)
	22:48	13	20:52 (78)	22:01			20:39	13	19:40 (76)	19:13			16:48	12	14:44 (18)	15:51	34	13:23 (13)
2	04:33		20:39 (78)	05:26			06:35		19:27 (76)	07:41			07:54		14:31 (18)	09:01		11:50 (27)
	22:48	13	20:52 (78)	21:58			20:37	13	19:40 (76)	19:10			16:46	15	14:46 (18)	15:50	35	13:24 (13)
3	04:34		20:39 (78)	05:28			06:37		19:27 (76)	07:44			07:56		14:31 (18)	09:03		11:50 (27)
	22:47	13	20:52 (78)	21:56			20:34	13	19:40 (76)	19:07			16:44	16	14:47 (18)	15:49	33	13:23 (13)
4	04:35		20:39 (78)	05:30			06:39		19:28 (76)	07:46			07:58		14:29 (18)	09:05		11:50 (27)
	22:46	13	20:52 (78)	21:54			20:31	11	19:39 (76)	19:04			16:41	18	14:47 (18)	15:48	33	13:23 (13)
5	04:36		20:40 (78)	05:33			06:42		19:28 (76)	07:48			08:01		14:29 (18)	09:07		11:50 (27)
	22:46	11	20:51 (78)	21:51			20:28	9	19:37 (76)	19:01			16:39	19	14:48 (18)	15:47	31	13:22 (13)
6	04:37		20:40 (78)	05:35			06:44		19:31 (76)	07:50			08:03		14:29 (18)	09:08		11:50 (27)
	22:45	11	20:51 (78)	21:49			20:25	2	19:33 (76)	18:58			16:36	19	14:48 (18)	15:46	29	13:21 (13)
7	04:38		20:40 (78)	05:37			06:46			07:53			08:06		14:29 (18)	09:10		11:51 (27)
	22:44	10	20:50 (78)	21:46			20:22			18:56			16:34	19	14:48 (18)	15:45	25	13:20 (13)
8	04:40		20:39 (78)	05:39			06:48			07:55			08:08		14:29 (18)	09:12		11:51 (27)
	22:43	11	20:50 (78)	21:44			20:19			18:53			16:32	19	14:48 (18)	15:44	21	12:12 (27)
9	04:41		20:39 (78)	05:41			06:51			07:57			08:10		14:30 (18)	09:13		11:51 (27)
	22:42	10	20:49 (78)	21:41			20:17			18:50			16:30	18	14:48 (18)	15:44	21	12:12 (27)
10	04:42		20:40 (78)	05:44			06:53			07:59			08:13		14:29 (18)	09:15		11:52 (27)
	22:40	9	20:49 (78)	21:39			20:14			18:47			16:27	18	14:47 (18)	15:43	20	12:12 (27)
11	04:44		20:40 (78)	05:46			06:55			08:02			08:15		14:30 (18)	09:16		11:53 (27)
	22:39	9	20:49 (78)	21:36			20:11			18:44			16:25	17	14:47 (18)	15:43	20	12:13 (27)
12	04:45		20:40 (78)	05:48			06:57			08:04			08:18		14:32 (18)	09:17		11:53 (27)
	22:38	8	20:48 (78)	21:34			20:08			18:42			16:23	15	14:47 (18)	15:42	20	12:13 (27)
13	04:47		20:41 (78)	05:50			06:59			08:06			08:20		13:07 (13)	09:19		11:54 (27)
	22:36	7	20:48 (78)	21:31			20:05			18:39			16:21	21	14:46 (18)	15:42	20	12:14 (27)
14	04:49		20:41 (78)	05:53			07:02			08:09			08:22		13:04 (13)	09:20		11:54 (27)
	22:35	6	20:47 (78)	21:29			20:02			18:36			16:19	23	14:44 (18)	15:42	20	12:14 (27)
15	04:50		20:41 (78)	05:55			07:04			08:11			08:25		13:03 (13)	09:21		11:54 (27)
	22:33	5	20:46 (78)	21:26			19:59			18:33			16:17	21	14:42 (18)	15:42	20	12:14 (27)
16	04:52		20:41 (78)	05:57			07:06			08:13			08:27		13:03 (13)	09:22		11:55 (27)
	22:32	4	20:45 (78)	21:23			19:56			18:30			16:15	17	13:20 (13)	15:42	20	12:15 (27)
17	04:54		20:42 (78)	05:59			07:08			08:16			08:29		13:02 (13)	09:23		11:55 (27)
	22:30	3	20:45 (78)	21:21			19:53			18:28			16:13	18	13:20 (13)	15:42	20	12:15 (27)
18	04:56		20:42 (78)	06:02			07:10			08:18			08:32		13:02 (13)	09:24		11:56 (27)
	22:29	2	20:44 (78)	21:18			19:50			18:25			16:11	19	13:21 (13)	15:42	19	12:15 (27)
19	04:57		20:43 (78)	06:04			07:13			08:20			08:34		13:02 (13)	09:25		11:56 (27)
	22:27	1	20:44 (78)	21:15			19:48			18:22			16:09	20	13:22 (13)	15:42	20	12:16 (27)
20	04:59			06:06		19:44 (77)	07:15			08:23			08:36		13:01 (13)	09:25		11:57 (27)
	22:25			21:13	7	19:51 (77)	19:45			18:20			16:07	21	13:22 (13)	15:42	20	12:17 (27)
21	05:01			06:08		19:41 (77)	07:17			08:25			08:38		13:02 (13)	09:26		11:57 (27)
	22:23			21:10	11	19:52 (77)	19:42			18:17			16:06	21	13:23 (13)	15:43	20	12:17 (27)
22	05:03			06:10		19:40 (77)	07:19			08:27			08:41		13:02 (13)	09:27		11:58 (27)
	22:22			21:07	13	19:53 (77)	19:39			18:14			16:04	22	13:24 (13)	15:43	20	12:18 (27)
23	05:05			06:13		19:39 (77)	07:21			08:30			08:43		13:02 (13)	09:27		11:58 (27)
	22:20			21:05	15	19:54 (77)	19:36			18:12			16:02	21	13:23 (13)	15:44	20	12:18 (27)
24	05:07			06:15		19:39 (77)	07:24			08:32			08:45		11:54 (27)	09:27		11:58 (27)
	22:18			21:02	16	19:55 (77)	19:33			18:09			16:01	26	13:24 (13)	15:44	20	12:18 (27)
25	05:09		20:34 (79)	06:17		19:39 (77)	07:26			07:34			08:47		11:52 (27)	09:28		11:59 (27)
	22:16	3	20:37 (79)	20:59	15	19:54 (77)	19:30			17:06			15:59	30	13:24 (13)	15:45	20	12:19 (27)
26	05:11		20:33 (79)	06:19		19:38 (77)	07:28			07:37			08:49		11:51 (27)	09:28		12:00 (27)
	22:14	3	20:36 (79)	20:56	14	19:52 (77)	19:27			17:04			15:57	32	13:24 (13)	15:46	20	12:20 (27)
27	05:13		20:32 (79)	06:22		19:38 (77)	07:30			07:39			08:51		11:50 (27)	09:28		12:00 (27)
	22:12	3	20:35 (79)	20:54	12	19:50 (77)	19:24			17:01			15:56	34	13:24 (13)	15:47	20	12:20 (27)
28	05:15		20:31 (79)	06:24		19:39 (77)	07:32			07:42			08:54		11:49 (27)	09:28		12:00 (27)
	22:09	3	20:34 (79)	20:51	10	19:49 (77)	19:21			16:59			15:55	35	13:23 (13)	15:48	20	12:20 (27)
29	05:17		20:31 (79)	06:26		19:31 (76)	07:35			07:44			08:56		11:50 (27)	09:28		12:01 (27)
	22:07	2	20:33 (79)	20:48	17	19:48 (77)	19:19			16:56			15:53	35	13:24 (13)	15:49	20	12:21 (27)
30	05:20		20:31 (79)	06:28		19:29 (76)	07:37			07:46			08:58		11:49 (27)	09:28		12:01 (27)
	22:05	1	20:32 (79)	20:45	16	19:46 (77)	19:16			16:53			15:52	35	13:23 (13)	15:50	21	12:22 (27)
31	05:22			06:31		19:28 (76)				07:49		14:35 (18)				09:28		12:01 (27)
	22:03			20:42	12	19:40 (76)				16:51	6	14:41 (18)				15:51	21	12:22 (27)
Potential sun hours	546			478			386			319			236			199		
Total, worst case		174			158			61			6			656			703	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** R - Buevegen 2165 (18)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April			May			June
1	09:28		12:35 (27)	08:45		14:09 (13)	07:35	07:06			05:44		20:15 (79)	04:39
	15:52	20	12:55 (27)	16:56	5	14:14 (13)	18:04	20:16			21:26	1	20:16 (79)	22:30
2	09:27		12:36 (27)	08:43			07:32	07:04			05:41		20:14 (79)	04:38
	15:54	21	12:57 (27)	16:58			18:07	20:19			21:28	2	20:16 (79)	22:32
3	09:27		12:36 (27)	08:41			07:30	07:01			05:38		20:14 (79)	04:37
	15:55	21	12:57 (27)	17:01			18:09	20:21			21:30	4	20:18 (79)	22:33
4	09:26		12:37 (27)	08:39			07:27	06:58			05:36		20:14 (79)	04:36
	15:57	20	12:57 (27)	17:03			18:12	20:23			21:33	5	20:19 (79)	22:35
5	09:26		12:37 (27)	08:37			07:24	06:55			05:33		20:13 (79)	04:34
	15:58	20	12:57 (27)	17:06			18:14	20:26			21:35	7	20:20 (79)	22:36
6	09:25		12:38 (27)	08:34			07:21	06:52			05:31		20:14 (79)	04:33
	16:00	20	12:58 (27)	17:08			18:16	20:28			21:37	7	20:21 (79)	22:38
7	09:24		12:38 (27)	08:32			07:18	06:49			05:29		20:15 (79)	04:32
	16:01	20	12:58 (27)	17:11			18:19	20:30			21:39	8	20:23 (79)	22:39
8	09:23		12:39 (27)	08:30			07:16	06:46			05:26		20:16 (79)	04:31
	16:03	20	12:59 (27)	17:13			18:21	20:33			21:42	10	20:26 (79)	22:40
9	09:23		12:39 (27)	08:27			07:13	06:44			05:24		20:17 (79)	04:31
	16:05	19	12:58 (27)	17:15			18:23	20:35			21:44	11	20:29 (78)	22:41
10	09:22		12:40 (27)	08:25			07:10	06:41		19:41 (77)	05:21		20:24 (78)	04:30
	16:07	19	12:59 (27)	17:18			18:26	20:37	5	19:46 (77)	21:46	7	20:31 (78)	22:43
11	09:21		12:40 (27)	08:22			07:07	06:38		19:38 (77)	05:19		20:22 (78)	04:29
	16:09	19	12:59 (27)	17:20			18:28	20:39	10	19:48 (77)	21:49	9	20:31 (78)	22:44
12	09:19		12:42 (27)	08:20			07:04	06:35		19:37 (77)	05:17		20:22 (78)	04:29
	16:10	23	14:09 (13)	17:23			18:30	20:42	12	19:49 (77)	21:51	9	20:31 (78)	22:45
13	09:18		12:42 (27)	08:17			07:01	06:32		19:37 (77)	05:15		20:21 (78)	04:28
	16:12	27	14:11 (13)	17:25			18:33	20:44	13	19:50 (77)	21:53	11	20:32 (78)	22:46
14	09:17		12:44 (27)	08:15			06:58	06:29		19:36 (77)	05:12		20:21 (78)	04:27
	16:14	27	14:13 (13)	17:28			18:35	20:46	14	19:50 (77)	21:55	12	20:33 (78)	22:46
15	09:16		12:45 (27)	08:12			06:56	06:27		19:35 (77)	05:10		20:21 (78)	04:27
	16:17	27	14:14 (13)	17:30			18:37	20:49	14	19:49 (77)	21:57	14	20:35 (78)	22:47
16	09:14		12:46 (27)	08:10			06:53	06:24		19:36 (77)	05:08		20:21 (78)	04:27
	16:19	26	14:15 (13)	17:33			18:40	20:51	13	19:49 (77)	21:59	14	20:35 (78)	22:48
17	09:13		12:48 (27)	08:07			06:50	06:21		19:36 (77)	05:06		20:21 (78)	04:27
	16:21	25	14:16 (13)	17:35			18:42	20:53	12	19:48 (77)	22:02	14	20:35 (78)	22:48
18	09:11		13:59 (13)	08:05			06:47	06:18		19:37 (77)	05:04		20:21 (78)	04:26
	16:23	18	14:17 (13)	17:38			18:44	20:56	9	19:46 (77)	22:04	15	20:36 (78)	22:49
19	09:10		13:59 (13)	08:02			06:44	06:16		19:40 (77)	05:02		20:21 (78)	04:26
	16:25	18	14:17 (13)	17:40			18:47	20:58	3	19:43 (77)	22:06	16	20:37 (78)	22:49
20	09:08		13:59 (13)	07:59			06:41	06:13			05:00		20:22 (78)	04:26
	16:27	19	14:18 (13)	17:43			18:49	21:00			22:08	16	20:38 (78)	22:50
21	09:07		13:59 (13)	07:57			06:38	06:10			04:58		20:23 (78)	04:26
	16:30	20	14:19 (13)	17:45			18:51	21:03			22:10	15	20:38 (78)	22:50
22	09:05		13:59 (13)	07:54			06:35	06:07			04:56		20:23 (78)	04:27
	16:32	20	14:19 (13)	17:47			18:54	21:05			22:12	15	20:38 (78)	22:50
23	09:03		13:59 (13)	07:51			06:32	06:05			04:54		20:24 (78)	04:27
	16:34	21	14:20 (13)	17:50			18:56	21:07			22:14	14	20:38 (78)	22:50
24	09:01		14:00 (13)	07:49			06:30	06:02			04:52		20:25 (78)	04:27
	16:36	20	14:20 (13)	17:52			18:58	21:09			22:16	11	20:36 (78)	22:50
25	09:00		14:00 (13)	07:46			06:27	05:59			04:50		20:26 (78)	04:28
	16:39	21	14:21 (13)	17:55			19:00	21:12			22:18	10	20:36 (78)	22:50
26	08:58		14:01 (13)	07:43			06:24	05:57			04:49		20:28 (78)	04:28
	16:41	20	14:21 (13)	17:57			19:03	21:14			22:20	6	20:34 (78)	22:50
27	08:56		14:01 (13)	07:41			06:21	05:54			04:47			04:29
	16:44	19	14:20 (13)	18:00			19:05	21:16			22:22			22:50
28	08:54		14:02 (13)	07:38			06:18	05:51			04:45			04:29
	16:46	18	14:20 (13)	18:02			19:07	21:19			22:23			22:50
29	08:52		14:04 (13)				07:15	05:49			04:44			04:30
	16:48	16	14:20 (13)				20:10	21:21			22:25			22:49
30	08:50		14:04 (13)				07:12	05:46			04:42			04:31
	16:51	14	14:18 (13)				20:12	21:23			22:27			22:49
31	08:48		14:06 (13)				07:09				04:41			
	16:53	11	14:17 (13)				20:14				22:29			
Potential sun hours	221			260			365	432			521			547
Total, worst case		629			5				105			263		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** R - Buevegen 2165 (18)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July			August			September			October	November			December		
1	04:32			05:24		20:33 (78)	06:33		19:37 (77)	07:39	07:51			08:59		12:22 (27)
	22:48			22:01	9	20:42 (78)	20:39	10	19:47 (77)	19:13	16:48			15:51	19	12:41 (27)
2	04:33			05:26		20:34 (78)	06:35		19:39 (77)	07:41	07:54			09:01		12:23 (27)
	22:48			21:58	8	20:42 (78)	20:37	5	19:44 (77)	19:10	16:46			15:50	19	12:42 (27)
3	04:34			05:28		20:30 (79)	06:37			07:44	07:56			09:03		12:23 (27)
	22:47			21:56	8	20:40 (78)	20:34			19:07	16:44			15:49	20	12:43 (27)
4	04:35			05:30		20:26 (79)	06:39			07:46	07:58			09:05		12:23 (27)
	22:46			21:54	10	20:37 (78)	20:31			19:04	16:41			15:48	20	12:43 (27)
5	04:36			05:33		20:25 (79)	06:42			07:48	08:01			09:07		12:24 (27)
	22:46			21:51	9	20:35 (79)	20:28			19:01	16:39			15:47	20	12:44 (27)
6	04:37			05:35		20:24 (79)	06:44			07:50	08:03			09:08		12:24 (27)
	22:45			21:49	8	20:32 (79)	20:25			18:58	16:36			15:46	20	12:44 (27)
7	04:38			05:37		20:23 (79)	06:46			07:53	08:06			09:10		12:24 (27)
	22:44			21:46	7	20:30 (79)	20:22			18:56	16:34			15:45	21	12:45 (27)
8	04:40			05:39		20:23 (79)	06:48			07:55	08:08			09:12		12:25 (27)
	22:43			21:44	6	20:29 (79)	20:19			18:53	16:32			15:44	20	12:45 (27)
9	04:41			05:41		20:23 (79)	06:50			07:57	08:10			09:13		12:24 (27)
	22:42			21:41	5	20:28 (79)	20:17			18:50	16:30			15:44	21	12:45 (27)
10	04:42			05:44		20:23 (79)	06:53			07:59	08:13		13:39 (13)	09:15		12:25 (27)
	22:40			21:39	4	20:27 (79)	20:14			18:47	16:27	7	13:46 (13)	15:43	21	12:46 (27)
11	04:44			05:46		20:23 (79)	06:55			08:02	08:15		13:37 (13)	09:16		12:26 (27)
	22:39			21:36	2	20:25 (79)	20:11			18:44	16:25	11	13:48 (13)	15:43	21	12:47 (27)
12	04:45			05:48			06:57			08:04	08:18		13:36 (13)	09:17		12:26 (27)
	22:38			21:34			20:08			18:42	16:23	14	13:50 (13)	15:42	20	12:46 (27)
13	04:47			05:50			06:59			08:06	08:20		13:35 (13)	09:19		12:27 (27)
	22:36			21:31			20:05			18:39	16:21	17	13:52 (13)	15:42	20	12:47 (27)
14	04:49			05:53			07:01			08:09	08:22		13:34 (13)	09:20		12:27 (27)
	22:35			21:29			20:02			18:36	16:19	18	13:52 (13)	15:42	21	12:48 (27)
15	04:50			05:55			07:04			08:11	08:25		13:34 (13)	09:21		12:27 (27)
	22:33			21:26			19:59			18:33	16:17	19	13:53 (13)	15:42	21	12:48 (27)
16	04:52			05:57			07:06			08:13	08:27		13:34 (13)	09:22		12:28 (27)
	22:32			21:23			19:56			18:30	16:15	20	13:54 (13)	15:42	20	12:48 (27)
17	04:54		20:39 (78)	05:59			07:08			08:16	08:29		13:33 (13)	09:23		12:28 (27)
	22:30	3	20:42 (78)	21:21			19:53			18:28	16:13	20	13:53 (13)	15:42	20	12:48 (27)
18	04:56		20:36 (78)	06:02			07:10			08:18	08:32		13:34 (13)	09:24		12:29 (27)
	22:29	8	20:44 (78)	21:18			19:50			18:25	16:11	20	13:54 (13)	15:42	20	12:49 (27)
19	04:57		20:35 (78)	06:04			07:12			08:20	08:34		13:34 (13)	09:25		12:30 (27)
	22:27	11	20:46 (78)	21:15			19:48			18:22	16:09	21	13:55 (13)	15:42	20	12:50 (27)
20	04:59		20:34 (78)	06:06			07:15			08:23	08:36		13:34 (13)	09:25		12:30 (27)
	22:25	13	20:47 (78)	21:13			19:45			18:20	16:07	20	13:54 (13)	15:42	20	12:50 (27)
21	05:01		20:33 (78)	06:08			07:17			08:25	08:38		13:35 (13)	09:26		12:30 (27)
	22:23	14	20:47 (78)	21:10			19:42			18:17	16:06	20	13:55 (13)	15:43	20	12:50 (27)
22	05:03		20:33 (78)	06:10			07:19			08:27	08:41		13:35 (13)	09:27		12:31 (27)
	22:21	15	20:48 (78)	21:07			19:39			18:14	16:04	19	13:54 (13)	15:43	20	12:51 (27)
23	05:05		20:33 (78)	06:13			07:21			08:30	08:43		13:36 (13)	09:27		12:31 (27)
	22:20	15	20:48 (78)	21:05			19:36			18:11	16:02	19	13:55 (13)	15:44	20	12:51 (27)
24	05:07		20:32 (78)	06:15		19:43 (77)	07:24			08:32	08:45		13:37 (13)	09:27		12:31 (27)
	22:18	16	20:48 (78)	21:02	5	19:48 (77)	19:33			18:09	16:01	18	13:55 (13)	15:44	21	12:52 (27)
25	05:09		20:31 (78)	06:17		19:41 (77)	07:26			07:34	08:47		12:26 (27)	09:28		12:33 (27)
	22:16	16	20:47 (78)	20:59	9	19:50 (77)	19:30			17:06	15:59	25	13:54 (13)	15:45	20	12:53 (27)
26	05:11		20:31 (78)	06:19		19:39 (77)	07:28			07:37	08:49		12:25 (27)	09:28		12:33 (27)
	22:14	15	20:46 (78)	20:56	11	19:50 (77)	19:27			17:04	15:57	26	13:54 (13)	15:46	20	12:53 (27)
27	05:13		20:31 (78)	06:22		19:38 (77)	07:30			07:39	08:51		12:24 (27)	09:28		12:34 (27)
	22:12	14	20:45 (78)	20:54	13	19:51 (77)	19:24			17:01	15:56	27	13:53 (13)	15:47	20	12:54 (27)
28	05:15		20:32 (78)	06:24		19:37 (77)	07:32			07:42	08:54		12:23 (27)	09:28		12:33 (27)
	22:09	14	20:46 (78)	20:51	14	19:51 (77)	19:21			16:58	15:55	27	13:52 (13)	15:47	20	12:53 (27)
29	05:17		20:32 (78)	06:26		19:37 (77)	07:35			07:44	08:56		12:23 (27)	09:28		12:34 (27)
	22:07	13	20:45 (78)	20:48	13	19:50 (77)	19:19			16:56	15:53	27	13:52 (13)	15:49	20	12:54 (27)
30	05:20		20:32 (78)	06:28		19:36 (77)	07:37			07:46	08:58		12:23 (27)	09:28		12:35 (27)
	22:05	12	20:44 (78)	20:45	14	19:50 (77)	19:16			16:53	15:52	24	13:51 (13)	15:50	20	12:55 (27)
31	05:22		20:32 (78)	06:31		19:37 (77)				07:49				09:28		12:35 (27)
	22:03	10	20:42 (78)	20:42	12	19:49 (77)				16:51				15:51	20	12:55 (27)
Potential sun hours	546			478			386			319	236			199		
Total, worst case		189			167			15				419			625	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** S - Vaule 176 (19)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April	May			June		
1	09:28		13:54 (27)	08:45		15:13 (13)	07:35	07:06	05:43			04:39		
	15:52	8	14:02 (27)	16:56	13	15:26 (13)	18:04	20:16	21:26			22:30		
2	09:27		13:55 (27)	08:43		15:12 (13)	07:32	07:04	05:41		20:29 (78)	04:38		
	15:54	9	14:04 (27)	16:58	16	15:28 (13)	18:07	20:19	21:28	6	20:35 (78)	22:32		
3	09:27		13:54 (27)	08:41		15:11 (13)	07:29	07:01	05:38		20:28 (78)	04:37		
	15:55	11	14:05 (27)	17:01	17	15:28 (13)	18:09	20:21	21:30	9	20:37 (78)	22:33		
4	09:26		13:54 (27)	08:39		15:11 (13)	07:27	06:58	05:36		20:27 (78)	04:36		
	15:57	12	14:06 (27)	17:03	18	15:29 (13)	18:12	20:23	21:33	10	20:37 (78)	22:35		
5	09:26		13:54 (27)	08:37		15:11 (13)	07:24	06:55	05:33		20:26 (78)	04:34		
	15:58	13	14:07 (27)	17:06	18	15:29 (13)	18:14	20:26	21:35	12	20:38 (78)	22:36		
6	09:25		13:54 (27)	08:34		15:11 (13)	07:21	06:52	05:31		20:25 (78)	04:33		
	16:00	14	14:08 (27)	17:08	19	15:30 (13)	18:16	20:28	21:37	13	20:38 (78)	22:38		
7	09:24		13:54 (27)	08:32		15:11 (13)	07:18	06:49	05:29		20:25 (78)	04:32		
	16:01	15	14:09 (27)	17:10	19	15:30 (13)	18:19	20:30	21:39	14	20:39 (78)	22:39		
8	09:23		13:54 (27)	08:30		15:11 (13)	07:15	06:46	05:26		20:25 (78)	04:31		21:34 (81)
	16:03	17	14:11 (27)	17:13	18	15:29 (13)	18:21	20:32	21:42	14	20:39 (78)	22:40	5	21:39 (81)
9	09:23		13:53 (27)	08:27		15:12 (13)	07:13	06:44	05:24		20:26 (78)	04:31		21:33 (81)
	16:05	18	14:11 (27)	17:15	18	15:30 (13)	18:23	20:35	21:44	13	20:39 (78)	22:41	6	21:39 (81)
10	09:22		13:54 (27)	08:25		15:12 (13)	07:10	06:41	05:21		20:25 (78)	04:30		21:32 (81)
	16:07	18	14:12 (27)	17:18	17	15:29 (13)	18:26	20:37	21:46	12	20:37 (78)	22:43	8	21:40 (81)
11	09:20		13:53 (27)	08:22		15:13 (13)	07:07	06:38	05:19		20:26 (78)	04:29		21:32 (81)
	16:09	19	14:12 (27)	17:20	15	15:28 (13)	18:28	20:39	21:48	11	20:37 (78)	22:44	9	21:41 (81)
12	09:19		13:54 (27)	08:20		15:15 (13)	07:04	06:35	05:17		20:27 (78)	04:28		21:32 (81)
	16:10	19	14:13 (27)	17:23	12	15:27 (13)	18:30	20:42	21:51	9	20:36 (78)	22:45	10	21:42 (81)
13	09:18		13:53 (27)	08:17		15:17 (13)	07:01	06:32	05:14		20:29 (78)	04:28		21:32 (81)
	16:12	21	14:14 (27)	17:25	7	15:24 (13)	18:33	20:44	21:53	5	20:34 (78)	22:45	10	21:42 (81)
14	09:17		13:54 (27)	08:15			06:58	06:29	05:12			04:27		21:32 (81)
	16:14	21	14:15 (27)	17:28			18:35	20:46	21:55			22:46	10	21:42 (81)
15	09:16		13:54 (27)	08:12			06:56	06:27	05:10			04:27		21:32 (81)
	16:16	21	14:15 (27)	17:30			18:37	20:49	21:57			22:47	11	21:43 (81)
16	09:14		13:54 (27)	08:10			06:53	06:24	05:08			04:27		21:32 (81)
	16:19	21	14:15 (27)	17:33			18:40	20:51	21:59			22:48	12	21:44 (81)
17	09:13		13:54 (27)	08:07			06:50	06:21	05:06		20:57 (80)	04:27		21:32 (81)
	16:21	22	14:16 (27)	17:35			18:42	20:53	22:02	1	20:58 (80)	22:48	11	21:43 (81)
18	09:11		13:55 (27)	08:05			06:47	06:18	05:04		20:56 (80)	04:26		21:32 (81)
	16:23	21	14:16 (27)	17:38			18:44	20:56	22:04	3	20:59 (80)	22:49	11	21:43 (81)
19	09:10		13:55 (27)	08:02			06:44	06:15	05:02		20:56 (80)	04:26		21:32 (81)
	16:25	21	14:16 (27)	17:40			18:47	20:58	22:06	5	21:01 (80)	22:49	12	21:44 (81)
20	09:08		13:56 (27)	07:59			06:41	06:13	05:00		20:55 (80)	04:26		21:33 (81)
	16:27	20	14:16 (27)	17:43			18:49	21:00	22:08	7	21:02 (80)	22:50	12	21:45 (81)
21	09:07		13:56 (27)	07:57			06:38	06:10	04:58		20:56 (80)	04:26		21:33 (81)
	16:30	20	14:16 (27)	17:45			18:51	21:02	22:10	11	21:07 (80)	22:50	12	21:45 (81)
22	09:05		13:57 (27)	07:54			06:35	06:07	04:56		20:55 (80)	04:27		21:33 (81)
	16:32	19	14:16 (27)	17:47			18:53	21:05	22:12	13	21:08 (80)	22:50	12	21:45 (81)
23	09:03		13:58 (27)	07:51			06:32	06:05	04:54		20:56 (80)	04:27		21:33 (81)
	16:34	18	14:16 (27)	17:50			18:56	21:07	22:14	13	21:09 (80)	22:50	12	21:45 (81)
24	09:01		13:59 (27)	07:49			06:30	06:02	04:52		20:56 (80)	04:27		21:34 (81)
	16:36	17	14:16 (27)	17:52			18:58	21:09	22:16	13	21:09 (80)	22:50	11	21:45 (81)
25	08:59		14:01 (27)	07:46			06:27	05:59	04:50		20:57 (80)	04:28		21:34 (81)
	16:39	14	14:15 (27)	17:55			19:00	21:12	22:18	12	21:09 (80)	22:50	11	21:45 (81)
26	08:58		14:01 (27)	07:43			06:24	05:57	04:49		20:57 (80)	04:28		21:35 (81)
	16:41	13	14:14 (27)	17:57			19:03	21:14	22:20	11	21:08 (80)	22:50	11	21:46 (81)
27	08:56		14:04 (27)	07:41			06:21	05:54	04:47		20:58 (80)	04:29		21:34 (81)
	16:44	8	14:12 (27)	18:00			19:05	21:16	22:22	10	21:08 (80)	22:50	11	21:45 (81)
28	08:54			07:38			06:18	05:51	04:45		20:58 (80)	04:29		21:35 (81)
	16:46			18:02			19:07	21:19	22:23	9	21:07 (80)	22:50	11	21:46 (81)
29	08:52						07:15	05:49	04:44		20:59 (80)	04:30		21:35 (81)
	16:48						20:10	21:21	22:25	8	21:07 (80)	22:49	10	21:45 (81)
30	08:50		15:16 (13)				07:12	05:46	04:42		21:00 (80)	04:31		21:36 (81)
	16:51	6	15:22 (13)				20:12	21:23	22:27	6	21:06 (80)	22:49	9	21:45 (81)
31	08:48		15:14 (13)				07:09		04:41					
	16:53	11	15:25 (13)				20:14		22:29					
Potential sun hours	221			260			365	432	521			547		
Total, worst case		467			207					250			237	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** S - Vaule 176 (19)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July			August			September	October			November			December		
1	04:32		21:36 (81)	05:24		20:38 (78)	06:33	07:39			07:51		14:42 (13)	08:59		13:35 (27)
	22:48	9	21:45 (81)	22:01	9	20:47 (78)	20:39	19:13			16:48	16	14:58 (13)	15:51	19	13:54 (27)
2	04:33		21:37 (81)	05:26		20:37 (78)	06:35	07:41			07:53		14:41 (13)	09:01		13:37 (27)
	22:48	8	21:45 (81)	21:58	11	20:48 (78)	20:37	19:10			16:46	18	14:59 (13)	15:50	18	13:55 (27)
3	04:34		21:38 (81)	05:28		20:35 (78)	06:37	07:44			07:56		14:40 (13)	09:03		13:37 (27)
	22:47	7	21:45 (81)	21:56	13	20:48 (78)	20:34	19:07			16:44	19	14:59 (13)	15:49	18	13:55 (27)
4	04:35		21:39 (81)	05:30		20:35 (78)	06:39	07:46			07:58		14:40 (13)	09:05		13:38 (27)
	22:46	5	21:44 (81)	21:54	13	20:48 (78)	20:31	19:04			16:41	19	14:59 (13)	15:48	17	13:55 (27)
5	04:36		21:40 (81)	05:32		20:35 (78)	06:42	07:48			08:01		14:41 (13)	09:07		13:39 (27)
	22:45	3	21:43 (81)	21:51	13	20:48 (78)	20:28	19:01			16:39	19	15:00 (13)	15:47	16	13:55 (27)
6	04:37			05:35		20:35 (78)	06:44	07:50			08:03		14:41 (13)	09:08		13:40 (27)
	22:45			21:49	13	20:48 (78)	20:25	18:58			16:36	19	15:00 (13)	15:46	14	13:54 (27)
7	04:38			05:37		20:35 (78)	06:46	07:53			08:06		14:41 (13)	09:10		13:41 (27)
	22:44			21:46	12	20:47 (78)	20:22	18:56			16:34	18	14:59 (13)	15:45	13	13:54 (27)
8	04:40			05:39		20:35 (78)	06:48	07:55			08:08		14:42 (13)	09:12		13:42 (27)
	22:43			21:44	12	20:47 (78)	20:19	18:53			16:32	17	14:59 (13)	15:44	12	13:54 (27)
9	04:41			05:41		20:36 (78)	06:50	07:57			08:10		14:43 (13)	09:13		13:42 (27)
	22:41			21:41	10	20:46 (78)	20:16	18:50			16:30	15	14:58 (13)	15:44	11	13:53 (27)
10	04:42			05:44		20:38 (78)	06:53	07:59			08:13		14:43 (13)	09:15		13:44 (27)
	22:40			21:39	8	20:46 (78)	20:14	18:47			16:27	14	14:57 (13)	15:43	9	13:53 (27)
11	04:44			05:46		20:40 (78)	06:55	08:02			08:15		14:45 (13)	09:16		13:45 (27)
	22:39			21:36	4	20:44 (78)	20:11	18:44			16:25	11	14:56 (13)	15:43	8	13:53 (27)
12	04:45			05:48			06:57	08:04			08:18		14:48 (13)	09:17		13:46 (27)
	22:38			21:34			20:08	18:41			16:23	5	14:53 (13)	15:42	6	13:52 (27)
13	04:47		21:10 (80)	05:50			06:59	08:06			08:20			09:19		13:49 (27)
	22:36	4	21:14 (80)	21:31			20:05	18:39			16:21			15:42	3	13:52 (27)
14	04:49		21:08 (80)	05:53			07:01	08:09			08:22			09:20		
	22:35	7	21:15 (80)	21:29			20:02	18:36			16:19			15:42		
15	04:50		21:08 (80)	05:55			07:04	08:11			08:25		13:37 (27)	09:21		
	22:33	8	21:16 (80)	21:26			19:59	18:33			16:17	8	13:45 (27)	15:42		
16	04:52		21:07 (80)	05:57			07:06	08:13			08:27		13:35 (27)	09:22		
	22:32	10	21:17 (80)	21:23			19:56	18:30			16:15	12	13:47 (27)	15:42		
17	04:54		21:07 (80)	05:59			07:08	08:16			08:29		13:33 (27)	09:23		
	22:30	11	21:18 (80)	21:21			19:53	18:28			16:13	15	13:48 (27)	15:42		
18	04:56		21:06 (80)	06:01			07:10	08:18			08:32		13:33 (27)	09:24		
	22:29	12	21:18 (80)	21:18			19:50	18:25			16:11	17	13:50 (27)	15:42		
19	04:57		21:06 (80)	06:04			07:12	08:20			08:34		13:33 (27)	09:25		
	22:27	12	21:18 (80)	21:15			19:47	18:22			16:09	18	13:51 (27)	15:42		
20	04:59		21:06 (80)	06:06			07:15	08:23			08:36		13:32 (27)	09:25		
	22:25	13	21:19 (80)	21:13			19:45	18:19			16:07	19	13:51 (27)	15:42		
21	05:01		21:05 (80)	06:08			07:17	08:25			08:38		13:32 (27)	09:26		
	22:23	13	21:18 (80)	21:10			19:42	18:17			16:06	20	13:52 (27)	15:43		
22	05:03		21:06 (80)	06:10			07:19	08:27			08:41		13:32 (27)	09:27		
	22:21	11	21:17 (80)	21:07			19:39	18:14			16:04	20	13:52 (27)	15:43		
23	05:05		21:06 (80)	06:13			07:21	08:30			08:43		13:32 (27)	09:27		
	22:20	9	21:16 (80)	21:05			19:36	18:11			16:02	21	13:53 (27)	15:44		
24	05:07		21:06 (80)	06:15			07:23	08:32			08:45		13:33 (27)	09:27		
	22:18	6	21:12 (80)	21:02			19:33	18:09			16:00	21	13:54 (27)	15:44		
25	05:09		21:06 (80)	06:17			07:26	07:34			08:47		13:32 (27)	09:28		
	22:16	4	21:10 (80)	20:59			19:30	17:06			15:59	22	13:54 (27)	15:45		
26	05:11		21:07 (80)	06:19			07:28	07:37			08:49		13:33 (27)	09:28		
	22:14	2	21:09 (80)	20:56			19:27	17:04			15:57	21	13:54 (27)	15:46		
27	05:13			06:22			07:30	07:39			08:51		13:33 (27)	09:28		
	22:11			20:53			19:24	17:01			15:56	21	13:54 (27)	15:47		
28	05:15			06:24			07:32	07:41			08:53		13:33 (27)	09:28		
	22:09			20:51			19:21	16:58			15:55	21	13:54 (27)	15:47		
29	05:17			06:26			07:35	07:44		14:46 (13)	08:55		13:35 (27)	09:28		
	22:07			20:48			19:18	16:56	8	14:54 (13)	15:53	20	13:55 (27)	15:48		
30	05:19			06:28			07:37	07:46		14:44 (13)	08:57		13:35 (27)	09:28		
	22:05			20:45			19:16	16:53	13	14:57 (13)	15:52	19	13:54 (27)	15:50		
31	05:22		20:40 (78)	06:31				07:49		14:42 (13)				09:28		13:56 (27)
	22:03	6	20:46 (78)	20:42				16:51	15	14:57 (13)				15:51	4	14:00 (27)
Potential sun hours	546			478			386	319			236			199		
Total, worst case		160			118				36			485			168	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** T - Vaule 247 (20)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March			April	May	June		
1	09:28			08:45		10:57 (38)	07:35		16:28 (18)	07:06	05:44	04:39		21:26 (78)
	15:52			16:56	41	13:51 (27)	18:04	11	16:39 (18)	20:16	21:26	22:30	2	21:28 (78)
2	09:27			08:43		10:59 (38)	07:32		16:27 (18)	07:04	05:41	04:38		21:24 (78)
	15:54			16:58	37	13:51 (27)	18:07	14	16:41 (18)	20:19	21:28	22:32	6	21:30 (78)
3	09:27			08:41		11:02 (38)	07:30		16:27 (18)	07:01	05:38	04:37		21:23 (78)
	15:55			17:01	27	13:49 (27)	18:09	15	16:42 (18)	20:21	21:30	22:33	8	21:31 (78)
4	09:26			08:39		13:29 (27)	07:27		16:27 (18)	06:58	05:36	04:36		21:23 (78)
	15:57			17:03	20	13:49 (27)	18:12	18	16:45 (18)	20:23	21:33	22:35	9	21:32 (78)
5	09:26			08:37		13:30 (27)	07:24		16:28 (18)	06:55	05:33	04:34		21:22 (78)
	15:58			17:06	17	13:47 (27)	18:14	18	16:46 (18)	20:26	21:35	22:36	11	21:33 (78)
6	09:25			08:34		13:34 (27)	07:21		16:28 (18)	06:52	05:31	04:33		21:22 (78)
	16:00			17:08	11	13:45 (27)	18:16	17	16:45 (18)	20:28	21:37	22:38	11	21:33 (78)
7	09:24			08:32			07:18		16:29 (18)	06:49	05:29	04:32		21:21 (78)
	16:01			17:11			18:19	15	16:44 (18)	20:30	21:39	22:39	12	21:33 (78)
8	09:23			08:30			07:15		16:30 (18)	06:46	05:26	04:32		21:22 (78)
	16:03			17:13			18:21	12	16:42 (18)	20:32	21:42	22:40	13	21:35 (78)
9	09:23			08:27			07:13		16:33 (18)	06:44	05:24	04:31		21:22 (78)
	16:05			17:15			18:23	5	16:38 (18)	20:35	21:44	22:41	13	21:35 (78)
10	09:22			08:25			07:10			06:41	05:21	04:30		21:22 (78)
	16:07			17:18			18:26			20:37	21:46	22:43	13	21:35 (78)
11	09:20			08:22		14:55 (8)	07:07			06:38	05:19	04:29		21:22 (78)
	16:09			17:20	7	15:02 (8)	18:28			20:39	21:48	22:44	13	21:35 (78)
12	09:19			08:20		14:57 (8)	07:04			06:35	05:17	04:29		21:22 (78)
	16:11			17:23	10	15:07 (8)	18:30			20:42	21:51	22:45	14	21:36 (78)
13	09:18		11:01 (38)	08:17		14:59 (8)	07:01			06:32	05:15	04:28		21:22 (78)
	16:12	5	11:06 (38)	17:25	12	15:11 (13)	18:33			20:44	21:53	22:45	14	21:36 (78)
14	09:17		10:57 (38)	08:15		15:02 (8)	06:58			06:29	05:12	04:28		21:22 (78)
	16:14	11	11:08 (38)	17:28	12	15:15 (13)	18:35			20:46	21:55	22:46	14	21:36 (78)
15	09:16		10:52 (38)	08:12		15:06 (13)	06:56			06:27	05:10	04:27		21:22 (78)
	16:17	17	11:09 (38)	17:30	13	15:19 (13)	18:37			20:49	21:57	22:47	15	21:37 (78)
16	09:14		10:52 (38)	08:10		15:06 (13)	06:53			06:24	05:08	04:27		21:23 (78)
	16:19	18	11:10 (38)	17:33	16	15:22 (13)	18:40			20:51	21:59	22:48	14	21:37 (78)
17	09:13		10:51 (38)	08:07		15:05 (13)	06:50			06:21	05:06	04:27		21:22 (78)
	16:21	19	11:10 (38)	17:35	16	15:21 (13)	18:42			20:53	22:02	22:48	15	21:37 (78)
18	09:11		10:51 (38)	08:05		15:05 (13)	06:47			06:18	05:04	04:26		21:22 (78)
	16:23	20	11:11 (38)	17:38	15	15:20 (13)	18:44			20:56	22:04	22:49	15	21:37 (78)
19	09:10		10:51 (38)	08:02		15:06 (13)	06:44			06:16	05:02	04:26		21:23 (78)
	16:25	21	11:12 (38)	17:40	17	15:23 (13)	18:47			20:58	22:06	22:49	15	21:38 (78)
20	09:08		10:51 (38)	07:59		15:07 (13)	06:41			06:13	05:00	04:26		21:24 (78)
	16:27	22	11:13 (38)	17:43	18	15:25 (13)	18:49			21:00	22:08	22:50	14	21:38 (78)
21	09:07		10:51 (38)	07:57		15:07 (13)	06:38			06:10	04:58	04:26		21:24 (78)
	16:30	23	12:45 (33)	17:45	21	15:28 (13)	18:51			21:02	22:10	22:50	14	21:38 (78)
22	09:05		10:51 (38)	07:54		15:08 (13)	06:35			06:07	04:56	04:27		21:24 (78)
	16:32	35	12:57 (33)	17:47	20	15:28 (13)	18:53			21:05	22:12	22:50	14	21:38 (78)
23	09:03		10:51 (38)	07:51		15:09 (13)	06:32			06:05	04:54	04:27		21:23 (78)
	16:34	41	13:04 (33)	17:50	18	15:27 (13)	18:56			21:07	22:14	22:50	15	21:38 (78)
24	09:01		10:52 (38)	07:49		15:12 (13)	06:30			06:02	04:52	04:27		21:24 (78)
	16:37	40	13:04 (33)	17:52	14	15:26 (13)	18:58			21:09	22:16	22:50	15	21:39 (78)
25	08:59		10:52 (38)	07:46		15:16 (13)	06:27			05:59	04:50	04:28		21:24 (78)
	16:39	39	13:04 (33)	17:55	6	15:22 (13)	19:00			21:12	22:18	22:50	15	21:39 (78)
26	08:58		10:52 (38)	07:43			06:24			05:57	04:49	04:28		21:25 (78)
	16:41	40	13:25 (27)	17:57			19:03			21:14	22:20	22:50	14	21:39 (78)
27	08:56		10:53 (38)	07:41			06:21			05:54	04:47	04:29		21:25 (78)
	16:44	42	13:31 (27)	18:00			19:05			21:16	22:22	22:50	14	21:39 (78)
28	08:54		10:53 (38)	07:38		16:29 (18)	06:18			05:51	04:45	04:29		21:25 (78)
	16:46	46	13:41 (27)	18:02	6	16:37 (18)	19:07			21:19	22:23	22:50	14	21:39 (78)
29	08:52		10:54 (38)				07:15			05:49	04:44	04:30		21:25 (78)
	16:48	42	13:45 (27)				20:10			21:21	22:25	22:49	14	21:39 (78)
30	08:50		10:55 (38)				07:12			05:46	04:42	04:31		21:25 (78)
	16:51	43	13:48 (27)				20:12			21:23	22:27	22:49	14	21:39 (78)
31	08:48		10:56 (38)				07:09				04:41			
	16:53	43	13:50 (27)				20:14				22:29			
Potential sun hours	221			260			365			432	521	547		
Total, worst case		567			374			125					384	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** T - Vaule 247 (20)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July			August		September		October			November			December
1	04:32		21:26 (78)	05:24		06:33		07:39			07:51			08:59
	22:48	14	21:40 (78)	22:01		20:39		19:13			16:48			15:51
2	04:33		21:26 (78)	05:26		06:35		07:41			07:54			09:01
	22:48	14	21:40 (78)	21:58		20:37		19:10			16:46			15:50
3	04:34		21:27 (78)	05:28		06:37		07:44			07:56			09:03
	22:47	13	21:40 (78)	21:56		20:34		19:07			16:44			15:49
4	04:35		21:27 (78)	05:30		06:39		07:46			07:58		13:08 (27)	09:05
	22:46	13	21:40 (78)	21:54		20:31		19:04			16:41	2	13:10 (27)	15:48
5	04:36		21:28 (78)	05:33		06:42		07:48		17:09 (18)	08:01		13:03 (27)	09:07
	22:45	12	21:40 (78)	21:51		20:28		19:01	9	17:18 (18)	16:39	12	13:15 (27)	15:47
6	04:37		21:28 (78)	05:35		06:44		07:50		17:06 (18)	08:03		13:01 (27)	09:08
	22:45	12	21:40 (78)	21:49		20:25		18:58	14	17:20 (18)	16:36	17	13:18 (27)	15:46
7	04:38		21:28 (78)	05:37		06:46		07:53		17:04 (18)	08:06		12:59 (27)	09:10
	22:44	11	21:39 (78)	21:46		20:22		18:56	16	17:20 (18)	16:34	20	13:19 (27)	15:45
8	04:40		21:29 (78)	05:39		06:48		07:55		17:03 (18)	08:08		10:32 (38)	09:12
	22:43	10	21:39 (78)	21:44		20:19		18:53	18	17:21 (18)	16:32	29	13:20 (27)	15:44
9	04:41		21:29 (78)	05:41		06:50		07:57		17:02 (18)	08:10		10:30 (38)	09:13
	22:41	9	21:38 (78)	21:41		20:16		18:50	18	17:20 (18)	16:30	37	13:22 (27)	15:44
10	04:42		21:31 (78)	05:44		06:53		07:59		17:01 (18)	08:13		10:28 (38)	09:15
	22:40	7	21:38 (78)	21:39		20:14		18:47	16	17:17 (18)	16:27	41	13:22 (27)	15:43
11	04:44		21:32 (78)	05:46		06:55		08:02		17:01 (18)	08:15		10:27 (38)	09:16
	22:39	5	21:37 (78)	21:36		20:11		18:44	15	17:16 (18)	16:25	42	13:20 (27)	15:43
12	04:45			05:48		06:57		08:04		17:01 (18)	08:18		10:27 (38)	09:17
	22:38			21:34		20:08		18:41	13	17:14 (18)	16:23	42	13:19 (27)	15:42
13	04:47			05:50		06:59		08:06		17:02 (18)	08:20		10:25 (38)	09:19
	22:36			21:31		20:05		18:39	10	17:12 (18)	16:21	43	13:17 (27)	15:42
14	04:49			05:53		07:01		08:09		17:06 (18)	08:22		10:25 (38)	09:20
	22:35			21:29		20:02		18:36	2	17:08 (18)	16:19	46	13:12 (27)	15:42
15	04:50			05:55		07:04		08:11			08:25		10:25 (38)	09:21
	22:33			21:26		19:59		18:33			16:17	43	13:04 (27)	15:42
16	04:52			05:57		07:06		08:13			08:27		10:26 (38)	09:22
	22:32			21:23		19:56		18:30			16:15	40	12:59 (27)	15:42
17	04:54			05:59		07:08		08:16		15:45 (13)	08:29		10:25 (38)	09:23
	22:30			21:21		19:53		18:28	9	15:54 (13)	16:13	39	12:37 (33)	15:42
18	04:56			06:02		07:10		08:18		15:42 (13)	08:32		10:26 (38)	09:24
	22:29			21:18		19:50		18:25	15	15:57 (13)	16:11	40	12:38 (33)	15:42
19	04:57			06:04		07:12		08:20		15:40 (13)	08:34		10:26 (38)	09:25
	22:27			21:15		19:47		18:22	18	15:58 (13)	16:09	41	12:39 (33)	15:42
20	04:59			06:06		07:15		08:23		15:39 (13)	08:36		10:26 (38)	09:25
	22:25			21:13		19:45		18:20	21	16:00 (13)	16:07	35	12:32 (33)	15:42
21	05:01			06:08		07:17		08:25		15:37 (13)	08:38		10:27 (38)	09:26
	22:23			21:10		19:42		18:17	20	15:57 (13)	16:06	23	12:21 (33)	15:43
22	05:03			06:10		07:19		08:27		15:37 (13)	08:41		10:27 (38)	09:27
	22:21			21:07		19:39		18:14	17	15:54 (13)	16:04	22	10:49 (38)	15:43
23	05:05			06:13		07:21		08:30		15:36 (13)	08:43		10:28 (38)	09:27
	22:20			21:05		19:36		18:12	16	15:52 (13)	16:02	21	10:49 (38)	15:44
24	05:07			06:15		07:24		08:32		15:35 (13)	08:45		10:29 (38)	09:27
	22:18			21:02		19:33		18:09	16	15:51 (13)	16:01	20	10:49 (38)	15:44
25	05:09			06:17		07:26		07:34		14:36 (13)	08:47		10:29 (38)	09:28
	22:16			20:59		19:30		17:06	15	14:51 (13)	15:59	20	10:49 (38)	15:45
26	05:11			06:19		07:28		07:37		14:35 (13)	08:49		10:31 (38)	09:28
	22:14			20:56		19:27		17:04	16	14:51 (13)	15:57	18	10:49 (38)	15:46
27	05:13			06:22		07:30		07:39		14:35 (13)	08:51		10:32 (38)	09:28
	22:11			20:53		19:24		17:01	13	14:48 (13)	15:56	16	10:48 (38)	15:47
28	05:15			06:24		07:32		07:41		14:30 (8)	08:53		10:36 (38)	09:28
	22:09			20:51		19:21		16:58	14	14:44 (13)	15:55	11	10:47 (38)	15:48
29	05:17			06:26		07:35		07:44		14:28 (8)	08:55		10:42 (38)	09:28
	22:07			20:48		19:19		16:56	12	14:40 (13)	15:53	5	10:47 (38)	15:49
30	05:20			06:28		07:37		07:46		14:26 (8)	08:57			09:28
	22:05			20:45		19:16		16:53	10	14:36 (8)	15:52			15:50
31	05:22			06:31				07:49						09:28
	22:03			20:42				16:51						15:51
Potential sun hours	546			478		386		319			236			199
Total, worst case		120							343			725		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** U - Store Svela, eiendom 60/5, Bjerkreim kommune (21)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March			April			May			June
1	09:27			08:45		15:29 (9)	07:35		15:43 (14)	07:06			05:43		18:53 (38)	04:39
	15:52			16:56	21	15:50 (9)	18:04	38	16:21 (14)	20:16			21:25	26	19:19 (38)	22:30
2	09:27			08:43		15:29 (9)	07:32		15:43 (14)	07:04			05:41		18:54 (38)	04:38
	15:54			16:58	23	15:52 (9)	18:07	37	16:20 (14)	20:19			21:28	23	19:17 (38)	22:32
3	09:27			08:41		15:29 (9)	07:29		15:43 (14)	07:01			05:38		18:56 (38)	04:37
	15:55			17:01	23	15:52 (9)	18:09	36	16:19 (14)	20:21			21:30	19	19:15 (38)	22:33
4	09:26			08:39		15:29 (9)	07:27		15:44 (14)	06:58		19:04 (38)	05:36		19:00 (38)	04:36
	15:57			17:03	23	15:52 (9)	18:11	34	16:18 (14)	20:23	15	19:19 (38)	21:32	12	19:12 (38)	22:35
5	09:25			08:36		15:29 (9)	07:24		15:46 (14)	06:55		19:00 (38)	05:33			04:35
	15:58			17:06	23	15:52 (9)	18:14	32	16:18 (14)	20:25	22	19:22 (38)	21:35			22:36
6	09:25			08:34		15:28 (9)	07:21		15:47 (14)	06:52		18:57 (38)	05:31			04:33
	16:00			17:08	24	15:52 (9)	18:16	29	16:16 (14)	20:28	27	19:24 (38)	21:37			22:37
7	09:24			08:32		15:29 (9)	07:18		15:48 (14)	06:49		18:55 (38)	05:29			04:32
	16:01			17:10	23	15:52 (9)	18:19	27	16:15 (14)	20:30	30	19:25 (38)	21:39			22:39
8	09:23			08:29		15:29 (9)	07:15		15:50 (14)	06:46		18:53 (38)	05:26			04:32
	16:03			17:13	23	15:52 (9)	18:21	22	16:12 (14)	20:32	33	19:26 (38)	21:42			22:40
9	09:22			08:27		15:30 (9)	07:13		15:52 (14)	06:43		18:52 (38)	05:24			04:31
	16:05			17:15	22	15:52 (9)	18:23	18	16:10 (14)	20:35	47	19:57 (27)	21:44			22:41
10	09:21			08:25		15:31 (9)	07:10		15:57 (14)	06:41		18:51 (38)	05:21			04:30
	16:07			17:18	20	15:51 (9)	18:26	8	16:05 (14)	20:37	55	19:58 (27)	21:46			22:42
11	09:20			08:22		15:31 (9)	07:07			06:38		18:49 (38)	05:19			04:29
	16:09			17:20	19	15:50 (9)	18:28			20:39	60	19:58 (27)	21:48			22:43
12	09:19			08:20		15:33 (9)	07:04			06:35		18:48 (38)	05:17			04:29
	16:11			17:23	16	15:49 (9)	18:30			20:42	61	19:58 (27)	21:50			22:44
13	09:18			08:17		15:35 (9)	07:01			06:32		18:48 (38)	05:15			04:28
	16:12			17:25	16	16:05 (14)	18:33			20:44	63	19:59 (27)	21:53			22:45
14	09:17			08:15		15:38 (9)	06:58			06:29		18:47 (38)	05:12			04:28
	16:14			17:28	21	16:10 (14)	18:35			20:46	63	19:58 (27)	21:55			22:46
15	09:15			08:12		15:52 (14)	06:55			06:27		18:46 (38)	05:10			04:27
	16:17			17:30	21	16:13 (14)	18:37			20:48	64	19:57 (27)	21:57			22:47
16	09:14			08:10		15:51 (14)	06:53		17:31 (33)	06:24		18:46 (38)	05:08			04:27
	16:19			17:33	25	16:16 (14)	18:40	6	17:37 (33)	20:51	63	19:57 (27)	21:59			22:47
17	09:13			08:07		15:49 (14)	06:50		17:27 (33)	06:21		18:45 (38)	05:06			04:27
	16:21			17:35	28	16:17 (14)	18:42	13	17:40 (33)	20:53	61	19:55 (27)	22:01			22:48
18	09:11			08:04		15:48 (14)	06:47		17:25 (33)	06:18		18:45 (38)	05:04			04:26
	16:23			17:38	30	16:18 (14)	18:44	16	17:41 (33)	20:55	58	19:54 (27)	22:04			22:49
19	09:10			08:02		15:46 (14)	06:44		17:23 (33)	06:15		18:45 (38)	05:02			04:26
	16:25			17:40	33	16:19 (14)	18:46	19	17:42 (33)	20:58	55	19:52 (27)	22:06			22:49
20	09:08			07:59		15:46 (14)	06:41		17:22 (33)	06:13		18:45 (38)	05:00			04:26
	16:27			17:43	34	16:20 (14)	18:49	20	17:42 (33)	21:00	44	19:29 (38)	22:08			22:49
21	09:06			07:57		15:45 (14)	06:38		17:21 (33)	06:10		18:45 (38)	04:58			04:26
	16:30			17:45	36	16:21 (14)	18:51	22	17:43 (33)	21:02	43	19:28 (38)	22:10			22:50
22	09:05			07:54		15:44 (14)	06:35		17:20 (33)	06:07		18:45 (38)	04:56			04:27
	16:32			17:47	37	16:21 (14)	18:53	22	17:42 (33)	21:05	43	19:28 (38)	22:12			22:50
23	09:03			07:51		15:44 (14)	06:32		17:20 (33)	06:05		18:45 (38)	04:54			04:27
	16:34			17:50	37	16:21 (14)	18:56	22	17:42 (33)	21:07	42	19:27 (38)	22:14			22:50
24	09:01			07:49		15:43 (14)	06:29		17:20 (33)	06:02		18:46 (38)	04:52			04:27
	16:36			17:52	38	16:21 (14)	18:58	22	17:42 (33)	21:09	41	19:27 (38)	22:16			22:50
25	08:59			07:46		15:44 (14)	06:27		17:20 (33)	05:59		18:46 (38)	04:50			04:28
	16:39			17:55	38	16:22 (14)	19:00	21	17:41 (33)	21:12	40	19:26 (38)	22:18			22:50
26	08:57			07:43		15:43 (14)	06:24		17:20 (33)	05:57		18:47 (38)	04:49			04:28
	16:41			17:57	39	16:22 (14)	19:03	20	17:40 (33)	21:14	38	19:25 (38)	22:20			22:50
27	08:55		15:35 (9)	07:40		15:43 (14)	06:21		17:22 (33)	05:54		18:47 (38)	04:47			04:29
	16:44	8	15:43 (9)	18:00	39	16:22 (14)	19:05	17	17:39 (33)	21:16	37	19:24 (38)	22:21			22:50
28	08:54		15:33 (9)	07:38		15:43 (14)	06:18		17:23 (33)	05:51		18:49 (38)	04:45			04:29
	16:46	13	15:46 (9)	18:02	38	16:21 (14)	19:07	14	17:37 (33)	21:19	34	19:23 (38)	22:23			22:49
29	08:51		15:31 (9)				07:15		18:25 (33)	05:49		18:49 (38)	04:44			04:30
	16:48	16	15:47 (9)				20:09	10	18:35 (33)	21:21	33	19:22 (38)	22:25			22:49
30	08:49		15:31 (9)				07:12			05:46		18:51 (38)	04:42			04:31
	16:51	17	15:48 (9)				20:12			21:23	30	19:21 (38)	22:27			22:49
31	08:47		15:29 (9)				07:09						04:41			
	16:53	20	15:49 (9)				20:14						22:28			
Potential sun hours	221			260			365			432			521			547
Total, worst case		74			770			525			1202			80		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** U - Store Svela, eiendom 60/5, Bjerkreim kommune (21)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August			September			October			November			December
1	04:32	05:24			06:33		18:48 (38)	07:39			07:51		15:00 (9)	08:59
	22:48	22:00			20:39	60	19:57 (27)	19:13			16:48	21	15:21 (9)	15:51
2	04:33	05:26			06:35		18:49 (38)	07:41			07:53		15:00 (9)	09:01
	22:47	21:58			20:36	56	19:56 (27)	19:10			16:46	22	15:22 (9)	15:50
3	04:34	05:28			06:37		18:49 (38)	07:43			07:56		14:59 (9)	09:03
	22:47	21:56			20:34	47	19:54 (27)	19:07			16:44	22	15:21 (9)	15:49
4	04:35	05:30			06:39		18:51 (38)	07:46		16:31 (14)	07:58		14:59 (9)	09:05
	22:46	21:53			20:31	33	19:24 (38)	19:04	14	16:45 (14)	16:41	23	15:22 (9)	15:48
5	04:36	05:33			06:42		18:52 (38)	07:48		16:27 (14)	08:01		14:59 (9)	09:07
	22:45	21:51			20:28	30	19:22 (38)	19:01	21	16:48 (14)	16:39	24	15:23 (9)	15:47
6	04:37	05:35			06:44		18:53 (38)	07:50		16:25 (14)	08:03		14:58 (9)	09:08
	22:44	21:49			20:25	27	19:20 (38)	18:58	25	16:50 (14)	16:36	24	15:22 (9)	15:46
7	04:38	05:37			06:46		18:55 (38)	07:52		16:23 (14)	08:05		14:59 (9)	09:10
	22:43	21:46			20:22	22	19:17 (38)	18:55	28	16:51 (14)	16:34	23	15:22 (9)	15:45
8	04:40	05:39		19:13 (38)	06:48		18:58 (38)	07:55		16:21 (14)	08:08		14:59 (9)	09:11
	22:42	21:44	3	19:16 (38)	20:19	15	19:13 (38)	18:53	31	16:52 (14)	16:32	23	15:22 (9)	15:44
9	04:41	05:41		19:07 (38)	06:50			07:57		16:20 (14)	08:10		14:59 (9)	09:13
	22:41	21:41	15	19:22 (38)	20:16			18:50	33	16:53 (14)	16:30	22	15:21 (9)	15:44
10	04:42	05:44		19:05 (38)	06:53			07:59		16:18 (14)	08:13		15:00 (9)	09:14
	22:40	21:39	20	19:25 (38)	20:13			18:47	35	16:53 (14)	16:27	21	15:21 (9)	15:43
11	04:44	05:46		19:03 (38)	06:55			08:02		16:18 (14)	08:15		15:01 (9)	09:16
	22:39	21:36	24	19:27 (38)	20:11			18:44	36	16:54 (14)	16:25	20	15:21 (9)	15:43
12	04:45	05:48		19:01 (38)	06:57			08:04		16:17 (14)	08:17		15:03 (9)	09:17
	22:37	21:34	27	19:28 (38)	20:08			18:41	37	16:54 (14)	16:23	17	15:20 (9)	15:42
13	04:47	05:50		18:59 (38)	06:59			08:06		16:16 (14)	08:20		15:03 (9)	09:18
	22:36	21:31	30	19:29 (38)	20:05			18:39	38	16:54 (14)	16:21	16	15:19 (9)	15:42
14	04:49	05:53		18:57 (38)	07:01		18:16 (33)	08:08		16:16 (14)	08:22		15:05 (9)	09:20
	22:35	21:28	33	19:30 (38)	20:02	8	18:24 (33)	18:36	38	16:54 (14)	16:19	12	15:17 (9)	15:42
15	04:50	05:55		18:56 (38)	07:04		18:13 (33)	08:11		16:15 (14)	08:24		15:08 (9)	09:21
	22:33	21:26	35	19:31 (38)	19:59	13	18:26 (33)	18:33	39	16:54 (14)	16:17	7	15:15 (9)	15:42
16	04:52	05:57		18:55 (38)	07:06		18:11 (33)	08:13		16:15 (14)	08:27			09:22
	22:32	21:23	37	19:32 (38)	19:56	16	18:27 (33)	18:30	39	16:54 (14)	16:15			15:42
17	04:54	05:59		18:53 (38)	07:08		18:09 (33)	08:15		16:15 (14)	08:29			09:23
	22:30	21:21	39	19:32 (38)	19:53	19	18:28 (33)	18:28	38	16:53 (14)	16:13			15:42
18	04:56	06:01		18:52 (38)	07:10		18:08 (33)	08:18		16:15 (14)	08:31			09:24
	22:28	21:18	40	19:32 (38)	19:50	20	18:28 (33)	18:25	38	16:53 (14)	16:11			15:42
19	04:57	06:04		18:51 (38)	07:12		18:07 (33)	08:20		16:15 (14)	08:34			09:24
	22:27	21:15	42	19:33 (38)	19:47	22	18:29 (33)	18:22	37	16:52 (14)	16:09			15:42
20	04:59	06:06		18:51 (38)	07:15		18:07 (33)	08:22		16:16 (14)	08:36			09:25
	22:25	21:13	42	19:33 (38)	19:44	22	18:29 (33)	18:19	36	16:52 (14)	16:07			15:42
21	05:01	06:08		18:50 (38)	07:17		18:06 (33)	08:25		16:16 (14)	08:38			09:26
	22:23	21:10	43	19:33 (38)	19:42	22	18:28 (33)	18:17	35	16:51 (14)	16:06			15:43
22	05:03	06:10		18:49 (38)	07:19		18:06 (33)	08:27		16:17 (14)	08:40			09:26
	22:21	21:07	44	19:33 (38)	19:39	21	18:27 (33)	18:14	33	16:50 (14)	16:04			15:43
23	05:05	06:13		18:49 (38)	07:21		18:06 (33)	08:29		16:17 (14)	08:43			09:27
	22:19	21:04	48	19:52 (27)	19:36	20	18:26 (33)	18:11	32	16:49 (14)	16:02			15:44
24	05:07	06:15		18:48 (38)	07:23		18:07 (33)	08:32		16:18 (14)	08:45			09:27
	22:17	21:02	55	19:55 (27)	19:33	19	18:26 (33)	18:09	30	16:48 (14)	16:01			15:44
25	05:09	06:17		18:49 (38)	07:26		18:07 (33)	07:34		15:19 (14)	08:47			09:28
	22:15	20:59	58	19:57 (27)	19:30	17	18:24 (33)	17:06	27	15:46 (14)	15:59			15:45
26	05:11	06:19		18:48 (38)	07:28		18:08 (33)	07:37		15:21 (14)	08:49			09:28
	22:13	20:56	62	19:58 (27)	19:27	14	18:22 (33)	17:04	23	15:44 (14)	15:57			15:46
27	05:13	06:22		18:48 (38)	07:30		18:10 (33)	07:39		15:23 (14)	08:51			09:28
	22:11	20:53	63	19:59 (27)	19:24	9	18:19 (33)	17:01	20	15:43 (14)	15:56			15:47
28	05:15	06:24		18:48 (38)	07:32			07:41		15:07 (9)	08:53			09:28
	22:09	20:51	63	19:59 (27)	19:21			16:58	21	15:39 (14)	15:55			15:48
29	05:17	06:26		18:48 (38)	07:34			07:44		15:04 (9)	08:55			09:28
	22:07	20:48	64	19:59 (27)	19:18			16:56	13	15:17 (9)	15:53			15:49
30	05:20	06:28		18:48 (38)	07:37			07:46		15:03 (9)	08:57			09:28
	22:05	20:45	63	19:59 (27)	19:16			16:53	16	15:19 (9)	15:52			15:50
31	05:22	06:30		18:48 (38)				07:49		15:01 (9)				09:28
	22:03	20:42	61	19:58 (27)				16:51	19	15:20 (9)				15:51
Potential sun hours	545	478			386			319			236			200
Total, worst case			1011			532			832			297		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** V - Osland 45 (22)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February	March	April	May	June	July	August	September	October	November			December		
1	09:28		12:02 (24)	08:46	07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:39	07:51			09:00		11:45 (24)
	15:53	39	13:36 (25)	16:56	18:05	20:17	21:26	22:31	22:49	22:01	20:40	19:13	16:49			15:51	40	13:20 (25)
2	09:28		12:01 (24)	08:44	07:33	07:04	05:41	04:38	04:33	05:26	06:35	07:42	07:54			09:02		11:46 (24)
	15:54	41	13:36 (25)	16:58	18:07	20:19	21:28	22:32	22:48	21:59	20:37	19:10	16:46			15:50	40	13:20 (25)
3	09:27		12:01 (24)	08:41	07:30	07:01	05:39	04:37	04:34	05:28	06:37	07:44	07:56			09:03		11:46 (24)
	15:55	41	13:36 (25)	17:01	18:09	20:21	21:31	22:34	22:47	21:56	20:34	19:07	16:44			15:49	41	13:21 (25)
4	09:27		12:01 (24)	08:39	07:27	06:58	05:36	04:36	04:35	05:31	06:40	07:46	07:59			09:05		11:47 (24)
	15:57	41	13:36 (25)	17:03	18:12	20:24	21:33	22:35	22:47	21:54	20:31	19:04	16:41			15:48	41	13:22 (25)
5	09:26		12:01 (24)	08:37	07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48	08:01			09:07		11:47 (24)
	15:58	43	13:37 (25)	17:06	18:14	20:26	21:35	22:37	22:46	21:52	20:28	19:02	16:39			15:47	41	13:22 (25)
6	09:25		12:02 (24)	08:35	07:21	06:52	05:31	04:34	04:37	05:35	06:44	07:51	08:03			09:09		11:48 (24)
	16:00	41	13:37 (25)	17:08	18:17	20:28	21:37	22:38	22:45	21:49	20:25	18:59	16:37			15:46	42	13:23 (25)
7	09:25		12:02 (24)	08:32	07:19	06:50	05:29	04:33	04:39	05:37	06:46	07:53	08:06			09:10		11:49 (24)
	16:02	41	13:37 (25)	17:11	18:19	20:30	21:40	22:39	22:44	21:47	20:23	18:56	16:34			15:45	41	13:24 (25)
8	09:24		12:02 (24)	08:30	07:16	06:47	05:26	04:32	04:40	05:39	06:49	07:55	08:08			09:12		11:49 (24)
	16:03	42	13:38 (25)	17:13	18:21	20:33	21:42	22:41	22:43	21:44	20:20	18:53	16:32			15:45	41	13:24 (25)
9	09:23		12:03 (24)	08:27	07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:57	08:11			09:13		11:50 (24)
	16:05	41	13:38 (25)	17:16	18:24	20:35	21:44	22:42	22:42	21:42	20:17	18:50	16:30			15:44	41	13:25 (25)
10	09:22		12:03 (24)	08:25	07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00	08:13			09:15		11:50 (24)
	16:07	40	13:37 (25)	17:18	18:26	20:37	21:47	22:43	22:41	21:39	20:14	18:47	16:28			15:43	41	13:25 (25)
11	09:21		12:03 (24)	08:23	07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02	08:15			09:16		11:52 (24)
	16:09	41	13:38 (25)	17:21	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:45	16:25			15:43	40	13:26 (25)
12	09:20		12:03 (24)	08:20	07:04	06:35	05:17	04:29	04:46	05:48	06:57	08:04	08:18			09:18		11:52 (24)
	16:11	39	13:37 (25)	17:23	18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42	16:23			15:43	39	13:26 (25)
13	09:19		12:04 (24)	08:18	07:02	06:33	05:15	04:28	04:47	05:51	07:00	08:07	08:20			09:19		11:53 (24)
	16:13	37	13:37 (25)	17:26	18:33	20:44	21:53	22:46	22:37	21:32	20:05	18:39	16:21			15:42	39	13:27 (25)
14	09:17		12:04 (24)	08:15	06:59	06:30	05:13	04:28	04:49	05:53	07:02	08:09	08:23			09:20		11:54 (24)
	16:15	35	13:36 (25)	17:28	18:35	20:47	21:55	22:47	22:35	21:29	20:02	18:36	16:19			15:42	38	13:27 (25)
15	09:16		12:04 (24)	08:13	06:56	06:27	05:10	04:27	04:51	05:55	07:04	08:11	08:25		11:50 (24)	09:21		11:54 (24)
	16:17	32	13:35 (25)	17:31	18:38	20:49	21:58	22:47	22:34	21:26	19:59	18:33	16:17	5	11:55 (24)	15:42	38	13:27 (25)
16	09:15		12:04 (24)	08:10	06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13	08:27		11:47 (24)	09:22		11:55 (24)
	16:19	24	12:28 (24)	17:33	18:40	20:51	22:00	22:48	22:32	21:24	19:56	18:31	16:15	11	11:58 (24)	15:42	37	13:28 (25)
17	09:13		12:06 (24)	08:07	06:50	06:21	05:06	04:27	04:54	06:00	07:08	08:16	08:30		11:46 (24)	09:23		11:55 (24)
	16:21	24	12:30 (24)	17:36	18:42	20:54	22:02	22:49	22:31	21:21	19:54	18:28	16:13	15	12:01 (24)	15:42	37	13:28 (25)
18	09:12		12:06 (24)	08:05	06:47	06:19	05:04	04:27	04:56	06:02	07:11	08:18	08:32		11:44 (24)	09:24		11:56 (24)
	16:23	24	12:30 (24)	17:38	18:45	20:56	22:04	22:49	22:29	21:18	19:51	18:25	16:11	17	12:01 (24)	15:42	36	13:29 (25)
19	09:10		12:06 (24)	08:02	06:44	06:16	05:02	04:27	04:58	06:04	07:13	08:20	08:34		11:44 (24)	09:25		11:57 (24)
	16:25	24	12:30 (24)	17:40	18:47	20:58	22:06	22:50	22:27	21:16	19:48	18:22	16:09	19	12:03 (24)	15:42	36	13:29 (25)
20	09:09		12:07 (24)	08:00	06:41	06:13	05:00	04:27	05:00	06:06	07:15	08:23	08:36		11:44 (24)	09:26		11:58 (24)
	16:28	23	12:30 (24)	17:43	18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20	16:08	20	12:04 (24)	15:43	36	13:30 (25)
21	09:07		12:08 (24)	07:57	06:39	06:10	04:58	04:27	05:01	06:09	07:17	08:25	08:39		11:43 (24)	09:26		11:59 (24)
	16:30	21	12:29 (24)	17:45	18:51	21:03	22:10	22:50	22:24	21:10	19:42	18:17	16:06	22	12:05 (24)	15:43	35	13:31 (25)
22	09:05		12:09 (24)	07:54	06:36	06:08	04:56	04:27	05:03	06:11	07:19	08:28	08:41		11:43 (24)	09:27		11:58 (24)
	16:32	20	12:29 (24)	17:48	18:54	21:05	22:12	22:50	22:22	21:08	19:39	18:14	16:04	23	12:06 (24)	15:43	36	13:31 (25)
23	09:03		12:09 (24)	07:52	06:33	06:05	04:54	04:27	05:05	06:13	07:22	08:30	08:43		11:43 (24)	09:27		11:59 (24)
	16:34	19	12:28 (24)	17:50	18:56	21:07	22:14	22:51	22:20	21:05	19:36	18:12	16:02	23	12:06 (24)	15:44	36	13:31 (25)
24	09:02		12:10 (24)	07:49	06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32	08:45		11:43 (24)	09:28		12:00 (24)
	16:37	17	12:27 (24)	17:53	18:58	21:10	22:16	22:51	22:18	21:02	19:33	18:09	16:01	24	12:07 (24)	15:44	36	13:32 (25)
25	09:00		12:12 (24)	07:46	06:27	06:00	04:51	04:28	05:09	06:17	07:26	07:35	08:48		11:43 (24)	09:28		12:00 (24)
	16:39	15	12:27 (24)	17:55	19:01	21:12	22:18	22:51	22:16	20:59	19:30	17:07	15:59	24	12:07 (24)	15:45	37	13:33 (25)
26	08:58		12:14 (24)	07:44	06:24	05:57	04:49	04:28	05:11	06:20	07:28	07:37	08:50		11:43 (24)	09:28		12:00 (24)
	16:41	11	12:25 (24)	17:57	19:03	21:14	22:20	22:50	22:14	20:57	19:27	17:04	15:58	25	12:08 (24)	15:46	37	13:33 (25)
27	08:56		12:17 (24)	07:41	06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39	08:52		11:43 (24)	09:28		12:00 (24)
	16:44	4	12:21 (24)	18:00	19:05	21:17	22:22	22:50	22:12	20:54	19:25	17:01	15:56	32	13:14 (25)	15:47	38	13:33 (25)
28	08:54			07:38	06:18	05:52	04:46	04:30	05:16	06:24	07:33	07:42	08:54		11:44 (24)	09:29		12:01 (24)
	16:46			18:02	19:08	21:19	22:24	22:50	22:10	20:51	19:22	16:59	15:55	35	13:16 (25)	15:48	37	13:34 (25)
29	08:52				07:15	05:49	04:44	04:30	05:18	06:26	07:35	07:44	08:56		11:44 (24)	09:28		12:00 (24)
	16:49				20:10	21:21	22:26	22:50	22:08	20:48	19:19	16:56	15:54	37	13:17 (25)	15:49	38	13:34 (25)
30	08:50				07:13	05:46	04:42	04:31	05:20	06:29	07:37	07:47	08:58		11:44 (24)	09:28		12:01 (24)
	16:51				20:12	21:24	22:27	22:49	22:05	20:45	19:16	16:54	15:52	39	13:18 (25)	15:50	39	13:35 (25)
31	08:48				07:10		04:41		05:22	06:31		07:49				09:28		12:01 (24)
	16:54				20:14		22:29		22:03	20:43		16:51				15:51	39	13:35 (25)
Potential sun hours	221			260	365	432	521	547	546	478	386	319	236			199		
Total, worst case		820												371			1193	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** W - Osland 85 (23)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April			May			June
1	09:28		12:21 (25)	08:46		10:00 (29)	07:35	07:07			05:44		07:10 (76)	04:40
	15:53	20	12:41 (25)	16:56	20	10:20 (29)	18:05	20:17			21:26	11	07:21 (76)	22:31
2	09:28		12:21 (25)	08:44		09:59 (29)	07:33	07:04			05:41		06:28 (79)	04:38
	15:54	20	12:41 (25)	16:58	20	10:19 (29)	18:07	20:19			21:28	15	07:19 (76)	22:32
3	09:27		12:22 (25)	08:41		10:00 (29)	07:30	07:01			05:39		06:26 (79)	04:37
	15:55	19	12:41 (25)	17:01	20	10:20 (29)	18:09	20:21			21:31	10	06:36 (79)	22:34
4	09:27		12:22 (25)	08:39		10:00 (29)	07:27	06:58			05:36		06:25 (79)	04:36
	15:57	20	12:42 (25)	17:03	20	10:20 (29)	18:12	20:24			21:33	12	06:37 (79)	22:35
5	09:26		11:11 (24)	08:37		10:01 (29)	07:24	06:55			05:34		06:25 (79)	04:35
	15:58	25	12:42 (25)	17:06	19	10:20 (29)	18:14	20:26			21:35	13	06:38 (79)	22:37
6	09:25		11:10 (24)	08:35		10:01 (29)	07:21	06:52			05:31		06:24 (79)	04:34
	16:00	27	12:42 (25)	17:08	18	10:19 (29)	18:17	20:28			21:37	13	06:37 (79)	22:38
7	09:25		11:10 (24)	08:32		10:01 (29)	07:19	06:50			05:29		06:24 (79)	04:33
	16:02	28	12:42 (25)	17:11	17	10:18 (29)	18:19	20:31			21:40	13	06:37 (79)	22:39
8	09:24		11:09 (24)	08:30		10:03 (29)	07:16	06:47			05:26		06:24 (79)	04:32
	16:03	29	12:42 (25)	17:13	15	10:18 (29)	18:21	20:33			21:42	13	06:37 (79)	22:41
9	09:23		11:09 (24)	08:27		10:04 (29)	07:13	06:44			05:24		06:25 (79)	04:31
	16:05	30	12:42 (25)	17:16	12	10:16 (29)	18:24	20:35			21:44	12	06:37 (79)	22:42
10	09:22		11:08 (24)	08:25		10:07 (29)	07:10	06:41			05:22		06:25 (79)	04:30
	16:07	30	12:42 (25)	17:18	5	10:12 (29)	18:26	20:37			21:47	11	06:36 (79)	22:43
11	09:21		11:09 (24)	08:23			07:07	06:38			05:19		06:26 (79)	04:29
	16:09	29	12:42 (25)	17:21			18:28	20:40			21:49	9	06:35 (79)	22:44
12	09:20		11:08 (24)	08:20			07:04	06:35			05:17		06:28 (79)	04:29
	16:11	27	12:40 (25)	17:23			18:31	20:42			21:51	6	06:34 (79)	22:45
13	09:19		11:08 (24)	08:18			07:02	06:33			05:15			04:28
	16:13	25	12:39 (25)	17:26			18:33	20:44			21:53			22:46
14	09:17		11:08 (24)	08:15			06:59	06:30			05:13			04:28
	16:15	20	11:28 (24)	17:28			18:35	20:47			21:55			22:47
15	09:16		11:08 (24)	08:13			06:56	06:27			05:10			04:27
	16:17	21	11:29 (24)	17:31			18:38	20:49			21:58			22:47
16	09:15		11:08 (24)	08:10			06:53	06:24			05:08			04:27
	16:19	21	11:29 (24)	17:33			18:40	20:51			22:00			22:48
17	09:13		11:09 (24)	08:08			06:50	06:21		07:11 (77)	05:06			04:27
	16:21	22	11:31 (24)	17:36			18:42	20:54	3	07:14 (77)	22:02			22:49
18	09:12		11:09 (24)	08:05			06:47	06:19		07:08 (77)	05:04			04:27
	16:23	22	11:31 (24)	17:38			18:45	20:56	9	07:17 (77)	22:04			22:49
19	09:10		11:09 (24)	08:02			06:44	06:16		07:05 (77)	05:02			04:27
	16:25	22	11:31 (24)	17:40			18:47	20:58	12	07:17 (77)	22:06			22:50
20	09:09		11:09 (24)	08:00			06:41	06:13		07:04 (77)	05:00			04:27
	16:28	23	11:32 (24)	17:43			18:49	21:01	18	07:22 (76)	22:08			22:50
21	09:07		11:09 (24)	07:57			06:39	06:10		07:04 (77)	04:58			04:27
	16:30	23	11:32 (24)	17:45			18:52	21:03	20	07:24 (76)	22:10			22:50
22	09:05		11:10 (24)	07:54			06:36	06:08		07:03 (77)	04:56			04:27
	16:32	22	11:32 (24)	17:48			18:54	21:05	22	07:25 (76)	22:12			22:50
23	09:03		11:10 (24)	07:52			06:33	06:05		07:04 (77)	04:54			04:27
	16:34	22	11:32 (24)	17:50			18:56	21:07	22	07:26 (76)	22:14			22:51
24	09:02		11:10 (24)	07:49			06:30	06:02		07:03 (77)	04:52			04:27
	16:37	22	11:32 (24)	17:53			18:58	21:10	22	07:25 (76)	22:16			22:51
25	09:00		10:05 (29)	07:46			06:27	06:00		07:04 (77)	04:51			04:28
	16:39	27	11:32 (24)	17:55			19:01	21:12	22	07:26 (76)	22:18			22:51
26	08:58		10:03 (29)	07:44			06:24	05:57		07:05 (77)	04:49			04:28
	16:42	31	11:32 (24)	17:57			19:03	21:14	20	07:25 (76)	22:20			22:50
27	08:56		10:02 (29)	07:41			06:21	05:54		07:07 (77)	04:47			04:29
	16:44	32	11:31 (24)	18:00			19:05	21:17	19	07:26 (76)	22:22			22:50
28	08:54		10:00 (29)	07:38			06:18	05:52		07:08 (76)	04:46			04:30
	16:46	32	11:30 (24)	18:02			19:08	21:19	16	07:24 (76)	22:24			22:50
29	08:52		10:00 (29)				07:15	05:49		07:08 (76)	04:44			04:30
	16:49	30	11:29 (24)				20:10	21:21	16	07:24 (76)	22:26			22:50
30	08:50		09:59 (29)				07:13	05:46		07:08 (76)	04:43			04:31
	16:51	29	11:27 (24)				20:12	21:24	14	07:22 (76)	22:27			22:49
31	08:48		09:59 (29)				07:10				04:41			
	16:54	20	10:19 (29)				20:14				22:29			
Potential sun hours	221			260			365	432			521			547
Total, worst case		770			166				235			138		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** W - Osland 85 (23)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July			August			September	October	November			December		
1	04:32			05:24		06:37 (79)	06:33	07:39	07:51		09:35 (29)	09:00		10:51 (24)
	22:49			22:01	8	06:45 (79)	20:40	19:13	16:49	8	09:43 (29)	15:51	29	12:24 (25)
2	04:33			05:26		06:36 (79)	06:35	07:42	07:54		09:33 (29)	09:02		10:51 (24)
	22:48			21:59	10	06:46 (79)	20:37	19:10	16:46	13	09:46 (29)	15:50	31	12:25 (25)
3	04:34			05:28		06:35 (79)	06:38	07:44	07:56		09:32 (29)	09:04		10:52 (24)
	22:47			21:56	12	06:47 (79)	20:34	19:07	16:44	15	09:47 (29)	15:49	31	12:26 (25)
4	04:35			05:31		06:35 (79)	06:40	07:46	07:59		09:31 (29)	09:05		10:53 (24)
	22:47			21:54	12	06:47 (79)	20:31	19:04	16:41	17	09:48 (29)	15:48	30	12:26 (25)
5	04:36			05:33		06:34 (79)	06:42	07:48	08:01		09:30 (29)	09:07		10:55 (24)
	22:46			21:52	14	06:48 (79)	20:28	19:02	16:39	19	09:49 (29)	15:47	28	12:27 (25)
6	04:37			05:35		06:34 (79)	06:44	07:51	08:03		09:30 (29)	09:09		10:56 (24)
	22:45			21:49	14	06:48 (79)	20:25	18:59	16:37	20	09:50 (29)	15:46	27	12:28 (25)
7	04:39			05:37		06:34 (79)	06:46	07:53	08:06		09:30 (29)	09:10		10:58 (24)
	22:44			21:47	14	06:48 (79)	20:23	18:56	16:34	20	09:50 (29)	15:45	26	12:29 (25)
8	04:40			05:39		06:34 (79)	06:49	07:55	08:08		09:29 (29)	09:12		12:11 (25)
	22:43			21:44	13	06:47 (79)	20:20	18:53	16:32	21	09:50 (29)	15:45	19	12:30 (25)
9	04:41			05:42		06:35 (79)	06:51	07:57	08:11		09:30 (29)	09:13		12:11 (25)
	22:42			21:42	11	06:46 (79)	20:17	18:50	16:30	20	09:50 (29)	15:44	20	12:31 (25)
10	04:43			05:44		06:36 (79)	06:53	08:00	08:13		09:30 (29)	09:15		12:11 (25)
	22:41			21:39	9	06:45 (79)	20:14	18:47	16:28	20	09:50 (29)	15:44	20	12:31 (25)
11	04:44			05:46		06:37 (79)	06:55	08:02	08:15		09:30 (29)	09:16		12:11 (25)
	22:39			21:37	16	07:29 (76)	20:11	18:45	16:26	19	09:49 (29)	15:43	20	12:31 (25)
12	04:46			05:48		07:18 (76)	06:57	08:04	08:18		09:31 (29)	09:18		12:11 (25)
	22:38			21:34	12	07:30 (76)	20:08	18:42	16:23	28	10:59 (24)	15:43	21	12:32 (25)
13	04:47			05:51		07:17 (76)	07:00	08:07	08:20		09:32 (29)	09:19		12:12 (25)
	22:37			21:32	14	07:31 (76)	20:05	18:39	16:21	30	11:01 (24)	15:42	21	12:33 (25)
14	04:49			05:53		07:16 (76)	07:02	08:09	08:23		09:33 (29)	09:20		12:12 (25)
	22:35			21:29	16	07:32 (76)	20:02	18:36	16:19	32	11:03 (24)	15:42	21	12:33 (25)
15	04:51			05:55		07:15 (76)	07:04	08:11	08:25		09:34 (29)	09:21		12:12 (25)
	22:34			21:26	17	07:32 (76)	19:59	18:33	16:17	31	11:03 (24)	15:42	21	12:33 (25)
16	04:52			05:57		07:13 (77)	07:06	08:14	08:27		09:36 (29)	09:22		12:13 (25)
	22:32			21:24	19	07:32 (76)	19:57	18:31	16:15	31	11:05 (24)	15:42	21	12:34 (25)
17	04:54			06:00		07:11 (77)	07:08	08:16	08:30		09:39 (29)	09:23		12:14 (25)
	22:31			21:21	21	07:32 (76)	19:54	18:28	16:13	27	11:06 (24)	15:42	21	12:35 (25)
18	04:56			06:02		07:10 (77)	07:11	08:18	08:32		10:44 (24)	09:24		12:14 (25)
	22:29			21:18	22	07:32 (76)	19:51	18:25	16:11	22	11:06 (24)	15:42	21	12:35 (25)
19	04:58			06:04		07:09 (77)	07:13	08:21	08:34		10:45 (24)	09:25		12:14 (25)
	22:27			21:16	22	07:31 (76)	19:48	18:23	16:09	22	11:07 (24)	15:42	21	12:35 (25)
20	05:00			06:06		07:09 (77)	07:15	08:23	08:36		10:45 (24)	09:26		12:15 (25)
	22:25			21:13	22	07:31 (76)	19:45	18:20	16:08	22	11:07 (24)	15:43	21	12:36 (25)
21	05:02			06:09		07:09 (77)	07:17	08:25	08:39		10:44 (24)	09:26		12:16 (25)
	22:24			21:10	21	07:30 (76)	19:42	18:17	16:06	23	11:07 (24)	15:43	21	12:37 (25)
22	05:03			06:11		07:08 (77)	07:19	08:28	08:41		10:45 (24)	09:27		12:16 (25)
	22:22			21:08	21	07:29 (76)	19:39	18:14	16:04	23	11:08 (24)	15:43	21	12:37 (25)
23	05:05			06:13		07:08 (77)	07:22	08:30	08:43		10:45 (24)	09:27		12:16 (25)
	22:20			21:05	18	07:26 (76)	19:36	18:12	16:02	22	11:07 (24)	15:44	21	12:37 (25)
24	05:07			06:15		07:09 (77)	07:24	08:32	08:45		10:46 (24)	09:28		12:17 (25)
	22:18			21:02	12	07:21 (77)	19:33	18:09	16:01	22	11:08 (24)	15:45	21	12:38 (25)
25	05:09			06:17		07:11 (77)	07:26	07:35	08:48		10:46 (24)	09:28		12:17 (25)
	22:16			20:59	8	07:19 (77)	19:30	17:07	15:59	22	11:08 (24)	15:45	21	12:38 (25)
26	05:11			06:20		07:14 (77)	07:28	07:37	08:50		10:47 (24)	09:28		12:18 (25)
	22:14			20:57	2	07:16 (77)	19:27	17:04	15:58	21	11:08 (24)	15:46	21	12:39 (25)
27	05:14			06:22			07:30	07:39	08:52		10:47 (24)	09:28		12:18 (25)
	22:12			20:54			19:25	17:01	15:56	21	11:08 (24)	15:47	21	12:39 (25)
28	05:16			06:24			07:33	07:42	08:54		10:48 (24)	09:29		12:19 (25)
	22:10			20:51			19:22	16:59	15:55	20	11:08 (24)	15:48	21	12:40 (25)
29	05:18			06:26			07:35	07:44	08:56		10:49 (24)	09:29		12:19 (25)
	22:08			20:48			19:19	16:56	15:54	24	12:19 (25)	15:49	21	12:40 (25)
30	05:20			06:29			07:37	07:47	08:58		10:49 (24)	09:28		12:20 (25)
	22:05			20:45			19:16	16:54	15:52	28	12:21 (25)	15:50	20	12:40 (25)
31	05:22		06:41 (79)	06:31				07:49				09:28		12:21 (25)
	22:03	1	06:42 (79)	20:43				16:51				15:51	20	12:41 (25)
Potential sun hours	546			478			386	319	236			199		
Total, worst case		1			380					663			699	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** X - Osland 65 (24)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April			May			June
1	09:28		11:14 (24)	08:46		10:11 (29)	07:35	07:07			05:44		06:33 (79)	04:40
	15:53	31	12:43 (25)	16:56	18	10:29 (29)	18:05	20:17			21:26	14	06:47 (79)	22:31
2	09:28		11:14 (24)	08:44		10:11 (29)	07:33	07:04			05:41		06:33 (79)	04:38
	15:54	30	12:43 (25)	16:58	17	10:28 (29)	18:07	20:19			21:28	14	06:47 (79)	22:32
3	09:27		11:13 (24)	08:41		10:13 (29)	07:30	07:01			05:39		06:33 (79)	04:37
	15:55	31	12:43 (25)	17:01	14	10:27 (29)	18:09	20:21			21:31	13	06:46 (79)	22:34
4	09:27		11:13 (24)	08:39		10:14 (29)	07:27	06:58			05:36		06:33 (79)	04:36
	15:57	31	12:43 (25)	17:03	11	10:25 (29)	18:12	20:24			21:33	13	06:46 (79)	22:35
5	09:26		11:14 (24)	08:37		10:17 (29)	07:24	06:55			05:34		06:34 (79)	04:35
	15:58	29	12:43 (25)	17:06	6	10:23 (29)	18:14	20:26			21:35	12	06:46 (79)	22:37
6	09:25		11:14 (24)	08:35			07:21	06:52			05:31		06:34 (79)	04:34
	16:00	28	12:42 (25)	17:08			18:17	20:28			21:37	10	06:44 (79)	22:38
7	09:25		11:14 (24)	08:32			07:19	06:50			05:29		06:35 (79)	04:33
	16:02	26	12:41 (25)	17:11			18:19	20:31			21:40	8	06:43 (79)	22:39
8	09:24		11:15 (24)	08:30			07:16	06:47			05:26		06:38 (79)	04:32
	16:03	20	11:35 (24)	17:13			18:21	20:33			21:42	2	06:40 (79)	22:41
9	09:23		11:15 (24)	08:27			07:13	06:44			05:24			04:31
	16:05	21	11:36 (24)	17:16			18:24	20:35			21:44			22:42
10	09:22		11:15 (24)	08:25			07:10	06:41			05:22			04:30
	16:07	21	11:36 (24)	17:18			18:26	20:37			21:47			22:43
11	09:21		11:15 (24)	08:23			07:07	06:38			05:19			04:29
	16:09	22	11:37 (24)	17:21			18:28	20:40			21:49			22:44
12	09:20		11:15 (24)	08:20			07:04	06:35			05:17			04:29
	16:11	22	11:37 (24)	17:23			18:31	20:42			21:51			22:45
13	09:19		11:16 (24)	08:18			07:02	06:33		07:18 (77)	05:15			04:28
	16:13	22	11:38 (24)	17:26			18:33	20:44	9	07:27 (77)	21:53			22:46
14	09:17		11:16 (24)	08:15			06:59	06:30		07:16 (77)	05:13			04:28
	16:15	22	11:38 (24)	17:28			18:35	20:47	19	07:35 (76)	21:55			22:47
15	09:16		11:16 (24)	08:13			06:56	06:27		07:16 (77)	05:10			04:27
	16:17	22	11:38 (24)	17:31			18:38	20:49	22	07:38 (76)	21:58			22:47
16	09:15		11:16 (24)	08:10			06:53	06:24		07:15 (77)	05:08			04:27
	16:19	22	11:38 (24)	17:33			18:40	20:51	24	07:39 (76)	22:00			22:48
17	09:13		11:18 (24)	08:08			06:50	06:21		07:14 (77)	05:06			04:27
	16:21	21	11:39 (24)	17:36			18:42	20:54	25	07:39 (76)	22:02			22:49
18	09:12		11:18 (24)	08:05			06:47	06:19		07:14 (77)	05:04			04:27
	16:23	21	11:39 (24)	17:38			18:45	20:56	26	07:40 (76)	22:04			22:49
19	09:10		10:13 (29)	08:02			06:44	06:16		07:14 (77)	05:02			04:27
	16:25	27	11:39 (24)	17:40			18:47	20:58	26	07:40 (76)	22:06			22:50
20	09:09		10:12 (29)	08:00			06:41	06:13		07:14 (77)	05:00			04:27
	16:28	30	11:39 (24)	17:43			18:49	21:01	25	07:39 (76)	22:08			22:50
21	09:07		10:11 (29)	07:57			06:39	06:10		07:16 (77)	04:58			04:27
	16:30	32	11:39 (24)	17:45			18:52	21:03	23	07:39 (76)	22:10			22:50
22	09:05		10:10 (29)	07:54			06:36	06:08		07:17 (77)	04:56			04:27
	16:32	32	11:38 (24)	17:48			18:54	21:05	21	07:38 (76)	22:12			22:51
23	09:03		10:09 (29)	07:52			06:33	06:05		07:22 (76)	04:54			04:27
	16:34	31	11:37 (24)	17:50			18:56	21:07	16	07:38 (76)	22:14			22:51
24	09:02		10:09 (29)	07:49			06:30	06:02		07:22 (76)	04:52			04:27
	16:37	29	11:36 (24)	17:53			18:58	21:10	14	07:36 (76)	22:16			22:51
25	09:00		10:09 (29)	07:46			06:27	06:00		07:24 (76)	04:51			04:28
	16:39	26	11:34 (24)	17:55			19:01	21:12	11	07:35 (76)	22:18			22:51
26	08:58		10:09 (29)	07:44			06:24	05:57		07:25 (76)	04:49			04:28
	16:41	19	10:28 (29)	17:57			19:03	21:14	7	07:32 (76)	22:20			22:51
27	08:56		10:09 (29)	07:41			06:21	05:54		06:39 (79)	04:47			04:29
	16:44	20	10:29 (29)	18:00			19:05	21:17	4	06:43 (79)	22:22			22:50
28	08:54		10:09 (29)	07:38			06:18	05:52		06:36 (79)	04:46			04:30
	16:46	19	10:28 (29)	18:02			19:08	21:19	9	06:45 (79)	22:24			22:50
29	08:52		10:09 (29)				07:15	05:49		06:35 (79)	04:44			04:30
	16:49	20	10:29 (29)				20:10	21:21	11	06:46 (79)	22:26			22:50
30	08:50		10:09 (29)				07:13	05:46		06:33 (79)	04:43			04:31
	16:51	19	10:28 (29)				20:12	21:24	13	06:46 (79)	22:27			22:49
31	08:48		10:10 (29)				07:10				04:41			
	16:54	19	10:29 (29)				20:14				22:29			
Potential sun hours	221			260			365	432			521			547
Total, worst case		765			66				305			86		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** X - Osland 65 (24)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August			September	October	November			December		
1	04:32	05:24			06:33	07:39	07:51			09:00		10:57 (24)
	22:49	22:01			20:40	19:13	16:49			15:51	22	11:19 (24)
2	04:33	05:26			06:35	07:42	07:54			09:02		10:58 (24)
	22:48	21:59			20:37	19:10	16:46			15:50	21	11:19 (24)
3	04:34	05:28			06:38	07:44	07:56			09:04		10:58 (24)
	22:47	21:56			20:34	19:07	16:44			15:49	21	11:19 (24)
4	04:35	05:31			06:40	07:46	07:59			09:05		10:59 (24)
	22:47	21:54			20:31	19:04	16:41			15:48	20	11:19 (24)
5	04:36	05:33		06:47 (79)	06:42	07:48	08:01			09:07		10:59 (24)
	22:46	21:52	5	06:52 (79)	20:28	19:02	16:39			15:47	26	12:26 (25)
6	04:37	05:35		06:45 (79)	06:44	07:51	08:03		09:47 (29)	09:09		11:00 (24)
	22:45	21:49	9	06:54 (79)	20:25	18:59	16:37	7	09:54 (29)	15:46	28	12:28 (25)
7	04:39	05:37		06:44 (79)	06:46	07:53	08:06		09:45 (29)	09:10		11:01 (24)
	22:44	21:47	11	06:55 (79)	20:23	18:56	16:34	11	09:56 (29)	15:45	29	12:30 (25)
8	04:40	05:39		06:43 (79)	06:49	07:55	08:08		09:43 (29)	09:12		11:02 (24)
	22:43	21:44	12	06:55 (79)	20:20	18:53	16:32	14	09:57 (29)	15:45	30	12:31 (25)
9	04:41	05:42		06:42 (79)	06:51	07:57	08:11		09:42 (29)	09:14		11:03 (24)
	22:42	21:42	14	06:56 (79)	20:17	18:50	16:30	17	09:59 (29)	15:44	30	12:32 (25)
10	04:43	05:44		06:42 (79)	06:53	08:00	08:13		09:42 (29)	09:15		11:03 (24)
	22:41	21:39	14	06:56 (79)	20:14	18:47	16:28	18	10:00 (29)	15:44	30	12:32 (25)
11	04:44	05:46		06:42 (79)	06:55	08:02	08:15		09:41 (29)	09:16		11:04 (24)
	22:39	21:37	13	06:55 (79)	20:11	18:45	16:26	19	10:00 (29)	15:43	31	12:34 (25)
12	04:46	05:48		06:42 (79)	06:57	08:04	08:18		09:41 (29)	09:18		11:04 (24)
	22:38	21:34	13	06:55 (79)	20:08	18:42	16:23	19	10:00 (29)	15:43	31	12:34 (25)
13	04:47	05:51		06:42 (79)	07:00	08:07	08:20		09:41 (29)	09:19		11:05 (24)
	22:37	21:32	12	06:54 (79)	20:05	18:39	16:21	20	10:01 (29)	15:42	31	12:35 (25)
14	04:49	05:53		06:43 (79)	07:02	08:09	08:23		09:42 (29)	09:20		11:06 (24)
	22:35	21:29	10	06:53 (79)	20:02	18:36	16:19	19	10:01 (29)	15:42	30	12:35 (25)
15	04:51	05:55		06:44 (79)	07:04	08:11	08:25		09:41 (29)	09:21		11:06 (24)
	22:34	21:26	8	06:52 (79)	19:59	18:33	16:17	20	10:01 (29)	15:42	31	12:36 (25)
16	04:52	05:57			07:06	08:14	08:27		09:42 (29)	09:22		11:08 (24)
	22:32	21:24			19:57	18:31	16:15	19	10:01 (29)	15:42	30	12:37 (25)
17	04:54	06:00		07:31 (76)	07:08	08:16	08:30		09:43 (29)	09:23		11:09 (24)
	22:31	21:21	8	07:39 (76)	19:54	18:28	16:13	26	11:08 (24)	15:42	30	12:38 (25)
18	04:56	06:02		07:29 (76)	07:11	08:18	08:32		09:43 (29)	09:24		11:09 (24)
	22:29	21:18	12	07:41 (76)	19:51	18:25	16:11	30	11:10 (24)	15:42	28	12:37 (25)
19	04:58	06:04		07:27 (76)	07:13	08:21	08:34		09:44 (29)	09:25		11:09 (24)
	22:27	21:16	15	07:42 (76)	19:48	18:23	16:09	31	11:12 (24)	15:42	30	12:38 (25)
20	05:00	06:06		07:27 (76)	07:15	08:23	08:36		09:45 (29)	09:26		11:10 (24)
	22:25	21:13	17	07:44 (76)	19:45	18:20	16:08	32	11:13 (24)	15:43	30	12:39 (25)
21	05:01	06:09		07:22 (77)	07:17	08:25	08:39		09:46 (29)	09:26		11:11 (24)
	22:24	21:10	22	07:44 (76)	19:42	18:17	16:06	32	11:14 (24)	15:43	29	12:40 (25)
22	05:03	06:11		07:20 (77)	07:19	08:28	08:41		09:48 (29)	09:27		11:11 (24)
	22:22	21:08	24	07:44 (76)	19:39	18:14	16:04	29	11:15 (24)	15:43	29	12:40 (25)
23	05:05	06:13		07:19 (77)	07:22	08:30	08:43		09:49 (29)	09:27		11:11 (24)
	22:20	21:05	25	07:44 (76)	19:36	18:12	16:02	27	11:15 (24)	15:44	30	12:40 (25)
24	05:07	06:15		07:18 (77)	07:24	08:32	08:45		10:55 (24)	09:28		11:12 (24)
	22:18	21:02	25	07:43 (76)	19:33	18:09	16:01	21	11:16 (24)	15:45	30	12:41 (25)
25	05:09	06:17		07:17 (77)	07:26	07:35	08:48		10:55 (24)	09:28		11:12 (24)
	22:16	20:59	26	07:43 (76)	19:30	17:07	15:59	21	11:16 (24)	15:45	29	12:41 (25)
26	05:11	06:20		07:17 (77)	07:28	07:37	08:50		10:55 (24)	09:28		11:13 (24)
	22:14	20:57	25	07:42 (76)	19:27	17:04	15:58	22	11:17 (24)	15:46	30	12:42 (25)
27	05:14	06:22		07:16 (77)	07:30	07:39	08:52		10:55 (24)	09:28		11:13 (24)
	22:12	20:54	24	07:40 (76)	19:25	17:01	15:56	22	11:17 (24)	15:47	30	12:42 (25)
28	05:16	06:24		07:17 (77)	07:33	07:42	08:54		10:56 (24)	09:29		11:13 (24)
	22:10	20:51	22	07:39 (76)	19:22	16:59	15:55	22	11:18 (24)	15:48	31	12:43 (25)
29	05:18	06:26		07:17 (77)	07:35	07:44	08:56		10:56 (24)	09:29		11:13 (24)
	22:08	20:48	19	07:36 (76)	19:19	16:56	15:54	22	11:18 (24)	15:49	31	12:42 (25)
30	05:20	06:29		07:18 (77)	07:37	07:47	08:58		10:56 (24)	09:28		11:13 (24)
	22:05	20:45	9	07:27 (77)	19:16	16:54	15:52	22	11:18 (24)	15:50	31	12:43 (25)
31	05:22	06:31				07:49				09:28		11:14 (24)
	22:03	20:43				16:51				15:51	30	12:43 (25)
Potential sun hours	546	478			386	319	236			199		
Total, worst case			394					542			889	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** Y - Brusalivegen 215 (25)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February			March			April	May			June		
1	09:28	08:46			07:35		08:18 (63)	07:07	05:44			04:40		06:16 (1)
	15:53	16:56			18:05	13	08:31 (63)	20:17	21:26			22:30	29	06:45 (1)
2	09:27	08:43			07:33		08:19 (63)	07:04	05:42			04:39		06:15 (1)
	15:54	16:59			18:07	10	08:29 (63)	20:19	21:28			22:32	31	06:46 (1)
3	09:27	08:41			07:30		08:22 (63)	07:01	05:39			04:38		06:14 (1)
	15:56	17:01			18:10	4	08:26 (63)	20:21	21:31			22:33	32	06:46 (1)
4	09:26	08:39			07:27			06:58	05:37			04:36		06:14 (1)
	15:57	17:04			18:12			20:24	21:33			22:35	32	06:46 (1)
5	09:26	08:37			07:24			06:55	05:34			04:35		06:14 (1)
	15:59	17:06			18:14			20:26	21:35			22:36	32	06:46 (1)
6	09:25	08:34			07:21			06:53	05:32			04:34		06:13 (1)
	16:00	17:09			18:17			20:28	21:37			22:38	33	06:46 (1)
7	09:24	08:32			07:19		07:48 (62)	06:50	05:29			04:33		06:12 (1)
	16:02	17:11			18:19	7	07:55 (62)	20:31	21:40			22:39	34	06:46 (1)
8	09:24	08:30			07:16		07:46 (62)	06:47	05:27			04:32		06:12 (1)
	16:04	17:14			18:21	10	07:56 (62)	20:33	21:42			22:40	34	06:46 (1)
9	09:23	08:27			07:13		07:44 (62)	06:44	05:24			04:31		06:13 (1)
	16:06	17:16			18:24	13	07:57 (62)	20:35	21:44			22:41	34	06:47 (1)
10	09:22	08:25			07:10		07:44 (62)	06:41	05:22			04:31		06:13 (1)
	16:07	17:19			18:26	14	07:58 (62)	20:37	21:46			22:43	33	06:46 (1)
11	09:21	08:23			07:07		07:44 (62)	06:38	05:20			04:30		06:14 (1)
	16:09	17:21			18:28	14	07:58 (62)	20:40	21:49			22:44	33	06:47 (1)
12	09:20	08:20			07:04		07:44 (62)	06:36	05:17			04:29		06:13 (1)
	16:11	17:23			18:31	13	07:57 (62)	20:42	21:51			22:45	33	06:46 (1)
13	09:18	08:18			07:02		07:44 (62)	06:33	05:15			04:29		06:14 (1)
	16:13	17:26			18:33	12	07:56 (62)	20:44	21:53			22:46	33	06:47 (1)
14	09:17	08:15			06:59		07:45 (62)	06:30	05:13			04:28		06:15 (1)
	16:15	17:28			18:35	10	07:55 (62)	20:47	21:55			22:46	32	06:47 (1)
15	09:16	08:13			06:56		07:46 (62)	06:27	05:11		06:38 (1)	04:28		06:14 (1)
	16:17	17:31			18:38	6	07:52 (62)	20:49	21:57	2	06:40 (1)	22:47	32	06:46 (1)
16	09:14	08:10			06:53			06:24	05:09		06:37 (1)	04:28		06:15 (1)
	16:19	17:33			18:40			20:51	22:00	4	06:41 (1)	22:48	32	06:47 (1)
17	09:13	08:07			06:50			06:22	05:06		06:35 (1)	04:27		06:15 (1)
	16:21	17:36			18:42			20:54	22:02	6	06:41 (1)	22:48	32	06:47 (1)
18	09:12	08:05			06:47			06:19	05:04		06:34 (1)	04:27		06:15 (1)
	16:24	17:38			18:45			20:56	22:04	9	06:43 (1)	22:49	32	06:47 (1)
19	09:10	08:02			06:44			06:16	05:02		06:32 (1)	04:27		06:16 (1)
	16:26	17:41			18:47			20:58	22:06	11	06:43 (1)	22:49	31	06:47 (1)
20	09:08	08:00			06:42			06:13	05:00		06:31 (1)	04:27		06:16 (1)
	16:28	17:43			18:49			21:00	22:08	12	06:43 (1)	22:50	31	06:47 (1)
21	09:07	07:57			06:39			06:11	04:58		06:29 (1)	04:27		06:16 (1)
	16:30	17:46			18:52			21:03	22:10	14	06:43 (1)	22:50	31	06:47 (1)
22	09:05	07:54		08:23 (63)	06:36			06:08	04:56		06:28 (1)	04:27		06:17 (1)
	16:32	17:48	5	08:28 (63)	18:54			21:05	22:12	16	06:44 (1)	22:50	31	06:48 (1)
23	09:03	07:52		08:21 (63)	06:33			06:05	04:55		06:26 (1)	04:28		06:17 (1)
	16:35	17:50	10	08:31 (63)	18:56			21:07	22:14	18	06:44 (1)	22:50	31	06:48 (1)
24	09:02	07:49		08:18 (63)	06:30			06:02	04:53		06:26 (1)	04:28		06:16 (1)
	16:37	17:53	13	08:31 (63)	18:58			21:10	22:16	19	06:45 (1)	22:50	32	06:48 (1)
25	09:00	07:46		08:17 (63)	06:27			06:00	04:51		06:24 (1)	04:28		06:17 (1)
	16:39	17:55	15	08:32 (63)	19:01			21:12	22:18	21	06:45 (1)	22:50	32	06:49 (1)
26	08:58	07:44		08:17 (63)	06:24			05:57	04:49		06:23 (1)	04:29		06:17 (1)
	16:42	17:58	15	08:32 (63)	19:03			21:14	22:20	22	06:45 (1)	22:50	32	06:49 (1)
27	08:56	07:41		08:17 (63)	06:21			05:54	04:48		06:21 (1)	04:29		06:17 (1)
	16:44	18:00	14	08:31 (63)	19:05			21:17	22:22	24	06:45 (1)	22:50	32	06:49 (1)
28	08:54	07:38		08:17 (63)	06:18			05:52	04:46		06:20 (1)	04:30		06:17 (1)
	16:47	18:02	14	08:31 (63)	19:08			21:19	22:24	25	06:45 (1)	22:50	32	06:49 (1)
29	08:52				07:16			05:49	04:44		06:20 (1)	04:31		06:17 (1)
	16:49				20:10			21:21	22:25	26	06:46 (1)	22:49	33	06:50 (1)
30	08:50				07:13			05:47	04:43		06:19 (1)	04:32		06:18 (1)
	16:51				20:12			21:24	22:27	27	06:46 (1)	22:49	32	06:50 (1)
31	08:48				07:10				04:41		06:17 (1)			
	16:54				20:14				22:29	28	06:45 (1)			
Potential sun hours	221	260			365			432	521			547		
Total, worst case			86			126				284			963	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** Y - Brusalivegen 215 (25)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July			August		September			October			November	December
1	04:32		06:18 (1)	05:24		06:33			07:39		08:23 (62)	07:51	09:00
	22:48	33	06:51 (1)	22:01		20:40			19:13	13	08:36 (62)	16:49	15:52
2	04:33		06:18 (1)	05:27		06:35			07:42		08:22 (62)	07:54	09:01
	22:48	33	06:51 (1)	21:58		20:37			19:10	14	08:36 (62)	16:47	15:50
3	04:34		06:17 (1)	05:29		06:38			07:44		08:21 (62)	07:56	09:03
	22:47	34	06:51 (1)	21:56		20:34			19:07	14	08:35 (62)	16:44	15:49
4	04:35		06:18 (1)	05:31		06:40			07:46		08:22 (62)	07:59	09:05
	22:46	33	06:51 (1)	21:54		20:31			19:05	13	08:35 (62)	16:42	15:48
5	04:37		06:18 (1)	05:33		06:42			07:48		08:22 (62)	08:01	09:07
	22:46	33	06:51 (1)	21:51		20:28			19:02	12	08:34 (62)	16:39	15:47
6	04:38		06:19 (1)	05:35		06:44			07:51		08:23 (62)	08:03	09:09
	22:45	34	06:53 (1)	21:49		20:25			18:59	9	08:32 (62)	16:37	15:47
7	04:39		06:20 (1)	05:38		06:47			07:53		08:27 (62)	08:06	09:10
	22:44	33	06:53 (1)	21:47		20:23			18:56	2	08:29 (62)	16:35	15:46
8	04:40		06:21 (1)	05:40		06:49			07:55			08:08	09:12
	22:43	32	06:53 (1)	21:44		20:20			18:53			16:32	15:45
9	04:42		06:21 (1)	05:42		06:51			07:57			08:11	09:13
	22:42	32	06:53 (1)	21:42		20:17			18:50			16:30	15:44
10	04:43		06:22 (1)	05:44		06:53			08:00			08:13	09:15
	22:40	31	06:53 (1)	21:39		20:14			18:48			16:28	15:44
11	04:45		06:24 (1)	05:46		06:55			08:02		08:54 (63)	08:15	09:16
	22:39	30	06:54 (1)	21:37		20:11			18:45	7	09:01 (63)	16:26	15:43
12	04:46		06:25 (1)	05:49		06:58			08:04		08:51 (63)	08:18	09:17
	22:38	29	06:54 (1)	21:34		20:08			18:42	11	09:02 (63)	16:24	15:43
13	04:48		06:26 (1)	05:51		07:00			08:07		08:51 (63)	08:20	09:19
	22:36	28	06:54 (1)	21:32		20:05			18:39	13	09:04 (63)	16:22	15:43
14	04:49		06:28 (1)	05:53		07:02			08:09		08:49 (63)	08:22	09:20
	22:35	26	06:54 (1)	21:29		20:02			18:36	15	09:04 (63)	16:19	15:43
15	04:51		06:28 (1)	05:55		07:04			08:11		08:49 (63)	08:25	09:21
	22:34	26	06:54 (1)	21:26		19:59			18:34	15	09:04 (63)	16:17	15:42
16	04:53		06:30 (1)	05:58		07:06			08:14		08:49 (63)	08:27	09:22
	22:32	24	06:54 (1)	21:24		19:57			18:31	15	09:04 (63)	16:15	15:42
17	04:54		06:31 (1)	06:00		07:09			08:16		08:50 (63)	08:29	09:23
	22:30	23	06:54 (1)	21:21		19:54			18:28	14	09:04 (63)	16:14	15:42
18	04:56		06:33 (1)	06:02		07:11			08:18		08:50 (63)	08:32	09:24
	22:29	21	06:54 (1)	21:18		19:51			18:25	12	09:02 (63)	16:12	15:42
19	04:58		06:35 (1)	06:04		07:13			08:21		08:53 (63)	08:34	09:25
	22:27	20	06:55 (1)	21:16		19:48			18:23	8	09:01 (63)	16:10	15:43
20	05:00		06:35 (1)	06:07		07:15			08:23		08:55 (63)	08:36	09:25
	22:25	19	06:54 (1)	21:13		19:45			18:20	3	08:58 (63)	16:08	15:43
21	05:02		06:37 (1)	06:09		07:17			08:25			08:39	09:26
	22:23	17	06:54 (1)	21:10		19:42			18:17			16:06	15:43
22	05:04		06:39 (1)	06:11		07:20			08:28			08:41	09:27
	22:22	15	06:54 (1)	21:08		19:39			18:15			16:04	15:44
23	05:06		06:40 (1)	06:13		07:22			08:30			08:43	09:27
	22:20	13	06:53 (1)	21:05		19:36			18:12			16:03	15:44
24	05:08		06:42 (1)	06:15		07:24			08:32			08:45	09:28
	22:18	11	06:53 (1)	21:02		19:33			18:09			16:01	15:45
25	05:10		06:43 (1)	06:18		07:26			07:35			08:47	09:28
	22:16	10	06:53 (1)	20:59		19:30			17:07			16:00	15:46
26	05:12		06:45 (1)	06:20		07:28			07:37			08:49	09:28
	22:14	7	06:52 (1)	20:57		19:28			17:04			15:58	15:46
27	05:14		06:47 (1)	06:22		07:31			07:39			08:52	09:28
	22:12	5	06:52 (1)	20:54		19:25			17:02			15:57	15:47
28	05:16		06:49 (1)	06:24		07:33		08:29 (62)	07:42			08:54	09:28
	22:10	2	06:51 (1)	20:51		19:22	3	08:32 (62)	16:59			15:55	15:48
29	05:18		06:49 (1)	06:27		07:35		08:25 (62)	07:44			08:56	09:28
	22:07	1	06:50 (1)	20:48		19:19	9	08:34 (62)	16:56			15:54	15:49
30	05:20			06:29		07:37		08:23 (62)	07:47			08:58	09:28
	22:05			20:45		19:16	12	08:35 (62)	16:54			15:53	15:50
31	05:22			06:31					07:49				09:28
	22:03			20:43					16:51				15:51
Potential sun hours	545			478		386			319			236	200
Total, worst case		655					24			190			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** Z - Brusalivegen 217 (26)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February		March			April	May			June		
1	09:28	08:46		07:35		08:16 (63)	07:07	05:44			04:40		06:00 (1)
	15:53	16:56		18:05	15	08:31 (63)	20:17	21:26			22:30	35	06:35 (1)
2	09:27	08:43		07:33		08:17 (63)	07:04	05:42			04:39		06:00 (1)
	15:54	16:59		18:07	13	08:30 (63)	20:19	21:28			22:32	35	06:35 (1)
3	09:27	08:41		07:30		08:18 (63)	07:01	05:39			04:38		06:00 (1)
	15:56	17:01		18:10	10	08:28 (63)	20:21	21:30			22:33	36	06:36 (1)
4	09:26	08:39		07:27		08:20 (63)	06:58	05:37			04:36		06:00 (1)
	15:57	17:04		18:12	5	08:25 (63)	20:24	21:33			22:35	36	06:36 (1)
5	09:26	08:37		07:24			06:55	05:34			04:35		06:01 (1)
	15:59	17:06		18:14			20:26	21:35			22:36	36	06:37 (1)
6	09:25	08:34		07:21			06:53	05:32			04:34		06:01 (1)
	16:00	17:09		18:17			20:28	21:37			22:38	36	06:37 (1)
7	09:24	08:32		07:19			06:50	05:29			04:33		06:01 (1)
	16:02	17:11		18:19			20:31	21:40			22:39	36	06:37 (1)
8	09:24	08:30		07:16		07:46 (62)	06:47	05:27			04:32		06:01 (1)
	16:04	17:14		18:21	6	07:52 (62)	20:33	21:42			22:40	36	06:37 (1)
9	09:23	08:27		07:13		07:44 (62)	06:44	05:24			04:31		06:01 (1)
	16:06	17:16		18:24	10	07:54 (62)	20:35	21:44			22:41	37	06:38 (1)
10	09:22	08:25		07:10		07:43 (62)	06:41	05:22			04:31		06:01 (1)
	16:07	17:19		18:26	13	07:56 (62)	20:37	21:46			22:43	37	06:38 (1)
11	09:21	08:23		07:07		07:42 (62)	06:38	05:20			04:30		06:02 (1)
	16:09	17:21		18:28	14	07:56 (62)	20:40	21:49			22:44	36	06:38 (1)
12	09:20	08:20		07:04		07:42 (62)	06:36	05:17			04:29		06:01 (1)
	16:11	17:23		18:31	14	07:56 (62)	20:42	21:51			22:45	37	06:38 (1)
13	09:18	08:18		07:02		07:41 (62)	06:33	05:15			04:29		06:02 (1)
	16:13	17:26		18:33	15	07:56 (62)	20:44	21:53			22:46	37	06:39 (1)
14	09:17	08:15		06:59		07:41 (62)	06:30	05:13			04:28		06:02 (1)
	16:15	17:28		18:35	14	07:55 (62)	20:47	21:55			22:46	37	06:39 (1)
15	09:16	08:13		06:56		07:42 (62)	06:27	05:11			04:28		06:02 (1)
	16:17	17:31		18:38	11	07:53 (62)	20:49	21:57			22:47	37	06:39 (1)
16	09:14	08:10		06:53		07:43 (62)	06:24	05:09			04:28		06:02 (1)
	16:19	17:33		18:40	8	07:51 (62)	20:51	22:00			22:48	37	06:39 (1)
17	09:13	08:07		06:50			06:22	05:06		06:13 (1)	04:27		06:03 (1)
	16:21	17:36		18:42			20:54	22:02	7	06:20 (1)	22:48	36	06:39 (1)
18	09:12	08:05		06:47			06:19	05:04		06:11 (1)	04:27		06:03 (1)
	16:24	17:38		18:45			20:56	22:04	13	06:24 (1)	22:49	37	06:40 (1)
19	09:10	08:02		06:44			06:16	05:02		06:10 (1)	04:27		06:03 (1)
	16:26	17:41		18:47			20:58	22:06	16	06:26 (1)	22:49	37	06:40 (1)
20	09:08	08:00		06:42			06:13	05:00		06:08 (1)	04:27		06:03 (1)
	16:28	17:43		18:49			21:00	22:08	19	06:27 (1)	22:50	37	06:40 (1)
21	09:07	07:57		06:39			06:11	04:58		06:06 (1)	04:27		06:03 (1)
	16:30	17:46		18:52			21:03	22:10	22	06:28 (1)	22:50	37	06:40 (1)
22	09:05	07:54		06:36			06:08	04:56		06:05 (1)	04:27		06:04 (1)
	16:32	17:48		18:54			21:05	22:12	25	06:30 (1)	22:50	37	06:41 (1)
23	09:03	07:52		08:21 (63)	06:33		06:05	04:55		06:04 (1)	04:28		06:04 (1)
	16:35	17:50	8	08:29 (63)	18:56		21:07	22:14	26	06:30 (1)	22:50	37	06:41 (1)
24	09:02	07:49		08:18 (63)	06:30		06:02	04:53		06:03 (1)	04:28		06:04 (1)
	16:37	17:53	12	08:30 (63)	18:58		21:10	22:16	29	06:32 (1)	22:50	37	06:41 (1)
25	09:00	07:46		08:17 (63)	06:27		06:00	04:51		06:02 (1)	04:28		06:05 (1)
	16:39	17:55	14	08:31 (63)	19:01		21:12	22:18	30	06:32 (1)	22:50	36	06:41 (1)
26	08:58	07:44		08:16 (63)	06:24		05:57	04:49		06:02 (1)	04:29		06:04 (1)
	16:42	17:58	15	08:31 (63)	19:03		21:14	22:20	31	06:33 (1)	22:50	37	06:41 (1)
27	08:56	07:41		08:15 (63)	06:21		05:54	04:48		06:01 (1)	04:29		06:05 (1)
	16:44	18:00	16	08:31 (63)	19:05		21:17	22:22	32	06:33 (1)	22:50	37	06:42 (1)
28	08:54	07:38		08:15 (63)	06:18		05:52	04:46		06:01 (1)	04:30		06:05 (1)
	16:47	18:02	15	08:30 (63)	19:08		21:19	22:24	33	06:34 (1)	22:50	36	06:41 (1)
29	08:52				07:16		05:49	04:44		06:01 (1)	04:31		06:05 (1)
	16:49				20:10		21:21	22:25	33	06:34 (1)	22:49	37	06:42 (1)
30	08:50				07:13		05:47	04:43		06:01 (1)	04:32		06:06 (1)
	16:51				20:12		21:24	22:27	34	06:35 (1)	22:49	36	06:42 (1)
31	08:48				07:10			04:41		06:00 (1)			
	16:54				20:14			22:29	35	06:35 (1)			
Potential sun hours	221	260			365		432	521			547		
Total, worst case			80			148			385			1095	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** Z - Brusalivegen 217 (26)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July			August	September			October			November	December
1	04:32		06:06 (1)	05:24	06:33			07:39		08:21 (62)	07:51	09:00
	22:48	37	06:43 (1)	22:01	20:40			19:13	14	08:35 (62)	16:49	15:52
2	04:33		06:06 (1)	05:27	06:35			07:42		08:20 (62)	07:54	09:01
	22:48	37	06:43 (1)	21:58	20:37			19:10	14	08:34 (62)	16:47	15:50
3	04:34		06:06 (1)	05:29	06:38			07:44		08:20 (62)	07:56	09:03
	22:47	36	06:42 (1)	21:56	20:34			19:07	13	08:33 (62)	16:44	15:49
4	04:35		06:06 (1)	05:31	06:40			07:46		08:21 (62)	07:59	09:05
	22:46	36	06:42 (1)	21:54	20:31			19:05	12	08:33 (62)	16:42	15:48
5	04:37		06:06 (1)	05:33	06:42			07:48		08:22 (62)	08:01	09:07
	22:46	37	06:43 (1)	21:51	20:28			19:02	9	08:31 (62)	16:39	15:47
6	04:38		06:07 (1)	05:35	06:44			07:51			08:03	09:09
	22:45	37	06:44 (1)	21:49	20:25			18:59			16:37	15:47
7	04:39		06:08 (1)	05:38	06:47			07:53			08:06	09:10
	22:44	36	06:44 (1)	21:47	20:23			18:56			16:35	15:46
8	04:40		06:08 (1)	05:40	06:49			07:55			08:08	09:12
	22:43	35	06:43 (1)	21:44	20:20			18:53			16:32	15:45
9	04:42		06:08 (1)	05:42	06:51			07:57			08:11	09:13
	22:42	35	06:43 (1)	21:42	20:17			18:50			16:30	15:44
10	04:43		06:08 (1)	05:44	06:53			08:00		08:53 (63)	08:13	09:15
	22:40	35	06:43 (1)	21:39	20:14			18:48	8	09:01 (63)	16:28	15:44
11	04:45		06:09 (1)	05:46	06:55			08:02		08:51 (63)	08:15	09:16
	22:39	35	06:44 (1)	21:37	20:11			18:45	11	09:02 (63)	16:26	15:43
12	04:46		06:09 (1)	05:49	06:58			08:04		08:49 (63)	08:18	09:17
	22:38	34	06:43 (1)	21:34	20:08			18:42	14	09:03 (63)	16:24	15:43
13	04:48		06:09 (1)	05:51	07:00			08:07		08:49 (63)	08:20	09:19
	22:36	34	06:43 (1)	21:31	20:05			18:39	15	09:04 (63)	16:22	15:43
14	04:49		06:10 (1)	05:53	07:02			08:09		08:48 (63)	08:22	09:20
	22:35	33	06:43 (1)	21:29	20:02			18:36	15	09:03 (63)	16:19	15:43
15	04:51		06:10 (1)	05:55	07:04			08:11		08:48 (63)	08:25	09:21
	22:34	32	06:42 (1)	21:26	19:59			18:34	16	09:04 (63)	16:17	15:42
16	04:53		06:11 (1)	05:58	07:06			08:14		08:48 (63)	08:27	09:22
	22:32	32	06:43 (1)	21:24	19:57			18:31	15	09:03 (63)	16:15	15:42
17	04:54		06:11 (1)	06:00	07:09			08:16		08:49 (63)	08:29	09:23
	22:30	31	06:42 (1)	21:21	19:54			18:28	13	09:02 (63)	16:14	15:42
18	04:56		06:12 (1)	06:02	07:11			08:18		08:50 (63)	08:32	09:24
	22:29	30	06:42 (1)	21:18	19:51			18:25	10	09:00 (63)	16:12	15:42
19	04:58		06:13 (1)	06:04	07:13			08:20		08:53 (63)	08:34	09:25
	22:27	29	06:42 (1)	21:16	19:48			18:23	6	08:59 (63)	16:10	15:43
20	05:00		06:13 (1)	06:07	07:15			08:23			08:36	09:25
	22:25	27	06:40 (1)	21:13	19:45			18:20			16:08	15:43
21	05:02		06:15 (1)	06:09	07:17			08:25			08:39	09:26
	22:23	25	06:40 (1)	21:10	19:42			18:17			16:06	15:43
22	05:04		06:16 (1)	06:11	07:20			08:28			08:41	09:27
	22:22	24	06:40 (1)	21:08	19:39			18:15			16:04	15:44
23	05:06		06:17 (1)	06:13	07:22			08:30			08:43	09:27
	22:20	21	06:38 (1)	21:05	19:36			18:12			16:03	15:44
24	05:08		06:19 (1)	06:15	07:24			08:32			08:45	09:28
	22:18	18	06:37 (1)	21:02	19:33			18:09			16:01	15:45
25	05:10		06:20 (1)	06:18	07:26			07:35			08:47	09:28
	22:16	15	06:35 (1)	20:59	19:30			17:07			16:00	15:46
26	05:12		06:22 (1)	06:20	07:28			07:37			08:49	09:28
	22:14	11	06:33 (1)	20:57	19:28			17:04			15:58	15:46
27	05:14		06:27 (1)	06:22	07:31		08:26 (62)	07:39			08:52	09:28
	22:12	2	06:29 (1)	20:54	19:25	6	08:32 (62)	17:02			15:57	15:47
28	05:16			06:24	07:33		08:23 (62)	07:42			08:54	09:28
	22:10			20:51	19:22	11	08:34 (62)	16:59			15:55	15:48
29	05:18			06:27	07:35		08:22 (62)	07:44			08:56	09:28
	22:07			20:48	19:19	12	08:34 (62)	16:56			15:54	15:49
30	05:20			06:29	07:37		08:20 (62)	07:47			08:58	09:28
	22:05			20:45	19:16	15	08:35 (62)	16:54			15:53	15:50
31	05:22			06:31				07:49				09:28
	22:03			20:43				16:51				15:51
Potential sun hours	545			478	386			319			236	200
Total, worst case		794				44			185			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** AA - Buevegen 1463 (27)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February		March		April	May	June
1	09:28	08:46		07:35		08:22 (23)	07:07	05:44	04:40
	15:53	16:56		18:05	22	08:44 (23)	20:17	21:26	22:31
2	09:28	08:44		07:33		08:21 (23)	07:04	05:41	04:39
	15:54	16:59		18:07	24	08:45 (23)	20:19	21:28	22:32
3	09:27	08:41		07:30		08:20 (23)	07:01	05:39	04:37
	15:56	17:01		18:10	25	08:45 (23)	20:21	21:31	22:34
4	09:27	08:39		07:27		08:20 (23)	06:58	05:36	04:36
	15:57	17:04		18:12	24	08:44 (23)	20:24	21:33	22:35
5	09:26	08:37		07:24		08:20 (23)	06:55	05:34	04:35
	15:59	17:06		18:14	24	08:44 (23)	20:26	21:35	22:37
6	09:25	08:35		07:22		08:20 (23)	06:53	05:31	04:34
	16:00	17:09		18:17	23	08:43 (23)	20:28	21:38	22:38
7	09:25	08:32		07:19		08:20 (23)	06:50	05:29	04:33
	16:02	17:11		18:19	22	08:42 (23)	20:31	21:40	22:39
8	09:24	08:30		07:16		08:20 (23)	06:47	05:27	04:32
	16:04	17:13		18:21	21	08:41 (23)	20:33	21:42	22:41
9	09:23	08:28	09:21 (3)	07:13		08:22 (23)	06:44	05:24	04:31
	16:05	17:16	1 09:22 (3)	18:24	19	08:41 (23)	20:35	21:44	22:42
10	09:22	08:25	09:18 (3)	07:10		08:23 (23)	06:41	05:22	04:30
	16:07	17:18	9 09:27 (3)	18:26	16	08:39 (23)	20:38	21:47	22:43
11	09:21	08:23	09:15 (3)	07:07		08:25 (23)	06:38	05:20	04:30
	16:09	17:21	14 09:29 (3)	18:28	11	08:36 (23)	20:40	21:49	22:44
12	09:20	08:20	09:14 (3)	07:05			06:36	05:17	04:29
	16:11	17:23	16 09:30 (3)	18:31			20:42	21:51	22:45
13	09:19	08:18	09:13 (3)	07:02			06:33	05:15	04:29
	16:13	17:26	17 09:30 (3)	18:33			20:44	21:53	22:46
14	09:17	08:15	09:13 (3)	06:59		07:38 (25)	06:30	05:13	04:28
	16:15	17:28	18 09:31 (3)	18:35	1	07:39 (25)	20:47	21:55	22:47
15	09:16	08:13	09:12 (3)	06:56		07:33 (25)	06:27	05:11	04:28
	16:17	17:31	19 09:31 (3)	18:38	11	07:44 (25)	20:49	21:58	22:47
16	09:15	08:10	09:12 (3)	06:53		07:31 (25)	06:24	05:08	04:27
	16:19	17:33	19 09:31 (3)	18:40	14	07:45 (25)	20:51	22:00	22:48
17	09:13	08:08	09:13 (3)	06:50		07:29 (25)	06:22	05:06	04:27
	16:21	17:36	19 09:32 (3)	18:42	17	07:46 (25)	20:54	22:02	22:49
18	09:12	08:05	09:13 (3)	06:47		07:28 (25)	06:19	05:04	04:27
	16:23	17:38	18 09:31 (3)	18:45	18	07:46 (25)	20:56	22:04	22:49
19	09:10	08:02	09:13 (3)	06:44		07:28 (25)	06:16	05:02	04:27
	16:26	17:41	17 09:30 (3)	18:47	18	07:46 (25)	20:58	22:06	22:50
20	09:09	08:00	09:14 (3)	06:42		07:27 (25)	06:13	05:00	04:27
	16:28	17:43	15 09:29 (3)	18:49	19	07:46 (25)	21:01	22:08	22:50
21	09:07	07:57	09:15 (3)	06:39		07:28 (25)	06:11	04:58	04:27
	16:30	17:46	12 09:27 (3)	18:52	19	07:47 (25)	21:03	22:10	22:50
22	09:05	07:54	09:18 (3)	06:36		07:28 (25)	06:08	04:56	04:27
	16:32	17:48	8 09:26 (3)	18:54	18	07:46 (25)	21:05	22:12	22:50
23	09:04	07:52		06:33		07:28 (25)	06:05	04:54	04:27
	16:35	17:50		18:56	17	07:45 (25)	21:08	22:14	22:51
24	09:02	07:49		06:30		07:29 (25)	06:02	04:53	04:28
	16:37	17:53		18:59	14	07:43 (25)	21:10	22:16	22:51
25	09:00	07:46	08:28 (23)	06:27		07:30 (25)	06:00	04:51	04:28
	16:39	17:55	11 08:39 (23)	19:01	11	07:41 (25)	21:12	22:18	22:51
26	08:58	07:44	08:25 (23)	06:24		07:34 (25)	05:57	04:49	04:29
	16:42	17:58	16 08:41 (23)	19:03	2	07:36 (25)	21:14	22:20	22:50
27	08:56	07:41	08:23 (23)	06:21			05:54	04:47	04:29
	16:44	18:00	19 08:42 (23)	19:05			21:17	22:22	22:50
28	08:54	07:38	08:23 (23)	06:18			05:52	04:46	04:30
	16:46	18:02	21 08:44 (23)	19:08			21:19	22:24	22:50
29	08:52			07:16			05:49	04:44	04:31
	16:49			20:10			21:21	22:26	22:50
30	08:50			07:13			05:47	04:43	04:31
	16:51			20:12			21:24	22:27	22:49
31	08:48			07:10				04:41	
	16:54			20:15				22:29	
Potential sun hours	221	260		365		432	521	547	
Total, worst case			269		410				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** AA - Buevegen 1463 (27)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September			October			November			December
1	04:32	05:24	06:33			07:40			07:52		08:47 (3)	09:00
	22:49	22:01	20:40			19:13			16:49	8	08:55 (3)	15:51
2	04:33	05:26	06:35			07:42		09:05 (23)	07:54			09:02
	22:48	21:59	20:37			19:10	7	09:12 (23)	16:46			15:50
3	04:34	05:29	06:38			07:44		09:01 (23)	07:56			09:04
	22:47	21:56	20:34			19:07	14	09:15 (23)	16:44			15:49
4	04:35	05:31	06:40			07:46		09:00 (23)	07:59			09:05
	22:47	21:54	20:31			19:05	17	09:17 (23)	16:42			15:48
5	04:36	05:33	06:42			07:48		08:58 (23)	08:01			09:07
	22:46	21:52	20:28			19:02	20	09:18 (23)	16:39			15:47
6	04:38	05:35	06:44			07:51		08:56 (23)	08:04			09:09
	22:45	21:49	20:26			18:59	22	09:18 (23)	16:37			15:46
7	04:39	05:37	06:47			07:53		08:56 (23)	08:06			09:10
	22:44	21:47	20:23			18:56	23	09:19 (23)	16:35			15:46
8	04:40	05:40	06:49			07:55		08:55 (23)	08:08			09:12
	22:43	21:44	20:20			18:53	24	09:19 (23)	16:32			15:45
9	04:41	05:42	06:51			07:58		08:54 (23)	08:11			09:14
	22:42	21:42	20:17			18:50	25	09:19 (23)	16:30			15:44
10	04:43	05:44	06:53			08:00		08:55 (23)	08:13			09:15
	22:41	21:39	20:14			18:48	24	09:19 (23)	16:28			15:44
11	04:44	05:46	06:55			08:02		08:54 (23)	08:16			09:16
	22:39	21:37	20:11			18:45	24	09:18 (23)	16:26			15:43
12	04:46	05:49	06:58			08:04		08:55 (23)	08:18			09:18
	22:38	21:34	20:08			18:42	23	09:18 (23)	16:24			15:43
13	04:48	05:51	07:00			08:07		08:55 (23)	08:20			09:19
	22:37	21:32	20:05			18:39	22	09:17 (23)	16:21			15:43
14	04:49	05:53	07:02			08:09		08:55 (23)	08:23			09:20
	22:35	21:29	20:02			18:36	20	09:15 (23)	16:19			15:42
15	04:51	05:55	07:04			08:11		08:57 (23)	08:25			09:21
	22:34	21:26	20:00			18:34	18	09:15 (23)	16:17			15:42
16	04:53	05:58	07:06			08:14		08:58 (23)	08:27			09:22
	22:32	21:24	19:57			18:31	14	09:12 (23)	16:15			15:42
17	04:54	06:00	07:09			08:16		09:01 (23)	08:30			09:23
	22:31	21:21	19:54			18:28	9	09:10 (23)	16:13			15:42
18	04:56	06:02	07:11		08:18 (25)	08:18			08:32			09:24
	22:29	21:19	19:51	10	08:28 (25)	18:25			16:11			15:42
19	04:58	06:04	07:13		08:16 (25)	08:21			08:34			09:25
	22:27	21:16	19:48	13	08:29 (25)	18:23			16:10			15:43
20	05:00	06:06	07:15		08:14 (25)	08:23		09:47 (3)	08:37			09:26
	22:25	21:13	19:45	16	08:30 (25)	18:20	10	09:57 (3)	16:08			15:43
21	05:02	06:09	07:17		08:14 (25)	08:25		09:46 (3)	08:39			09:26
	22:24	21:10	19:42	17	08:31 (25)	18:17	13	09:59 (3)	16:06			15:43
22	05:04	06:11	07:20		08:13 (25)	08:28		09:44 (3)	08:41			09:27
	22:22	21:08	19:39	18	08:31 (25)	18:15	16	10:00 (3)	16:04			15:44
23	05:06	06:13	07:22		08:12 (25)	08:30		09:43 (3)	08:43			09:27
	22:20	21:05	19:36	19	08:31 (25)	18:12	18	10:01 (3)	16:03			15:44
24	05:08	06:15	07:24		08:11 (25)	08:32		09:42 (3)	08:45			09:28
	22:18	21:02	19:33	19	08:30 (25)	18:09	19	10:01 (3)	16:01			15:45
25	05:10	06:18	07:26		08:11 (25)	07:35		08:42 (3)	08:48			09:28
	22:16	20:59	19:31	18	08:29 (25)	17:07	19	09:01 (3)	15:59			15:45
26	05:12	06:20	07:28		08:12 (25)	07:37		08:42 (3)	08:50			09:28
	22:14	20:57	19:28	17	08:29 (25)	17:04	20	09:02 (3)	15:58			15:46
27	05:14	06:22	07:31		08:12 (25)	07:40		08:42 (3)	08:52			09:28
	22:12	20:54	19:25	16	08:28 (25)	17:02	19	09:01 (3)	15:57			15:47
28	05:16	06:24	07:33		08:13 (25)	07:42		08:43 (3)	08:54			09:29
	22:10	20:51	19:22	12	08:25 (25)	16:59	18	09:01 (3)	15:55			15:48
29	05:18	06:27	07:35		08:16 (25)	07:44		08:43 (3)	08:56			09:29
	22:08	20:48	19:19	6	08:22 (25)	16:56	17	09:00 (3)	15:54			15:49
30	05:20	06:29	07:37			07:47		08:44 (3)	08:58			09:28
	22:05	20:45	19:16			16:54	15	08:59 (3)	15:53			15:50
31	05:22	06:31				07:49		08:45 (3)				09:28
	22:03	20:43				16:51	13	08:58 (3)				15:51
Potential sun hours	545	478	386			319			236			200
Total, worst case				181			503			8		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** AB - Buevegen 1461 (28)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February		March		April	May	June	July	August	September		October		November	December
1	09:28	08:46		07:35	08:24 (23)	07:07	05:44	04:40	04:32	05:24	06:33		07:40		07:52	09:00
	15:53	16:56		18:05	23 08:47 (23)	20:17	21:26	22:31	22:49	22:01	20:40		19:13		16:49	15:51
2	09:28	08:44		07:33	08:23 (23)	07:04	05:41	04:39	04:33	05:26	06:35		07:42		07:54	09:02
	15:54	16:59		18:07	24 08:47 (23)	20:19	21:28	22:32	22:48	21:59	20:37		19:10		16:46	15:50
3	09:27	08:41		07:30	08:23 (23)	07:01	05:39	04:37	04:34	05:29	06:38		07:44		07:56	09:04
	15:56	17:01		18:10	24 08:47 (23)	20:21	21:31	22:34	22:47	21:56	20:34		19:07		16:44	15:49
4	09:27	08:39		07:27	08:23 (23)	06:58	05:36	04:36	04:35	05:31	06:40		07:46	09:05 (23)	07:59	09:05
	15:57	17:04		18:12	23 08:46 (23)	20:24	21:33	22:35	22:47	21:54	20:31		19:05	11 09:16 (23)	16:42	15:48
5	09:26	08:37		07:24	08:23 (23)	06:55	05:34	04:35	04:36	05:33	06:42		07:48	09:02 (23)	08:01	09:07
	15:59	17:06		18:14	22 08:45 (23)	20:26	21:35	22:37	22:46	21:52	20:28		19:02	16 09:18 (23)	16:39	15:47
6	09:25	08:35		07:22	08:23 (23)	06:53	05:31	04:34	04:38	05:35	06:44		07:51	09:00 (23)	08:04	09:09
	16:00	17:09		18:17	21 08:44 (23)	20:28	21:38	22:38	22:45	21:49	20:26		18:59	19 09:19 (23)	16:37	15:46
7	09:25	08:32		07:19	08:23 (23)	06:50	05:29	04:33	04:39	05:37	06:47		07:53	09:00 (23)	08:06	09:10
	16:02	17:11		18:19	20 08:43 (23)	20:31	21:40	22:39	22:44	21:47	20:23		18:56	20 09:20 (23)	16:35	15:46
8	09:24	08:30		07:16	08:24 (23)	06:47	05:27	04:32	04:40	05:40	06:49		07:55	08:58 (23)	08:08	09:12
	16:04	17:13		18:21	18 08:42 (23)	20:33	21:42	22:41	22:43	21:44	20:20		18:53	22 09:20 (23)	16:32	15:45
9	09:23	08:28		07:13	08:27 (23)	06:44	05:24	04:31	04:41	05:42	06:51		07:58	08:57 (23)	08:11	09:14
	16:05	17:16		18:24	13 08:40 (23)	20:35	21:44	22:42	22:42	21:42	20:17		18:50	23 09:20 (23)	16:30	15:44
10	09:22	08:25		07:10	08:30 (23)	06:41	05:22	04:30	04:43	05:44	06:53		08:00	08:57 (23)	08:13	09:15
	16:07	17:18		18:26	7 08:37 (23)	20:38	21:47	22:43	22:41	21:39	20:14		18:48	24 09:21 (23)	16:28	15:44
11	09:21	08:23		07:07		06:38	05:20	04:30	04:44	05:46	06:55		08:02	08:57 (23)	08:16	09:16
	16:09	17:21		18:28		20:40	21:49	22:44	22:39	21:37	20:11		18:45	23 09:20 (23)	16:26	15:43
12	09:20	08:20		07:05		06:36	05:17	04:29	04:46	05:49	06:58		08:04	08:57 (23)	08:18	09:18
	16:11	17:23		18:31		20:42	21:51	22:45	22:38	21:34	20:08		18:42	23 09:20 (23)	16:24	15:43
13	09:19	08:18		07:02	07:40 (25)	06:33	05:15	04:29	04:48	05:51	07:00		08:07	08:57 (23)	08:20	09:19
	16:13	17:26		18:33	5 07:45 (25)	20:44	21:53	22:46	22:37	21:32	20:05		18:39	22 09:19 (23)	16:21	15:43
14	09:17	08:15		06:59	07:36 (25)	06:30	05:13	04:28	04:49	05:53	07:02		08:09	08:57 (23)	08:23	09:20
	16:15	17:28		18:35	11 07:47 (25)	20:47	21:55	22:47	22:35	21:29	20:02		18:36	21 09:18 (23)	16:19	15:42
15	09:16	08:13		06:56	07:34 (25)	06:27	05:11	04:28	04:51	05:55	07:04		08:11	08:58 (23)	08:25	09:21
	16:17	17:31		18:38	15 07:49 (25)	20:49	21:58	22:47	22:34	21:26	20:00		18:34	20 09:18 (23)	16:17	15:42
16	09:15	08:10		06:53	07:33 (25)	06:24	05:08	04:27	04:53	05:58	07:06		08:14	08:58 (23)	08:27	09:22
	16:19	17:33		18:40	16 07:49 (25)	20:51	22:00	22:48	22:32	21:24	19:57		18:31	18 09:16 (23)	16:15	15:42
17	09:13	08:08		06:50	07:32 (25)	06:22	05:06	04:27	04:54	06:00	07:09		08:16	09:00 (23)	08:30	09:23
	16:21	17:36		18:42	18 07:50 (25)	20:54	22:02	22:49	22:31	21:21	19:54		18:28	15 09:15 (23)	16:13	15:42
18	09:12	08:05		06:47	07:31 (25)	06:19	05:04	04:27	04:56	06:02	07:11		08:18	09:02 (23)	08:32	09:24
	16:23	17:38		18:45	19 07:50 (25)	20:56	22:04	22:49	22:29	21:19	19:51		18:25	9 09:11 (23)	16:11	15:42
19	09:10	08:02		06:44	07:31 (25)	06:16	05:02	04:27	04:58	06:04	07:13	08:22 (25)	08:21		08:34	09:25
	16:26	17:41		18:47	18 07:49 (25)	20:58	22:06	22:50	22:27	21:16	19:48	6 08:28 (25)	18:23		16:10	15:43
20	09:09	08:00		06:42	07:30 (25)	06:13	05:00	04:27	05:00	06:06	07:15	08:19 (25)	08:23		08:37	09:26
	16:28	17:43		18:49	19 07:49 (25)	21:01	22:08	22:50	22:25	21:13	19:45	12 08:31 (25)	18:20		16:08	15:43
21	09:07	07:57		06:39	07:32 (25)	06:11	04:58	04:27	05:02	06:09	07:17	08:18 (25)	08:25		08:39	09:26
	16:30	17:46		18:52	17 07:49 (25)	21:03	22:10	22:50	22:24	21:10	19:42	15 08:33 (25)	18:17		16:06	15:43
22	09:05	07:54		06:36	07:32 (25)	06:08	04:56	04:27	05:04	06:11	07:20	08:16 (25)	08:28		08:41	09:27
	16:32	17:48		18:54	15 07:47 (25)	21:05	22:12	22:50	22:22	21:08	19:39	17 08:33 (25)	18:15		16:04	15:44
23	09:04	07:52		06:33	07:33 (25)	06:05	04:54	04:27	05:06	06:13	07:22	08:15 (25)	08:30		08:43	09:27
	16:35	17:50		18:56	13 07:46 (25)	21:08	22:14	22:51	22:20	21:05	19:36	18 08:33 (25)	18:12		16:03	15:44
24	09:02	07:49	08:30 (23)	06:30	07:35 (25)	06:02	04:53	04:28	05:08	06:15	07:24	08:14 (25)	08:32		08:45	09:28
	16:37	17:53	11 08:41 (23)	18:59	8 07:43 (25)	21:10	22:16	22:51	22:18	21:02	19:33	19 08:33 (25)	18:09		16:01	15:45
25	09:00	07:46	08:28 (23)	06:27		06:00	04:51	04:28	05:10	06:18	07:26	08:14 (25)	07:35		08:48	09:28
	16:39	17:55	15 08:43 (23)	19:01		21:12	22:18	22:51	22:16	20:59	19:31	18 08:32 (25)	17:07		15:59	15:45
26	08:58	07:44	08:26 (23)	06:24		05:57	04:49	04:29	05:12	06:20	07:28	08:14 (25)	07:37		08:50	09:28
	16:42	17:58	18 08:44 (23)	19:03		21:14	22:20	22:50	22:14	20:57	19:28	19 08:33 (25)	17:04		15:58	15:46
27	08:56	07:41	08:25 (23)	06:21		05:54	04:47	04:29	05:14	06:22	07:31	08:14 (25)	07:40		08:52	09:28
	16:44	18:00	20 08:45 (23)	19:05		21:17	22:22	22:50	22:12	20:54	19:25	18 08:32 (25)	17:02		15:57	15:47
28	08:54	07:38	08:25 (23)	06:18		05:52	04:46	04:30	05:16	06:24	07:33	08:15 (25)	07:42		08:54	09:29
	16:46	18:02	22 08:47 (23)	19:08		21:19	22:24	22:50	22:10	20:51	19:22	15 08:30 (25)	16:59		15:55	15:48
29	08:52			07:16		05:49	04:44	04:31	05:18	06:27	07:35	08:15 (25)	07:44		08:56	09:29
	16:49			20:10		21:21	22:26	22:50	22:08	20:48	19:19	13 08:28 (25)	16:56		15:54	15:49
30	08:50			07:13		05:47	04:43	04:31	05:20	06:29	07:37	08:18 (25)	07:47		08:58	09:28
	16:51			20:12		21:24	22:27	22:49	22:05	20:45	19:16	8 08:26 (25)	16:54		15:53	15:50
31	08:48			07:10			04:41		05:22	06:31			07:49			09:28
	16:54			20:15			22:29		22:03	20:43			16:51			15:51
Potential sun hours	221	260		365		432	521	547	545	478	386		319		236	200
Total, worst case			86		369							178		286		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** AC - Buevegen 1502 (29)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March			April		May	June
1	09:28			08:46		09:42 (23)	07:35		08:32 (25)	07:07		05:44	04:40
	15:53			16:56	14	09:56 (23)	18:05	20	08:52 (25)	20:17		21:26	22:31
2	09:28			08:44		09:40 (23)	07:33		08:32 (25)	07:04		05:41	04:39
	15:54			16:59	17	09:57 (23)	18:07	20	08:52 (25)	20:19		21:28	22:32
3	09:27			08:41		09:40 (23)	07:30		08:32 (25)	07:01		05:39	04:37
	15:56			17:01	19	09:59 (23)	18:10	19	08:51 (25)	20:21		21:31	22:34
4	09:27			08:39		09:38 (23)	07:27		08:32 (25)	06:58		05:36	04:36
	15:57			17:04	21	09:59 (23)	18:12	18	08:50 (25)	20:24		21:33	22:35
5	09:26			08:37		09:38 (23)	07:24		08:32 (25)	06:55		05:34	04:35
	15:59			17:06	22	10:00 (23)	18:14	17	08:49 (25)	20:26		21:35	22:37
6	09:25			08:35		09:38 (23)	07:22		08:33 (25)	06:53		05:31	04:34
	16:00			17:08	22	10:00 (23)	18:17	14	08:47 (25)	20:28		21:38	22:38
7	09:25			08:32		09:37 (23)	07:19		08:35 (25)	06:50		05:29	04:33
	16:02			17:11	24	10:01 (23)	18:19	10	08:45 (25)	20:31		21:40	22:39
8	09:24			08:30		09:37 (23)	07:16			06:47		05:27	04:32
	16:04			17:13	24	10:01 (23)	18:21			20:33		21:42	22:41
9	09:23			08:28		09:37 (23)	07:13			06:44		05:24	04:31
	16:05			17:16	24	10:01 (23)	18:24			20:35		21:44	22:42
10	09:22			08:25		09:38 (23)	07:10			06:41		05:22	04:30
	16:07			17:18	24	10:02 (23)	18:26			20:38		21:47	22:43
11	09:21			08:23		09:38 (23)	07:07			06:38		05:20	04:30
	16:09			17:21	23	10:01 (23)	18:28			20:40		21:49	22:44
12	09:20			08:20		09:38 (23)	07:05			06:36		05:17	04:29
	16:11			17:23	22	10:00 (23)	18:31			20:42		21:51	22:45
13	09:19			08:18		09:38 (23)	07:02			06:33		05:15	04:28
	16:13			17:26	21	09:59 (23)	18:33			20:44		21:53	22:46
14	09:17			08:15		09:40 (23)	06:59			06:30		05:13	04:28
	16:15			17:28	19	09:59 (23)	18:35			20:47		21:55	22:47
15	09:16			08:13		09:41 (23)	06:56			06:27		05:11	04:28
	16:17			17:31	17	09:58 (23)	18:38			20:49		21:58	22:47
16	09:15			08:10		09:43 (23)	06:53			06:24		05:08	04:27
	16:19			17:33	12	09:55 (23)	18:40			20:51		22:00	22:48
17	09:13			08:08		09:46 (23)	06:50			06:21		05:06	04:27
	16:21			17:36	7	09:53 (23)	18:42			20:54		22:02	22:49
18	09:12			08:05			06:47			06:19		05:04	04:27
	16:23			17:38			18:45			20:56		22:04	22:49
19	09:10			08:02			06:44			06:16		05:02	04:27
	16:26			17:41			18:47			20:58		22:06	22:50
20	09:09			08:00			06:42			06:13		05:00	04:27
	16:28			17:43			18:49			21:01		22:08	22:50
21	09:07			07:57			06:39			06:10		04:58	04:27
	16:30			17:45			18:52			21:03		22:10	22:50
22	09:05			07:54			06:36			06:08		04:56	04:27
	16:32			17:48			18:54			21:05		22:12	22:51
23	09:04			07:52		08:40 (25)	06:33			06:05		04:54	04:27
	16:35			17:50	6	08:46 (25)	18:56			21:08		22:14	22:51
24	09:02			07:49		08:36 (25)	06:30			06:02		04:53	04:28
	16:37			17:53	12	08:48 (25)	18:59			21:10		22:16	22:51
25	09:00			07:46		08:34 (25)	06:27			06:00		04:51	04:28
	16:39			17:55	16	08:50 (25)	19:01			21:12		22:18	22:51
26	08:58			07:44		08:33 (25)	06:24			05:57		04:49	04:29
	16:42			17:58	17	08:50 (25)	19:03			21:14		22:20	22:51
27	08:56			07:41		08:32 (25)	06:21			05:54		04:47	04:29
	16:44			18:00	19	08:51 (25)	19:05			21:17		22:22	22:50
28	08:54			07:38		08:32 (25)	06:18			05:52		04:46	04:30
	16:46			18:02	20	08:52 (25)	19:08			21:19		22:24	22:50
29	08:52						07:16			05:49		04:44	04:30
	16:49						20:10			21:21		22:26	22:50
30	08:50						07:13			05:47		04:43	04:31
	16:51						20:12			21:24		22:27	22:49
31	08:48		09:43 (23)				07:10					04:41	
	16:54	10	09:53 (23)				20:15					22:29	
Potential sun hours	221			260			365			432		521	547
Total, worst case		10			422			118					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** AC - Buevegen 1502 (29)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July	August	September	October		November		December
1	04:32	05:24	06:33	07:39		07:51	09:06 (23)	09:00
	22:49	22:01	20:40	19:13		16:49	24 09:30 (23)	15:51
2	04:33	05:26	06:35	07:42		07:54	09:07 (23)	09:02
	22:48	21:59	20:37	19:10		16:46	24 09:31 (23)	15:50
3	04:34	05:29	06:38	07:44		07:56	09:07 (23)	09:04
	22:47	21:56	20:34	19:07		16:44	24 09:31 (23)	15:49
4	04:35	05:31	06:40	07:46		07:59	09:08 (23)	09:05
	22:47	21:54	20:31	19:05		16:42	23 09:31 (23)	15:48
5	04:36	05:33	06:42	07:48		08:01	09:07 (23)	09:07
	22:46	21:52	20:28	19:02		16:39	23 09:30 (23)	15:47
6	04:37	05:35	06:44	07:51	09:13 (25)	08:04	09:08 (23)	09:09
	22:45	21:49	20:26	18:59	6 09:19 (25)	16:37	22 09:30 (23)	15:46
7	04:39	05:37	06:47	07:53	09:11 (25)	08:06	09:09 (23)	09:10
	22:44	21:47	20:23	18:56	11 09:22 (25)	16:35	21 09:30 (23)	15:46
8	04:40	05:40	06:49	07:55	09:08 (25)	08:08	09:09 (23)	09:12
	22:43	21:44	20:20	18:53	16 09:24 (25)	16:32	19 09:28 (23)	15:45
9	04:41	05:42	06:51	07:58	09:07 (25)	08:11	09:11 (23)	09:14
	22:42	21:42	20:17	18:50	17 09:24 (25)	16:30	16 09:27 (23)	15:44
10	04:43	05:44	06:53	08:00	09:06 (25)	08:13	09:13 (23)	09:15
	22:41	21:39	20:14	18:48	19 09:25 (25)	16:28	13 09:26 (23)	15:44
11	04:44	05:46	06:55	08:02	09:05 (25)	08:16	09:14 (23)	09:16
	22:39	21:37	20:11	18:45	20 09:25 (25)	16:26	10 09:24 (23)	15:43
12	04:46	05:49	06:58	08:04	09:05 (25)	08:18		09:18
	22:38	21:34	20:08	18:42	20 09:25 (25)	16:24		15:43
13	04:47	05:51	07:00	08:07	09:05 (25)	08:20		09:19
	22:37	21:32	20:05	18:39	20 09:25 (25)	16:21		15:43
14	04:49	05:53	07:02	08:09	09:04 (25)	08:23		09:20
	22:35	21:29	20:02	18:36	20 09:24 (25)	16:19		15:42
15	04:51	05:55	07:04	08:11	09:05 (25)	08:25		09:21
	22:34	21:26	20:00	18:34	19 09:24 (25)	16:17		15:42
16	04:53	05:57	07:06	08:14	09:05 (25)	08:27		09:22
	22:32	21:24	19:57	18:31	17 09:22 (25)	16:15		15:42
17	04:54	06:00	07:09	08:16	09:07 (25)	08:30		09:23
	22:31	21:21	19:54	18:28	14 09:21 (25)	16:13		15:42
18	04:56	06:02	07:11	08:18	09:08 (25)	08:32		09:24
	22:29	21:19	19:51	18:25	11 09:19 (25)	16:11		15:42
19	04:58	06:04	07:13	08:21		08:34		09:25
	22:27	21:16	19:48	18:23		16:10		15:42
20	05:00	06:06	07:15	08:23		08:37		09:26
	22:25	21:13	19:45	18:20		16:08		15:43
21	05:02	06:09	07:17	08:25		08:39		09:26
	22:24	21:10	19:42	18:17		16:06		15:43
22	05:04	06:11	07:20	08:28		08:41		09:27
	22:22	21:08	19:39	18:15		16:04		15:44
23	05:06	06:13	07:22	08:30		08:43		09:27
	22:20	21:05	19:36	18:12		16:03		15:44
24	05:08	06:15	07:24	08:32		08:45		09:28
	22:18	21:02	19:33	18:09		16:01		15:45
25	05:10	06:18	07:26	07:35	09:15 (23)	08:48		09:28
	22:16	20:59	19:30	17:07	8 09:23 (23)	15:59		15:45
26	05:12	06:20	07:28	07:37	09:12 (23)	08:50		09:28
	22:14	20:57	19:28	17:04	14 09:26 (23)	15:58		15:46
27	05:14	06:22	07:31	07:40	09:10 (23)	08:52		09:28
	22:12	20:54	19:25	17:01	17 09:27 (23)	15:56		15:47
28	05:16	06:24	07:33	07:42	09:09 (23)	08:54		09:29
	22:10	20:51	19:22	16:59	20 09:29 (23)	15:55		15:48
29	05:18	06:27	07:35	07:44	09:09 (23)	08:56		09:29
	22:08	20:48	19:19	16:56	21 09:30 (23)	15:54		15:49
30	05:20	06:29	07:37	07:47	09:07 (23)	08:58		09:28
	22:05	20:45	19:16	16:54	23 09:30 (23)	15:53		15:50
31	05:22	06:31		07:49	09:07 (23)			09:28
	22:03	20:43		16:51	24 09:31 (23)			15:51
Potential sun hours	546	478	386	319		236		199
Total, worst case					337		219	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** AD - Buevegen 1500 (30)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February		March		April	May	June	July	August	September	October		November		December
1	09:28	08:46		09:42 (23)	07:35	08:28 (25)	07:07	05:44	04:40	04:32	05:24	06:33	07:39		07:52	09:00 (23)	09:00
	15:53	16:56	1	09:43 (23)	18:05	19 08:47 (25)	20:17	21:26	22:31	22:49	22:01	20:40	19:13		16:49	24 09:24 (23)	15:51
2	09:28	08:44		09:37 (23)	07:33	08:27 (25)	07:04	05:41	04:39	04:33	05:26	06:35	07:42		07:54	09:01 (23)	09:02
	15:54	16:59	10	09:47 (23)	18:07	20 08:47 (25)	20:19	21:28	22:32	22:48	21:59	20:37	19:10		16:46	23 09:24 (23)	15:50
3	09:27	08:41		09:36 (23)	07:30	08:27 (25)	07:01	05:39	04:37	04:34	05:29	06:38	07:44		07:56	09:01 (23)	09:04
	15:56	17:01	14	09:50 (23)	18:10	20 08:47 (25)	20:21	21:31	22:34	22:47	21:56	20:34	19:07		16:44	23 09:24 (23)	15:49
4	09:27	08:39		09:34 (23)	07:27	08:27 (25)	06:58	05:36	04:36	04:35	05:31	06:40	07:46		07:59	09:02 (23)	09:05
	15:57	17:04	17	09:51 (23)	18:12	19 08:46 (25)	20:24	21:33	22:35	22:47	21:54	20:31	19:05		16:42	22 09:24 (23)	15:48
5	09:26	08:37		09:33 (23)	07:24	08:27 (25)	06:55	05:34	04:35	04:36	05:33	06:42	07:48	09:10 (25)	08:01	09:02 (23)	09:07
	15:59	17:06	20	09:53 (23)	18:14	18 08:45 (25)	20:26	21:35	22:37	22:46	21:52	20:28	19:02	4 09:14 (25)	16:39	21 09:23 (23)	15:47
6	09:25	08:35		09:32 (23)	07:22	08:28 (25)	06:53	05:31	04:34	04:37	05:35	06:44	07:51	09:06 (25)	08:04	09:03 (23)	09:09
	16:00	17:08	21	09:53 (23)	18:17	16 08:44 (25)	20:28	21:38	22:38	22:45	21:49	20:26	18:59	12 09:18 (25)	16:37	19 09:22 (23)	15:46
7	09:25	08:32		09:31 (23)	07:19	08:29 (25)	06:50	05:29	04:33	04:39	05:37	06:47	07:53	09:05 (25)	08:06	09:05 (23)	09:10
	16:02	17:11	22	09:53 (23)	18:19	13 08:42 (25)	20:31	21:40	22:39	22:44	21:47	20:23	18:56	15 09:20 (25)	16:35	16 09:21 (23)	15:46
8	09:24	08:30		09:32 (23)	07:16	08:31 (25)	06:47	05:27	04:32	04:40	05:40	06:49	07:55	09:03 (25)	08:08	09:05 (23)	09:12
	16:04	17:13	22	09:54 (23)	18:21	8 08:39 (25)	20:33	21:42	22:41	22:43	21:44	20:20	18:53	17 09:20 (25)	16:32	14 09:19 (23)	15:45
9	09:23	08:28		09:31 (23)	07:13		06:44	05:24	04:31	04:41	05:42	06:51	07:58	09:02 (25)	08:11	09:08 (23)	09:14
	16:05	17:16	23	09:54 (23)	18:24		20:35	21:44	22:42	22:42	21:42	20:17	18:50	18 09:20 (25)	16:30	10 09:18 (23)	15:44
10	09:22	08:25		09:32 (23)	07:10		06:41	05:22	04:30	04:43	05:44	06:53	08:00	09:02 (25)	08:13		09:15
	16:07	17:18	23	09:55 (23)	18:26		20:38	21:47	22:43	22:41	21:39	20:14	18:48	19 09:21 (25)	16:28		15:44
11	09:21	08:23		09:31 (23)	07:07		06:38	05:20	04:30	04:44	05:46	06:55	08:02	09:01 (25)	08:16		09:16
	16:09	17:21	24	09:55 (23)	18:28		20:40	21:49	22:44	22:39	21:37	20:11	18:45	20 09:21 (25)	16:26		15:43
12	09:20	08:20		09:31 (23)	07:05		06:36	05:17	04:29	04:46	05:49	06:58	08:04	09:01 (25)	08:18		09:18
	16:11	17:23	23	09:54 (23)	18:31		20:42	21:51	22:45	22:38	21:34	20:08	18:42	20 09:21 (25)	16:24		15:43
13	09:19	08:18		09:31 (23)	07:02		06:33	05:15	04:28	04:47	05:51	07:00	08:07	09:01 (25)	08:20		09:19
	16:13	17:26	23	09:54 (23)	18:33		20:44	21:53	22:46	22:37	21:32	20:05	18:39	19 09:20 (25)	16:21		15:43
14	09:17	08:15		09:33 (23)	06:59		06:30	05:13	04:28	04:49	05:53	07:02	08:09	09:01 (25)	08:23		09:20
	16:15	17:28	21	09:54 (23)	18:35		20:47	21:55	22:47	22:35	21:29	20:02	18:36	18 09:19 (25)	16:19		15:42
15	09:16	08:13		09:33 (23)	06:56		06:27	05:11	04:28	04:51	05:55	07:04	08:11	09:02 (25)	08:25		09:21
	16:17	17:31	20	09:53 (23)	18:38		20:49	21:58	22:47	22:34	21:26	20:00	18:34	16 09:18 (25)	16:17		15:42
16	09:15	08:10		09:34 (23)	06:53		06:24	05:08	04:27	04:53	05:57	07:06	08:14	09:03 (25)	08:27		09:22
	16:19	17:33	17	09:51 (23)	18:40		20:51	22:00	22:48	22:32	21:24	19:57	18:31	13 09:16 (25)	16:15		15:42
17	09:13	08:08		09:36 (23)	06:50		06:22	05:06	04:27	04:54	06:00	07:09	08:16	09:05 (25)	08:30		09:23
	16:21	17:36	14	09:50 (23)	18:42		20:54	22:02	22:49	22:31	21:21	19:54	18:28	10 09:15 (25)	16:13		15:42
18	09:12	08:05		09:39 (23)	06:47		06:19	05:04	04:27	04:56	06:02	07:11	08:18		08:32		09:24
	16:23	17:38	8	09:47 (23)	18:45		20:56	22:04	22:49	22:29	21:19	19:51	18:25		16:11		15:42
19	09:10	08:02			06:44		06:16	05:02	04:27	04:58	06:04	07:13	08:21		08:34		09:25
	16:26	17:41			18:47		20:58	22:06	22:50	22:27	21:16	19:48	18:23		16:10		15:42
20	09:09	08:00			06:42		06:13	05:00	04:27	05:00	06:06	07:15	08:23		08:37		09:26
	16:28	17:43			18:49		21:01	22:08	22:50	22:25	21:13	19:45	18:20		16:08		15:43
21	09:07	07:57			06:39		06:10	04:58	04:27	05:02	06:09	07:17	08:25		08:39		09:26
	16:30	17:45			18:52		21:03	22:10	22:50	22:24	21:10	19:42	18:17		16:06		15:43
22	09:05	07:54			06:36		06:08	04:56	04:27	05:04	06:11	07:20	08:28		08:41		09:27
	16:32	17:48			18:54		21:05	22:12	22:51	22:22	21:08	19:39	18:15		16:04		15:44
23	09:04	07:52			06:33		06:05	04:54	04:27	05:06	06:13	07:22	08:30		08:43		09:27
	16:35	17:50			18:56		21:08	22:14	22:51	22:20	21:05	19:36	18:12		16:03		15:44
24	09:02	07:49		08:36 (25)	06:30		06:02	04:53	04:28	05:08	06:15	07:24	08:32	10:07 (23)	08:45		09:28
	16:37	17:53	4	08:40 (25)	18:59		21:10	22:16	22:51	22:18	21:02	19:33	18:09	11 10:18 (23)	16:01		15:45
25	09:00	07:46		08:32 (25)	06:27		06:00	04:51	04:28	05:10	06:18	07:26	07:35	09:05 (23)	08:48		09:28
	16:39	17:55	11	08:43 (25)	19:01		21:12	22:18	22:51	22:16	20:59	19:30	17:07	15 09:20 (23)	15:59		15:45
26	08:58	07:44		08:30 (25)	06:24		05:57	04:49	04:29	05:12	06:20	07:28	07:37	09:04 (23)	08:50		09:28
	16:42	17:58	15	08:45 (25)	19:03		21:14	22:20	22:51	22:14	20:57	19:28	17:04	18 09:22 (23)	15:58		15:46
27	08:56	07:41		08:29 (25)	06:21		05:54	04:47	04:29	05:14	06:22	07:31	07:40	09:02 (23)	08:52		09:28
	16:44	18:00	17	08:46 (25)	19:05		21:17	22:22	22:50	22:12	20:54	19:25	17:02	20 09:22 (23)	15:56		15:47
28	08:54	07:38		08:29 (25)	06:18		05:52	04:46	04:30	05:16	06:24	07:33	07:42	09:02 (23)	08:54		09:29
	16:46	18:02	18	08:47 (25)	19:08		21:19	22:24	22:50	22:10	20:51	19:22	16:59	21 09:23 (23)	15:55		15:48
29	08:52				07:16		05:49	04:44	04:30	05:18	06:27	07:35	07:44	09:02 (23)	08:56		09:29
	16:49				20:10		21:21	22:26	22:50	22:08	20:48	19:19	16:56	22 09:24 (23)	15:54		15:49
30	08:50				07:13		05:47	04:43	04:31	05:20	06:29	07:37	07:47	09:01 (23)	08:58		09:28
	16:51				20:12		21:24	22:27	22:49	22:05	20:45	19:16	16:54	23 09:24 (23)	15:53		15:50
31	08:48				07:10			04:41		05:22	06:31		07:49	09:01 (23)			09:28
	16:54				20:15			22:29		22:03	20:43		16:51	23 09:24 (23)			15:51
Potential sun hours	221	260			365		432	521	547	546	478	386	319		236		199
Total, worst case			388			133								354		172	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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Nedre Skøyen vei 2 .
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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** AE - Buevegen 1498 (31)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February		March	April	May	June	July	August	September	October		November		December
1	09:28	08:46		07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:40		07:52	08:41 (23)	09:00
	15:53	16:56		18:05	20:17	21:26	22:31	22:49	22:01	20:40	19:13		16:49	8 08:49 (23)	15:51
2	09:28	08:44		07:33	07:04	05:41	04:39	04:33	05:26	06:35	07:42		07:54		09:02
	15:54	16:59		18:07	20:19	21:28	22:32	22:48	21:59	20:37	19:10		16:46		15:50
3	09:27	08:41		07:30	07:01	05:39	04:37	04:34	05:29	06:38	07:44		07:56		09:04
	15:56	17:01		18:10	20:21	21:31	22:34	22:47	21:56	20:34	19:07		16:44		15:49
4	09:27	08:39		07:27	06:58	05:36	04:36	04:35	05:31	06:40	07:46		07:59		09:05
	15:57	17:04		18:12	20:24	21:33	22:35	22:47	21:54	20:31	19:05		16:42		15:48
5	09:26	08:37		07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48		08:01		09:07
	15:59	17:06		18:14	20:26	21:35	22:37	22:46	21:52	20:28	19:02		16:39		15:47
6	09:25	08:35		07:22	06:53	05:31	04:34	04:37	05:35	06:44	07:51		08:04		09:09
	16:00	17:09		18:17	20:28	21:38	22:38	22:45	21:49	20:26	18:59		16:37		15:46
7	09:25	08:32		07:19	06:50	05:29	04:33	04:39	05:37	06:47	07:53		08:06		09:10
	16:02	17:11		18:19	20:31	21:40	22:39	22:44	21:47	20:23	18:56		16:35		15:46
8	09:24	08:30		07:16	06:47	05:27	04:32	04:40	05:40	06:49	07:55		08:08		09:12
	16:04	17:13		18:21	20:33	21:42	22:41	22:43	21:44	20:20	18:53		16:32		15:45
9	09:23	08:28		07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:58		08:11		09:14
	16:05	17:16		18:24	20:35	21:44	22:42	22:42	21:42	20:17	18:50		16:30		15:44
10	09:22	08:25	09:11 (23)	07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00		08:13		09:15
	16:07	17:18	9 09:20 (23)	18:26	20:38	21:47	22:43	22:41	21:39	20:14	18:48		16:28		15:44
11	09:21	08:23	09:09 (23)	07:07	06:38	05:20	04:30	04:44	05:46	06:55	08:02		08:16		09:16
	16:09	17:21	13 09:22 (23)	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:45		16:26		15:43
12	09:20	08:20	09:07 (23)	07:05	06:36	05:17	04:29	04:46	05:49	06:58	08:04		08:18		09:18
	16:11	17:23	16 09:23 (23)	18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42		16:24		15:43
13	09:19	08:18	09:07 (23)	07:02	06:33	05:15	04:28	04:48	05:51	07:00	08:07		08:20		09:19
	16:13	17:26	18 09:25 (23)	18:33	20:44	21:53	22:46	22:37	21:32	20:05	18:39		16:21		15:43
14	09:17	08:15	09:06 (23)	06:59	06:30	05:13	04:28	04:49	05:53	07:02	08:09		08:23		09:20
	16:15	17:28	19 09:25 (23)	18:35	20:47	21:56	22:47	22:35	21:29	20:02	18:36		16:19		15:42
15	09:16	08:13	09:05 (23)	06:56	06:27	05:11	04:28	04:51	05:55	07:04	08:11		08:25		09:21
	16:17	17:31	20 09:25 (23)	18:38	20:49	21:58	22:47	22:34	21:26	20:00	18:34		16:17		15:42
16	09:15	08:10	09:04 (23)	06:53	06:24	05:08	04:27	04:53	05:58	07:06	08:14		08:27		09:22
	16:19	17:33	21 09:25 (23)	18:40	20:51	22:00	22:48	22:32	21:24	19:57	18:31		16:15		15:42
17	09:13	08:08	09:05 (23)	06:50	06:22	05:06	04:27	04:54	06:00	07:09	08:16		08:30		09:23
	16:21	17:36	21 09:26 (23)	18:42	20:54	22:02	22:49	22:31	21:21	19:54	18:28		16:13		15:42
18	09:12	08:05	09:05 (23)	06:47	06:19	05:04	04:27	04:56	06:02	07:11	08:18	09:42 (23)	08:32		09:24
	16:23	17:38	21 09:26 (23)	18:45	20:56	22:04	22:49	22:29	21:19	19:51	18:25	7 09:49 (23)	16:11		15:42
19	09:10	08:02	09:05 (23)	06:44	06:16	05:02	04:27	04:58	06:04	07:13	08:21	09:40 (23)	08:34		09:25
	16:26	17:41	20 09:25 (23)	18:47	20:58	22:06	22:50	22:27	21:16	19:48	18:23	12 09:52 (23)	16:10		15:42
20	09:09	08:00	09:05 (23)	06:42	06:13	05:00	04:27	05:00	06:06	07:15	08:23	09:37 (23)	08:37		09:26
	16:28	17:43	19 09:24 (23)	18:49	21:01	22:08	22:50	22:26	21:13	19:45	18:20	16 09:53 (23)	16:08		15:43
21	09:07	07:57	09:06 (23)	06:39	06:11	04:58	04:27	05:02	06:09	07:17	08:25	09:37 (23)	08:39		09:26
	16:30	17:46	17 09:23 (23)	18:52	21:03	22:10	22:50	22:24	21:10	19:42	18:17	18 09:55 (23)	16:06		15:43
22	09:05	07:54	09:08 (23)	06:36	06:08	04:56	04:27	05:04	06:11	07:20	08:28	09:35 (23)	08:41		09:27
	16:32	17:48	14 09:22 (23)	18:54	21:05	22:12	22:51	22:22	21:08	19:39	18:15	20 09:55 (23)	16:04		15:44
23	09:04	07:52	09:09 (23)	06:33	06:05	04:54	04:27	05:06	06:13	07:22	08:30	09:35 (23)	08:43		09:27
	16:35	17:50	11 09:20 (23)	18:56	21:08	22:14	22:51	22:20	21:05	19:36	18:12	20 09:55 (23)	16:03		15:44
24	09:02	07:49	09:14 (23)	06:30	06:02	04:53	04:28	05:08	06:15	07:24	08:32	09:34 (23)	08:45		09:28
	16:37	17:53	1 09:15 (23)	18:59	21:10	22:16	22:51	22:18	21:02	19:33	18:09	21 09:55 (23)	16:01		15:45
25	09:00	07:46		06:27	06:00	04:51	04:28	05:10	06:18	07:26	07:35	08:34 (23)	08:48		09:28
	16:39	17:55		19:01	21:12	22:18	22:51	22:16	20:59	19:31	17:07	21 08:55 (23)	15:59		15:45
26	08:58	07:44		06:24	05:57	04:49	04:29	05:12	06:20	07:28	07:37	08:35 (23)	08:50		09:28
	16:42	17:58		19:03	21:15	22:20	22:51	22:14	20:57	19:28	17:04	21 08:56 (23)	15:58		15:46
27	08:56	07:41		06:21	05:54	04:47	04:29	05:14	06:22	07:31	07:40	08:34 (23)	08:52		09:29
	16:44	18:00		19:05	21:17	22:22	22:50	22:12	20:54	19:25	17:02	21 08:55 (23)	15:57		15:47
28	08:54	07:38		06:18	05:52	04:46	04:30	05:16	06:24	07:33	07:42	08:35 (23)	08:54		09:29
	16:46	18:02		19:08	21:19	22:24	22:50	22:10	20:51	19:22	16:59	19 08:54 (23)	15:55		15:48
29	08:52			07:16	05:49	04:44	04:30	05:18	06:27	07:35	07:44	08:36 (23)	08:56		09:29
	16:49			20:10	21:21	22:26	22:50	22:08	20:48	19:19	16:56	18 08:54 (23)	15:54		15:49
30	08:50			07:13	05:47	04:43	04:31	05:20	06:29	07:37	07:47	08:37 (23)	08:58		09:28
	16:51			20:12	21:24	22:27	22:49	22:05	20:45	19:16	16:54	15 08:52 (23)	15:53		15:50
31	08:48			07:10		04:41		05:22	06:31		07:49	08:39 (23)			09:28
	16:54			20:15		22:29		22:03	20:43		16:51	12 08:51 (23)			15:51
Potential sun hours	221	260		365	432	521	547	546	478	386	319		236		199
Total, worst case			240									241		8	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** AF - Buevegen 1496 (32)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February		March	April	May	June	July	August	September	October		November	December
1	09:28	08:46		07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:40		07:52	09:00
	15:53	16:56		18:05	20:17	21:26	22:31	22:49	22:01	20:40	19:13		16:49	15:51
2	09:28	08:44		07:33	07:04	05:41	04:39	04:33	05:26	06:35	07:42		07:54	09:02
	15:54	16:59		18:07	20:19	21:28	22:32	22:48	21:59	20:37	19:10		16:46	15:50
3	09:27	08:41		07:30	07:01	05:39	04:37	04:34	05:29	06:38	07:44		07:56	09:04
	15:56	17:01		18:10	20:21	21:31	22:34	22:47	21:56	20:34	19:07		16:44	15:49
4	09:27	08:39		07:27	06:58	05:36	04:36	04:35	05:31	06:40	07:46		07:59	09:05
	15:57	17:04		18:12	20:24	21:33	22:35	22:47	21:54	20:31	19:05		16:42	15:48
5	09:26	08:37		07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:49		08:01	09:07
	15:59	17:06		18:14	20:26	21:35	22:37	22:46	21:52	20:28	19:02		16:39	15:47
6	09:25	08:35		07:22	06:53	05:31	04:34	04:38	05:35	06:44	07:51		08:04	09:09
	16:00	17:09		18:17	20:28	21:38	22:38	22:45	21:49	20:26	18:59		16:37	15:46
7	09:25	08:32		07:19	06:50	05:29	04:33	04:39	05:37	06:47	07:53		08:06	09:10
	16:02	17:11		18:19	20:31	21:40	22:39	22:44	21:47	20:23	18:56		16:35	15:46
8	09:24	08:30		07:16	06:47	05:27	04:32	04:40	05:40	06:49	07:55		08:08	09:12
	16:04	17:13		18:21	20:33	21:42	22:41	22:43	21:44	20:20	18:53		16:32	15:45
9	09:23	08:28		07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:58		08:11	09:14
	16:05	17:16		18:24	20:35	21:44	22:42	22:42	21:42	20:17	18:50		16:30	15:44
10	09:22	08:25		07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00		08:13	09:15
	16:07	17:18		18:26	20:38	21:47	22:43	22:41	21:39	20:14	18:48		16:28	15:44
11	09:21	08:23	09:07 (23)	07:07	06:38	05:20	04:30	04:44	05:46	06:55	08:02		08:16	09:16
	16:09	17:21	7 09:14 (23)	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:45		16:26	15:43
12	09:20	08:20	09:04 (23)	07:05	06:36	05:17	04:29	04:46	05:49	06:58	08:04		08:18	09:18
	16:11	17:23	12 09:16 (23)	18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42		16:24	15:43
13	09:19	08:18	09:03 (23)	07:02	06:33	05:15	04:28	04:48	05:51	07:00	08:07		08:20	09:19
	16:13	17:26	15 09:18 (23)	18:33	20:44	21:53	22:46	22:37	21:32	20:05	18:39		16:21	15:43
14	09:17	08:15	09:02 (23)	06:59	06:30	05:13	04:28	04:49	05:53	07:02	08:09		08:23	09:20
	16:15	17:28	17 09:19 (23)	18:35	20:47	21:56	22:47	22:35	21:29	20:02	18:36		16:19	15:42
15	09:16	08:13	09:01 (23)	06:56	06:27	05:11	04:28	04:51	05:55	07:04	08:11		08:25	09:21
	16:17	17:31	19 09:20 (23)	18:38	20:49	21:58	22:47	22:34	21:26	20:00	18:34		16:17	15:42
16	09:15	08:10	09:00 (23)	06:53	06:24	05:08	04:27	04:53	05:58	07:06	08:14		08:27	09:22
	16:19	17:33	20 09:20 (23)	18:40	20:51	22:00	22:48	22:32	21:24	19:57	18:31		16:15	15:42
17	09:13	08:08	09:01 (23)	06:50	06:22	05:06	04:27	04:54	06:00	07:09	08:16		08:30	09:23
	16:21	17:36	20 09:21 (23)	18:42	20:54	22:02	22:49	22:31	21:21	19:54	18:28		16:13	15:42
18	09:12	08:05	09:00 (23)	06:47	06:19	05:04	04:27	04:56	06:02	07:11	08:18	09:36 (23)	08:32	09:24
	16:23	17:38	20 09:20 (23)	18:45	20:56	22:04	22:49	22:29	21:19	19:51	18:25	10 09:46 (23)	16:11	15:42
19	09:10	08:02	09:00 (23)	06:44	06:16	05:02	04:27	04:58	06:04	07:13	08:21	09:34 (23)	08:34	09:25
	16:26	17:41	20 09:20 (23)	18:47	20:58	22:06	22:50	22:27	21:16	19:48	18:23	14 09:48 (23)	16:10	15:42
20	09:09	08:00	09:00 (23)	06:42	06:13	05:00	04:27	05:00	06:06	07:15	08:23	09:32 (23)	08:37	09:26
	16:28	17:43	19 09:19 (23)	18:49	21:01	22:08	22:50	22:26	21:13	19:45	18:20	17 09:49 (23)	16:08	15:43
21	09:07	07:57	09:01 (23)	06:39	06:11	04:58	04:27	05:02	06:09	07:17	08:25	09:32 (23)	08:39	09:26
	16:30	17:46	17 09:18 (23)	18:52	21:03	22:10	22:50	22:24	21:10	19:42	18:17	18 09:50 (23)	16:06	15:43
22	09:05	07:55	09:02 (23)	06:36	06:08	04:56	04:27	05:04	06:11	07:20	08:28	09:30 (23)	08:41	09:27
	16:32	17:48	16 09:18 (23)	18:54	21:05	22:12	22:51	22:22	21:08	19:39	18:15	20 09:50 (23)	16:04	15:44
23	09:04	07:52	09:03 (23)	06:33	06:05	04:54	04:27	05:06	06:13	07:22	08:30	09:30 (23)	08:43	09:27
	16:35	17:50	13 09:16 (23)	18:56	21:08	22:14	22:51	22:20	21:05	19:36	18:12	20 09:50 (23)	16:03	15:44
24	09:02	07:49	09:06 (23)	06:30	06:02	04:53	04:28	05:08	06:15	07:24	08:32	09:30 (23)	08:45	09:28
	16:37	17:53	8 09:14 (23)	18:59	21:10	22:16	22:51	22:18	21:02	19:33	18:09	21 09:51 (23)	16:01	15:45
25	09:00	07:46		06:27	06:00	04:51	04:28	05:10	06:18	07:26	07:35	08:30 (23)	08:48	09:28
	16:39	17:55		19:01	21:12	22:18	22:51	22:16	20:59	19:31	17:07	20 08:50 (23)	15:59	15:45
26	08:58	07:44		06:24	05:57	04:49	04:29	05:12	06:20	07:28	07:37	08:30 (23)	08:50	09:28
	16:42	17:58		19:03	21:15	22:20	22:51	22:14	20:57	19:28	17:04	20 08:50 (23)	15:58	15:46
27	08:56	07:41		06:21	05:54	04:47	04:29	05:14	06:22	07:31	07:40	08:30 (23)	08:52	09:29
	16:44	18:00		19:05	21:17	22:22	22:50	22:12	20:54	19:25	17:02	19 08:49 (23)	15:57	15:47
28	08:54	07:38		06:18	05:52	04:46	04:30	05:16	06:24	07:33	07:42	08:31 (23)	08:54	09:29
	16:46	18:02		19:08	21:19	22:24	22:50	22:10	20:51	19:22	16:59	17 08:48 (23)	15:55	15:48
29	08:52			07:16	05:49	04:44	04:31	05:18	06:27	07:35	07:44	08:33 (23)	08:56	09:29
	16:49			20:10	21:21	22:26	22:50	22:08	20:48	19:19	16:56	15 08:48 (23)	15:54	15:49
30	08:50			07:13	05:47	04:43	04:31	05:20	06:29	07:37	07:47	08:34 (23)	08:58	09:28
	16:51			20:12	21:24	22:27	22:49	22:05	20:45	19:16	16:54	11 08:45 (23)	15:53	15:50
31	08:48			07:10		04:41		05:22	06:31		07:49	08:37 (23)		09:28
	16:54			20:15		22:29		22:03	20:43		16:51	6 08:43 (23)		15:51
Potential sun hours	221	260		365	432	521	547	546	478	386	319		236	199
Total, worst case			223									228		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** AG - Hytte, ikke ferdig bygd. Eiendom 57/3 - Bjerkreim kommune (33)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March			April			May	June
1	09:28		12:11 (33)	08:45		12:16 (33)	07:35		15:43 (8)	07:07		18:42 (18)	05:44	04:39
	15:52	49	14:26 (15)	16:56	112	15:37 (36)	18:04	25	17:06 (10)	20:16	18	19:00 (18)	21:26	22:30
2	09:27		12:12 (33)	08:43		12:17 (33)	07:32		15:46 (8)	07:04		18:43 (18)	05:41	04:38
	15:54	54	14:28 (15)	16:58	113	15:38 (36)	18:07	35	17:10 (10)	20:19	14	18:57 (18)	21:28	22:32
3	09:27		12:11 (33)	08:41		12:19 (33)	07:30		16:31 (13)	07:01		18:47 (18)	05:38	04:37
	15:55	58	14:29 (15)	17:01	110	15:38 (36)	18:09	38	17:13 (10)	20:21	8	18:55 (18)	21:30	22:33
4	09:26		12:11 (33)	08:39		12:21 (33)	07:27		16:29 (13)	06:58			05:36	04:36
	15:57	61	14:29 (15)	17:03	107	15:39 (36)	18:12	46	17:15 (10)	20:23			21:33	22:35
5	09:26		12:10 (33)	08:36		12:25 (33)	07:24		16:27 (13)	06:55			05:34	04:35
	15:58	66	14:30 (15)	17:06	99	15:39 (36)	18:14	48	17:15 (10)	20:26			21:35	22:36
6	09:25		12:10 (33)	08:34		12:59 (27)	07:21		16:25 (13)	06:52			05:31	04:34
	16:00	70	14:31 (15)	17:08	92	15:39 (36)	18:16	50	17:15 (10)	20:28			21:37	22:38
7	09:24		12:10 (33)	08:32		12:59 (27)	07:18		16:23 (13)	06:49			05:29	04:33
	16:01	73	14:32 (15)	17:11	91	15:38 (36)	18:19	52	17:15 (10)	20:30			21:39	22:39
8	09:23		12:10 (33)	08:30		12:59 (27)	07:15		16:22 (13)	06:46			05:26	04:32
	16:03	78	14:33 (15)	17:13	90	15:38 (36)	18:21	52	17:14 (10)	20:32			21:42	22:40
9	09:22		12:09 (33)	08:27		13:00 (27)	07:13		16:20 (13)	06:44			05:24	04:31
	16:05	81	14:33 (15)	17:16	88	15:38 (36)	18:23	54	17:14 (10)	20:35			21:44	22:41
10	09:21		12:09 (33)	08:25		12:59 (27)	07:10		16:19 (13)	06:41			05:21	04:30
	16:07	84	14:34 (15)	17:18	97	15:58 (8)	18:26	54	17:13 (10)	20:37			21:46	22:42
11	09:20		12:09 (33)	08:22		12:59 (27)	07:07		16:18 (13)	06:38			05:19	04:29
	16:09	87	14:34 (15)	17:20	99	16:00 (8)	18:28	54	17:12 (10)	20:39			21:48	22:44
12	09:19		12:09 (33)	08:20		13:00 (27)	07:04		16:17 (13)	06:35			05:17	04:29
	16:11	91	14:35 (15)	17:23	100	16:03 (8)	18:30	54	17:11 (10)	20:42			21:51	22:44
13	09:18		12:09 (33)	08:17		13:00 (27)	07:01		16:16 (13)	06:32			05:15	04:28
	16:13	93	14:35 (15)	17:25	95	16:04 (8)	18:33	53	17:09 (10)	20:44			21:53	22:45
14	09:17		12:09 (33)	08:15		13:01 (27)	06:58		16:16 (13)	06:29			05:12	04:28
	16:15	96	14:36 (15)	17:28	90	16:05 (8)	18:35	50	17:06 (10)	20:46			21:55	22:46
15	09:16		12:09 (33)	08:12		13:02 (27)	06:56		16:16 (13)	06:27			05:10	04:27
	16:17	99	14:37 (15)	17:30	91	16:07 (8)	18:37	46	17:02 (13)	20:49			21:57	22:47
16	09:14		12:09 (33)	08:10		13:02 (27)	06:53		16:16 (13)	06:24			05:08	04:27
	16:19	101	14:37 (15)	17:33	91	16:07 (8)	18:40	46	17:02 (13)	20:51			21:59	22:48
17	09:13		12:09 (33)	08:07		13:03 (27)	06:50		16:16 (13)	06:21			05:06	04:27
	16:21	103	14:37 (15)	17:35	91	16:08 (8)	18:42	45	17:01 (13)	20:53			22:02	22:48
18	09:11		12:09 (33)	08:05		13:03 (27)	06:47		16:15 (13)	06:18			05:04	04:27
	16:23	104	14:37 (15)	17:38	91	16:08 (8)	18:44	48	17:56 (18)	20:56			22:04	22:49
19	09:10		12:09 (33)	08:02		13:05 (27)	06:44		16:15 (13)	06:16			05:02	04:26
	16:25	105	14:37 (15)	17:40	89	16:09 (8)	18:47	57	18:01 (18)	20:58			22:06	22:49
20	09:08		12:09 (33)	07:59		13:06 (27)	06:41		16:16 (13)	06:13			05:00	04:26
	16:27	107	14:37 (15)	17:43	88	16:09 (8)	18:49	60	18:03 (18)	21:00			22:08	22:50
21	09:07		12:09 (33)	07:57		13:07 (27)	06:38		16:16 (13)	06:10			04:58	04:27
	16:30	106	14:36 (15)	17:45	84	16:08 (8)	18:51	63	18:04 (18)	21:02			22:10	22:50
22	09:05		12:10 (33)	07:54		13:08 (27)	06:35		16:16 (13)	06:07			04:56	04:27
	16:32	106	14:36 (15)	17:48	82	16:08 (8)	18:54	63	18:05 (18)	21:05			22:12	22:50
23	09:03		12:10 (33)	07:51		13:09 (27)	06:32		16:17 (13)	06:05			04:54	04:27
	16:34	105	14:36 (15)	17:50	78	16:07 (8)	18:56	63	18:05 (18)	21:07			22:14	22:50
24	09:01		12:10 (33)	07:49		13:12 (27)	06:30		16:17 (13)	06:02			04:52	04:27
	16:37	106	14:35 (15)	17:52	74	16:08 (8)	18:58	63	18:05 (18)	21:09			22:16	22:50
25	08:59		12:11 (33)	07:46		13:14 (27)	06:27		16:18 (13)	05:59			04:50	04:28
	16:39	104	15:26 (36)	17:55	68	16:07 (8)	19:00	61	18:05 (18)	21:12			22:18	22:50
26	08:58		12:11 (33)	07:43		13:16 (27)	06:24		16:20 (13)	05:57			04:49	04:28
	16:41	103	15:28 (36)	17:57	62	16:06 (8)	19:03	59	18:06 (18)	21:14			22:20	22:50
27	08:56		12:12 (33)	07:41		13:19 (27)	06:21		16:22 (13)	05:54			04:47	04:29
	16:44	108	15:31 (36)	18:00	52	16:04 (8)	19:05	55	18:06 (18)	21:16			22:22	22:50
28	08:54		12:12 (33)	07:38		13:24 (27)	06:18		16:24 (13)	05:51			04:45	04:29
	16:46	111	15:33 (36)	18:02	40	17:03 (10)	19:07	49	18:05 (18)	21:19			22:23	22:50
29	08:52		12:13 (33)				07:15		17:27 (13)	05:49			04:44	04:30
	16:48	112	15:34 (36)				20:10	42	19:04 (18)	21:21			22:25	22:49
30	08:50		12:14 (33)				07:12		17:31 (13)	05:46			04:42	04:31
	16:51	115	15:36 (36)				20:12	32	19:03 (18)	21:23			22:27	22:49
31	08:47		12:15 (33)				07:09		18:41 (18)				04:41	
	16:53	116	15:37 (36)				20:14	20	19:01 (18)				22:29	
Potential sun hours	221			260			365			432			521	547
Total, worst case		2852			2464			1537			40			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
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NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** AG - Hytte, ikke ferdig bygd. Eiendom 57/3 - Bjerkreim kommune (33)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July		August		September			October			November			December		
1	04:32		05:24		06:33			07:39		16:56 (13)	07:51		12:29 (27)	08:59		11:51 (33)
	22:48		22:01		20:39			19:13	53	17:49 (10)	16:49	96	15:27 (8)	15:51	87	14:16 (15)
2	04:33		05:26		06:35			07:41		16:57 (13)	07:53		12:29 (27)	09:01		11:52 (33)
	22:48		21:58		20:37			19:10	54	17:51 (10)	16:46	89	15:07 (36)	15:50	84	14:16 (15)
3	04:34		05:28		06:37			07:44		16:57 (13)	07:56		12:28 (27)	09:03		11:53 (33)
	22:47		21:56		20:34			19:07	54	17:51 (10)	16:44	90	15:07 (36)	15:49	82	14:17 (15)
4	04:35		05:30		06:39			07:46		16:57 (13)	07:58		12:29 (27)	09:05		11:54 (33)
	22:46		21:54		20:31			19:04	54	17:51 (10)	16:41	91	15:08 (36)	15:48	78	14:17 (15)
5	04:36		05:33		06:42			07:48		16:58 (13)	08:01		12:29 (27)	09:07		11:55 (33)
	22:45		21:51		20:28			19:01	54	17:52 (10)	16:39	92	15:09 (36)	15:47	73	14:17 (15)
6	04:37		05:35		06:44			07:50		16:59 (13)	08:03		11:55 (33)	09:08		11:56 (33)
	22:45		21:49		20:25			18:58	52	17:51 (10)	16:37	101	15:09 (36)	15:46	71	14:17 (15)
7	04:38		05:37		06:46			07:53		16:59 (13)	08:06		11:51 (33)	09:10		11:57 (33)
	22:44		21:46		20:22			18:56	51	17:50 (10)	16:34	107	15:09 (36)	15:45	66	14:17 (15)
8	04:40		05:39		06:48			07:55		17:01 (13)	08:08		11:49 (33)	09:12		11:58 (33)
	22:43		21:44		20:19			18:53	49	17:50 (10)	16:32	112	15:09 (36)	15:44	62	14:17 (15)
9	04:41		05:41		06:51		18:41 (18)	07:57		17:02 (13)	08:10		11:48 (33)	09:13		11:59 (33)
	22:41		21:41		20:16	6	18:47 (18)	18:50	47	17:49 (10)	16:30	113	15:09 (36)	15:44	58	14:17 (15)
10	04:42		05:44		06:53		18:37 (18)	07:59		17:04 (13)	08:13		11:46 (33)	09:15		12:01 (33)
	22:40		21:39		20:14	13	18:50 (18)	18:47	43	17:48 (10)	16:27	115	15:08 (36)	15:43	54	14:17 (15)
11	04:44		05:46		06:55		18:35 (18)	08:02		16:24 (8)	08:15		11:46 (33)	09:16		12:01 (33)
	22:39		21:36		20:11	18	18:53 (18)	18:44	37	17:46 (10)	16:25	114	15:08 (36)	15:43	50	14:17 (15)
12	04:45		05:48		06:57		18:33 (18)	08:04		16:18 (8)	08:17		11:46 (33)	09:17		12:03 (33)
	22:38		21:34		20:08	21	18:54 (18)	18:42	26	17:42 (10)	16:23	114	15:08 (36)	15:42	46	14:17 (15)
13	04:47		05:50		06:59		17:24 (13)	08:06		14:04 (27)	08:20		11:44 (33)	09:19		12:04 (33)
	22:36		21:31		20:05	27	18:54 (18)	18:39	30	17:38 (10)	16:21	113	15:06 (36)	15:42	41	14:17 (15)
14	04:49		05:53		07:02		17:18 (13)	08:09		13:55 (27)	08:22		11:44 (33)	09:20		12:06 (33)
	22:35		21:29		20:02	41	18:54 (18)	18:36	44	16:36 (8)	16:19	111	15:05 (36)	15:42	37	14:17 (15)
15	04:50		05:55		07:04		17:14 (13)	08:11		13:50 (27)	08:25		11:44 (33)	09:21		12:08 (33)
	22:33		21:26		19:59	48	18:54 (18)	18:33	57	16:37 (8)	16:17	108	15:03 (36)	15:42	31	14:17 (15)
16	04:52		05:57		07:06		17:11 (13)	08:13		13:47 (27)	08:27		11:45 (33)	09:22		13:08 (27)
	22:32		21:23		19:56	54	18:54 (18)	18:30	64	16:38 (8)	16:15	103	15:02 (36)	15:42	23	14:16 (15)
17	04:54		05:59		07:08		17:08 (13)	08:16		13:44 (27)	08:29		11:44 (33)	09:23		13:09 (27)
	22:30		21:21		19:53	58	18:54 (18)	18:28	70	16:38 (8)	16:13	104	14:59 (36)	15:42	21	14:16 (15)
18	04:56		06:02		07:10		17:07 (13)	08:18		13:42 (27)	08:32		11:44 (33)	09:24		13:11 (27)
	22:29		21:18		19:50	61	18:54 (18)	18:25	76	16:39 (8)	16:11	106	14:09 (15)	15:42	19	14:15 (15)
19	04:58		06:04		07:12		17:05 (13)	08:20		13:39 (27)	08:34		11:45 (33)	09:25		13:12 (27)
	22:27		21:15		19:47	62	18:53 (18)	18:22	81	16:39 (8)	16:09	105	14:11 (15)	15:42	18	14:16 (15)
20	04:59		06:06		07:15		17:04 (13)	08:23		13:38 (27)	08:36		11:45 (33)	09:25		13:13 (27)
	22:25		21:13		19:45	63	18:52 (18)	18:20	83	16:39 (8)	16:07	106	14:11 (15)	15:42	16	14:15 (15)
21	05:01		06:08		07:17		17:02 (13)	08:25		13:36 (27)	08:38		11:45 (33)	09:26		13:15 (27)
	22:23		21:10		19:42	64	18:51 (18)	18:17	86	16:38 (8)	16:06	107	14:13 (15)	15:43	14	14:16 (15)
22	05:03		06:11		07:19		17:01 (13)	08:27		13:35 (27)	08:41		11:45 (33)	09:26		13:16 (27)
	22:21		21:07		19:39	63	18:49 (18)	18:14	89	16:39 (8)	16:04	107	14:13 (15)	15:43	14	14:17 (15)
23	05:05		06:13		07:21		16:59 (13)	08:30		13:34 (27)	08:43		11:46 (33)	09:27		13:15 (27)
	22:19		21:05		19:36	62	18:47 (18)	18:12	89	16:38 (8)	16:02	105	14:14 (15)	15:44	15	14:17 (15)
24	05:07		06:15		07:24		16:59 (13)	08:32		13:33 (27)	08:45		11:46 (33)	09:27		13:15 (27)
	22:18		21:02		19:33	59	18:46 (18)	18:09	92	16:38 (8)	16:01	104	14:14 (15)	15:44	16	14:17 (15)
25	05:09		06:17		07:26		16:58 (13)	07:34		12:33 (27)	08:47		11:47 (33)	09:28		13:14 (27)
	22:16		20:59		19:30	54	18:42 (18)	17:06	92	15:38 (8)	15:59	102	14:15 (15)	15:45	18	14:18 (15)
26	05:11		06:19		07:28		16:58 (13)	07:37		12:31 (27)	08:49		11:47 (33)	09:28		13:13 (27)
	22:14		20:56		19:27	45	17:43 (13)	17:04	92	15:36 (8)	15:58	101	14:15 (15)	15:46	21	14:19 (15)
27	05:13		06:22		07:30		16:57 (13)	07:39		12:31 (27)	08:51		11:48 (33)	09:28		13:13 (27)
	22:11		20:53		19:24	46	17:43 (13)	17:01	91	15:36 (8)	15:56	99	14:16 (15)	15:47	22	14:20 (15)
28	05:15		06:24		07:32		16:57 (13)	07:41		12:30 (27)	08:53		11:48 (33)	09:28		12:15 (33)
	22:09		20:51		19:21	46	17:43 (13)	16:59	90	15:34 (8)	15:55	97	14:16 (15)	15:48	27	14:22 (15)
29	05:17		06:26		07:35		16:57 (13)	07:44		12:30 (27)	08:55		11:50 (33)	09:28		12:13 (33)
	22:07		20:48		19:19	48	17:45 (10)	16:56	96	15:33 (8)	15:53	94	14:16 (15)	15:49	36	14:24 (15)
30	05:20		06:28		07:37		16:56 (13)	07:46		12:30 (27)	08:57		11:50 (33)	09:28		12:13 (33)
	22:05		20:45		19:16	52	17:48 (10)	16:53	99	15:32 (8)	15:52	91	14:16 (15)	15:50	41	14:25 (15)
31	05:22		06:31					07:49		12:29 (27)				09:28		12:12 (33)
	22:03		20:42					16:51	99	15:29 (8)				15:51	45	14:26 (15)
Potential sun hours	546		478		386			319			236			199		
Total, worst case						1011			2094			3097			1286	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** AH - Brusalivegen 201 (34)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February		March		April	May	June	July	August	September		October		November	December
1	09:28	08:46		07:35		07:07	05:44	04:40	04:32	05:24	06:33		07:39	08:39 (60)	07:51	09:00
	15:53	16:56		18:05		20:17	21:26	22:30	22:48	22:01	20:40		19:13	22 09:01 (63)	16:49	15:52
2	09:27	08:43		07:33	08:13 (63)	07:04	05:42	04:39	04:33	05:27	06:35		07:42	08:36 (60)	07:54	09:01
	15:54	16:59		18:07	6 08:19 (63)	20:19	21:28	22:32	22:48	21:58	20:37		19:10	25 09:01 (63)	16:47	15:50
3	09:27	08:41		07:30	08:09 (63)	07:01	05:39	04:38	04:34	05:29	06:38		07:44	08:34 (60)	07:56	09:03
	15:56	17:01		18:10	13 08:22 (63)	20:21	21:30	22:33	22:47	21:56	20:34		19:07	27 09:01 (63)	16:44	15:49
4	09:26	08:39		07:27	08:07 (63)	06:58	05:36	04:36	04:35	05:31	06:40		07:46	08:34 (60)	07:59	09:05
	15:57	17:04		18:12	16 08:23 (63)	20:24	21:33	22:35	22:46	21:54	20:31		19:05	28 09:02 (63)	16:42	15:48
5	09:26	08:37		07:24	08:00 (60)	06:55	05:34	04:35	04:37	05:33	06:42		07:48	08:34 (60)	08:01	09:07
	15:59	17:06		18:14	24 08:24 (63)	20:26	21:35	22:36	22:45	21:51	20:28		19:02	28 09:02 (63)	16:39	15:47
6	09:25	08:34		07:21	07:58 (60)	06:53	05:32	04:34	04:38	05:35	06:44		07:51	08:33 (60)	08:03	09:08
	16:00	17:09		18:17	26 08:24 (63)	20:28	21:37	22:38	22:45	21:49	20:25		18:59	28 09:01 (63)	16:37	15:47
7	09:24	08:32		07:19	07:57 (60)	06:50	05:29	04:33	04:39	05:38	06:47		07:53	08:34 (60)	08:06	09:10
	16:02	17:11		18:19	27 08:24 (63)	20:30	21:40	22:39	22:44	21:47	20:23		18:56	27 09:01 (63)	16:35	15:46
8	09:23	08:30		07:16	07:56 (60)	06:47	05:27	04:32	04:40	05:40	06:49		07:55	08:35 (60)	08:08	09:12
	16:04	17:14		18:21	28 08:24 (63)	20:33	21:42	22:40	22:43	21:44	20:20		18:53	25 09:00 (63)	16:32	15:45
9	09:23	08:27		07:13	07:56 (60)	06:44	05:24	04:31	04:42	05:42	06:51		07:57	08:36 (60)	08:11	09:13
	16:06	17:16		18:24	28 08:24 (63)	20:35	21:44	22:41	22:41	21:42	20:17		18:50	22 08:58 (63)	16:30	15:44
10	09:22	08:25		07:10	07:56 (60)	06:41	05:22	04:31	04:43	05:44	06:53		08:00	08:43 (63)	08:13	09:15
	16:07	17:18		18:26	27 08:23 (63)	20:37	21:46	22:43	22:40	21:39	20:14		18:48	14 08:57 (63)	16:28	15:44
11	09:21	08:23		07:07	07:57 (60)	06:38	05:20	04:30	04:45	05:46	06:55		08:02	08:44 (63)	08:15	09:16
	16:09	17:21		18:28	26 08:23 (63)	20:40	21:49	22:44	22:39	21:37	20:11		18:45	10 08:54 (63)	16:26	15:43
12	09:19	08:20		07:04	07:59 (60)	06:36	05:17	04:29	04:46	05:49	06:58		08:04		08:18	09:17
	16:11	17:23		18:31	23 08:22 (63)	20:42	21:51	22:45	22:38	21:34	20:08		18:42		16:24	15:43
13	09:18	08:18		07:02	07:37 (59)	06:33	05:15	04:29	04:48	05:51	07:00	08:12 (62)	08:07		08:20	09:19
	16:13	17:26		18:33	21 08:21 (63)	20:44	21:53	22:45	22:36	21:31	20:05	9 08:21 (62)	18:39		16:22	15:43
14	09:17	08:15		06:59	07:35 (59)	06:30	05:13	04:28	04:49	05:53	07:02	08:10 (62)	08:09		08:22	09:20
	16:15	17:28		18:35	20 08:18 (63)	20:47	21:55	22:46	22:35	21:29	20:02	13 08:23 (62)	18:36		16:19	15:43
15	09:16	08:13		06:56	07:33 (59)	06:27	05:11	04:28	04:51	05:55	07:04	08:08 (62)	08:11		08:25	09:21
	16:17	17:31		18:38	14 08:14 (63)	20:49	21:57	22:47	22:33	21:26	19:59	16 08:24 (62)	18:34		16:17	15:42
16	09:14	08:10		06:53	07:32 (59)	06:24	05:09	04:28	04:53	05:58	07:06	08:08 (62)	08:13	09:01 (61)	08:27	09:22
	16:19	17:33		18:40	12 07:44 (59)	20:51	22:00	22:48	22:32	21:24	19:57	17 08:25 (62)	18:31	9 09:10 (61)	16:15	15:42
17	09:13	08:07		06:50	07:32 (59)	06:22	05:06	04:27	04:54	06:00	07:08	08:07 (62)	08:16	09:00 (61)	08:29	09:23
	16:21	17:36		18:42	12 07:44 (59)	20:53	22:02	22:48	22:30	21:21	19:54	18 08:25 (62)	18:28	12 09:12 (61)	16:13	15:42
18	09:12	08:05	08:36 (61)	06:47	07:32 (59)	06:19	05:04	04:27	04:56	06:02	07:11	08:06 (62)	08:18	08:59 (61)	08:32	09:24
	16:24	17:38	3 08:39 (61)	18:45	11 07:43 (59)	20:56	22:04	22:49	22:29	21:18	19:51	19 08:25 (62)	18:25	13 09:12 (61)	16:12	15:42
19	09:10	08:02	08:33 (61)	06:44	07:26 (62)	06:16	05:02	04:27	04:58	06:04	07:13	08:05 (62)	08:20	08:59 (61)	08:34	09:25
	16:26	17:41	7 08:40 (61)	18:47	16 07:42 (59)	20:58	22:06	22:49	22:27	21:16	19:48	19 08:24 (62)	18:23	14 09:13 (61)	16:10	15:43
20	09:08	08:00	08:30 (61)	06:42	07:23 (62)	06:13	05:00	04:27	05:00	06:07	07:15	08:05 (62)	08:23	08:58 (61)	08:36	09:25
	16:28	17:43	11 08:41 (61)	18:49	17 07:40 (59)	21:00	22:08	22:50	22:25	21:13	19:45	18 08:23 (62)	18:20	14 09:12 (61)	16:08	15:43
21	09:07	07:57	08:27 (61)	06:39	07:21 (62)	06:11	04:58	04:27	05:02	06:09	07:17	08:05 (62)	08:25	08:59 (61)	08:39	09:26
	16:30	17:46	14 08:41 (61)	18:52	15 07:36 (62)	21:03	22:10	22:50	22:23	21:10	19:42	17 08:22 (62)	18:17	13 09:12 (61)	16:06	15:43
22	09:05	07:54	08:27 (61)	06:36	07:20 (62)	06:08	04:56	04:27	05:04	06:11	07:19	08:06 (62)	08:27	09:01 (61)	08:41	09:27
	16:32	17:48	14 08:41 (61)	18:54	17 07:37 (62)	21:05	22:12	22:50	22:22	21:08	19:39	16 08:22 (62)	18:15	10 09:11 (61)	16:04	15:44
23	09:03	07:52	08:28 (61)	06:33	07:19 (62)	06:05	04:55	04:28	05:06	06:13	07:22	08:07 (62)	08:30	09:04 (61)	08:43	09:27
	16:35	17:50	13 08:41 (61)	18:56	19 07:38 (62)	21:07	22:14	22:50	22:20	21:05	19:36	17 08:24 (59)	18:12	6 09:10 (61)	16:03	15:44
24	09:01	07:49	08:28 (61)	06:30	07:19 (62)	06:02	04:53	04:28	05:08	06:15	07:24	08:09 (62)	08:32	09:06 (61)	08:45	09:27
	16:37	17:53	13 08:41 (61)	18:58	19 07:38 (62)	21:10	22:16	22:50	22:18	21:02	19:33	16 08:25 (59)	18:09	2 09:08 (61)	16:01	15:45
25	09:00	07:46	08:29 (61)	06:27	07:18 (62)	06:00	04:51	04:28	05:10	06:18	07:26	08:15 (59)	07:35		08:47	09:28
	16:39	17:55	10 08:39 (61)	19:01	19 07:37 (62)	21:12	22:18	22:50	22:16	20:59	19:30	11 08:26 (59)	17:07		16:00	15:46
26	08:58	07:44	08:30 (61)	06:24	07:18 (62)	05:57	04:49	04:29	05:12	06:20	07:28	08:14 (59)	07:37		08:49	09:28
	16:42	17:58	7 08:37 (61)	19:03	19 07:37 (62)	21:14	22:20	22:50	22:14	20:57	19:28	12 08:26 (59)	17:04		15:58	15:46
27	08:56	07:41		06:21	07:18 (62)	05:54	04:48	04:29	05:14	06:22	07:31	08:14 (59)	07:39		08:52	09:28
	16:44	18:00		19:05	18 07:36 (62)	21:17	22:22	22:50	22:12	20:54	19:25	12 08:26 (59)	17:02		15:57	15:47
28	08:54	07:38		06:18	07:18 (62)	05:52	04:46	04:30	05:16	06:24	07:33	08:14 (59)	07:42		08:54	09:28
	16:47	18:02		19:08	16 07:34 (62)	21:19	22:23	22:50	22:09	20:51	19:22	11 08:25 (59)	16:59		15:55	15:48
29	08:52			07:16	08:19 (62)	05:49	04:44	04:31	05:18	06:27	07:35	08:14 (59)	07:44		08:56	09:28
	16:49			20:10	14 08:33 (62)	21:21	22:25	22:49	22:07	20:48	19:19	19 08:57 (63)	16:56		15:54	15:49
30	08:50			07:13	08:21 (62)	05:47	04:43	04:32	05:20	06:29	07:37	08:15 (59)	07:47		08:58	09:28
	16:51			20:12	9 08:30 (62)	21:24	22:27	22:49	22:05	20:45	19:16	21 08:59 (63)	16:54		15:53	15:50
31	08:48			07:10			04:41		05:22	06:31			07:49			09:28
	16:54			20:14			22:29		22:03	20:43			16:51			15:51
Potential sun hours	222	260		365		432	521	547	545	478	386		319		236	200
Total, worst case			92		532							281		349		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** AI - Vaule 218 (35)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February			March	April	May			June		
1	09:28			08:45		13:54 (27)	07:35	07:06	05:44			04:39		20:58 (78)
	15:52			16:56	18	14:12 (27)	18:04	20:16	21:26			22:30	7	21:05 (78)
2	09:27			08:43		13:56 (27)	07:32	07:04	05:41			04:38		20:59 (78)
	15:54			16:58	16	14:12 (27)	18:07	20:19	21:28			22:32	5	21:04 (78)
3	09:27			08:41		13:58 (27)	07:29	07:01	05:38			04:37		
	15:55			17:01	11	14:09 (27)	18:09	20:21	21:30			22:33		
4	09:26			08:39			07:27	06:58	05:36			04:36		
	15:57			17:03			18:12	20:23	21:33			22:35		
5	09:26			08:37			07:24	06:55	05:33			04:34		
	15:58			17:06			18:14	20:26	21:35			22:36		
6	09:25			08:34		15:24 (13)	07:21	06:52	05:31			04:33		
	16:00			17:08	6	15:30 (13)	18:16	20:28	21:37			22:38		
7	09:24			08:32		15:21 (13)	07:18	06:49	05:29			04:32		
	16:01			17:11	12	15:33 (13)	18:19	20:30	21:39			22:39		
8	09:23			08:30		15:19 (13)	07:15	06:46	05:26			04:31		
	16:03			17:13	15	15:34 (13)	18:21	20:32	21:42			22:40		
9	09:23			08:27		15:18 (13)	07:13	06:44	05:24			04:31		
	16:05			17:15	18	15:36 (13)	18:23	20:35	21:44			22:41		
10	09:22			08:25		15:17 (13)	07:10	06:41	05:21			04:30		21:27 (80)
	16:07			17:18	20	15:37 (13)	18:26	20:37	21:46			22:43	1	21:28 (80)
11	09:20			08:22		15:16 (13)	07:07	06:38	05:19			04:29		21:26 (80)
	16:09			17:20	21	15:37 (13)	18:28	20:39	21:48			22:44	2	21:28 (80)
12	09:19		13:53 (27)	08:20		15:17 (13)	07:04	06:35	05:17			04:29		21:27 (80)
	16:10	2	13:55 (27)	17:23	21	15:38 (13)	18:30	20:42	21:51			22:45	2	21:29 (80)
13	09:18		13:53 (27)	08:17		15:16 (13)	07:01	06:32	05:15			04:28		21:26 (80)
	16:12	5	13:58 (27)	17:25	22	15:38 (13)	18:33	20:44	21:53			22:45	3	21:29 (80)
14	09:17		13:51 (27)	08:15		15:16 (13)	06:58	06:29	05:12			04:27		21:27 (80)
	16:14	8	13:59 (27)	17:28	22	15:38 (13)	18:35	20:46	21:55			22:46	3	21:30 (80)
15	09:16		13:50 (27)	08:12		15:17 (13)	06:56	06:27	05:10			04:27		21:27 (80)
	16:17	13	14:03 (27)	17:30	21	15:38 (13)	18:37	20:49	21:57			22:47	4	21:31 (80)
16	09:14		13:49 (27)	08:10		15:17 (13)	06:53	06:24	05:08		20:58 (78)	04:27		21:28 (80)
	16:19	19	14:08 (27)	17:33	21	15:38 (13)	18:40	20:51	21:59	4	21:02 (78)	22:48	3	21:31 (80)
17	09:13		11:39 (38)	08:07		15:17 (13)	06:50	06:21	05:06		20:56 (78)	04:27		21:27 (80)
	16:21	27	14:10 (27)	17:35	20	15:37 (13)	18:42	20:53	22:02	8	21:04 (78)	22:48	4	21:31 (80)
18	09:11		11:35 (38)	08:05		15:17 (13)	06:47	06:18	05:04		20:55 (78)	04:26		21:27 (80)
	16:23	33	14:11 (27)	17:38	19	15:36 (13)	18:44	20:56	22:04	10	21:05 (78)	22:49	4	21:31 (80)
19	09:10		11:32 (38)	08:02		15:19 (13)	06:44	06:16	05:02		20:54 (78)	04:26		21:27 (80)
	16:25	36	14:11 (27)	17:40	17	15:36 (13)	18:47	20:58	22:06	11	21:05 (78)	22:49	6	21:34 (80)
20	09:08		11:28 (38)	07:59		15:21 (13)	06:41	06:13	05:00		20:54 (78)	04:26		21:28 (80)
	16:27	43	14:12 (27)	17:43	13	15:34 (13)	18:49	21:00	22:08	13	21:07 (78)	22:50	6	21:35 (80)
21	09:07		11:27 (38)	07:57		15:24 (13)	06:38	06:10	04:58		20:53 (78)	04:26		21:28 (80)
	16:30	44	14:13 (27)	17:45	6	15:30 (13)	18:51	21:02	22:10	14	21:07 (78)	22:50	6	21:35 (80)
22	09:05		11:28 (38)	07:54			06:35	06:07	04:56		20:53 (78)	04:27		21:28 (80)
	16:32	43	14:13 (27)	17:47			18:53	21:05	22:12	14	21:07 (78)	22:50	6	21:35 (80)
23	09:03		11:29 (38)	07:51			06:32	06:05	04:54		20:53 (78)	04:27		21:28 (80)
	16:34	43	14:14 (27)	17:50			18:56	21:07	22:14	14	21:07 (78)	22:50	6	21:35 (80)
24	09:01		11:30 (38)	07:49			06:30	06:02	04:52		20:53 (78)	04:27		21:29 (80)
	16:36	42	14:14 (27)	17:52			18:58	21:09	22:16	14	21:07 (78)	22:50	5	21:36 (80)
25	08:59		11:32 (38)	07:46			06:27	05:59	04:50		20:54 (78)	04:28		21:29 (80)
	16:39	39	14:15 (27)	17:55			19:00	21:12	22:18	14	21:08 (78)	22:50	4	21:33 (80)
26	08:58		11:33 (38)	07:43			06:24	05:57	04:49		20:53 (78)	04:28		21:30 (80)
	16:41	36	14:14 (27)	17:57			19:03	21:14	22:20	14	21:07 (78)	22:50	4	21:34 (80)
27	08:56		11:36 (38)	07:41			06:21	05:54	04:47		20:54 (78)	04:29		21:29 (80)
	16:44	30	14:14 (27)	18:00			19:05	21:16	22:22	13	21:07 (78)	22:50	4	21:33 (80)
28	08:54		13:51 (27)	07:38			06:18	05:51	04:45		20:54 (78)	04:29		21:30 (80)
	16:46	24	14:15 (27)	18:02			19:07	21:19	22:23	12	21:06 (78)	22:50	3	21:33 (80)
29	08:52		13:51 (27)				07:15	05:49	04:44		20:55 (78)	04:30		21:30 (80)
	16:48	23	14:14 (27)				20:10	21:21	22:25	11	21:06 (78)	22:49	2	21:32 (80)
30	08:50		13:52 (27)				07:12	05:46	04:42		20:56 (78)	04:31		21:30 (80)
	16:51	22	14:14 (27)				20:12	21:23	22:27	10	21:06 (78)	22:49	2	21:32 (80)
31	08:48		13:54 (27)				07:09		04:41		20:57 (78)			
	16:53	20	14:14 (27)				20:14		22:29	9	21:06 (78)			
Potential sun hours	221			260			365	432	521			547		
Total, worst case		552			319					185			92	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** AI - Vaule 218 (35)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July			August		September		October			November			December
1	04:32		21:31 (80)	05:24		06:33		07:39			07:51		14:47 (13)	08:59
	22:48	1	21:32 (80)	22:01		20:39		19:13			16:48	19	15:06 (13)	15:51
2	04:33		21:31 (80)	05:26		06:35		07:41			07:53		14:48 (13)	09:01
	22:48	1	21:32 (80)	21:58		20:37		19:10			16:46	17	15:05 (13)	15:50
3	04:34		21:31 (80)	05:28		06:37		07:44			07:56		14:48 (13)	09:03
	22:47	1	21:32 (80)	21:56		20:34		19:07			16:44	16	15:04 (13)	15:49
4	04:35			05:30		06:39		07:46			07:58		14:50 (13)	09:05
	22:46			21:54		20:31		19:04			16:41	12	15:02 (13)	15:48
5	04:36			05:33		06:42		07:48			08:01		14:54 (13)	09:07
	22:45			21:51		20:28		19:01			16:39	5	14:59 (13)	15:47
6	04:37			05:35		06:44		07:50			08:03			09:08
	22:45			21:49		20:25		18:58			16:36			15:46
7	04:38			05:37		06:46		07:53			08:06		13:33 (27)	09:10
	22:44			21:46		20:22		18:56			16:34	3	13:36 (27)	15:45
8	04:40			05:39		06:48		07:55			08:08		13:29 (27)	09:12
	22:43			21:44		20:19		18:53			16:32	11	13:40 (27)	15:44
9	04:41			05:41		06:50		07:57			08:10		13:27 (27)	09:13
	22:41			21:41		20:16		18:50			16:30	15	13:42 (27)	15:44
10	04:42		21:08 (78)	05:44		06:53		07:59			08:13		13:25 (27)	09:15
	22:40	3	21:11 (78)	21:39		20:14		18:47			16:27	18	13:43 (27)	15:43
11	04:44		21:06 (78)	05:46		06:55		08:02			08:15		13:24 (27)	09:16
	22:39	6	21:12 (78)	21:36		20:11		18:44			16:25	21	13:45 (27)	15:43
12	04:45		21:05 (78)	05:48		06:57		08:04			08:17		13:24 (27)	09:17
	22:38	8	21:13 (78)	21:34		20:08		18:41			16:23	22	13:46 (27)	15:42
13	04:47		21:05 (78)	05:50		06:59		08:06			08:20		13:23 (27)	09:19
	22:36	9	21:14 (78)	21:31		20:05		18:39			16:21	23	13:46 (27)	15:42
14	04:49		21:04 (78)	05:53		07:01		08:09			08:22		13:23 (27)	09:20
	22:35	11	21:15 (78)	21:29		20:02		18:36			16:19	24	13:47 (27)	15:42
15	04:50		21:04 (78)	05:55		07:04		08:11			08:25		11:08 (38)	09:21
	22:33	12	21:16 (78)	21:26		19:59		18:33			16:17	31	13:47 (27)	15:42
16	04:52		21:03 (78)	05:57		07:06		08:13			08:27		11:06 (38)	09:22
	22:32	13	21:16 (78)	21:23		19:56		18:30			16:15	37	13:48 (27)	15:42
17	04:54		21:03 (78)	05:59		07:08		08:16			08:29		11:05 (38)	09:23
	22:30	13	21:16 (78)	21:21		19:53		18:28			16:13	39	13:48 (27)	15:42
18	04:56		21:03 (78)	06:01		07:10		08:18			08:32		11:04 (38)	09:24
	22:29	13	21:16 (78)	21:18		19:50		18:25			16:11	42	13:48 (27)	15:42
19	04:57		21:03 (78)	06:04		07:12		08:20			08:34		11:04 (38)	09:25
	22:27	14	21:17 (78)	21:15		19:47		18:22			16:09	43	13:49 (27)	15:42
20	04:59		21:03 (78)	06:06		07:15		08:23			08:36		11:03 (38)	09:25
	22:25	14	21:17 (78)	21:13		19:45		18:19			16:07	43	13:48 (27)	15:42
21	05:01		21:03 (78)	06:08		07:17		08:25		15:53 (13)	08:38		11:03 (38)	09:26
	22:23	14	21:17 (78)	21:10		19:42		18:17	9	16:02 (13)	16:06	44	13:49 (27)	15:43
22	05:03		21:03 (78)	06:10		07:19		08:27		15:51 (13)	08:41		11:04 (38)	09:27
	22:21	14	21:17 (78)	21:07		19:39		18:14	13	16:04 (13)	16:04	43	13:48 (27)	15:43
23	05:05		21:04 (78)	06:13		07:21		08:30		15:48 (13)	08:43		11:09 (38)	09:27
	22:20	13	21:17 (78)	21:05		19:36		18:11	17	16:05 (13)	16:02	36	13:48 (27)	15:44
24	05:07		21:05 (78)	06:15		07:23		08:32		15:47 (13)	08:45		11:13 (38)	09:27
	22:18	12	21:17 (78)	21:02		19:33		18:09	19	16:06 (13)	16:01	33	13:49 (27)	15:44
25	05:09		21:04 (78)	06:17		07:26		07:34		14:47 (13)	08:47		11:17 (38)	09:28
	22:16	11	21:15 (78)	20:59		19:30		17:06	20	15:07 (13)	15:59	27	13:48 (27)	15:45
26	05:11		21:05 (78)	06:19		07:28		07:37		14:46 (13)	08:49		13:28 (27)	09:28
	22:14	10	21:15 (78)	20:56		19:27		17:04	21	15:07 (13)	15:57	20	13:48 (27)	15:46
27	05:13		21:07 (78)	06:22		07:30		07:39		14:46 (13)	08:51		13:29 (27)	09:28
	22:11	6	21:13 (78)	20:53		19:24		17:01	22	15:08 (13)	15:56	13	13:42 (27)	15:47
28	05:15			06:24		07:32		07:41		14:45 (13)	08:53		13:30 (27)	09:28
	22:09			20:51		19:21		16:58	22	15:07 (13)	15:55	9	13:39 (27)	15:47
29	05:17			06:26		07:35		07:44		14:45 (13)	08:55		13:34 (27)	09:28
	22:07			20:48		19:18		16:56	22	15:07 (13)	15:53	5	13:39 (27)	15:49
30	05:20			06:28		07:37		07:46		14:46 (13)	08:57		13:34 (27)	09:28
	22:05			20:45		19:16		16:53	21	15:07 (13)	15:52	2	13:36 (27)	15:50
31	05:22			06:31				07:49		14:46 (13)				09:28
	22:03			20:42				16:51	20	15:06 (13)				15:51
Potential sun hours	546			478		386		319			236			199
Total, worst case		199							206			673		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** AJ - Heiavegen 543 (36)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February	March	April	May	June		July		August	September	October	November	December
1	09:27	08:45	07:35	07:06	05:44	04:40		04:32	20:43 (2)	05:24	06:33	07:39	07:51	08:59
	15:53	16:56	18:04	20:16	21:25	22:30		22:48	2 20:45 (2)	22:00	20:39	19:13	16:49	15:51
2	09:27	08:43	07:32	07:04	05:41	04:38		04:33	20:44 (2)	05:26	06:35	07:41	07:53	09:01
	15:54	16:58	18:07	20:19	21:28	22:31		22:47	1 20:45 (2)	21:58	20:36	19:10	16:46	15:50
3	09:26	08:41	07:29	07:01	05:39	04:37		04:34	20:44 (2)	05:28	06:37	07:43	07:56	09:03
	15:55	17:01	18:09	20:21	21:30	22:33		22:47	1 20:45 (2)	21:56	20:33	19:07	16:44	15:49
4	09:26	08:38	07:27	06:58	05:36	04:36		04:35		05:30	06:39	07:46	07:58	09:05
	15:57	17:03	18:11	20:23	21:32	22:34		22:46		21:53	20:31	19:04	16:41	15:48
5	09:25	08:36	07:24	06:55	05:34	04:35		04:36		05:33	06:42	07:48	08:00	09:06
	15:58	17:06	18:14	20:25	21:35	22:36		22:45		21:51	20:28	19:01	16:39	15:47
6	09:25	08:34	07:21	06:52	05:31	04:34		04:37		05:35	06:44	07:50	08:03	09:08
	16:00	17:08	18:16	20:28	21:37	22:37		22:44		21:48	20:25	18:58	16:37	15:46
7	09:24	08:32	07:18	06:49	05:29	04:33		04:39		05:37	06:46	07:52	08:05	09:10
	16:02	17:11	18:19	20:30	21:39	22:38		22:43		21:46	20:22	18:56	16:34	15:45
8	09:23	08:29	07:15	06:46	05:26	04:32		04:40		05:39	06:48	07:55	08:08	09:11
	16:03	17:13	18:21	20:32	21:41	22:40		22:42		21:44	20:19	18:53	16:32	15:45
9	09:22	08:27	07:12	06:44	05:24	04:31		04:41		05:41	06:50	07:57	08:10	09:13
	16:05	17:16	18:23	20:35	21:44	22:41		22:41		21:41	20:16	18:50	16:30	15:44
10	09:21	08:24	07:10	06:41	05:22	04:30		04:43		05:44	06:53	07:59	08:12	09:14
	16:07	17:18	18:26	20:37	21:46	22:42		22:40		21:39	20:13	18:47	16:27	15:43
11	09:20	08:22	07:07	06:38	05:19	04:29	20:39 (2)	04:44		05:46	06:55	08:01	08:15	09:16
	16:09	17:20	18:28	20:39	21:48	22:43	1 20:40 (2)	22:39		21:36	20:11	18:44	16:25	15:43
12	09:19	08:20	07:04	06:35	05:17	04:29	20:40 (2)	04:46		05:48	06:57	08:04	08:17	09:17
	16:11	17:23	18:30	20:41	21:50	22:44	1 20:41 (2)	22:37		21:34	20:08	18:41	16:23	15:43
13	09:18	08:17	07:01	06:32	05:15	04:28	20:39 (2)	04:47		05:50	06:59	08:06	08:20	09:18
	16:13	17:25	18:33	20:44	21:53	22:45	2 20:41 (2)	22:36		21:31	20:05	18:39	16:21	15:42
14	09:17	08:15	06:58	06:29	05:12	04:28	20:40 (2)	04:49		05:53	07:01	08:08	08:22	09:19
	16:15	17:28	18:35	20:46	21:55	22:46	2 20:42 (2)	22:34		21:28	20:02	18:36	16:19	15:42
15	09:15	08:12	06:55	06:27	05:10	04:27	20:40 (2)	04:51		05:55	07:04	08:11	08:24	09:20
	16:17	17:30	18:37	20:48	21:57	22:47	2 20:42 (2)	22:33		21:26	19:59	18:33	16:17	15:42
16	09:14	08:10	06:53	06:24	05:08	04:27	20:40 (2)	04:52		05:57	07:06	08:13	08:27	09:21
	16:19	17:33	18:40	20:51	21:59	22:47	3 20:43 (2)	22:31		21:23	19:56	18:30	16:15	15:42
17	09:12	08:07	06:50	06:21	05:06	04:27	20:40 (2)	04:54		05:59	07:08	08:15	08:29	09:22
	16:21	17:35	18:42	20:53	22:01	22:48	4 20:44 (2)	22:30		21:20	19:53	18:28	16:13	15:42
18	09:11	08:04	06:47	06:18	05:04	04:27	20:41 (2)	04:56		06:02	07:10	08:18	08:31	09:23
	16:23	17:38	18:44	20:55	22:03	22:48	3 20:44 (2)	22:28		21:18	19:50	18:25	16:11	15:42
19	09:09	08:02	06:44	06:16	05:02	04:27	20:41 (2)	04:58		06:04	07:12	08:20	08:33	09:24
	16:25	17:40	18:46	20:58	22:05	22:49	3 20:44 (2)	22:26		21:15	19:47	18:22	16:09	15:42
20	09:08	07:59	06:41	06:13	05:00	04:27	20:41 (2)	05:00		06:06	07:15	08:22	08:36	09:25
	16:27	17:43	18:49	21:00	22:07	22:49	3 20:44 (2)	22:25		21:12	19:44	18:20	16:07	15:43
21	09:06	07:56	06:38	06:10	04:58	04:27	20:41 (2)	05:01		06:08	07:17	08:25	08:38	09:25
	16:30	17:45	18:51	21:02	22:10	22:49	3 20:44 (2)	22:23		21:10	19:42	18:17	16:06	15:43
22	09:05	07:54	06:35	06:07	04:56	04:27	20:41 (2)	05:03		06:11	07:19	08:27	08:40	09:26
	16:32	17:47	18:53	21:05	22:12	22:50	3 20:44 (2)	22:21		21:07	19:39	18:14	16:04	15:43
23	09:03	07:51	06:32	06:05	04:54	04:27	20:42 (2)	05:05		06:13	07:21	08:29	08:42	09:27
	16:34	17:50	18:56	21:07	22:14	22:50	3 20:45 (2)	22:19		21:04	19:36	18:12	16:02	15:44
24	09:01	07:48	06:29	06:02	04:52	04:27	20:42 (2)	05:07		06:15	07:23	08:32	08:45	09:27
	16:37	17:52	18:58	21:09	22:15	22:50	3 20:45 (2)	22:17		21:02	19:33	18:09	16:01	15:44
25	08:59	07:46	06:27	05:59	04:51	04:28	20:42 (2)	05:09		06:17	07:26	07:34	08:47	09:27
	16:39	17:55	19:00	21:11	22:17	22:50	3 20:45 (2)	22:15		20:59	19:30	17:06	15:59	15:45
26	08:57	07:43	06:24	05:57	04:49	04:28	20:42 (2)	05:11		06:19	07:28	07:36	08:49	09:27
	16:41	17:57	19:03	21:14	22:19	22:50	3 20:45 (2)	22:13		20:56	19:27	17:04	15:58	15:46
27	08:55	07:40	06:21	05:54	04:47	04:29	20:42 (2)	05:13		06:22	07:30	07:39	08:51	09:28
	16:44	18:00	19:05	21:16	22:21	22:49	3 20:45 (2)	22:11		20:53	19:24	17:01	15:56	15:47
28	08:53	07:38	06:18	05:51	04:46	04:30	20:43 (2)	05:15		06:24	07:32	07:41	08:53	09:28
	16:46	18:02	19:07	21:18	22:23	22:49	2 20:45 (2)	22:09		20:50	19:21	16:59	15:55	15:48
29	08:51		07:15	05:49	04:44	04:30	20:43 (2)	05:18		06:26	07:34	07:44	08:55	09:28
	16:49		20:09	21:21	22:25	22:49	2 20:45 (2)	22:07		20:48	19:18	16:56	15:54	15:49
30	08:49		07:12	05:46	04:42	04:31	20:43 (2)	05:20		06:28	07:37	07:46	08:57	09:28
	16:51		20:12	21:23	22:26	22:48	2 20:45 (2)	22:05		20:45	19:16	16:53	15:52	15:50
31	08:47		07:09		04:41			05:22		06:31		07:48		09:27
	16:53		20:14		22:28			22:02		20:42		16:51		15:51
Potential sun hours	222	260	365	432	521	547		545		478	386	319	236	200
Total, worst case							51		4					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** AK - Heiavegen 541 (37)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February	March	April	May		June		July		August	September	October	November	December
1	09:27	08:45	07:35	07:06	05:44		04:40		20:27 (2)	04:32		20:32 (2)	05:24	06:33	07:39	07:51	08:59
	15:53	16:56	18:04	20:16	21:25		22:30	9	20:36 (2)	22:48	17	20:49 (2)	22:00	20:39	19:13	16:49	15:51
2	09:27	08:43	07:32	07:04	05:41		04:38		20:27 (2)	04:33		20:32 (2)	05:26	06:35	07:41	07:53	09:01
	15:54	16:58	18:07	20:19	21:28		22:31	11	20:38 (2)	22:47	16	20:48 (2)	21:58	20:36	19:10	16:46	15:50
3	09:26	08:41	07:29	07:01	05:39		04:37		20:27 (2)	04:34		20:33 (2)	05:28	06:37	07:43	07:56	09:03
	15:55	17:01	18:09	20:21	21:30		22:33	12	20:39 (2)	22:47	15	20:48 (2)	21:56	20:33	19:07	16:44	15:49
4	09:26	08:38	07:27	06:58	05:36		04:36		20:27 (2)	04:35		20:33 (2)	05:30	06:39	07:46	07:58	09:05
	15:57	17:03	18:11	20:23	21:32		22:34	12	20:39 (2)	22:46	14	20:47 (2)	21:53	20:31	19:04	16:41	15:48
5	09:25	08:36	07:24	06:55	05:34		04:35		20:27 (2)	04:36		20:33 (2)	05:33	06:42	07:48	08:00	09:06
	15:58	17:06	18:14	20:25	21:35		22:36	13	20:40 (2)	22:45	14	20:47 (2)	21:51	20:28	19:01	16:39	15:47
6	09:25	08:34	07:21	06:52	05:31		04:34		20:27 (2)	04:37		20:33 (2)	05:35	06:44	07:50	08:03	09:08
	16:00	17:08	18:16	20:28	21:37		22:37	13	20:40 (2)	22:44	14	20:47 (2)	21:48	20:25	18:58	16:37	15:46
7	09:24	08:32	07:18	06:49	05:29		04:33		20:28 (2)	04:39		20:33 (2)	05:37	06:46	07:52	08:05	09:10
	16:02	17:11	18:19	20:30	21:39		22:38	14	20:42 (2)	22:43	13	20:46 (2)	21:46	20:22	18:56	16:34	15:45
8	09:23	08:29	07:15	06:46	05:26		04:32		20:27 (2)	04:40		20:33 (2)	05:39	06:48	07:55	08:08	09:11
	16:03	17:13	18:21	20:32	21:41		22:40	15	20:42 (2)	22:42	13	20:46 (2)	21:44	20:19	18:53	16:32	15:45
9	09:22	08:27	07:12	06:44	05:24		04:31		20:27 (2)	04:41		20:34 (2)	05:41	06:50	07:57	08:10	09:13
	16:05	17:16	18:23	20:35	21:44		22:41	15	20:42 (2)	22:41	12	20:46 (2)	21:41	20:16	18:50	16:30	15:44
10	09:21	08:24	07:10	06:41	05:22		04:30		20:28 (2)	04:43		20:34 (2)	05:44	06:53	07:59	08:12	09:14
	16:07	17:18	18:26	20:37	21:46		22:42	15	20:43 (2)	22:40	12	20:46 (2)	21:39	20:13	18:47	16:27	15:43
11	09:20	08:22	07:07	06:38	05:19		04:29		20:28 (2)	04:44		20:34 (2)	05:46	06:55	08:01	08:15	09:16
	16:09	17:20	18:28	20:39	21:48		22:43	16	20:44 (2)	22:39	11	20:45 (2)	21:36	20:11	18:44	16:25	15:43
12	09:19	08:20	07:04	06:35	05:17		04:29		20:29 (2)	04:46		20:35 (2)	05:48	06:57	08:04	08:17	09:17
	16:11	17:23	18:30	20:41	21:50		22:44	16	20:45 (2)	22:37	5	20:42 (2)	21:34	20:08	18:41	16:23	15:43
13	09:18	08:17	07:01	06:32	05:15		04:28		20:28 (2)	04:47		20:35 (2)	05:50	06:59	08:06	08:20	09:18
	16:13	17:25	18:33	20:44	21:53		22:45	17	20:45 (2)	22:36	3	20:38 (2)	21:31	20:05	18:39	16:21	15:42
14	09:17	08:15	06:58	06:29	05:12		04:28		20:29 (2)	04:49		20:35 (2)	05:53	07:01	08:08	08:22	09:19
	16:15	17:28	18:35	20:46	21:55		22:46	17	20:46 (2)	22:34	2	20:37 (2)	21:28	20:02	18:36	16:19	15:42
15	09:15	08:12	06:55	06:27	05:10		04:27		20:29 (2)	04:51			05:55	07:04	08:11	08:24	09:20
	16:17	17:30	18:37	20:48	21:57		22:47	18	20:47 (2)	22:33			21:26	19:59	18:33	16:17	15:42
16	09:14	08:10	06:53	06:24	05:08		04:27		20:30 (2)	04:52			05:57	07:06	08:13	08:27	09:21
	16:19	17:33	18:40	20:51	21:59		22:47	17	20:47 (2)	22:31			21:23	19:56	18:30	16:15	15:42
17	09:12	08:07	06:50	06:21	05:06		04:27		20:30 (2)	04:54			05:59	07:08	08:15	08:29	09:22
	16:21	17:35	18:42	20:53	22:01		22:48	18	20:48 (2)	22:30			21:20	19:53	18:28	16:13	15:42
18	09:11	08:04	06:47	06:18	05:04		04:27		20:30 (2)	04:56			06:02	07:10	08:18	08:31	09:23
	16:23	17:38	18:44	20:55	22:03		22:48	18	20:48 (2)	22:28			21:18	19:50	18:25	16:11	15:42
19	09:09	08:02	06:44	06:16	05:02		04:27		20:30 (2)	04:58			06:04	07:12	08:20	08:34	09:24
	16:25	17:40	18:46	20:58	22:05		22:49	19	20:49 (2)	22:26			21:15	19:47	18:22	16:09	15:42
20	09:08	07:59	06:41	06:13	05:00		04:27		20:31 (2)	05:00			06:06	07:15	08:22	08:36	09:25
	16:27	17:43	18:49	21:00	22:07		22:49	18	20:49 (2)	22:25			21:12	19:44	18:19	16:07	15:42
21	09:06	07:56	06:38	06:10	04:58		04:27		20:31 (2)	05:01			06:08	07:17	08:25	08:38	09:25
	16:30	17:45	18:51	21:02	22:10		22:49	18	20:49 (2)	22:23			21:10	19:42	18:17	16:06	15:43
22	09:05	07:54	06:35	06:07	04:56		04:27		20:31 (2)	05:03			06:11	07:19	08:27	08:40	09:26
	16:32	17:47	18:53	21:05	22:12		22:50	18	20:49 (2)	22:21			21:07	19:39	18:14	16:04	15:43
23	09:03	07:51	06:32	06:05	04:54		04:27		20:30 (2)	05:05			06:13	07:21	08:29	08:42	09:27
	16:34	17:50	18:56	21:07	22:14		22:50	19	20:49 (2)	22:19			21:04	19:36	18:11	16:02	15:44
24	09:01	07:48	06:29	06:02	04:52		04:27		20:31 (2)	05:07			06:15	07:23	08:32	08:45	09:27
	16:37	17:52	18:58	21:09	22:15		22:50	19	20:50 (2)	22:17			21:02	19:33	18:09	16:01	15:44
25	08:59	07:46	06:27	05:59	04:51		04:28		20:31 (2)	05:09			06:17	07:26	07:34	08:47	09:27
	16:39	17:55	19:00	21:11	22:17		22:50	18	20:49 (2)	22:15			20:59	19:30	17:06	15:59	15:45
26	08:57	07:43	06:24	05:57	04:49		04:28		20:32 (2)	05:11			06:19	07:28	07:36	08:49	09:27
	16:41	17:57	19:03	21:14	22:19		22:50	18	20:50 (2)	22:13			20:56	19:27	17:04	15:58	15:46
27	08:55	07:40	06:21	05:54	04:47		04:29		20:31 (2)	05:13			06:22	07:30	07:39	08:51	09:28
	16:44	18:00	19:05	21:16	22:21		22:49	18	20:49 (2)	22:11			20:53	19:24	17:01	15:56	15:47
28	08:53	07:38	06:18	05:51	04:46		04:30		20:32 (2)	05:15			06:24	07:32	07:41	08:53	09:28
	16:46	18:02	19:07	21:18	22:23		22:49	17	20:49 (2)	22:09			20:50	19:21	16:59	15:55	15:48
29	08:51		07:15	05:49	04:44		04:30		20:32 (2)	05:18			06:26	07:34	07:44	08:55	09:28
	16:49		20:09	21:21	22:25		22:49	18	20:50 (2)	22:07			20:48	19:18	16:56	15:53	15:49
30	08:49		07:12	05:46	04:42	20:27 (2)	04:31		20:32 (2)	05:20			06:28	07:37	07:46	08:57	09:28
	16:51		20:12	21:23	22:26	2 20:29 (2)	22:48	17	20:49 (2)	22:05			20:45	19:16	16:53	15:52	15:50
31	08:47		07:09		04:41	20:27 (2)				05:22			06:31		07:48		09:27
	16:53		20:14		22:28	3 20:30 (2)				22:02			20:42		16:51		15:51
Potential sun hours	222	260	365	432	521		547		545		478	386	319	236	200
Total, worst case						5		483		161					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** AL - Buevegen 2100 (38)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January			February	March	April	May	June	July	August	September	October	November			December		
1	09:28		12:55 (13)	08:45	07:35	07:07	05:44	04:39	04:32	05:24	06:33	07:39	07:51			09:00		12:38 (13)
	15:52	16	13:11 (13)	16:56	18:04	20:16	21:26	22:30	22:48	22:01	20:39	19:13	16:48			15:51	20	12:58 (13)
2	09:27		12:55 (13)	08:43	07:32	07:04	05:41	04:38	04:33	05:26	06:35	07:41	07:54			09:01		12:39 (13)
	15:54	16	13:11 (13)	16:58	18:07	20:19	21:28	22:32	22:48	21:58	20:37	19:10	16:46			15:50	20	12:59 (13)
3	09:27		12:55 (13)	08:41	07:30	07:01	05:38	04:37	04:34	05:28	06:37	07:44	07:56			09:03		12:40 (13)
	15:55	17	13:12 (13)	17:01	18:09	20:21	21:30	22:33	22:47	21:56	20:34	19:07	16:44			15:49	20	13:00 (13)
4	09:26		12:55 (13)	08:39	07:27	06:58	05:36	04:36	04:35	05:30	06:39	07:46	07:58			09:05		12:40 (13)
	15:57	17	13:12 (13)	17:03	18:12	20:23	21:33	22:35	22:46	21:54	20:31	19:04	16:41			15:48	20	13:00 (13)
5	09:26		12:55 (13)	08:37	07:24	06:55	05:33	04:34	04:36	05:33	06:42	07:48	08:01			09:07		12:41 (13)
	15:58	18	13:13 (13)	17:06	18:14	20:26	21:35	22:36	22:46	21:51	20:28	19:01	16:39			15:47	19	13:00 (13)
6	09:25		12:55 (13)	08:34	07:21	06:52	05:31	04:33	04:37	05:35	06:44	07:50	08:03			09:09		12:41 (13)
	16:00	19	13:14 (13)	17:08	18:16	20:28	21:37	22:38	22:45	21:49	20:25	18:58	16:36			15:46	19	13:00 (13)
7	09:24		12:55 (13)	08:32	07:18	06:49	05:29	04:32	04:38	05:37	06:46	07:53	08:06			09:10		12:42 (13)
	16:01	20	13:15 (13)	17:11	18:19	20:30	21:40	22:39	22:44	21:46	20:22	18:56	16:34			15:45	18	13:00 (13)
8	09:24		12:56 (13)	08:30	07:16	06:46	05:26	04:31	04:40	05:39	06:48	07:55	08:08			09:12		12:43 (13)
	16:03	19	13:15 (13)	17:13	18:21	20:33	21:42	22:40	22:43	21:44	20:19	18:53	16:32			15:44	18	13:01 (13)
9	09:23		12:55 (13)	08:27	07:13	06:44	05:24	04:31	04:41	05:41	06:51	07:57	08:10			09:13		12:43 (13)
	16:05	20	13:15 (13)	17:16	18:23	20:35	21:44	22:42	22:42	21:42	20:17	18:50	16:30			15:44	17	13:00 (13)
10	09:22		12:56 (13)	08:25	07:10	06:41	05:21	04:30	04:42	05:44	06:53	07:59	08:13			09:15		12:44 (13)
	16:07	20	13:16 (13)	17:18	18:26	20:37	21:46	22:43	22:40	21:39	20:14	18:47	16:27			15:43	16	13:00 (13)
11	09:21		12:57 (13)	08:22	07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02	08:15			09:16		12:45 (13)
	16:09	20	13:17 (13)	17:20	18:28	20:39	21:49	22:44	22:39	21:36	20:11	18:44	16:25			15:43	16	13:01 (13)
12	09:19		12:57 (13)	08:20	07:04	06:35	05:17	04:29	04:45	05:48	06:57	08:04	08:18			09:17		12:45 (13)
	16:11	20	13:17 (13)	17:23	18:30	20:42	21:51	22:45	22:38	21:34	20:08	18:42	16:23			15:42	16	13:01 (13)
13	09:18		12:57 (13)	08:17	07:01	06:32	05:15	04:28	04:47	05:50	06:59	08:06	08:20			09:19		12:46 (13)
	16:12	20	13:17 (13)	17:25	18:33	20:44	21:53	22:46	22:36	21:31	20:05	18:39	16:21			15:42	15	13:01 (13)
14	09:17		12:58 (13)	08:15	06:58	06:29	05:12	04:28	04:49	05:53	07:02	08:09	08:22			09:20		12:47 (13)
	16:14	20	13:18 (13)	17:28	18:35	20:46	21:55	22:46	22:35	21:29	20:02	18:36	16:19			15:42	14	13:01 (13)
15	09:16		12:58 (13)	08:12	06:56	06:27	05:10	04:27	04:50	05:55	07:04	08:11	08:25			09:21		12:47 (13)
	16:17	20	13:18 (13)	17:30	18:37	20:49	21:57	22:47	22:34	21:26	19:59	18:33	16:17			15:42	14	13:01 (13)
16	09:14		12:58 (13)	08:10	06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13	08:27			09:22		12:48 (13)
	16:19	20	13:18 (13)	17:33	18:40	20:51	22:00	22:48	22:32	21:23	19:56	18:30	16:15			15:42	13	13:01 (13)
17	09:13		12:59 (13)	08:07	06:50	06:21	05:06	04:27	04:54	05:59	07:08	08:16	08:29			09:23		12:48 (13)
	16:21	19	13:18 (13)	17:35	18:42	20:53	22:02	22:48	22:30	21:21	19:53	18:28	16:13			15:42	14	13:02 (13)
18	09:11		12:59 (13)	08:05	06:47	06:18	05:04	04:26	04:56	06:02	07:10	08:18	08:32			09:24		12:49 (13)
	16:23	19	13:18 (13)	17:38	18:44	20:56	22:04	22:49	22:29	21:18	19:50	18:25	16:11			15:42	13	13:02 (13)
19	09:10		13:01 (13)	08:02	06:44	06:16	05:02	04:26	04:57	06:04	07:13	08:20	08:34		12:41 (13)	09:25		12:50 (13)
	16:25	18	13:19 (13)	17:40	18:47	20:58	22:06	22:49	22:27	21:15	19:48	18:22	16:09	9	12:50 (13)	15:42	12	13:02 (13)
20	09:08		13:02 (13)	07:59	06:41	06:13	05:00	04:26	04:59	06:06	07:15	08:23	08:36		12:39 (13)	09:25		12:51 (13)
	16:27	16	13:18 (13)	17:43	18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20	16:07	12	12:51 (13)	15:42	12	13:03 (13)
21	09:07		13:02 (13)	07:57	06:38	06:10	04:58	04:26	05:01	06:08	07:17	08:25	08:38		12:38 (13)	09:26		12:51 (13)
	16:30	15	13:17 (13)	17:45	18:51	21:03	22:10	22:50	22:23	21:10	19:42	18:17	16:06	15	12:53 (13)	15:43	12	13:03 (13)
22	09:05		13:04 (13)	07:54	06:35	06:07	04:56	04:27	05:03	06:11	07:19	08:27	08:41		12:38 (13)	09:27		12:52 (13)
	16:32	12	13:16 (13)	17:48	18:54	21:05	22:12	22:50	22:22	21:07	19:39	18:14	16:04	16	12:54 (13)	15:43	12	13:04 (13)
23	09:03		13:06 (13)	07:51	06:33	06:05	04:54	04:27	05:05	06:13	07:21	08:30	08:43		12:37 (13)	09:27		12:52 (13)
	16:34	9	13:15 (13)	17:50	18:56	21:07	22:14	22:50	22:20	21:05	19:36	18:12	16:02	18	12:55 (13)	15:44	12	13:04 (13)
24	09:01			07:49	06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32	08:45		12:38 (13)	09:28		12:52 (13)
	16:37			17:52	18:58	21:10	22:16	22:50	22:18	21:02	19:33	18:09	16:01	18	12:56 (13)	15:44	12	13:04 (13)
25	09:00			07:46	06:27	05:59	04:50	04:28	05:09	06:17	07:26	07:34	08:47		12:37 (13)	09:28		12:53 (13)
	16:39			17:55	19:00	21:12	22:18	22:50	22:16	20:59	19:30	17:06	15:59	19	12:56 (13)	15:45	13	13:06 (13)
26	08:58			07:43	06:24	05:57	04:49	04:28	05:11	06:19	07:28	07:37	08:49		12:38 (13)	09:28		12:53 (13)
	16:41			17:57	19:03	21:14	22:20	22:50	22:14	20:56	19:27	17:04	15:57	19	12:57 (13)	15:46	13	13:06 (13)
27	08:56			07:41	06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39	08:52		12:37 (13)	09:28		12:54 (13)
	16:44			18:00	19:05	21:16	22:22	22:50	22:12	20:54	19:24	17:01	15:56	20	12:57 (13)	15:47	13	13:07 (13)
28	08:54			07:38	06:18	05:51	04:45	04:29	05:15	06:24	07:32	07:42	08:54		12:37 (13)	09:28		12:53 (13)
	16:46			18:02	19:07	21:19	22:24	22:50	22:09	20:51	19:21	16:59	15:55	20	12:57 (13)	15:48	14	13:07 (13)
29	08:52				07:15	05:49	04:44	04:30	05:17	06:26	07:35	07:44	08:56		12:38 (13)	09:28		12:54 (13)
	16:48				20:10	21:21	22:25	22:49	22:07	20:48	19:19	16:56	15:53	20	12:58 (13)	15:49	14	13:08 (13)
30	08:50				07:12	05:46	04:42	04:31	05:20	06:28	07:37	07:46	08:58		12:38 (13)	09:28		12:54 (13)
	16:51				20:12	21:23	22:27	22:49	22:05	20:45	19:16	16:53	15:52	20	12:58 (13)	15:50	15	13:09 (13)
31	08:48				07:09		04:41		05:22	06:31		07:49				09:28		12:54 (13)
	16:53				20:14		22:29		22:03	20:42		16:51				15:51	15	13:09 (13)
Potential sun hours	221			260	365	432	521	547	546	478	386	319	236			199		
Total, worst case		410												206			471	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** AM - Eiendom 121/9 - Hå kommune (39)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February		March	April		May			June		
1	09:28	08:46		07:35	07:07		05:44		07:30 (1)	04:40		06:17 (37)
	15:53	16:56		18:05	20:17		21:26	32	08:02 (1)	22:30	22	06:39 (37)
2	09:27	08:43		07:33	07:04		05:42		07:32 (1)	04:39		06:16 (37)
	15:54	16:59		18:07	20:19		21:28	29	08:01 (1)	22:32	24	06:40 (37)
3	09:27	08:41		07:30	07:01		05:39		07:32 (1)	04:37		06:16 (37)
	15:56	17:01		18:10	20:21		21:31	27	07:59 (1)	22:34	25	06:41 (37)
4	09:26	08:39		07:27	06:58		05:36		07:33 (1)	04:36		06:16 (37)
	15:57	17:04		18:12	20:24		21:33	25	07:58 (1)	22:35	25	06:41 (37)
5	09:26	08:37		07:24	06:55		05:34		07:35 (1)	04:35		06:16 (37)
	15:59	17:06		18:14	20:26		21:35	21	07:56 (1)	22:36	27	06:43 (37)
6	09:25	08:34		07:21	06:53		05:32		07:37 (1)	04:34		06:16 (37)
	16:00	17:09		18:17	20:28		21:37	18	07:55 (1)	22:38	27	06:43 (37)
7	09:24	08:32		07:19	06:50		05:29		07:39 (1)	04:33		06:15 (37)
	16:02	17:11		18:19	20:31		21:40	12	07:51 (1)	22:39	28	06:43 (37)
8	09:24	08:30	09:03 (63)	07:16	06:47		05:27			04:32		06:15 (37)
	16:04	17:14	2 09:05 (63)	18:21	20:33		21:42			22:40	28	06:43 (37)
9	09:23	08:27	09:00 (63)	07:13	06:44		05:24			04:31		06:16 (37)
	16:06	17:16	7 09:07 (63)	18:24	20:35		21:44			22:42	28	06:44 (37)
10	09:22	08:25	08:58 (63)	07:10	06:41	07:48 (1)	05:22			04:31		06:15 (37)
	16:07	17:18	9 09:07 (63)	18:26	20:37	9 07:57 (1)	21:46			22:43	29	06:44 (37)
11	09:21	08:23	08:57 (63)	07:07	06:38	07:46 (1)	05:20			04:30		06:16 (37)
	16:09	17:21	12 09:09 (63)	18:28	20:40	15 08:01 (1)	21:49			22:44	29	06:45 (37)
12	09:20	08:20	08:55 (63)	07:04	06:36	07:42 (1)	05:17			04:29		06:15 (37)
	16:11	17:23	14 09:09 (63)	18:31	20:42	21 08:03 (1)	21:51			22:45	30	06:45 (37)
13	09:18	08:18	08:55 (63)	07:02	06:33	07:38 (1)	05:15			04:29		06:16 (37)
	16:13	17:26	14 09:09 (63)	18:33	20:44	26 08:04 (1)	21:53			22:46	30	06:46 (37)
14	09:17	08:15	08:56 (63)	06:59	06:30	07:35 (1)	05:13			04:28		06:16 (37)
	16:15	17:28	13 09:09 (63)	18:35	20:47	30 08:05 (1)	21:55			22:46	30	06:46 (37)
15	09:16	08:13	08:56 (63)	06:56	06:27	07:34 (1)	05:11			04:28		06:15 (37)
	16:17	17:31	13 09:09 (63)	18:38	20:49	32 08:06 (1)	21:57			22:47	31	06:46 (37)
16	09:14	08:10	08:56 (63)	06:53	06:24	07:33 (1)	05:09			04:28		06:16 (37)
	16:19	17:33	11 09:07 (63)	18:40	20:51	34 08:07 (1)	22:00			22:48	30	06:46 (37)
17	09:13	08:07	08:58 (63)	06:50	06:22	07:32 (1)	05:06			04:27		06:16 (37)
	16:21	17:36	7 09:05 (63)	18:42	20:54	35 08:07 (1)	22:02			22:48	30	06:46 (37)
18	09:12	08:05		06:47	06:19	07:31 (1)	05:04			04:27		06:16 (37)
	16:24	17:38		18:45	20:56	37 08:08 (1)	22:04			22:49	31	06:47 (37)
19	09:10	08:02		06:44	06:16	07:30 (1)	05:02			04:27		06:16 (37)
	16:26	17:41		18:47	20:58	38 08:08 (1)	22:06			22:49	31	06:47 (37)
20	09:08	08:00		06:42	06:13	07:30 (1)	05:00			04:27		06:16 (37)
	16:28	17:43		18:49	21:00	38 08:08 (1)	22:08			22:50	31	06:47 (37)
21	09:07	07:57		06:39	06:11	07:29 (1)	04:58			04:27		06:16 (37)
	16:30	17:46		18:52	21:03	39 08:08 (1)	22:10			22:50	31	06:47 (37)
22	09:05	07:54		06:36	06:08	07:29 (1)	04:56			04:27		06:17 (37)
	16:32	17:48		18:54	21:05	38 08:07 (1)	22:12			22:50	31	06:48 (37)
23	09:03	07:52		06:33	06:05	07:29 (1)	04:55			04:28		06:17 (37)
	16:35	17:50		18:56	21:07	39 08:08 (1)	22:14			22:50	31	06:48 (37)
24	09:02	07:49		06:30	06:02	07:28 (1)	04:53			04:28		06:17 (37)
	16:37	17:53		18:58	21:10	39 08:07 (1)	22:16			22:50	31	06:48 (37)
25	09:00	07:46		06:27	06:00	07:29 (1)	04:51			04:28		06:18 (37)
	16:39	17:55		19:01	21:12	38 08:07 (1)	22:18			22:50	31	06:49 (37)
26	08:58	07:44		06:24	05:57	07:28 (1)	04:49		06:25 (37)	04:29		06:18 (37)
	16:42	17:58		19:03	21:14	38 08:06 (1)	22:20	6	06:31 (37)	22:50	30	06:48 (37)
27	08:56	07:41		06:21	05:54	07:29 (1)	04:48		06:22 (37)	04:29		06:18 (37)
	16:44	18:00		19:05	21:17	37 08:06 (1)	22:22	11	06:33 (37)	22:50	31	06:49 (37)
28	08:54	07:38		06:18	05:52	07:29 (1)	04:46		06:20 (37)	04:30		06:18 (37)
	16:47	18:02		19:08	21:19	36 08:05 (1)	22:24	15	06:35 (37)	22:50	30	06:48 (37)
29	08:52			07:16	05:49	07:30 (1)	04:44		06:20 (37)	04:31		06:19 (37)
	16:49			20:10	21:21	34 08:04 (1)	22:25	17	06:37 (37)	22:49	30	06:49 (37)
30	08:50			07:13	05:47	07:29 (1)	04:43		06:19 (37)	04:31		06:19 (37)
	16:51			20:12	21:24	34 08:03 (1)	22:27	19	06:38 (37)	22:49	30	06:49 (37)
31	08:48			07:10			04:41		06:17 (37)			
	16:54			20:14			22:29	21	06:38 (37)			
Potential sun hours	221	260		365	432		521			547		
Total, worst case			102			687		253			872	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** AM - Eiendom 121/9 - Hå kommune (39)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July			August			September			October			November			December
1	04:32		06:20 (37)	05:24			06:33		07:45 (1)	07:39			07:51		08:28 (63)	09:00
	22:48	29	06:49 (37)	22:01			20:40	15	08:00 (1)	19:13			16:49	9	08:37 (63)	15:51
2	04:33		06:20 (37)	05:27			06:35		07:47 (1)	07:42			07:54		08:30 (63)	09:01
	22:48	30	06:50 (37)	21:58			20:37	9	07:56 (1)	19:10			16:47	6	08:36 (63)	15:50
3	04:34		06:20 (37)	05:29			06:38			07:44			07:56		08:33 (63)	09:03
	22:47	29	06:49 (37)	21:56			20:34			19:07			16:44	1	08:34 (63)	15:49
4	04:35		06:20 (37)	05:31			06:40			07:46			07:59			09:05
	22:46	29	06:49 (37)	21:54			20:31			19:05			16:42			15:48
5	04:36		06:21 (37)	05:33		07:52 (1)	06:42			07:48			08:01			09:07
	22:46	28	06:49 (37)	21:51	6	07:58 (1)	20:28			19:02			16:39			15:47
6	04:38		06:21 (37)	05:35		07:48 (1)	06:44			07:51			08:03			09:09
	22:45	27	06:48 (37)	21:49	14	08:02 (1)	20:25			18:59			16:37			15:47
7	04:39		06:22 (37)	05:38		07:46 (1)	06:47			07:53			08:06			09:10
	22:44	27	06:49 (37)	21:47	19	08:05 (1)	20:23			18:56			16:35			15:46
8	04:40		06:23 (37)	05:40		07:44 (1)	06:49			07:55			08:08			09:12
	22:43	26	06:49 (37)	21:44	22	08:06 (1)	20:20			18:53			16:32			15:45
9	04:42		06:23 (37)	05:42		07:42 (1)	06:51			07:57			08:11			09:13
	22:42	25	06:48 (37)	21:42	26	08:08 (1)	20:17			18:50			16:30			15:44
10	04:43		06:24 (37)	05:44		07:41 (1)	06:53			08:00			08:13			09:15
	22:40	24	06:48 (37)	21:39	28	08:09 (1)	20:14			18:48			16:28			15:44
11	04:45		06:25 (37)	05:46		07:40 (1)	06:55			08:02			08:15			09:16
	22:39	23	06:48 (37)	21:37	30	08:10 (1)	20:11			18:45			16:26			15:43
12	04:46		06:25 (37)	05:49		07:39 (1)	06:58			08:04			08:18			09:17
	22:38	22	06:47 (37)	21:34	32	08:11 (1)	20:08			18:42			16:24			15:43
13	04:48		06:26 (37)	05:51		07:38 (1)	07:00			08:07			08:20			09:19
	22:36	20	06:46 (37)	21:32	33	08:11 (1)	20:05			18:39			16:22			15:43
14	04:49		06:28 (37)	05:53		07:37 (1)	07:02			08:09			08:22			09:20
	22:35	18	06:46 (37)	21:29	35	08:12 (1)	20:02			18:36			16:19			15:43
15	04:51		06:28 (37)	05:55		07:36 (1)	07:04			08:11			08:25			09:21
	22:34	16	06:44 (37)	21:26	36	08:12 (1)	19:59			18:34			16:17			15:42
16	04:53		06:30 (37)	05:58		07:35 (1)	07:06			08:14			08:27			09:22
	22:32	14	06:44 (37)	21:24	37	08:12 (1)	19:57			18:31			16:15			15:42
17	04:54		06:32 (37)	06:00		07:35 (1)	07:09			08:16			08:29			09:23
	22:30	9	06:41 (37)	21:21	38	08:13 (1)	19:54			18:28			16:13			15:42
18	04:56			06:02		07:35 (1)	07:11			08:18			08:32			09:24
	22:29			21:18	39	08:14 (1)	19:51			18:25			16:12			15:42
19	04:58			06:04		07:35 (1)	07:13			08:21			08:34			09:25
	22:27			21:16	38	08:13 (1)	19:48			18:23			16:10			15:43
20	05:00			06:07		07:35 (1)	07:15			08:23			08:36			09:25
	22:25			21:13	38	08:13 (1)	19:45			18:20			16:08			15:43
21	05:02			06:09		07:34 (1)	07:17			08:25			08:39			09:26
	22:23			21:10	39	08:13 (1)	19:42			18:17			16:06			15:43
22	05:04			06:11		07:34 (1)	07:20			08:28			08:41			09:27
	22:22			21:08	38	08:12 (1)	19:39			18:15			16:04			15:44
23	05:06			06:13		07:34 (1)	07:22			08:30			08:43			09:27
	22:20			21:05	38	08:12 (1)	19:36			18:12			16:03			15:44
24	05:08			06:15		07:34 (1)	07:24			08:32		09:30 (63)	08:45			09:28
	22:18			21:02	37	08:11 (1)	19:33			18:09	3	09:33 (63)	16:01			15:45
25	05:10			06:18		07:34 (1)	07:26			07:35		08:27 (63)	08:47			09:28
	22:16			20:59	36	08:10 (1)	19:30			17:07	9	08:36 (63)	16:00			15:46
26	05:12			06:20		07:34 (1)	07:28			07:37		08:26 (63)	08:50			09:28
	22:14			20:57	35	08:09 (1)	19:28			17:04	12	08:38 (63)	15:58			15:46
27	05:14			06:22		07:35 (1)	07:31			07:39		08:25 (63)	08:52			09:28
	22:12			20:54	33	08:08 (1)	19:25			17:02	13	08:38 (63)	15:57			15:47
28	05:16			06:24		07:35 (1)	07:33			07:42		08:25 (63)	08:54			09:28
	22:10			20:51	32	08:07 (1)	19:22			16:59	14	08:39 (63)	15:55			15:48
29	05:18			06:27		07:36 (1)	07:35			07:44		08:24 (63)	08:56			09:28
	22:07			20:48	30	08:06 (1)	19:19			16:56	14	08:38 (63)	15:54			15:49
30	05:20			06:29		07:39 (1)	07:37			07:47		08:25 (63)	08:58			09:28
	22:05			20:45	26	08:05 (1)	19:16			16:54	13	08:38 (63)	15:53			15:50
31	05:22			06:31		07:42 (1)				07:49		08:26 (63)				09:28
	22:03			20:43	21	08:03 (1)				16:51	12	08:38 (63)				15:51
Potential sun hours	545			478			386			319			236			200
Total, worst case		396			836			24			90			16		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** AN - Brusalivegen 219 (40)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	January	February		March			April	May			June		
1	09:28	08:46		07:35		08:11 (62)	07:07	05:44			04:40		06:44 (1)
	15:53	16:56		18:05	6	08:17 (62)	20:17	21:26			22:30	33	07:17 (1)
2	09:27	08:43		07:33		08:08 (62)	07:04	05:42		07:06 (1)	04:39		06:44 (1)
	15:54	16:59		18:07	10	08:18 (62)	20:19	21:28	4	07:10 (1)	22:32	33	07:17 (1)
3	09:27	08:41		07:30		08:06 (62)	07:01	05:39		07:04 (1)	04:38		06:45 (1)
	15:56	17:01		18:10	13	08:19 (62)	20:21	21:31	7	07:11 (1)	22:33	31	07:16 (1)
4	09:26	08:39		07:27		08:05 (62)	06:58	05:37		07:02 (1)	04:36		06:45 (1)
	15:57	17:04		18:12	14	08:19 (62)	20:24	21:33	11	07:13 (1)	22:35	31	07:16 (1)
5	09:26	08:37		07:24		08:04 (62)	06:55	05:34		07:00 (1)	04:35		06:47 (1)
	15:59	17:06		18:14	15	08:19 (62)	20:26	21:35	15	07:15 (1)	22:36	30	07:17 (1)
6	09:25	08:34		07:21		08:04 (62)	06:53	05:32		06:59 (1)	04:34		06:47 (1)
	16:00	17:09		18:17	14	08:18 (62)	20:28	21:37	17	07:16 (1)	22:38	29	07:16 (1)
7	09:24	08:32		07:19		08:05 (62)	06:50	05:29		06:56 (1)	04:33		06:47 (1)
	16:02	17:11		18:19	12	08:17 (62)	20:31	21:40	20	07:16 (1)	22:39	29	07:16 (1)
8	09:24	08:30		07:16		08:05 (62)	06:47	05:27		06:54 (1)	04:32		06:48 (1)
	16:04	17:14		18:21	11	08:16 (62)	20:33	21:42	23	07:17 (1)	22:40	27	07:15 (1)
9	09:23	08:27		07:13		08:07 (62)	06:44	05:24		06:52 (1)	04:31		06:49 (1)
	16:06	17:16		18:24	6	08:13 (62)	20:35	21:44	25	07:17 (1)	22:42	27	07:16 (1)
10	09:22	08:25		07:10			06:41	05:22		06:50 (1)	04:31		06:49 (1)
	16:07	17:18		18:26			20:37	21:46	28	07:18 (1)	22:43	26	07:15 (1)
11	09:21	08:23		07:07			06:38	05:20		06:48 (1)	04:30		06:50 (1)
	16:09	17:21		18:28			20:40	21:49	30	07:18 (1)	22:44	25	07:15 (1)
12	09:20	08:20		07:04			06:36	05:17		06:46 (1)	04:29		06:50 (1)
	16:11	17:23		18:31			20:42	21:51	33	07:19 (1)	22:45	24	07:14 (1)
13	09:18	08:18		07:02			06:33	05:15		06:45 (1)	04:29		06:51 (1)
	16:13	17:26		18:33			20:44	21:53	34	07:19 (1)	22:46	24	07:15 (1)
14	09:17	08:15		06:59			06:30	05:13		06:43 (1)	04:28		06:52 (1)
	16:15	17:28		18:35			20:47	21:55	36	07:19 (1)	22:46	23	07:15 (1)
15	09:16	08:13	08:45 (63)	06:56			06:27	05:11		06:41 (1)	04:28		06:51 (1)
	16:17	17:31	5 08:50 (63)	18:38			20:49	21:57	38	07:19 (1)	22:47	23	07:14 (1)
16	09:14	08:10	08:42 (63)	06:53			06:24	05:09		06:40 (1)	04:28		06:52 (1)
	16:19	17:33	10 08:52 (63)	18:40			20:51	22:00	39	07:19 (1)	22:48	22	07:14 (1)
17	09:13	08:07	08:40 (63)	06:50			06:22	05:06		06:39 (1)	04:27		06:52 (1)
	16:21	17:36	12 08:52 (63)	18:42			20:54	22:02	40	07:19 (1)	22:48	22	07:14 (1)
18	09:12	08:05	08:40 (63)	06:47			06:19	05:04		06:40 (1)	04:27		06:53 (1)
	16:24	17:38	14 08:54 (63)	18:45			20:56	22:04	40	07:20 (1)	22:49	21	07:14 (1)
19	09:10	08:02	08:39 (63)	06:44			06:16	05:02		06:40 (1)	04:27		06:53 (1)
	16:26	17:41	15 08:54 (63)	18:47			20:58	22:06	40	07:20 (1)	22:49	21	07:14 (1)
20	09:08	08:00	08:39 (63)	06:42			06:13	05:00		06:40 (1)	04:27		06:53 (1)
	16:28	17:43	15 08:54 (63)	18:49			21:00	22:08	40	07:20 (1)	22:50	21	07:14 (1)
21	09:07	07:57	08:39 (63)	06:39			06:11	04:58		06:40 (1)	04:27		06:53 (1)
	16:30	17:46	14 08:53 (63)	18:52			21:03	22:10	39	07:19 (1)	22:50	21	07:14 (1)
22	09:05	07:54	08:39 (63)	06:36			06:08	04:56		06:40 (1)	04:27		06:54 (1)
	16:32	17:48	13 08:52 (63)	18:54			21:05	22:12	40	07:20 (1)	22:50	21	07:15 (1)
23	09:03	07:52	08:41 (63)	06:33			06:05	04:55		06:40 (1)	04:28		06:54 (1)
	16:35	17:50	11 08:52 (63)	18:56			21:07	22:14	39	07:19 (1)	22:50	21	07:15 (1)
24	09:02	07:49	08:42 (63)	06:30			06:02	04:53		06:41 (1)	04:28		06:54 (1)
	16:37	17:53	8 08:50 (63)	18:58			21:10	22:16	38	07:19 (1)	22:50	21	07:15 (1)
25	09:00	07:46		06:27			06:00	04:51		06:41 (1)	04:28		06:55 (1)
	16:39	17:55		19:01			21:12	22:18	38	07:19 (1)	22:50	21	07:16 (1)
26	08:58	07:44		06:24			05:57	04:49		06:42 (1)	04:29		06:54 (1)
	16:42	17:58		19:03			21:14	22:20	37	07:19 (1)	22:50	22	07:16 (1)
27	08:56	07:41		06:21			05:54	04:48		06:41 (1)	04:29		06:54 (1)
	16:44	18:00		19:05			21:17	22:22	37	07:18 (1)	22:50	23	07:17 (1)
28	08:54	07:38		06:18			05:52	04:46		06:42 (1)	04:30		06:54 (1)
	16:47	18:02		19:08			21:19	22:24	36	07:18 (1)	22:50	23	07:17 (1)
29	08:52			07:16			05:49	04:44		06:43 (1)	04:31		06:54 (1)
	16:49			20:10			21:21	22:25	35	07:18 (1)	22:49	24	07:18 (1)
30	08:50			07:13			05:47	04:43		06:43 (1)	04:32		06:54 (1)
	16:51			20:12			21:24	22:27	35	07:18 (1)	22:49	24	07:18 (1)
31	08:48			07:10				04:41		06:43 (1)			
	16:54			20:14				22:29	34	07:17 (1)			
Potential sun hours	221	260		365			432	521			547		
Total, worst case			117		101				928			743	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker **Shadow receptor:** AN - Brusalivegen 219 (40)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

	July			August			September	October			November	December
1	04:32		06:54 (1)	05:24		06:57 (1)	06:33	07:39			07:51	09:00
	22:48	25	07:19 (1)	22:01	32	07:29 (1)	20:40	19:13			16:49	15:52
2	04:33		06:54 (1)	05:27		06:59 (1)	06:35	07:42			07:54	09:01
	22:48	26	07:20 (1)	21:58	30	07:29 (1)	20:37	19:10			16:47	15:50
3	04:34		06:53 (1)	05:29		07:01 (1)	06:38	07:44			07:56	09:03
	22:47	27	07:20 (1)	21:56	27	07:28 (1)	20:34	19:07			16:44	15:49
4	04:35		06:53 (1)	05:31		07:03 (1)	06:40	07:46			07:59	09:05
	22:46	27	07:20 (1)	21:54	24	07:27 (1)	20:31	19:05			16:42	15:48
5	04:37		06:53 (1)	05:33		07:05 (1)	06:42	07:48		08:43 (62)	08:01	09:07
	22:46	28	07:21 (1)	21:51	22	07:27 (1)	20:28	19:02	9	08:52 (62)	16:39	15:47
6	04:38		06:54 (1)	05:35		07:07 (1)	06:44	07:51		08:41 (62)	08:03	09:09
	22:45	28	07:22 (1)	21:49	19	07:26 (1)	20:25	18:59	12	08:53 (62)	16:37	15:47
7	04:39		06:53 (1)	05:38		07:09 (1)	06:47	07:53		08:41 (62)	08:06	09:10
	22:44	30	07:23 (1)	21:47	16	07:25 (1)	20:23	18:56	13	08:54 (62)	16:35	15:46
8	04:40		06:53 (1)	05:40		07:10 (1)	06:49	07:55		08:40 (62)	08:08	09:12
	22:43	30	07:23 (1)	21:44	13	07:23 (1)	20:20	18:53	14	08:54 (62)	16:32	15:45
9	04:42		06:52 (1)	05:42		07:12 (1)	06:51	07:57		08:39 (62)	08:11	09:13
	22:42	32	07:24 (1)	21:42	10	07:22 (1)	20:17	18:50	15	08:54 (62)	16:30	15:44
10	04:43		06:52 (1)	05:44		07:14 (1)	06:53	08:00		08:40 (62)	08:13	09:15
	22:40	32	07:24 (1)	21:39	6	07:20 (1)	20:14	18:48	14	08:54 (62)	16:28	15:44
11	04:45		06:52 (1)	05:46		07:15 (1)	06:55	08:02		08:40 (62)	08:15	09:16
	22:39	33	07:25 (1)	21:37	3	07:18 (1)	20:11	18:45	12	08:52 (62)	16:26	15:43
12	04:46		06:52 (1)	05:49			06:58	08:04		08:42 (62)	08:18	09:17
	22:38	34	07:26 (1)	21:34			20:08	18:42	8	08:50 (62)	16:24	15:43
13	04:48		06:51 (1)	05:51			07:00	08:07		08:45 (62)	08:20	09:19
	22:36	35	07:26 (1)	21:32			20:05	18:39	4	08:49 (62)	16:22	15:43
14	04:49		06:52 (1)	05:53			07:02	08:09			08:22	09:20
	22:35	35	07:27 (1)	21:29			20:02	18:36			16:19	15:43
15	04:51		06:51 (1)	05:55			07:04	08:11			08:25	09:21
	22:34	36	07:27 (1)	21:26			19:59	18:34			16:17	15:42
16	04:53		06:51 (1)	05:58			07:06	08:14			08:27	09:22
	22:32	37	07:28 (1)	21:24			19:57	18:31			16:15	15:42
17	04:54		06:50 (1)	06:00			07:09	08:16		09:16 (63)	08:29	09:23
	22:30	38	07:28 (1)	21:21			19:54	18:28	3	09:19 (63)	16:13	15:42
18	04:56		06:51 (1)	06:02			07:11	08:18		09:12 (63)	08:32	09:24
	22:29	37	07:28 (1)	21:18			19:51	18:25	10	09:22 (63)	16:12	15:42
19	04:58		06:51 (1)	06:04			07:13	08:21		09:11 (63)	08:34	09:25
	22:27	38	07:29 (1)	21:16			19:48	18:23	12	09:23 (63)	16:10	15:43
20	05:00		06:50 (1)	06:07			07:15	08:23		09:10 (63)	08:36	09:25
	22:25	39	07:29 (1)	21:13			19:45	18:20	14	09:24 (63)	16:08	15:43
21	05:02		06:50 (1)	06:09			07:17	08:25		09:10 (63)	08:39	09:26
	22:23	39	07:29 (1)	21:10			19:42	18:17	14	09:24 (63)	16:06	15:43
22	05:04		06:51 (1)	06:11			07:19	08:28		09:09 (63)	08:41	09:27
	22:22	39	07:30 (1)	21:08			19:39	18:15	15	09:24 (63)	16:04	15:44
23	05:06		06:50 (1)	06:13			07:22	08:30		09:09 (63)	08:43	09:27
	22:20	39	07:29 (1)	21:05			19:36	18:12	15	09:24 (63)	16:03	15:44
24	05:08		06:50 (1)	06:15			07:24	08:32		09:09 (63)	08:45	09:28
	22:18	40	07:30 (1)	21:02			19:33	18:09	14	09:23 (63)	16:01	15:45
25	05:10		06:50 (1)	06:18			07:26	07:35		08:10 (63)	08:47	09:28
	22:16	40	07:30 (1)	20:59			19:30	17:07	12	08:22 (63)	16:00	15:46
26	05:12		06:50 (1)	06:20			07:28	07:37		08:13 (63)	08:49	09:28
	22:14	40	07:30 (1)	20:57			19:28	17:04	8	08:21 (63)	15:58	15:46
27	05:14		06:51 (1)	06:22			07:31	07:39		08:15 (63)	08:52	09:28
	22:12	39	07:30 (1)	20:54			19:25	17:02	3	08:18 (63)	15:57	15:47
28	05:16		06:51 (1)	06:24			07:33	07:42			08:54	09:28
	22:10	40	07:31 (1)	20:51			19:22	16:59			15:55	15:48
29	05:18		06:52 (1)	06:27			07:35	07:44			08:56	09:28
	22:07	38	07:30 (1)	20:48			19:19	16:56			15:54	15:49
30	05:20		06:54 (1)	06:29			07:37	07:47			08:58	09:28
	22:05	35	07:29 (1)	20:45			19:16	16:54			15:53	15:50
31	05:22		06:56 (1)	06:31				07:49				09:28
	22:03	33	07:29 (1)	20:43				16:51				15:51
Potential sun hours	545			478			386	319			236	200
Total, worst case		1069			202				221			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Multiconsult

Vedlegg 3.2

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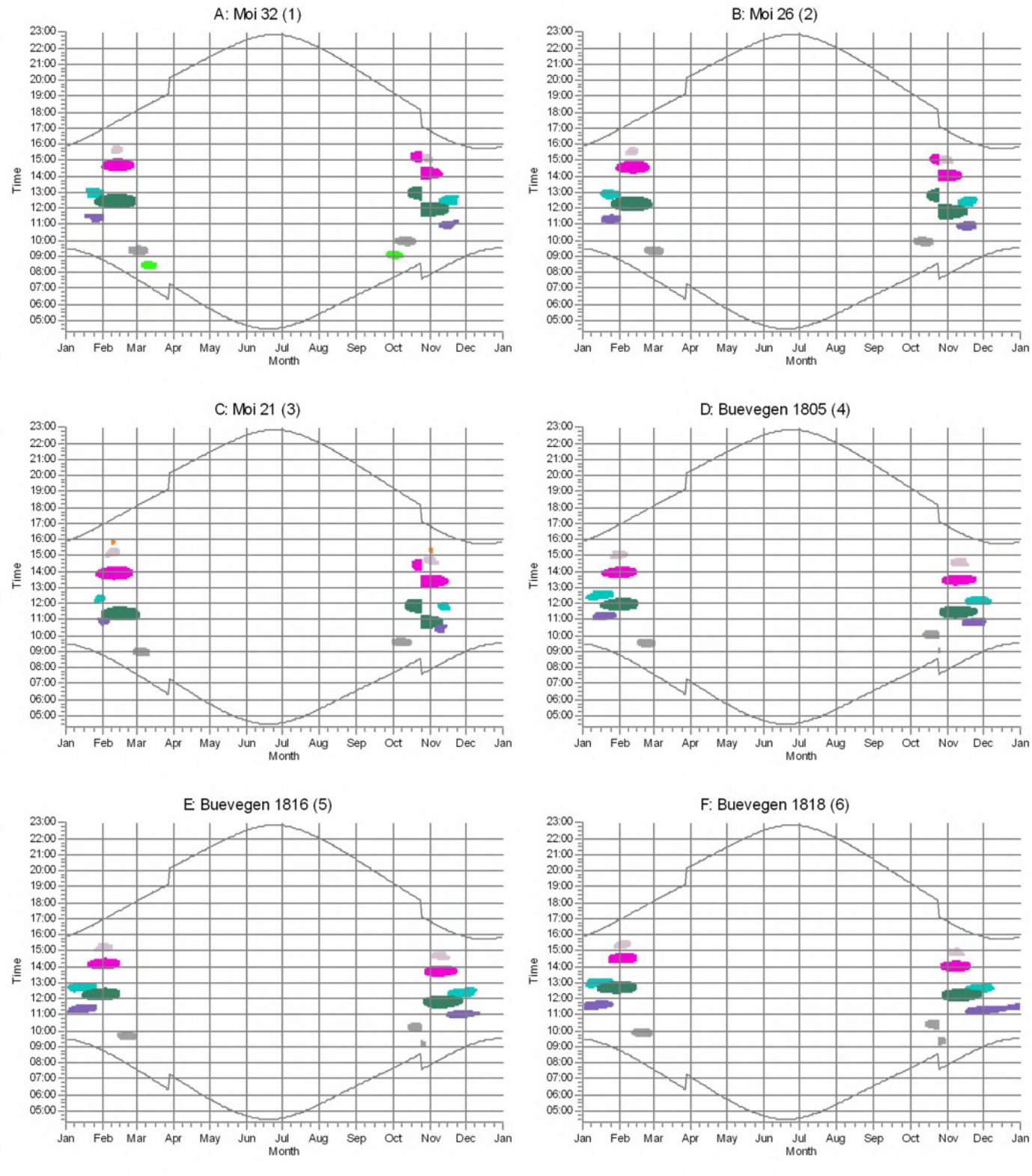
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar, graphical

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker



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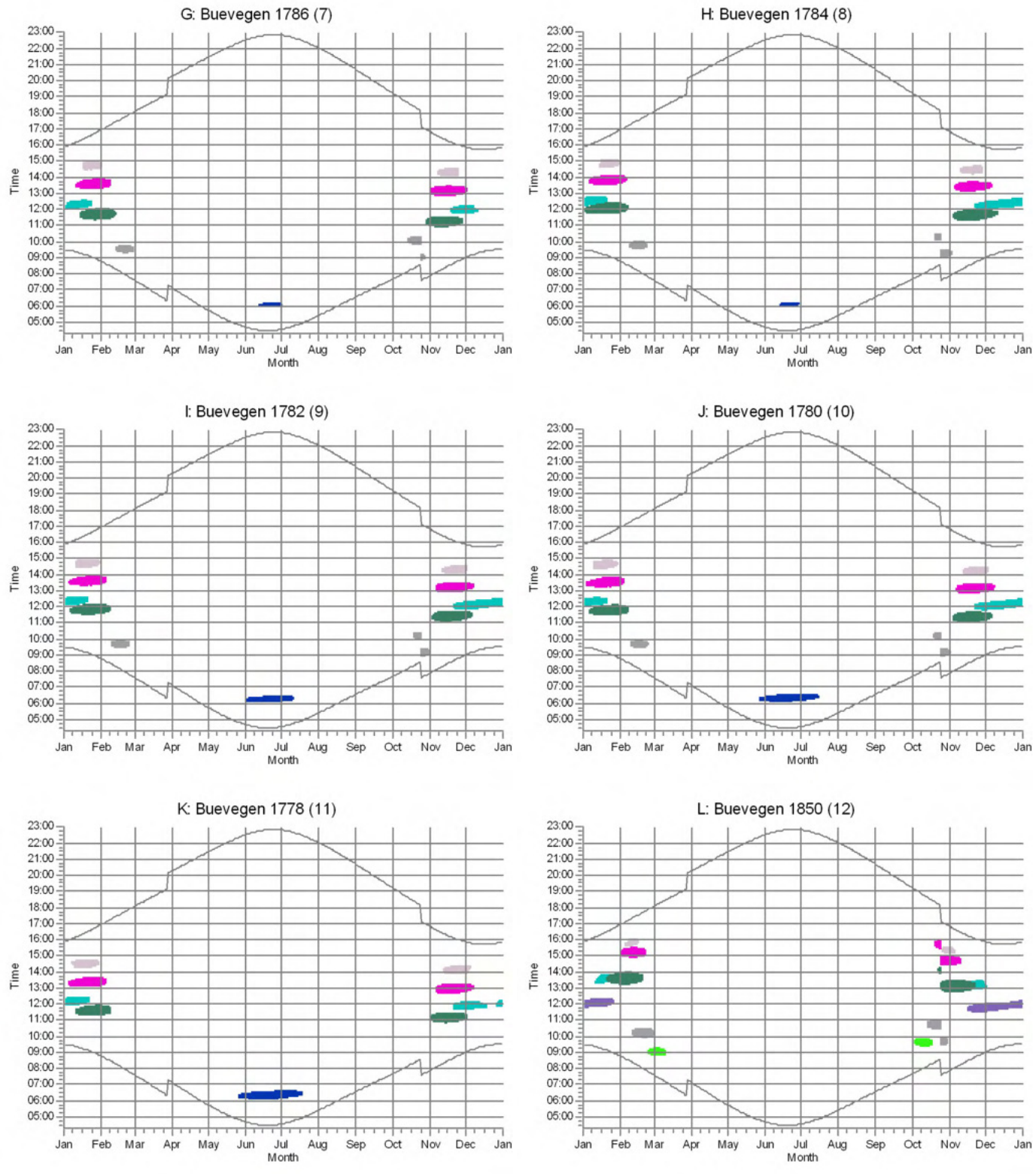
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar, graphical

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker



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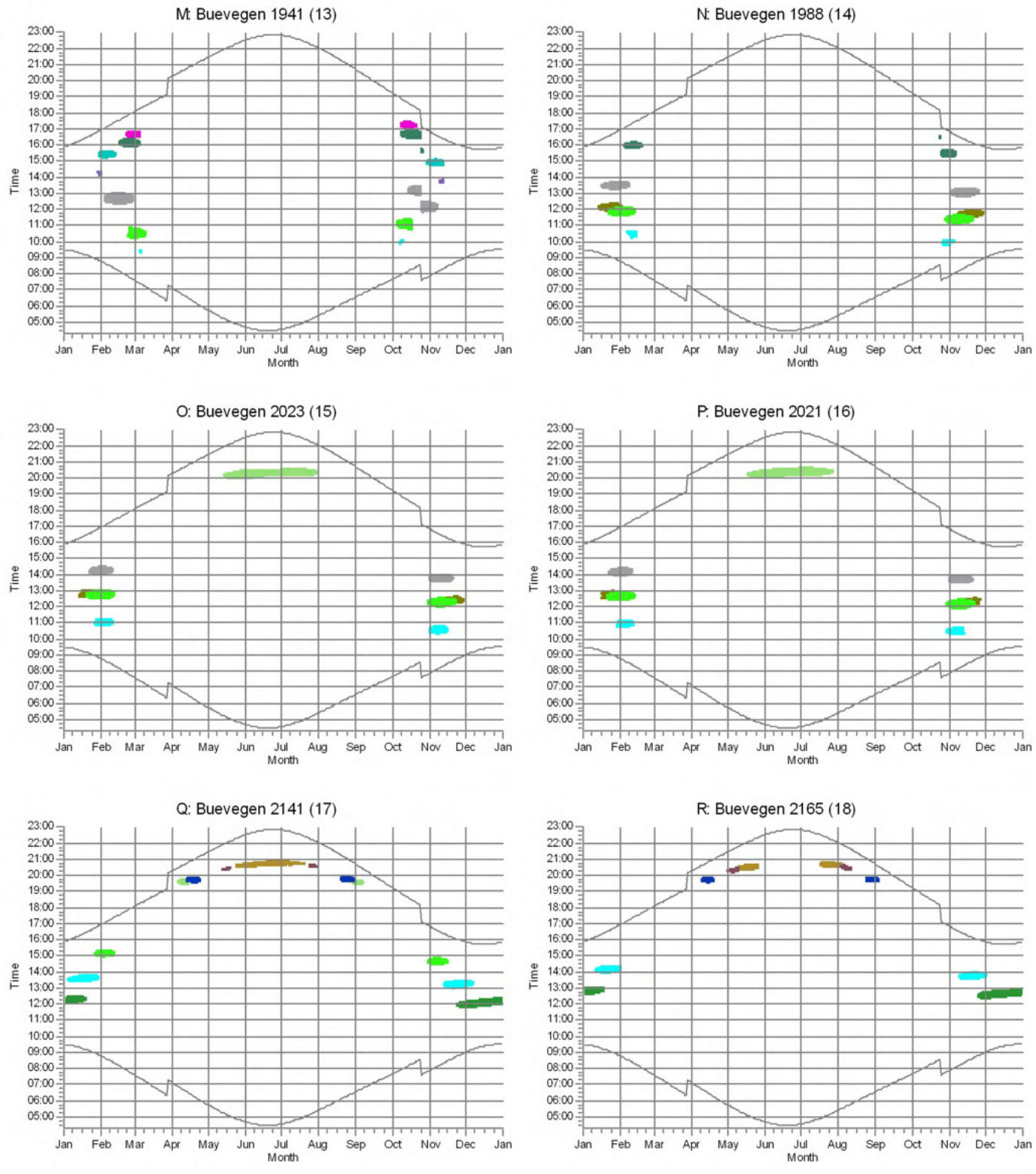
SHADOW - Calendar, graphical

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker



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Calculated:
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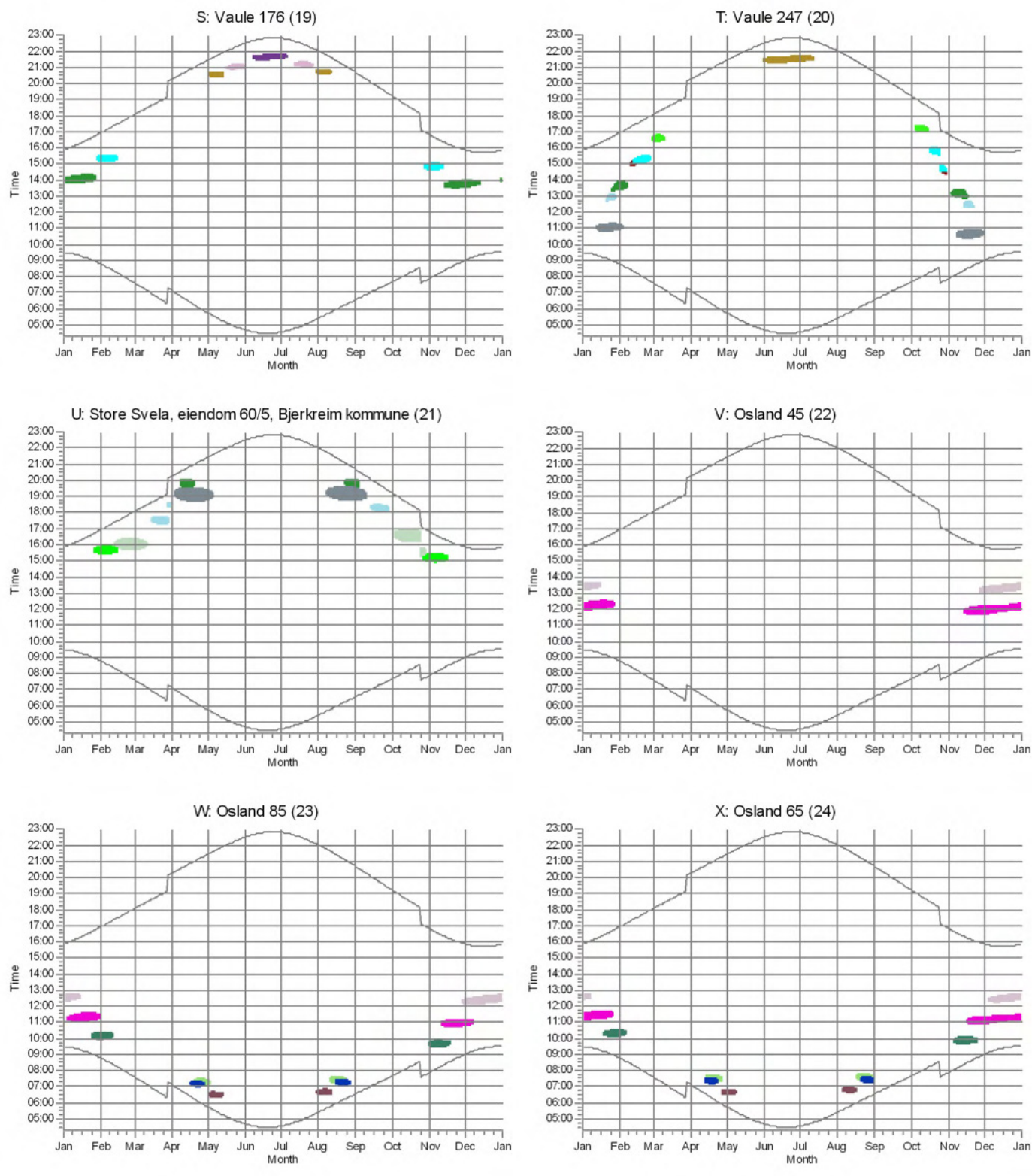
SHADOW - Calendar, graphical

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker



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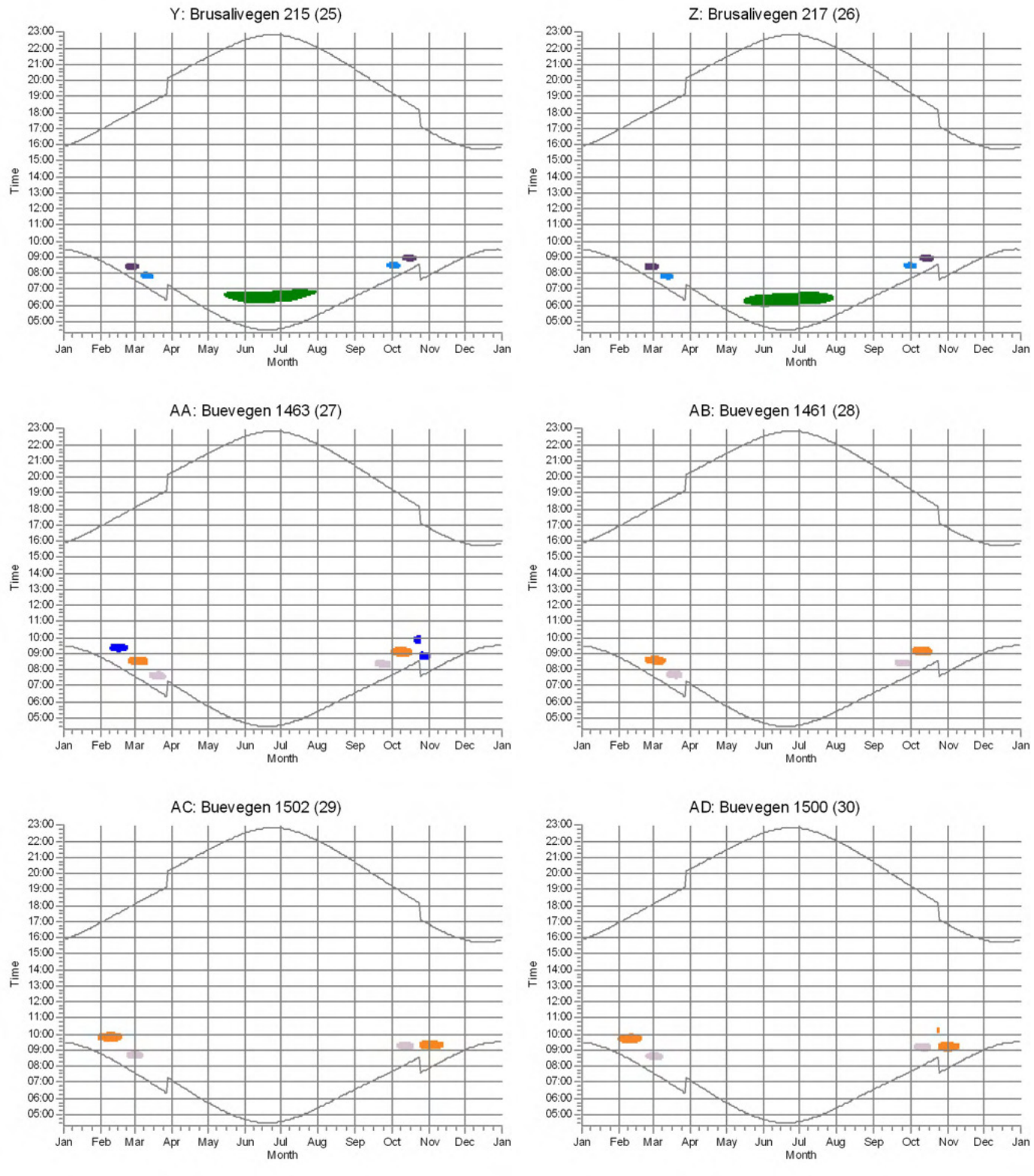
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar, graphical

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker



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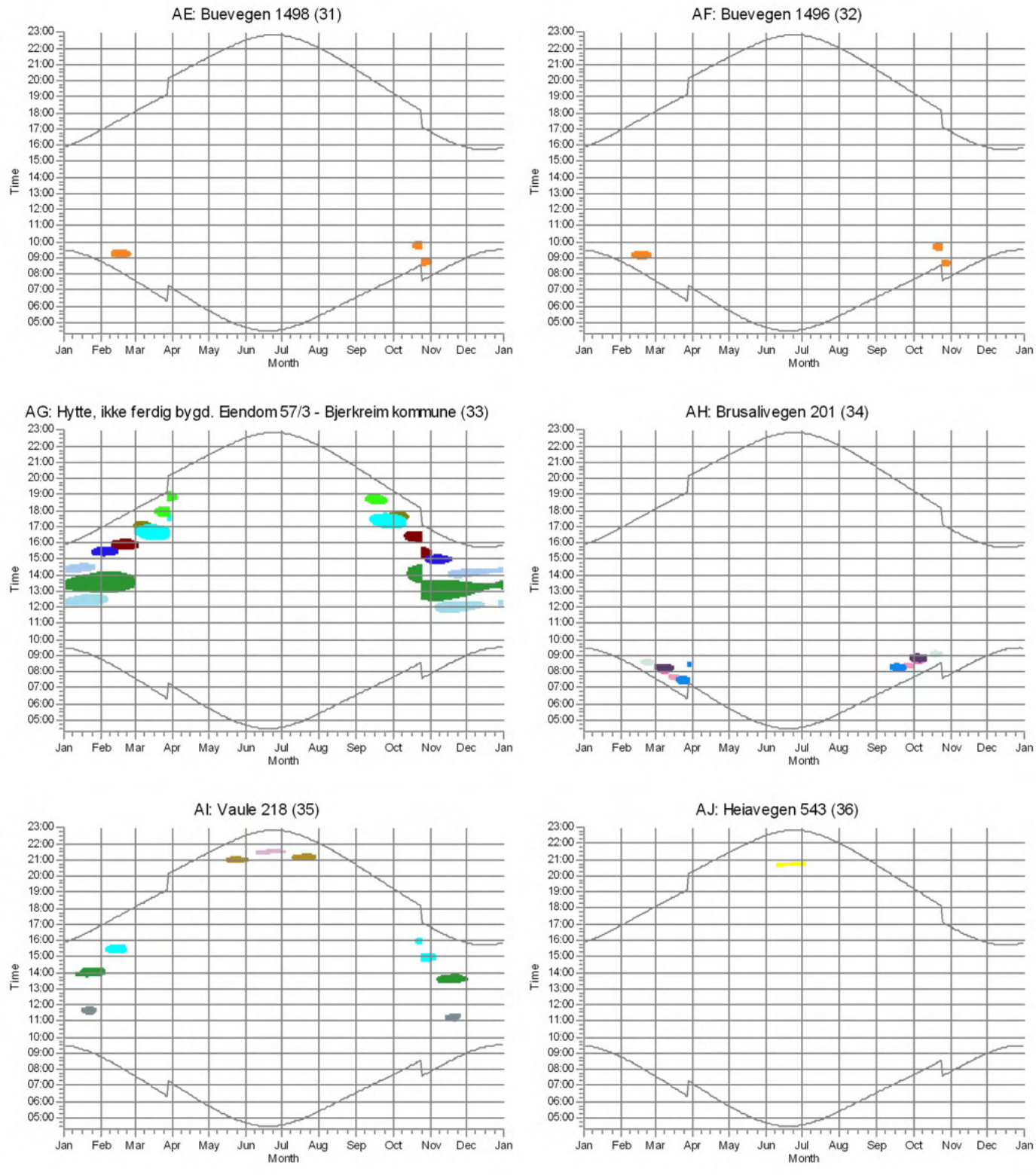
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar, graphical

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker



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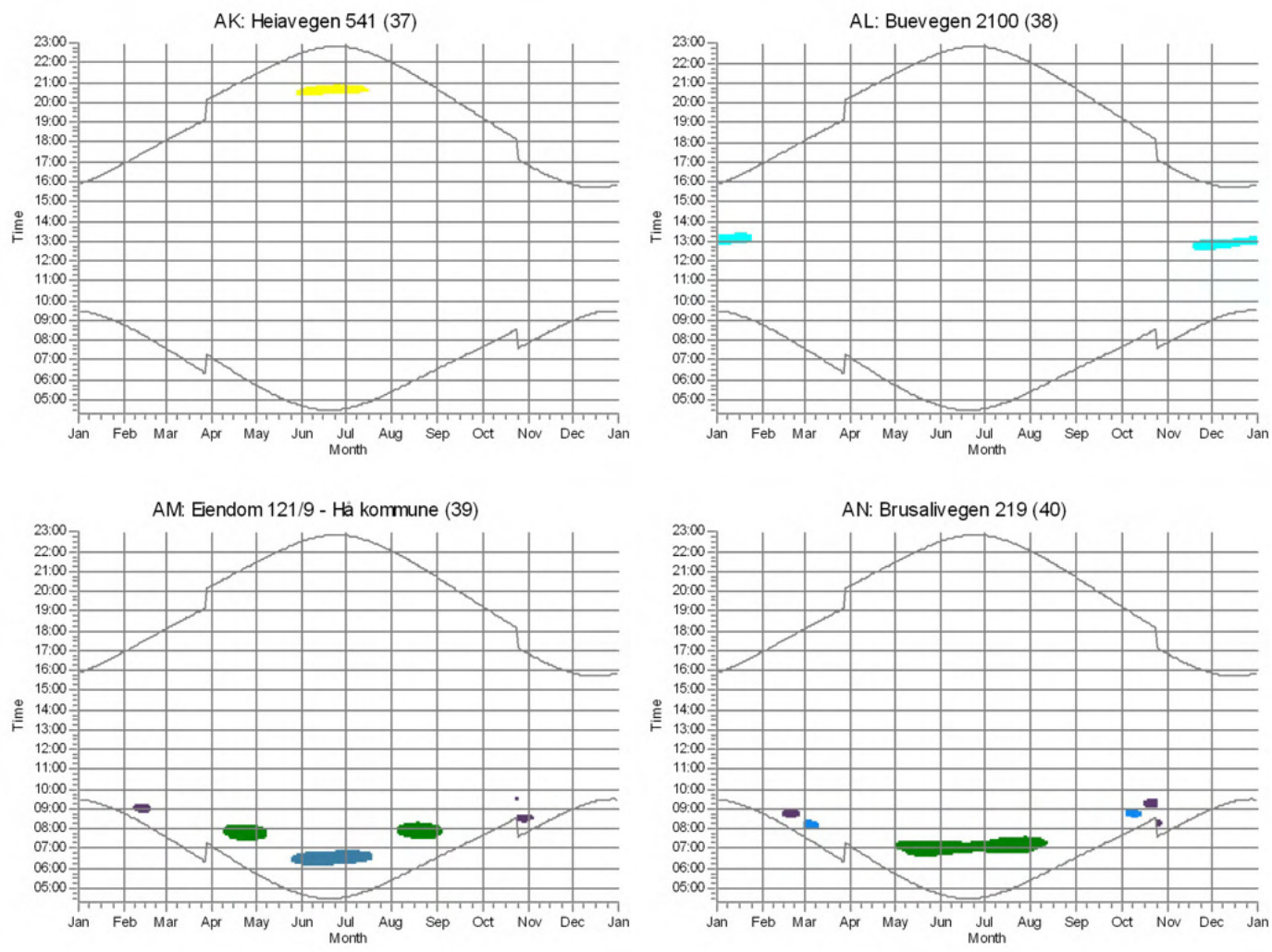
Calculated:
20.01.2025 16:36/4.0.540

SHADOW - Calendar, graphical

Calculation: Oppdatert layout - med nærliggende - worst case - oppdatert mottaker



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Vedlegg 4.1

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** A - Moi 32 (1)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March			April	May	June
1	09:28			08:46		11:21 (34)	07:35		09:10 (16)	07:07	05:44	04:40
	15:53			16:56	46	14:37 (24)	18:05	24	09:34 (16)	20:17	21:26	22:30
2	09:27			08:43		12:08 (29)	07:33		09:10 (16)	07:04	05:41	04:38
	15:54			16:58	46	14:44 (24)	18:07	24	09:34 (16)	20:19	21:28	22:32
3	09:27			08:41		12:06 (29)	07:30		09:10 (16)	07:01	05:39	04:37
	15:55			17:01	57	14:50 (24)	18:09	24	09:34 (16)	20:21	21:30	22:34
4	09:26			08:39		12:06 (29)	07:27		09:10 (16)	06:58	05:36	04:36
	15:57			17:03	62	14:52 (24)	18:12	23	09:33 (16)	20:24	21:33	22:35
5	09:26			08:37		12:05 (29)	07:24		09:10 (16)	06:55	05:34	04:35
	15:58			17:06	65	14:53 (24)	18:14	22	09:32 (16)	20:26	21:35	22:37
6	09:25			08:34		12:05 (29)	07:21		08:23 (18)	06:52	05:31	04:34
	16:00			17:08	69	14:55 (24)	18:17	29	09:31 (16)	20:28	21:37	22:38
7	09:24			08:32		12:04 (29)	07:19		08:20 (18)	06:50	05:29	04:33
	16:02			17:11	73	14:56 (24)	18:19	33	09:30 (16)	20:30	21:40	22:39
8	09:24			08:30		12:04 (29)	07:16		08:19 (18)	06:47	05:26	04:32
	16:03			17:13	75	14:57 (24)	18:21	31	09:28 (16)	20:33	21:42	22:40
9	09:23			08:27		12:04 (29)	07:13		08:18 (18)	06:44	05:24	04:31
	16:05			17:16	81	15:36 (25)	18:24	27	09:25 (16)	20:35	21:44	22:42
10	09:22			08:25		12:03 (29)	07:10		08:17 (18)	06:41	05:22	04:30
	16:07			17:18	95	15:42 (25)	18:26	18	08:35 (18)	20:37	21:46	22:43
11	09:21			08:23		12:04 (29)	07:07		08:16 (18)	06:38	05:19	04:29
	16:09			17:21	100	15:47 (25)	18:28	19	08:35 (18)	20:40	21:49	22:44
12	09:20			08:20		12:03 (29)	07:04		08:17 (18)	06:35	05:17	04:29
	16:11			17:23	103	15:49 (25)	18:31	19	08:36 (18)	20:42	21:51	22:45
13	09:18			08:18		12:03 (29)	07:01		08:17 (18)	06:32	05:15	04:28
	16:13			17:26	101	15:48 (25)	18:33	18	08:35 (18)	20:44	21:53	22:46
14	09:17			08:15		12:04 (29)	06:59		08:17 (18)	06:30	05:13	04:28
	16:15			17:28	98	15:48 (25)	18:35	17	08:34 (18)	20:47	21:55	22:47
15	09:16			08:13		12:04 (29)	06:56		08:18 (18)	06:27	05:10	04:27
	16:17			17:31	95	15:46 (25)	18:38	14	08:32 (18)	20:49	21:58	22:47
16	09:15			08:10		12:03 (29)	06:53		08:20 (18)	06:24	05:08	04:27
	16:19			17:33	90	15:43 (25)	18:40	10	08:30 (18)	20:51	22:00	22:48
17	09:13			08:07		12:04 (29)	06:50			06:21	05:06	04:27
	16:21			17:36	78	14:58 (24)	18:42			20:53	22:02	22:49
18	09:12		11:27 (34)	08:05		12:05 (29)	06:47			06:19	05:04	04:27
	16:23	6	11:33 (34)	17:38	76	14:58 (24)	18:45			20:56	22:04	22:49
19	09:10		11:28 (34)	08:02		12:05 (29)	06:44			06:16	05:02	04:27
	16:25	6	13:07 (21)	17:40	75	14:58 (24)	18:47			20:58	22:06	22:50
20	09:08		11:28 (34)	08:00		12:05 (29)	06:41			06:13	05:00	04:27
	16:28	23	13:08 (21)	17:43	72	14:57 (24)	18:49			21:00	22:08	22:50
21	09:07		11:26 (34)	07:57		12:06 (29)	06:38			06:10	04:58	04:27
	16:30	24	13:08 (21)	17:45	67	14:55 (24)	18:51			21:03	22:10	22:50
22	09:05		11:22 (34)	07:54		12:07 (29)	06:36			06:08	04:56	04:27
	16:32	38	13:07 (21)	17:48	62	14:54 (24)	18:54			21:05	22:12	22:50
23	09:03		11:17 (34)	07:52		09:18 (16)	06:33			06:05	04:54	04:27
	16:34	43	13:08 (21)	17:50	68	14:53 (24)	18:56			21:07	22:14	22:50
24	09:02		11:11 (34)	07:49		09:15 (16)	06:30			06:02	04:52	04:27
	16:37	48	13:08 (21)	17:53	66	14:51 (24)	18:58			21:10	22:16	22:51
25	09:00		11:12 (34)	07:46		09:14 (16)	06:27			05:59	04:51	04:28
	16:39	48	13:08 (21)	17:55	55	14:47 (24)	19:01			21:12	22:18	22:50
26	08:58		11:13 (34)	07:44		09:12 (16)	06:24			05:57	04:49	04:28
	16:41	48	13:08 (21)	17:57	41	12:35 (29)	19:03			21:14	22:20	22:50
27	08:56		11:13 (34)	07:41		09:11 (16)	06:21			05:54	04:47	04:29
	16:44	58	13:07 (21)	18:00	33	12:30 (29)	19:05			21:17	22:22	22:50
28	08:54		11:14 (34)	07:38		09:10 (16)	06:18			05:52	04:46	04:30
	16:46	61	13:07 (21)	18:02	23	09:33 (16)	19:07			21:19	22:24	22:50
29	08:52		11:15 (34)				07:15			05:49	04:44	04:30
	16:49	60	13:06 (21)				20:10			21:21	22:25	22:50
30	08:50		11:16 (34)				07:12			05:46	04:43	04:31
	16:51	59	13:04 (21)				20:12			21:24	22:27	22:49
31	08:48		11:18 (34)				07:10				04:41	
	16:54	55	13:03 (21)				20:14				22:29	
Potential sun hours	221			260			365			432	521	547
Total, worst case		577			1972			352				
Sun reduction		0,50			0,50			0,50				
Oper. time red.		0,80			0,80			0,80				
Wind dir. red.		0,65			0,61			0,73				
Total reduction		0,26			0,24			0,29				
Total, real		149			479			103				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** A - Moi 32 (1)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September			October		November			December
1	04:32	05:24	06:33			07:39		08:56 (18)	07:51		11:33 (29)	09:00
	22:49	22:01	20:40			19:13	18	09:14 (18)	16:49	91	15:09 (25)	15:51
2	04:33	05:26	06:35			07:42		08:55 (18)	07:54		11:33 (29)	09:02
	22:48	21:58	20:37			19:10	19	09:14 (18)	16:46	79	15:05 (25)	15:50
3	04:34	05:28	06:37			07:44		08:55 (18)	07:56		11:34 (29)	09:03
	22:47	21:56	20:34			19:07	18	09:13 (18)	16:44	73	14:26 (24)	15:49
4	04:35	05:31	06:40			07:46		08:55 (18)	07:59		11:34 (29)	09:05
	22:47	21:54	20:31			19:04	24	10:00 (16)	16:41	71	14:25 (24)	15:48
5	04:36	05:33	06:42			07:48		08:56 (18)	08:01		11:35 (29)	09:07
	22:46	21:51	20:28			19:02	29	10:04 (16)	16:39	68	14:24 (24)	15:47
6	04:37	05:35	06:44			07:51		08:56 (18)	08:03		11:36 (29)	09:09
	22:45	21:49	20:25			18:59	32	10:05 (16)	16:37	66	14:24 (24)	15:46
7	04:39	05:37	06:46			07:53		08:57 (18)	08:06		11:36 (29)	09:10
	22:44	21:47	20:22			18:56	32	10:06 (16)	16:34	61	14:22 (24)	15:45
8	04:40	05:39	06:49			07:55		09:00 (18)	08:08		11:37 (29)	09:12
	22:43	21:44	20:20			18:53	27	10:07 (16)	16:32	56	14:20 (24)	15:45
9	04:41	05:42	06:51			07:57		09:45 (16)	08:11		11:38 (29)	09:13
	22:42	21:42	20:17			18:50	22	10:07 (16)	16:30	46	14:15 (24)	15:44
10	04:43	05:44	06:53			08:00		09:45 (16)	08:13		10:52 (34)	09:15
	22:40	21:39	20:14			18:47	23	10:08 (16)	16:28	47	14:09 (24)	15:44
11	04:44	05:46	06:55			08:02		09:44 (16)	08:15		10:49 (34)	09:16
	22:39	21:37	20:11			18:45	24	10:08 (16)	16:25	55	12:34 (21)	15:43
12	04:46	05:48	06:57			08:04		09:43 (16)	08:18		10:48 (34)	09:18
	22:38	21:34	20:08			18:42	24	10:07 (16)	16:23	60	12:36 (21)	15:43
13	04:47	05:51	07:00			08:07		09:44 (16)	08:20		10:47 (34)	09:19
	22:37	21:31	20:05			18:39	23	10:07 (16)	16:21	60	12:38 (21)	15:42
14	04:49	05:53	07:02			08:09		09:43 (16)	08:22		10:46 (34)	09:20
	22:35	21:29	20:02			18:36	23	10:06 (16)	16:19	61	12:39 (21)	15:42
15	04:51	05:55	07:04			08:11		09:44 (16)	08:25		10:46 (34)	09:21
	22:34	21:26	19:59			18:33	37	13:05 (29)	16:17	58	12:40 (21)	15:42
16	04:52	05:57	07:06			08:13		09:45 (16)	08:27		10:46 (34)	09:22
	22:32	21:24	19:56			18:31	42	13:08 (29)	16:15	46	12:41 (21)	15:42
17	04:54	06:00	07:08			08:16		09:46 (16)	08:29		10:45 (34)	09:23
	22:30	21:21	19:54			18:28	61	15:21 (24)	16:13	48	12:41 (21)	15:42
18	04:56	06:02	07:11			08:18		09:47 (16)	08:32		10:45 (34)	09:24
	22:29	21:18	19:51			18:25	66	15:23 (24)	16:11	48	12:42 (21)	15:42
19	04:58	06:04	07:13			08:20		09:50 (16)	08:34		10:52 (34)	09:25
	22:27	21:16	19:48			18:22	68	15:25 (24)	16:09	43	12:43 (21)	15:42
20	05:00	06:06	07:15			08:23		12:38 (29)	08:36		10:57 (34)	09:26
	22:25	21:13	19:45			18:20	64	15:25 (24)	16:08	38	12:42 (21)	15:43
21	05:01	06:08	07:17			08:25		12:37 (29)	08:39		11:01 (34)	09:26
	22:24	21:10	19:42			18:17	68	15:27 (24)	16:06	24	12:43 (21)	15:43
22	05:03	06:11	07:19			08:27		12:35 (29)	08:41		11:04 (34)	09:27
	22:22	21:08	19:39			18:14	72	15:27 (24)	16:04	22	12:44 (21)	15:43
23	05:05	06:13	07:22			08:30		12:35 (29)	08:43		11:04 (34)	09:27
	22:20	21:05	19:36			18:12	75	15:28 (24)	16:02	9	12:44 (21)	15:44
24	05:07	06:15	07:24			08:32		12:34 (29)	08:45		11:04 (34)	09:28
	22:18	21:02	19:33			18:09	77	15:28 (24)	16:01	6	11:10 (34)	15:44
25	05:09	06:17	07:26			07:35		11:34 (29)	08:47			09:28
	22:16	20:59	19:30			17:06	78	14:28 (24)	15:59			15:45
26	05:11	06:20	07:28			07:37		11:33 (29)	08:50			09:28
	22:14	20:56	19:27			17:04	91	15:13 (25)	15:58			15:46
27	05:13	06:22	07:30		09:03 (18)	07:39		11:33 (29)	08:52			09:28
	22:12	20:54	19:25	8	09:11 (18)	17:01	97	15:16 (25)	15:56			15:47
28	05:16	06:24	07:33		09:00 (18)	07:42		11:33 (29)	08:54			09:28
	22:10	20:51	19:22	12	09:12 (18)	16:59	99	15:17 (25)	15:55			15:48
29	05:18	06:26	07:35		08:58 (18)	07:44		11:32 (29)	08:56			09:28
	22:07	20:48	19:19	15	09:13 (18)	16:56	102	15:18 (25)	15:54			15:49
30	05:20	06:29	07:37		08:56 (18)	07:47		11:33 (29)	08:58			09:28
	22:05	20:45	19:16	18	09:14 (18)	16:54	102	15:19 (25)	15:52			15:50
31	05:22	06:31				07:49		11:33 (29)				09:28
	22:03	20:42				16:51	98	15:16 (25)				15:51
Potential sun hours	546	478	386			319			236			199
Total, worst case				53			1635			1236		
Sun reduction				0,50			0,50			0,50		
Oper. time red.				0,80			0,80			0,80		
Wind dir. red.				0,72			0,63			0,62		
Total reduction				0,29			0,25			0,25		
Total, real				15			413			308		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** B - Moi 26 (2)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March			April	May	June
1	09:28			08:46		11:18 (34)	07:35		09:09 (16)	07:07	05:44	04:40
	15:53			16:56	58	14:41 (24)	18:05	23	09:32 (16)	20:17	21:26	22:30
2	09:27			08:43		11:58 (29)	07:33		09:09 (16)	07:04	05:41	04:38
	15:54			16:58	58	14:43 (24)	18:07	24	09:33 (16)	20:19	21:28	22:32
3	09:27			08:41		11:57 (29)	07:30		09:09 (16)	07:01	05:39	04:37
	15:55			17:01	63	14:44 (24)	18:09	23	09:32 (16)	20:21	21:30	22:34
4	09:26			08:39		11:57 (29)	07:27		09:09 (16)	06:58	05:36	04:36
	15:57			17:03	66	14:46 (24)	18:12	22	09:31 (16)	20:24	21:33	22:35
5	09:26			08:37		11:56 (29)	07:24		09:10 (16)	06:55	05:34	04:35
	15:58			17:06	70	14:47 (24)	18:14	20	09:30 (16)	20:26	21:35	22:37
6	09:25			08:34		11:56 (29)	07:21		09:10 (16)	06:52	05:31	04:34
	16:00			17:08	73	14:48 (24)	18:17	19	09:29 (16)	20:28	21:37	22:38
7	09:24			08:32		11:55 (29)	07:19		09:11 (16)	06:50	05:29	04:33
	16:02			17:11	85	15:29 (25)	18:19	16	09:27 (16)	20:30	21:40	22:39
8	09:24			08:30		11:56 (29)	07:16		09:13 (16)	06:47	05:26	04:32
	16:03			17:13	91	15:35 (25)	18:21	12	09:25 (16)	20:33	21:42	22:40
9	09:23			08:27		11:55 (29)	07:13			06:44	05:24	04:31
	16:05			17:16	97	15:40 (25)	18:24			20:35	21:44	22:42
10	09:22			08:25		11:55 (29)	07:10			06:41	05:22	04:30
	16:07			17:18	102	15:44 (25)	18:26			20:37	21:46	22:43
11	09:21			08:23		11:55 (29)	07:07			06:38	05:19	04:29
	16:09			17:21	101	15:44 (25)	18:28			20:40	21:49	22:44
12	09:20			08:20		11:55 (29)	07:04			06:35	05:17	04:29
	16:11			17:23	100	15:43 (25)	18:31			20:42	21:51	22:45
13	09:18			08:18		11:55 (29)	07:01			06:32	05:15	04:28
	16:13			17:26	96	15:41 (25)	18:33			20:44	21:53	22:46
14	09:17			08:15		11:55 (29)	06:59			06:30	05:13	04:28
	16:15			17:28	92	15:40 (25)	18:35			20:47	21:55	22:47
15	09:16			08:13		11:55 (29)	06:56			06:27	05:10	04:27
	16:17			17:31	86	15:37 (25)	18:38			20:49	21:58	22:47
16	09:15			08:10		11:55 (29)	06:53			06:24	05:08	04:27
	16:19			17:33	77	14:50 (24)	18:40			20:51	22:00	22:48
17	09:13		12:54 (21)	08:07		11:56 (29)	06:50			06:21	05:06	04:27
	16:21	1	12:55 (21)	17:36	75	14:49 (24)	18:42			20:53	22:02	22:49
18	09:12		11:10 (34)	08:05		11:57 (29)	06:47			06:19	05:04	04:27
	16:23	27	13:01 (21)	17:38	72	14:49 (24)	18:45			20:56	22:04	22:49
19	09:10		11:10 (34)	08:02		11:57 (29)	06:44			06:16	05:02	04:27
	16:25	34	13:02 (21)	17:40	70	14:48 (24)	18:47			20:58	22:06	22:50
20	09:08		11:10 (34)	08:00		11:58 (29)	06:41			06:13	05:00	04:27
	16:28	39	13:02 (21)	17:43	65	14:47 (24)	18:49			21:00	22:08	22:50
21	09:07		11:09 (34)	07:57		11:59 (29)	06:38			06:10	04:58	04:27
	16:30	47	13:02 (21)	17:45	59	14:45 (24)	18:51			21:03	22:10	22:50
22	09:05		11:07 (34)	07:54		09:19 (16)	06:36			06:08	04:56	04:27
	16:32	49	13:02 (21)	17:48	58	14:43 (24)	18:54			21:05	22:12	22:50
23	09:03		11:07 (34)	07:52		09:16 (16)	06:33			06:05	04:54	04:27
	16:34	48	13:02 (21)	17:50	56	14:41 (24)	18:56			21:07	22:14	22:50
24	09:02		11:08 (34)	07:49		09:14 (16)	06:30			06:02	04:52	04:27
	16:37	47	13:02 (21)	17:53	46	14:36 (24)	18:58			21:10	22:16	22:51
25	09:00		11:08 (34)	07:46		09:12 (16)	06:27			05:59	04:51	04:28
	16:39	47	13:02 (21)	17:55	37	12:25 (29)	19:01			21:12	22:18	22:50
26	08:58		11:09 (34)	07:44		09:11 (16)	06:24			05:57	04:49	04:28
	16:41	59	13:02 (21)	17:57	26	12:18 (29)	19:03			21:14	22:20	22:50
27	08:56		11:09 (34)	07:41		09:10 (16)	06:21			05:54	04:47	04:29
	16:44	61	13:01 (21)	18:00	22	09:32 (16)	19:05			21:17	22:22	22:50
28	08:54		11:10 (34)	07:38		09:09 (16)	06:18			05:52	04:46	04:30
	16:46	62	13:00 (21)	18:02	23	09:32 (16)	19:07			21:19	22:24	22:50
29	08:52		11:12 (34)				07:15			05:49	04:44	04:30
	16:49	61	13:00 (21)				20:10			21:21	22:25	22:50
30	08:50		11:13 (34)				07:12			05:46	04:43	04:31
	16:51	61	14:31 (24)				20:12			21:24	22:27	22:49
31	08:48		11:15 (34)				07:10				04:41	
	16:54	65	14:39 (24)				20:14				22:29	
Potential sun hours	221			260			365			432	521	547
Total, worst case		708			1924			159				
Sun reduction		0,50			0,50			0,50				
Oper. time red.		0,80			0,80			0,80				
Wind dir. red.		0,65			0,61			0,74				
Total reduction		0,26			0,24			0,29				
Total, real		183			468			47				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** B - Moi 26 (2)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October			November			December
1	04:32	05:24	06:33	07:39			07:51		11:24 (29)	09:00
	22:49	22:01	20:40	19:13			16:49	101	15:13 (25)	15:51
2	04:33	05:26	06:35	07:42			07:54		11:25 (29)	09:02
	22:48	21:58	20:37	19:10			16:46	96	15:09 (25)	15:50
3	04:34	05:28	06:37	07:44			07:56		11:25 (29)	09:03
	22:47	21:56	20:34	19:07			16:44	90	15:04 (25)	15:49
4	04:35	05:31	06:40	07:46			07:59		11:25 (29)	09:05
	22:47	21:54	20:31	19:04			16:41	81	14:58 (25)	15:48
5	04:36	05:33	06:42	07:48		09:52 (16)	08:01		11:26 (29)	09:07
	22:46	21:51	20:28	19:02	8	10:00 (16)	16:39	72	14:18 (24)	15:47
6	04:37	05:35	06:44	07:51		09:48 (16)	08:03		11:27 (29)	09:09
	22:45	21:49	20:25	18:59	15	10:03 (16)	16:37	69	14:17 (24)	15:46
7	04:39	05:37	06:46	07:53		09:46 (16)	08:06		11:27 (29)	09:10
	22:44	21:47	20:22	18:56	18	10:04 (16)	16:34	67	14:16 (24)	15:45
8	04:40	05:39	06:49	07:55		09:45 (16)	08:08		11:28 (29)	09:12
	22:43	21:44	20:20	18:53	20	10:05 (16)	16:32	62	14:15 (24)	15:45
9	04:41	05:42	06:51	07:57		09:44 (16)	08:11		11:29 (29)	09:13
	22:42	21:42	20:17	18:50	22	10:06 (16)	16:30	58	14:14 (24)	15:44
10	04:43	05:44	06:53	08:00		09:44 (16)	08:13		10:49 (34)	09:15
	22:40	21:39	20:14	18:47	22	10:06 (16)	16:28	59	14:13 (24)	15:44
11	04:44	05:46	06:55	08:02		09:43 (16)	08:15		10:46 (34)	09:16
	22:39	21:37	20:11	18:45	23	10:06 (16)	16:25	66	14:10 (24)	15:43
12	04:46	05:48	06:57	08:04		09:42 (16)	08:18		10:44 (34)	09:18
	22:38	21:34	20:08	18:42	24	10:06 (16)	16:23	61	14:02 (24)	15:43
13	04:47	05:51	07:00	08:07		09:42 (16)	08:20		10:44 (34)	09:19
	22:37	21:31	20:05	18:39	24	10:06 (16)	16:21	60	12:31 (21)	15:42
14	04:49	05:53	07:02	08:09		09:42 (16)	08:22		10:42 (34)	09:20
	22:35	21:29	20:02	18:36	23	10:05 (16)	16:19	62	12:32 (21)	15:42
15	04:51	05:55	07:04	08:11		09:43 (16)	08:25		10:42 (34)	09:21
	22:34	21:26	19:59	18:33	22	10:05 (16)	16:17	62	12:34 (21)	15:42
16	04:52	05:57	07:06	08:13		09:43 (16)	08:27		10:42 (34)	09:22
	22:32	21:24	19:56	18:31	32	12:54 (29)	16:15	59	12:35 (21)	15:42
17	04:54	06:00	07:08	08:16		09:44 (16)	08:29		10:41 (34)	09:23
	22:30	21:21	19:54	18:28	39	12:58 (29)	16:13	47	12:35 (21)	15:42
18	04:56	06:02	07:11	08:18		09:45 (16)	08:32		10:42 (34)	09:24
	22:29	21:18	19:51	18:25	53	15:09 (24)	16:11	47	12:36 (21)	15:42
19	04:58	06:04	07:13	08:20		09:48 (16)	08:34		10:42 (34)	09:25
	22:27	21:16	19:48	18:22	58	15:13 (24)	16:09	48	12:37 (21)	15:42
20	05:00	06:06	07:15	08:23		12:31 (29)	08:36		10:42 (34)	09:26
	22:25	21:13	19:45	18:20	55	15:15 (24)	16:08	49	12:37 (21)	15:43
21	05:01	06:08	07:17	08:25		12:30 (29)	08:39		10:44 (34)	09:26
	22:24	21:10	19:42	18:17	61	15:17 (24)	16:06	47	12:37 (21)	15:43
22	05:03	06:11	07:19	08:27		12:28 (29)	08:41		10:46 (34)	09:27
	22:22	21:08	19:39	18:14	66	15:17 (24)	16:04	39	12:38 (21)	15:43
23	05:05	06:13	07:22	08:30		12:27 (29)	08:43		10:46 (34)	09:27
	22:20	21:05	19:36	18:12	71	15:19 (24)	16:02	34	12:38 (21)	15:44
24	05:07	06:15	07:24	08:32		12:26 (29)	08:45		10:47 (34)	09:28
	22:18	21:02	19:33	18:09	73	15:19 (24)	16:01	27	12:38 (21)	15:44
25	05:09	06:17	07:26	07:35		11:26 (29)	08:47		12:32 (21)	09:28
	22:16	20:59	19:30	17:06	76	14:20 (24)	15:59	2	12:34 (21)	15:45
26	05:11	06:20	07:28	07:37		11:25 (29)	08:50			09:28
	22:14	20:56	19:27	17:04	77	14:19 (24)	15:58			15:46
27	05:13	06:22	07:30	07:39		11:25 (29)	08:52			09:28
	22:12	20:54	19:25	17:01	87	15:07 (25)	15:56			15:47
28	05:16	06:24	07:33	07:42		11:25 (29)	08:54			09:28
	22:10	20:51	19:22	16:59	93	15:10 (25)	15:55			15:48
29	05:18	06:26	07:35	07:44		11:24 (29)	08:56			09:28
	22:07	20:48	19:19	16:56	98	15:11 (25)	15:54			15:49
30	05:20	06:29	07:37	07:47		11:24 (29)	08:58			09:28
	22:05	20:45	19:16	16:54	100	15:12 (25)	15:52			15:50
31	05:22	06:31		07:49		11:25 (29)				09:28
	22:03	20:42		16:51	100	15:13 (25)				15:51
Potential sun hours	546	478	386	319			236			199
Total, worst case					1360			1465		
Sun reduction					0,50			0,50		
Oper. time red.					0,80			0,80		
Wind dir. red.					0,63			0,62		
Total reduction					0,25			0,25		
Total, real					342			365		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** C - Moi 21 (3)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March			April	May	June
1	09:28			08:46		10:42 (34)	07:35		08:50 (16)	07:07	05:44	04:40
	15:53			16:56	72	14:06 (24)	18:05	39	11:29 (29)	20:17	21:26	22:30
2	09:27			08:43		10:44 (34)	07:33		08:50 (16)	07:04	05:41	04:38
	15:54			16:58	70	14:08 (24)	18:07	31	11:25 (29)	20:19	21:28	22:32
3	09:27			08:41		10:46 (34)	07:30		08:49 (16)	07:01	05:39	04:37
	15:55			17:01	72	14:10 (24)	18:09	21	09:10 (16)	20:21	21:31	22:34
4	09:26			08:39		10:47 (34)	07:27		08:48 (16)	06:58	05:36	04:36
	15:57			17:03	77	15:02 (25)	18:12	22	09:10 (16)	20:24	21:33	22:35
5	09:26			08:37		10:50 (34)	07:24		08:48 (16)	06:55	05:34	04:35
	15:58			17:06	77	15:05 (25)	18:14	21	09:09 (16)	20:26	21:35	22:37
6	09:25			08:34		11:05 (29)	07:21		08:48 (16)	06:52	05:31	04:34
	16:00			17:08	82	15:12 (25)	18:17	21	09:09 (16)	20:28	21:37	22:38
7	09:24			08:32		11:03 (29)	07:19		08:48 (16)	06:50	05:29	04:33
	16:02			17:11	92	15:18 (25)	18:19	20	09:08 (16)	20:30	21:40	22:39
8	09:24			08:30		11:03 (29)	07:16		08:48 (16)	06:47	05:26	04:32
	16:03			17:13	101	15:25 (25)	18:21	19	09:07 (16)	20:33	21:42	22:40
9	09:23			08:27		11:02 (29)	07:13		08:48 (16)	06:44	05:24	04:31
	16:05			17:16	112	15:55 (23)	18:24	18	09:06 (16)	20:35	21:44	22:42
10	09:22			08:25		11:01 (29)	07:10		08:49 (16)	06:41	05:22	04:30
	16:07			17:18	104	15:51 (23)	18:26	15	09:04 (16)	20:37	21:46	22:43
11	09:21			08:23		11:01 (29)	07:07		08:51 (16)	06:38	05:19	04:29
	16:09			17:21	101	15:23 (25)	18:28	11	09:02 (16)	20:40	21:49	22:44
12	09:20			08:20		11:00 (29)	07:04			06:35	05:17	04:29
	16:11			17:23	98	15:21 (25)	18:31			20:42	21:51	22:45
13	09:18			08:18		10:59 (29)	07:02			06:33	05:15	04:28
	16:13			17:26	94	15:18 (25)	18:33			20:44	21:53	22:46
14	09:17			08:15		11:00 (29)	06:59			06:30	05:13	04:28
	16:15			17:28	83	14:14 (24)	18:35			20:47	21:55	22:47
15	09:16			08:13		10:59 (29)	06:56			06:27	05:10	04:27
	16:17			17:31	83	14:13 (24)	18:38			20:49	21:58	22:47
16	09:15			08:10		10:59 (29)	06:53			06:24	05:08	04:27
	16:19			17:33	81	14:12 (24)	18:40			20:51	22:00	22:48
17	09:13			08:07		10:59 (29)	06:50			06:21	05:06	04:27
	16:21			17:36	81	14:12 (24)	18:42			20:53	22:02	22:49
18	09:12			08:05		10:59 (29)	06:47			06:19	05:04	04:27
	16:23			17:38	80	14:12 (24)	18:45			20:56	22:04	22:49
19	09:10			08:02		10:59 (29)	06:44			06:16	05:02	04:27
	16:25			17:40	78	14:11 (24)	18:47			20:58	22:06	22:50
20	09:08			08:00		10:59 (29)	06:41			06:13	05:00	04:27
	16:28			17:43	74	14:09 (24)	18:49			21:00	22:08	22:50
21	09:07			07:57		10:59 (29)	06:39			06:10	04:58	04:27
	16:30			17:45	71	14:08 (24)	18:51			21:03	22:10	22:50
22	09:05			07:54		11:00 (29)	06:36			06:08	04:56	04:27
	16:32			17:48	66	14:06 (24)	18:54			21:05	22:12	22:50
23	09:03			07:52		11:01 (29)	06:33			06:05	04:54	04:27
	16:34			17:50	60	14:04 (24)	18:56			21:07	22:14	22:50
24	09:02			07:49		11:01 (29)	06:30			06:02	04:52	04:27
	16:37			17:53	50	14:00 (24)	18:58			21:10	22:16	22:51
25	09:00			07:46		11:02 (29)	06:27			06:00	04:51	04:28
	16:39			17:55	36	11:38 (29)	19:01			21:12	22:18	22:50
26	08:58		12:05 (21)	07:44		11:03 (29)	06:24			05:57	04:49	04:28
	16:41	5	12:10 (21)	17:57	33	11:36 (29)	19:03			21:14	22:20	22:50
27	08:56		12:05 (21)	07:41		08:54 (16)	06:21			05:54	04:47	04:29
	16:44	19	13:53 (24)	18:00	41	11:34 (29)	19:05			21:17	22:22	22:50
28	08:54		11:00 (34)	07:38		08:52 (16)	06:18			05:52	04:46	04:30
	16:46	40	13:59 (24)	18:02	41	11:32 (29)	19:08			21:19	22:24	22:50
29	08:52		10:56 (34)				07:15			05:49	04:44	04:30
	16:49	47	14:02 (24)				20:10			21:21	22:25	22:50
30	08:50		10:50 (34)				07:13			05:46	04:43	04:31
	16:51	55	14:03 (24)				20:12			21:24	22:27	22:49
31	08:48		10:44 (34)				07:10				04:41	
	16:54	61	14:05 (24)				20:14				22:29	
Potential sun hours	221			260			365			432	521	547
Total, worst case		227			2110			238				
Sun reduction		0,50			0,50			0,50				
Oper. time red.		0,80			0,80			0,80				
Wind dir. red.		0,62			0,63			0,73				
Total reduction		0,25			0,25			0,29				
Total, real		56			529			69				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** C - Moi 21 (3)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October			November			December
1	04:32	05:24	06:33	07:39			07:51		10:30 (29)	09:00
	22:49	22:01	20:40	19:13			16:49	107	15:21 (23)	15:51
2	04:33	05:26	06:35	07:42		09:32 (16)	07:54		10:31 (29)	09:02
	22:48	21:58	20:37	19:10	7	09:39 (16)	16:46	111	15:25 (23)	15:50
3	04:34	05:28	06:37	07:44		09:28 (16)	07:56		10:33 (29)	09:03
	22:47	21:56	20:34	19:07	14	09:42 (16)	16:44	97	14:53 (25)	15:49
4	04:35	05:31	06:40	07:46		09:26 (16)	07:59		10:33 (29)	09:05
	22:47	21:54	20:31	19:04	17	09:43 (16)	16:41	89	14:46 (25)	15:48
5	04:36	05:33	06:42	07:48		09:25 (16)	08:01		10:34 (29)	09:07
	22:46	21:51	20:28	19:02	19	09:44 (16)	16:39	82	14:41 (25)	15:47
6	04:37	05:35	06:44	07:51		09:24 (16)	08:03		10:20 (34)	09:09
	22:45	21:49	20:25	18:59	20	09:44 (16)	16:37	77	14:35 (25)	15:46
7	04:39	05:37	06:46	07:53		09:23 (16)	08:06		10:16 (34)	09:10
	22:44	21:47	20:22	18:56	21	09:44 (16)	16:34	78	14:32 (25)	15:45
8	04:40	05:39	06:49	07:55		09:23 (16)	08:08		10:15 (34)	09:12
	22:43	21:44	20:20	18:53	22	09:45 (16)	16:32	71	13:39 (24)	15:45
9	04:41	05:42	06:51	07:57		09:23 (16)	08:11		10:15 (34)	09:13
	22:42	21:42	20:17	18:50	21	09:44 (16)	16:30	71	13:39 (24)	15:44
10	04:43	05:44	06:53	08:00		09:23 (16)	08:13		10:14 (34)	09:15
	22:40	21:39	20:14	18:47	21	09:44 (16)	16:28	70	13:38 (24)	15:44
11	04:44	05:46	06:55	08:02		09:23 (16)	08:15		10:15 (34)	09:16
	22:39	21:37	20:11	18:45	20	09:43 (16)	16:25	61	13:36 (24)	15:43
12	04:46	05:48	06:57	08:04		09:23 (16)	08:18		10:24 (34)	09:18
	22:38	21:34	20:08	18:42	35	12:00 (29)	16:23	52	13:35 (24)	15:43
13	04:47	05:51	07:00	08:07		09:25 (16)	08:20		10:28 (34)	09:19
	22:37	21:31	20:05	18:39	39	12:04 (29)	16:21	46	13:33 (24)	15:42
14	04:49	05:53	07:02	08:09		09:25 (16)	08:22		10:32 (34)	09:20
	22:35	21:29	20:02	18:36	42	12:06 (29)	16:19	39	13:30 (24)	15:42
15	04:51	05:55	07:04	08:11		09:28 (16)	08:25		11:38 (21)	09:21
	22:34	21:26	19:59	18:33	40	12:08 (29)	16:17	19	13:26 (24)	15:42
16	04:52	05:57	07:06	08:13		11:35 (29)	08:27		11:38 (21)	09:22
	22:32	21:24	19:56	18:31	34	12:09 (29)	16:15	4	11:42 (21)	15:42
17	04:54	06:00	07:08	08:16		11:34 (29)	08:29			09:23
	22:30	21:21	19:54	18:28	36	12:10 (29)	16:13			15:42
18	04:56	06:02	07:11	08:18		11:32 (29)	08:32			09:24
	22:29	21:18	19:51	18:25	55	14:33 (24)	16:11			15:42
19	04:58	06:04	07:13	08:20		11:32 (29)	08:34			09:25
	22:27	21:16	19:48	18:22	62	14:36 (24)	16:09			15:42
20	05:00	06:06	07:15	08:23		11:31 (29)	08:36			09:26
	22:25	21:13	19:45	18:20	67	14:37 (24)	16:08			15:43
21	05:01	06:09	07:17	08:25		11:30 (29)	08:39			09:26
	22:24	21:10	19:42	18:17	72	14:39 (24)	16:06			15:43
22	05:03	06:11	07:19	08:27		11:29 (29)	08:41			09:27
	22:22	21:08	19:39	18:14	75	14:40 (24)	16:04			15:43
23	05:05	06:13	07:22	08:30		11:29 (29)	08:43			09:27
	22:20	21:05	19:36	18:12	78	14:41 (24)	16:02			15:44
24	05:07	06:15	07:24	08:32		11:29 (29)	08:45			09:28
	22:18	21:02	19:33	18:09	78	14:41 (24)	16:01			15:45
25	05:09	06:17	07:26	07:35		10:29 (29)	08:47			09:28
	22:16	20:59	19:30	17:07	81	13:42 (24)	15:59			15:45
26	05:11	06:20	07:28	07:37		10:29 (29)	08:50			09:28
	22:14	20:57	19:27	17:04	82	13:43 (24)	15:58			15:46
27	05:13	06:22	07:30	07:39		10:29 (29)	08:52			09:28
	22:12	20:54	19:25	17:01	81	13:42 (24)	15:56			15:47
28	05:16	06:24	07:33	07:42		10:29 (29)	08:54			09:28
	22:10	20:51	19:22	16:59	87	14:45 (25)	15:55			15:48
29	05:18	06:26	07:35	07:44		10:29 (29)	08:56			09:28
	22:07	20:48	19:19	16:56	95	14:48 (25)	15:54			15:49
30	05:20	06:29	07:37	07:47		10:30 (29)	08:58			09:28
	22:05	20:45	19:16	16:54	99	14:51 (25)	15:52			15:50
31	05:22	06:31		07:49		10:30 (29)				09:28
	22:03	20:42		16:51	100	14:52 (25)				15:51
Potential sun hours	546	478	386	319			236			199
Total, worst case					1520			1074		
Sun reduction					0,50			0,50		
Oper. time red.					0,80			0,80		
Wind dir. red.					0,65			0,62		
Total reduction					0,26			0,25		
Total, real					395			264		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** D - Buevegen 1805 (4)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March		April	May	June
1	09:28		08:46		11:39 (29)	07:35	09:25 (16)	07:07	05:44	04:40
	15:53		16:56	88	15:12 (25)	18:05	9 09:34 (16)	20:17	21:26	22:31
2	09:27		08:43		11:39 (29)	07:33		07:04	05:41	04:38
	15:54		16:58	88	15:13 (25)	18:07		20:19	21:28	22:32
3	09:27		08:41		11:40 (29)	07:30		07:01	05:39	04:37
	15:55		17:01	85	15:12 (25)	18:09		20:21	21:31	22:34
4	09:27		08:39		11:39 (29)	07:27		06:58	05:36	04:36
	15:57		17:03	83	15:11 (25)	18:12		20:24	21:33	22:35
5	09:26	12:20 (21)	08:37		11:39 (29)	07:24		06:55	05:34	04:35
	15:58	1 12:21 (21)	17:06	80	15:09 (25)	18:14		20:26	21:35	22:37
6	09:25	12:19 (21)	08:34		11:40 (29)	07:21		06:52	05:31	04:34
	16:00	5 12:24 (21)	17:08	74	15:08 (25)	18:17		20:28	21:37	22:38
7	09:24	12:17 (21)	08:32		11:40 (29)	07:19		06:50	05:29	04:33
	16:02	11 12:28 (21)	17:11	62	14:11 (24)	18:19		20:30	21:40	22:39
8	09:24	12:17 (21)	08:30		11:41 (29)	07:16		06:47	05:26	04:32
	16:03	13 12:30 (21)	17:13	61	14:11 (24)	18:21		20:33	21:42	22:40
9	09:23	12:18 (21)	08:27		11:42 (29)	07:13		06:44	05:24	04:31
	16:05	16 12:34 (21)	17:16	57	14:10 (24)	18:24		20:35	21:44	22:42
10	09:22	11:06 (34)	08:25		11:42 (29)	07:10		06:41	05:22	04:30
	16:07	25 12:39 (21)	17:18	54	14:09 (24)	18:26		20:37	21:46	22:43
11	09:21	11:02 (34)	08:23		11:44 (29)	07:07		06:38	05:19	04:29
	16:09	31 12:41 (21)	17:21	48	14:08 (24)	18:28		20:40	21:49	22:44
12	09:20	11:01 (34)	08:20		11:45 (29)	07:04		06:35	05:17	04:29
	16:11	40 12:41 (21)	17:23	42	14:06 (24)	18:31		20:42	21:51	22:45
13	09:18	11:02 (34)	08:18		11:46 (29)	07:02		06:32	05:15	04:28
	16:13	42 12:42 (21)	17:26	32	14:02 (24)	18:33		20:44	21:53	22:46
14	09:17	11:02 (34)	08:15		11:49 (29)	06:59		06:30	05:13	04:28
	16:15	42 12:42 (21)	17:28	18	12:07 (29)	18:35		20:47	21:55	22:47
15	09:16	11:02 (34)	08:13		11:52 (29)	06:56		06:27	05:10	04:27
	16:17	43 12:42 (21)	17:31	12	12:04 (29)	18:38		20:49	21:58	22:47
16	09:15	11:02 (34)	08:10		09:29 (16)	06:53		06:24	05:08	04:27
	16:19	43 12:42 (21)	17:33	5	09:34 (16)	18:40		20:51	22:00	22:48
17	09:13	11:02 (34)	08:07		09:26 (16)	06:50		06:21	05:06	04:27
	16:21	47 12:42 (21)	17:36	11	09:37 (16)	18:42		20:53	22:02	22:49
18	09:12	11:03 (34)	08:05		09:25 (16)	06:47		06:19	05:04	04:27
	16:23	58 13:55 (24)	17:38	14	09:39 (16)	18:45		20:56	22:04	22:49
19	09:10	11:03 (34)	08:02		09:23 (16)	06:44		06:16	05:02	04:27
	16:25	69 13:59 (24)	17:40	17	09:40 (16)	18:47		20:58	22:06	22:50
20	09:08	11:04 (34)	08:00		09:22 (16)	06:41		06:13	05:00	04:27
	16:28	75 14:01 (24)	17:43	19	09:41 (16)	18:49		21:00	22:08	22:50
21	09:07	11:04 (34)	07:57		09:21 (16)	06:39		06:10	04:58	04:27
	16:30	79 14:03 (24)	17:45	20	09:41 (16)	18:51		21:03	22:10	22:50
22	09:05	11:05 (34)	07:54		09:20 (16)	06:36		06:08	04:56	04:27
	16:32	82 14:05 (24)	17:48	21	09:41 (16)	18:54		21:05	22:12	22:50
23	09:03	11:05 (34)	07:52		09:21 (16)	06:33		06:05	04:54	04:27
	16:34	83 14:05 (24)	17:50	21	09:42 (16)	18:56		21:07	22:14	22:51
24	09:02	11:06 (34)	07:49		09:21 (16)	06:30		06:02	04:52	04:27
	16:37	84 14:07 (24)	17:53	21	09:42 (16)	18:58		21:10	22:16	22:51
25	09:00	11:07 (34)	07:46		09:21 (16)	06:27		05:59	04:51	04:28
	16:39	82 14:52 (25)	17:55	20	09:41 (16)	19:01		21:12	22:18	22:51
26	08:58	11:09 (34)	07:44		09:21 (16)	06:24		05:57	04:49	04:28
	16:41	78 14:57 (25)	17:57	19	09:40 (16)	19:03		21:14	22:20	22:50
27	08:56	11:10 (34)	07:41		09:22 (16)	06:21		05:54	04:47	04:29
	16:44	86 15:12 (25)	18:00	17	09:39 (16)	19:05		21:17	22:22	22:50
28	08:54	11:13 (34)	07:38		09:23 (16)	06:18		05:52	04:46	04:30
	16:46	90 15:13 (25)	18:02	14	09:37 (16)	19:08		21:19	22:24	22:50
29	08:52	11:40 (29)				07:15		05:49	04:44	04:30
	16:49	88 15:14 (25)				20:10		21:21	22:25	22:50
30	08:50	11:39 (29)				07:12		05:46	04:42	04:31
	16:51	88 15:13 (25)				20:12		21:24	22:27	22:49
31	08:48	11:39 (29)				07:10			04:41	
	16:54	88 15:13 (25)				20:14			22:29	
Potential sun hours	221		260		365		432	521	547	
Total, worst case		1489		1103		9				
Sun reduction		0,50		0,50		0,50				
Oper. time red.		0,80		0,80		0,80				
Wind dir. red.		0,62		0,63		0,73				
Total reduction		0,25		0,25		0,29				
Total, real		371		276		3				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** D - Buevegen 1805 (4)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October			November			December		
1	04:32	05:24	06:33	07:39			07:51		11:12 (29)	09:00		10:44 (34)
	22:49	22:01	20:40	19:13			16:49	53	13:38 (24)	15:51	31	12:23 (21)
2	04:33	05:26	06:35	07:42			07:54		11:11 (29)	09:02		10:48 (34)
	22:48	21:58	20:37	19:10			16:46	58	13:40 (24)	15:50	27	12:23 (21)
3	04:34	05:28	06:37	07:44			07:56		11:11 (29)	09:03		12:01 (21)
	22:47	21:56	20:34	19:07			16:44	60	13:41 (24)	15:49	17	12:18 (21)
4	04:35	05:31	06:40	07:46			07:59		11:10 (29)	09:05		12:01 (21)
	22:47	21:54	20:31	19:04			16:41	63	13:41 (24)	15:48	13	12:14 (21)
5	04:36	05:33	06:42	07:48			08:01		11:10 (29)	09:07		12:02 (21)
	22:46	21:51	20:28	19:02			16:39	75	14:38 (25)	15:47	11	12:13 (21)
6	04:37	05:35	06:44	07:51			08:03		11:10 (29)	09:09		12:05 (21)
	22:45	21:49	20:25	18:59			16:37	79	14:40 (25)	15:46	5	12:10 (21)
7	04:39	05:37	06:46	07:53			08:06		11:09 (29)	09:10		12:07 (21)
	22:44	21:47	20:22	18:56			16:34	84	14:41 (25)	15:45	2	12:09 (21)
8	04:40	05:39	06:49	07:55			08:08		11:09 (29)	09:12		
	22:43	21:44	20:20	18:53			16:32	87	14:42 (25)	15:45		
9	04:41	05:42	06:51	07:57			08:11		11:10 (29)	09:13		
	22:42	21:42	20:17	18:50			16:30	87	14:43 (25)	15:44		
10	04:43	05:44	06:53	08:00			08:13		11:10 (29)	09:15		
	22:41	21:39	20:14	18:47			16:28	88	14:44 (25)	15:43		
11	04:44	05:46	06:55	08:02			08:15		11:10 (29)	09:16		
	22:39	21:37	20:11	18:45			16:25	88	14:44 (25)	15:43		
12	04:46	05:48	06:57	08:04		10:01 (16)	08:18		11:11 (29)	09:18		
	22:38	21:34	20:08	18:42	4	10:05 (16)	16:23	88	14:45 (25)	15:43		
13	04:47	05:51	07:00	08:07		09:58 (16)	08:20		11:11 (29)	09:19		
	22:37	21:32	20:05	18:39	11	10:09 (16)	16:21	87	14:45 (25)	15:42		
14	04:49	05:53	07:02	08:09		09:55 (16)	08:22		10:45 (34)	09:20		
	22:35	21:29	20:02	18:36	16	10:11 (16)	16:19	89	14:45 (25)	15:42		
15	04:51	05:55	07:04	08:11		09:54 (16)	08:25		10:42 (34)	09:21		
	22:34	21:26	19:59	18:33	18	10:12 (16)	16:17	87	14:45 (25)	15:42		
16	04:52	05:57	07:06	08:13		09:53 (16)	08:27		10:41 (34)	09:22		
	22:32	21:24	19:56	18:31	19	10:12 (16)	16:15	79	14:30 (25)	15:42		
17	04:54	06:00	07:08	08:16		09:53 (16)	08:30		10:41 (34)	09:23		
	22:30	21:21	19:54	18:28	20	10:13 (16)	16:13	81	14:25 (25)	15:42		
18	04:56	06:02	07:11	08:18		09:52 (16)	08:32		10:40 (34)	09:24		
	22:29	21:18	19:51	18:25	21	10:13 (16)	16:11	84	13:41 (24)	15:42		
19	04:58	06:04	07:13	08:20		09:52 (16)	08:34		10:40 (34)	09:25		
	22:27	21:16	19:48	18:22	21	10:13 (16)	16:09	83	13:40 (24)	15:42		
20	05:00	06:06	07:15	08:23		09:52 (16)	08:36		10:39 (34)	09:26		
	22:25	21:13	19:45	18:20	20	10:12 (16)	16:08	82	13:39 (24)	15:43		
21	05:01	06:08	07:17	08:25		09:52 (16)	08:39		10:39 (34)	09:26		
	22:24	21:10	19:42	18:17	20	10:12 (16)	16:06	79	13:38 (24)	15:43		
22	05:03	06:11	07:19	08:27		09:52 (16)	08:41		10:40 (34)	09:27		
	22:22	21:08	19:39	18:14	19	10:11 (16)	16:04	75	13:37 (24)	15:43		
23	05:05	06:13	07:22	08:30		09:54 (16)	08:43		10:39 (34)	09:27		
	22:20	21:05	19:36	18:12	16	10:10 (16)	16:02	69	13:35 (24)	15:44		
24	05:07	06:15	07:24	08:32		09:54 (16)	08:45		10:40 (34)	09:28		
	22:18	21:02	19:33	18:09	14	10:08 (16)	16:01	58	13:32 (24)	15:44		
25	05:09	06:17	07:26	07:35		08:57 (16)	08:47		10:40 (34)	09:28		
	22:16	20:59	19:30	17:06	10	09:07 (16)	15:59	46	12:20 (21)	15:45		
26	05:11	06:20	07:28	07:37			08:50		10:41 (34)	09:28		
	22:14	20:57	19:27	17:04			15:58	43	12:21 (21)	15:46		
27	05:13	06:22	07:30	07:39		11:20 (29)	08:52		10:41 (34)	09:28		
	22:12	20:54	19:25	17:01	14	11:34 (29)	15:56	43	12:21 (21)	15:47		
28	05:16	06:24	07:33	07:42		11:18 (29)	08:54		10:42 (34)	09:28		
	22:10	20:51	19:22	16:59	19	11:37 (29)	15:55	42	12:22 (21)	15:48		
29	05:18	06:26	07:35	07:44		11:15 (29)	08:56		10:42 (34)	09:28		
	22:07	20:48	19:19	16:56	34	13:32 (24)	15:54	42	12:22 (21)	15:49		
30	05:20	06:29	07:37	07:47		11:14 (29)	08:58		10:42 (34)	09:28		
	22:05	20:45	19:16	16:54	42	13:35 (24)	15:52	40	12:22 (21)	15:50		
31	05:22	06:31		07:49		11:13 (29)				09:28		
	22:03	20:42		16:51	50	13:38 (24)				15:51		
Potential sun hours	546	478	386	319			236			199		
Total, worst case					388			2119			106	
Sun reduction					0,50			0,50			0,50	
Oper. time red.					0,80			0,80			0,80	
Wind dir. red.					0,69			0,61			0,64	
Total reduction					0,27			0,25			0,25	
Total, real					106			519			27	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** E - Buevegen 1816 (5)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March	April	May	June
1	09:28		11:12 (34)	08:46		11:58 (29)	07:35	07:07	05:44	04:40
	15:53	2	11:14 (34)	16:56	87	15:21 (25)	18:05	20:17	21:26	22:30
2	09:27		11:12 (34)	08:43		11:59 (29)	07:33	07:04	05:41	04:38
	15:54	2	11:14 (34)	16:58	85	15:21 (25)	18:07	20:19	21:28	22:32
3	09:27		11:11 (34)	08:41		12:00 (29)	07:30	07:01	05:39	04:37
	15:55	4	12:42 (21)	17:01	84	15:21 (25)	18:09	20:21	21:31	22:34
4	09:27		11:11 (34)	08:39		11:59 (29)	07:27	06:58	05:36	04:36
	15:57	12	12:45 (21)	17:03	83	15:20 (25)	18:12	20:24	21:33	22:35
5	09:26		11:11 (34)	08:37		11:59 (29)	07:24	06:55	05:34	04:35
	15:58	18	12:46 (21)	17:06	81	15:19 (25)	18:14	20:26	21:35	22:37
6	09:25		11:11 (34)	08:34		12:00 (29)	07:21	06:52	05:31	04:34
	16:00	29	12:50 (21)	17:08	76	15:18 (25)	18:17	20:28	21:37	22:38
7	09:24		11:11 (34)	08:32		12:01 (29)	07:19	06:50	05:29	04:33
	16:02	35	12:50 (21)	17:11	67	15:15 (25)	18:19	20:30	21:40	22:39
8	09:24		11:12 (34)	08:30		12:02 (29)	07:16	06:47	05:26	04:32
	16:03	38	12:51 (21)	17:13	57	14:25 (24)	18:21	20:33	21:42	22:40
9	09:23		11:12 (34)	08:27		12:03 (29)	07:13	06:44	05:24	04:31
	16:05	40	12:52 (21)	17:16	54	14:24 (24)	18:24	20:35	21:44	22:42
10	09:22		11:11 (34)	08:25		12:03 (29)	07:10	06:41	05:22	04:30
	16:07	41	12:52 (21)	17:18	51	14:23 (24)	18:26	20:37	21:46	22:43
11	09:21		11:12 (34)	08:23		12:05 (29)	07:07	06:38	05:19	04:29
	16:09	42	12:53 (21)	17:21	45	14:22 (24)	18:28	20:40	21:49	22:44
12	09:20		11:12 (34)	08:20		12:07 (29)	07:04	06:35	05:17	04:29
	16:11	43	12:53 (21)	17:23	37	14:20 (24)	18:31	20:42	21:51	22:45
13	09:18		11:12 (34)	08:18		12:09 (29)	07:02	06:32	05:15	04:28
	16:13	44	12:54 (21)	17:26	26	14:17 (24)	18:33	20:44	21:53	22:46
14	09:17		11:12 (34)	08:15		09:39 (16)	06:59	06:30	05:13	04:28
	16:15	44	12:54 (21)	17:28	12	12:21 (29)	18:35	20:47	21:55	22:47
15	09:16		11:12 (34)	08:13		09:36 (16)	06:56	06:27	05:10	04:27
	16:17	51	12:54 (21)	17:31	11	09:47 (16)	18:38	20:49	21:58	22:47
16	09:15		11:13 (34)	08:10		09:33 (16)	06:53	06:24	05:08	04:27
	16:19	54	12:54 (21)	17:33	16	09:49 (16)	18:40	20:51	22:00	22:48
17	09:13		11:13 (34)	08:07		09:32 (16)	06:50	06:21	05:06	04:27
	16:21	58	12:54 (21)	17:36	17	09:49 (16)	18:42	20:53	22:02	22:49
18	09:12		11:14 (34)	08:05		09:32 (16)	06:47	06:19	05:04	04:27
	16:23	61	12:55 (21)	17:38	19	09:51 (16)	18:45	20:56	22:04	22:49
19	09:10		11:15 (34)	08:02		09:31 (16)	06:44	06:16	05:02	04:27
	16:25	63	12:55 (21)	17:40	20	09:51 (16)	18:47	20:58	22:06	22:50
20	09:08		11:15 (34)	08:00		09:30 (16)	06:41	06:13	05:00	04:27
	16:28	73	14:13 (24)	17:43	21	09:51 (16)	18:49	21:00	22:08	22:50
21	09:07		11:16 (34)	07:57		09:30 (16)	06:38	06:10	04:58	04:27
	16:30	76	14:15 (24)	17:45	21	09:51 (16)	18:51	21:03	22:10	22:50
22	09:05		11:16 (34)	07:54		09:30 (16)	06:36	06:08	04:56	04:27
	16:32	78	14:16 (24)	17:48	21	09:51 (16)	18:54	21:05	22:12	22:50
23	09:03		11:17 (34)	07:52		09:31 (16)	06:33	06:05	04:54	04:27
	16:34	79	14:18 (24)	17:50	20	09:51 (16)	18:56	21:07	22:14	22:51
24	09:02		11:18 (34)	07:49		09:31 (16)	06:30	06:02	04:52	04:27
	16:37	79	14:20 (24)	17:53	20	09:51 (16)	18:58	21:10	22:16	22:51
25	09:00		11:20 (34)	07:46		09:31 (16)	06:27	05:59	04:51	04:28
	16:39	73	14:21 (24)	17:55	18	09:49 (16)	19:01	21:12	22:18	22:51
26	08:58		11:23 (34)	07:44		09:32 (16)	06:24	05:57	04:49	04:28
	16:41	69	15:03 (25)	17:57	16	09:48 (16)	19:03	21:14	22:20	22:50
27	08:56		11:58 (29)	07:41		09:33 (16)	06:21	05:54	04:47	04:29
	16:44	66	15:04 (25)	18:00	13	09:46 (16)	19:05	21:17	22:22	22:50
28	08:54		11:58 (29)	07:38		09:36 (16)	06:18	05:52	04:46	04:30
	16:46	74	15:10 (25)	18:02	6	09:42 (16)	19:07	21:19	22:24	22:50
29	08:52		11:59 (29)				07:15	05:49	04:44	04:30
	16:49	82	15:17 (25)				20:10	21:21	22:25	22:50
30	08:50		11:58 (29)				07:12	05:46	04:42	04:31
	16:51	86	15:21 (25)				20:12	21:24	22:27	22:49
31	08:48		11:59 (29)				07:10		04:41	
	16:54	87	15:22 (25)				20:14		22:29	
Potential sun hours	221			260		365	432	521	547
Total, worst case		1603			1084				
Sun reduction		0,50			0,50				
Oper. time red.		0,80			0,80				
Wind dir. red.		0,63			0,62				
Total reduction		0,25			0,25				
Total, real		401			270				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** E - Buevegen 1816 (5)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October			November			December		
1	04:32	05:24	06:33	07:39			07:51		11:33 (29)	09:00		10:54 (34)
	22:49	22:01	20:40	19:13			16:49	50	13:53 (24)	15:51	43	12:35 (21)
2	04:33	05:26	06:35	07:42			07:54		11:32 (29)	09:02		10:55 (34)
	22:48	21:58	20:37	19:10			16:46	55	13:54 (24)	15:50	40	12:35 (21)
3	04:34	05:28	06:37	07:44			07:56		11:31 (29)	09:03		10:55 (34)
	22:47	21:56	20:34	19:07			16:44	59	13:55 (24)	15:49	40	12:35 (21)
4	04:35	05:31	06:40	07:46			07:59		11:30 (29)	09:05		10:56 (34)
	22:47	21:54	20:31	19:04			16:41	69	14:45 (25)	15:48	39	12:35 (21)
5	04:36	05:33	06:42	07:48			08:01		11:30 (29)	09:07		10:56 (34)
	22:46	21:51	20:28	19:02			16:39	76	14:48 (25)	15:47	35	12:36 (21)
6	04:37	05:35	06:44	07:51			08:03		11:30 (29)	09:09		10:57 (34)
	22:45	21:49	20:25	18:59			16:37	79	14:50 (25)	15:46	29	12:36 (21)
7	04:39	05:37	06:46	07:53			08:06		11:29 (29)	09:10		10:58 (34)
	22:44	21:47	20:22	18:56			16:34	83	14:50 (25)	15:45	21	12:34 (21)
8	04:40	05:39	06:49	07:55			08:08		11:29 (29)	09:12		10:59 (34)
	22:43	21:44	20:20	18:53			16:32	87	14:51 (25)	15:45	12	12:33 (21)
9	04:41	05:42	06:51	07:57			08:11		11:30 (29)	09:13		11:00 (34)
	22:42	21:42	20:17	18:50			16:30	86	14:52 (25)	15:44	5	12:32 (21)
10	04:43	05:44	06:53	08:00			08:13		11:30 (29)	09:15		11:01 (34)
	22:41	21:39	20:14	18:47			16:28	88	14:53 (25)	15:43	2	11:03 (34)
11	04:44	05:46	06:55	08:02			08:15		11:29 (29)	09:16		11:02 (34)
	22:39	21:37	20:11	18:45			16:25	87	14:52 (25)	15:43	2	11:04 (34)
12	04:46	05:48	06:57	08:04			08:18		11:30 (29)	09:18		
	22:38	21:34	20:08	18:42			16:23	87	14:53 (25)	15:43		
13	04:47	05:51	07:00	08:07			08:20		11:31 (29)	09:19		
	22:37	21:31	20:05	18:39			16:21	81	14:49 (25)	15:42		
14	04:49	05:53	07:02	08:09		10:08 (16)	08:22		11:30 (29)	09:20		
	22:35	21:29	20:02	18:36	9	10:17 (16)	16:19	73	14:41 (25)	15:42		
15	04:51	05:55	07:04	08:11		10:06 (16)	08:25		11:31 (29)	09:21		
	22:34	21:26	19:59	18:33	14	10:20 (16)	16:17	67	14:37 (25)	15:42		
16	04:52	05:57	07:06	08:13		10:04 (16)	08:27		10:56 (34)	09:22		
	22:32	21:24	19:56	18:31	16	10:20 (16)	16:15	69	14:36 (25)	15:42		
17	04:54	06:00	07:08	08:16		10:03 (16)	08:30		10:54 (34)	09:23		
	22:30	21:21	19:54	18:28	19	10:22 (16)	16:13	73	13:55 (24)	15:42		
18	04:56	06:02	07:11	08:18		10:02 (16)	08:32		10:52 (34)	09:24		
	22:29	21:18	19:51	18:25	20	10:22 (16)	16:11	79	13:54 (24)	15:42		
19	04:58	06:04	07:13	08:20		10:02 (16)	08:34		10:52 (34)	09:25		
	22:27	21:16	19:48	18:22	21	10:23 (16)	16:09	79	13:53 (24)	15:42		
20	05:00	06:06	07:15	08:23		10:01 (16)	08:36		10:51 (34)	09:26		
	22:25	21:13	19:45	18:20	21	10:22 (16)	16:08	78	13:51 (24)	15:43		
21	05:01	06:08	07:17	08:25		10:01 (16)	08:39		10:51 (34)	09:26		
	22:24	21:10	19:42	18:17	21	10:22 (16)	16:06	76	13:50 (24)	15:43		
22	05:03	06:11	07:19	08:27		10:01 (16)	08:41		10:51 (34)	09:27		
	22:22	21:08	19:39	18:14	21	10:22 (16)	16:04	73	13:49 (24)	15:43		
23	05:05	06:13	07:22	08:30		10:01 (16)	08:43		10:51 (34)	09:27		
	22:20	21:05	19:36	18:12	20	10:21 (16)	16:02	63	12:31 (21)	15:44		
24	05:07	06:15	07:24	08:32		10:01 (16)	08:45		10:51 (34)	09:28		
	22:18	21:02	19:33	18:09	19	10:20 (16)	16:01	61	12:32 (21)	15:44		
25	05:09	06:17	07:26	07:35		09:02 (16)	08:47		10:51 (34)	09:28		
	22:16	20:59	19:30	17:06	17	09:19 (16)	15:59	59	12:32 (21)	15:45		
26	05:11	06:20	07:28	07:37		09:03 (16)	08:50		10:52 (34)	09:28		
	22:14	20:57	19:27	17:04	14	09:17 (16)	15:58	55	12:33 (21)	15:46		
27	05:13	06:22	07:30	07:39		09:06 (16)	08:52		10:52 (34)	09:28		
	22:12	20:54	19:25	17:01	10	09:16 (16)	15:56	51	12:33 (21)	15:47		
28	05:16	06:24	07:33	07:42		11:42 (29)	08:54		10:53 (34)	09:28		
	22:10	20:51	19:22	16:59	10	11:52 (29)	15:55	43	12:34 (21)	15:48		
29	05:18	06:26	07:35	07:44		11:38 (29)	08:56		10:53 (34)	09:28		
	22:07	20:48	19:19	16:56	28	13:47 (24)	15:54	43	12:34 (21)	15:49		
30	05:20	06:29	07:37	07:47		11:36 (29)	08:58		10:53 (34)	09:28		
	22:05	20:45	19:16	16:54	39	13:50 (24)	15:52	43	12:34 (21)	15:50		
31	05:22	06:31		07:49		11:35 (29)				09:28		
	22:03	20:42		16:51	45	13:52 (24)				15:51		
Potential sun hours	546	478	386	319			236			199		
Total, worst case					364			2072			268	
Sun reduction					0,50			0,50			0,50	
Oper. time red.					0,80			0,80			0,80	
Wind dir. red.					0,69			0,61			0,65	
Total reduction					0,27			0,24			0,26	
Total, real					100			505			70	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** F - Buevegen 1818 (6)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March	April	May	June
1	09:28		11:23 (34)	08:46		12:23 (29)	07:35	07:07	05:44	04:40
	15:53	17	11:40 (34)	16:56	82	15:30 (25)	18:05	20:17	21:26	22:30
2	09:27		11:23 (34)	08:43		12:24 (29)	07:33	07:04	05:41	04:38
	15:54	17	11:40 (34)	16:58	86	15:34 (25)	18:07	20:19	21:28	22:32
3	09:27		11:23 (34)	08:41		12:25 (29)	07:30	07:01	05:39	04:37
	15:55	18	11:41 (34)	17:01	84	15:34 (25)	18:09	20:21	21:31	22:34
4	09:26		11:23 (34)	08:39		12:25 (29)	07:27	06:58	05:36	04:36
	15:57	23	12:52 (21)	17:03	85	15:34 (25)	18:12	20:24	21:33	22:35
5	09:26		11:23 (34)	08:37		12:25 (29)	07:24	06:55	05:34	04:35
	15:58	25	12:53 (21)	17:06	82	15:33 (25)	18:14	20:26	21:35	22:37
6	09:25		11:24 (34)	08:34		12:26 (29)	07:21	06:52	05:31	04:34
	16:00	31	13:06 (21)	17:08	79	15:33 (25)	18:17	20:28	21:37	22:38
7	09:24		11:24 (34)	08:32		12:26 (29)	07:19	06:50	05:29	04:33
	16:02	34	13:07 (21)	17:11	74	15:31 (25)	18:19	20:30	21:40	22:39
8	09:24		11:24 (34)	08:30		12:28 (29)	07:16	06:47	05:26	04:32
	16:03	41	13:07 (21)	17:13	68	15:30 (25)	18:21	20:33	21:42	22:40
9	09:23		11:24 (34)	08:27		12:28 (29)	07:13	06:44	05:24	04:31
	16:05	42	13:07 (21)	17:16	60	15:26 (25)	18:24	20:35	21:44	22:42
10	09:22		11:25 (34)	08:25		12:29 (29)	07:10	06:41	05:22	04:30
	16:07	42	13:08 (21)	17:18	51	14:44 (24)	18:26	20:37	21:46	22:43
11	09:21		11:25 (34)	08:23		12:32 (29)	07:07	06:38	05:19	04:29
	16:09	43	13:09 (21)	17:21	44	14:43 (24)	18:28	20:40	21:49	22:44
12	09:20		11:25 (34)	08:20		09:50 (16)	07:04	06:35	05:17	04:29
	16:11	44	13:09 (21)	17:23	43	14:42 (24)	18:31	20:42	21:51	22:45
13	09:18		11:26 (34)	08:18		09:46 (16)	07:01	06:32	05:15	04:28
	16:13	44	13:10 (21)	17:26	41	14:40 (24)	18:33	20:44	21:53	22:46
14	09:17		11:26 (34)	08:15		09:45 (16)	06:59	06:30	05:13	04:28
	16:15	54	13:10 (21)	17:28	26	14:38 (24)	18:35	20:47	21:55	22:47
15	09:16		11:26 (34)	08:13		09:43 (16)	06:56	06:27	05:10	04:27
	16:17	57	13:10 (21)	17:31	18	10:01 (16)	18:38	20:49	21:58	22:47
16	09:15		11:27 (34)	08:10		09:42 (16)	06:53	06:24	05:08	04:27
	16:19	60	13:10 (21)	17:33	20	10:02 (16)	18:40	20:51	22:00	22:48
17	09:13		11:27 (34)	08:07		09:41 (16)	06:50	06:21	05:06	04:27
	16:21	63	13:10 (21)	17:35	21	10:02 (16)	18:42	20:53	22:02	22:49
18	09:12		11:28 (34)	08:05		09:41 (16)	06:47	06:19	05:04	04:27
	16:23	64	13:11 (21)	17:38	22	10:03 (16)	18:45	20:56	22:04	22:49
19	09:10		11:29 (34)	08:02		09:41 (16)	06:44	06:16	05:02	04:27
	16:25	63	13:11 (21)	17:40	22	10:03 (16)	18:47	20:58	22:06	22:50
20	09:08		11:30 (34)	08:00		09:40 (16)	06:41	06:13	05:00	04:27
	16:28	63	13:11 (21)	17:43	23	10:03 (16)	18:49	21:00	22:08	22:50
21	09:07		11:31 (34)	07:57		09:40 (16)	06:38	06:10	04:58	04:27
	16:30	62	13:10 (21)	17:45	22	10:02 (16)	18:51	21:03	22:10	22:50
22	09:05		11:31 (34)	07:54		09:40 (16)	06:36	06:08	04:56	04:27
	16:32	60	13:09 (21)	17:48	22	10:02 (16)	18:54	21:05	22:12	22:50
23	09:03		11:33 (34)	07:52		09:42 (16)	06:33	06:05	04:54	04:27
	16:34	66	14:33 (24)	17:50	20	10:02 (16)	18:56	21:07	22:14	22:50
24	09:02		11:35 (34)	07:49		09:42 (16)	06:30	06:02	04:52	04:27
	16:37	67	14:36 (24)	17:53	19	10:01 (16)	18:58	21:10	22:16	22:51
25	09:00		11:39 (34)	07:46		09:43 (16)	06:27	05:59	04:51	04:28
	16:39	58	14:38 (24)	17:55	16	09:59 (16)	19:01	21:12	22:18	22:50
26	08:58		12:24 (29)	07:44		09:45 (16)	06:24	05:57	04:49	04:28
	16:41	55	14:40 (24)	17:57	12	09:57 (16)	19:03	21:14	22:20	22:50
27	08:56		12:23 (29)	07:41		09:48 (16)	06:21	05:54	04:47	04:29
	16:44	57	14:40 (24)	18:00	5	09:53 (16)	19:05	21:17	22:22	22:50
28	08:54		12:23 (29)	07:38			06:18	05:52	04:46	04:30
	16:46	61	15:15 (25)	18:02			19:07	21:19	22:24	22:50
29	08:52		12:24 (29)				07:15	05:49	04:44	04:30
	16:49	67	15:19 (25)				20:10	21:21	22:25	22:50
30	08:50		12:23 (29)				07:12	05:46	04:42	04:31
	16:51	74	15:23 (25)				20:12	21:24	22:27	22:49
31	08:48		12:24 (29)				07:10		04:41	
	16:53	77	15:26 (25)				20:14		22:29	
Potential sun hours	221			260		365	432	521	547
Total, worst case		1549			1147				
Sun reduction		0,50			0,50				
Oper. time red.		0,80			0,80				
Wind dir. red.		0,62			0,62				
Total reduction		0,25			0,25				
Total, real		386			283				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** F - Buevegen 1818 (6)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October		November		December		
1	04:32	05:24	06:33	07:39		07:51		11:59 (29)	09:00	11:07 (34)
	22:49	22:01	20:40	19:13		16:49	51	14:13 (24)	15:51	43 12:51 (21)
2	04:33	05:26	06:35	07:42		07:54		11:58 (29)	09:02	11:08 (34)
	22:48	21:58	20:37	19:10		16:46	61	14:57 (25)	15:50	42 12:51 (21)
3	04:34	05:28	06:37	07:44		07:56		11:57 (29)	09:03	11:08 (34)
	22:47	21:56	20:34	19:07		16:44	71	15:00 (25)	15:49	42 12:51 (21)
4	04:35	05:31	06:40	07:46		07:59		11:56 (29)	09:05	11:09 (34)
	22:47	21:54	20:31	19:04		16:41	76	15:01 (25)	15:48	41 12:52 (21)
5	04:36	05:33	06:42	07:48		08:01		11:55 (29)	09:07	11:09 (34)
	22:46	21:51	20:28	19:02		16:39	80	15:02 (25)	15:47	35 12:52 (21)
6	04:37	05:35	06:44	07:51		08:03		11:55 (29)	09:09	11:10 (34)
	22:45	21:49	20:25	18:59		16:37	82	15:03 (25)	15:46	31 12:52 (21)
7	04:38	05:37	06:46	07:53		08:06		11:54 (29)	09:10	11:11 (34)
	22:44	21:47	20:22	18:56		16:34	84	15:03 (25)	15:45	24 12:40 (21)
8	04:40	05:39	06:49	07:55		08:08		11:54 (29)	09:12	11:11 (34)
	22:43	21:44	20:20	18:53		16:32	87	15:04 (25)	15:45	24 12:41 (21)
9	04:41	05:42	06:51	07:57		08:11		11:55 (29)	09:13	11:12 (34)
	22:42	21:42	20:17	18:50		16:30	87	15:05 (25)	15:44	20 12:37 (21)
10	04:43	05:44	06:53	08:00		08:13		11:55 (29)	09:15	11:12 (34)
	22:40	21:39	20:14	18:47		16:28	81	15:01 (25)	15:43	17 11:29 (34)
11	04:44	05:46	06:55	08:02		08:15		11:54 (29)	09:16	11:14 (34)
	22:39	21:37	20:11	18:45		16:25	78	14:57 (25)	15:43	16 11:30 (34)
12	04:46	05:48	06:57	08:04		08:18		11:55 (29)	09:18	11:14 (34)
	22:38	21:34	20:08	18:42		16:23	74	14:55 (25)	15:43	15 11:29 (34)
13	04:47	05:51	07:00	08:07		08:20		11:55 (29)	09:19	11:15 (34)
	22:37	21:31	20:05	18:39		16:21	68	14:51 (25)	15:42	15 11:30 (34)
14	04:49	05:53	07:02	08:09		08:22		11:55 (29)	09:20	11:16 (34)
	22:35	21:29	20:02	18:36		16:19	62	14:47 (25)	15:42	14 11:30 (34)
15	04:51	05:55	07:04	08:11	10:19 (16)	08:25		11:56 (29)	09:21	11:16 (34)
	22:34	21:26	19:59	18:33	8 10:27 (16)	16:17	57	14:13 (24)	15:42	14 11:30 (34)
16	04:52	05:57	07:06	08:13	10:16 (16)	08:27		11:57 (29)	09:22	11:17 (34)
	22:32	21:24	19:56	18:31	14 10:30 (16)	16:15	54	14:12 (24)	15:42	12 11:29 (34)
17	04:54	06:00	07:08	08:16	10:15 (16)	08:29		11:12 (34)	09:23	11:17 (34)
	22:30	21:21	19:54	18:28	17 10:32 (16)	16:13	58	14:11 (24)	15:42	12 11:29 (34)
18	04:56	06:02	07:11	08:18	10:13 (16)	08:32		11:09 (34)	09:24	11:18 (34)
	22:29	21:18	19:51	18:25	19 10:32 (16)	16:11	67	14:10 (24)	15:42	11 11:29 (34)
19	04:58	06:04	07:13	08:20	10:12 (16)	08:34		11:08 (34)	09:25	11:19 (34)
	22:27	21:16	19:48	18:22	21 10:33 (16)	16:09	66	14:08 (24)	15:42	11 11:30 (34)
20	05:00	06:06	07:15	08:23	10:11 (16)	08:36		11:06 (34)	09:26	11:20 (34)
	22:25	21:13	19:45	18:20	22 10:33 (16)	16:08	60	12:44 (21)	15:43	10 11:30 (34)
21	05:01	06:08	07:17	08:25	10:11 (16)	08:39		11:06 (34)	09:26	11:20 (34)
	22:24	21:10	19:42	18:17	23 10:34 (16)	16:06	62	12:45 (21)	15:43	10 11:30 (34)
22	05:03	06:11	07:19	08:27	10:10 (16)	08:41		11:06 (34)	09:27	11:21 (34)
	22:22	21:08	19:39	18:14	23 10:33 (16)	16:04	63	12:47 (21)	15:43	10 11:31 (34)
23	05:05	06:13	07:22	08:30	10:11 (16)	08:43		11:05 (34)	09:27	11:21 (34)
	22:20	21:05	19:36	18:12	22 10:33 (16)	16:02	63	12:47 (21)	15:44	10 11:31 (34)
24	05:07	06:15	07:24	08:32	10:10 (16)	08:45		11:05 (34)	09:28	11:22 (34)
	22:18	21:02	19:33	18:09	22 10:32 (16)	16:01	64	12:48 (21)	15:44	10 11:32 (34)
25	05:09	06:17	07:26	07:35	09:11 (16)	08:47		11:05 (34)	09:28	11:22 (34)
	22:16	20:59	19:30	17:06	21 09:32 (16)	15:59	63	12:48 (21)	15:45	11 11:33 (34)
26	05:11	06:20	07:28	07:37	09:11 (16)	08:50		11:06 (34)	09:28	11:22 (34)
	22:14	20:56	19:27	17:04	20 09:31 (16)	15:58	60	12:49 (21)	15:46	12 11:34 (34)
27	05:13	06:22	07:30	07:39	09:13 (16)	08:52		11:05 (34)	09:28	11:23 (34)
	22:12	20:54	19:25	17:01	17 09:30 (16)	15:56	58	12:49 (21)	15:47	11 11:34 (34)
28	05:16	06:24	07:33	07:42	09:14 (16)	08:54		11:06 (34)	09:28	11:23 (34)
	22:10	20:51	19:22	16:59	28 14:08 (24)	15:55	53	12:50 (21)	15:48	13 11:36 (34)
29	05:18	06:26	07:35	07:44	09:16 (16)	08:56		11:06 (34)	09:28	11:22 (34)
	22:07	20:48	19:19	16:56	42 14:10 (24)	15:54	44	12:50 (21)	15:49	14 11:36 (34)
30	05:20	06:29	07:37	07:47	12:02 (29)	08:58		11:06 (34)	09:28	11:23 (34)
	22:05	20:45	19:16	16:54	40 14:11 (24)	15:52	43	12:50 (21)	15:50	15 11:38 (34)
31	05:22	06:31		07:49	12:01 (29)				09:28	11:23 (34)
	22:03	20:42		16:51	46 14:13 (24)				15:51	15 11:38 (34)
Potential sun hours	546	478	386	319		236			199	
Total, worst case					405		1977			580
Sun reduction					0,50		0,50			0,50
Oper. time red.					0,80		0,80			0,80
Wind dir. red.					0,68		0,61			0,65
Total reduction					0,27		0,24			0,26
Total, real					110		478			151

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** G - Buevegen 1786 (7)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March	April	May	June		
1	09:28			08:46		11:27 (29)	07:35	07:07	05:44	04:40		
	15:53			16:56	70	14:51 (25)	18:05	20:17	21:26	22:31		
2	09:27		12:04 (21)	08:43		11:27 (29)	07:33	07:04	05:41	04:38		
	15:54	1	12:05 (21)	16:58	60	13:50 (24)	18:07	20:19	21:28	22:32		
3	09:27		12:04 (21)	08:41		11:28 (29)	07:30	07:01	05:39	04:37		
	15:55	4	12:08 (21)	17:01	58	13:50 (24)	18:09	20:21	21:31	22:34		
4	09:27		12:04 (21)	08:39		11:28 (29)	07:27	06:58	05:36	04:36		
	15:57	7	12:11 (21)	17:03	54	13:48 (24)	18:12	20:24	21:33	22:35		
5	09:26		12:04 (21)	08:37		11:28 (29)	07:24	06:55	05:34	04:35		
	15:58	17	12:21 (21)	17:06	52	13:47 (24)	18:14	20:26	21:35	22:37		
6	09:25		12:04 (21)	08:34		11:29 (29)	07:21	06:52	05:31	04:34		
	16:00	17	12:21 (21)	17:08	49	13:47 (24)	18:17	20:28	21:37	22:38		
7	09:24		12:05 (21)	08:32		11:29 (29)	07:19	06:50	05:29	04:33		
	16:02	19	12:26 (21)	17:11	43	13:44 (24)	18:19	20:30	21:40	22:39		
8	09:24		12:05 (21)	08:30		11:31 (29)	07:16	06:47	05:26	04:32		
	16:03	22	12:27 (21)	17:13	35	13:42 (24)	18:21	20:33	21:42	22:40		
9	09:23		12:06 (21)	08:27		11:32 (29)	07:13	06:44	05:24	04:31		
	16:05	22	12:28 (21)	17:16	22	11:54 (29)	18:24	20:35	21:44	22:42		
10	09:22		12:06 (21)	08:25		11:34 (29)	07:10	06:41	05:22	04:30		
	16:07	22	12:28 (21)	17:18	18	11:52 (29)	18:26	20:37	21:46	22:43		
11	09:21		12:07 (21)	08:23		11:37 (29)	07:07	06:38	05:19	04:29		
	16:09	22	12:29 (21)	17:21	13	11:50 (29)	18:28	20:40	21:49	22:44		
12	09:20		12:07 (21)	08:20		11:42 (29)	07:04	06:35	05:17	04:29		
	16:11	28	13:33 (24)	17:23	2	11:44 (29)	18:31	20:42	21:51	22:45		
13	09:18		12:08 (21)	08:18			07:02	06:32	05:15	04:28		06:00 (77)
	16:13	33	13:37 (24)	17:26			18:33	20:44	21:53	22:46	4	06:04 (77)
14	09:17		12:08 (21)	08:15		09:31 (16)	06:59	06:30	05:13	04:28		06:00 (77)
	16:15	36	13:38 (24)	17:28	3	09:34 (16)	18:35	20:47	21:55	22:47	4	06:04 (77)
15	09:16		11:34 (29)	08:13		09:27 (16)	06:56	06:27	05:10	04:27		06:00 (77)
	16:17	47	13:40 (24)	17:31	10	09:37 (16)	18:38	20:49	21:58	22:47	5	06:05 (77)
16	09:15		11:31 (29)	08:10		09:25 (16)	06:53	06:24	05:08	04:27		06:00 (77)
	16:19	55	13:41 (24)	17:33	14	09:39 (16)	18:40	20:51	22:00	22:48	6	06:06 (77)
17	09:13		11:31 (29)	08:07		09:23 (16)	06:50	06:21	05:06	04:27		06:00 (77)
	16:21	58	13:43 (24)	17:36	17	09:40 (16)	18:42	20:53	22:02	22:49	7	06:07 (77)
18	09:12		11:30 (29)	08:05		09:23 (16)	06:47	06:19	05:04	04:27		06:00 (77)
	16:23	72	14:53 (25)	17:38	18	09:41 (16)	18:45	20:56	22:04	22:49	7	06:07 (77)
19	09:10		11:29 (29)	08:02		09:23 (16)	06:44	06:16	05:02	04:27		06:00 (77)
	16:25	85	14:53 (25)	17:40	18	09:41 (16)	18:47	20:58	22:06	22:50	8	06:08 (77)
20	09:09		11:28 (29)	08:00		09:22 (16)	06:41	06:13	05:00	04:27		06:00 (77)
	16:28	88	14:54 (25)	17:43	19	09:41 (16)	18:49	21:00	22:08	22:50	8	06:08 (77)
21	09:07		11:28 (29)	07:57		09:22 (16)	06:39	06:10	04:58	04:27		06:00 (77)
	16:30	88	14:54 (25)	17:45	19	09:41 (16)	18:51	21:03	22:10	22:50	8	06:08 (77)
22	09:05		11:27 (29)	07:54		09:22 (16)	06:36	06:08	04:56	04:27		06:00 (77)
	16:32	89	14:55 (25)	17:48	19	09:41 (16)	18:54	21:05	22:12	22:50	8	06:08 (77)
23	09:03		11:26 (29)	07:52		09:23 (16)	06:33	06:05	04:54	04:27		06:01 (77)
	16:34	87	14:54 (25)	17:50	18	09:41 (16)	18:56	21:07	22:14	22:51	8	06:09 (77)
24	09:02		11:26 (29)	07:49		09:23 (16)	06:30	06:02	04:52	04:27		06:01 (77)
	16:37	81	14:55 (25)	17:53	17	09:40 (16)	18:58	21:10	22:16	22:51	8	06:09 (77)
25	09:00		11:26 (29)	07:46		09:24 (16)	06:27	05:59	04:51	04:28		06:01 (77)
	16:39	82	14:55 (25)	17:55	14	09:38 (16)	19:01	21:12	22:18	22:51	7	06:08 (77)
26	08:58		11:26 (29)	07:44		09:25 (16)	06:24	05:57	04:49	04:28		06:02 (77)
	16:41	83	14:55 (25)	17:57	11	09:36 (16)	19:03	21:14	22:20	22:50	7	06:09 (77)
27	08:56		11:25 (29)	07:41		09:29 (16)	06:21	05:54	04:47	04:29		06:02 (77)
	16:44	83	14:54 (25)	18:00	3	09:32 (16)	19:05	21:17	22:22	22:50	6	06:08 (77)
28	08:54		11:26 (29)	07:38			06:18	05:52	04:46	04:30		06:03 (77)
	16:46	82	14:54 (25)	18:02			19:08	21:19	22:24	22:50	5	06:08 (77)
29	08:52		11:26 (29)				07:15	05:49	04:44	04:30		06:03 (77)
	16:49	80	14:54 (25)				20:10	21:21	22:25	22:50	5	06:08 (77)
30	08:50		11:26 (29)				07:13	05:46	04:42	04:31		06:04 (77)
	16:51	79	14:53 (25)				20:12	21:24	22:27	22:49	1	06:05 (77)
31	08:48		11:26 (29)				07:10		04:41			
	16:54	76	14:52 (25)				20:14		22:29			
Potential sun hours	221			260			365	432	521	547		
Total, worst case		1565			676						112	
Sun reduction		0,50			0,50						0,50	
Oper. time red.		0,80			0,80						0,80	
Wind dir. red.		0,61			0,66						0,56	
Total reduction		0,24			0,26						0,22	
Total, real		383			178						25	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** G - Buevegen 1786 (7)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October		November		December		
1	04:32	05:24	06:33	07:39		07:51		11:03 (29)	09:00	11:49 (21)
	22:49	22:01	20:40	19:13		16:49	19	11:22 (29)	15:51	22 12:11 (21)
2	04:33	05:26	06:35	07:42		07:54		11:01 (29)	09:02	11:49 (21)
	22:48	21:59	20:37	19:10		16:46	23	11:24 (29)	15:50	22 12:11 (21)
3	04:34	05:28	06:37	07:44		07:56		11:01 (29)	09:03	11:49 (21)
	22:47	21:56	20:34	19:07		16:44	36	13:12 (24)	15:49	22 12:11 (21)
4	04:35	05:31	06:40	07:46		07:59		10:59 (29)	09:05	11:50 (21)
	22:47	21:54	20:31	19:04		16:41	43	13:14 (24)	15:48	21 12:11 (21)
5	04:36	05:33	06:42	07:48		08:01		10:59 (29)	09:07	11:50 (21)
	22:46	21:51	20:28	19:02		16:39	48	13:16 (24)	15:47	21 12:11 (21)
6	04:37	05:35	06:44	07:51		08:03		10:58 (29)	09:09	11:51 (21)
	22:45	21:49	20:25	18:59		16:37	53	13:18 (24)	15:46	16 12:07 (21)
7	04:39	05:37	06:46	07:53		08:06		10:57 (29)	09:10	11:51 (21)
	22:44	21:47	20:23	18:56		16:34	55	13:18 (24)	15:45	17 12:08 (21)
8	04:40	05:39	06:49	07:55		08:08		10:57 (29)	09:12	11:52 (21)
	22:43	21:44	20:20	18:53		16:32	58	13:19 (24)	15:45	8 12:00 (21)
9	04:41	05:42	06:51	07:57		08:11		10:57 (29)	09:13	11:53 (21)
	22:42	21:42	20:17	18:50		16:30	63	14:18 (25)	15:44	4 11:57 (21)
10	04:43	05:44	06:53	08:00		08:13		10:58 (29)	09:15	11:53 (21)
	22:41	21:39	20:14	18:47		16:28	71	14:22 (25)	15:43	1 11:54 (21)
11	04:44	05:46	06:55	08:02		08:15		10:57 (29)	09:16	
	22:39	21:37	20:11	18:45		16:25	76	14:23 (25)	15:43	
12	04:46	05:48	06:57	08:04		08:18		10:57 (29)	09:18	
	22:38	21:34	20:08	18:42		16:23	80	14:25 (25)	15:43	
13	04:47	05:51	07:00	08:07		08:20		10:58 (29)	09:19	
	22:37	21:32	20:05	18:39		16:21	81	14:26 (25)	15:42	
14	04:49	05:53	07:02	08:09		08:22		10:58 (29)	09:20	
	22:35	21:29	20:02	18:36		16:19	82	14:26 (25)	15:42	
15	04:51	05:55	07:04	08:11	10:00 (16)	08:25		10:58 (29)	09:21	
	22:34	21:26	19:59	18:33	7 10:07 (16)	16:17	83	14:27 (25)	15:42	
16	04:52	05:57	07:06	08:13	09:57 (16)	08:27		10:59 (29)	09:22	
	22:32	21:24	19:56	18:31	12 10:09 (16)	16:15	83	14:28 (25)	15:42	
17	04:54	06:00	07:08	08:16	09:55 (16)	08:30		11:00 (29)	09:23	
	22:31	21:21	19:54	18:28	16 10:11 (16)	16:13	83	14:29 (25)	15:42	
18	04:56	06:02	07:11	08:18	09:54 (16)	08:32		11:00 (29)	09:24	
	22:29	21:18	19:51	18:25	17 10:11 (16)	16:11	81	14:29 (25)	15:42	
19	04:58	06:04	07:13	08:20	09:54 (16)	08:34		11:01 (29)	09:25	
	22:27	21:16	19:48	18:22	18 10:12 (16)	16:09	87	14:29 (25)	15:42	
20	05:00	06:06	07:15	08:23	09:53 (16)	08:36		11:01 (29)	09:26	
	22:25	21:13	19:45	18:20	19 10:12 (16)	16:08	89	14:29 (25)	15:43	
21	05:01	06:08	07:17	08:25	09:53 (16)	08:39		11:03 (29)	09:26	
	22:24	21:10	19:42	18:17	19 10:12 (16)	16:06	88	14:29 (25)	15:43	
22	05:03	06:11	07:19	08:27	09:52 (16)	08:41		11:04 (29)	09:27	
	22:22	21:08	19:39	18:14	20 10:12 (16)	16:04	88	14:30 (25)	15:43	
23	05:05	06:13	07:22	08:30	09:53 (16)	08:43		11:05 (29)	09:27	
	22:20	21:05	19:36	18:12	19 10:12 (16)	16:02	84	14:29 (25)	15:44	
24	05:07	06:15	07:24	08:32	09:53 (16)	08:45		11:07 (29)	09:28	
	22:18	21:02	19:33	18:09	17 10:10 (16)	16:01	72	14:30 (25)	15:44	
25	05:09	06:17	07:26	07:35	08:54 (16)	08:47		11:08 (29)	09:28	
	22:16	20:59	19:30	17:06	16 09:10 (16)	15:59	58	13:20 (24)	15:45	
26	05:11	06:20	07:28	07:37	08:56 (16)	08:50		11:10 (29)	09:28	
	22:14	20:57	19:27	17:04	13 09:09 (16)	15:58	54	13:20 (24)	15:46	
27	05:13	06:22	07:30	07:39	08:57 (16)	08:52		11:12 (29)	09:28	
	22:12	20:54	19:25	17:01	9 09:06 (16)	15:56	49	13:19 (24)	15:47	
28	05:16	06:24	07:33	07:42		08:54		11:48 (21)	09:28	
	22:10	20:51	19:22	16:59		15:55	35	13:18 (24)	15:48	
29	05:18	06:26	07:35	07:44		08:56		11:48 (21)	09:28	
	22:07	20:48	19:19	16:56		15:54	33	13:17 (24)	15:49	
30	05:20	06:29	07:37	07:47	11:09 (29)	08:58		11:48 (21)	09:28	
	22:05	20:45	19:16	16:54	7 11:16 (29)	15:52	30	13:15 (24)	15:50	
31	05:22	06:31		07:49	11:06 (29)				09:28	
	22:03	20:42		16:51	14 11:20 (29)				15:51	
Potential sun hours	546	478	386	319		236			199	
Total, worst case					223		1885			154
Sun reduction					0,50		0,50			0,50
Oper. time red.					0,80		0,80			0,80
Wind dir. red.					0,73		0,61			0,64
Total reduction					0,29		0,25			0,25
Total, real					65		462			39

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** H - Buevegen 1784 (8)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March	April	May	June		
1	09:28		12:18 (21)	08:46	11:54 (29)	07:35	07:07	05:44	04:40	
	15:53	21	12:39 (21)	16:56	47 14:04 (24)	18:05	20:17	21:26	22:31	
2	09:27		11:56 (29)	08:43	11:54 (29)	07:33	07:04	05:41	04:38	
	15:54	22	12:39 (21)	16:58	44 14:02 (24)	18:07	20:19	21:28	22:32	
3	09:27		11:53 (29)	08:41	11:56 (29)	07:30	07:01	05:39	04:37	
	15:55	28	12:39 (21)	17:01	38 14:01 (24)	18:09	20:21	21:31	22:34	
4	09:27		11:52 (29)	08:39	11:57 (29)	07:27	06:58	05:36	04:36	
	15:57	32	12:40 (21)	17:03	31 13:59 (24)	18:12	20:24	21:33	22:35	
5	09:26		11:51 (29)	08:37	11:59 (29)	07:24	06:55	05:34	04:35	
	15:58	34	12:40 (21)	17:06	18 13:54 (24)	18:14	20:26	21:35	22:37	
6	09:25		11:50 (29)	08:34	12:05 (29)	07:21	06:52	05:31	04:34	
	16:00	36	12:40 (21)	17:08	3 12:08 (29)	18:17	20:28	21:37	22:38	
7	09:24		11:50 (29)	08:32		07:19	06:50	05:29	04:33	
	16:02	43	13:47 (24)	17:11		18:19	20:30	21:40	22:39	
8	09:24		11:50 (29)	08:30		07:16	06:47	05:26	04:32	
	16:03	49	13:50 (24)	17:13		18:21	20:33	21:42	22:40	
9	09:23		11:50 (29)	08:27	09:43 (16)	07:13	06:44	05:24	04:31	
	16:05	54	13:52 (24)	17:16	6 09:49 (16)	18:24	20:35	21:44	22:42	
10	09:22		11:49 (29)	08:25	09:40 (16)	07:10	06:41	05:22	04:30	
	16:07	57	13:53 (24)	17:18	11 09:51 (16)	18:26	20:37	21:46	22:43	
11	09:21		11:49 (29)	08:23	09:39 (16)	07:07	06:38	05:19	04:29	
	16:09	60	13:55 (24)	17:21	15 09:54 (16)	18:28	20:40	21:49	22:44	
12	09:20		11:48 (29)	08:20	09:38 (16)	07:04	06:35	05:17	04:29	
	16:11	61	13:55 (24)	17:23	16 09:54 (16)	18:31	20:42	21:51	22:45	
13	09:18		11:49 (29)	08:18	09:37 (16)	07:02	06:32	05:15	04:28	
	16:13	64	13:57 (24)	17:26	18 09:55 (16)	18:33	20:44	21:53	22:46	
14	09:17		11:48 (29)	08:15	09:37 (16)	06:59	06:30	05:13	04:28	06:03 (77)
	16:15	64	13:58 (24)	17:28	19 09:56 (16)	18:35	20:47	21:55	22:47	2 06:05 (77)
15	09:16		11:48 (29)	08:13	09:36 (16)	06:56	06:27	05:10	04:27	06:03 (77)
	16:17	74	14:47 (25)	17:31	20 09:56 (16)	18:38	20:49	21:58	22:47	3 06:06 (77)
16	09:15		11:47 (29)	08:10	09:36 (16)	06:53	06:24	05:08	04:27	06:03 (77)
	16:19	83	14:59 (25)	17:33	20 09:56 (16)	18:40	20:51	22:00	22:48	4 06:07 (77)
17	09:13		11:48 (29)	08:07	09:36 (16)	06:50	06:21	05:06	04:27	06:04 (77)
	16:21	88	15:01 (25)	17:36	19 09:55 (16)	18:42	20:53	22:02	22:49	4 06:08 (77)
18	09:12		11:48 (29)	08:05	09:37 (16)	06:47	06:19	05:04	04:27	06:04 (77)
	16:23	87	15:01 (25)	17:38	19 09:56 (16)	18:45	20:56	22:04	22:49	5 06:09 (77)
19	09:10		11:48 (29)	08:02	09:37 (16)	06:44	06:16	05:02	04:27	06:04 (77)
	16:25	84	15:02 (25)	17:40	18 09:55 (16)	18:47	20:58	22:06	22:50	5 06:09 (77)
20	09:08		11:48 (29)	08:00	09:38 (16)	06:41	06:13	05:00	04:27	06:04 (77)
	16:28	79	15:02 (25)	17:43	16 09:54 (16)	18:49	21:00	22:08	22:50	5 06:09 (77)
21	09:07		11:48 (29)	07:57	09:39 (16)	06:39	06:10	04:58	04:27	06:04 (77)
	16:30	80	15:02 (25)	17:45	13 09:52 (16)	18:51	21:03	22:10	22:50	6 06:10 (77)
22	09:05		11:48 (29)	07:54	09:41 (16)	06:36	06:08	04:56	04:27	06:04 (77)
	16:32	82	15:03 (25)	17:48	8 09:49 (16)	18:54	21:05	22:12	22:50	6 06:10 (77)
23	09:03		11:48 (29)	07:52		06:33	06:05	04:54	04:27	06:05 (77)
	16:34	80	15:02 (25)	17:50		18:56	21:07	22:14	22:51	5 06:10 (77)
24	09:02		11:48 (29)	07:49		06:30	06:02	04:52	04:27	06:05 (77)
	16:37	80	15:02 (25)	17:53		18:58	21:10	22:16	22:51	5 06:10 (77)
25	09:00		11:49 (29)	07:46		06:27	05:59	04:51	04:28	06:05 (77)
	16:39	80	15:02 (25)	17:55		19:01	21:12	22:18	22:51	5 06:10 (77)
26	08:58		11:49 (29)	07:44		06:24	05:57	04:49	04:28	06:05 (77)
	16:41	79	15:02 (25)	17:57		19:03	21:14	22:20	22:50	5 06:10 (77)
27	08:56		11:49 (29)	07:41		06:21	05:54	04:47	04:29	06:05 (77)
	16:44	75	15:01 (25)	18:00		19:05	21:17	22:22	22:50	4 06:09 (77)
28	08:54		11:50 (29)	07:38		06:18	05:52	04:46	04:30	06:06 (77)
	16:46	73	15:01 (25)	18:02		19:08	21:19	22:24	22:50	3 06:09 (77)
29	08:52		11:51 (29)			07:15	05:49	04:44	04:30	
	16:49	69	15:00 (25)			20:10	21:21	22:25	22:50	
30	08:50		11:51 (29)			07:12	05:46	04:42	04:31	
	16:51	64	14:58 (25)			20:12	21:24	22:27	22:49	
31	08:48		11:52 (29)			07:10		04:41		
	16:54	54	14:55 (25)			20:14		22:29		
Potential sun hours	221			260		365	432	521	547	
Total, worst case		1936			399					67
Sun reduction		0,50			0,50					0,50
Oper. time red.		0,80			0,80					0,80
Wind dir. red.		0,60			0,67					0,56
Total reduction		0,24			0,27					0,23
Total, real		466			107					15

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** H - Buevegen 1784 (8)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October			November			December		
1	04:32	05:24	06:33	07:39			07:51		09:10 (16)	09:00		11:31 (29)
	22:49	22:01	20:40	19:13			16:49	11	09:21 (16)	15:51	60	13:37 (24)
2	04:33	05:26	06:35	07:42			07:54		09:13 (16)	09:02		11:32 (29)
	22:48	21:59	20:37	19:10			16:46	5	09:18 (16)	15:50	56	13:36 (24)
3	04:34	05:28	06:37	07:44			07:56			09:03		11:33 (29)
	22:47	21:56	20:34	19:07			16:44			15:49	53	13:35 (24)
4	04:35	05:31	06:40	07:46			07:59			09:05		11:34 (29)
	22:47	21:54	20:31	19:04			16:41			15:48	49	13:34 (24)
5	04:36	05:33	06:42	07:48			08:01		11:33 (29)	09:07		11:35 (29)
	22:46	21:51	20:28	19:02			16:39	6	11:39 (29)	15:47	44	13:32 (24)
6	04:37	05:35	06:44	07:51			08:03		11:30 (29)	09:09		11:36 (29)
	22:45	21:49	20:25	18:59			16:37	20	13:26 (24)	15:46	37	12:27 (21)
7	04:38	05:37	06:46	07:53			08:06		11:27 (29)	09:10		11:38 (29)
	22:44	21:47	20:22	18:56			16:34	31	13:29 (24)	15:45	34	12:27 (21)
8	04:40	05:39	06:49	07:55			08:08		11:26 (29)	09:12		11:40 (29)
	22:43	21:44	20:20	18:53			16:32	38	13:31 (24)	15:45	32	12:28 (21)
9	04:41	05:42	06:51	07:57			08:11		11:25 (29)	09:13		11:42 (29)
	22:42	21:42	20:17	18:50			16:30	44	13:33 (24)	15:44	29	12:28 (21)
10	04:43	05:44	06:53	08:00			08:13		11:24 (29)	09:15		11:44 (29)
	22:41	21:39	20:14	18:47			16:28	48	13:34 (24)	15:43	24	12:28 (21)
11	04:44	05:46	06:55	08:02			08:15		11:23 (29)	09:16		12:08 (21)
	22:39	21:37	20:11	18:45			16:25	55	14:27 (25)	15:43	21	12:29 (21)
12	04:46	05:48	06:57	08:04			08:18		11:23 (29)	09:18		12:08 (21)
	22:38	21:34	20:08	18:42			16:23	63	14:30 (25)	15:43	21	12:29 (21)
13	04:47	05:51	07:00	08:07			08:20		11:23 (29)	09:19		12:09 (21)
	22:37	21:32	20:05	18:39			16:21	69	14:32 (25)	15:42	21	12:30 (21)
14	04:49	05:53	07:02	08:09			08:22		11:22 (29)	09:20		12:09 (21)
	22:35	21:29	20:02	18:36			16:19	73	14:33 (25)	15:42	21	12:30 (21)
15	04:51	05:55	07:04	08:11			08:25		11:22 (29)	09:21		12:09 (21)
	22:34	21:26	19:59	18:33			16:17	76	14:34 (25)	15:42	21	12:30 (21)
16	04:52	05:57	07:06	08:13			08:27		11:22 (29)	09:22		12:10 (21)
	22:32	21:24	19:56	18:31			16:15	79	14:35 (25)	15:42	20	12:30 (21)
17	04:54	06:00	07:08	08:16			08:30		11:23 (29)	09:23		12:10 (21)
	22:31	21:21	19:54	18:28			16:13	80	14:36 (25)	15:42	21	12:31 (21)
18	04:56	06:02	07:11	08:18			08:32		11:22 (29)	09:24		12:11 (21)
	22:29	21:18	19:51	18:25			16:11	80	14:36 (25)	15:42	20	12:31 (21)
19	04:58	06:04	07:13	08:20			08:34		11:23 (29)	09:25		12:12 (21)
	22:27	21:16	19:48	18:22			16:09	80	14:37 (25)	15:42	20	12:32 (21)
20	05:00	06:06	07:15	08:23		10:11 (16)	08:36		11:22 (29)	09:26		12:12 (21)
	22:25	21:13	19:45	18:20	10	10:21 (16)	16:08	82	14:37 (25)	15:43	20	12:32 (21)
21	05:01	06:08	07:17	08:25		10:09 (16)	08:39		11:23 (29)	09:26		12:12 (21)
	22:24	21:10	19:42	18:17	15	10:24 (16)	16:06	80	14:37 (25)	15:43	20	12:32 (21)
22	05:03	06:11	07:19	08:27		10:08 (16)	08:41		11:24 (29)	09:27		12:13 (21)
	22:22	21:08	19:39	18:14	16	10:24 (16)	16:04	79	14:38 (25)	15:43	20	12:33 (21)
23	05:05	06:13	07:22	08:30		10:07 (16)	08:43		11:24 (29)	09:27		12:13 (21)
	22:20	21:05	19:36	18:12	18	10:25 (16)	16:02	83	14:38 (25)	15:44	20	12:33 (21)
24	05:07	06:15	07:24	08:32		10:06 (16)	08:45		11:25 (29)	09:28		12:14 (21)
	22:18	21:02	19:33	18:09	19	10:25 (16)	16:01	87	14:38 (25)	15:44	21	12:35 (21)
25	05:09	06:17	07:26	07:35		09:06 (16)	08:47		11:25 (29)	09:28		12:15 (21)
	22:16	20:59	19:30	17:06	20	09:26 (16)	15:59	87	14:38 (25)	15:45	20	12:35 (21)
26	05:11	06:20	07:28	07:37		09:06 (16)	08:50		11:26 (29)	09:28		12:15 (21)
	22:14	20:57	19:27	17:04	20	09:26 (16)	15:58	83	14:38 (25)	15:46	20	12:35 (21)
27	05:13	06:22	07:30	07:39		09:06 (16)	08:52		11:27 (29)	09:28		12:16 (21)
	22:12	20:54	19:25	17:01	19	09:25 (16)	15:56	75	14:34 (25)	15:47	20	12:36 (21)
28	05:16	06:24	07:33	07:42		09:06 (16)	08:54		11:28 (29)	09:28		12:16 (21)
	22:10	20:51	19:22	16:59	19	09:25 (16)	15:55	65	13:38 (24)	15:48	21	12:37 (21)
29	05:18	06:26	07:35	07:44		09:06 (16)	08:56		11:29 (29)	09:28		12:16 (21)
	22:07	20:48	19:19	16:56	18	09:24 (16)	15:54	64	13:37 (24)	15:49	20	12:36 (21)
30	05:20	06:29	07:37	07:47		09:07 (16)	08:58		11:29 (29)	09:28		12:17 (21)
	22:05	20:45	19:16	16:54	17	09:24 (16)	15:52	62	13:37 (24)	15:50	20	12:37 (21)
31	05:22	06:31		07:49		09:09 (16)				09:28		12:16 (21)
	22:03	20:42		16:51	14	09:23 (16)				15:51	21	12:37 (21)
Potential sun hours	546	478	386	319			236			199		
Total, worst case					205			1705			847	
Sun reduction					0,50			0,50			0,50	
Oper. time red.					0,80			0,80			0,80	
Wind dir. red.					0,73			0,60			0,63	
Total reduction					0,29			0,24			0,25	
Total, real					60			408			212	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** I - Buevegen 1782 (9)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March	April	May	June		
1	09:28		12:08 (21)	08:46	11:39 (29)	07:35	07:07	05:44	04:40	
	15:53	21	12:29 (21)	16:56 48	13:50 (24)	18:05	20:17	21:26	22:31	
2	09:27		12:08 (21)	08:43	11:40 (29)	07:33	07:04	05:41	04:38	06:09 (77)
	15:54	21	12:29 (21)	16:58 44	13:48 (24)	18:07	20:19	21:28	22:32 2	06:11 (77)
3	09:27		12:09 (21)	08:41	11:41 (29)	07:30	07:01	05:39	04:37	06:09 (77)
	15:55	20	12:29 (21)	17:01 39	13:47 (24)	18:09	20:21	21:31	22:34 4	06:13 (77)
4	09:27		12:09 (21)	08:39	11:42 (29)	07:27	06:58	05:36	04:36	06:09 (77)
	15:57	21	12:30 (21)	17:03 31	13:44 (24)	18:12	20:24	21:33	22:35 6	06:15 (77)
5	09:26		12:09 (21)	08:37	11:43 (29)	07:24	06:55	05:34	04:35	06:09 (77)
	15:58	21	12:30 (21)	17:06 18	12:01 (29)	18:14	20:26	21:35	22:37 7	06:16 (77)
6	09:25		12:10 (21)	08:34	11:46 (29)	07:21	06:52	05:31	04:34	06:08 (77)
	16:00	26	13:33 (24)	17:08 14	12:00 (29)	18:17	20:28	21:37	22:38 8	06:16 (77)
7	09:24		11:42 (29)	08:32	11:51 (29)	07:19	06:50	05:29	04:33	06:09 (77)
	16:02	37	13:36 (24)	17:11 3	11:54 (29)	18:19	20:30	21:40	22:39 9	06:18 (77)
8	09:24		11:40 (29)	08:30		07:16	06:47	05:26	04:32	06:08 (77)
	16:03	45	13:38 (24)	17:13		18:21	20:33	21:42	22:41 10	06:18 (77)
9	09:23		11:39 (29)	08:27		07:13	06:44	05:24	04:31	06:07 (77)
	16:05	50	13:40 (24)	17:16		18:24	20:35	21:44	22:42 11	06:18 (77)
10	09:22		11:38 (29)	08:25	09:40 (16)	07:10	06:41	05:22	04:30	06:08 (77)
	16:07	52	13:40 (24)	17:18 2	09:42 (16)	18:26	20:37	21:46	22:43 11	06:19 (77)
11	09:21		11:38 (29)	08:23	09:36 (16)	07:07	06:38	05:19	04:29	06:07 (77)
	16:09	56	13:42 (24)	17:21 10	09:46 (16)	18:28	20:40	21:49	22:44 12	06:19 (77)
12	09:20		11:37 (29)	08:20	09:34 (16)	07:04	06:35	05:17	04:29	06:07 (77)
	16:11	63	14:47 (25)	17:23 14	09:48 (16)	18:31	20:42	21:51	22:45 13	06:20 (77)
13	09:18		11:37 (29)	08:18	09:33 (16)	07:02	06:32	05:15	04:28	06:07 (77)
	16:13	74	14:49 (25)	17:26 16	09:49 (16)	18:33	20:44	21:53	22:46 13	06:20 (77)
14	09:17		11:36 (29)	08:15	09:33 (16)	06:59	06:30	05:13	04:28	06:07 (77)
	16:15	82	14:49 (25)	17:28 17	09:50 (16)	18:35	20:47	21:55	22:47 14	06:21 (77)
15	09:16		11:36 (29)	08:13	09:32 (16)	06:56	06:27	05:10	04:27	06:07 (77)
	16:17	87	14:50 (25)	17:31 18	09:50 (16)	18:38	20:49	21:58	22:47 14	06:21 (77)
16	09:15		11:35 (29)	08:10	09:31 (16)	06:53	06:24	05:08	04:27	06:07 (77)
	16:19	87	14:50 (25)	17:33 19	09:50 (16)	18:40	20:51	22:00	22:48 15	06:22 (77)
17	09:13		11:36 (29)	08:07	09:31 (16)	06:50	06:21	05:06	04:27	06:07 (77)
	16:21	87	14:52 (25)	17:36 19	09:50 (16)	18:42	20:53	22:02	22:49 15	06:22 (77)
18	09:12		11:36 (29)	08:05	09:32 (16)	06:47	06:19	05:04	04:27	06:07 (77)
	16:23	89	14:52 (25)	17:38 19	09:51 (16)	18:45	20:56	22:04	22:49 16	06:23 (77)
19	09:10		11:35 (29)	08:02	09:32 (16)	06:44	06:16	05:02	04:27	06:07 (77)
	16:25	86	14:52 (25)	17:40 18	09:50 (16)	18:47	20:58	22:06	22:50 16	06:23 (77)
20	09:09		11:35 (29)	08:00	09:32 (16)	06:41	06:13	05:00	04:27	06:07 (77)
	16:28	83	14:53 (25)	17:43 17	09:49 (16)	18:49	21:00	22:08	22:50 16	06:23 (77)
21	09:07		11:35 (29)	07:57	09:33 (16)	06:39	06:10	04:58	04:27	06:08 (77)
	16:30	79	14:53 (25)	17:45 15	09:48 (16)	18:51	21:03	22:10	22:50 15	06:23 (77)
22	09:05		11:35 (29)	07:54	09:34 (16)	06:36	06:08	04:56	04:27	06:08 (77)
	16:32	80	14:53 (25)	17:48 12	09:46 (16)	18:54	21:05	22:12	22:50 15	06:23 (77)
23	09:03		11:35 (29)	07:52	09:37 (16)	06:33	06:05	04:54	04:27	06:08 (77)
	16:34	79	14:52 (25)	17:50 7	09:44 (16)	18:56	21:07	22:14	22:51 16	06:24 (77)
24	09:02		11:35 (29)	07:49		06:30	06:02	04:52	04:27	06:08 (77)
	16:37	79	14:52 (25)	17:53		18:58	21:10	22:16	22:51 16	06:24 (77)
25	09:00		11:35 (29)	07:46		06:27	05:59	04:51	04:28	06:08 (77)
	16:39	78	14:52 (25)	17:55		19:01	21:12	22:18	22:51 15	06:23 (77)
26	08:58		11:36 (29)	07:44		06:24	05:57	04:49	04:28	06:09 (77)
	16:41	77	14:52 (25)	17:57		19:03	21:14	22:20	22:50 15	06:24 (77)
27	08:56		11:36 (29)	07:41		06:21	05:54	04:47	04:29	06:09 (77)
	16:44	73	14:51 (25)	18:00		19:05	21:17	22:22	22:50 15	06:24 (77)
28	08:54		11:36 (29)	07:38		06:18	05:52	04:46	04:30	06:10 (77)
	16:46	71	14:50 (25)	18:02		19:08	21:19	22:24	22:50 14	06:24 (77)
29	08:52		11:37 (29)			07:15	05:49	04:44	04:30	06:11 (77)
	16:49	66	14:49 (25)			20:10	21:21	22:25	22:50 13	06:24 (77)
30	08:50		11:37 (29)			07:13	05:46	04:42	04:31	06:10 (77)
	16:51	54	14:44 (25)			20:12	21:24	22:27	22:49 14	06:24 (77)
31	08:48		11:38 (29)			07:10		04:41		
	16:54	51	13:50 (24)			20:14		22:29		
Potential sun hours	221			260		365	432	521	547	
Total, worst case		1895		400					360	
Sun reduction		0,50		0,50					0,50	
Oper. time red.		0,80		0,80					0,80	
Wind dir. red.		0,61		0,68					0,57	
Total reduction		0,24		0,27					0,23	
Total, real		460		108					82	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** I - Buevegen 1782 (9)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July			August	September	October		November			December		
1	04:32		06:11 (77)	05:24	06:33	07:39		07:51			09:00		11:20 (29)
	22:49	13	06:24 (77)	22:01	20:40	19:13		16:49			15:51	56	13:24 (24)
2	04:33		06:12 (77)	05:26	06:35	07:42		07:54			09:02		11:21 (29)
	22:48	12	06:24 (77)	21:59	20:37	19:10		16:46			15:50	52	13:23 (24)
3	04:34		06:13 (77)	05:28	06:37	07:44		07:56			09:03		11:22 (29)
	22:47	11	06:24 (77)	21:56	20:34	19:07		16:44			15:49	50	13:23 (24)
4	04:35		06:13 (77)	05:31	06:40	07:46		07:59		11:19 (29)	09:05		11:24 (29)
	22:47	11	06:24 (77)	21:54	20:31	19:04		16:41	6	11:25 (29)	15:48	45	13:22 (24)
5	04:36		06:14 (77)	05:33	06:42	07:48		08:01		11:16 (29)	09:07		11:26 (29)
	22:46	9	06:23 (77)	21:51	20:28	19:02		16:39	14	11:30 (29)	15:47	38	13:21 (24)
6	04:37		06:14 (77)	05:35	06:44	07:51		08:03		11:14 (29)	09:09		11:56 (21)
	22:45	9	06:23 (77)	21:49	20:25	18:59		16:37	18	11:32 (29)	15:46	26	13:19 (24)
7	04:38		06:15 (77)	05:37	06:46	07:53		08:06		11:12 (29)	09:10		11:56 (21)
	22:44	7	06:22 (77)	21:47	20:23	18:56		16:34	32	13:14 (24)	15:45	21	12:17 (21)
8	04:40		06:15 (77)	05:39	06:49	07:55		08:08		11:11 (29)	09:12		11:57 (21)
	22:43	7	06:22 (77)	21:44	20:20	18:53		16:32	40	13:17 (24)	15:45	21	12:18 (21)
9	04:41		06:16 (77)	05:42	06:51	07:57		08:11		11:10 (29)	09:13		11:58 (21)
	22:42	6	06:22 (77)	21:42	20:17	18:50		16:30	45	13:19 (24)	15:44	20	12:18 (21)
10	04:43		06:16 (77)	05:44	06:53	08:00		08:13		11:10 (29)	09:15		11:57 (21)
	22:41	4	06:20 (77)	21:39	20:14	18:47		16:28	49	13:21 (24)	15:43	21	12:18 (21)
11	04:44			05:46	06:55	08:02		08:15		11:09 (29)	09:16		11:58 (21)
	22:39			21:37	20:11	18:45		16:25	51	13:21 (24)	15:43	21	12:19 (21)
12	04:46			05:48	06:57	08:04		08:18		11:09 (29)	09:18		11:58 (21)
	22:38			21:34	20:08	18:42		16:23	57	14:17 (25)	15:43	21	12:19 (21)
13	04:47			05:51	07:00	08:07		08:20		11:09 (29)	09:19		12:00 (21)
	22:37			21:32	20:05	18:39		16:21	66	14:21 (25)	15:42	20	12:20 (21)
14	04:49			05:53	07:02	08:09		08:23		11:08 (29)	09:20		12:00 (21)
	22:35			21:29	20:02	18:36		16:19	72	14:22 (25)	15:42	20	12:20 (21)
15	04:51			05:55	07:04	08:11		08:25		11:08 (29)	09:21		12:00 (21)
	22:34			21:26	19:59	18:33		16:17	75	14:24 (25)	15:42	20	12:20 (21)
16	04:52			05:57	07:06	08:13		08:27		11:09 (29)	09:22		12:00 (21)
	22:32			21:24	19:56	18:31		16:15	77	14:25 (25)	15:42	20	12:20 (21)
17	04:54			06:00	07:08	08:16		08:30		11:09 (29)	09:23		12:01 (21)
	22:31			21:21	19:54	18:28		16:13	78	14:26 (25)	15:42	20	12:21 (21)
18	04:56			06:02	07:11	08:18		08:32		11:09 (29)	09:24		12:02 (21)
	22:29			21:18	19:51	18:25		16:11	79	14:26 (25)	15:42	19	12:21 (21)
19	04:58			06:04	07:13	08:20	10:07 (16)	08:34		11:10 (29)	09:25		12:02 (21)
	22:27			21:16	19:48	18:22	9	10:16 (16)	16:09	79	14:27 (25)	15:42	20	12:22 (21)
20	05:00			06:06	07:15	08:23	10:05 (16)	08:36		11:10 (29)	09:26		12:03 (21)
	22:25			21:13	19:45	18:20	13	10:18 (16)	16:08	79	14:27 (25)	15:43	19	12:22 (21)
21	05:01			06:08	07:17	08:25	10:04 (16)	08:39		11:10 (29)	09:26		12:03 (21)
	22:24			21:10	19:42	18:17	15	10:19 (16)	16:06	79	14:28 (25)	15:43	19	12:22 (21)
22	05:03			06:11	07:19	08:27	10:02 (16)	08:41		11:11 (29)	09:27		12:04 (21)
	22:22			21:08	19:39	18:14	18	10:20 (16)	16:04	83	14:29 (25)	15:43	19	12:23 (21)
23	05:05			06:13	07:22	08:30	10:02 (16)	08:43		11:11 (29)	09:27		12:04 (21)
	22:20			21:05	19:36	18:12	18	10:20 (16)	16:02	86	14:28 (25)	15:44	19	12:23 (21)
24	05:07			06:15	07:24	08:32	10:01 (16)	08:45		11:13 (29)	09:28		12:05 (21)
	22:18			21:02	19:33	18:09	19	10:20 (16)	16:01	88	14:29 (25)	15:44	20	12:25 (21)
25	05:09			06:17	07:26	07:35	09:01 (16)	08:47		11:13 (29)	09:28		12:05 (21)
	22:16			20:59	19:30	17:06	19	09:20 (16)	15:59	88	14:29 (25)	15:45	20	12:25 (21)
26	05:11			06:20	07:28	07:37	09:02 (16)	08:50		11:14 (29)	09:28		12:06 (21)
	22:14			20:57	19:27	17:04	19	09:21 (16)	15:58	87	14:29 (25)	15:46	19	12:25 (21)
27	05:13			06:22	07:30	07:39	09:01 (16)	08:52		11:15 (29)	09:28		12:06 (21)
	22:12			20:54	19:25	17:01	19	09:20 (16)	15:56	86	14:29 (25)	15:47	20	12:26 (21)
28	05:16			06:24	07:33	07:42	09:02 (16)	08:54		11:16 (29)	09:28		12:07 (21)
	22:10			20:51	19:22	16:59	17	09:19 (16)	15:55	82	14:29 (25)	15:48	20	12:27 (21)
29	05:18			06:26	07:35	07:44	09:02 (16)	08:56		11:17 (29)	09:28		12:06 (21)
	22:07			20:48	19:19	16:56	16	09:18 (16)	15:54	75	14:29 (25)	15:49	20	12:26 (21)
30	05:20			06:29	07:37	07:47	09:04 (16)	08:58		11:18 (29)	09:28		12:07 (21)
	22:05			20:45	19:16	16:54	13	09:17 (16)	15:52	62	14:28 (25)	15:50	20	12:27 (21)
31	05:22			06:31		07:49	09:06 (16)					09:28		12:07 (21)
	22:03			20:42		16:51	9	09:15 (16)				15:51	20	12:27 (21)
Potential sun hours	546			478	386	319		236			199			
Total, worst case		89					204			1733			766	
Sun reduction		0,50					0,50			0,50			0,50	
Oper. time red.		0,80					0,80			0,80			0,80	
Wind dir. red.		0,57					0,73			0,61			0,63	
Total reduction		0,23					0,29			0,24			0,25	
Total, real		20					59			420			193	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Project:
Moifjellet vindkraftverk

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** J - Buevegen 1780 (10)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March	April	May			June		
1	09:28		12:05 (21)	08:46		11:36 (29)	07:35	07:07	05:44			04:40		06:13 (77)
	15:53	21	12:26 (21)	16:56	45	13:44 (24)	18:05	20:17	21:26			22:31	8	06:21 (77)
2	09:27		12:06 (21)	08:43		11:37 (29)	07:33	07:04	05:41			04:38		06:13 (77)
	15:54	20	12:26 (21)	16:58	40	13:42 (24)	18:07	20:19	21:28			22:32	9	06:22 (77)
3	09:27		12:06 (21)	08:41		11:38 (29)	07:30	07:01	05:39			04:37		06:12 (77)
	15:55	20	12:26 (21)	17:01	34	13:40 (24)	18:09	20:21	21:31			22:34	11	06:23 (77)
4	09:27		12:06 (21)	08:39		11:39 (29)	07:27	06:58	05:36			04:36		06:12 (77)
	15:57	21	12:27 (21)	17:03	20	11:59 (29)	18:12	20:24	21:33			22:35	11	06:23 (77)
5	09:26		12:06 (21)	08:37		11:41 (29)	07:24	06:55	05:34			04:35		06:11 (77)
	15:58	28	13:28 (24)	17:06	16	11:57 (29)	18:14	20:26	21:35			22:37	13	06:24 (77)
6	09:25		12:07 (21)	08:34		11:44 (29)	07:21	06:52	05:31			04:34		06:10 (77)
	16:00	31	13:30 (24)	17:08	10	11:54 (29)	18:17	20:28	21:37			22:38	14	06:24 (77)
7	09:24		11:38 (29)	08:32			07:19	06:50	05:29			04:33		06:11 (77)
	16:02	39	13:32 (24)	17:11			18:19	20:30	21:40			22:39	14	06:25 (77)
8	09:24		11:37 (29)	08:30			07:16	06:47	05:26			04:32		06:10 (77)
	16:03	46	13:34 (24)	17:13			18:21	20:33	21:42			22:41	15	06:25 (77)
9	09:23		11:36 (29)	08:27			07:13	06:44	05:24			04:31		06:10 (77)
	16:05	50	13:36 (24)	17:16			18:24	20:35	21:44			22:42	15	06:25 (77)
10	09:22		11:35 (29)	08:25		09:38 (16)	07:10	06:41	05:22			04:30		06:10 (77)
	16:07	58	14:41 (25)	17:18	5	09:43 (16)	18:26	20:37	21:46			22:43	16	06:26 (77)
11	09:21		11:34 (29)	08:23		09:36 (16)	07:07	06:38	05:19			04:29		06:09 (77)
	16:09	71	14:43 (25)	17:21	10	09:46 (16)	18:28	20:40	21:49			22:44	17	06:26 (77)
12	09:20		11:33 (29)	08:20		09:34 (16)	07:04	06:35	05:17			04:29		06:09 (77)
	16:11	79	14:44 (25)	17:23	14	09:48 (16)	18:31	20:42	21:51			22:45	18	06:27 (77)
13	09:18		11:34 (29)	08:18		09:32 (16)	07:02	06:32	05:15			04:28		06:09 (77)
	16:13	81	14:45 (25)	17:26	16	09:48 (16)	18:33	20:44	21:53			22:46	17	06:26 (77)
14	09:17		11:33 (29)	08:15		09:32 (16)	06:59	06:30	05:13			04:28		06:09 (77)
	16:15	84	14:45 (25)	17:28	18	09:50 (16)	18:35	20:47	21:55			22:47	18	06:27 (77)
15	09:16		11:32 (29)	08:13		09:32 (16)	06:56	06:27	05:10			04:27		06:09 (77)
	16:17	86	14:46 (25)	17:31	18	09:50 (16)	18:38	20:49	21:58			22:47	19	06:28 (77)
16	09:15		11:32 (29)	08:10		09:31 (16)	06:53	06:24	05:08			04:27		06:09 (77)
	16:19	87	14:46 (25)	17:33	19	09:50 (16)	18:40	20:51	22:00			22:48	19	06:28 (77)
17	09:13		11:32 (29)	08:07		09:31 (16)	06:50	06:21	05:06			04:27		06:10 (77)
	16:21	87	14:47 (25)	17:36	19	09:50 (16)	18:42	20:53	22:02			22:49	18	06:28 (77)
18	09:12		11:32 (29)	08:05		09:32 (16)	06:47	06:19	05:04			04:27		06:10 (77)
	16:23	88	14:48 (25)	17:38	18	09:50 (16)	18:45	20:56	22:04			22:49	19	06:29 (77)
19	09:10		11:32 (29)	08:02		09:32 (16)	06:44	06:16	05:02			04:27		06:10 (77)
	16:25	86	14:48 (25)	17:40	17	09:49 (16)	18:47	20:58	22:06			22:50	19	06:29 (77)
20	09:09		11:32 (29)	08:00		09:32 (16)	06:41	06:13	05:00			04:27		06:10 (77)
	16:28	77	14:48 (25)	17:43	16	09:48 (16)	18:49	21:00	22:08			22:50	19	06:29 (77)
21	09:07		11:32 (29)	07:57		09:33 (16)	06:39	06:10	04:58			04:27		06:10 (77)
	16:30	77	14:48 (25)	17:45	14	09:47 (16)	18:51	21:03	22:10			22:50	19	06:29 (77)
22	09:05		11:32 (29)	07:54		09:35 (16)	06:36	06:08	04:56			04:27		06:10 (77)
	16:32	79	14:49 (25)	17:48	10	09:45 (16)	18:54	21:05	22:12			22:50	19	06:29 (77)
23	09:03		11:31 (29)	07:52		09:39 (16)	06:33	06:05	04:54			04:27		06:11 (77)
	16:34	78	14:48 (25)	17:50	2	09:41 (16)	18:56	21:07	22:14			22:51	19	06:30 (77)
24	09:02		11:32 (29)	07:49			06:30	06:02	04:52			04:27		06:11 (77)
	16:37	77	14:48 (25)	17:53			18:58	21:10	22:16			22:51	19	06:30 (77)
25	09:00		11:32 (29)	07:46			06:27	05:59	04:51			04:28		06:11 (77)
	16:39	75	14:47 (25)	17:55			19:01	21:12	22:18			22:51	18	06:29 (77)
26	08:58		11:33 (29)	07:44			06:24	05:57	04:49			04:28		06:12 (77)
	16:41	73	14:47 (25)	17:57			19:03	21:14	22:20			22:50	18	06:30 (77)
27	08:56		11:32 (29)	07:41			06:21	05:54	04:47			04:29		06:11 (77)
	16:44	70	14:45 (25)	18:00			19:05	21:17	22:22			22:50	19	06:30 (77)
28	08:54		11:33 (29)	07:38			06:18	05:52	04:46			04:30		06:12 (77)
	16:46	66	14:44 (25)	18:02			19:08	21:19	22:24			22:50	18	06:30 (77)
29	08:52		11:34 (29)				07:15	05:49	04:44		06:14 (77)	04:30		06:13 (77)
	16:49	57	14:41 (25)				20:10	21:21	22:25	2	06:16 (77)	22:50	18	06:31 (77)
30	08:50		11:34 (29)				07:13	05:46	04:42		06:14 (77)	04:31		06:13 (77)
	16:51	52	13:45 (24)				20:12	21:24	22:27	4	06:18 (77)	22:49	17	06:30 (77)
31	08:48		11:35 (29)				07:10		04:41		06:14 (77)			
	16:54	48	13:44 (24)				20:14		22:29	6	06:20 (77)			
Potential sun hours	221			260			365	432	521			547		
Total, worst case		1912			361					12			493	
Sun reduction		0,50			0,50					0,50			0,50	
Oper. time red.		0,80			0,80					0,80			0,80	
Wind dir. red.		0,61			0,69					0,57			0,57	
Total reduction		0,24			0,27					0,23			0,23	
Total, real		466			99					3			113	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** J - Buevegen 1780 (10)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July			August	September	October		November			December		
1	04:32		06:13 (77)	05:24	06:33	07:39		07:51		09:09 (16)	09:00		11:16 (29)
	22:49	17	06:30 (77)	22:01	20:40	19:13		16:49	2	09:11 (16)	15:51	74	14:26 (25)
2	04:33		06:14 (77)	05:26	06:35	07:42		07:54			09:02		11:18 (29)
	22:48	17	06:31 (77)	21:59	20:37	19:10		16:46			15:50	58	14:24 (25)
3	04:34		06:15 (77)	05:28	06:37	07:44		07:56			09:03		11:19 (29)
	22:47	16	06:31 (77)	21:56	20:34	19:07		16:44			15:49	51	13:19 (24)
4	04:35		06:15 (77)	05:31	06:40	07:46		07:59			09:05		11:21 (29)
	22:47	16	06:31 (77)	21:54	20:31	19:04		16:41			15:48	46	13:18 (24)
5	04:36		06:16 (77)	05:33	06:42	07:48		08:01		11:13 (29)	09:07		11:23 (29)
	22:46	15	06:31 (77)	21:51	20:28	19:02		16:39	12	11:25 (29)	15:47	39	13:18 (24)
6	04:37		06:17 (77)	05:35	06:44	07:51		08:03		11:11 (29)	09:09		11:53 (21)
	22:45	13	06:30 (77)	21:49	20:25	18:59		16:37	17	11:28 (29)	15:46	32	13:17 (24)
7	04:38		06:17 (77)	05:37	06:46	07:53		08:06		11:10 (29)	09:10		11:54 (21)
	22:44	13	06:30 (77)	21:47	20:23	18:56		16:34	22	13:06 (24)	15:45	28	13:16 (24)
8	04:40		06:18 (77)	05:39	06:49	07:55		08:08		11:08 (29)	09:12		11:54 (21)
	22:43	12	06:30 (77)	21:44	20:20	18:53		16:32	34	13:10 (24)	15:45	22	13:13 (24)
9	04:41		06:19 (77)	05:42	06:51	07:57		08:11		11:07 (29)	09:13		11:55 (21)
	22:42	11	06:30 (77)	21:42	20:17	18:50		16:30	41	13:13 (24)	15:44	20	12:15 (21)
10	04:43		06:20 (77)	05:44	06:53	08:00		08:13		11:07 (29)	09:15		11:55 (21)
	22:41	10	06:30 (77)	21:39	20:14	18:47		16:28	46	13:15 (24)	15:43	20	12:15 (21)
11	04:44		06:20 (77)	05:46	06:55	08:02		08:15		11:06 (29)	09:16		11:56 (21)
	22:39	9	06:29 (77)	21:37	20:11	18:45		16:25	48	13:15 (24)	15:43	20	12:16 (21)
12	04:46		06:22 (77)	05:48	06:57	08:04		08:18		11:06 (29)	09:18		11:56 (21)
	22:38	7	06:29 (77)	21:34	20:08	18:42		16:23	52	13:17 (24)	15:43	20	12:16 (21)
13	04:47		06:22 (77)	05:51	07:00	08:07		08:20		11:06 (29)	09:19		11:57 (21)
	22:37	6	06:28 (77)	21:32	20:05	18:39		16:21	58	14:14 (25)	15:42	20	12:17 (21)
14	04:49		06:23 (77)	05:53	07:02	08:09		08:23		11:05 (29)	09:20		11:57 (21)
	22:35	3	06:26 (77)	21:29	20:02	18:36		16:19	66	14:16 (25)	15:42	20	12:17 (21)
15	04:51			05:55	07:04	08:11		08:25		11:05 (29)	09:21		11:57 (21)
	22:34			21:26	19:59	18:33		16:17	70	14:18 (25)	15:42	20	12:17 (21)
16	04:52			05:57	07:06	08:13		08:27		11:06 (29)	09:22		11:58 (21)
	22:32			21:24	19:56	18:31		16:15	73	14:20 (25)	15:42	19	12:17 (21)
17	04:54			06:00	07:08	08:16		08:30		11:06 (29)	09:23		11:58 (21)
	22:31			21:21	19:54	18:28		16:13	75	14:21 (25)	15:42	20	12:18 (21)
18	04:56			06:02	07:11	08:18		08:32		11:06 (29)	09:24		11:59 (21)
	22:29			21:18	19:51	18:25		16:11	77	14:22 (25)	15:42	19	12:18 (21)
19	04:58			06:04	07:13	08:20	10:08 (16)	08:34		11:06 (29)	09:25		11:59 (21)
	22:27			21:16	19:48	18:22	7	10:15 (16)	16:09	78	14:23 (25)	15:42	20	12:19 (21)
20	05:00			06:06	07:15	08:23	10:05 (16)	08:36		11:06 (29)	09:26		12:00 (21)
	22:25			21:13	19:45	18:20	12	10:17 (16)	16:08	79	14:23 (25)	15:43	19	12:19 (21)
21	05:01			06:08	07:17	08:25		10:04 (16)	08:39		11:07 (29)	09:26		12:00 (21)
	22:24			21:10	19:42	18:17	15	10:19 (16)	16:06	77	14:23 (25)	15:43	19	12:19 (21)
22	05:03			06:11	07:19	08:27		10:02 (16)	08:41		11:08 (29)	09:27		12:01 (21)
	22:22			21:08	19:39	18:14	17	10:19 (16)	16:04	77	14:24 (25)	15:43	19	12:20 (21)
23	05:05			06:13	07:22	08:30		10:02 (16)	08:43		11:08 (29)	09:27		12:01 (21)
	22:20			21:05	19:36	18:12	18	10:20 (16)	16:02	86	14:24 (25)	15:44	19	12:20 (21)
24	05:07			06:15	07:24	08:32		10:01 (16)	08:45		11:09 (29)	09:28		12:02 (21)
	22:18			21:02	19:33	18:09	19	10:20 (16)	16:01	87	14:25 (25)	15:44	19	12:21 (21)
25	05:09			06:17	07:26	07:35		09:01 (16)	08:47		11:09 (29)	09:28		12:03 (21)
	22:16			20:59	19:30	17:06	19	09:20 (16)	15:59	88	14:25 (25)	15:45	19	12:22 (21)
26	05:11			06:20	07:28	07:37		09:01 (16)	08:50		11:11 (29)	09:28		12:03 (21)
	22:14			20:57	19:27	17:04	19	09:20 (16)	15:58	87	14:25 (25)	15:46	19	12:22 (21)
27	05:13			06:22	07:30	07:39		09:01 (16)	08:52		11:11 (29)	09:28		12:03 (21)
	22:12			20:54	19:25	17:01	18	09:19 (16)	15:56	85	14:25 (25)	15:47	20	12:23 (21)
28	05:16			06:24	07:33	07:42		09:02 (16)	08:54		11:13 (29)	09:28		12:04 (21)
	22:10			20:51	19:22	16:59	17	09:19 (16)	15:55	85	14:26 (25)	15:48	20	12:24 (21)
29	05:18			06:26	07:35	07:44		09:02 (16)	08:56		11:14 (29)	09:28		12:04 (21)
	22:07			20:48	19:19	16:56	16	09:18 (16)	15:54	82	14:25 (25)	15:49	19	12:23 (21)
30	05:20			06:29	07:37	07:47		09:03 (16)	08:58		11:14 (29)	09:28		12:04 (21)
	22:05			20:45	19:16	16:54	14	09:17 (16)	15:52	80	14:25 (25)	15:50	20	12:24 (21)
31	05:22			06:31		07:49		09:06 (16)				09:28		12:04 (21)
	22:03			20:42		16:51	9	09:15 (16)				15:51	20	12:24 (21)
Potential sun hours	546			478	386	319		236			199			
Total, worst case		165					200			1684			800	
Sun reduction		0,50					0,50			0,50			0,50	
Oper. time red.		0,80					0,80			0,80			0,80	
Wind dir. red.		0,57					0,73			0,61			0,63	
Total reduction		0,23					0,29			0,24			0,25	
Total, real		38					58			410			201	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** K - Buevegen 1778 (11)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March	April	May			June		
1	09:28		11:58 (21)	08:46		11:24 (29)	07:35	07:07	05:44			04:40		06:12 (77)
	15:53	16	12:14 (21)	16:56	49	13:35 (24)	18:05	20:17	21:26			22:31	12	06:24 (77)
2	09:28		11:58 (21)	08:43		11:24 (29)	07:33	07:04	05:41			04:38		06:12 (77)
	15:54	18	12:16 (21)	16:58	47	13:34 (24)	18:07	20:19	21:28			22:32	13	06:25 (77)
3	09:27		11:58 (21)	08:41		11:25 (29)	07:30	07:01	05:39			04:37		06:11 (77)
	15:55	20	12:18 (21)	17:01	42	13:33 (24)	18:09	20:21	21:31			22:34	14	06:25 (77)
4	09:27		11:58 (21)	08:39		11:26 (29)	07:27	06:58	05:36			04:36		06:11 (77)
	15:57	21	12:19 (21)	17:03	35	13:30 (24)	18:12	20:24	21:33			22:35	14	06:25 (77)
5	09:26		11:59 (21)	08:37		11:26 (29)	07:24	06:55	05:34			04:35		06:10 (77)
	15:58	20	12:19 (21)	17:06	23	11:49 (29)	18:14	20:26	21:35			22:37	16	06:26 (77)
6	09:25		11:59 (21)	08:34		11:28 (29)	07:21	06:52	05:31			04:34		06:10 (77)
	16:00	26	13:18 (24)	17:08	20	11:48 (29)	18:17	20:28	21:37			22:38	16	06:26 (77)
7	09:25		12:00 (21)	08:32		11:30 (29)	07:19	06:50	05:29			04:33		06:10 (77)
	16:02	30	13:21 (24)	17:11	16	11:46 (29)	18:19	20:30	21:40			22:39	17	06:27 (77)
8	09:24		12:00 (21)	08:30		11:33 (29)	07:16	06:47	05:26			04:32		06:10 (77)
	16:03	34	14:35 (25)	17:13	11	11:44 (29)	18:21	20:33	21:42			22:41	17	06:27 (77)
9	09:23		12:01 (21)	08:27			07:13	06:44	05:24			04:31		06:09 (77)
	16:05	41	14:36 (25)	17:16			18:24	20:35	21:44			22:42	18	06:27 (77)
10	09:22		12:01 (21)	08:25			07:10	06:41	05:22			04:30		06:09 (77)
	16:07	50	14:36 (25)	17:18			18:26	20:37	21:46			22:43	19	06:28 (77)
11	09:21		12:02 (21)	08:23			07:07	06:38	05:19			04:29		06:09 (77)
	16:09	57	14:37 (25)	17:21			18:28	20:40	21:49			22:44	19	06:28 (77)
12	09:20		11:27 (29)	08:20			07:04	06:35	05:17			04:29		06:09 (77)
	16:11	69	14:38 (25)	17:23			18:31	20:42	21:51			22:45	19	06:28 (77)
13	09:18		11:26 (29)	08:18			07:02	06:32	05:15			04:28		06:08 (77)
	16:13	75	14:39 (25)	17:26			18:33	20:44	21:53			22:46	20	06:28 (77)
14	09:17		11:25 (29)	08:15			06:59	06:30	05:13			04:28		06:08 (77)
	16:15	78	14:39 (25)	17:28			18:35	20:47	21:55			22:47	21	06:29 (77)
15	09:16		11:24 (29)	08:13			06:56	06:27	05:10			04:27		06:07 (77)
	16:17	82	14:40 (25)	17:31			18:38	20:49	21:58			22:47	22	06:29 (77)
16	09:15		11:23 (29)	08:10			06:53	06:24	05:08			04:27		06:07 (77)
	16:19	85	14:40 (25)	17:33			18:40	20:51	22:00			22:48	22	06:29 (77)
17	09:13		11:23 (29)	08:07			06:50	06:21	05:06			04:27		06:07 (77)
	16:21	86	14:41 (25)	17:36			18:42	20:54	22:02			22:49	23	06:30 (77)
18	09:12		11:23 (29)	08:05			06:47	06:19	05:04			04:27		06:07 (77)
	16:23	87	14:42 (25)	17:38			18:45	20:56	22:04			22:49	23	06:30 (77)
19	09:10		11:22 (29)	08:02			06:44	06:16	05:02			04:27		06:08 (77)
	16:25	87	14:42 (25)	17:40			18:47	20:58	22:06			22:50	22	06:30 (77)
20	09:09		11:22 (29)	08:00			06:41	06:13	05:00			04:27		06:08 (77)
	16:28	85	14:42 (25)	17:43			18:49	21:00	22:08			22:50	22	06:30 (77)
21	09:07		11:22 (29)	07:57			06:39	06:10	04:58			04:27		06:08 (77)
	16:30	82	14:42 (25)	17:45			18:51	21:03	22:10			22:50	22	06:30 (77)
22	09:05		11:22 (29)	07:54			06:36	06:08	04:56			04:27		06:08 (77)
	16:32	77	14:42 (25)	17:48			18:54	21:05	22:12			22:50	22	06:30 (77)
23	09:03		11:21 (29)	07:52			06:33	06:05	04:54			04:27		06:09 (77)
	16:34	77	14:41 (25)	17:50			18:56	21:07	22:14			22:51	22	06:31 (77)
24	09:02		11:21 (29)	07:49			06:30	06:02	04:52			04:27		06:08 (77)
	16:37	76	14:41 (25)	17:53			18:58	21:10	22:16			22:51	23	06:31 (77)
25	09:00		11:21 (29)	07:46			06:27	05:59	04:51			04:28		06:08 (77)
	16:39	77	14:41 (25)	17:55			19:01	21:12	22:18			22:51	23	06:31 (77)
26	08:58		11:21 (29)	07:44			06:24	05:57	04:49			04:28		06:09 (77)
	16:41	75	14:41 (25)	17:57			19:03	21:14	22:20			22:50	23	06:32 (77)
27	08:56		11:21 (29)	07:41			06:21	05:54	04:47		06:15 (77)	04:29		06:09 (77)
	16:44	71	14:39 (25)	18:00			19:05	21:17	22:22	4	06:19 (77)	22:50	22	06:31 (77)
28	08:54		11:21 (29)	07:38			06:18	05:52	04:46		06:15 (77)	04:30		06:11 (77)
	16:46	69	14:38 (25)	18:02			19:08	21:19	22:24	6	06:21 (77)	22:50	21	06:32 (77)
29	08:52		11:22 (29)				07:15	05:49	04:44		06:14 (77)	04:30		06:12 (77)
	16:49	61	14:36 (25)				20:10	21:21	22:25	7	06:21 (77)	22:50	20	06:32 (77)
30	08:50		11:22 (29)				07:13	05:46	04:42		06:13 (77)	04:31		06:12 (77)
	16:51	55	13:36 (24)				20:12	21:24	22:27	9	06:22 (77)	22:49	20	06:32 (77)
31	08:48		11:23 (29)				07:10		04:41		06:13 (77)			
	16:54	53	13:36 (24)				20:14		22:29	10	06:23 (77)			
Potential sun hours	221			260			365	432	521			547		
Total, worst case		1840			243					36			587	
Sun reduction		0,50			0,50					0,50			0,50	
Oper. time red.		0,80			0,80					0,80			0,80	
Wind dir. red.		0,62			0,65					0,58			0,58	
Total reduction		0,25			0,26					0,23			0,23	
Total, real		452			63					8			135	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** K - Buevegen 1778 (11)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July			August	September	October	November			December		
1	04:32		06:13 (77)	05:24	06:33	07:39	07:51			09:00		11:13 (29)
	22:49	19	06:32 (77)	22:01	20:40	19:13	16:49			15:51	59	14:20 (25)
2	04:33		06:14 (77)	05:26	06:35	07:42	07:54			09:02		11:44 (21)
	22:48	18	06:32 (77)	21:59	20:37	19:10	16:46			15:50	50	14:19 (25)
3	04:34		06:14 (77)	05:28	06:37	07:44	07:56		11:02 (29)	09:03		11:44 (21)
	22:47	18	06:32 (77)	21:56	20:34	19:07	16:44	12	11:14 (29)	15:49	40	14:19 (25)
4	04:35		06:15 (77)	05:31	06:40	07:46	07:59		10:59 (29)	09:05		11:44 (21)
	22:47	18	06:33 (77)	21:54	20:31	19:04	16:41	17	11:16 (29)	15:48	34	14:19 (25)
5	04:36		06:15 (77)	05:33	06:42	07:48	08:01		10:58 (29)	09:07		11:45 (21)
	22:46	18	06:33 (77)	21:51	20:28	19:02	16:39	20	11:18 (29)	15:47	31	13:06 (24)
6	04:37		06:16 (77)	05:35	06:44	07:51	08:03		10:57 (29)	09:09		11:45 (21)
	22:45	16	06:32 (77)	21:49	20:25	18:59	16:37	22	11:19 (29)	15:46	27	13:05 (24)
7	04:39		06:16 (77)	05:37	06:46	07:53	08:06		10:56 (29)	09:10		11:46 (21)
	22:44	16	06:32 (77)	21:47	20:23	18:56	16:34	37	13:01 (24)	15:45	20	12:06 (21)
8	04:40		06:17 (77)	05:39	06:49	07:55	08:08		10:55 (29)	09:12		11:47 (21)
	22:43	15	06:32 (77)	21:44	20:20	18:53	16:32	43	13:03 (24)	15:45	20	12:07 (21)
9	04:41		06:18 (77)	05:42	06:51	07:57	08:11		10:55 (29)	09:13		11:47 (21)
	22:42	15	06:33 (77)	21:42	20:17	18:50	16:30	47	13:05 (24)	15:44	20	12:07 (21)
10	04:43		06:19 (77)	05:44	06:53	08:00	08:13		10:54 (29)	09:15		11:47 (21)
	22:41	13	06:32 (77)	21:39	20:14	18:47	16:28	51	13:06 (24)	15:43	19	12:07 (21)
11	04:44		06:19 (77)	05:46	06:55	08:02	08:15		10:54 (29)	09:16		11:48 (21)
	22:39	13	06:32 (77)	21:37	20:11	18:45	16:25	52	13:06 (24)	15:43	16	12:04 (21)
12	04:46		06:21 (77)	05:48	06:57	08:04	08:18		10:54 (29)	09:18		11:48 (21)
	22:38	11	06:32 (77)	21:34	20:08	18:42	16:23	55	13:08 (24)	15:43	11	11:59 (21)
13	04:47		06:21 (77)	05:51	07:00	08:07	08:20		10:54 (29)	09:19		11:49 (21)
	22:37	10	06:31 (77)	21:32	20:05	18:39	16:21	62	14:08 (25)	15:42	11	12:00 (21)
14	04:49		06:22 (77)	05:53	07:02	08:09	08:23		10:53 (29)	09:20		11:50 (21)
	22:35	8	06:30 (77)	21:29	20:02	18:36	16:19	69	14:10 (25)	15:42	7	12:00 (21)
15	04:51		06:23 (77)	05:55	07:04	08:11	08:25		10:54 (29)	09:21		11:50 (21)
	22:34	7	06:30 (77)	21:26	19:59	18:33	16:17	71	14:12 (25)	15:42	3	11:53 (21)
16	04:52		06:24 (77)	05:57	07:06	08:13	08:27		10:54 (29)	09:22		11:50 (21)
	22:32	4	06:28 (77)	21:24	19:56	18:31	16:15	75	14:14 (25)	15:42	3	11:53 (21)
17	04:54		06:25 (77)	06:00	07:08	08:16	08:30		10:55 (29)	09:23		11:51 (21)
	22:31	2	06:27 (77)	21:21	19:54	18:28	16:13	77	14:15 (25)	15:42	1	11:52 (21)
18	04:56			06:02	07:11	08:18	08:32		10:55 (29)	09:24		
	22:29			21:18	19:51	18:25	16:11	76	14:15 (25)	15:42		
19	04:58			06:04	07:13	08:20	08:34		10:56 (29)	09:25		
	22:27			21:16	19:48	18:22	16:09	77	14:16 (25)	15:42		
20	05:00			06:06	07:15	08:23	08:36		10:56 (29)	09:26		
	22:25			21:13	19:45	18:20	16:08	77	14:16 (25)	15:43		
21	05:01			06:08	07:17	08:25	08:39		10:57 (29)	09:26		
	22:24			21:10	19:42	18:17	16:06	81	14:17 (25)	15:43		
22	05:03			06:11	07:19	08:27	08:41		10:58 (29)	09:27		
	22:22			21:08	19:39	18:14	16:04	85	14:18 (25)	15:43		
23	05:05			06:13	07:22	08:30	08:43		10:58 (29)	09:27		
	22:20			21:05	19:36	18:12	16:02	88	14:18 (25)	15:44		
24	05:07			06:15	07:24	08:32	08:45		11:00 (29)	09:28		
	22:18			21:02	19:33	18:09	16:01	87	14:19 (25)	15:44		
25	05:09			06:17	07:26	07:35	08:47		11:00 (29)	09:28		
	22:16			20:59	19:30	17:06	15:59	86	14:18 (25)	15:45		
26	05:11			06:20	07:28	07:37	08:50		11:02 (29)	09:28		
	22:14			20:57	19:27	17:04	15:58	85	14:19 (25)	15:46		
27	05:13			06:22	07:30	07:39	08:52		11:03 (29)	09:28		11:56 (21)
	22:12			20:54	19:25	17:01	15:56	82	14:19 (25)	15:47	3	11:59 (21)
28	05:16			06:24	07:33	07:42	08:54		11:05 (29)	09:28		11:57 (21)
	22:10			20:51	19:22	16:59	15:55	79	14:19 (25)	15:48	3	12:00 (21)
29	05:18			06:26	07:35	07:44	08:56		11:06 (29)	09:28		11:56 (21)
	22:07			20:48	19:19	16:56	15:54	74	14:19 (25)	15:49	5	12:07 (21)
30	05:20			06:29	07:37	07:47	08:58		11:08 (29)	09:28		11:57 (21)
	22:05			20:45	19:16	16:54	15:52	69	14:19 (25)	15:50	11	12:08 (21)
31	05:22			06:31		07:49				09:28		11:57 (21)
	22:03			20:42		16:51				15:51	11	12:08 (21)
Potential sun hours	546			478	386	319	236			199		
Total, worst case		221						1756			405	
Sun reduction		0,50						0,50			0,50	
Oper. time red.		0,80						0,80			0,80	
Wind dir. red.		0,58						0,62			0,62	
Total reduction		0,23						0,25			0,25	
Total, real		51						434			101	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** L - Buevegen 1850 (12)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March		April	May	June
1	09:28	11:52 (34)	08:46	13:17 (29)	07:35	08:53 (18)	07:07	05:44	04:40
	15:53 17	12:09 (34)	16:56 36	13:53 (29)	18:05 19	09:12 (18)	20:17	21:26	22:30
2	09:27	11:51 (34)	08:43	13:18 (29)	07:32	08:53 (18)	07:04	05:41	04:38
	15:54 19	12:10 (34)	16:58 43	15:13 (24)	18:07 20	09:13 (18)	20:19	21:28	22:32
3	09:27	11:51 (34)	08:41	13:17 (29)	07:30	08:52 (18)	07:01	05:39	04:37
	15:55 19	12:10 (34)	17:01 52	15:18 (24)	18:09 21	09:13 (18)	20:21	21:30	22:34
4	09:26	11:51 (34)	08:39	13:18 (29)	07:27	08:52 (18)	06:58	05:36	04:36
	15:57 20	12:11 (34)	17:03 54	15:20 (24)	18:12 20	09:12 (18)	20:24	21:33	22:35
5	09:26	11:52 (34)	08:37	13:17 (29)	07:24	08:52 (18)	06:55	05:34	04:35
	15:58 20	12:12 (34)	17:06 58	15:21 (24)	18:14 20	09:12 (18)	20:26	21:35	22:37
6	09:25	11:52 (34)	08:34	13:18 (29)	07:21	08:52 (18)	06:52	05:31	04:34
	16:00 20	12:12 (34)	17:08 63	15:44 (25)	18:16 19	09:11 (18)	20:28	21:37	22:38
7	09:24	11:52 (34)	08:32	13:17 (29)	07:19	08:53 (18)	06:49	05:29	04:33
	16:02 21	12:13 (34)	17:11 68	15:46 (25)	18:19 17	09:10 (18)	20:30	21:40	22:39
8	09:24	11:53 (34)	08:30	13:18 (29)	07:16	08:54 (18)	06:47	05:26	04:32
	16:03 21	12:14 (34)	17:13 73	15:51 (25)	18:21 14	09:08 (18)	20:33	21:42	22:40
9	09:23	11:52 (34)	08:27	13:18 (29)	07:13	08:55 (18)	06:44	05:24	04:31
	16:05 22	12:14 (34)	17:16 79	15:59 (25)	18:24 10	09:05 (18)	20:35	21:44	22:42
10	09:22	11:53 (34)	08:25	13:18 (29)	07:10		06:41	05:22	04:30
	16:07 22	12:15 (34)	17:18 82	16:00 (25)	18:26		20:37	21:46	22:43
11	09:21	11:54 (34)	08:23	13:20 (29)	07:07		06:38	05:19	04:29
	16:09 22	12:16 (34)	17:21 80	16:00 (25)	18:28		20:40	21:49	22:44
12	09:20	11:53 (34)	08:20	10:07 (16)	07:04		06:35	05:17	04:29
	16:11 24	13:22 (21)	17:23 88	15:59 (25)	18:31		20:42	21:51	22:45
13	09:18	11:53 (34)	08:18	10:04 (16)	07:01		06:32	05:15	04:28
	16:13 30	13:28 (21)	17:26 90	15:58 (25)	18:33		20:44	21:53	22:46
14	09:17	11:54 (34)	08:15	10:03 (16)	06:59		06:30	05:13	04:28
	16:15 38	13:37 (21)	17:28 87	15:57 (25)	18:35		20:47	21:55	22:46
15	09:16	11:55 (34)	08:13	10:02 (16)	06:56		06:27	05:10	04:27
	16:17 44	13:43 (21)	17:31 80	15:54 (25)	18:38		20:49	21:57	22:47
16	09:15	11:55 (34)	08:10	10:01 (16)	06:53		06:24	05:08	04:27
	16:19 45	13:44 (21)	17:33 72	15:24 (24)	18:40		20:51	22:00	22:48
17	09:13	11:55 (34)	08:07	10:00 (16)	06:50		06:21	05:06	04:27
	16:21 45	13:44 (21)	17:35 66	15:23 (24)	18:42		20:53	22:02	22:49
18	09:12	11:57 (34)	08:05	10:00 (16)	06:47		06:19	05:04	04:27
	16:23 44	13:46 (21)	17:38 60	15:23 (24)	18:45		20:56	22:04	22:49
19	09:10	11:57 (34)	08:02	10:00 (16)	06:44		06:16	05:02	04:27
	16:25 44	13:46 (21)	17:40 43	15:21 (24)	18:47		20:58	22:06	22:50
20	09:08	11:58 (34)	08:00	09:59 (16)	06:41		06:13	05:00	04:27
	16:28 43	13:46 (21)	17:43 41	15:19 (24)	18:49		21:00	22:08	22:50
21	09:07	11:59 (34)	07:57	09:59 (16)	06:38		06:10	04:58	04:27
	16:30 40	13:46 (21)	17:45 33	15:15 (24)	18:51		21:03	22:10	22:50
22	09:05	11:59 (34)	07:54	09:59 (16)	06:36		06:08	04:56	04:27
	16:32 40	13:46 (21)	17:48 25	10:24 (16)	18:54		21:05	22:12	22:50
23	09:03	12:01 (34)	07:52	10:00 (16)	06:33		06:05	04:54	04:27
	16:34 36	13:46 (21)	17:50 24	10:24 (16)	18:56		21:07	22:14	22:50
24	09:02	12:03 (34)	07:49	10:01 (16)	06:30		06:02	04:52	04:27
	16:37 34	13:46 (21)	17:53 22	10:23 (16)	18:58		21:10	22:16	22:51
25	09:00	12:05 (34)	07:46	09:00 (18)	06:27		05:59	04:51	04:28
	16:39 32	13:46 (29)	17:55 27	10:22 (16)	19:01		21:12	22:18	22:50
26	08:58	13:21 (29)	07:43	08:57 (18)	06:24		05:57	04:49	04:28
	16:41 27	13:48 (29)	17:57 30	10:20 (16)	19:03		21:14	22:20	22:50
27	08:56	13:20 (29)	07:41	08:55 (18)	06:21		05:54	04:47	04:29
	16:44 28	13:48 (29)	18:00 29	10:18 (16)	19:05		21:17	22:22	22:50
28	08:54	13:19 (29)	07:38	08:54 (18)	06:18		05:52	04:46	04:30
	16:46 31	13:50 (29)	18:02 24	10:14 (16)	19:07		21:19	22:24	22:50
29	08:52	13:19 (29)			07:15		05:49	04:44	04:30
	16:49 32	13:51 (29)			20:10		21:21	22:25	22:50
30	08:50	13:18 (29)			07:12		05:46	04:42	04:31
	16:51 33	13:51 (29)			20:12		21:24	22:27	22:49
31	08:48	13:18 (29)			07:10			04:41	
	16:53 35	13:53 (29)			20:14			22:29	
Potential sun hours	221		260		365		432	521	547
Total, worst case	948		1529		160				
Sun reduction	0,50		0,50		0,50				
Oper. time red.	0,80		0,80		0,80				
Wind dir. red.	0,61		0,61		0,74				
Total reduction	0,24		0,24		0,29				
Total, real	231		369		47				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** L - Buevegen 1850 (12)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October			November			December		
1	04:32	05:24	06:33	07:39			07:51		12:48 (29)	09:00		11:36 (34)
	22:49	22:01	20:40	19:13			16:49	83	15:30 (25)	15:51	22	11:58 (34)
2	04:33	05:26	06:35	07:42			07:54		12:48 (29)	09:02		11:36 (34)
	22:48	21:58	20:37	19:10			16:46	76	15:28 (25)	15:50	22	11:58 (34)
3	04:34	05:28	06:37	07:44			07:56		12:48 (29)	09:03		11:36 (34)
	22:47	21:56	20:34	19:07			16:44	71	15:20 (25)	15:49	22	11:58 (34)
4	04:35	05:31	06:40	07:46		09:34 (18)	07:59		12:47 (29)	09:05		11:37 (34)
	22:47	21:54	20:31	19:04	7	09:41 (18)	16:41	66	15:15 (25)	15:48	21	11:58 (34)
5	04:36	05:33	06:42	07:48		09:32 (18)	08:01		12:47 (29)	09:07		11:37 (34)
	22:46	21:51	20:28	19:01	12	09:44 (18)	16:39	62	15:13 (25)	15:47	21	11:58 (34)
6	04:37	05:35	06:44	07:51		09:30 (18)	08:03		12:48 (29)	09:09		11:38 (34)
	22:45	21:49	20:25	18:59	15	09:45 (18)	16:37	58	14:52 (24)	15:46	21	11:59 (34)
7	04:38	05:37	06:46	07:53		09:28 (18)	08:06		12:47 (29)	09:10		11:39 (34)
	22:44	21:47	20:22	18:56	18	09:46 (18)	16:34	55	14:50 (24)	15:45	20	11:59 (34)
8	04:40	05:39	06:48	07:55		09:28 (18)	08:08		12:48 (29)	09:12		11:40 (34)
	22:43	21:44	20:20	18:53	19	09:47 (18)	16:32	50	14:48 (24)	15:45	19	11:59 (34)
9	04:41	05:42	06:51	07:57		09:27 (18)	08:11		12:48 (29)	09:13		11:41 (34)
	22:42	21:42	20:17	18:50	20	09:47 (18)	16:30	42	14:43 (24)	15:44	19	12:00 (34)
10	04:43	05:44	06:53	08:00		09:27 (18)	08:13		12:49 (29)	09:15		11:41 (34)
	22:40	21:39	20:14	18:47	20	09:47 (18)	16:28	35	13:24 (29)	15:43	18	11:59 (34)
11	04:44	05:46	06:55	08:02		09:26 (18)	08:15		12:49 (29)	09:16		11:42 (34)
	22:39	21:37	20:11	18:45	20	09:46 (18)	16:25	34	13:23 (29)	15:43	18	12:00 (34)
12	04:46	05:48	06:57	08:04		09:26 (18)	08:18		12:50 (29)	09:18		11:42 (34)
	22:38	21:34	20:08	18:42	19	09:45 (18)	16:23	33	13:23 (29)	15:43	17	11:59 (34)
13	04:47	05:51	07:00	08:06		09:27 (18)	08:20		12:51 (29)	09:19		11:43 (34)
	22:37	21:31	20:05	18:39	18	09:45 (18)	16:21	32	13:23 (29)	15:42	17	12:00 (34)
14	04:49	05:53	07:02	08:09		09:27 (18)	08:22		12:51 (29)	09:20		11:44 (34)
	22:35	21:29	20:02	18:36	28	10:49 (16)	16:19	31	13:22 (29)	15:42	16	12:00 (34)
15	04:51	05:55	07:04	08:11		09:29 (18)	08:25		12:53 (29)	09:21		11:44 (34)
	22:34	21:26	19:59	18:33	30	10:52 (16)	16:17	28	13:21 (29)	15:42	16	12:00 (34)
16	04:52	05:57	07:06	08:13		09:30 (18)	08:27		12:54 (29)	09:22		11:45 (34)
	22:32	21:24	19:56	18:31	29	10:53 (16)	16:15	27	13:21 (29)	15:42	15	12:00 (34)
17	04:54	05:59	07:08	08:16		10:33 (16)	08:29		11:38 (34)	09:23		11:45 (34)
	22:30	21:21	19:54	18:28	21	10:54 (16)	16:13	32	13:19 (29)	15:42	15	12:00 (34)
18	04:56	06:02	07:10	08:18		10:31 (16)	08:32		11:37 (34)	09:24		11:46 (34)
	22:29	21:18	19:51	18:25	24	10:55 (16)	16:11	34	13:20 (21)	15:42	15	12:01 (34)
19	04:58	06:04	07:13	08:20		10:31 (16)	08:34		11:36 (34)	09:25		11:47 (34)
	22:27	21:16	19:48	18:22	24	10:55 (16)	16:09	36	13:21 (21)	15:42	14	12:01 (34)
20	05:00	06:06	07:15	08:23		10:30 (16)	08:36		11:34 (34)	09:26		11:48 (34)
	22:25	21:13	19:45	18:20	25	10:55 (16)	16:08	39	13:21 (21)	15:42	14	12:02 (34)
21	05:01	06:08	07:17	08:25		10:30 (16)	08:39		11:34 (34)	09:26		11:48 (34)
	22:24	21:10	19:42	18:17	36	15:48 (24)	16:06	40	13:21 (21)	15:43	14	12:02 (34)
22	05:03	06:11	07:19	08:27		10:30 (16)	08:41		11:34 (34)	09:27		11:48 (34)
	22:22	21:08	19:39	18:14	41	15:50 (24)	16:04	43	13:22 (21)	15:43	15	12:03 (34)
23	05:05	06:13	07:22	08:30		10:30 (16)	08:43		11:33 (34)	09:27		11:49 (34)
	22:20	21:05	19:36	18:12	48	15:52 (24)	16:02	44	13:22 (21)	15:44	14	12:03 (34)
24	05:07	06:15	07:24	08:32		10:30 (16)	08:45		11:34 (34)	09:28		11:50 (34)
	22:18	21:02	19:33	18:09	61	15:52 (24)	16:01	44	13:23 (21)	15:44	14	12:04 (34)
25	05:09	06:17	07:26	07:35		09:30 (16)	08:47		11:33 (34)	09:28		11:50 (34)
	22:16	20:59	19:30	17:06	69	14:54 (24)	15:59	44	13:22 (21)	15:45	14	12:04 (34)
26	05:11	06:20	07:28	07:37		09:30 (16)	08:50		11:34 (34)	09:28		11:50 (34)
	22:14	20:56	19:27	17:04	73	14:54 (24)	15:58	44	13:23 (21)	15:46	15	12:05 (34)
27	05:13	06:22	07:30	07:39		09:32 (16)	08:52		11:34 (34)	09:28		11:50 (34)
	22:12	20:54	19:24	17:01	81	15:24 (25)	15:56	44	13:23 (21)	15:47	16	12:06 (34)
28	05:16	06:24	07:33	07:42		09:33 (16)	08:54		11:35 (34)	09:28		11:50 (34)
	22:10	20:51	19:22	16:59	88	15:27 (25)	15:55	38	13:18 (21)	15:48	16	12:06 (34)
29	05:18	06:26	07:35	07:44		09:34 (16)	08:56		11:35 (34)	09:28		11:50 (34)
	22:07	20:48	19:19	16:56	90	15:28 (25)	15:54	29	13:09 (21)	15:49	17	12:07 (34)
30	05:20	06:29	07:37	07:47		09:37 (16)	08:58		11:35 (34)	09:28		11:51 (34)
	22:05	20:45	19:16	16:54	89	15:29 (25)	15:52	23	13:03 (21)	15:50	17	12:08 (34)
31	05:22	06:31		07:49		12:49 (29)				09:28		11:51 (34)
	22:03	20:42		16:51	81	15:30 (25)				15:51	17	12:08 (34)
Potential sun hours	546	478	386	319			236			199		
Total, worst case					1106			1317			531	
Sun reduction					0,50			0,50			0,50	
Oper. time red.					0,80			0,80			0,80	
Wind dir. red.					0,64			0,59			0,64	
Total reduction					0,26			0,23			0,26	
Total, real					285			308			136	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** M - Buevegen 1941 (13)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March			April	May	June
1	09:28			08:46		14:11 (34)	07:35		10:14 (18)	07:07	05:44	04:40
	15:53			16:56	18	15:31 (21)	18:05	73	16:49 (24)	20:17	21:26	22:30
2	09:27			08:43		15:15 (21)	07:32		10:15 (18)	07:04	05:41	04:38
	15:54			16:58	17	15:32 (21)	18:07	70	16:50 (24)	20:19	21:28	22:32
3	09:27			08:41		15:14 (21)	07:30		10:16 (18)	07:01	05:39	04:37
	15:55			17:01	19	15:33 (21)	18:09	62	16:48 (24)	20:21	21:30	22:34
4	09:26			08:39		12:34 (16)	07:27		10:16 (18)	06:58	05:36	04:36
	15:57			17:03	30	15:33 (21)	18:12	54	16:47 (24)	20:23	21:33	22:35
5	09:26			08:37		12:30 (16)	07:24		09:25 (13)	06:55	05:34	04:35
	15:58			17:06	36	15:33 (21)	18:14	36	16:44 (24)	20:26	21:35	22:36
6	09:25			08:34		12:29 (16)	07:21		09:21 (13)	06:52	05:31	04:34
	16:00			17:08	40	15:34 (21)	18:16	27	10:42 (18)	20:28	21:37	22:38
7	09:24			08:32		12:27 (16)	07:18		10:19 (18)	06:49	05:29	04:33
	16:02			17:11	42	15:33 (21)	18:19	20	10:39 (18)	20:30	21:40	22:39
8	09:24			08:30		12:27 (16)	07:16		10:21 (18)	06:47	05:26	04:32
	16:03			17:13	44	15:34 (21)	18:21	15	10:36 (18)	20:33	21:42	22:40
9	09:23			08:27		12:25 (16)	07:13		10:25 (18)	06:44	05:24	04:31
	16:05			17:16	46	15:33 (21)	18:24	7	10:32 (18)	20:35	21:44	22:42
10	09:22			08:25		12:24 (16)	07:10			06:41	05:22	04:30
	16:07			17:18	45	15:31 (21)	18:26			20:37	21:46	22:43
11	09:21			08:22		12:24 (16)	07:07			06:38	05:19	04:29
	16:09			17:21	43	15:30 (21)	18:28			20:40	21:49	22:44
12	09:20			08:20		12:23 (16)	07:04			06:35	05:17	04:29
	16:11			17:23	38	15:27 (21)	18:31			20:42	21:51	22:45
13	09:18			08:18		12:22 (16)	07:01			06:32	05:15	04:28
	16:13			17:26	34	12:56 (16)	18:33			20:44	21:53	22:46
14	09:17			08:15		12:23 (16)	06:59			06:30	05:12	04:28
	16:15			17:28	34	12:57 (16)	18:35			20:46	21:55	22:46
15	09:16			08:12		12:22 (16)	06:56			06:27	05:10	04:27
	16:17			17:30	35	12:57 (16)	18:38			20:49	21:57	22:47
16	09:14			08:10		12:22 (16)	06:53			06:24	05:08	04:27
	16:19			17:33	43	16:12 (29)	18:40			20:51	22:00	22:48
17	09:13			08:07		12:22 (16)	06:50			06:21	05:06	04:27
	16:21			17:35	49	16:15 (29)	18:42			20:53	22:02	22:48
18	09:12			08:05		12:23 (16)	06:47			06:18	05:04	04:27
	16:23			17:38	51	16:17 (29)	18:44			20:56	22:04	22:49
19	09:10			08:02		12:23 (16)	06:44			06:16	05:02	04:27
	16:25			17:40	54	16:18 (29)	18:47			20:58	22:06	22:49
20	09:08			08:00		12:23 (16)	06:41			06:13	05:00	04:27
	16:28			17:43	55	16:19 (29)	18:49			21:00	22:08	22:50
21	09:07			07:57		12:23 (16)	06:38			06:10	04:58	04:27
	16:30			17:45	56	16:20 (29)	18:51			21:03	22:10	22:50
22	09:05			07:54		12:24 (16)	06:36			06:07	04:56	04:27
	16:32			17:48	61	16:42 (24)	18:54			21:05	22:12	22:50
23	09:03			07:52		12:26 (16)	06:33			06:05	04:54	04:27
	16:34			17:50	67	16:48 (24)	18:56			21:07	22:14	22:50
24	09:01			07:49		10:20 (18)	06:30			06:02	04:52	04:27
	16:37			17:52	68	16:49 (24)	18:58			21:10	22:16	22:50
25	09:00			07:46		10:16 (18)	06:27			05:59	04:51	04:28
	16:39			17:55	91	16:50 (24)	19:01			21:12	22:18	22:50
26	08:58			07:43		10:15 (18)	06:24			05:57	04:49	04:28
	16:41			17:57	92	16:50 (24)	19:03			21:14	22:20	22:50
27	08:56			07:41		10:15 (18)	06:21			05:54	04:47	04:29
	16:44			18:00	82	16:50 (24)	19:05			21:17	22:22	22:50
28	08:54			07:38		10:15 (18)	06:18			05:51	04:45	04:29
	16:46			18:02	75	16:50 (24)	19:07			21:19	22:24	22:50
29	08:52						07:15			05:49	04:44	04:30
	16:49						20:10			21:21	22:25	22:49
30	08:50		14:16 (34)				07:12			05:46	04:42	04:31
	16:51	3	14:19 (34)				20:12			21:23	22:27	22:49
31	08:48		14:08 (34)				07:10				04:41	
	16:53	21	15:27 (21)				20:14				22:29	
Potential sun hours	221			260			365			432	521	547
Total, worst case		24			1365			364				
Sun reduction		0,50			0,50			0,50				
Oper. time red.		0,80			0,80			0,80				
Wind dir. red.		0,55			0,60			0,65				
Total reduction		0,22			0,24			0,26				
Total, real		5			328			95				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** M - Buevegen 1941 (13)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October			November			December
1	04:32	05:24	06:33	07:39			07:51		11:54 (16)	09:00
	22:48	22:01	20:40	19:13			16:49	45	15:01 (21)	15:51
2	04:33	05:26	06:35	07:41			07:54		11:55 (16)	09:01
	22:48	21:58	20:37	19:10			16:46	44	15:02 (21)	15:50
3	04:34	05:28	06:37	07:44			07:56		11:56 (16)	09:03
	22:47	21:56	20:34	19:07			16:44	45	15:03 (21)	15:49
4	04:35	05:31	06:40	07:46			07:58		11:57 (16)	09:05
	22:46	21:54	20:31	19:04			16:41	43	15:03 (21)	15:48
5	04:36	05:33	06:42	07:48		10:59 (18)	08:01		11:59 (16)	09:07
	22:46	21:51	20:28	19:01	13	11:12 (18)	16:39	39	15:03 (21)	15:47
6	04:37	05:35	06:44	07:50		10:56 (18)	08:03		12:01 (16)	09:09
	22:45	21:49	20:25	18:59	19	11:15 (18)	16:37	36	15:04 (21)	15:46
7	04:38	05:37	06:46	07:53		09:54 (13)	08:06		12:04 (16)	09:10
	22:44	21:47	20:22	18:56	25	11:16 (18)	16:34	29	15:03 (21)	15:45
8	04:40	05:39	06:48	07:55		09:58 (13)	08:08		14:45 (21)	09:12
	22:43	21:44	20:20	18:53	33	17:18 (24)	16:32	18	15:03 (21)	15:45
9	04:41	05:42	06:51	07:57		10:01 (13)	08:10		14:46 (21)	09:13
	22:42	21:42	20:17	18:50	49	17:20 (24)	16:30	17	15:03 (21)	15:44
10	04:43	05:44	06:53	08:00		10:49 (18)	08:13		13:42 (34)	09:15
	22:40	21:39	20:14	18:47	59	17:21 (24)	16:28	20	15:03 (21)	15:43
11	04:44	05:46	06:55	08:02		10:49 (18)	08:15		13:39 (34)	09:16
	22:39	21:37	20:11	18:44	66	17:23 (24)	16:25	20	14:58 (21)	15:43
12	04:46	05:48	06:57	08:04		10:48 (18)	08:18		13:48 (34)	09:17
	22:38	21:34	20:08	18:42	71	17:23 (24)	16:23	3	13:51 (34)	15:43
13	04:47	05:50	06:59	08:06		10:48 (18)	08:20			09:19
	22:36	21:31	20:05	18:39	73	17:23 (24)	16:21			15:42
14	04:49	05:53	07:02	08:09		10:47 (18)	08:22			09:20
	22:35	21:29	20:02	18:36	77	17:23 (24)	16:19			15:42
15	04:50	05:55	07:04	08:11		10:48 (18)	08:25			09:21
	22:34	21:26	19:59	18:33	88	17:23 (24)	16:17			15:42
16	04:52	05:57	07:06	08:13		10:47 (18)	08:27			09:22
	22:32	21:24	19:56	18:31	94	17:22 (24)	16:15			15:42
17	04:54	05:59	07:08	08:16		10:48 (18)	08:29			09:23
	22:30	21:21	19:53	18:28	85	17:22 (24)	16:13			15:42
18	04:56	06:02	07:10	08:18		12:57 (16)	08:32			09:24
	22:29	21:18	19:51	18:25	67	17:20 (24)	16:11			15:42
19	04:58	06:04	07:13	08:20		12:56 (16)	08:34			09:25
	22:27	21:16	19:48	18:22	65	17:17 (24)	16:09			15:42
20	04:59	06:06	07:15	08:23		12:55 (16)	08:36			09:25
	22:25	21:13	19:45	18:20	58	17:12 (24)	16:07			15:42
21	05:01	06:08	07:17	08:25		12:54 (16)	08:39			09:26
	22:23	21:10	19:42	18:17	57	16:51 (29)	16:06			15:43
22	05:03	06:11	07:19	08:27		12:53 (16)	08:41			09:27
	22:22	21:07	19:39	18:14	55	16:49 (29)	16:04			15:43
23	05:05	06:13	07:21	08:30		12:53 (16)	08:43			09:27
	22:20	21:05	19:36	18:12	53	16:48 (29)	16:02			15:44
24	05:07	06:15	07:24	08:32		12:52 (16)	08:45			09:28
	22:18	21:02	19:33	18:09	52	16:46 (29)	16:01			15:44
25	05:09	06:17	07:26	07:34		11:52 (16)	08:47			09:28
	22:16	20:59	19:30	17:06	47	15:44 (29)	15:59			15:45
26	05:11	06:20	07:28	07:37		11:51 (16)	08:49			09:28
	22:14	20:56	19:27	17:04	40	15:40 (29)	15:58			15:46
27	05:13	06:22	07:30	07:39		11:52 (16)	08:52			09:28
	22:12	20:54	19:24	17:01	35	12:27 (16)	15:56			15:47
28	05:15	06:24	07:33	07:42		11:52 (16)	08:54			09:28
	22:10	20:51	19:22	16:59	35	12:27 (16)	15:55			15:48
29	05:18	06:26	07:35	07:44		11:52 (16)	08:56			09:28
	22:07	20:48	19:19	16:56	34	12:26 (16)	15:53			15:49
30	05:20	06:29	07:37	07:46		11:53 (16)	08:58			09:28
	22:05	20:45	19:16	16:54	39	14:57 (21)	15:52			15:50
31	05:22	06:31		07:49		11:54 (16)				09:28
	22:03	20:42		16:51	42	15:00 (21)				15:51
Potential sun hours	546	478	386	319			236			199
Total, worst case					1431			359		
Sun reduction					0,50			0,50		
Oper. time red.					0,80			0,80		
Wind dir. red.					0,62			0,58		
Total reduction					0,25			0,23		
Total, real					354			84		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** N - Buevegen 1988 (14)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March	April	May	June	July	August	September	October		November		December
1	09:28		08:46		11:38 (18)	07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:39		07:51	09:44 (13)	09:00
	15:53		16:56	62	13:43 (16)	18:05	20:17	21:26	22:30	22:48	22:01	20:40	19:13		16:49	55 15:37 (29)	15:51
2	09:27		08:43		11:39 (18)	07:32	07:04	05:41	04:38	04:33	05:26	06:35	07:41		07:54	09:56 (13)	09:01
	15:54		16:58	57	13:43 (16)	18:07	20:19	21:28	22:32	22:48	21:58	20:37	19:10		16:46	51 15:37 (29)	15:50
3	09:27		08:41		11:38 (18)	07:30	07:01	05:39	04:37	04:34	05:28	06:37	07:44		07:56	09:57 (13)	09:03
	15:55		17:01	51	13:42 (16)	18:09	20:21	21:30	22:34	22:47	21:56	20:34	19:07		16:44	57 15:36 (29)	15:49
4	09:26		08:39		11:39 (18)	07:27	06:58	05:36	04:36	04:35	05:30	06:40	07:46		07:58	10:02 (13)	09:05
	15:57		17:03	51	15:59 (29)	18:12	20:23	21:33	22:35	22:46	21:54	20:31	19:04		16:41	58 15:35 (29)	15:48
5	09:26		08:37		11:39 (18)	07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48		08:01	11:09 (18)	09:07
	15:58		17:06	57	16:02 (29)	18:14	20:26	21:35	22:36	22:46	21:51	20:28	19:01		16:39	57 15:34 (29)	15:47
6	09:25		08:34		11:40 (18)	07:21	06:52	05:31	04:34	04:37	05:35	06:44	07:50		08:03	11:10 (18)	09:09
	16:00		17:08	57	16:05 (29)	18:16	20:28	21:37	22:38	22:45	21:49	20:25	18:59		16:37	56 15:33 (29)	15:46
7	09:24		08:32		10:32 (13)	07:18	06:49	05:29	04:33	04:38	05:37	06:46	07:53		08:06	11:09 (18)	09:10
	16:02		17:11	56	16:05 (29)	18:19	20:30	21:40	22:39	22:44	21:47	20:22	18:56		16:34	49 13:12 (16)	15:45
8	09:24		08:30		10:27 (13)	07:16	06:47	05:26	04:32	04:40	05:39	06:48	07:55		08:08	11:09 (18)	09:12
	16:03		17:13	56	16:07 (29)	18:21	20:33	21:42	22:40	22:43	21:44	20:20	18:53		16:32	50 13:13 (16)	15:45
9	09:23		08:27		10:26 (13)	07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:57		08:10	11:09 (18)	09:13
	16:05		17:16	49	16:07 (29)	18:23	20:35	21:44	22:42	22:42	21:42	20:17	18:50		16:30	59 13:14 (16)	15:44
10	09:22		08:25		10:15 (13)	07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00		08:13	11:10 (18)	09:15
	16:07		17:18	57	16:07 (29)	18:26	20:37	21:46	22:43	22:40	21:39	20:14	18:47		16:28	62 13:15 (16)	15:43
11	09:21		08:22		10:16 (13)	07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02		08:15	11:10 (18)	09:16
	16:09		17:21	55	16:08 (29)	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:44		16:25	63 13:14 (16)	15:43
12	09:20		08:20		10:17 (13)	07:04	06:35	05:17	04:29	04:46	05:48	06:57	08:04		08:18	11:10 (18)	09:17
	16:11		17:23	48	16:08 (29)	18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42		16:23	65 13:15 (16)	15:43
13	09:18		08:17		10:18 (13)	07:01	06:32	05:15	04:28	04:47	05:50	06:59	08:06		08:20	11:11 (18)	09:19
	16:13		17:26	33	16:07 (29)	18:33	20:44	21:53	22:46	22:36	21:31	20:05	18:39		16:21	65 13:15 (16)	15:42
14	09:17	12:03 (10)	08:15		10:21 (13)	06:59	06:30	05:12	04:28	04:49	05:53	07:02	08:09		08:22	11:11 (18)	09:20
	16:15	8 12:11 (10)	17:28	28	16:08 (29)	18:35	20:46	21:55	22:46	22:35	21:29	20:02	18:36		16:19	66 13:15 (16)	15:42
15	09:16	12:02 (10)	08:12		15:50 (29)	06:56	06:27	05:10	04:27	04:50	05:55	07:04	08:11		08:25	11:13 (18)	09:21
	16:17	10 12:12 (10)	17:30	17	16:07 (29)	18:37	20:49	21:57	22:47	22:34	21:26	19:59	18:33		16:17	64 13:15 (16)	15:42
16	09:14	12:02 (10)	08:10		15:51 (29)	06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13		08:27	11:14 (18)	09:22
	16:19	11 12:13 (10)	17:33	14	16:05 (29)	18:40	20:51	22:00	22:48	22:32	21:24	19:56	18:31		16:15	62 13:15 (16)	15:42
17	09:13	12:02 (10)	08:07		15:52 (29)	06:50	06:21	05:06	04:27	04:54	05:59	07:08	08:16		08:29	11:15 (18)	09:23
	16:21	18 13:29 (16)	17:35	12	16:04 (29)	18:42	20:53	22:02	22:48	22:30	21:21	19:53	18:28		16:13	61 13:14 (16)	15:42
18	09:12	11:58 (10)	08:05		15:56 (29)	06:47	06:18	05:04	04:27	04:56	06:02	07:10	08:18		08:32	11:17 (18)	09:24
	16:23	29 13:33 (16)	17:38	6	16:02 (29)	18:44	20:56	22:04	22:49	22:29	21:18	19:51	18:25		16:11	59 13:14 (16)	15:42
19	09:10	11:58 (10)	08:02			06:44	06:16	05:02	04:26	04:58	06:04	07:13	08:20		08:34	11:19 (18)	09:25
	16:25	32 13:35 (16)	17:40			18:47	20:58	22:06	22:49	22:27	21:16	19:48	18:22		16:09	54 13:14 (16)	15:42
20	09:08	11:57 (10)	08:00			06:41	06:13	05:00	04:26	04:59	06:06	07:15	08:23		08:36	11:21 (18)	09:25
	16:27	37 13:37 (16)	17:43			18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20		16:07	48 13:13 (16)	15:42
21	09:07	11:57 (10)	07:57			06:38	06:10	04:58	04:27	05:01	06:08	07:17	08:25		08:39	11:32 (10)	09:26
	16:30	40 13:38 (16)	17:45			18:51	21:03	22:10	22:50	22:23	21:10	19:42	18:17		16:06	40 13:13 (16)	15:43
22	09:05	11:46 (18)	07:54			06:36	06:07	04:56	04:27	05:03	06:11	07:19	08:27		08:41	11:33 (10)	09:27
	16:32	48 13:38 (16)	17:48			18:54	21:05	22:12	22:50	22:22	21:07	19:39	18:14		16:04	37 13:13 (16)	15:43
23	09:03	11:44 (18)	07:52			06:33	06:05	04:54	04:27	05:05	06:13	07:21	08:30		08:43	11:34 (10)	09:27
	16:34	54 13:39 (16)	17:50			18:56	21:07	22:14	22:50	22:20	21:05	19:36	18:12		16:02	33 13:11 (16)	15:44
24	09:01	11:43 (18)	07:49			06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32	16:24 (29)	08:45	11:35 (10)	09:28
	16:37	59 13:40 (16)	17:52			18:58	21:10	22:16	22:50	22:18	21:02	19:33	18:09	8 16:32 (29)	16:01	29 13:10 (16)	15:44
25	09:00	11:42 (18)	07:46			06:27	05:59	04:50	04:28	05:09	06:17	07:26	07:34	15:22 (29)	08:47	11:41 (10)	09:28
	16:39	60 13:41 (16)	17:55			19:01	21:12	22:18	22:50	22:16	20:59	19:30	17:06	12 15:34 (29)	15:59	18 13:08 (16)	15:45
26	08:58	11:41 (18)	07:43			06:24	05:57	04:49	04:28	05:11	06:20	07:28	07:37	15:20 (29)	08:49	11:41 (10)	09:28
	16:41	62 13:42 (16)	17:57			19:03	21:14	22:20	22:50	22:14	20:56	19:27	17:04	15 15:35 (29)	15:58	11 11:52 (10)	15:46
27	08:56	11:40 (18)	07:41			06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39	09:53 (13)	08:52	11:41 (10)	09:28
	16:44	64 13:42 (16)	18:00			19:05	21:17	22:22	22:50	22:12	20:54	19:24	17:01	20 15:36 (29)	15:56	10 11:51 (10)	15:47
28	08:54	11:40 (18)	07:38			06:18	05:51	04:45	04:29	05:15	06:24	07:33	07:42	09:49 (13)	08:54	11:43 (10)	09:28
	16:46	65 13:43 (16)	18:02			19:07	21:19	22:24	22:50	22:10	20:51	19:22	16:59	29 15:37 (29)	15:55	8 11:51 (10)	15:48
29	08:52	11:40 (18)				07:15	05:49	04:44	04:30	05:18	06:26	07:35	07:44	09:47 (13)	08:56		09:28
	16:49	64 13:43 (16)				20:10	21:21	22:25	22:49	22:07	20:48	19:19	16:56	38 15:37 (29)	15:53		15:49
30	08:50	11:39 (18)				07:12	05:46	04:42	04:31	05:20	06:28	07:37	07:46	09:46 (13)	08:58		09:28
	16:51	65 13:43 (16)				20:12	21:23	22:27	22:49	22:05	20:45	19:16	16:54	49 15:37 (29)	15:52		15:50
31	08:48	11:39 (18)				07:09		04:41		05:22	06:31		07:49	09:46 (13)			09:28
	16:53	63 13:43 (16)				20:14		22:29		22:03	20:42		16:51	56 15:38 (29)			15:51
Potential sun hours	221		260		365	432	521	547	546	478	386	319		236			199
Total, worst case		789		766									227		1347		
Sun reduction		0,50		0,50									0,50		0,50		
Oper. time red.		0,80		0,80									0,80		0,80		
Wind dir. red.		0,62		0,61									0,60		0,62		
Total reduction		0,25		0,24									0,24		0,25		
Total, real		196		187									54		334		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** O - Buevegen 2023 (15)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March	April	May			June		
1	09:28			08:46		10:50 (13)	07:35	07:07	05:44			04:39		20:01 (76)
	15:53			16:56	74	14:26 (16)	18:04	20:17	21:26			22:30	25	20:26 (76)
2	09:27			08:43		10:51 (13)	07:32	07:04	05:41			04:38		20:02 (76)
	15:54			16:58	73	14:27 (16)	18:07	20:19	21:28			22:32	24	20:26 (76)
3	09:27			08:41		10:50 (13)	07:30	07:01	05:39			04:37		20:02 (76)
	15:55			17:01	74	14:27 (16)	18:09	20:21	21:30			22:34	24	20:26 (76)
4	09:26			08:39		10:51 (13)	07:27	06:58	05:36			04:36		20:02 (76)
	15:57			17:03	73	14:27 (16)	18:12	20:23	21:33			22:35	23	20:25 (76)
5	09:26			08:37		10:51 (13)	07:24	06:55	05:34			04:35		20:02 (76)
	15:58			17:06	69	14:26 (16)	18:14	20:26	21:35			22:36	23	20:25 (76)
6	09:25			08:34		10:52 (13)	07:21	06:52	05:31			04:34		20:03 (76)
	16:00			17:08	65	14:26 (16)	18:16	20:28	21:37			22:38	22	20:25 (76)
7	09:24			08:32		10:53 (13)	07:18	06:49	05:29			04:33		20:03 (76)
	16:02			17:11	61	14:25 (16)	18:19	20:30	21:40			22:39	22	20:25 (76)
8	09:24			08:30		10:55 (13)	07:16	06:47	05:26			04:32		20:04 (76)
	16:03			17:13	55	14:25 (16)	18:21	20:33	21:42			22:40	21	20:25 (76)
9	09:23			08:27		10:56 (13)	07:13	06:44	05:24			04:31		20:04 (76)
	16:05			17:16	46	14:23 (16)	18:23	20:35	21:44			22:42	21	20:25 (76)
10	09:22			08:25		10:57 (13)	07:10	06:41	05:22			04:30		20:05 (76)
	16:07			17:18	32	14:20 (16)	18:26	20:37	21:46			22:43	21	20:26 (76)
11	09:21			08:22		12:43 (18)	07:07	06:38	05:19			04:29		20:05 (76)
	16:09			17:21	8	12:51 (18)	18:28	20:40	21:49			22:44	20	20:25 (76)
12	09:20			08:20			07:04	06:35	05:17			04:29		20:06 (76)
	16:11			17:23			18:30	20:42	21:51			22:45	19	20:25 (76)
13	09:18			08:17			07:01	06:32	05:15			04:28		20:06 (76)
	16:13			17:25			18:33	20:44	21:53			22:46	19	20:25 (76)
14	09:17		12:39 (10)	08:15			06:59	06:30	05:12		20:08 (76)	04:28		20:06 (76)
	16:15	6	12:45 (10)	17:28			18:35	20:46	21:55	4	20:12 (76)	22:46	19	20:25 (76)
15	09:16		12:39 (10)	08:12			06:56	06:27	05:10		20:06 (76)	04:27		20:07 (76)
	16:17	7	12:46 (10)	17:30			18:37	20:49	21:57	7	20:13 (76)	22:47	18	20:25 (76)
16	09:14		12:38 (10)	08:10			06:53	06:24	05:08		20:04 (76)	04:27		20:08 (76)
	16:19	17	12:55 (10)	17:33			18:40	20:51	22:00	9	20:13 (76)	22:48	18	20:26 (76)
17	09:13		12:38 (10)	08:07			06:50	06:21	05:06		20:03 (76)	04:27		20:08 (76)
	16:21	18	12:56 (10)	17:35			18:42	20:53	22:02	11	20:14 (76)	22:48	18	20:26 (76)
18	09:12		12:37 (10)	08:05			06:47	06:18	05:04		20:02 (76)	04:27		20:08 (76)
	16:23	19	12:56 (10)	17:38			18:44	20:56	22:04	13	20:15 (76)	22:49	18	20:26 (76)
19	09:10		12:38 (10)	08:02			06:44	06:16	05:02		20:01 (76)	04:26		20:09 (76)
	16:25	20	12:58 (10)	17:40			18:47	20:58	22:06	14	20:15 (76)	22:49	17	20:26 (76)
20	09:08		12:38 (18)	07:59			06:41	06:13	05:00		20:01 (76)	04:26		20:09 (76)
	16:27	21	12:59 (10)	17:43			18:49	21:00	22:08	16	20:17 (76)	22:50	17	20:26 (76)
21	09:07		12:35 (18)	07:57			06:38	06:10	04:58		20:01 (76)	04:27		20:09 (76)
	16:30	23	12:58 (10)	17:45			18:51	21:03	22:10	16	20:17 (76)	22:50	17	20:26 (76)
22	09:05		12:34 (18)	07:54			06:35	06:07	04:56		20:00 (76)	04:27		20:09 (76)
	16:32	29	14:14 (16)	17:48			18:54	21:05	22:12	18	20:18 (76)	22:50	17	20:26 (76)
23	09:03		12:34 (18)	07:52			06:33	06:05	04:54		20:00 (76)	04:27		20:09 (76)
	16:34	36	14:18 (16)	17:50			18:56	21:07	22:14	20	20:20 (76)	22:50	17	20:26 (76)
24	09:01		12:33 (18)	07:49			06:30	06:02	04:52		20:00 (76)	04:27		20:09 (76)
	16:37	41	14:20 (16)	17:52			18:58	21:10	22:16	20	20:20 (76)	22:50	18	20:27 (76)
25	09:00		12:33 (18)	07:46			06:27	05:59	04:50		20:00 (76)	04:28		20:09 (76)
	16:39	44	14:22 (16)	17:55			19:00	21:12	22:18	22	20:22 (76)	22:50	18	20:27 (76)
26	08:58		12:32 (18)	07:43			06:24	05:57	04:49		20:00 (76)	04:28		20:10 (76)
	16:41	46	14:23 (16)	17:57			19:03	21:14	22:20	22	20:22 (76)	22:50	18	20:28 (76)
27	08:56		10:54 (13)	07:41			06:21	05:54	04:47		20:00 (76)	04:29		20:09 (76)
	16:44	54	14:24 (16)	18:00			19:05	21:17	22:22	23	20:23 (76)	22:50	18	20:27 (76)
28	08:54		10:52 (13)	07:38			06:18	05:51	04:45		20:00 (76)	04:29		20:10 (76)
	16:46	67	14:25 (16)	18:02			19:07	21:19	22:24	24	20:24 (76)	22:50	18	20:28 (76)
29	08:52		10:51 (13)				07:15	05:49	04:44		20:00 (76)	04:30		20:10 (76)
	16:49	70	14:26 (16)				20:10	21:21	22:25	25	20:25 (76)	22:49	19	20:29 (76)
30	08:50		10:51 (13)				07:12	05:46	04:42		20:00 (76)	04:31		20:09 (76)
	16:51	71	14:26 (16)				20:12	21:23	22:27	25	20:25 (76)	22:49	20	20:29 (76)
31	08:48		10:51 (13)				07:09		04:41		20:01 (76)			
	16:53	74	14:27 (16)				20:14		22:29	24	20:25 (76)			
Potential sun hours	221			260			365	432	521			547		
Total, worst case		663			630					313			589	
Sun reduction		0,50			0,50					0,50			0,50	
Oper. time red.		0,80			0,80					0,80			0,80	
Wind dir. red.		0,62			0,63					0,71			0,71	
Total reduction		0,25			0,25					0,28			0,28	
Total, real		164			158					89			167	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** O - Buevegen 2023 (15)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July		August		September		October		November		December	
1	04:32		20:09 (76)	05:24		06:33		07:39		07:51		10:26 (13)	09:00
	22:48	20	20:29 (76)	22:01		20:40		19:13		16:49	35	13:50 (16)	15:51
2	04:33		20:09 (76)	05:26		06:35		07:41		07:54		10:25 (13)	09:01
	22:48	21	20:30 (76)	21:58		20:37		19:10		16:46	48	13:53 (16)	15:50
3	04:34		20:10 (76)	05:28		06:37		07:44		07:56		10:24 (13)	09:03
	22:47	20	20:30 (76)	21:56		20:34		19:07		16:44	57	13:55 (16)	15:49
4	04:35		20:09 (76)	05:30		06:40		07:46		07:58		10:22 (13)	09:05
	22:46	22	20:31 (76)	21:54		20:31		19:04		16:41	62	13:55 (16)	15:48
5	04:36		20:09 (76)	05:33		06:42		07:48		08:01		10:22 (13)	09:07
	22:46	22	20:31 (76)	21:51		20:28		19:01		16:39	67	13:56 (16)	15:47
6	04:37		20:09 (76)	05:35		06:44		07:50		08:03		10:22 (13)	09:09
	22:45	22	20:31 (76)	21:49		20:25		18:59		16:37	70	13:57 (16)	15:46
7	04:38		20:09 (76)	05:37		06:46		07:53		08:06		10:21 (13)	09:10
	22:44	23	20:32 (76)	21:46		20:22		18:56		16:34	72	13:57 (16)	15:45
8	04:40		20:09 (76)	05:39		06:48		07:55		08:08		10:21 (13)	09:12
	22:43	23	20:32 (76)	21:44		20:19		18:53		16:32	73	13:57 (16)	15:45
9	04:41		20:10 (76)	05:41		06:51		07:57		08:10		10:22 (13)	09:13
	22:42	23	20:33 (76)	21:42		20:17		18:50		16:30	74	13:58 (16)	15:44
10	04:42		20:09 (76)	05:44		06:53		08:00		08:13		10:22 (13)	09:15
	22:40	24	20:33 (76)	21:39		20:14		18:47		16:28	72	13:58 (16)	15:43
11	04:44		20:09 (76)	05:46		06:55		08:02		08:15		10:22 (13)	09:16
	22:39	24	20:33 (76)	21:37		20:11		18:44		16:25	73	13:57 (16)	15:43
12	04:46		20:08 (76)	05:48		06:57		08:04		08:18		10:22 (13)	09:17
	22:38	25	20:33 (76)	21:34		20:08		18:42		16:23	72	13:58 (16)	15:42
13	04:47		20:09 (76)	05:50		06:59		08:06		08:20		10:23 (13)	09:19
	22:36	25	20:34 (76)	21:31		20:05		18:39		16:21	70	13:58 (16)	15:42
14	04:49		20:09 (76)	05:53		07:02		08:09		08:22		10:23 (13)	09:20
	22:35	25	20:34 (76)	21:29		20:02		18:36		16:19	68	13:57 (16)	15:42
15	04:50		20:09 (76)	05:55		07:04		08:11		08:25		10:27 (13)	09:21
	22:34	24	20:33 (76)	21:26		19:59		18:33		16:17	53	13:56 (16)	15:42
16	04:52		20:09 (76)	05:57		07:06		08:13		08:27		12:05 (18)	09:22
	22:32	23	20:32 (76)	21:24		19:56		18:31		16:15	46	13:56 (16)	15:42
17	04:54		20:09 (76)	05:59		07:08		08:16		08:29		12:06 (18)	09:23
	22:30	23	20:32 (76)	21:21		19:53		18:28		16:13	44	13:55 (16)	15:42
18	04:56		20:10 (76)	06:02		07:10		08:18		08:32		12:07 (18)	09:24
	22:29	22	20:32 (76)	21:18		19:51		18:25		16:11	41	13:54 (16)	15:42
19	04:58		20:09 (76)	06:04		07:13		08:20		08:34		12:09 (18)	09:25
	22:27	21	20:30 (76)	21:16		19:48		18:22		16:09	36	13:53 (16)	15:42
20	04:59		20:10 (76)	06:06		07:15		08:23		08:36		12:09 (18)	09:25
	22:25	20	20:30 (76)	21:13		19:45		18:20		16:07	29	13:49 (16)	15:42
21	05:01		20:10 (76)	06:08		07:17		08:25		08:39		12:11 (18)	09:26
	22:23	18	20:28 (76)	21:10		19:42		18:17		16:06	23	12:34 (10)	15:43
22	05:03		20:10 (76)	06:11		07:19		08:27		08:41		12:14 (18)	09:27
	22:22	18	20:28 (76)	21:07		19:39		18:14		16:04	21	12:35 (10)	15:43
23	05:05		20:11 (76)	06:13		07:21		08:30		08:43		12:14 (10)	09:27
	22:20	16	20:27 (76)	21:05		19:36		18:12		16:02	20	12:34 (10)	15:44
24	05:07		20:12 (76)	06:15		07:24		08:32		08:45		12:15 (10)	09:28
	22:18	15	20:27 (76)	21:02		19:33		18:09		16:01	20	12:35 (10)	15:44
25	05:09		20:13 (76)	06:17		07:26		07:34		08:47		12:16 (10)	09:28
	22:16	13	20:26 (76)	20:59		19:30		17:06		15:59	18	12:34 (10)	15:45
26	05:11		20:12 (76)	06:20		07:28		07:37		08:49		12:17 (10)	09:28
	22:14	13	20:25 (76)	20:56		19:27		17:04		15:58	17	12:34 (10)	15:46
27	05:13		20:14 (76)	06:22		07:30		07:39		08:52		12:18 (10)	09:28
	22:12	10	20:24 (76)	20:54		19:24		17:01		15:56	7	12:25 (10)	15:47
28	05:15		20:15 (76)	06:24		07:32		07:42		08:54		12:19 (10)	09:28
	22:09	8	20:23 (76)	20:51		19:21		16:59		15:55	6	12:25 (10)	15:48
29	05:18		20:17 (76)	06:26		07:35		07:44		08:56			09:28
	22:07	6	20:23 (76)	20:48		19:19		16:56		15:53			15:49
30	05:20		20:20 (76)	06:28		07:37		07:46		08:58			09:28
	22:05	2	20:22 (76)	20:45		19:16		16:54		15:52			15:50
31	05:22			06:31				07:49	12:11 (18)				09:28
	22:03			20:42				16:51	10	12:21 (18)			15:51
Potential sun hours	546			478		386		319		236			199
Total, worst case		571							10		1294		
Sun reduction		0,50							0,50		0,50		
Oper. time red.		0,80							0,80		0,80		
Wind dir. red.		0,71							0,63		0,62		
Total reduction		0,28							0,25		0,25		
Total, real		162							3		321		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** P - Buevegen 2021 (16)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March	April	May			June		
1	09:28			08:46		10:45 (13)	07:35	07:07	05:44			04:40		20:04 (76)
	15:53			16:56	73	14:22 (16)	18:04	20:17	21:26			22:30	22	20:26 (76)
2	09:27			08:43		10:46 (13)	07:32	07:04	05:41			04:38		20:04 (76)
	15:54			16:58	74	14:23 (16)	18:07	20:19	21:28			22:32	23	20:27 (76)
3	09:27			08:41		10:45 (13)	07:30	07:01	05:39			04:37		20:04 (76)
	15:55			17:01	74	14:22 (16)	18:09	20:21	21:30			22:34	24	20:28 (76)
4	09:26			08:39		10:46 (13)	07:27	06:58	05:36			04:36		20:04 (76)
	15:57			17:03	73	14:23 (16)	18:12	20:23	21:33			22:35	24	20:28 (76)
5	09:26			08:37		10:46 (13)	07:24	06:55	05:34			04:35		20:04 (76)
	15:58			17:06	71	14:22 (16)	18:14	20:26	21:35			22:36	25	20:29 (76)
6	09:25			08:34		10:47 (13)	07:21	06:52	05:31			04:34		20:04 (76)
	16:00			17:08	68	14:22 (16)	18:16	20:28	21:37			22:38	25	20:29 (76)
7	09:24			08:32		10:47 (13)	07:18	06:49	05:29			04:33		20:04 (76)
	16:02			17:11	65	14:21 (16)	18:19	20:30	21:40			22:39	25	20:29 (76)
8	09:24			08:30		10:48 (13)	07:16	06:47	05:26			04:32		20:05 (76)
	16:03			17:13	59	14:21 (16)	18:21	20:33	21:42			22:40	26	20:31 (76)
9	09:23			08:27		10:49 (13)	07:13	06:44	05:24			04:31		20:05 (76)
	16:05			17:16	52	14:19 (16)	18:23	20:35	21:44			22:42	25	20:30 (76)
10	09:22			08:25		10:50 (13)	07:10	06:41	05:22			04:30		20:06 (76)
	16:07			17:18	41	14:16 (16)	18:26	20:37	21:46			22:43	25	20:31 (76)
11	09:21			08:22		10:53 (13)	07:07	06:38	05:19			04:29		20:06 (76)
	16:09			17:21	23	12:47 (18)	18:28	20:40	21:49			22:44	25	20:31 (76)
12	09:20			08:20		12:38 (18)	07:04	06:35	05:17			04:29		20:06 (76)
	16:11			17:23	3	12:41 (18)	18:30	20:42	21:51			22:45	25	20:31 (76)
13	09:18			08:17			07:01	06:32	05:15			04:28		20:06 (76)
	16:13			17:25			18:33	20:44	21:53			22:46	25	20:31 (76)
14	09:17			08:15			06:59	06:30	05:12			04:28		20:07 (76)
	16:15			17:28			18:35	20:46	21:55			22:46	24	20:31 (76)
15	09:16			08:12			06:56	06:27	05:10			04:27		20:07 (76)
	16:17			17:30			18:37	20:49	21:57			22:47	24	20:31 (76)
16	09:14		12:49 (10)	08:10			06:53	06:24	05:08			04:27		20:08 (76)
	16:19	1	12:50 (10)	17:33			18:40	20:51	22:00			22:48	24	20:32 (76)
17	09:13		12:33 (10)	08:07			06:50	06:21	05:06			04:27		20:08 (76)
	16:21	5	12:50 (10)	17:35			18:42	20:53	22:02			22:48	24	20:32 (76)
18	09:12		12:33 (10)	08:05			06:47	06:18	05:04		20:10 (76)	04:27		20:08 (76)
	16:23	18	12:51 (10)	17:38			18:44	20:56	22:04	5	20:15 (76)	22:49	24	20:32 (76)
19	09:10		12:34 (10)	08:02			06:44	06:16	05:02		20:08 (76)	04:26		20:08 (76)
	16:25	19	12:53 (10)	17:40			18:47	20:58	22:06	8	20:16 (76)	22:49	24	20:32 (76)
20	09:08		12:33 (10)	07:59			06:41	06:13	05:00		20:07 (76)	04:26		20:09 (76)
	16:27	21	12:54 (10)	17:43			18:49	21:00	22:08	10	20:17 (76)	22:50	23	20:32 (76)
21	09:07		12:31 (18)	07:57			06:38	06:10	04:58		20:06 (76)	04:27		20:09 (76)
	16:30	22	12:53 (10)	17:45			18:51	21:03	22:10	12	20:18 (76)	22:50	23	20:32 (76)
22	09:05		12:29 (18)	07:54			06:35	06:07	04:56		20:05 (76)	04:27		20:09 (76)
	16:32	26	14:06 (16)	17:48			18:54	21:05	22:12	13	20:18 (76)	22:50	23	20:32 (76)
23	09:03		12:28 (18)	07:52			06:33	06:05	04:54		20:05 (76)	04:27		20:09 (76)
	16:34	36	14:13 (16)	17:50			18:56	21:07	22:14	15	20:20 (76)	22:50	23	20:32 (76)
24	09:01		12:27 (18)	07:49			06:30	06:02	04:52		20:04 (76)	04:27		20:09 (76)
	16:37	42	14:15 (16)	17:52			18:58	21:10	22:16	16	20:20 (76)	22:50	24	20:33 (76)
25	09:00		12:27 (18)	07:46			06:27	05:59	04:50		20:04 (76)	04:28		20:09 (76)
	16:39	44	14:17 (16)	17:55			19:00	21:12	22:18	17	20:21 (76)	22:50	24	20:33 (76)
26	08:58		12:26 (18)	07:43			06:24	05:57	04:49		20:03 (76)	04:28		20:10 (76)
	16:41	49	14:19 (16)	17:57			19:03	21:14	22:20	18	20:21 (76)	22:50	24	20:34 (76)
27	08:56		12:25 (18)	07:41			06:21	05:54	04:47		20:04 (76)	04:29		20:09 (76)
	16:44	50	14:19 (16)	18:00			19:05	21:17	22:22	18	20:22 (76)	22:50	24	20:33 (76)
28	08:54		12:25 (18)	07:38			06:18	05:51	04:45		20:04 (76)	04:29		20:10 (76)
	16:46	51	14:20 (16)	18:02			19:07	21:19	22:24	20	20:24 (76)	22:50	24	20:34 (76)
29	08:52		10:48 (13)				07:15	05:49	04:44		20:03 (76)	04:30		20:10 (76)
	16:49	53	14:21 (16)				20:10	21:21	22:25	21	20:24 (76)	22:49	25	20:35 (76)
30	08:50		10:46 (13)				07:12	05:46	04:42		20:03 (76)	04:31		20:10 (76)
	16:51	55	14:21 (16)				20:12	21:23	22:27	22	20:25 (76)	22:49	24	20:34 (76)
31	08:48		10:46 (13)				07:09		04:41		20:03 (76)			
	16:53	69	14:22 (16)				20:14		22:29	22	20:25 (76)			
Potential sun hours	221			260			365	432	521			547		
Total, worst case		561			676					217			724	
Sun reduction		0,50			0,50					0,50			0,50	
Oper. time red.		0,80			0,80					0,80			0,80	
Wind dir. red.		0,61			0,63					0,71			0,71	
Total reduction		0,24			0,25					0,29			0,29	
Total, real		137			170					62			206	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** P - Buevegen 2021 (16)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July			August	September	October		November			December
1	04:32		20:10 (76)	05:24	06:33	07:39		07:51		10:19 (13)	09:00
	22:48	25	20:35 (76)	22:01	20:40	19:13		16:49	44	13:46 (16)	15:51
2	04:33		20:10 (76)	05:26	06:35	07:41		07:54		10:18 (13)	09:01
	22:48	25	20:35 (76)	21:58	20:37	19:10		16:46	55	13:49 (16)	15:50
3	04:34		20:10 (76)	05:28	06:37	07:44		07:56		10:18 (13)	09:03
	22:47	26	20:36 (76)	21:56	20:34	19:07		16:44	60	13:50 (16)	15:49
4	04:35		20:11 (76)	05:30	06:40	07:46		07:58		10:16 (13)	09:05
	22:46	25	20:36 (76)	21:54	20:31	19:04		16:41	65	13:51 (16)	15:48
5	04:36		20:11 (76)	05:33	06:42	07:48		08:01		10:16 (13)	09:07
	22:46	25	20:36 (76)	21:51	20:28	19:01		16:39	70	13:52 (16)	15:47
6	04:37		20:11 (76)	05:35	06:44	07:50		08:03		10:16 (13)	09:09
	22:45	25	20:36 (76)	21:49	20:25	18:59		16:37	73	13:53 (16)	15:46
7	04:38		20:11 (76)	05:37	06:46	07:53		08:06		10:16 (13)	09:10
	22:44	24	20:35 (76)	21:46	20:22	18:56		16:34	73	13:52 (16)	15:45
8	04:40		20:11 (76)	05:39	06:48	07:55		08:08		10:16 (13)	09:12
	22:43	24	20:35 (76)	21:44	20:19	18:53		16:32	73	13:53 (16)	15:45
9	04:41		20:11 (76)	05:41	06:51	07:57		08:10		10:16 (13)	09:13
	22:42	24	20:35 (76)	21:42	20:17	18:50		16:30	75	13:53 (16)	15:44
10	04:42		20:11 (76)	05:44	06:53	08:00		08:13		10:17 (13)	09:15
	22:40	24	20:35 (76)	21:39	20:14	18:47		16:28	74	13:54 (16)	15:43
11	04:44		20:11 (76)	05:46	06:55	08:02		08:15		10:17 (13)	09:16
	22:39	23	20:34 (76)	21:37	20:11	18:44		16:25	69	13:53 (16)	15:43
12	04:46		20:11 (76)	05:48	06:57	08:04		08:18		10:18 (13)	09:17
	22:38	22	20:33 (76)	21:34	20:08	18:42		16:23	53	13:53 (16)	15:42
13	04:47		20:12 (76)	05:50	06:59	08:06		08:20		10:20 (13)	09:19
	22:36	21	20:33 (76)	21:31	20:05	18:39		16:21	53	13:53 (16)	15:42
14	04:49		20:12 (76)	05:53	07:02	08:09		08:22		11:57 (18)	09:20
	22:35	21	20:33 (76)	21:29	20:02	18:36		16:19	51	13:52 (16)	15:42
15	04:50		20:12 (76)	05:55	07:04	08:11		08:25		11:58 (18)	09:21
	22:34	21	20:33 (76)	21:26	19:59	18:33		16:17	50	13:52 (16)	15:42
16	04:52		20:12 (76)	05:57	07:06	08:13		08:27		11:59 (18)	09:22
	22:32	20	20:32 (76)	21:24	19:56	18:31		16:15	49	13:52 (16)	15:42
17	04:54		20:13 (76)	05:59	07:08	08:16		08:29		12:00 (18)	09:23
	22:30	18	20:31 (76)	21:21	19:53	18:28		16:13	44	13:50 (16)	15:42
18	04:56		20:14 (76)	06:02	07:10	08:18		08:32		12:01 (18)	09:24
	22:29	17	20:31 (76)	21:18	19:51	18:25		16:11	42	13:49 (16)	15:42
19	04:58		20:14 (76)	06:04	07:13	08:20		08:34		12:03 (18)	09:25
	22:27	16	20:30 (76)	21:16	19:48	18:22		16:09	36	13:48 (16)	15:42
20	04:59		20:15 (76)	06:06	07:15	08:23		08:36		12:04 (18)	09:25
	22:25	15	20:30 (76)	21:13	19:45	18:20		16:07	26	13:41 (16)	15:42
21	05:01		20:15 (76)	06:08	07:17	08:25		08:39		12:07 (18)	09:26
	22:23	13	20:28 (76)	21:10	19:42	18:17		16:06	22	12:29 (10)	15:43
22	05:03		20:16 (76)	06:11	07:19	08:27		08:41		12:10 (10)	09:27
	22:22	12	20:28 (76)	21:07	19:39	18:14		16:04	20	12:30 (10)	15:43
23	05:05		20:17 (76)	06:13	07:21	08:30		08:43		12:10 (10)	09:27
	22:20	10	20:27 (76)	21:05	19:36	18:12		16:02	19	12:29 (10)	15:44
24	05:07		20:18 (76)	06:15	07:24	08:32		08:45		12:11 (10)	09:28
	22:18	9	20:27 (76)	21:02	19:33	18:09		16:01	18	12:29 (10)	15:44
25	05:09		20:20 (76)	06:17	07:26	07:34		08:47		12:11 (10)	09:28
	22:16	6	20:26 (76)	20:59	19:30	17:06		15:59	7	12:29 (10)	15:45
26	05:11		20:21 (76)	06:20	07:28	07:37		08:49		12:28 (10)	09:28
	22:14	4	20:25 (76)	20:56	19:27	17:04		15:58	1	12:29 (10)	15:46
27	05:13			06:22	07:30	07:39		08:52			09:28
	22:12			20:54	19:24	17:01		15:56			15:47
28	05:15			06:24	07:32	07:42		08:54			09:28
	22:09			20:51	19:22	16:59		15:55			15:48
29	05:18			06:26	07:35	07:44		08:56			09:28
	22:07			20:48	19:19	16:56		15:53			15:49
30	05:20			06:28	07:37	07:46	10:26 (13)	08:58			09:28
	22:05			20:45	19:16	16:54 8	12:13 (18)	15:52			15:50
31	05:22			06:31		07:49	10:22 (13)				09:28
	22:03			20:42		16:51 25	12:17 (18)				15:51
Potential sun hours	546			478	386	319		236			199
Total, worst case		495				33			1222		
Sun reduction		0,50				0,50			0,50		
Oper. time red.		0,80				0,80			0,80		
Wind dir. red.		0,71				0,66			0,62		
Total reduction		0,29				0,26			0,25		
Total, real		141				9			303		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** Q - Buevegen 2141 (17)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March	April			May			June		
1	09:28		12:03 (27)	08:45		14:59 (18)	07:35	07:07			05:44			04:39		20:33 (78)
	15:52	20	12:23 (27)	16:56	18	15:17 (18)	18:04	20:16			21:26			22:30	8	20:41 (78)
2	09:27		12:03 (27)	08:43		14:59 (18)	07:32	07:04			05:41			04:38		20:33 (78)
	15:54	20	12:23 (27)	16:58	19	15:18 (18)	18:07	20:19			21:28			22:32	9	20:42 (78)
3	09:27		12:03 (27)	08:41		14:58 (18)	07:30	07:01			05:38			04:37		20:33 (78)
	15:55	20	12:23 (27)	17:01	19	15:17 (18)	18:09	20:21			21:30			22:33	9	20:42 (78)
4	09:26		12:03 (27)	08:39		14:59 (18)	07:27	06:58			05:36			04:36		20:33 (78)
	15:57	21	12:24 (27)	17:03	19	15:18 (18)	18:12	20:23			21:33			22:35	10	20:43 (78)
5	09:26		12:04 (27)	08:37		14:59 (18)	07:24	06:55			05:33			04:34		20:33 (78)
	15:58	25	13:33 (13)	17:06	19	15:18 (18)	18:14	20:26			21:35			22:36	11	20:44 (78)
6	09:25		12:04 (27)	08:34		15:00 (18)	07:21	06:52		19:35 (76)	05:31			04:33		20:33 (78)
	16:00	29	13:35 (13)	17:08	18	15:18 (18)	18:16	20:28	2	19:37 (76)	21:37			22:38	11	20:44 (78)
7	09:24		12:05 (27)	08:32		15:00 (18)	07:18	06:49		19:31 (76)	05:29			04:32		20:33 (78)
	16:01	31	13:37 (13)	17:11	17	15:17 (18)	18:19	20:30	9	19:40 (76)	21:39			22:39	12	20:45 (78)
8	09:23		12:06 (27)	08:30		15:00 (18)	07:16	06:46		19:31 (76)	05:26			04:31		20:34 (78)
	16:03	32	13:38 (13)	17:13	16	15:16 (18)	18:21	20:33	11	19:42 (76)	21:42			22:40	12	20:46 (78)
9	09:23		12:06 (27)	08:27		15:02 (18)	07:13	06:44		19:29 (76)	05:24			04:31		20:34 (78)
	16:05	33	13:39 (13)	17:15	14	15:16 (18)	18:23	20:35	13	19:42 (76)	21:44			22:42	12	20:46 (78)
10	09:22		12:07 (27)	08:25		15:03 (18)	07:10	06:41		19:29 (76)	05:21			04:30		20:35 (78)
	16:07	34	13:40 (13)	17:18	11	15:14 (18)	18:26	20:37	13	19:42 (76)	21:46			22:43	12	20:47 (78)
11	09:21		12:07 (27)	08:22		15:07 (18)	07:07	06:38		19:28 (76)	05:19			04:29		20:35 (78)
	16:09	35	13:41 (13)	17:20	5	15:12 (18)	18:28	20:39	13	19:41 (76)	21:49			22:44	13	20:48 (78)
12	09:19		12:08 (27)	08:20			07:04	06:35		19:28 (76)	05:17			04:29		20:35 (78)
	16:11	35	13:42 (13)	17:23			18:30	20:42	12	19:40 (76)	21:51			22:45	13	20:48 (78)
13	09:18		12:08 (27)	08:17			07:01	06:32		19:29 (76)	05:15		20:19 (79)	04:28		20:35 (78)
	16:12	36	13:43 (13)	17:25			18:33	20:44	16	19:46 (77)	21:53	1	20:20 (79)	22:46	13	20:48 (78)
14	09:17		12:10 (27)	08:15			06:58	06:29		19:30 (76)	05:12		20:20 (79)	04:28		20:36 (78)
	16:14	35	13:44 (13)	17:28			18:35	20:46	16	19:47 (77)	21:55	1	20:21 (79)	22:46	13	20:49 (78)
15	09:16		12:11 (27)	08:12			06:56	06:27		19:37 (77)	05:10		20:21 (79)	04:27		20:36 (78)
	16:17	34	13:45 (13)	17:30			18:37	20:49	10	19:47 (77)	21:57	2	20:23 (79)	22:47	14	20:50 (78)
16	09:14		12:12 (27)	08:10			06:53	06:24		19:37 (77)	05:08		20:22 (79)	04:27		20:37 (78)
	16:19	32	13:45 (13)	17:33			18:40	20:51	12	19:49 (77)	22:00	2	20:24 (79)	22:48	13	20:50 (78)
17	09:13		12:14 (27)	08:07			06:50	06:21		19:36 (77)	05:06		20:22 (79)	04:27		20:36 (78)
	16:21	29	13:45 (13)	17:35			18:42	20:53	14	19:50 (77)	22:02	3	20:25 (79)	22:48	14	20:50 (78)
18	09:11		12:16 (27)	08:05			06:47	06:18		19:35 (77)	05:04		20:24 (79)	04:26		20:36 (78)
	16:23	26	13:46 (13)	17:38			18:44	20:56	16	19:51 (77)	22:04	3	20:27 (79)	22:49	14	20:50 (78)
19	09:10		13:25 (13)	08:02			06:44	06:16		19:35 (77)	05:02		20:25 (79)	04:26		20:37 (78)
	16:25	21	13:46 (13)	17:40			18:47	20:58	16	19:51 (77)	22:06	3	20:28 (79)	22:49	14	20:51 (78)
20	09:08		13:25 (13)	07:59			06:41	06:13		19:35 (77)	05:00			04:26		20:38 (78)
	16:27	22	13:47 (13)	17:43			18:49	21:00	15	19:50 (77)	22:08			22:50	14	20:52 (78)
21	09:07		13:26 (13)	07:57			06:38	06:10		19:35 (77)	04:58			04:26		20:38 (78)
	16:30	21	13:47 (13)	17:45			18:51	21:03	13	19:48 (77)	22:10			22:50	14	20:52 (78)
22	09:05		13:26 (13)	07:54			06:35	06:07		19:37 (77)	04:56			04:27		20:38 (78)
	16:32	21	13:47 (13)	17:48			18:54	21:05	11	19:48 (77)	22:12			22:50	14	20:52 (78)
23	09:03		13:27 (13)	07:51			06:33	06:05		19:38 (77)	04:54			04:27		20:38 (78)
	16:34	20	13:47 (13)	17:50			18:56	21:07	7	19:45 (77)	22:14			22:50	14	20:52 (78)
24	09:01		13:28 (13)	07:49			06:30	06:02			04:52			04:27		20:38 (78)
	16:37	19	13:47 (13)	17:52			18:58	21:09			22:16			22:50	14	20:52 (78)
25	09:00		13:29 (13)	07:46			06:27	05:59			04:50		20:33 (78)	04:28		20:38 (78)
	16:39	18	13:47 (13)	17:55			19:00	21:12			22:18	2	20:35 (78)	22:50	14	20:52 (78)
26	08:58		13:30 (13)	07:43			06:24	05:57			04:49		20:32 (78)	04:28		20:39 (78)
	16:41	17	13:47 (13)	17:57			19:03	21:14			22:20	3	20:35 (78)	22:50	14	20:53 (78)
27	08:56		13:30 (13)	07:41			06:21	05:54			04:47		20:33 (78)	04:29		20:38 (78)
	16:44	21	15:09 (18)	18:00			19:05	21:16			22:22	3	20:36 (78)	22:50	14	20:52 (78)
28	08:54		13:32 (13)	07:38			06:18	05:51			04:45		20:33 (78)	04:29		20:39 (78)
	16:46	23	15:12 (18)	18:02			19:07	21:19			22:23	4	20:37 (78)	22:50	13	20:52 (78)
29	08:52		13:35 (13)				07:15	05:49			04:44		20:32 (78)	04:30		20:38 (78)
	16:48	21	15:14 (18)				20:10	21:21			22:25	5	20:37 (78)	22:49	14	20:52 (78)
30	08:50		15:00 (18)				07:12	05:46			04:42		20:32 (78)	04:31		20:39 (78)
	16:51	15	15:15 (18)				20:12	21:23			22:27	7	20:39 (78)	22:49	13	20:52 (78)
31	08:48		15:00 (18)				07:09				04:41		20:32 (78)			
	16:53	16	15:16 (18)				20:14				22:29	8	20:40 (78)			
Potential sun hours	221			260			365	432			521			547		
Total, worst case	782			175				219			47			379		
Sun reduction	0,50			0,50				0,50			0,50			0,50		
Oper. time red.	0,80			0,80				0,80			0,80			0,80		
Wind dir. red.	0,60			0,55				0,68			0,72			0,73		
Total reduction	0,24			0,22				0,27			0,29			0,29		
Total, real	187			39				60			14			110		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** Q - Buevegen 2141 (17)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July		August		September		October		November		December	
1	04:32	20:39 (78)	05:24		06:33	19:27 (76)	07:39		07:51	14:32 (18)	08:59	11:49 (27)
	22:48 13	20:52 (78)	22:01		20:39 13	19:40 (76)	19:13		16:48 12	14:44 (18)	15:51 34	13:23 (13)
2	04:33	20:39 (78)	05:26		06:35	19:27 (76)	07:41		07:54	14:31 (18)	09:01	11:50 (27)
	22:48 13	20:52 (78)	21:58		20:37 13	19:40 (76)	19:10		16:46 15	14:46 (18)	15:50 35	13:24 (13)
3	04:34	20:39 (78)	05:28		06:37	19:27 (76)	07:44		07:56	14:31 (18)	09:03	11:50 (27)
	22:47 13	20:52 (78)	21:56		20:34 13	19:40 (76)	19:07		16:44 16	14:47 (18)	15:49 33	13:23 (13)
4	04:35	20:39 (78)	05:30		06:39	19:28 (76)	07:46		07:58	14:29 (18)	09:05	11:50 (27)
	22:46 13	20:52 (78)	21:54		20:31 11	19:39 (76)	19:04		16:41 18	14:47 (18)	15:48 33	13:23 (13)
5	04:36	20:40 (78)	05:33		06:42	19:28 (76)	07:48		08:01	14:29 (18)	09:07	11:50 (27)
	22:46 11	20:51 (78)	21:51		20:28 9	19:37 (76)	19:01		16:39 19	14:48 (18)	15:47 31	13:22 (13)
6	04:37	20:40 (78)	05:35		06:44	19:31 (76)	07:50		08:03	14:29 (18)	09:08	11:50 (27)
	22:45 11	20:51 (78)	21:49		20:25 2	19:33 (76)	18:58		16:36 19	14:48 (18)	15:46 29	13:21 (13)
7	04:38	20:40 (78)	05:37		06:46		07:53		08:06	14:29 (18)	09:10	11:51 (27)
	22:44 10	20:50 (78)	21:46		20:22		18:56		16:34 19	14:48 (18)	15:45 25	13:20 (13)
8	04:40	20:39 (78)	05:39		06:48		07:55		08:08	14:29 (18)	09:12	11:51 (27)
	22:43 11	20:50 (78)	21:44		20:19		18:53		16:32 19	14:48 (18)	15:44 21	12:12 (27)
9	04:41	20:39 (78)	05:41		06:51		07:57		08:10	14:30 (18)	09:13	11:51 (27)
	22:42 10	20:49 (78)	21:41		20:17		18:50		16:30 18	14:48 (18)	15:44 21	12:12 (27)
10	04:42	20:40 (78)	05:44		06:53		07:59		08:13	14:29 (18)	09:15	11:52 (27)
	22:40 9	20:49 (78)	21:39		20:14		18:47		16:27 18	14:47 (18)	15:43 20	12:12 (27)
11	04:44	20:40 (78)	05:46		06:55		08:02		08:15	14:30 (18)	09:16	11:53 (27)
	22:39 9	20:49 (78)	21:36		20:11		18:44		16:25 17	14:47 (18)	15:43 20	12:13 (27)
12	04:45	20:40 (78)	05:48		06:57		08:04		08:18	14:32 (18)	09:17	11:53 (27)
	22:38 8	20:48 (78)	21:34		20:08		18:42		16:23 15	14:47 (18)	15:42 20	12:13 (27)
13	04:47	20:41 (78)	05:50		06:59		08:06		08:20	13:07 (13)	09:19	11:54 (27)
	22:36 7	20:48 (78)	21:31		20:05		18:39		16:21 21	14:46 (18)	15:42 20	12:14 (27)
14	04:49	20:41 (78)	05:53		07:02		08:09		08:22	13:04 (13)	09:20	11:54 (27)
	22:35 6	20:47 (78)	21:29		20:02		18:36		16:19 23	14:44 (18)	15:42 20	12:14 (27)
15	04:50	20:41 (78)	05:55		07:04		08:11		08:25	13:03 (13)	09:21	11:54 (27)
	22:33 5	20:46 (78)	21:26		19:59		18:33		16:17 21	14:42 (18)	15:42 20	12:14 (27)
16	04:52	20:41 (78)	05:57		07:06		08:13		08:27	13:03 (13)	09:22	11:55 (27)
	22:32 4	20:45 (78)	21:23		19:56		18:30		16:15 17	13:20 (13)	15:42 20	12:15 (27)
17	04:54	20:42 (78)	05:59		07:08		08:16		08:29	13:02 (13)	09:23	11:55 (27)
	22:30 3	20:45 (78)	21:21		19:53		18:28		16:13 18	13:20 (13)	15:42 20	12:15 (27)
18	04:56	20:42 (78)	06:02		07:10		08:18		08:32	13:02 (13)	09:24	11:56 (27)
	22:29 2	20:44 (78)	21:18		19:50		18:25		16:11 19	13:21 (13)	15:42 19	12:15 (27)
19	04:57	20:43 (78)	06:04		07:13		08:20		08:34	13:02 (13)	09:25	11:56 (27)
	22:27 1	20:44 (78)	21:15		19:48		18:22		16:09 20	13:22 (13)	15:42 20	12:16 (27)
20	04:59		06:06	19:44 (77)	07:15		08:23		08:36	13:01 (13)	09:25	11:57 (27)
	22:25		21:13 7	19:51 (77)	19:45		18:20		16:07 21	13:22 (13)	15:42 20	12:17 (27)
21	05:01		06:08	19:41 (77)	07:17		08:25		08:38	13:02 (13)	09:26	11:57 (27)
	22:23		21:10 11	19:52 (77)	19:42		18:17		16:06 21	13:23 (13)	15:43 20	12:17 (27)
22	05:03		06:10	19:40 (77)	07:19		08:27		08:41	13:02 (13)	09:27	11:58 (27)
	22:22		21:07 13	19:53 (77)	19:39		18:14		16:04 22	13:24 (13)	15:43 20	12:18 (27)
23	05:05		06:13	19:39 (77)	07:21		08:30		08:43	13:02 (13)	09:27	11:58 (27)
	22:20		21:05 15	19:54 (77)	19:36		18:12		16:02 21	13:23 (13)	15:44 20	12:18 (27)
24	05:07		06:15	19:39 (77)	07:24		08:32		08:45	11:54 (27)	09:27	11:58 (27)
	22:18		21:02 16	19:55 (77)	19:33		18:09		16:01 26	13:24 (13)	15:44 20	12:18 (27)
25	05:09	20:34 (79)	06:17	19:39 (77)	07:26		07:34		08:47	11:52 (27)	09:28	11:59 (27)
	22:16 3	20:37 (79)	20:59 15	19:54 (77)	19:30		17:06		15:59 30	13:24 (13)	15:45 20	12:19 (27)
26	05:11	20:33 (79)	06:19	19:38 (77)	07:28		07:37		08:49	11:51 (27)	09:28	12:00 (27)
	22:14 3	20:36 (79)	20:56 14	19:52 (77)	19:27		17:04		15:57 32	13:24 (13)	15:46 20	12:20 (27)
27	05:13	20:32 (79)	06:22	19:38 (77)	07:30		07:39		08:51	11:50 (27)	09:28	12:00 (27)
	22:12 3	20:35 (79)	20:54 12	19:50 (77)	19:24		17:01		15:56 34	13:24 (13)	15:47 20	12:20 (27)
28	05:15	20:31 (79)	06:24	19:39 (77)	07:32		07:42		08:54	11:49 (27)	09:28	12:00 (27)
	22:09 3	20:34 (79)	20:51 10	19:49 (77)	19:21		16:59		15:55 35	13:23 (13)	15:48 20	12:20 (27)
29	05:17	20:31 (79)	06:26	19:31 (76)	07:35		07:44		08:56	11:50 (27)	09:28	12:01 (27)
	22:07 2	20:33 (79)	20:48 17	19:48 (77)	19:19		16:56		15:53 35	13:24 (13)	15:49 20	12:21 (27)
30	05:20	20:31 (79)	06:28	19:29 (76)	07:37		07:46		08:58	11:49 (27)	09:28	12:01 (27)
	22:05 1	20:32 (79)	20:45 16	19:46 (77)	19:16		16:53		15:52 35	13:23 (13)	15:50 21	12:22 (27)
31	05:22		06:31	19:28 (76)			07:49	14:35 (18)			09:28	12:01 (27)
	22:03		20:42 12	19:40 (76)			16:51 6	14:41 (18)			15:51 21	12:22 (27)
Potential sun hours	546		478		386		319		236		199	
Total, worst case	174		158		61		6		656		703	
Sun reduction	0,50		0,50		0,50		0,50		0,50		0,50	
Oper. time red.	0,80		0,80		0,80		0,80		0,80		0,80	
Wind dir. red.	0,73		0,68		0,68		0,55		0,58		0,63	
Total reduction	0,29		0,27		0,27		0,22		0,23		0,25	
Total, real	51		43		16		1		151		177	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** R - Buevegen 2165 (18)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March	April			May			June
1	09:28		12:35 (27)	08:45		14:09 (13)	07:35	07:06			05:44		20:15 (79)	04:39
	15:52	20	12:55 (27)	16:56	5	14:14 (13)	18:04	20:16			21:26	1	20:16 (79)	22:30
2	09:27		12:36 (27)	08:43			07:32	07:04			05:41		20:14 (79)	04:38
	15:54	21	12:57 (27)	16:58			18:07	20:19			21:28	2	20:16 (79)	22:32
3	09:27		12:36 (27)	08:41			07:30	07:01			05:38		20:14 (79)	04:37
	15:55	21	12:57 (27)	17:01			18:09	20:21			21:30	4	20:18 (79)	22:33
4	09:26		12:37 (27)	08:39			07:27	06:58			05:36		20:14 (79)	04:36
	15:57	20	12:57 (27)	17:03			18:12	20:23			21:33	5	20:19 (79)	22:35
5	09:26		12:37 (27)	08:37			07:24	06:55			05:33		20:13 (79)	04:34
	15:58	20	12:57 (27)	17:06			18:14	20:26			21:35	7	20:20 (79)	22:36
6	09:25		12:38 (27)	08:34			07:21	06:52			05:31		20:14 (79)	04:33
	16:00	20	12:58 (27)	17:08			18:16	20:28			21:37	7	20:21 (79)	22:38
7	09:24		12:38 (27)	08:32			07:18	06:49			05:29		20:15 (79)	04:32
	16:01	20	12:58 (27)	17:11			18:19	20:30			21:39	8	20:23 (79)	22:39
8	09:23		12:39 (27)	08:30			07:16	06:46			05:26		20:16 (79)	04:31
	16:03	20	12:59 (27)	17:13			18:21	20:33			21:42	10	20:26 (79)	22:40
9	09:23		12:39 (27)	08:27			07:13	06:44			05:24		20:17 (79)	04:31
	16:05	19	12:58 (27)	17:15			18:23	20:35			21:44	11	20:29 (78)	22:41
10	09:22		12:40 (27)	08:25			07:10	06:41		19:41 (77)	05:21		20:24 (78)	04:30
	16:07	19	12:59 (27)	17:18			18:26	20:37	5	19:46 (77)	21:46	7	20:31 (78)	22:43
11	09:21		12:40 (27)	08:22			07:07	06:38		19:38 (77)	05:19		20:22 (78)	04:29
	16:09	19	12:59 (27)	17:20			18:28	20:39	10	19:48 (77)	21:49	9	20:31 (78)	22:44
12	09:19		12:42 (27)	08:20			07:04	06:35		19:37 (77)	05:17		20:22 (78)	04:29
	16:10	23	14:09 (13)	17:23			18:30	20:42	12	19:49 (77)	21:51	9	20:31 (78)	22:45
13	09:18		12:42 (27)	08:17			07:01	06:32		19:37 (77)	05:15		20:21 (78)	04:28
	16:12	27	14:11 (13)	17:25			18:33	20:44	13	19:50 (77)	21:53	11	20:32 (78)	22:46
14	09:17		12:44 (27)	08:15			06:58	06:29		19:36 (77)	05:12		20:21 (78)	04:27
	16:14	27	14:13 (13)	17:28			18:35	20:46	14	19:50 (77)	21:55	12	20:33 (78)	22:46
15	09:16		12:45 (27)	08:12			06:56	06:27		19:35 (77)	05:10		20:21 (78)	04:27
	16:17	27	14:14 (13)	17:30			18:37	20:49	14	19:49 (77)	21:57	14	20:35 (78)	22:47
16	09:14		12:46 (27)	08:10			06:53	06:24		19:36 (77)	05:08		20:21 (78)	04:27
	16:19	26	14:15 (13)	17:33			18:40	20:51	13	19:49 (77)	21:59	14	20:35 (78)	22:48
17	09:13		12:48 (27)	08:07			06:50	06:21		19:36 (77)	05:06		20:21 (78)	04:27
	16:21	25	14:16 (13)	17:35			18:42	20:53	12	19:48 (77)	22:02	14	20:35 (78)	22:48
18	09:11		13:59 (13)	08:05			06:47	06:18		19:37 (77)	05:04		20:21 (78)	04:26
	16:23	18	14:17 (13)	17:38			18:44	20:56	9	19:46 (77)	22:04	15	20:36 (78)	22:49
19	09:10		13:59 (13)	08:02			06:44	06:16		19:40 (77)	05:02		20:21 (78)	04:26
	16:25	18	14:17 (13)	17:40			18:47	20:58	3	19:43 (77)	22:06	16	20:37 (78)	22:49
20	09:08		13:59 (13)	07:59			06:41	06:13			05:00		20:22 (78)	04:26
	16:27	19	14:18 (13)	17:43			18:49	21:00			22:08	16	20:38 (78)	22:50
21	09:07		13:59 (13)	07:57			06:38	06:10			04:58		20:23 (78)	04:26
	16:30	20	14:19 (13)	17:45			18:51	21:03			22:10	15	20:38 (78)	22:50
22	09:05		13:59 (13)	07:54			06:35	06:07			04:56		20:23 (78)	04:27
	16:32	20	14:19 (13)	17:47			18:54	21:05			22:12	15	20:38 (78)	22:50
23	09:03		13:59 (13)	07:51			06:32	06:05			04:54		20:24 (78)	04:27
	16:34	21	14:20 (13)	17:50			18:56	21:07			22:14	14	20:38 (78)	22:50
24	09:01		14:00 (13)	07:49			06:30	06:02			04:52		20:25 (78)	04:27
	16:36	20	14:20 (13)	17:52			18:58	21:09			22:16	11	20:36 (78)	22:50
25	09:00		14:00 (13)	07:46			06:27	05:59			04:50		20:26 (78)	04:28
	16:39	21	14:21 (13)	17:55			19:00	21:12			22:18	10	20:36 (78)	22:50
26	08:58		14:01 (13)	07:43			06:24	05:57			04:49		20:28 (78)	04:28
	16:41	20	14:21 (13)	17:57			19:03	21:14			22:20	6	20:34 (78)	22:50
27	08:56		14:01 (13)	07:41			06:21	05:54			04:47			04:29
	16:44	19	14:20 (13)	18:00			19:05	21:16			22:22			22:50
28	08:54		14:02 (13)	07:38			06:18	05:51			04:45			04:29
	16:46	18	14:20 (13)	18:02			19:07	21:19			22:23			22:50
29	08:52		14:04 (13)				07:15	05:49			04:44			04:30
	16:48	16	14:20 (13)				20:10	21:21			22:25			22:49
30	08:50		14:04 (13)				07:12	05:46			04:42			04:31
	16:51	14	14:18 (13)				20:12	21:23			22:27			22:49
31	08:48		14:06 (13)				07:09				04:41			
	16:53	11	14:17 (13)				20:14				22:29			
Potential sun hours	221			260			365	432			521			547
Total, worst case		629			5				105			263		
Sun reduction		0,50			0,50				0,50			0,50		
Oper. time red.		0,80			0,80				0,80			0,80		
Wind dir. red.		0,58			0,55				0,68			0,72		
Total reduction		0,23			0,22				0,27			0,29		
Total, real		146			1				29			75		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** R - Buevegen 2165 (18)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July			August			September			October	November			December		
1	04:32			05:24		20:33 (78)	06:33		19:37 (77)	07:39	07:51			08:59		12:22 (27)
	22:48			22:01	9	20:42 (78)	20:39	10	19:47 (77)	19:13	16:48			15:51	19	12:41 (27)
2	04:33			05:26		20:34 (78)	06:35		19:39 (77)	07:41	07:54			09:01		12:23 (27)
	22:48			21:58	8	20:42 (78)	20:37	5	19:44 (77)	19:10	16:46			15:50	19	12:42 (27)
3	04:34			05:28		20:30 (79)	06:37			07:44	07:56			09:03		12:23 (27)
	22:47			21:56	8	20:40 (78)	20:34			19:07	16:44			15:49	20	12:43 (27)
4	04:35			05:30		20:26 (79)	06:39			07:46	07:58			09:05		12:23 (27)
	22:46			21:54	10	20:37 (78)	20:31			19:04	16:41			15:48	20	12:43 (27)
5	04:36			05:33		20:25 (79)	06:42			07:48	08:01			09:07		12:24 (27)
	22:46			21:51	9	20:35 (79)	20:28			19:01	16:39			15:47	20	12:44 (27)
6	04:37			05:35		20:24 (79)	06:44			07:50	08:03			09:08		12:24 (27)
	22:45			21:49	8	20:32 (79)	20:25			18:58	16:36			15:46	20	12:44 (27)
7	04:38			05:37		20:23 (79)	06:46			07:53	08:06			09:10		12:24 (27)
	22:44			21:46	7	20:30 (79)	20:22			18:56	16:34			15:45	21	12:45 (27)
8	04:40			05:39		20:23 (79)	06:48			07:55	08:08			09:12		12:25 (27)
	22:43			21:44	6	20:29 (79)	20:19			18:53	16:32			15:44	20	12:45 (27)
9	04:41			05:41		20:23 (79)	06:50			07:57	08:10			09:13		12:24 (27)
	22:42			21:41	5	20:28 (79)	20:17			18:50	16:30			15:44	21	12:45 (27)
10	04:42			05:44		20:23 (79)	06:53			07:59	08:13		13:39 (13)	09:15		12:25 (27)
	22:40			21:39	4	20:27 (79)	20:14			18:47	16:27	7	13:46 (13)	15:43	21	12:46 (27)
11	04:44			05:46		20:23 (79)	06:55			08:02	08:15		13:37 (13)	09:16		12:26 (27)
	22:39			21:36	2	20:25 (79)	20:11			18:44	16:25	11	13:48 (13)	15:43	21	12:47 (27)
12	04:45			05:48			06:57			08:04	08:18		13:36 (13)	09:17		12:26 (27)
	22:38			21:34			20:08			18:42	16:23	14	13:50 (13)	15:42	20	12:46 (27)
13	04:47			05:50			06:59			08:06	08:20		13:35 (13)	09:19		12:27 (27)
	22:36			21:31			20:05			18:39	16:21	17	13:52 (13)	15:42	20	12:47 (27)
14	04:49			05:53			07:01			08:09	08:22		13:34 (13)	09:20		12:27 (27)
	22:35			21:29			20:02			18:36	16:19	18	13:52 (13)	15:42	21	12:48 (27)
15	04:50			05:55			07:04			08:11	08:25		13:34 (13)	09:21		12:27 (27)
	22:33			21:26			19:59			18:33	16:17	19	13:53 (13)	15:42	21	12:48 (27)
16	04:52			05:57			07:06			08:13	08:27		13:34 (13)	09:22		12:28 (27)
	22:32			21:23			19:56			18:30	16:15	20	13:54 (13)	15:42	20	12:48 (27)
17	04:54		20:39 (78)	05:59			07:08			08:16	08:29		13:33 (13)	09:23		12:28 (27)
	22:30	3	20:42 (78)	21:21			19:53			18:28	16:13	20	13:53 (13)	15:42	20	12:48 (27)
18	04:56		20:36 (78)	06:02			07:10			08:18	08:32		13:34 (13)	09:24		12:29 (27)
	22:29	8	20:44 (78)	21:18			19:50			18:25	16:11	20	13:54 (13)	15:42	20	12:49 (27)
19	04:57		20:35 (78)	06:04			07:12			08:20	08:34		13:34 (13)	09:25		12:30 (27)
	22:27	11	20:46 (78)	21:15			19:48			18:22	16:09	21	13:55 (13)	15:42	20	12:50 (27)
20	04:59		20:34 (78)	06:06			07:15			08:23	08:36		13:34 (13)	09:25		12:30 (27)
	22:25	13	20:47 (78)	21:13			19:45			18:20	16:07	20	13:54 (13)	15:42	20	12:50 (27)
21	05:01		20:33 (78)	06:08			07:17			08:25	08:38		13:35 (13)	09:26		12:30 (27)
	22:23	14	20:47 (78)	21:10			19:42			18:17	16:06	20	13:55 (13)	15:43	20	12:50 (27)
22	05:03		20:33 (78)	06:10			07:19			08:27	08:41		13:35 (13)	09:27		12:31 (27)
	22:21	15	20:48 (78)	21:07			19:39			18:14	16:04	19	13:54 (13)	15:43	20	12:51 (27)
23	05:05		20:33 (78)	06:13			07:21			08:30	08:43		13:36 (13)	09:27		12:31 (27)
	22:20	15	20:48 (78)	21:05			19:36			18:11	16:02	19	13:55 (13)	15:44	20	12:51 (27)
24	05:07		20:32 (78)	06:15		19:43 (77)	07:24			08:32	08:45		13:37 (13)	09:27		12:31 (27)
	22:18	16	20:48 (78)	21:02	5	19:48 (77)	19:33			18:09	16:01	18	13:55 (13)	15:44	21	12:52 (27)
25	05:09		20:31 (78)	06:17		19:41 (77)	07:26			07:34	08:47		12:26 (27)	09:28		12:33 (27)
	22:16	16	20:47 (78)	20:59	9	19:50 (77)	19:30			17:06	15:59	25	13:54 (13)	15:45	20	12:53 (27)
26	05:11		20:31 (78)	06:19		19:39 (77)	07:28			07:37	08:49		12:25 (27)	09:28		12:33 (27)
	22:14	15	20:46 (78)	20:56	11	19:50 (77)	19:27			17:04	15:57	26	13:54 (13)	15:46	20	12:53 (27)
27	05:13		20:31 (78)	06:22		19:38 (77)	07:30			07:39	08:51		12:24 (27)	09:28		12:34 (27)
	22:12	14	20:45 (78)	20:54	13	19:51 (77)	19:24			17:01	15:56	27	13:53 (13)	15:47	20	12:54 (27)
28	05:15		20:32 (78)	06:24		19:37 (77)	07:32			07:42	08:54		12:23 (27)	09:28		12:33 (27)
	22:09	14	20:46 (78)	20:51	14	19:51 (77)	19:21			16:58	15:55	27	13:52 (13)	15:47	20	12:53 (27)
29	05:17		20:32 (78)	06:26		19:37 (77)	07:35			07:44	08:56		12:23 (27)	09:28		12:34 (27)
	22:07	13	20:45 (78)	20:48	13	19:50 (77)	19:19			16:56	15:53	27	13:52 (13)	15:49	20	12:54 (27)
30	05:20		20:32 (78)	06:28		19:36 (77)	07:37			07:46	08:58		12:23 (27)	09:28		12:35 (27)
	22:05	12	20:44 (78)	20:45	14	19:50 (77)	19:16			16:53	15:52	24	13:51 (13)	15:50	20	12:55 (27)
31	05:22		20:32 (78)	06:31		19:37 (77)				07:49				09:28		12:35 (27)
	22:03	10	20:42 (78)	20:42	12	19:49 (77)				16:51				15:51	20	12:55 (27)
Potential sun hours	546			478			386			319	236			199		
Total, worst case		189			167			15				419			625	
Sun reduction		0,50			0,50			0,50				0,50			0,50	
Oper. time red.		0,80			0,80			0,80				0,80			0,80	
Wind dir. red.		0,72			0,70			0,68				0,56			0,62	
Total reduction		0,29			0,28			0,27				0,23			0,25	
Total, real		54			46			4				94			154	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** S - Vaule 176 (19)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March	April	May		June		
1	09:28	13:54 (27)	08:45	15:13 (13)	07:35	07:06	05:43		04:39		
	15:52	8 14:02 (27)	16:56	13 15:26 (13)	18:04	20:16	21:26		22:30		
2	09:27	13:55 (27)	08:43	15:12 (13)	07:32	07:04	05:41	20:29 (78)	04:38		
	15:54	9 14:04 (27)	16:58	16 15:28 (13)	18:07	20:19	21:28	6 20:35 (78)	22:32		
3	09:27	13:54 (27)	08:41	15:11 (13)	07:29	07:01	05:38	20:28 (78)	04:37		
	15:55	11 14:05 (27)	17:01	17 15:28 (13)	18:09	20:21	21:30	9 20:37 (78)	22:33		
4	09:26	13:54 (27)	08:39	15:11 (13)	07:27	06:58	05:36	20:27 (78)	04:36		
	15:57	12 14:06 (27)	17:03	18 15:29 (13)	18:12	20:23	21:33	10 20:37 (78)	22:35		
5	09:26	13:54 (27)	08:37	15:11 (13)	07:24	06:55	05:33	20:26 (78)	04:34		
	15:58	13 14:07 (27)	17:06	18 15:29 (13)	18:14	20:26	21:35	12 20:38 (78)	22:36		
6	09:25	13:54 (27)	08:34	15:11 (13)	07:21	06:52	05:31	20:25 (78)	04:33		
	16:00	14 14:08 (27)	17:08	19 15:30 (13)	18:16	20:28	21:37	13 20:38 (78)	22:38		
7	09:24	13:54 (27)	08:32	15:11 (13)	07:18	06:49	05:29	20:25 (78)	04:32		
	16:01	15 14:09 (27)	17:10	19 15:30 (13)	18:19	20:30	21:39	14 20:39 (78)	22:39		
8	09:23	13:54 (27)	08:30	15:11 (13)	07:15	06:46	05:26	20:25 (78)	04:31		21:34 (81)
	16:03	17 14:11 (27)	17:13	18 15:29 (13)	18:21	20:32	21:42	14 20:39 (78)	22:40	5	21:39 (81)
9	09:23	13:53 (27)	08:27	15:12 (13)	07:13	06:44	05:24	20:26 (78)	04:31		21:33 (81)
	16:05	18 14:11 (27)	17:15	18 15:30 (13)	18:23	20:35	21:44	13 20:39 (78)	22:41	6	21:39 (81)
10	09:22	13:54 (27)	08:25	15:12 (13)	07:10	06:41	05:21	20:25 (78)	04:30		21:32 (81)
	16:07	18 14:12 (27)	17:18	17 15:29 (13)	18:26	20:37	21:46	12 20:37 (78)	22:43	8	21:40 (81)
11	09:20	13:53 (27)	08:22	15:13 (13)	07:07	06:38	05:19	20:26 (78)	04:29		21:32 (81)
	16:09	19 14:12 (27)	17:20	15 15:28 (13)	18:28	20:39	21:48	11 20:37 (78)	22:44	9	21:41 (81)
12	09:19	13:54 (27)	08:20	15:15 (13)	07:04	06:35	05:17	20:27 (78)	04:28		21:32 (81)
	16:10	19 14:13 (27)	17:23	12 15:27 (13)	18:30	20:42	21:51	9 20:36 (78)	22:45	10	21:42 (81)
13	09:18	13:53 (27)	08:17	15:17 (13)	07:01	06:32	05:14	20:29 (78)	04:28		21:32 (81)
	16:12	21 14:14 (27)	17:25	7 15:24 (13)	18:33	20:44	21:53	5 20:34 (78)	22:45	10	21:42 (81)
14	09:17	13:54 (27)	08:15		06:58	06:29	05:12		04:27		21:32 (81)
	16:14	21 14:15 (27)	17:28		18:35	20:46	21:55		22:46	10	21:42 (81)
15	09:16	13:54 (27)	08:12		06:56	06:27	05:10		04:27		21:32 (81)
	16:16	21 14:15 (27)	17:30		18:37	20:49	21:57		22:47	11	21:43 (81)
16	09:14	13:54 (27)	08:10		06:53	06:24	05:08		04:27		21:32 (81)
	16:19	21 14:15 (27)	17:33		18:40	20:51	21:59		22:48	12	21:44 (81)
17	09:13	13:54 (27)	08:07		06:50	06:21	05:06	20:57 (80)	04:27		21:32 (81)
	16:21	22 14:16 (27)	17:35		18:42	20:53	22:02	1 20:58 (80)	22:48	11	21:43 (81)
18	09:11	13:55 (27)	08:05		06:47	06:18	05:04	20:56 (80)	04:26		21:32 (81)
	16:23	21 14:16 (27)	17:38		18:44	20:56	22:04	3 20:59 (80)	22:49	11	21:43 (81)
19	09:10	13:55 (27)	08:02		06:44	06:15	05:02	20:56 (80)	04:26		21:32 (81)
	16:25	21 14:16 (27)	17:40		18:47	20:58	22:06	5 21:01 (80)	22:49	12	21:44 (81)
20	09:08	13:56 (27)	07:59		06:41	06:13	05:00	20:55 (80)	04:26		21:33 (81)
	16:27	20 14:16 (27)	17:43		18:49	21:00	22:08	7 21:02 (80)	22:50	12	21:45 (81)
21	09:07	13:56 (27)	07:57		06:38	06:10	04:58	20:56 (80)	04:26		21:33 (81)
	16:30	20 14:16 (27)	17:45		18:51	21:02	22:10	11 21:07 (80)	22:50	12	21:45 (81)
22	09:05	13:57 (27)	07:54		06:35	06:07	04:56	20:55 (80)	04:27		21:33 (81)
	16:32	19 14:16 (27)	17:47		18:53	21:05	22:12	13 21:08 (80)	22:50	12	21:45 (81)
23	09:03	13:58 (27)	07:51		06:32	06:05	04:54	20:56 (80)	04:27		21:33 (81)
	16:34	18 14:16 (27)	17:50		18:56	21:07	22:14	13 21:09 (80)	22:50	12	21:45 (81)
24	09:01	13:59 (27)	07:49		06:30	06:02	04:52	20:56 (80)	04:27		21:34 (81)
	16:36	17 14:16 (27)	17:52		18:58	21:09	22:16	13 21:09 (80)	22:50	11	21:45 (81)
25	08:59	14:01 (27)	07:46		06:27	05:59	04:50	20:57 (80)	04:28		21:34 (81)
	16:39	14 14:15 (27)	17:55		19:00	21:12	22:18	12 21:09 (80)	22:50	11	21:45 (81)
26	08:58	14:01 (27)	07:43		06:24	05:57	04:49	20:57 (80)	04:28		21:35 (81)
	16:41	13 14:14 (27)	17:57		19:03	21:14	22:20	11 21:08 (80)	22:50	11	21:46 (81)
27	08:56	14:04 (27)	07:41		06:21	05:54	04:47	20:58 (80)	04:29		21:34 (81)
	16:44	8 14:12 (27)	18:00		19:05	21:16	22:22	10 21:08 (80)	22:50	11	21:45 (81)
28	08:54		07:38		06:18	05:51	04:45	20:58 (80)	04:29		21:35 (81)
	16:46		18:02		19:07	21:19	22:23	9 21:07 (80)	22:50	11	21:46 (81)
29	08:52				07:15	05:49	04:44	20:59 (80)	04:30		21:35 (81)
	16:48				20:10	21:21	22:25	8 21:07 (80)	22:49	10	21:45 (81)
30	08:50	15:16 (13)			07:12	05:46	04:42	21:00 (80)	04:31		21:36 (81)
	16:51	6 15:22 (13)			20:12	21:23	22:27	6 21:06 (80)	22:49	9	21:45 (81)
31	08:48	15:14 (13)			07:09		04:41				
	16:53	11 15:25 (13)			20:14		22:29				
Potential sun hours	221		260		365	432	521		547		
Total, worst case		467		207				250		237	
Sun reduction		0,50		0,50				0,50		0,50	
Oper. time red.		0,80		0,80				0,80		0,80	
Wind dir. red.		0,55		0,55				0,72		0,74	
Total reduction		0,22		0,22				0,29		0,29	
Total, real		102		45				72		70	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** S - Vaule 176 (19)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July			August			September	October			November			December		
1	04:32		21:36 (81)	05:24		20:38 (78)	06:33	07:39			07:51		14:42 (13)	08:59		13:35 (27)
	22:48	9	21:45 (81)	22:01	9	20:47 (78)	20:39	19:13			16:48	16	14:58 (13)	15:51	19	13:54 (27)
2	04:33		21:37 (81)	05:26		20:37 (78)	06:35	07:41			07:53		14:41 (13)	09:01		13:37 (27)
	22:48	8	21:45 (81)	21:58	11	20:48 (78)	20:37	19:10			16:46	18	14:59 (13)	15:50	18	13:55 (27)
3	04:34		21:38 (81)	05:28		20:35 (78)	06:37	07:44			07:56		14:40 (13)	09:03		13:37 (27)
	22:47	7	21:45 (81)	21:56	13	20:48 (78)	20:34	19:07			16:44	19	14:59 (13)	15:49	18	13:55 (27)
4	04:35		21:39 (81)	05:30		20:35 (78)	06:39	07:46			07:58		14:40 (13)	09:05		13:38 (27)
	22:46	5	21:44 (81)	21:54	13	20:48 (78)	20:31	19:04			16:41	19	14:59 (13)	15:48	17	13:55 (27)
5	04:36		21:40 (81)	05:32		20:35 (78)	06:42	07:48			08:01		14:41 (13)	09:07		13:39 (27)
	22:45	3	21:43 (81)	21:51	13	20:48 (78)	20:28	19:01			16:39	19	15:00 (13)	15:47	16	13:55 (27)
6	04:37			05:35		20:35 (78)	06:44	07:50			08:03		14:41 (13)	09:08		13:40 (27)
	22:45			21:49	13	20:48 (78)	20:25	18:58			16:36	19	15:00 (13)	15:46	14	13:54 (27)
7	04:38			05:37		20:35 (78)	06:46	07:53			08:06		14:41 (13)	09:10		13:41 (27)
	22:44			21:46	12	20:47 (78)	20:22	18:56			16:34	18	14:59 (13)	15:45	13	13:54 (27)
8	04:40			05:39		20:35 (78)	06:48	07:55			08:08		14:42 (13)	09:12		13:42 (27)
	22:43			21:44	12	20:47 (78)	20:19	18:53			16:32	17	14:59 (13)	15:44	12	13:54 (27)
9	04:41			05:41		20:36 (78)	06:50	07:57			08:10		14:43 (13)	09:13		13:42 (27)
	22:41			21:41	10	20:46 (78)	20:16	18:50			16:30	15	14:58 (13)	15:44	11	13:53 (27)
10	04:42			05:44		20:38 (78)	06:53	07:59			08:13		14:43 (13)	09:15		13:44 (27)
	22:40			21:39	8	20:46 (78)	20:14	18:47			16:27	14	14:57 (13)	15:43	9	13:53 (27)
11	04:44			05:46		20:40 (78)	06:55	08:02			08:15		14:45 (13)	09:16		13:45 (27)
	22:39			21:36	4	20:44 (78)	20:11	18:44			16:25	11	14:56 (13)	15:43	8	13:53 (27)
12	04:45			05:48			06:57	08:04			08:18		14:48 (13)	09:17		13:46 (27)
	22:38			21:34			20:08	18:41			16:23	5	14:53 (13)	15:42	6	13:52 (27)
13	04:47		21:10 (80)	05:50			06:59	08:06			08:20			09:19		13:49 (27)
	22:36	4	21:14 (80)	21:31			20:05	18:39			16:21			15:42	3	13:52 (27)
14	04:49		21:08 (80)	05:53			07:01	08:09			08:22			09:20		
	22:35	7	21:15 (80)	21:29			20:02	18:36			16:19			15:42		
15	04:50		21:08 (80)	05:55			07:04	08:11			08:25		13:37 (27)	09:21		
	22:33	8	21:16 (80)	21:26			19:59	18:33			16:17	8	13:45 (27)	15:42		
16	04:52		21:07 (80)	05:57			07:06	08:13			08:27		13:35 (27)	09:22		
	22:32	10	21:17 (80)	21:23			19:56	18:30			16:15	12	13:47 (27)	15:42		
17	04:54		21:07 (80)	05:59			07:08	08:16			08:29		13:33 (27)	09:23		
	22:30	11	21:18 (80)	21:21			19:53	18:28			16:13	15	13:48 (27)	15:42		
18	04:56		21:06 (80)	06:01			07:10	08:18			08:32		13:33 (27)	09:24		
	22:29	12	21:18 (80)	21:18			19:50	18:25			16:11	17	13:50 (27)	15:42		
19	04:57		21:06 (80)	06:04			07:12	08:20			08:34		13:33 (27)	09:25		
	22:27	12	21:18 (80)	21:15			19:47	18:22			16:09	18	13:51 (27)	15:42		
20	04:59		21:06 (80)	06:06			07:15	08:23			08:36		13:32 (27)	09:25		
	22:25	13	21:19 (80)	21:13			19:45	18:19			16:07	19	13:51 (27)	15:42		
21	05:01		21:05 (80)	06:08			07:17	08:25			08:38		13:32 (27)	09:26		
	22:23	13	21:18 (80)	21:10			19:42	18:17			16:06	20	13:52 (27)	15:43		
22	05:03		21:06 (80)	06:10			07:19	08:27			08:41		13:32 (27)	09:27		
	22:21	11	21:17 (80)	21:07			19:39	18:14			16:04	20	13:52 (27)	15:43		
23	05:05		21:06 (80)	06:13			07:21	08:30			08:43		13:32 (27)	09:27		
	22:20	9	21:16 (80)	21:05			19:36	18:11			16:02	21	13:53 (27)	15:44		
24	05:07		21:06 (80)	06:15			07:23	08:32			08:45		13:33 (27)	09:27		
	22:18	6	21:12 (80)	21:02			19:33	18:09			16:00	21	13:54 (27)	15:44		
25	05:09		21:06 (80)	06:17			07:26	07:34			08:47		13:32 (27)	09:28		
	22:16	4	21:10 (80)	20:59			19:30	17:06			15:59	22	13:54 (27)	15:45		
26	05:11		21:07 (80)	06:19			07:28	07:37			08:49		13:33 (27)	09:28		
	22:14	2	21:09 (80)	20:56			19:27	17:04			15:57	21	13:54 (27)	15:46		
27	05:13			06:22			07:30	07:39			08:51		13:33 (27)	09:28		
	22:11			20:53			19:24	17:01			15:56	21	13:54 (27)	15:47		
28	05:15			06:24			07:32	07:41			08:53		13:33 (27)	09:28		
	22:09			20:51			19:21	16:58			15:55	21	13:54 (27)	15:47		
29	05:17			06:26			07:35	07:44		14:46 (13)	08:55		13:35 (27)	09:28		
	22:07			20:48			19:18	16:56	8	14:54 (13)	15:53	20	13:55 (27)	15:48		
30	05:19			06:28			07:37	07:46		14:44 (13)	08:57		13:35 (27)	09:28		
	22:05			20:45			19:16	16:53	13	14:57 (13)	15:52	19	13:54 (27)	15:50		
31	05:22		20:40 (78)	06:31				07:49		14:42 (13)				09:28		13:56 (27)
	22:03	6	20:46 (78)	20:42				16:51	15	14:57 (13)				15:51	4	14:00 (27)
Potential sun hours	546			478			386	319			236			199		
Total, worst case		160			118				36			485			168	
Sun reduction		0,50			0,50				0,50			0,50			0,50	
Oper. time red.		0,80			0,80				0,80			0,80			0,80	
Wind dir. red.		0,73			0,72				0,55			0,55			0,55	
Total reduction		0,29			0,29				0,22			0,22			0,22	
Total, real		47			34				8			106			37	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** T - Vaule 247 (20)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March			April	May	June	
1	09:28			08:45		10:57 (38)	07:35		16:28 (18)	07:06	05:44	04:39	21:26 (78)
	15:52			16:56	41	13:51 (27)	18:04	11	16:39 (18)	20:16	21:26	22:30	2 21:28 (78)
2	09:27			08:43		10:59 (38)	07:32		16:27 (18)	07:04	05:41	04:38	21:24 (78)
	15:54			16:58	37	13:51 (27)	18:07	14	16:41 (18)	20:19	21:28	22:32	6 21:30 (78)
3	09:27			08:41		11:02 (38)	07:30		16:27 (18)	07:01	05:38	04:37	21:23 (78)
	15:55			17:01	27	13:49 (27)	18:09	15	16:42 (18)	20:21	21:30	22:33	8 21:31 (78)
4	09:26			08:39		13:29 (27)	07:27		16:27 (18)	06:58	05:36	04:36	21:23 (78)
	15:57			17:03	20	13:49 (27)	18:12	18	16:45 (18)	20:23	21:33	22:35	9 21:32 (78)
5	09:26			08:37		13:30 (27)	07:24		16:28 (18)	06:55	05:33	04:34	21:22 (78)
	15:58			17:06	17	13:47 (27)	18:14	18	16:46 (18)	20:26	21:35	22:36	11 21:33 (78)
6	09:25			08:34		13:34 (27)	07:21		16:28 (18)	06:52	05:31	04:33	21:22 (78)
	16:00			17:08	11	13:45 (27)	18:16	17	16:45 (18)	20:28	21:37	22:38	11 21:33 (78)
7	09:24			08:32			07:18		16:29 (18)	06:49	05:29	04:32	21:21 (78)
	16:01			17:11			18:19	15	16:44 (18)	20:30	21:39	22:39	12 21:33 (78)
8	09:23			08:30			07:15		16:30 (18)	06:46	05:26	04:32	21:22 (78)
	16:03			17:13			18:21	12	16:42 (18)	20:32	21:42	22:40	13 21:35 (78)
9	09:23			08:27			07:13		16:33 (18)	06:44	05:24	04:31	21:22 (78)
	16:05			17:15			18:23	5	16:38 (18)	20:35	21:44	22:41	13 21:35 (78)
10	09:22			08:25			07:10			06:41	05:21	04:30	21:22 (78)
	16:07			17:18			18:26			20:37	21:46	22:43	13 21:35 (78)
11	09:20			08:22		14:55 (8)	07:07			06:38	05:19	04:29	21:22 (78)
	16:09			17:20	7	15:02 (8)	18:28			20:39	21:48	22:44	13 21:35 (78)
12	09:19			08:20		14:57 (8)	07:04			06:35	05:17	04:29	21:22 (78)
	16:11			17:23	10	15:07 (8)	18:30			20:42	21:51	22:45	14 21:36 (78)
13	09:18		11:01 (38)	08:17		14:59 (8)	07:01			06:32	05:15	04:28	21:22 (78)
	16:12	5	11:06 (38)	17:25	12	15:11 (13)	18:33			20:44	21:53	22:45	14 21:36 (78)
14	09:17		10:57 (38)	08:15		15:02 (8)	06:58			06:29	05:12	04:28	21:22 (78)
	16:14	11	11:08 (38)	17:28	12	15:15 (13)	18:35			20:46	21:55	22:46	14 21:36 (78)
15	09:16		10:52 (38)	08:12		15:06 (13)	06:56			06:27	05:10	04:27	21:22 (78)
	16:17	17	11:09 (38)	17:30	13	15:19 (13)	18:37			20:49	21:57	22:47	15 21:37 (78)
16	09:14		10:52 (38)	08:10		15:06 (13)	06:53			06:24	05:08	04:27	21:23 (78)
	16:19	18	11:10 (38)	17:33	16	15:22 (13)	18:40			20:51	21:59	22:48	14 21:37 (78)
17	09:13		10:51 (38)	08:07		15:05 (13)	06:50			06:21	05:06	04:27	21:22 (78)
	16:21	19	11:10 (38)	17:35	16	15:21 (13)	18:42			20:53	22:02	22:48	15 21:37 (78)
18	09:11		10:51 (38)	08:05		15:05 (13)	06:47			06:18	05:04	04:26	21:22 (78)
	16:23	20	11:11 (38)	17:38	15	15:20 (13)	18:44			20:56	22:04	22:49	15 21:37 (78)
19	09:10		10:51 (38)	08:02		15:06 (13)	06:44			06:16	05:02	04:26	21:23 (78)
	16:25	21	11:12 (38)	17:40	17	15:23 (13)	18:47			20:58	22:06	22:49	15 21:38 (78)
20	09:08		10:51 (38)	07:59		15:07 (13)	06:41			06:13	05:00	04:26	21:24 (78)
	16:27	22	11:13 (38)	17:43	18	15:25 (13)	18:49			21:00	22:08	22:50	14 21:38 (78)
21	09:07		10:51 (38)	07:57		15:07 (13)	06:38			06:10	04:58	04:26	21:24 (78)
	16:30	23	12:45 (33)	17:45	21	15:28 (13)	18:51			21:02	22:10	22:50	14 21:38 (78)
22	09:05		10:51 (38)	07:54		15:08 (13)	06:35			06:07	04:56	04:27	21:24 (78)
	16:32	35	12:57 (33)	17:47	20	15:28 (13)	18:53			21:05	22:12	22:50	14 21:38 (78)
23	09:03		10:51 (38)	07:51		15:09 (13)	06:32			06:05	04:54	04:27	21:23 (78)
	16:34	41	13:04 (33)	17:50	18	15:27 (13)	18:56			21:07	22:14	22:50	15 21:38 (78)
24	09:01		10:52 (38)	07:49		15:12 (13)	06:30			06:02	04:52	04:27	21:24 (78)
	16:37	40	13:04 (33)	17:52	14	15:26 (13)	18:58			21:09	22:16	22:50	15 21:39 (78)
25	08:59		10:52 (38)	07:46		15:16 (13)	06:27			05:59	04:50	04:28	21:24 (78)
	16:39	39	13:04 (33)	17:55	6	15:22 (13)	19:00			21:12	22:18	22:50	15 21:39 (78)
26	08:58		10:52 (38)	07:43			06:24			05:57	04:49	04:28	21:25 (78)
	16:41	40	13:25 (27)	17:57			19:03			21:14	22:20	22:50	14 21:39 (78)
27	08:56		10:53 (38)	07:41			06:21			05:54	04:47	04:29	21:25 (78)
	16:44	42	13:31 (27)	18:00			19:05			21:16	22:22	22:50	14 21:39 (78)
28	08:54		10:53 (38)	07:38		16:29 (18)	06:18			05:51	04:45	04:29	21:25 (78)
	16:46	46	13:41 (27)	18:02	6	16:37 (18)	19:07			21:19	22:23	22:50	14 21:39 (78)
29	08:52		10:54 (38)				07:15			05:49	04:44	04:30	21:25 (78)
	16:48	42	13:45 (27)				20:10			21:21	22:25	22:49	14 21:39 (78)
30	08:50		10:55 (38)				07:12			05:46	04:42	04:31	21:25 (78)
	16:51	43	13:48 (27)				20:12			21:23	22:27	22:49	14 21:39 (78)
31	08:48		10:56 (38)				07:09				04:41		
	16:53	43	13:50 (27)				20:14				22:29		
Potential sun hours	221			260			365			432	521	547	
Total, worst case		567			374			125					384
Sun reduction		0,50			0,50			0,50					0,50
Oper. time red.		0,80			0,80			0,80					0,80
Wind dir. red.		0,66			0,57			0,57					0,74
Total reduction		0,26			0,23			0,23					0,29
Total, real		150			85			28					113

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** T - Vaule 247 (20)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July		August	September	October		November		December
1	04:32	21:26 (78)	05:24	06:33	07:39		07:51		08:59
	22:48	14 21:40 (78)	22:01	20:39	19:13		16:48		15:51
2	04:33	21:26 (78)	05:26	06:35	07:41		07:54		09:01
	22:48	14 21:40 (78)	21:58	20:37	19:10		16:46		15:50
3	04:34	21:27 (78)	05:28	06:37	07:44		07:56		09:03
	22:47	13 21:40 (78)	21:56	20:34	19:07		16:44		15:49
4	04:35	21:27 (78)	05:30	06:39	07:46		07:58	13:08 (27)	09:05
	22:46	13 21:40 (78)	21:54	20:31	19:04		16:41	2 13:10 (27)	15:48
5	04:36	21:28 (78)	05:33	06:42	07:48	17:09 (18)	08:01	13:03 (27)	09:07
	22:45	12 21:40 (78)	21:51	20:28	19:01	9 17:18 (18)	16:39	12 13:15 (27)	15:47
6	04:37	21:28 (78)	05:35	06:44	07:50	17:06 (18)	08:03	13:01 (27)	09:08
	22:45	12 21:40 (78)	21:49	20:25	18:58	14 17:20 (18)	16:36	17 13:18 (27)	15:46
7	04:38	21:28 (78)	05:37	06:46	07:53	17:04 (18)	08:06	12:59 (27)	09:10
	22:44	11 21:39 (78)	21:46	20:22	18:56	16 17:20 (18)	16:34	20 13:19 (27)	15:45
8	04:40	21:29 (78)	05:39	06:48	07:55	17:03 (18)	08:08	10:32 (38)	09:12
	22:43	10 21:39 (78)	21:44	20:19	18:53	18 17:21 (18)	16:32	29 13:20 (27)	15:44
9	04:41	21:29 (78)	05:41	06:50	07:57	17:02 (18)	08:10	10:30 (38)	09:13
	22:41	9 21:38 (78)	21:41	20:16	18:50	18 17:20 (18)	16:30	37 13:22 (27)	15:44
10	04:42	21:31 (78)	05:44	06:53	07:59	17:01 (18)	08:13	10:28 (38)	09:15
	22:40	7 21:38 (78)	21:39	20:14	18:47	16 17:17 (18)	16:27	41 13:22 (27)	15:43
11	04:44	21:32 (78)	05:46	06:55	08:02	17:01 (18)	08:15	10:27 (38)	09:16
	22:39	5 21:37 (78)	21:36	20:11	18:44	15 17:16 (18)	16:25	42 13:20 (27)	15:43
12	04:45		05:48	06:57	08:04	17:01 (18)	08:18	10:27 (38)	09:17
	22:38		21:34	20:08	18:41	13 17:14 (18)	16:23	42 13:19 (27)	15:42
13	04:47		05:50	06:59	08:06	17:02 (18)	08:20	10:25 (38)	09:19
	22:36		21:31	20:05	18:39	10 17:12 (18)	16:21	43 13:17 (27)	15:42
14	04:49		05:53	07:01	08:09	17:06 (18)	08:22	10:25 (38)	09:20
	22:35		21:29	20:02	18:36	2 17:08 (18)	16:19	46 13:12 (27)	15:42
15	04:50		05:55	07:04	08:11		08:25	10:25 (38)	09:21
	22:33		21:26	19:59	18:33		16:17	43 13:04 (27)	15:42
16	04:52		05:57	07:06	08:13		08:27	10:26 (38)	09:22
	22:32		21:23	19:56	18:30		16:15	40 12:59 (27)	15:42
17	04:54		05:59	07:08	08:16	15:45 (13)	08:29	10:25 (38)	09:23
	22:30		21:21	19:53	18:28	9 15:54 (13)	16:13	39 12:37 (33)	15:42
18	04:56		06:02	07:10	08:18	15:42 (13)	08:32	10:26 (38)	09:24
	22:29		21:18	19:50	18:25	15 15:57 (13)	16:11	40 12:38 (33)	15:42
19	04:57		06:04	07:12	08:20	15:40 (13)	08:34	10:26 (38)	09:25
	22:27		21:15	19:47	18:22	18 15:58 (13)	16:09	41 12:39 (33)	15:42
20	04:59		06:06	07:15	08:23	15:39 (13)	08:36	10:26 (38)	09:25
	22:25		21:13	19:45	18:20	21 16:00 (13)	16:07	35 12:32 (33)	15:42
21	05:01		06:08	07:17	08:25	15:37 (13)	08:38	10:27 (38)	09:26
	22:23		21:10	19:42	18:17	20 15:57 (13)	16:06	23 12:21 (33)	15:43
22	05:03		06:10	07:19	08:27	15:37 (13)	08:41	10:27 (38)	09:27
	22:21		21:07	19:39	18:14	17 15:54 (13)	16:04	22 10:49 (38)	15:43
23	05:05		06:13	07:21	08:30	15:36 (13)	08:43	10:28 (38)	09:27
	22:20		21:05	19:36	18:12	16 15:52 (13)	16:02	21 10:49 (38)	15:44
24	05:07		06:15	07:24	08:32	15:35 (13)	08:45	10:29 (38)	09:27
	22:18		21:02	19:33	18:09	16 15:51 (13)	16:01	20 10:49 (38)	15:44
25	05:09		06:17	07:26	07:34	14:36 (13)	08:47	10:29 (38)	09:28
	22:16		20:59	19:30	17:06	15 14:51 (13)	15:59	20 10:49 (38)	15:45
26	05:11		06:19	07:28	07:37	14:35 (13)	08:49	10:31 (38)	09:28
	22:14		20:56	19:27	17:04	16 14:51 (13)	15:57	18 10:49 (38)	15:46
27	05:13		06:22	07:30	07:39	14:35 (13)	08:51	10:32 (38)	09:28
	22:11		20:53	19:24	17:01	13 14:48 (13)	15:56	16 10:48 (38)	15:47
28	05:15		06:24	07:32	07:41	14:30 (8)	08:53	10:36 (38)	09:28
	22:09		20:51	19:21	16:58	14 14:44 (13)	15:55	11 10:47 (38)	15:48
29	05:17		06:26	07:35	07:44	14:28 (8)	08:55	10:42 (38)	09:28
	22:07		20:48	19:19	16:56	12 14:40 (13)	15:53	5 10:47 (38)	15:49
30	05:20		06:28	07:37	07:46	14:26 (8)	08:57		09:28
	22:05		20:45	19:16	16:53	10 14:36 (8)	15:52		15:50
31	05:22		06:31		07:49				09:28
	22:03		20:42		16:51				15:51
Potential sun hours	546		478	386	319		236		199
Total, worst case		120				343		725	
Sun reduction		0,50				0,50		0,50	
Oper. time red.		0,80				0,80		0,80	
Wind dir. red.		0,74				0,56		0,65	
Total reduction		0,29				0,22		0,26	
Total, real		35				76		188	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** U - Store Svela, eiendom 60/5, Bjerkreim kommune (21)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March			April			May			June
1	09:27			08:45		15:29 (9)	07:35		15:43 (14)	07:06			05:43		18:53 (38)	04:39
	15:52			16:56	21	15:50 (9)	18:04	38	16:21 (14)	20:16			21:25	26	19:19 (38)	22:30
2	09:27			08:43		15:29 (9)	07:32		15:43 (14)	07:04			05:41		18:54 (38)	04:38
	15:54			16:58	23	15:52 (9)	18:07	37	16:20 (14)	20:19			21:28	23	19:17 (38)	22:32
3	09:27			08:41		15:29 (9)	07:29		15:43 (14)	07:01			05:38		18:56 (38)	04:37
	15:55			17:01	23	15:52 (9)	18:09	36	16:19 (14)	20:21			21:30	19	19:15 (38)	22:33
4	09:26			08:39		15:29 (9)	07:27		15:44 (14)	06:58		19:04 (38)	05:36		19:00 (38)	04:36
	15:57			17:03	23	15:52 (9)	18:11	34	16:18 (14)	20:23	15	19:19 (38)	21:32	12	19:12 (38)	22:35
5	09:25			08:36		15:29 (9)	07:24		15:46 (14)	06:55		19:00 (38)	05:33			04:35
	15:58			17:06	23	15:52 (9)	18:14	32	16:18 (14)	20:25	22	19:22 (38)	21:35			22:36
6	09:25			08:34		15:28 (9)	07:21		15:47 (14)	06:52		18:57 (38)	05:31			04:33
	16:00			17:08	24	15:52 (9)	18:16	29	16:16 (14)	20:28	27	19:24 (38)	21:37			22:37
7	09:24			08:32		15:29 (9)	07:18		15:48 (14)	06:49		18:55 (38)	05:29			04:32
	16:01			17:10	23	15:52 (9)	18:19	27	16:15 (14)	20:30	30	19:25 (38)	21:39			22:39
8	09:23			08:29		15:29 (9)	07:15		15:50 (14)	06:46		18:53 (38)	05:26			04:32
	16:03			17:13	23	15:52 (9)	18:21	22	16:12 (14)	20:32	33	19:26 (38)	21:42			22:40
9	09:22			08:27		15:30 (9)	07:13		15:52 (14)	06:43		18:52 (38)	05:24			04:31
	16:05			17:15	22	15:52 (9)	18:23	18	16:10 (14)	20:35	47	19:57 (27)	21:44			22:41
10	09:21			08:25		15:31 (9)	07:10		15:57 (14)	06:41		18:51 (38)	05:21			04:30
	16:07			17:18	20	15:51 (9)	18:26	8	16:05 (14)	20:37	55	19:58 (27)	21:46			22:42
11	09:20			08:22		15:31 (9)	07:07			06:38		18:49 (38)	05:19			04:29
	16:09			17:20	19	15:50 (9)	18:28			20:39	60	19:58 (27)	21:48			22:43
12	09:19			08:20		15:33 (9)	07:04			06:35		18:48 (38)	05:17			04:29
	16:11			17:23	16	15:49 (9)	18:30			20:42	61	19:58 (27)	21:50			22:44
13	09:18			08:17		15:35 (9)	07:01			06:32		18:48 (38)	05:15			04:28
	16:12			17:25	16	16:05 (14)	18:33			20:44	63	19:59 (27)	21:53			22:45
14	09:17			08:15		15:38 (9)	06:58			06:29		18:47 (38)	05:12			04:28
	16:14			17:28	21	16:10 (14)	18:35			20:46	63	19:58 (27)	21:55			22:46
15	09:15			08:12		15:52 (14)	06:55			06:27		18:46 (38)	05:10			04:27
	16:17			17:30	21	16:13 (14)	18:37			20:48	64	19:57 (27)	21:57			22:47
16	09:14			08:10		15:51 (14)	06:53		17:31 (33)	06:24		18:46 (38)	05:08			04:27
	16:19			17:33	25	16:16 (14)	18:40	6	17:37 (33)	20:51	63	19:57 (27)	21:59			22:47
17	09:13			08:07		15:49 (14)	06:50		17:27 (33)	06:21		18:45 (38)	05:06			04:27
	16:21			17:35	28	16:17 (14)	18:42	13	17:40 (33)	20:53	61	19:55 (27)	22:01			22:48
18	09:11			08:04		15:48 (14)	06:47		17:25 (33)	06:18		18:45 (38)	05:04			04:26
	16:23			17:38	30	16:18 (14)	18:44	16	17:41 (33)	20:55	58	19:54 (27)	22:04			22:49
19	09:10			08:02		15:46 (14)	06:44		17:23 (33)	06:15		18:45 (38)	05:02			04:26
	16:25			17:40	33	16:19 (14)	18:46	19	17:42 (33)	20:58	55	19:52 (27)	22:06			22:49
20	09:08			07:59		15:46 (14)	06:41		17:22 (33)	06:13		18:45 (38)	05:00			04:26
	16:27			17:43	34	16:20 (14)	18:49	20	17:42 (33)	21:00	44	19:29 (38)	22:08			22:49
21	09:06			07:57		15:45 (14)	06:38		17:21 (33)	06:10		18:45 (38)	04:58			04:26
	16:30			17:45	36	16:21 (14)	18:51	22	17:43 (33)	21:02	43	19:28 (38)	22:10			22:50
22	09:05			07:54		15:44 (14)	06:35		17:20 (33)	06:07		18:45 (38)	04:56			04:27
	16:32			17:47	37	16:21 (14)	18:53	22	17:42 (33)	21:05	43	19:28 (38)	22:12			22:50
23	09:03			07:51		15:44 (14)	06:32		17:20 (33)	06:05		18:45 (38)	04:54			04:27
	16:34			17:50	37	16:21 (14)	18:56	22	17:42 (33)	21:07	42	19:27 (38)	22:14			22:50
24	09:01			07:49		15:43 (14)	06:29		17:20 (33)	06:02		18:46 (38)	04:52			04:27
	16:36			17:52	38	16:21 (14)	18:58	22	17:42 (33)	21:09	41	19:27 (38)	22:16			22:50
25	08:59			07:46		15:44 (14)	06:27		17:20 (33)	05:59		18:46 (38)	04:50			04:28
	16:39			17:55	38	16:22 (14)	19:00	21	17:41 (33)	21:12	40	19:26 (38)	22:18			22:50
26	08:57			07:43		15:43 (14)	06:24		17:20 (33)	05:57		18:47 (38)	04:49			04:28
	16:41			17:57	39	16:22 (14)	19:03	20	17:40 (33)	21:14	38	19:25 (38)	22:20			22:50
27	08:55		15:35 (9)	07:40		15:43 (14)	06:21		17:22 (33)	05:54		18:47 (38)	04:47			04:29
	16:44	8	15:43 (9)	18:00	39	16:22 (14)	19:05	17	17:39 (33)	21:16	37	19:24 (38)	22:21			22:50
28	08:54		15:33 (9)	07:38		15:43 (14)	06:18		17:23 (33)	05:51		18:49 (38)	04:45			04:29
	16:46	13	15:46 (9)	18:02	38	16:21 (14)	19:07	14	17:37 (33)	21:19	34	19:23 (38)	22:23			22:49
29	08:51		15:31 (9)				07:15		18:25 (33)	05:49		18:49 (38)	04:44			04:30
	16:48	16	15:47 (9)				20:09	10	18:35 (33)	21:21	33	19:22 (38)	22:25			22:49
30	08:49		15:31 (9)				07:12			05:46		18:51 (38)	04:42			04:31
	16:51	17	15:48 (9)				20:12			21:23	30	19:21 (38)	22:27			22:49
31	08:47		15:29 (9)				07:09						04:41			
	16:53	20	15:49 (9)				20:14						22:28			
Potential sun hours	221			260			365			432			521			547
Total, worst case		74			770			525			1202			80		
Sun reduction		0,50			0,50			0,50			0,50			0,50		
Oper. time red.		0,80			0,80			0,80			0,80			0,80		
Wind dir. red.		0,53			0,54			0,58			0,68			0,68		
Total reduction		0,21			0,22			0,23			0,27			0,27		
Total, real		16			167			122			327			22		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** U - Store Svela, eiendom 60/5, Bjerkreim kommune (21)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August		September		October		November		December
1	04:32	05:24		06:33		18:48 (38)	07:39		07:51	15:00 (9)	08:59
	22:48	22:00		20:39	60	19:57 (27)	19:13		16:48	21	15:21 (9)	15:51
2	04:33	05:26		06:35		18:49 (38)	07:41		07:53		15:00 (9)	09:01
	22:47	21:58		20:36	56	19:56 (27)	19:10		16:46	22	15:22 (9)	15:50
3	04:34	05:28		06:37		18:49 (38)	07:43		07:56		14:59 (9)	09:03
	22:47	21:56		20:34	47	19:54 (27)	19:07		16:44	22	15:21 (9)	15:49
4	04:35	05:30		06:39		18:51 (38)	07:46	16:31 (14)	07:58		14:59 (9)	09:05
	22:46	21:53		20:31	33	19:24 (38)	19:04	14	16:45 (14)	16:41	23	15:22 (9)	15:48
5	04:36	05:33		06:42		18:52 (38)	07:48		16:27 (14)	08:01		14:59 (9)	09:07
	22:45	21:51		20:28	30	19:22 (38)	19:01	21	16:48 (14)	16:39	24	15:23 (9)	15:47
6	04:37	05:35		06:44		18:53 (38)	07:50		16:25 (14)	08:03		14:58 (9)	09:08
	22:44	21:49		20:25	27	19:20 (38)	18:58	25	16:50 (14)	16:36	24	15:22 (9)	15:46
7	04:38	05:37		06:46		18:55 (38)	07:52		16:23 (14)	08:05		14:59 (9)	09:10
	22:43	21:46		20:22	22	19:17 (38)	18:55	28	16:51 (14)	16:34	23	15:22 (9)	15:45
8	04:40	05:39	19:13 (38)	06:48		18:58 (38)	07:55		16:21 (14)	08:08		14:59 (9)	09:11
	22:42	21:44	3 19:16 (38)	20:19	15	19:13 (38)	18:53	31	16:52 (14)	16:32	23	15:22 (9)	15:44
9	04:41	05:41	19:07 (38)	06:50			07:57		16:20 (14)	08:10		14:59 (9)	09:13
	22:41	21:41	15 19:22 (38)	20:16			18:50	33	16:53 (14)	16:30	22	15:21 (9)	15:44
10	04:42	05:44	19:05 (38)	06:53			07:59		16:18 (14)	08:13		15:00 (9)	09:14
	22:40	21:39	20 19:25 (38)	20:13			18:47	35	16:53 (14)	16:27	21	15:21 (9)	15:43
11	04:44	05:46	19:03 (38)	06:55			08:02		16:18 (14)	08:15		15:01 (9)	09:16
	22:39	21:36	24 19:27 (38)	20:11			18:44	36	16:54 (14)	16:25	20	15:21 (9)	15:43
12	04:45	05:48	19:01 (38)	06:57			08:04		16:17 (14)	08:17		15:03 (9)	09:17
	22:37	21:34	27 19:28 (38)	20:08			18:41	37	16:54 (14)	16:23	17	15:20 (9)	15:42
13	04:47	05:50	18:59 (38)	06:59			08:06		16:16 (14)	08:20		15:03 (9)	09:18
	22:36	21:31	30 19:29 (38)	20:05			18:39	38	16:54 (14)	16:21	16	15:19 (9)	15:42
14	04:49	05:53	18:57 (38)	07:01		18:16 (33)	08:08		16:16 (14)	08:22		15:05 (9)	09:20
	22:35	21:28	33 19:30 (38)	20:02	8	18:24 (33)	18:36	38	16:54 (14)	16:19	12	15:17 (9)	15:42
15	04:50	05:55	18:56 (38)	07:04		18:13 (33)	08:11		16:15 (14)	08:24		15:08 (9)	09:21
	22:33	21:26	35 19:31 (38)	19:59	13	18:26 (33)	18:33	39	16:54 (14)	16:17	7	15:15 (9)	15:42
16	04:52	05:57	18:55 (38)	07:06		18:11 (33)	08:13		16:15 (14)	08:27			09:22
	22:32	21:23	37 19:32 (38)	19:56	16	18:27 (33)	18:30	39	16:54 (14)	16:15			15:42
17	04:54	05:59	18:53 (38)	07:08		18:09 (33)	08:15		16:15 (14)	08:29			09:23
	22:30	21:21	39 19:32 (38)	19:53	19	18:28 (33)	18:28	38	16:53 (14)	16:13			15:42
18	04:56	06:01	18:52 (38)	07:10		18:08 (33)	08:18		16:15 (14)	08:31			09:24
	22:28	21:18	40 19:32 (38)	19:50	20	18:28 (33)	18:25	38	16:53 (14)	16:11			15:42
19	04:57	06:04	18:51 (38)	07:12		18:07 (33)	08:20		16:15 (14)	08:34			09:24
	22:27	21:15	42 19:33 (38)	19:47	22	18:29 (33)	18:22	37	16:52 (14)	16:09			15:42
20	04:59	06:06	18:51 (38)	07:15		18:07 (33)	08:22		16:16 (14)	08:36			09:25
	22:25	21:13	42 19:33 (38)	19:44	22	18:29 (33)	18:19	36	16:52 (14)	16:07			15:42
21	05:01	06:08	18:50 (38)	07:17		18:06 (33)	08:25		16:16 (14)	08:38			09:26
	22:23	21:10	43 19:33 (38)	19:42	22	18:28 (33)	18:17	35	16:51 (14)	16:06			15:43
22	05:03	06:10	18:49 (38)	07:19		18:06 (33)	08:27		16:17 (14)	08:40			09:26
	22:21	21:07	44 19:33 (38)	19:39	21	18:27 (33)	18:14	33	16:50 (14)	16:04			15:43
23	05:05	06:13	18:49 (38)	07:21		18:06 (33)	08:29		16:17 (14)	08:43			09:27
	22:19	21:04	48 19:52 (27)	19:36	20	18:26 (33)	18:11	32	16:49 (14)	16:02			15:44
24	05:07	06:15	18:48 (38)	07:23		18:07 (33)	08:32		16:18 (14)	08:45			09:27
	22:17	21:02	55 19:55 (27)	19:33	19	18:26 (33)	18:09	30	16:48 (14)	16:01			15:44
25	05:09	06:17	18:49 (38)	07:26		18:07 (33)	07:34		15:19 (14)	08:47			09:28
	22:15	20:59	58 19:57 (27)	19:30	17	18:24 (33)	17:06	27	15:46 (14)	15:59			15:45
26	05:11	06:19	18:48 (38)	07:28		18:08 (33)	07:37		15:21 (14)	08:49			09:28
	22:13	20:56	62 19:58 (27)	19:27	14	18:22 (33)	17:04	23	15:44 (14)	15:57			15:46
27	05:13	06:22	18:48 (38)	07:30		18:10 (33)	07:39		15:23 (14)	08:51			09:28
	22:11	20:53	63 19:59 (27)	19:24	9	18:19 (33)	17:01	20	15:43 (14)	15:56			15:47
28	05:15	06:24	18:48 (38)	07:32			07:41		15:07 (9)	08:53			09:28
	22:09	20:51	63 19:59 (27)	19:21			16:58	21	15:39 (14)	15:55			15:48
29	05:17	06:26	18:48 (38)	07:34			07:44		15:04 (9)	08:55			09:28
	22:07	20:48	64 19:59 (27)	19:18			16:56	13	15:17 (9)	15:53			15:49
30	05:20	06:28	18:48 (38)	07:37			07:46		15:03 (9)	08:57			09:28
	22:05	20:45	63 19:59 (27)	19:16			16:53	16	15:19 (9)	15:52			15:50
31	05:22	06:30	18:48 (38)				07:49		15:01 (9)				09:28
	22:03	20:42	61 19:58 (27)				16:51	19	15:20 (9)				15:51
Potential sun hours	545	478		386			319			236			200
Total, worst case			1011		532			832			297		
Sun reduction			0,50		0,50			0,50			0,50		
Oper. time red.			0,80		0,80			0,80			0,80		
Wind dir. red.			0,68		0,65			0,55			0,53		
Total reduction			0,27		0,26			0,22			0,21		
Total, real			275		138			183			62		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** V - Osland 45 (22)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February	March	April	May	June	July	August	September	October	November			December		
1	09:28		12:02 (24)	08:46	07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:39	07:51			09:00		11:45 (24)
	15:53	39	13:36 (25)	16:56	18:05	20:17	21:26	22:31	22:49	22:01	20:40	19:13	16:49			15:51	40	13:20 (25)
2	09:28		12:01 (24)	08:44	07:33	07:04	05:41	04:38	04:33	05:26	06:35	07:42	07:54			09:02		11:46 (24)
	15:54	41	13:36 (25)	16:58	18:07	20:19	21:28	22:32	22:48	21:59	20:37	19:10	16:46			15:50	40	13:20 (25)
3	09:27		12:01 (24)	08:41	07:30	07:01	05:39	04:37	04:34	05:28	06:37	07:44	07:56			09:03		11:46 (24)
	15:55	41	13:36 (25)	17:01	18:09	20:21	21:31	22:34	22:47	21:56	20:34	19:07	16:44			15:49	41	13:21 (25)
4	09:27		12:01 (24)	08:39	07:27	06:58	05:36	04:36	04:35	05:31	06:40	07:46	07:59			09:05		11:47 (24)
	15:57	41	13:36 (25)	17:03	18:12	20:24	21:33	22:35	22:47	21:54	20:31	19:04	16:41			15:48	41	13:22 (25)
5	09:26		12:01 (24)	08:37	07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48	08:01			09:07		11:47 (24)
	15:58	43	13:37 (25)	17:06	18:14	20:26	21:35	22:37	22:46	21:52	20:28	19:02	16:39			15:47	41	13:22 (25)
6	09:25		12:02 (24)	08:35	07:21	06:52	05:31	04:34	04:37	05:35	06:44	07:51	08:03			09:09		11:48 (24)
	16:00	41	13:37 (25)	17:08	18:17	20:28	21:37	22:38	22:45	21:49	20:25	18:59	16:37			15:46	42	13:23 (25)
7	09:25		12:02 (24)	08:32	07:19	06:50	05:29	04:33	04:39	05:37	06:46	07:53	08:06			09:10		11:49 (24)
	16:02	41	13:37 (25)	17:11	18:19	20:30	21:40	22:39	22:44	21:47	20:23	18:56	16:34			15:45	41	13:24 (25)
8	09:24		12:02 (24)	08:30	07:16	06:47	05:26	04:32	04:40	05:39	06:49	07:55	08:08			09:12		11:49 (24)
	16:03	42	13:38 (25)	17:13	18:21	20:33	21:42	22:41	22:43	21:44	20:20	18:53	16:32			15:45	41	13:24 (25)
9	09:23		12:03 (24)	08:27	07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:57	08:11			09:13		11:50 (24)
	16:05	41	13:38 (25)	17:16	18:24	20:35	21:44	22:42	22:42	21:42	20:17	18:50	16:30			15:44	41	13:25 (25)
10	09:22		12:03 (24)	08:25	07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00	08:13			09:15		11:50 (24)
	16:07	40	13:37 (25)	17:18	18:26	20:37	21:47	22:43	22:41	21:39	20:14	18:47	16:28			15:43	41	13:25 (25)
11	09:21		12:03 (24)	08:23	07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02	08:15			09:16		11:52 (24)
	16:09	41	13:38 (25)	17:21	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:45	16:25			15:43	40	13:26 (25)
12	09:20		12:03 (24)	08:20	07:04	06:35	05:17	04:29	04:46	05:48	06:57	08:04	08:18			09:18		11:52 (24)
	16:11	39	13:37 (25)	17:23	18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42	16:23			15:43	39	13:26 (25)
13	09:19		12:04 (24)	08:18	07:02	06:33	05:15	04:28	04:47	05:51	07:00	08:07	08:20			09:19		11:53 (24)
	16:13	37	13:37 (25)	17:26	18:33	20:44	21:53	22:46	22:37	21:32	20:05	18:39	16:21			15:42	39	13:27 (25)
14	09:17		12:04 (24)	08:15	06:59	06:30	05:13	04:28	04:49	05:53	07:02	08:09	08:23			09:20		11:54 (24)
	16:15	35	13:36 (25)	17:28	18:35	20:47	21:55	22:47	22:35	21:29	20:02	18:36	16:19			15:42	38	13:27 (25)
15	09:16		12:04 (24)	08:13	06:56	06:27	05:10	04:27	04:51	05:55	07:04	08:11	08:25		11:50 (24)	09:21		11:54 (24)
	16:17	32	13:35 (25)	17:31	18:38	20:49	21:58	22:47	22:34	21:26	19:59	18:33	16:17	5	11:55 (24)	15:42	38	13:27 (25)
16	09:15		12:04 (24)	08:10	06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13	08:27		11:47 (24)	09:22		11:55 (24)
	16:19	24	12:28 (24)	17:33	18:40	20:51	22:00	22:48	22:32	21:24	19:56	18:31	16:15	11	11:58 (24)	15:42	37	13:28 (25)
17	09:13		12:06 (24)	08:07	06:50	06:21	05:06	04:27	04:54	06:00	07:08	08:16	08:30		11:46 (24)	09:23		11:55 (24)
	16:21	24	12:30 (24)	17:36	18:42	20:54	22:02	22:49	22:31	21:21	19:54	18:28	16:13	15	12:01 (24)	15:42	37	13:28 (25)
18	09:12		12:06 (24)	08:05	06:47	06:19	05:04	04:27	04:56	06:02	07:11	08:18	08:32		11:44 (24)	09:24		11:56 (24)
	16:23	24	12:30 (24)	17:38	18:45	20:56	22:04	22:49	22:29	21:18	19:51	18:25	16:11	17	12:01 (24)	15:42	36	13:29 (25)
19	09:10		12:06 (24)	08:02	06:44	06:16	05:02	04:27	04:58	06:04	07:13	08:20	08:34		11:44 (24)	09:25		11:57 (24)
	16:25	24	12:30 (24)	17:40	18:47	20:58	22:06	22:50	22:27	21:16	19:48	18:22	16:09	19	12:03 (24)	15:42	36	13:29 (25)
20	09:09		12:07 (24)	08:00	06:41	06:13	05:00	04:27	05:00	06:06	07:15	08:23	08:36		11:44 (24)	09:26		11:58 (24)
	16:28	23	12:30 (24)	17:43	18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20	16:08	20	12:04 (24)	15:43	36	13:30 (25)
21	09:07		12:08 (24)	07:57	06:39	06:10	04:58	04:27	05:01	06:09	07:17	08:25	08:39		11:43 (24)	09:26		11:59 (24)
	16:30	21	12:29 (24)	17:45	18:51	21:03	22:10	22:50	22:24	21:10	19:42	18:17	16:06	22	12:05 (24)	15:43	35	13:31 (25)
22	09:05		12:09 (24)	07:54	06:36	06:08	04:56	04:27	05:03	06:11	07:19	08:28	08:41		11:43 (24)	09:27		11:58 (24)
	16:32	20	12:29 (24)	17:48	18:54	21:05	22:12	22:50	22:22	21:08	19:39	18:14	16:04	23	12:06 (24)	15:43	36	13:31 (25)
23	09:03		12:09 (24)	07:52	06:33	06:05	04:54	04:27	05:05	06:13	07:22	08:30	08:43		11:43 (24)	09:27		11:59 (24)
	16:34	19	12:28 (24)	17:50	18:56	21:07	22:14	22:51	22:20	21:05	19:36	18:12	16:02	23	12:06 (24)	15:44	36	13:31 (25)
24	09:02		12:10 (24)	07:49	06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32	08:45		11:43 (24)	09:28		12:00 (24)
	16:37	17	12:27 (24)	17:53	18:58	21:10	22:16	22:51	22:18	21:02	19:33	18:09	16:01	24	12:07 (24)	15:44	36	13:32 (25)
25	09:00		12:12 (24)	07:46	06:27	06:00	04:51	04:28	05:09	06:17	07:26	07:35	08:48		11:43 (24)	09:28		12:00 (24)
	16:39	15	12:27 (24)	17:55	19:01	21:12	22:18	22:51	22:16	20:59	19:30	17:07	15:59	24	12:07 (24)	15:45	37	13:33 (25)
26	08:58		12:14 (24)	07:44	06:24	05:57	04:49	04:28	05:11	06:20	07:28	07:37	08:50		11:43 (24)	09:28		12:00 (24)
	16:41	11	12:25 (24)	17:57	19:03	21:14	22:20	22:50	22:14	20:57	19:27	17:04	15:58	25	12:08 (24)	15:46	37	13:33 (25)
27	08:56		12:17 (24)	07:41	06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39	08:52		11:43 (24)	09:28		12:00 (24)
	16:44	4	12:21 (24)	18:00	19:05	21:17	22:22	22:50	22:12	20:54	19:25	17:01	15:56	32	13:14 (25)	15:47	38	13:33 (25)
28	08:54			07:38	06:18	05:52	04:46	04:30	05:16	06:24	07:33	07:42	08:54		11:44 (24)	09:29		12:01 (24)
	16:46			18:02	19:08	21:19	22:24	22:50	22:10	20:51	19:22	16:59	15:55	35	13:16 (25)	15:48	37	13:34 (25)
29	08:52				07:15	05:49	04:44	04:30	05:18	06:26	07:35	07:44	08:56		11:44 (24)	09:28		12:00 (24)
	16:49				20:10	21:21	22:26	22:50	22:08	20:48	19:19	16:56	15:54	37	13:17 (25)	15:49	38	13:34 (25)
30	08:50				07:13	05:46	04:42	04:31	05:20	06:29	07:37	07:47	08:58		11:44 (24)	09:28		12:01 (24)
	16:51				20:12	21:24	22:27	22:49	22:05	20:45	19:16	16:54	15:52	39	13:18 (25)	15:50	39	13:35 (25)
31	08:48				07:10		04:41		05:22	06:31		07:49				09:28		12:01 (24)
	16:54				20:14		22:29		22:03	20:43		16:51				15:51	39	13:35 (25)
Potential sun hours	221			260	365	432	521	547	546	478	386	319	236			199		
Total, worst case		820												371			1193	
Sun reduction		0,50												0,50			0,50	
Oper. time red.		0,80												0,80			0,80	
Wind dir. red.		0,62												0,63			0,61	
Total reduction		0,25												0,25			0,24	
Total, real		203												93			290	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** W - Osland 85 (23)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March	April			May			June	
1	09:28		12:21 (25)	08:46		10:00 (29)	07:35	07:07			05:44		07:10 (76)	04:40	
	15:53	20	12:41 (25)	16:56	20	10:20 (29)	18:05	20:17			21:26	11	07:21 (76)	22:31	
2	09:28		12:21 (25)	08:44		09:59 (29)	07:33	07:04			05:41		06:28 (79)	04:38	
	15:54	20	12:41 (25)	16:58	20	10:19 (29)	18:07	20:19			21:28	15	07:19 (76)	22:32	
3	09:27		12:22 (25)	08:41		10:00 (29)	07:30	07:01			05:39		06:26 (79)	04:37	
	15:55	19	12:41 (25)	17:01	20	10:20 (29)	18:09	20:21			21:31	10	06:36 (79)	22:34	
4	09:27		12:22 (25)	08:39		10:00 (29)	07:27	06:58			05:36		06:25 (79)	04:36	
	15:57	20	12:42 (25)	17:03	20	10:20 (29)	18:12	20:24			21:33	12	06:37 (79)	22:35	
5	09:26		11:11 (24)	08:37		10:01 (29)	07:24	06:55			05:34		06:25 (79)	04:35	
	15:58	25	12:42 (25)	17:06	19	10:20 (29)	18:14	20:26			21:35	13	06:38 (79)	22:37	
6	09:25		11:10 (24)	08:35		10:01 (29)	07:21	06:52			05:31		06:24 (79)	04:34	
	16:00	27	12:42 (25)	17:08	18	10:19 (29)	18:17	20:28			21:37	13	06:37 (79)	22:38	
7	09:25		11:10 (24)	08:32		10:01 (29)	07:19	06:50			05:29		06:24 (79)	04:33	
	16:02	28	12:42 (25)	17:11	17	10:18 (29)	18:19	20:31			21:40	13	06:37 (79)	22:39	
8	09:24		11:09 (24)	08:30		10:03 (29)	07:16	06:47			05:26		06:24 (79)	04:32	
	16:03	29	12:42 (25)	17:13	15	10:18 (29)	18:21	20:33			21:42	13	06:37 (79)	22:41	
9	09:23		11:09 (24)	08:27		10:04 (29)	07:13	06:44			05:24		06:25 (79)	04:31	
	16:05	30	12:42 (25)	17:16	12	10:16 (29)	18:24	20:35			21:44	12	06:37 (79)	22:42	
10	09:22		11:08 (24)	08:25		10:07 (29)	07:10	06:41			05:22		06:25 (79)	04:30	
	16:07	30	12:42 (25)	17:18	5	10:12 (29)	18:26	20:37			21:47	11	06:36 (79)	22:43	
11	09:21		11:09 (24)	08:23			07:07	06:38			05:19		06:26 (79)	04:29	
	16:09	29	12:42 (25)	17:21			18:28	20:40			21:49	9	06:35 (79)	22:44	
12	09:20		11:08 (24)	08:20			07:04	06:35			05:17		06:28 (79)	04:29	
	16:11	27	12:40 (25)	17:23			18:31	20:42			21:51	6	06:34 (79)	22:45	
13	09:19		11:08 (24)	08:18			07:02	06:33			05:15			04:28	
	16:13	25	12:39 (25)	17:26			18:33	20:44			21:53			22:46	
14	09:17		11:08 (24)	08:15			06:59	06:30			05:13			04:28	
	16:15	20	11:28 (24)	17:28			18:35	20:47			21:55			22:47	
15	09:16		11:08 (24)	08:13			06:56	06:27			05:10			04:27	
	16:17	21	11:29 (24)	17:31			18:38	20:49			21:58			22:47	
16	09:15		11:08 (24)	08:10			06:53	06:24			05:08			04:27	
	16:19	21	11:29 (24)	17:33			18:40	20:51			22:00			22:48	
17	09:13		11:09 (24)	08:08			06:50	06:21		07:11 (77)	05:06			04:27	
	16:21	22	11:31 (24)	17:36			18:42	20:54	3	07:14 (77)	22:02			22:49	
18	09:12		11:09 (24)	08:05			06:47	06:19		07:08 (77)	05:04			04:27	
	16:23	22	11:31 (24)	17:38			18:45	20:56	9	07:17 (77)	22:04			22:49	
19	09:10		11:09 (24)	08:02			06:44	06:16		07:05 (77)	05:02			04:27	
	16:25	22	11:31 (24)	17:40			18:47	20:58	12	07:17 (77)	22:06			22:50	
20	09:09		11:09 (24)	08:00			06:41	06:13		07:04 (77)	05:00			04:27	
	16:28	23	11:32 (24)	17:43			18:49	21:01	18	07:22 (76)	22:08			22:50	
21	09:07		11:09 (24)	07:57			06:39	06:10		07:04 (77)	04:58			04:27	
	16:30	23	11:32 (24)	17:45			18:52	21:03	20	07:24 (76)	22:10			22:50	
22	09:05		11:10 (24)	07:54			06:36	06:08		07:03 (77)	04:56			04:27	
	16:32	22	11:32 (24)	17:48			18:54	21:05	22	07:25 (76)	22:12			22:50	
23	09:03		11:10 (24)	07:52			06:33	06:05		07:04 (77)	04:54			04:27	
	16:34	22	11:32 (24)	17:50			18:56	21:07	22	07:26 (76)	22:14			22:51	
24	09:02		11:10 (24)	07:49			06:30	06:02		07:03 (77)	04:52			04:27	
	16:37	22	11:32 (24)	17:53			18:58	21:10	22	07:25 (76)	22:16			22:51	
25	09:00		10:05 (29)	07:46			06:27	06:00		07:04 (77)	04:51			04:28	
	16:39	27	11:32 (24)	17:55			19:01	21:12	22	07:26 (76)	22:18			22:51	
26	08:58		10:03 (29)	07:44			06:24	05:57		07:05 (77)	04:49			04:28	
	16:42	31	11:32 (24)	17:57			19:03	21:14	20	07:25 (76)	22:20			22:50	
27	08:56		10:02 (29)	07:41			06:21	05:54		07:07 (77)	04:47			04:29	
	16:44	32	11:31 (24)	18:00			19:05	21:17	19	07:26 (76)	22:22			22:50	
28	08:54		10:00 (29)	07:38			06:18	05:52		07:08 (76)	04:46			04:30	
	16:46	32	11:30 (24)	18:02			19:08	21:19	16	07:24 (76)	22:24			22:50	
29	08:52		10:00 (29)				07:15	05:49		07:08 (76)	04:44			04:30	
	16:49	30	11:29 (24)				20:10	21:21	16	07:24 (76)	22:26			22:50	
30	08:50		09:59 (29)				07:13	05:46		07:08 (76)	04:43			04:31	
	16:51	29	11:27 (24)				20:12	21:24	14	07:22 (76)	22:27			22:49	
31	08:48		09:59 (29)				07:10				04:41				
	16:54	20	10:19 (29)				20:14				22:29				
Potential sun hours	221			260			365	432			521			547	
Total, worst case		770			166				235			138			
Sun reduction		0,50			0,50				0,50			0,50			
Oper. time red.		0,80			0,80				0,80			0,80			
Wind dir. red.		0,67			0,72				0,60			0,59			
Total reduction		0,27			0,29				0,24			0,24			
Total, real		207			48				57			33			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** W - Osland 85 (23)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July		August			September	October	November			December		
1	04:32		05:24		06:37 (79)	06:33	07:39	07:51		09:35 (29)	09:00		10:51 (24)
	22:49		22:01	8	06:45 (79)	20:40	19:13	16:49	8	09:43 (29)	15:51	29	12:24 (25)
2	04:33		05:26		06:36 (79)	06:35	07:42	07:54		09:33 (29)	09:02		10:51 (24)
	22:48		21:59	10	06:46 (79)	20:37	19:10	16:46	13	09:46 (29)	15:50	31	12:25 (25)
3	04:34		05:28		06:35 (79)	06:38	07:44	07:56		09:32 (29)	09:04		10:52 (24)
	22:47		21:56	12	06:47 (79)	20:34	19:07	16:44	15	09:47 (29)	15:49	31	12:26 (25)
4	04:35		05:31		06:35 (79)	06:40	07:46	07:59		09:31 (29)	09:05		10:53 (24)
	22:47		21:54	12	06:47 (79)	20:31	19:04	16:41	17	09:48 (29)	15:48	30	12:26 (25)
5	04:36		05:33		06:34 (79)	06:42	07:48	08:01		09:30 (29)	09:07		10:55 (24)
	22:46		21:52	14	06:48 (79)	20:28	19:02	16:39	19	09:49 (29)	15:47	28	12:27 (25)
6	04:37		05:35		06:34 (79)	06:44	07:51	08:03		09:30 (29)	09:09		10:56 (24)
	22:45		21:49	14	06:48 (79)	20:25	18:59	16:37	20	09:50 (29)	15:46	27	12:28 (25)
7	04:39		05:37		06:34 (79)	06:46	07:53	08:06		09:30 (29)	09:10		10:58 (24)
	22:44		21:47	14	06:48 (79)	20:23	18:56	16:34	20	09:50 (29)	15:45	26	12:29 (25)
8	04:40		05:39		06:34 (79)	06:49	07:55	08:08		09:29 (29)	09:12		12:11 (25)
	22:43		21:44	13	06:47 (79)	20:20	18:53	16:32	21	09:50 (29)	15:45	19	12:30 (25)
9	04:41		05:42		06:35 (79)	06:51	07:57	08:11		09:30 (29)	09:13		12:11 (25)
	22:42		21:42	11	06:46 (79)	20:17	18:50	16:30	20	09:50 (29)	15:44	20	12:31 (25)
10	04:43		05:44		06:36 (79)	06:53	08:00	08:13		09:30 (29)	09:15		12:11 (25)
	22:41		21:39	9	06:45 (79)	20:14	18:47	16:28	20	09:50 (29)	15:44	20	12:31 (25)
11	04:44		05:46		06:37 (79)	06:55	08:02	08:15		09:30 (29)	09:16		12:11 (25)
	22:39		21:37	16	07:29 (76)	20:11	18:45	16:26	19	09:49 (29)	15:43	20	12:31 (25)
12	04:46		05:48		07:18 (76)	06:57	08:04	08:18		09:31 (29)	09:18		12:11 (25)
	22:38		21:34	12	07:30 (76)	20:08	18:42	16:23	28	10:59 (24)	15:43	21	12:32 (25)
13	04:47		05:51		07:17 (76)	07:00	08:07	08:20		09:32 (29)	09:19		12:12 (25)
	22:37		21:32	14	07:31 (76)	20:05	18:39	16:21	30	11:01 (24)	15:42	21	12:33 (25)
14	04:49		05:53		07:16 (76)	07:02	08:09	08:23		09:33 (29)	09:20		12:12 (25)
	22:35		21:29	16	07:32 (76)	20:02	18:36	16:19	32	11:03 (24)	15:42	21	12:33 (25)
15	04:51		05:55		07:15 (76)	07:04	08:11	08:25		09:34 (29)	09:21		12:12 (25)
	22:34		21:26	17	07:32 (76)	19:59	18:33	16:17	31	11:03 (24)	15:42	21	12:33 (25)
16	04:52		05:57		07:13 (77)	07:06	08:14	08:27		09:36 (29)	09:22		12:13 (25)
	22:32		21:24	19	07:32 (76)	19:57	18:31	16:15	31	11:05 (24)	15:42	21	12:34 (25)
17	04:54		06:00		07:11 (77)	07:08	08:16	08:30		09:39 (29)	09:23		12:14 (25)
	22:31		21:21	21	07:32 (76)	19:54	18:28	16:13	27	11:06 (24)	15:42	21	12:35 (25)
18	04:56		06:02		07:10 (77)	07:11	08:18	08:32		10:44 (24)	09:24		12:14 (25)
	22:29		21:18	22	07:32 (76)	19:51	18:25	16:11	22	11:06 (24)	15:42	21	12:35 (25)
19	04:58		06:04		07:09 (77)	07:13	08:21	08:34		10:45 (24)	09:25		12:14 (25)
	22:27		21:16	22	07:31 (76)	19:48	18:23	16:09	22	11:07 (24)	15:42	21	12:35 (25)
20	05:00		06:06		07:09 (77)	07:15	08:23	08:36		10:45 (24)	09:26		12:15 (25)
	22:25		21:13	22	07:31 (76)	19:45	18:20	16:08	22	11:07 (24)	15:43	21	12:36 (25)
21	05:02		06:09		07:09 (77)	07:17	08:25	08:39		10:44 (24)	09:26		12:16 (25)
	22:24		21:10	21	07:30 (76)	19:42	18:17	16:06	23	11:07 (24)	15:43	21	12:37 (25)
22	05:03		06:11		07:08 (77)	07:19	08:28	08:41		10:45 (24)	09:27		12:16 (25)
	22:22		21:08	21	07:29 (76)	19:39	18:14	16:04	23	11:08 (24)	15:43	21	12:37 (25)
23	05:05		06:13		07:08 (77)	07:22	08:30	08:43		10:45 (24)	09:27		12:16 (25)
	22:20		21:05	18	07:26 (76)	19:36	18:12	16:02	22	11:07 (24)	15:44	21	12:37 (25)
24	05:07		06:15		07:09 (77)	07:24	08:32	08:45		10:46 (24)	09:28		12:17 (25)
	22:18		21:02	12	07:21 (77)	19:33	18:09	16:01	22	11:08 (24)	15:45	21	12:38 (25)
25	05:09		06:17		07:11 (77)	07:26	07:35	08:48		10:46 (24)	09:28		12:17 (25)
	22:16		20:59	8	07:19 (77)	19:30	17:07	15:59	22	11:08 (24)	15:45	21	12:38 (25)
26	05:11		06:20		07:14 (77)	07:28	07:37	08:50		10:47 (24)	09:28		12:18 (25)
	22:14		20:57	2	07:16 (77)	19:27	17:04	15:58	21	11:08 (24)	15:46	21	12:39 (25)
27	05:14		06:22			07:30	07:39	08:52		10:47 (24)	09:28		12:18 (25)
	22:12		20:54			19:25	17:01	15:56	21	11:08 (24)	15:47	21	12:39 (25)
28	05:16		06:24			07:33	07:42	08:54		10:48 (24)	09:29		12:19 (25)
	22:10		20:51			19:22	16:59	15:55	20	11:08 (24)	15:48	21	12:40 (25)
29	05:18		06:26			07:35	07:44	08:56		10:49 (24)	09:29		12:19 (25)
	22:08		20:48			19:19	16:56	15:54	24	12:19 (25)	15:49	21	12:40 (25)
30	05:20		06:29			07:37	07:47	08:58		10:49 (24)	09:28		12:20 (25)
	22:05		20:45			19:16	16:54	15:52	28	12:21 (25)	15:50	20	12:40 (25)
31	05:22	06:41 (79)	06:31				07:49				09:28		12:21 (25)
	22:03	1 06:42 (79)	20:43				16:51				15:51	20	12:41 (25)
Potential sun hours	546		478			386	319	236			199		
Total, worst case		1		380					663			699	
Sun reduction		0,50		0,50					0,50			0,50	
Oper. time red.		0,80		0,80					0,80			0,80	
Wind dir. red.		0,59		0,60					0,70			0,64	
Total reduction		0,24		0,24					0,28			0,25	
Total, real		0		91					185			177	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** X - Osland 65 (24)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March	April			May			June
1	09:28		11:14 (24)	08:46		10:11 (29)	07:35	07:07			05:44		06:33 (79)	04:40
	15:53	31	12:43 (25)	16:56	18	10:29 (29)	18:05	20:17			21:26	14	06:47 (79)	22:31
2	09:28		11:14 (24)	08:44		10:11 (29)	07:33	07:04			05:41		06:33 (79)	04:38
	15:54	30	12:43 (25)	16:58	17	10:28 (29)	18:07	20:19			21:28	14	06:47 (79)	22:32
3	09:27		11:13 (24)	08:41		10:13 (29)	07:30	07:01			05:39		06:33 (79)	04:37
	15:55	31	12:43 (25)	17:01	14	10:27 (29)	18:09	20:21			21:31	13	06:46 (79)	22:34
4	09:27		11:13 (24)	08:39		10:14 (29)	07:27	06:58			05:36		06:33 (79)	04:36
	15:57	31	12:43 (25)	17:03	11	10:25 (29)	18:12	20:24			21:33	13	06:46 (79)	22:35
5	09:26		11:14 (24)	08:37		10:17 (29)	07:24	06:55			05:34		06:34 (79)	04:35
	15:58	29	12:43 (25)	17:06	6	10:23 (29)	18:14	20:26			21:35	12	06:46 (79)	22:37
6	09:25		11:14 (24)	08:35			07:21	06:52			05:31		06:34 (79)	04:34
	16:00	28	12:42 (25)	17:08			18:17	20:28			21:37	10	06:44 (79)	22:38
7	09:25		11:14 (24)	08:32			07:19	06:50			05:29		06:35 (79)	04:33
	16:02	26	12:41 (25)	17:11			18:19	20:31			21:40	8	06:43 (79)	22:39
8	09:24		11:15 (24)	08:30			07:16	06:47			05:26		06:38 (79)	04:32
	16:03	20	11:35 (24)	17:13			18:21	20:33			21:42	2	06:40 (79)	22:41
9	09:23		11:15 (24)	08:27			07:13	06:44			05:24			04:31
	16:05	21	11:36 (24)	17:16			18:24	20:35			21:44			22:42
10	09:22		11:15 (24)	08:25			07:10	06:41			05:22			04:30
	16:07	21	11:36 (24)	17:18			18:26	20:37			21:47			22:43
11	09:21		11:15 (24)	08:23			07:07	06:38			05:19			04:29
	16:09	22	11:37 (24)	17:21			18:28	20:40			21:49			22:44
12	09:20		11:15 (24)	08:20			07:04	06:35			05:17			04:29
	16:11	22	11:37 (24)	17:23			18:31	20:42			21:51			22:45
13	09:19		11:16 (24)	08:18			07:02	06:33		07:18 (77)	05:15			04:28
	16:13	22	11:38 (24)	17:26			18:33	20:44	9	07:27 (77)	21:53			22:46
14	09:17		11:16 (24)	08:15			06:59	06:30		07:16 (77)	05:13			04:28
	16:15	22	11:38 (24)	17:28			18:35	20:47	19	07:35 (76)	21:55			22:47
15	09:16		11:16 (24)	08:13			06:56	06:27		07:16 (77)	05:10			04:27
	16:17	22	11:38 (24)	17:31			18:38	20:49	22	07:38 (76)	21:58			22:47
16	09:15		11:16 (24)	08:10			06:53	06:24		07:15 (77)	05:08			04:27
	16:19	22	11:38 (24)	17:33			18:40	20:51	24	07:39 (76)	22:00			22:48
17	09:13		11:18 (24)	08:08			06:50	06:21		07:14 (77)	05:06			04:27
	16:21	21	11:39 (24)	17:36			18:42	20:54	25	07:39 (76)	22:02			22:49
18	09:12		11:18 (24)	08:05			06:47	06:19		07:14 (77)	05:04			04:27
	16:23	21	11:39 (24)	17:38			18:45	20:56	26	07:40 (76)	22:04			22:49
19	09:10		10:13 (29)	08:02			06:44	06:16		07:14 (77)	05:02			04:27
	16:25	27	11:39 (24)	17:40			18:47	20:58	26	07:40 (76)	22:06			22:50
20	09:09		10:12 (29)	08:00			06:41	06:13		07:14 (77)	05:00			04:27
	16:28	30	11:39 (24)	17:43			18:49	21:01	25	07:39 (76)	22:08			22:50
21	09:07		10:11 (29)	07:57			06:39	06:10		07:16 (77)	04:58			04:27
	16:30	32	11:39 (24)	17:45			18:52	21:03	23	07:39 (76)	22:10			22:50
22	09:05		10:10 (29)	07:54			06:36	06:08		07:17 (77)	04:56			04:27
	16:32	32	11:38 (24)	17:48			18:54	21:05	21	07:38 (76)	22:12			22:51
23	09:03		10:09 (29)	07:52			06:33	06:05		07:22 (76)	04:54			04:27
	16:34	31	11:37 (24)	17:50			18:56	21:07	16	07:38 (76)	22:14			22:51
24	09:02		10:09 (29)	07:49			06:30	06:02		07:22 (76)	04:52			04:27
	16:37	29	11:36 (24)	17:53			18:58	21:10	14	07:36 (76)	22:16			22:51
25	09:00		10:09 (29)	07:46			06:27	06:00		07:24 (76)	04:51			04:28
	16:39	26	11:34 (24)	17:55			19:01	21:12	11	07:35 (76)	22:18			22:51
26	08:58		10:09 (29)	07:44			06:24	05:57		07:25 (76)	04:49			04:28
	16:41	19	10:28 (29)	17:57			19:03	21:14	7	07:32 (76)	22:20			22:51
27	08:56		10:09 (29)	07:41			06:21	05:54		06:39 (79)	04:47			04:29
	16:44	20	10:29 (29)	18:00			19:05	21:17	4	06:43 (79)	22:22			22:50
28	08:54		10:09 (29)	07:38			06:18	05:52		06:36 (79)	04:46			04:30
	16:46	19	10:28 (29)	18:02			19:08	21:19	9	06:45 (79)	22:24			22:50
29	08:52		10:09 (29)				07:15	05:49		06:35 (79)	04:44			04:30
	16:49	20	10:29 (29)				20:10	21:21	11	06:46 (79)	22:26			22:50
30	08:50		10:09 (29)				07:13	05:46		06:33 (79)	04:43			04:31
	16:51	19	10:28 (29)				20:12	21:24	13	06:46 (79)	22:27			22:49
31	08:48		10:10 (29)				07:10				04:41			
	16:54	19	10:29 (29)				20:14				22:29			
Potential sun hours	221			260			365	432			521			547
Total, worst case		765			66				305			86		
Sun reduction		0,50			0,50				0,50			0,50		
Oper. time red.		0,80			0,80				0,80			0,80		
Wind dir. red.		0,68			0,72				0,62			0,59		
Total reduction		0,27			0,29				0,25			0,24		
Total, real		208			19				76			20		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** X - Osland 65 (24)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August			September	October	November			December		
1	04:32	05:24			06:33	07:39	07:51			09:00		10:57 (24)
	22:49	22:01			20:40	19:13	16:49			15:51	22	11:19 (24)
2	04:33	05:26			06:35	07:42	07:54			09:02		10:58 (24)
	22:48	21:59			20:37	19:10	16:46			15:50	21	11:19 (24)
3	04:34	05:28			06:38	07:44	07:56			09:04		10:58 (24)
	22:47	21:56			20:34	19:07	16:44			15:49	21	11:19 (24)
4	04:35	05:31			06:40	07:46	07:59			09:05		10:59 (24)
	22:47	21:54			20:31	19:04	16:41			15:48	20	11:19 (24)
5	04:36	05:33		06:47 (79)	06:42	07:48	08:01			09:07		10:59 (24)
	22:46	21:52	5	06:52 (79)	20:28	19:02	16:39			15:47	26	12:26 (25)
6	04:37	05:35		06:45 (79)	06:44	07:51	08:03		09:47 (29)	09:09		11:00 (24)
	22:45	21:49	9	06:54 (79)	20:25	18:59	16:37	7	09:54 (29)	15:46	28	12:28 (25)
7	04:39	05:37		06:44 (79)	06:46	07:53	08:06		09:45 (29)	09:10		11:01 (24)
	22:44	21:47	11	06:55 (79)	20:23	18:56	16:34	11	09:56 (29)	15:45	29	12:30 (25)
8	04:40	05:39		06:43 (79)	06:49	07:55	08:08		09:43 (29)	09:12		11:02 (24)
	22:43	21:44	12	06:55 (79)	20:20	18:53	16:32	14	09:57 (29)	15:45	30	12:31 (25)
9	04:41	05:42		06:42 (79)	06:51	07:57	08:11		09:42 (29)	09:14		11:03 (24)
	22:42	21:42	14	06:56 (79)	20:17	18:50	16:30	17	09:59 (29)	15:44	30	12:32 (25)
10	04:43	05:44		06:42 (79)	06:53	08:00	08:13		09:42 (29)	09:15		11:03 (24)
	22:41	21:39	14	06:56 (79)	20:14	18:47	16:28	18	10:00 (29)	15:44	30	12:32 (25)
11	04:44	05:46		06:42 (79)	06:55	08:02	08:15		09:41 (29)	09:16		11:04 (24)
	22:39	21:37	13	06:55 (79)	20:11	18:45	16:26	19	10:00 (29)	15:43	31	12:34 (25)
12	04:46	05:48		06:42 (79)	06:57	08:04	08:18		09:41 (29)	09:18		11:04 (24)
	22:38	21:34	13	06:55 (79)	20:08	18:42	16:23	19	10:00 (29)	15:43	31	12:34 (25)
13	04:47	05:51		06:42 (79)	07:00	08:07	08:20		09:41 (29)	09:19		11:05 (24)
	22:37	21:32	12	06:54 (79)	20:05	18:39	16:21	20	10:01 (29)	15:42	31	12:35 (25)
14	04:49	05:53		06:43 (79)	07:02	08:09	08:23		09:42 (29)	09:20		11:06 (24)
	22:35	21:29	10	06:53 (79)	20:02	18:36	16:19	19	10:01 (29)	15:42	30	12:35 (25)
15	04:51	05:55		06:44 (79)	07:04	08:11	08:25		09:41 (29)	09:21		11:06 (24)
	22:34	21:26	8	06:52 (79)	19:59	18:33	16:17	20	10:01 (29)	15:42	31	12:36 (25)
16	04:52	05:57			07:06	08:14	08:27		09:42 (29)	09:22		11:08 (24)
	22:32	21:24			19:57	18:31	16:15	19	10:01 (29)	15:42	30	12:37 (25)
17	04:54	06:00		07:31 (76)	07:08	08:16	08:30		09:43 (29)	09:23		11:09 (24)
	22:31	21:21	8	07:39 (76)	19:54	18:28	16:13	26	11:08 (24)	15:42	30	12:38 (25)
18	04:56	06:02		07:29 (76)	07:11	08:18	08:32		09:43 (29)	09:24		11:09 (24)
	22:29	21:18	12	07:41 (76)	19:51	18:25	16:11	30	11:10 (24)	15:42	28	12:37 (25)
19	04:58	06:04		07:27 (76)	07:13	08:21	08:34		09:44 (29)	09:25		11:09 (24)
	22:27	21:16	15	07:42 (76)	19:48	18:23	16:09	31	11:12 (24)	15:42	30	12:38 (25)
20	05:00	06:06		07:27 (76)	07:15	08:23	08:36		09:45 (29)	09:26		11:10 (24)
	22:25	21:13	17	07:44 (76)	19:45	18:20	16:08	32	11:13 (24)	15:43	30	12:39 (25)
21	05:01	06:09		07:22 (77)	07:17	08:25	08:39		09:46 (29)	09:26		11:11 (24)
	22:24	21:10	22	07:44 (76)	19:42	18:17	16:06	32	11:14 (24)	15:43	29	12:40 (25)
22	05:03	06:11		07:20 (77)	07:19	08:28	08:41		09:48 (29)	09:27		11:11 (24)
	22:22	21:08	24	07:44 (76)	19:39	18:14	16:04	29	11:15 (24)	15:43	29	12:40 (25)
23	05:05	06:13		07:19 (77)	07:22	08:30	08:43		09:49 (29)	09:27		11:11 (24)
	22:20	21:05	25	07:44 (76)	19:36	18:12	16:02	27	11:15 (24)	15:44	30	12:40 (25)
24	05:07	06:15		07:18 (77)	07:24	08:32	08:45		10:55 (24)	09:28		11:12 (24)
	22:18	21:02	25	07:43 (76)	19:33	18:09	16:01	21	11:16 (24)	15:45	30	12:41 (25)
25	05:09	06:17		07:17 (77)	07:26	07:35	08:48		10:55 (24)	09:28		11:12 (24)
	22:16	20:59	26	07:43 (76)	19:30	17:07	15:59	21	11:16 (24)	15:45	29	12:41 (25)
26	05:11	06:20		07:17 (77)	07:28	07:37	08:50		10:55 (24)	09:28		11:13 (24)
	22:14	20:57	25	07:42 (76)	19:27	17:04	15:58	22	11:17 (24)	15:46	30	12:42 (25)
27	05:14	06:22		07:16 (77)	07:30	07:39	08:52		10:55 (24)	09:28		11:13 (24)
	22:12	20:54	24	07:40 (76)	19:25	17:01	15:56	22	11:17 (24)	15:47	30	12:42 (25)
28	05:16	06:24		07:17 (77)	07:33	07:42	08:54		10:56 (24)	09:29		11:13 (24)
	22:10	20:51	22	07:39 (76)	19:22	16:59	15:55	22	11:18 (24)	15:48	31	12:43 (25)
29	05:18	06:26		07:17 (77)	07:35	07:44	08:56		10:56 (24)	09:29		11:13 (24)
	22:08	20:48	19	07:36 (76)	19:19	16:56	15:54	22	11:18 (24)	15:49	31	12:42 (25)
30	05:20	06:29		07:18 (77)	07:37	07:47	08:58		10:56 (24)	09:28		11:13 (24)
	22:05	20:45	9	07:27 (77)	19:16	16:54	15:52	22	11:18 (24)	15:50	31	12:43 (25)
31	05:22	06:31				07:49				09:28		11:14 (24)
	22:03	20:43				16:51				15:51	30	12:43 (25)
Potential sun hours	546	478			386	319	236			199		
Total, worst case			394					542			889	
Sun reduction			0,50					0,50			0,50	
Oper. time red.			0,80					0,80			0,80	
Wind dir. red.			0,62					0,70			0,65	
Total reduction			0,25					0,28			0,26	
Total, real			97					151			231	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** Y - Brusalivegen 215 (25)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February			March			April	May			June		
1	09:28	08:46			07:35		08:18 (63)	07:07	05:44			04:40		06:16 (1)
	15:53	16:56			18:05	13	08:31 (63)	20:17	21:26			22:30	29	06:45 (1)
2	09:27	08:43			07:33		08:19 (63)	07:04	05:42			04:39		06:15 (1)
	15:54	16:59			18:07	10	08:29 (63)	20:19	21:28			22:32	31	06:46 (1)
3	09:27	08:41			07:30		08:22 (63)	07:01	05:39			04:38		06:14 (1)
	15:56	17:01			18:10	4	08:26 (63)	20:21	21:31			22:33	32	06:46 (1)
4	09:26	08:39			07:27			06:58	05:37			04:36		06:14 (1)
	15:57	17:04			18:12			20:24	21:33			22:35	32	06:46 (1)
5	09:26	08:37			07:24			06:55	05:34			04:35		06:14 (1)
	15:59	17:06			18:14			20:26	21:35			22:36	32	06:46 (1)
6	09:25	08:34			07:21			06:53	05:32			04:34		06:13 (1)
	16:00	17:09			18:17			20:28	21:37			22:38	33	06:46 (1)
7	09:24	08:32			07:19		07:48 (62)	06:50	05:29			04:33		06:12 (1)
	16:02	17:11			18:19	7	07:55 (62)	20:31	21:40			22:39	34	06:46 (1)
8	09:24	08:30			07:16		07:46 (62)	06:47	05:27			04:32		06:12 (1)
	16:04	17:14			18:21	10	07:56 (62)	20:33	21:42			22:40	34	06:46 (1)
9	09:23	08:27			07:13		07:44 (62)	06:44	05:24			04:31		06:13 (1)
	16:06	17:16			18:24	13	07:57 (62)	20:35	21:44			22:41	34	06:47 (1)
10	09:22	08:25			07:10		07:44 (62)	06:41	05:22			04:31		06:13 (1)
	16:07	17:19			18:26	14	07:58 (62)	20:37	21:46			22:43	33	06:46 (1)
11	09:21	08:23			07:07		07:44 (62)	06:38	05:20			04:30		06:14 (1)
	16:09	17:21			18:28	14	07:58 (62)	20:40	21:49			22:44	33	06:47 (1)
12	09:20	08:20			07:04		07:44 (62)	06:36	05:17			04:29		06:13 (1)
	16:11	17:23			18:31	13	07:57 (62)	20:42	21:51			22:45	33	06:46 (1)
13	09:18	08:18			07:02		07:44 (62)	06:33	05:15			04:29		06:14 (1)
	16:13	17:26			18:33	12	07:56 (62)	20:44	21:53			22:46	33	06:47 (1)
14	09:17	08:15			06:59		07:45 (62)	06:30	05:13			04:28		06:15 (1)
	16:15	17:28			18:35	10	07:55 (62)	20:47	21:55			22:46	32	06:47 (1)
15	09:16	08:13			06:56		07:46 (62)	06:27	05:11		06:38 (1)	04:28		06:14 (1)
	16:17	17:31			18:38	6	07:52 (62)	20:49	21:57	2	06:40 (1)	22:47	32	06:46 (1)
16	09:14	08:10			06:53			06:24	05:09		06:37 (1)	04:28		06:15 (1)
	16:19	17:33			18:40			20:51	22:00	4	06:41 (1)	22:48	32	06:47 (1)
17	09:13	08:07			06:50			06:22	05:06		06:35 (1)	04:27		06:15 (1)
	16:21	17:36			18:42			20:54	22:02	6	06:41 (1)	22:48	32	06:47 (1)
18	09:12	08:05			06:47			06:19	05:04		06:34 (1)	04:27		06:15 (1)
	16:24	17:38			18:45			20:56	22:04	9	06:43 (1)	22:49	32	06:47 (1)
19	09:10	08:02			06:44			06:16	05:02		06:32 (1)	04:27		06:16 (1)
	16:26	17:41			18:47			20:58	22:06	11	06:43 (1)	22:49	31	06:47 (1)
20	09:08	08:00			06:42			06:13	05:00		06:31 (1)	04:27		06:16 (1)
	16:28	17:43			18:49			21:00	22:08	12	06:43 (1)	22:50	31	06:47 (1)
21	09:07	07:57			06:39			06:11	04:58		06:29 (1)	04:27		06:16 (1)
	16:30	17:46			18:52			21:03	22:10	14	06:43 (1)	22:50	31	06:47 (1)
22	09:05	07:54		08:23 (63)	06:36			06:08	04:56		06:28 (1)	04:27		06:17 (1)
	16:32	17:48	5	08:28 (63)	18:54			21:05	22:12	16	06:44 (1)	22:50	31	06:48 (1)
23	09:03	07:52		08:21 (63)	06:33			06:05	04:55		06:26 (1)	04:28		06:17 (1)
	16:35	17:50	10	08:31 (63)	18:56			21:07	22:14	18	06:44 (1)	22:50	31	06:48 (1)
24	09:02	07:49		08:18 (63)	06:30			06:02	04:53		06:26 (1)	04:28		06:16 (1)
	16:37	17:53	13	08:31 (63)	18:58			21:10	22:16	19	06:45 (1)	22:50	32	06:48 (1)
25	09:00	07:46		08:17 (63)	06:27			06:00	04:51		06:24 (1)	04:28		06:17 (1)
	16:39	17:55	15	08:32 (63)	19:01			21:12	22:18	21	06:45 (1)	22:50	32	06:49 (1)
26	08:58	07:44		08:17 (63)	06:24			05:57	04:49		06:23 (1)	04:29		06:17 (1)
	16:42	17:58	15	08:32 (63)	19:03			21:14	22:20	22	06:45 (1)	22:50	32	06:49 (1)
27	08:56	07:41		08:17 (63)	06:21			05:54	04:48		06:21 (1)	04:29		06:17 (1)
	16:44	18:00	14	08:31 (63)	19:05			21:17	22:22	24	06:45 (1)	22:50	32	06:49 (1)
28	08:54	07:38		08:17 (63)	06:18			05:52	04:46		06:20 (1)	04:30		06:17 (1)
	16:47	18:02	14	08:31 (63)	19:08			21:19	22:24	25	06:45 (1)	22:50	32	06:49 (1)
29	08:52				07:16			05:49	04:44		06:20 (1)	04:31		06:17 (1)
	16:49				20:10			21:21	22:25	26	06:46 (1)	22:49	33	06:50 (1)
30	08:50				07:13			05:47	04:43		06:19 (1)	04:32		06:18 (1)
	16:51				20:12			21:24	22:27	27	06:46 (1)	22:49	32	06:50 (1)
31	08:48				07:10				04:41		06:17 (1)			
	16:54				20:14				22:29	28	06:45 (1)			
Potential sun hours	221	260			365			432	521			547		
Total, worst case			86			126				284			963	
Sun reduction			0,50			0,50				0,50			0,50	
Oper. time red.			0,80			0,80				0,80			0,80	
Wind dir. red.			0,73			0,71				0,58			0,58	
Total reduction			0,29			0,28				0,23			0,23	
Total, real			25			36				66			225	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** Y - Brusalivegen 215 (25)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July		August		September			October			November	December
1	04:32		06:18 (1)	05:24	06:33			07:39		08:23 (62)	07:51	09:00
	22:48	33	06:51 (1)	22:01	20:40			19:13	13	08:36 (62)	16:49	15:52
2	04:33		06:18 (1)	05:27	06:35			07:42		08:22 (62)	07:54	09:01
	22:48	33	06:51 (1)	21:58	20:37			19:10	14	08:36 (62)	16:47	15:50
3	04:34		06:17 (1)	05:29	06:38			07:44		08:21 (62)	07:56	09:03
	22:47	34	06:51 (1)	21:56	20:34			19:07	14	08:35 (62)	16:44	15:49
4	04:35		06:18 (1)	05:31	06:40			07:46		08:22 (62)	07:59	09:05
	22:46	33	06:51 (1)	21:54	20:31			19:05	13	08:35 (62)	16:42	15:48
5	04:37		06:18 (1)	05:33	06:42			07:48		08:22 (62)	08:01	09:07
	22:46	33	06:51 (1)	21:51	20:28			19:02	12	08:34 (62)	16:39	15:47
6	04:38		06:19 (1)	05:35	06:44			07:51		08:23 (62)	08:03	09:09
	22:45	34	06:53 (1)	21:49	20:25			18:59	9	08:32 (62)	16:37	15:47
7	04:39		06:20 (1)	05:38	06:47			07:53		08:27 (62)	08:06	09:10
	22:44	33	06:53 (1)	21:47	20:23			18:56	2	08:29 (62)	16:35	15:46
8	04:40		06:21 (1)	05:40	06:49			07:55			08:08	09:12
	22:43	32	06:53 (1)	21:44	20:20			18:53			16:32	15:45
9	04:42		06:21 (1)	05:42	06:51			07:57			08:11	09:13
	22:42	32	06:53 (1)	21:42	20:17			18:50			16:30	15:44
10	04:43		06:22 (1)	05:44	06:53			08:00			08:13	09:15
	22:40	31	06:53 (1)	21:39	20:14			18:48			16:28	15:44
11	04:45		06:24 (1)	05:46	06:55			08:02		08:54 (63)	08:15	09:16
	22:39	30	06:54 (1)	21:37	20:11			18:45	7	09:01 (63)	16:26	15:43
12	04:46		06:25 (1)	05:49	06:58			08:04		08:51 (63)	08:18	09:17
	22:38	29	06:54 (1)	21:34	20:08			18:42	11	09:02 (63)	16:24	15:43
13	04:48		06:26 (1)	05:51	07:00			08:07		08:51 (63)	08:20	09:19
	22:36	28	06:54 (1)	21:32	20:05			18:39	13	09:04 (63)	16:22	15:43
14	04:49		06:28 (1)	05:53	07:02			08:09		08:49 (63)	08:22	09:20
	22:35	26	06:54 (1)	21:29	20:02			18:36	15	09:04 (63)	16:19	15:43
15	04:51		06:28 (1)	05:55	07:04			08:11		08:49 (63)	08:25	09:21
	22:34	26	06:54 (1)	21:26	19:59			18:34	15	09:04 (63)	16:17	15:42
16	04:53		06:30 (1)	05:58	07:06			08:14		08:49 (63)	08:27	09:22
	22:32	24	06:54 (1)	21:24	19:57			18:31	15	09:04 (63)	16:15	15:42
17	04:54		06:31 (1)	06:00	07:09			08:16		08:50 (63)	08:29	09:23
	22:30	23	06:54 (1)	21:21	19:54			18:28	14	09:04 (63)	16:14	15:42
18	04:56		06:33 (1)	06:02	07:11			08:18		08:50 (63)	08:32	09:24
	22:29	21	06:54 (1)	21:18	19:51			18:25	12	09:02 (63)	16:12	15:42
19	04:58		06:35 (1)	06:04	07:13			08:21		08:53 (63)	08:34	09:25
	22:27	20	06:55 (1)	21:16	19:48			18:23	8	09:01 (63)	16:10	15:43
20	05:00		06:35 (1)	06:07	07:15			08:23		08:55 (63)	08:36	09:25
	22:25	19	06:54 (1)	21:13	19:45			18:20	3	08:58 (63)	16:08	15:43
21	05:02		06:37 (1)	06:09	07:17			08:25			08:39	09:26
	22:23	17	06:54 (1)	21:10	19:42			18:17			16:06	15:43
22	05:04		06:39 (1)	06:11	07:20			08:28			08:41	09:27
	22:22	15	06:54 (1)	21:08	19:39			18:15			16:04	15:44
23	05:06		06:40 (1)	06:13	07:22			08:30			08:43	09:27
	22:20	13	06:53 (1)	21:05	19:36			18:12			16:03	15:44
24	05:08		06:42 (1)	06:15	07:24			08:32			08:45	09:28
	22:18	11	06:53 (1)	21:02	19:33			18:09			16:01	15:45
25	05:10		06:43 (1)	06:18	07:26			07:35			08:47	09:28
	22:16	10	06:53 (1)	20:59	19:30			17:07			16:00	15:46
26	05:12		06:45 (1)	06:20	07:28			07:37			08:49	09:28
	22:14	7	06:52 (1)	20:57	19:28			17:04			15:58	15:46
27	05:14		06:47 (1)	06:22	07:31			07:39			08:52	09:28
	22:12	5	06:52 (1)	20:54	19:25			17:02			15:57	15:47
28	05:16		06:49 (1)	06:24	07:33		08:29 (62)	07:42			08:54	09:28
	22:10	2	06:51 (1)	20:51	19:22	3	08:32 (62)	16:59			15:55	15:48
29	05:18		06:49 (1)	06:27	07:35		08:25 (62)	07:44			08:56	09:28
	22:07	1	06:50 (1)	20:48	19:19	9	08:34 (62)	16:56			15:54	15:49
30	05:20			06:29	07:37		08:23 (62)	07:47			08:58	09:28
	22:05			20:45	19:16	12	08:35 (62)	16:54			15:53	15:50
31	05:22			06:31				07:49				09:28
	22:03			20:43				16:51				15:51
Potential sun hours	545			478	386			319			236	200
Total, worst case		655				24			190			
Sun reduction		0,50				0,50			0,50			
Oper. time red.		0,80				0,80			0,80			
Wind dir. red.		0,58				0,70			0,72			
Total reduction		0,23				0,28			0,29			
Total, real		153				7			54			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** Z - Brusalivegen 217 (26)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February			March			April	May			June		
1	09:28	08:46			07:35		08:16 (63)	07:07	05:44			04:40		06:00 (1)
	15:53	16:56			18:05	15	08:31 (63)	20:17	21:26			22:30	35	06:35 (1)
2	09:27	08:43			07:33		08:17 (63)	07:04	05:42			04:39		06:00 (1)
	15:54	16:59			18:07	13	08:30 (63)	20:19	21:28			22:32	35	06:35 (1)
3	09:27	08:41			07:30		08:18 (63)	07:01	05:39			04:38		06:00 (1)
	15:56	17:01			18:10	10	08:28 (63)	20:21	21:30			22:33	36	06:36 (1)
4	09:26	08:39			07:27		08:20 (63)	06:58	05:37			04:36		06:00 (1)
	15:57	17:04			18:12	5	08:25 (63)	20:24	21:33			22:35	36	06:36 (1)
5	09:26	08:37			07:24			06:55	05:34			04:35		06:01 (1)
	15:59	17:06			18:14			20:26	21:35			22:36	36	06:37 (1)
6	09:25	08:34			07:21			06:53	05:32			04:34		06:01 (1)
	16:00	17:09			18:17			20:28	21:37			22:38	36	06:37 (1)
7	09:24	08:32			07:19			06:50	05:29			04:33		06:01 (1)
	16:02	17:11			18:19			20:31	21:40			22:39	36	06:37 (1)
8	09:24	08:30			07:16		07:46 (62)	06:47	05:27			04:32		06:01 (1)
	16:04	17:14			18:21	6	07:52 (62)	20:33	21:42			22:40	36	06:37 (1)
9	09:23	08:27			07:13		07:44 (62)	06:44	05:24			04:31		06:01 (1)
	16:06	17:16			18:24	10	07:54 (62)	20:35	21:44			22:41	37	06:38 (1)
10	09:22	08:25			07:10		07:43 (62)	06:41	05:22			04:31		06:01 (1)
	16:07	17:19			18:26	13	07:56 (62)	20:37	21:46			22:43	37	06:38 (1)
11	09:21	08:23			07:07		07:42 (62)	06:38	05:20			04:30		06:02 (1)
	16:09	17:21			18:28	14	07:56 (62)	20:40	21:49			22:44	36	06:38 (1)
12	09:20	08:20			07:04		07:42 (62)	06:36	05:17			04:29		06:01 (1)
	16:11	17:23			18:31	14	07:56 (62)	20:42	21:51			22:45	37	06:38 (1)
13	09:18	08:18			07:02		07:41 (62)	06:33	05:15			04:29		06:02 (1)
	16:13	17:26			18:33	15	07:56 (62)	20:44	21:53			22:46	37	06:39 (1)
14	09:17	08:15			06:59		07:41 (62)	06:30	05:13			04:28		06:02 (1)
	16:15	17:28			18:35	14	07:55 (62)	20:47	21:55			22:46	37	06:39 (1)
15	09:16	08:13			06:56		07:42 (62)	06:27	05:11			04:28		06:02 (1)
	16:17	17:31			18:38	11	07:53 (62)	20:49	21:57			22:47	37	06:39 (1)
16	09:14	08:10			06:53		07:43 (62)	06:24	05:09			04:28		06:02 (1)
	16:19	17:33			18:40	8	07:51 (62)	20:51	22:00			22:48	37	06:39 (1)
17	09:13	08:07			06:50			06:22	05:06		06:13 (1)	04:27		06:03 (1)
	16:21	17:36			18:42			20:54	22:02	7	06:20 (1)	22:48	36	06:39 (1)
18	09:12	08:05			06:47			06:19	05:04		06:11 (1)	04:27		06:03 (1)
	16:24	17:38			18:45			20:56	22:04	13	06:24 (1)	22:49	37	06:40 (1)
19	09:10	08:02			06:44			06:16	05:02		06:10 (1)	04:27		06:03 (1)
	16:26	17:41			18:47			20:58	22:06	16	06:26 (1)	22:49	37	06:40 (1)
20	09:08	08:00			06:42			06:13	05:00		06:08 (1)	04:27		06:03 (1)
	16:28	17:43			18:49			21:00	22:08	19	06:27 (1)	22:50	37	06:40 (1)
21	09:07	07:57			06:39			06:11	04:58		06:06 (1)	04:27		06:03 (1)
	16:30	17:46			18:52			21:03	22:10	22	06:28 (1)	22:50	37	06:40 (1)
22	09:05	07:54			06:36			06:08	04:56		06:05 (1)	04:27		06:04 (1)
	16:32	17:48			18:54			21:05	22:12	25	06:30 (1)	22:50	37	06:41 (1)
23	09:03	07:52		08:21 (63)	06:33			06:05	04:55		06:04 (1)	04:28		06:04 (1)
	16:35	17:50	8	08:29 (63)	18:56			21:07	22:14	26	06:30 (1)	22:50	37	06:41 (1)
24	09:02	07:49		08:18 (63)	06:30			06:02	04:53		06:03 (1)	04:28		06:04 (1)
	16:37	17:53	12	08:30 (63)	18:58			21:10	22:16	29	06:32 (1)	22:50	37	06:41 (1)
25	09:00	07:46		08:17 (63)	06:27			06:00	04:51		06:02 (1)	04:28		06:05 (1)
	16:39	17:55	14	08:31 (63)	19:01			21:12	22:18	30	06:32 (1)	22:50	36	06:41 (1)
26	08:58	07:44		08:16 (63)	06:24			05:57	04:49		06:02 (1)	04:29		06:04 (1)
	16:42	17:58	15	08:31 (63)	19:03			21:14	22:20	31	06:33 (1)	22:50	37	06:41 (1)
27	08:56	07:41		08:15 (63)	06:21			05:54	04:48		06:01 (1)	04:29		06:05 (1)
	16:44	18:00	16	08:31 (63)	19:05			21:17	22:22	32	06:33 (1)	22:50	37	06:42 (1)
28	08:54	07:38		08:15 (63)	06:18			05:52	04:46		06:01 (1)	04:30		06:05 (1)
	16:47	18:02	15	08:30 (63)	19:08			21:19	22:24	33	06:34 (1)	22:50	36	06:41 (1)
29	08:52				07:16			05:49	04:44		06:01 (1)	04:31		06:05 (1)
	16:49				20:10			21:21	22:25	33	06:34 (1)	22:49	37	06:42 (1)
30	08:50				07:13			05:47	04:43		06:01 (1)	04:32		06:06 (1)
	16:51				20:12			21:24	22:27	34	06:35 (1)	22:49	36	06:42 (1)
31	08:48				07:10				04:41		06:00 (1)			
	16:54				20:14				22:29	35	06:35 (1)			
Potential sun hours	221	260			365			432	521			547		
Total, worst case			80			148				385			1095	
Sun reduction			0,50			0,50				0,50			0,50	
Oper. time red.			0,80			0,80				0,80			0,80	
Wind dir. red.			0,72			0,71				0,58			0,58	
Total reduction			0,29			0,28				0,23			0,23	
Total, real			23			42				89			253	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** Z - Brusalivegen 217 (26)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July		August		September		October		November	December
1	04:32	06:06 (1)	05:24	06:33			07:39	08:21 (62)	07:51	09:00
	22:48	37 06:43 (1)	22:01	20:40			19:13	14 08:35 (62)	16:49	15:52
2	04:33	06:06 (1)	05:27	06:35			07:42	08:20 (62)	07:54	09:01
	22:48	37 06:43 (1)	21:58	20:37			19:10	14 08:34 (62)	16:47	15:50
3	04:34	06:06 (1)	05:29	06:38			07:44	08:20 (62)	07:56	09:03
	22:47	36 06:42 (1)	21:56	20:34			19:07	13 08:33 (62)	16:44	15:49
4	04:35	06:06 (1)	05:31	06:40			07:46	08:21 (62)	07:59	09:05
	22:46	36 06:42 (1)	21:54	20:31			19:05	12 08:33 (62)	16:42	15:48
5	04:37	06:06 (1)	05:33	06:42			07:48	08:22 (62)	08:01	09:07
	22:46	37 06:43 (1)	21:51	20:28			19:02	9 08:31 (62)	16:39	15:47
6	04:38	06:07 (1)	05:35	06:44			07:51		08:03	09:09
	22:45	37 06:44 (1)	21:49	20:25			18:59		16:37	15:47
7	04:39	06:08 (1)	05:38	06:47			07:53		08:06	09:10
	22:44	36 06:44 (1)	21:47	20:23			18:56		16:35	15:46
8	04:40	06:08 (1)	05:40	06:49			07:55		08:08	09:12
	22:43	35 06:43 (1)	21:44	20:20			18:53		16:32	15:45
9	04:42	06:08 (1)	05:42	06:51			07:57		08:11	09:13
	22:42	35 06:43 (1)	21:42	20:17			18:50		16:30	15:44
10	04:43	06:08 (1)	05:44	06:53			08:00	08:53 (63)	08:13	09:15
	22:40	35 06:43 (1)	21:39	20:14			18:48	8 09:01 (63)	16:28	15:44
11	04:45	06:09 (1)	05:46	06:55			08:02	08:51 (63)	08:15	09:16
	22:39	35 06:44 (1)	21:37	20:11			18:45	11 09:02 (63)	16:26	15:43
12	04:46	06:09 (1)	05:49	06:58			08:04	08:49 (63)	08:18	09:17
	22:38	34 06:43 (1)	21:34	20:08			18:42	14 09:03 (63)	16:24	15:43
13	04:48	06:09 (1)	05:51	07:00			08:07	08:49 (63)	08:20	09:19
	22:36	34 06:43 (1)	21:31	20:05			18:39	15 09:04 (63)	16:22	15:43
14	04:49	06:10 (1)	05:53	07:02			08:09	08:48 (63)	08:22	09:20
	22:35	33 06:43 (1)	21:29	20:02			18:36	15 09:03 (63)	16:19	15:43
15	04:51	06:10 (1)	05:55	07:04			08:11	08:48 (63)	08:25	09:21
	22:34	32 06:42 (1)	21:26	19:59			18:34	16 09:04 (63)	16:17	15:42
16	04:53	06:11 (1)	05:58	07:06			08:14	08:48 (63)	08:27	09:22
	22:32	32 06:43 (1)	21:24	19:57			18:31	15 09:03 (63)	16:15	15:42
17	04:54	06:11 (1)	06:00	07:09			08:16	08:49 (63)	08:29	09:23
	22:30	31 06:42 (1)	21:21	19:54			18:28	13 09:02 (63)	16:14	15:42
18	04:56	06:12 (1)	06:02	07:11			08:18	08:50 (63)	08:32	09:24
	22:29	30 06:42 (1)	21:18	19:51			18:25	10 09:00 (63)	16:12	15:42
19	04:58	06:13 (1)	06:04	07:13			08:20	08:53 (63)	08:34	09:25
	22:27	29 06:42 (1)	21:16	19:48			18:23	6 08:59 (63)	16:10	15:43
20	05:00	06:13 (1)	06:07	07:15			08:23		08:36	09:25
	22:25	27 06:40 (1)	21:13	19:45			18:20		16:08	15:43
21	05:02	06:15 (1)	06:09	07:17			08:25		08:39	09:26
	22:23	25 06:40 (1)	21:10	19:42			18:17		16:06	15:43
22	05:04	06:16 (1)	06:11	07:20			08:28		08:41	09:27
	22:22	24 06:40 (1)	21:08	19:39			18:15		16:04	15:44
23	05:06	06:17 (1)	06:13	07:22			08:30		08:43	09:27
	22:20	21 06:38 (1)	21:05	19:36			18:12		16:03	15:44
24	05:08	06:19 (1)	06:15	07:24			08:32		08:45	09:28
	22:18	18 06:37 (1)	21:02	19:33			18:09		16:01	15:45
25	05:10	06:20 (1)	06:18	07:26			07:35		08:47	09:28
	22:16	15 06:35 (1)	20:59	19:30			17:07		16:00	15:46
26	05:12	06:22 (1)	06:20	07:28			07:37		08:49	09:28
	22:14	11 06:33 (1)	20:57	19:28			17:04		15:58	15:46
27	05:14	06:27 (1)	06:22	07:31		08:26 (62)	07:39		08:52	09:28
	22:12	2 06:29 (1)	20:54	19:25	6	08:32 (62)	17:02		15:57	15:47
28	05:16		06:24	07:33		08:23 (62)	07:42		08:54	09:28
	22:10		20:51	19:22	11	08:34 (62)	16:59		15:55	15:48
29	05:18		06:27	07:35		08:22 (62)	07:44		08:56	09:28
	22:07		20:48	19:19	12	08:34 (62)	16:56		15:54	15:49
30	05:20		06:29	07:37		08:20 (62)	07:47		08:58	09:28
	22:05		20:45	19:16	15	08:35 (62)	16:54		15:53	15:50
31	05:22		06:31				07:49			09:28
	22:03		20:43				16:51			15:51
Potential sun hours	545		478	386			319		236	200
Total, worst case		794			44			185		
Sun reduction		0,50			0,50			0,50		
Oper. time red.		0,80			0,80			0,80		
Wind dir. red.		0,58			0,70			0,72		
Total reduction		0,23			0,28			0,29		
Total, real		183			12			53		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** AA - Buevegen 1463 (27)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February		March		April	May	June
1	09:28	08:46		07:35		08:22 (23)	07:07	05:44	04:40
	15:53	16:56		18:05	22	08:44 (23)	20:17	21:26	22:31
2	09:28	08:44		07:33		08:21 (23)	07:04	05:41	04:39
	15:54	16:59		18:07	24	08:45 (23)	20:19	21:28	22:32
3	09:27	08:41		07:30		08:20 (23)	07:01	05:39	04:37
	15:56	17:01		18:10	25	08:45 (23)	20:21	21:31	22:34
4	09:27	08:39		07:27		08:20 (23)	06:58	05:36	04:36
	15:57	17:04		18:12	24	08:44 (23)	20:24	21:33	22:35
5	09:26	08:37		07:24		08:20 (23)	06:55	05:34	04:35
	15:59	17:06		18:14	24	08:44 (23)	20:26	21:35	22:37
6	09:25	08:35		07:22		08:20 (23)	06:53	05:31	04:34
	16:00	17:09		18:17	23	08:43 (23)	20:28	21:38	22:38
7	09:25	08:32		07:19		08:20 (23)	06:50	05:29	04:33
	16:02	17:11		18:19	22	08:42 (23)	20:31	21:40	22:39
8	09:24	08:30		07:16		08:20 (23)	06:47	05:27	04:32
	16:04	17:13		18:21	21	08:41 (23)	20:33	21:42	22:41
9	09:23	08:28	09:21 (3)	07:13		08:22 (23)	06:44	05:24	04:31
	16:05	17:16	1 09:22 (3)	18:24	19	08:41 (23)	20:35	21:44	22:42
10	09:22	08:25	09:18 (3)	07:10		08:23 (23)	06:41	05:22	04:30
	16:07	17:18	9 09:27 (3)	18:26	16	08:39 (23)	20:38	21:47	22:43
11	09:21	08:23	09:15 (3)	07:07		08:25 (23)	06:38	05:20	04:30
	16:09	17:21	14 09:29 (3)	18:28	11	08:36 (23)	20:40	21:49	22:44
12	09:20	08:20	09:14 (3)	07:05			06:36	05:17	04:29
	16:11	17:23	16 09:30 (3)	18:31			20:42	21:51	22:45
13	09:19	08:18	09:13 (3)	07:02			06:33	05:15	04:29
	16:13	17:26	17 09:30 (3)	18:33			20:44	21:53	22:46
14	09:17	08:15	09:13 (3)	06:59		07:38 (25)	06:30	05:13	04:28
	16:15	17:28	18 09:31 (3)	18:35	1	07:39 (25)	20:47	21:55	22:47
15	09:16	08:13	09:12 (3)	06:56		07:33 (25)	06:27	05:11	04:28
	16:17	17:31	19 09:31 (3)	18:38	11	07:44 (25)	20:49	21:58	22:47
16	09:15	08:10	09:12 (3)	06:53		07:31 (25)	06:24	05:08	04:27
	16:19	17:33	19 09:31 (3)	18:40	14	07:45 (25)	20:51	22:00	22:48
17	09:13	08:08	09:13 (3)	06:50		07:29 (25)	06:22	05:06	04:27
	16:21	17:36	19 09:32 (3)	18:42	17	07:46 (25)	20:54	22:02	22:49
18	09:12	08:05	09:13 (3)	06:47		07:28 (25)	06:19	05:04	04:27
	16:23	17:38	18 09:31 (3)	18:45	18	07:46 (25)	20:56	22:04	22:49
19	09:10	08:02	09:13 (3)	06:44		07:28 (25)	06:16	05:02	04:27
	16:26	17:41	17 09:30 (3)	18:47	18	07:46 (25)	20:58	22:06	22:50
20	09:09	08:00	09:14 (3)	06:42		07:27 (25)	06:13	05:00	04:27
	16:28	17:43	15 09:29 (3)	18:49	19	07:46 (25)	21:01	22:08	22:50
21	09:07	07:57	09:15 (3)	06:39		07:28 (25)	06:11	04:58	04:27
	16:30	17:46	12 09:27 (3)	18:52	19	07:47 (25)	21:03	22:10	22:50
22	09:05	07:54	09:18 (3)	06:36		07:28 (25)	06:08	04:56	04:27
	16:32	17:48	8 09:26 (3)	18:54	18	07:46 (25)	21:05	22:12	22:50
23	09:04	07:52		06:33		07:28 (25)	06:05	04:54	04:27
	16:35	17:50		18:56	17	07:45 (25)	21:08	22:14	22:51
24	09:02	07:49		06:30		07:29 (25)	06:02	04:53	04:28
	16:37	17:53		18:59	14	07:43 (25)	21:10	22:16	22:51
25	09:00	07:46	08:28 (23)	06:27		07:30 (25)	06:00	04:51	04:28
	16:39	17:55	11 08:39 (23)	19:01	11	07:41 (25)	21:12	22:18	22:51
26	08:58	07:44	08:25 (23)	06:24		07:34 (25)	05:57	04:49	04:29
	16:42	17:58	16 08:41 (23)	19:03	2	07:36 (25)	21:14	22:20	22:50
27	08:56	07:41	08:23 (23)	06:21			05:54	04:47	04:29
	16:44	18:00	19 08:42 (23)	19:05			21:17	22:22	22:50
28	08:54	07:38	08:23 (23)	06:18			05:52	04:46	04:30
	16:46	18:02	21 08:44 (23)	19:08			21:19	22:24	22:50
29	08:52			07:16			05:49	04:44	04:31
	16:49			20:10			21:21	22:26	22:50
30	08:50			07:13			05:47	04:43	04:31
	16:51			20:12			21:24	22:27	22:49
31	08:48			07:10				04:41	
	16:54			20:15				22:29	
Potential sun hours	221	260		365			432	521	547
Total, worst case			269		410				
Sun reduction			0,50		0,50				
Oper. time red.			0,80		0,80				
Wind dir. red.			0,73		0,71				
Total reduction			0,29		0,28				
Total, real			79		117				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** AA - Buevegen 1463 (27)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September			October			November			December
1	04:32	05:24	06:33			07:40			07:52		08:47 (3)	09:00
	22:49	22:01	20:40			19:13			16:49	8	08:55 (3)	15:51
2	04:33	05:26	06:35			07:42		09:05 (23)	07:54			09:02
	22:48	21:59	20:37			19:10	7	09:12 (23)	16:46			15:50
3	04:34	05:29	06:38			07:44		09:01 (23)	07:56			09:04
	22:47	21:56	20:34			19:07	14	09:15 (23)	16:44			15:49
4	04:35	05:31	06:40			07:46		09:00 (23)	07:59			09:05
	22:47	21:54	20:31			19:05	17	09:17 (23)	16:42			15:48
5	04:36	05:33	06:42			07:48		08:58 (23)	08:01			09:07
	22:46	21:52	20:28			19:02	20	09:18 (23)	16:39			15:47
6	04:38	05:35	06:44			07:51		08:56 (23)	08:04			09:09
	22:45	21:49	20:26			18:59	22	09:18 (23)	16:37			15:46
7	04:39	05:37	06:47			07:53		08:56 (23)	08:06			09:10
	22:44	21:47	20:23			18:56	23	09:19 (23)	16:35			15:46
8	04:40	05:40	06:49			07:55		08:55 (23)	08:08			09:12
	22:43	21:44	20:20			18:53	24	09:19 (23)	16:32			15:45
9	04:41	05:42	06:51			07:58		08:54 (23)	08:11			09:14
	22:42	21:42	20:17			18:50	25	09:19 (23)	16:30			15:44
10	04:43	05:44	06:53			08:00		08:55 (23)	08:13			09:15
	22:41	21:39	20:14			18:48	24	09:19 (23)	16:28			15:44
11	04:44	05:46	06:55			08:02		08:54 (23)	08:16			09:16
	22:39	21:37	20:11			18:45	24	09:18 (23)	16:26			15:43
12	04:46	05:49	06:58			08:04		08:55 (23)	08:18			09:18
	22:38	21:34	20:08			18:42	23	09:18 (23)	16:24			15:43
13	04:48	05:51	07:00			08:07		08:55 (23)	08:20			09:19
	22:37	21:32	20:05			18:39	22	09:17 (23)	16:21			15:43
14	04:49	05:53	07:02			08:09		08:55 (23)	08:23			09:20
	22:35	21:29	20:02			18:36	20	09:15 (23)	16:19			15:42
15	04:51	05:55	07:04			08:11		08:57 (23)	08:25			09:21
	22:34	21:26	20:00			18:34	18	09:15 (23)	16:17			15:42
16	04:53	05:58	07:06			08:14		08:58 (23)	08:27			09:22
	22:32	21:24	19:57			18:31	14	09:12 (23)	16:15			15:42
17	04:54	06:00	07:09			08:16		09:01 (23)	08:30			09:23
	22:31	21:21	19:54			18:28	9	09:10 (23)	16:13			15:42
18	04:56	06:02	07:11		08:18 (25)	08:18			08:32			09:24
	22:29	21:19	19:51	10	08:28 (25)	18:25			16:11			15:42
19	04:58	06:04	07:13		08:16 (25)	08:21			08:34			09:25
	22:27	21:16	19:48	13	08:29 (25)	18:23			16:10			15:43
20	05:00	06:06	07:15		08:14 (25)	08:23		09:47 (3)	08:37			09:26
	22:25	21:13	19:45	16	08:30 (25)	18:20	10	09:57 (3)	16:08			15:43
21	05:02	06:09	07:17		08:14 (25)	08:25		09:46 (3)	08:39			09:26
	22:24	21:10	19:42	17	08:31 (25)	18:17	13	09:59 (3)	16:06			15:43
22	05:04	06:11	07:20		08:13 (25)	08:28		09:44 (3)	08:41			09:27
	22:22	21:08	19:39	18	08:31 (25)	18:15	16	10:00 (3)	16:04			15:44
23	05:06	06:13	07:22		08:12 (25)	08:30		09:43 (3)	08:43			09:27
	22:20	21:05	19:36	19	08:31 (25)	18:12	18	10:01 (3)	16:03			15:44
24	05:08	06:15	07:24		08:11 (25)	08:32		09:42 (3)	08:45			09:28
	22:18	21:02	19:33	19	08:30 (25)	18:09	19	10:01 (3)	16:01			15:45
25	05:10	06:18	07:26		08:11 (25)	07:35		08:42 (3)	08:48			09:28
	22:16	20:59	19:31	18	08:29 (25)	17:07	19	09:01 (3)	15:59			15:45
26	05:12	06:20	07:28		08:12 (25)	07:37		08:42 (3)	08:50			09:28
	22:14	20:57	19:28	17	08:29 (25)	17:04	20	09:02 (3)	15:58			15:46
27	05:14	06:22	07:31		08:12 (25)	07:40		08:42 (3)	08:52			09:28
	22:12	20:54	19:25	16	08:28 (25)	17:02	19	09:01 (3)	15:57			15:47
28	05:16	06:24	07:33		08:13 (25)	07:42		08:43 (3)	08:54			09:29
	22:10	20:51	19:22	12	08:25 (25)	16:59	18	09:01 (3)	15:55			15:48
29	05:18	06:27	07:35		08:16 (25)	07:44		08:43 (3)	08:56			09:29
	22:08	20:48	19:19	6	08:22 (25)	16:56	17	09:00 (3)	15:54			15:49
30	05:20	06:29	07:37			07:47		08:44 (3)	08:58			09:28
	22:05	20:45	19:16			16:54	15	08:59 (3)	15:53			15:50
31	05:22	06:31				07:49		08:45 (3)				09:28
	22:03	20:43				16:51	13	08:58 (3)				15:51
Potential sun hours	545	478	386			319			236			200
Total, worst case				181			503			8		
Sun reduction				0,50			0,50			0,50		
Oper. time red.				0,80			0,80			0,80		
Wind dir. red.				0,70			0,73			0,74		
Total reduction				0,28			0,29			0,29		
Total, real				50			147			2		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** AB - Buevegen 1461 (28)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February		March		April	May	June	July	August	September		October		November	December
1	09:28	08:46		07:35	08:24 (23)	07:07	05:44	04:40	04:32	05:24	06:33		07:40		07:52	09:00
	15:53	16:56		18:05	23 08:47 (23)	20:17	21:26	22:31	22:49	22:01	20:40		19:13		16:49	15:51
2	09:28	08:44		07:33	08:23 (23)	07:04	05:41	04:39	04:33	05:26	06:35		07:42		07:54	09:02
	15:54	16:59		18:07	24 08:47 (23)	20:19	21:28	22:32	22:48	21:59	20:37		19:10		16:46	15:50
3	09:27	08:41		07:30	08:23 (23)	07:01	05:39	04:37	04:34	05:29	06:38		07:44		07:56	09:04
	15:56	17:01		18:10	24 08:47 (23)	20:21	21:31	22:34	22:47	21:56	20:34		19:07		16:44	15:49
4	09:27	08:39		07:27	08:23 (23)	06:58	05:36	04:36	04:35	05:31	06:40		07:46	09:05 (23)	07:59	09:05
	15:57	17:04		18:12	23 08:46 (23)	20:24	21:33	22:35	22:47	21:54	20:31		19:05	11 09:16 (23)	16:42	15:48
5	09:26	08:37		07:24	08:23 (23)	06:55	05:34	04:35	04:36	05:33	06:42		07:48	09:02 (23)	08:01	09:07
	15:59	17:06		18:14	22 08:45 (23)	20:26	21:35	22:37	22:46	21:52	20:28		19:02	16 09:18 (23)	16:39	15:47
6	09:25	08:35		07:22	08:23 (23)	06:53	05:31	04:34	04:38	05:35	06:44		07:51	09:00 (23)	08:04	09:09
	16:00	17:09		18:17	21 08:44 (23)	20:28	21:38	22:38	22:45	21:49	20:26		18:59	19 09:19 (23)	16:37	15:46
7	09:25	08:32		07:19	08:23 (23)	06:50	05:29	04:33	04:39	05:37	06:47		07:53	09:00 (23)	08:06	09:10
	16:02	17:11		18:19	20 08:43 (23)	20:31	21:40	22:39	22:44	21:47	20:23		18:56	20 09:20 (23)	16:35	15:46
8	09:24	08:30		07:16	08:24 (23)	06:47	05:27	04:32	04:40	05:40	06:49		07:55	08:58 (23)	08:08	09:12
	16:04	17:13		18:21	18 08:42 (23)	20:33	21:42	22:41	22:43	21:44	20:20		18:53	22 09:20 (23)	16:32	15:45
9	09:23	08:28		07:13	08:27 (23)	06:44	05:24	04:31	04:41	05:42	06:51		07:58	08:57 (23)	08:11	09:14
	16:05	17:16		18:24	13 08:40 (23)	20:35	21:44	22:42	22:42	21:42	20:17		18:50	23 09:20 (23)	16:30	15:44
10	09:22	08:25		07:10	08:30 (23)	06:41	05:22	04:30	04:43	05:44	06:53		08:00	08:57 (23)	08:13	09:15
	16:07	17:18		18:26	7 08:37 (23)	20:38	21:47	22:43	22:41	21:39	20:14		18:48	24 09:21 (23)	16:28	15:44
11	09:21	08:23		07:07		06:38	05:20	04:30	04:44	05:46	06:55		08:02	08:57 (23)	08:16	09:16
	16:09	17:21		18:28		20:40	21:49	22:44	22:39	21:37	20:11		18:45	23 09:20 (23)	16:26	15:43
12	09:20	08:20		07:05		06:36	05:17	04:29	04:46	05:49	06:58		08:04	08:57 (23)	08:18	09:18
	16:11	17:23		18:31		20:42	21:51	22:45	22:38	21:34	20:08		18:42	23 09:20 (23)	16:24	15:43
13	09:19	08:18		07:02	07:40 (25)	06:33	05:15	04:29	04:48	05:51	07:00		08:07	08:57 (23)	08:20	09:19
	16:13	17:26		18:33	5 07:45 (25)	20:44	21:53	22:46	22:37	21:32	20:05		18:39	22 09:19 (23)	16:21	15:43
14	09:17	08:15		06:59	07:36 (25)	06:30	05:13	04:28	04:49	05:53	07:02		08:09	08:57 (23)	08:23	09:20
	16:15	17:28		18:35	11 07:47 (25)	20:47	21:55	22:47	22:35	21:29	20:02		18:36	21 09:18 (23)	16:19	15:42
15	09:16	08:13		06:56	07:34 (25)	06:27	05:11	04:28	04:51	05:55	07:04		08:11	08:58 (23)	08:25	09:21
	16:17	17:31		18:38	15 07:49 (25)	20:49	21:58	22:47	22:34	21:26	20:00		18:34	20 09:18 (23)	16:17	15:42
16	09:15	08:10		06:53	07:33 (25)	06:24	05:08	04:27	04:53	05:58	07:06		08:14	08:58 (23)	08:27	09:22
	16:19	17:33		18:40	16 07:49 (25)	20:51	22:00	22:48	22:32	21:24	19:57		18:31	18 09:16 (23)	16:15	15:42
17	09:13	08:08		06:50	07:32 (25)	06:22	05:06	04:27	04:54	06:00	07:09		08:16	09:00 (23)	08:30	09:23
	16:21	17:36		18:42	18 07:50 (25)	20:54	22:02	22:49	22:31	21:21	19:54		18:28	15 09:15 (23)	16:13	15:42
18	09:12	08:05		06:47	07:31 (25)	06:19	05:04	04:27	04:56	06:02	07:11		08:18	09:02 (23)	08:32	09:24
	16:23	17:38		18:45	19 07:50 (25)	20:56	22:04	22:49	22:29	21:19	19:51		18:25	9 09:11 (23)	16:11	15:42
19	09:10	08:02		06:44	07:31 (25)	06:16	05:02	04:27	04:58	06:04	07:13	08:22 (25)	08:21		08:34	09:25
	16:26	17:41		18:47	18 07:49 (25)	20:58	22:06	22:50	22:27	21:16	19:48	6 08:28 (25)	18:23		16:10	15:43
20	09:09	08:00		06:42	07:30 (25)	06:13	05:00	04:27	05:00	06:06	07:15	08:19 (25)	08:23		08:37	09:26
	16:28	17:43		18:49	19 07:49 (25)	21:01	22:08	22:50	22:25	21:13	19:45	12 08:31 (25)	18:20		16:08	15:43
21	09:07	07:57		06:39	07:32 (25)	06:11	04:58	04:27	05:02	06:09	07:17	08:18 (25)	08:25		08:39	09:26
	16:30	17:46		18:52	17 07:49 (25)	21:03	22:10	22:50	22:24	21:10	19:42	15 08:33 (25)	18:17		16:06	15:43
22	09:05	07:54		06:36	07:32 (25)	06:08	04:56	04:27	05:04	06:11	07:20	08:16 (25)	08:28		08:41	09:27
	16:32	17:48		18:54	15 07:47 (25)	21:05	22:12	22:50	22:22	21:08	19:39	17 08:33 (25)	18:15		16:04	15:44
23	09:04	07:52		06:33	07:33 (25)	06:05	04:54	04:27	05:06	06:13	07:22	08:15 (25)	08:30		08:43	09:27
	16:35	17:50		18:56	13 07:46 (25)	21:08	22:14	22:51	22:20	21:05	19:36	18 08:33 (25)	18:12		16:03	15:44
24	09:02	07:49	08:30 (23)	06:30	07:35 (25)	06:02	04:53	04:28	05:08	06:15	07:24	08:14 (25)	08:32		08:45	09:28
	16:37	17:53	11 08:41 (23)	18:59	8 07:43 (25)	21:10	22:16	22:51	22:18	21:02	19:33	19 08:33 (25)	18:09		16:01	15:45
25	09:00	07:46	08:28 (23)	06:27		06:00	04:51	04:28	05:10	06:18	07:26	08:14 (25)	07:35		08:48	09:28
	16:39	17:55	15 08:43 (23)	19:01		21:12	22:18	22:51	22:16	20:59	19:31	18 08:32 (25)	17:07		15:59	15:45
26	08:58	07:44	08:26 (23)	06:24		05:57	04:49	04:29	05:12	06:20	07:28	08:14 (25)	07:37		08:50	09:28
	16:42	17:58	18 08:44 (23)	19:03		21:14	22:20	22:50	22:14	20:57	19:28	19 08:33 (25)	17:04		15:58	15:46
27	08:56	07:41	08:25 (23)	06:21		05:54	04:47	04:29	05:14	06:22	07:31	08:14 (25)	07:40		08:52	09:28
	16:44	18:00	20 08:45 (23)	19:05		21:17	22:22	22:50	22:12	20:54	19:25	18 08:32 (25)	17:02		15:57	15:47
28	08:54	07:38	08:25 (23)	06:18		05:52	04:46	04:30	05:16	06:24	07:33	08:15 (25)	07:42		08:54	09:29
	16:46	18:02	22 08:47 (23)	19:08		21:19	22:24	22:50	22:10	20:51	19:22	15 08:30 (25)	16:59		15:55	15:48
29	08:52			07:16		05:49	04:44	04:31	05:18	06:27	07:35	08:15 (25)	07:44		08:56	09:29
	16:49			20:10		21:21	22:26	22:50	22:08	20:48	19:19	13 08:28 (25)	16:56		15:54	15:49
30	08:50			07:13		05:47	04:43	04:31	05:20	06:29	07:37	08:18 (25)	07:47		08:58	09:28
	16:51			20:12		21:24	22:27	22:49	22:05	20:45	19:16	8 08:26 (25)	16:54		15:53	15:50
31	08:48			07:10			04:41		05:22	06:31			07:49			09:28
	16:54			20:15			22:29		22:03	20:43			16:51			15:51
Potential sun hours	221	260		365		432	521	547	545	478	386		319		236	200
Total, worst case			86		369							178		286		
Sun reduction			0,50		0,50							0,50		0,50		
Oper. time red.			0,80		0,80							0,80		0,80		
Wind dir. red.			0,73		0,71							0,70		0,73		
Total reduction			0,29		0,29							0,28		0,29		
Total, real			25		105							50		83		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** AC - Buevegen 1502 (29)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March		April	May	June
1	09:28		08:46		09:42 (23)		07:35	08:32 (25)	07:07	05:44	04:40
	15:53		16:56	14	09:56 (23)		18:05	20	08:52 (25)	20:17	21:26	22:31
2	09:28		08:44		09:40 (23)		07:33	08:32 (25)	07:04	05:41	04:39
	15:54		16:59	17	09:57 (23)		18:07	20	08:52 (25)	20:19	21:28	22:32
3	09:27		08:41		09:40 (23)		07:30	08:32 (25)	07:01	05:39	04:37
	15:56		17:01	19	09:59 (23)		18:10	19	08:51 (25)	20:21	21:31	22:34
4	09:27		08:39		09:38 (23)		07:27	08:32 (25)	06:58	05:36	04:36
	15:57		17:04	21	09:59 (23)		18:12	18	08:50 (25)	20:24	21:33	22:35
5	09:26		08:37		09:38 (23)		07:24	08:32 (25)	06:55	05:34	04:35
	15:59		17:06	22	10:00 (23)		18:14	17	08:49 (25)	20:26	21:35	22:37
6	09:25		08:35		09:38 (23)		07:22	08:33 (25)	06:53	05:31	04:34
	16:00		17:08	22	10:00 (23)		18:17	14	08:47 (25)	20:28	21:38	22:38
7	09:25		08:32		09:37 (23)		07:19	08:35 (25)	06:50	05:29	04:33
	16:02		17:11	24	10:01 (23)		18:19	10	08:45 (25)	20:31	21:40	22:39
8	09:24		08:30		09:37 (23)		07:16		06:47	05:27	04:32
	16:04		17:13	24	10:01 (23)		18:21		20:33	21:42	22:41
9	09:23		08:28		09:37 (23)		07:13		06:44	05:24	04:31
	16:05		17:16	24	10:01 (23)		18:24		20:35	21:44	22:42
10	09:22		08:25		09:38 (23)		07:10		06:41	05:22	04:30
	16:07		17:18	24	10:02 (23)		18:26		20:38	21:47	22:43
11	09:21		08:23		09:38 (23)		07:07		06:38	05:20	04:30
	16:09		17:21	23	10:01 (23)		18:28		20:40	21:49	22:44
12	09:20		08:20		09:38 (23)		07:05		06:36	05:17	04:29
	16:11		17:23	22	10:00 (23)		18:31		20:42	21:51	22:45
13	09:19		08:18		09:38 (23)		07:02		06:33	05:15	04:28
	16:13		17:26	21	09:59 (23)		18:33		20:44	21:53	22:46
14	09:17		08:15		09:40 (23)		06:59		06:30	05:13	04:28
	16:15		17:28	19	09:59 (23)		18:35		20:47	21:55	22:47
15	09:16		08:13		09:41 (23)		06:56		06:27	05:11	04:28
	16:17		17:31	17	09:58 (23)		18:38		20:49	21:58	22:47
16	09:15		08:10		09:43 (23)		06:53		06:24	05:08	04:27
	16:19		17:33	12	09:55 (23)		18:40		20:51	22:00	22:48
17	09:13		08:08		09:46 (23)		06:50		06:21	05:06	04:27
	16:21		17:36	7	09:53 (23)		18:42		20:54	22:02	22:49
18	09:12		08:05				06:47		06:19	05:04	04:27
	16:23		17:38				18:45		20:56	22:04	22:49
19	09:10		08:02				06:44		06:16	05:02	04:27
	16:26		17:41				18:47		20:58	22:06	22:50
20	09:09		08:00				06:42		06:13	05:00	04:27
	16:28		17:43				18:49		21:01	22:08	22:50
21	09:07		07:57				06:39		06:10	04:58	04:27
	16:30		17:45				18:52		21:03	22:10	22:50
22	09:05		07:54				06:36		06:08	04:56	04:27
	16:32		17:48				18:54		21:05	22:12	22:51
23	09:04		07:52		08:40 (25)		06:33		06:05	04:54	04:27
	16:35		17:50	6	08:46 (25)		18:56		21:08	22:14	22:51
24	09:02		07:49		08:36 (25)		06:30		06:02	04:53	04:28
	16:37		17:53	12	08:48 (25)		18:59		21:10	22:16	22:51
25	09:00		07:46		08:34 (25)		06:27		06:00	04:51	04:28
	16:39		17:55	16	08:50 (25)		19:01		21:12	22:18	22:51
26	08:58		07:44		08:33 (25)		06:24		05:57	04:49	04:29
	16:42		17:58	17	08:50 (25)		19:03		21:14	22:20	22:51
27	08:56		07:41		08:32 (25)		06:21		05:54	04:47	04:29
	16:44		18:00	19	08:51 (25)		19:05		21:17	22:22	22:50
28	08:54		07:38		08:32 (25)		06:18		05:52	04:46	04:30
	16:46		18:02	20	08:52 (25)		19:08		21:19	22:24	22:50
29	08:52						07:16		05:49	04:44	04:30
	16:49						20:10		21:21	22:26	22:50
30	08:50						07:13		05:47	04:43	04:31
	16:51						20:12		21:24	22:27	22:49
31	08:48	09:43 (23)					07:10			04:41	
	16:54	10	09:53 (23)				20:15			22:29	
Potential sun hours	221		260		365		432	521	547
Total, worst case	10		422		118				
Sun reduction	0,50		0,50		0,50				
Oper. time red.	0,80		0,80		0,80				
Wind dir. red.	0,72		0,73		0,73				
Total reduction	0,29		0,29		0,29				
Total, real	3		122		34				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** AC - Buevegen 1502 (29)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September	October			November			December
1	04:32	05:24	06:33	07:39			07:51		09:06 (23)	09:00
	22:49	22:01	20:40	19:13			16:49	24	09:30 (23)	15:51
2	04:33	05:26	06:35	07:42			07:54		09:07 (23)	09:02
	22:48	21:59	20:37	19:10			16:46	24	09:31 (23)	15:50
3	04:34	05:29	06:38	07:44			07:56		09:07 (23)	09:04
	22:47	21:56	20:34	19:07			16:44	24	09:31 (23)	15:49
4	04:35	05:31	06:40	07:46			07:59		09:08 (23)	09:05
	22:47	21:54	20:31	19:05			16:42	23	09:31 (23)	15:48
5	04:36	05:33	06:42	07:48			08:01		09:07 (23)	09:07
	22:46	21:52	20:28	19:02			16:39	23	09:30 (23)	15:47
6	04:37	05:35	06:44	07:51		09:13 (25)	08:04		09:08 (23)	09:09
	22:45	21:49	20:26	18:59	6	09:19 (25)	16:37	22	09:30 (23)	15:46
7	04:39	05:37	06:47	07:53		09:11 (25)	08:06		09:09 (23)	09:10
	22:44	21:47	20:23	18:56	11	09:22 (25)	16:35	21	09:30 (23)	15:46
8	04:40	05:40	06:49	07:55		09:08 (25)	08:08		09:09 (23)	09:12
	22:43	21:44	20:20	18:53	16	09:24 (25)	16:32	19	09:28 (23)	15:45
9	04:41	05:42	06:51	07:58		09:07 (25)	08:11		09:11 (23)	09:14
	22:42	21:42	20:17	18:50	17	09:24 (25)	16:30	16	09:27 (23)	15:44
10	04:43	05:44	06:53	08:00		09:06 (25)	08:13		09:13 (23)	09:15
	22:41	21:39	20:14	18:48	19	09:25 (25)	16:28	13	09:26 (23)	15:44
11	04:44	05:46	06:55	08:02		09:05 (25)	08:16		09:14 (23)	09:16
	22:39	21:37	20:11	18:45	20	09:25 (25)	16:26	10	09:24 (23)	15:43
12	04:46	05:49	06:58	08:04		09:05 (25)	08:18			09:18
	22:38	21:34	20:08	18:42	20	09:25 (25)	16:24			15:43
13	04:47	05:51	07:00	08:07		09:05 (25)	08:20			09:19
	22:37	21:32	20:05	18:39	20	09:25 (25)	16:21			15:43
14	04:49	05:53	07:02	08:09		09:04 (25)	08:23			09:20
	22:35	21:29	20:02	18:36	20	09:24 (25)	16:19			15:42
15	04:51	05:55	07:04	08:11		09:05 (25)	08:25			09:21
	22:34	21:26	20:00	18:34	19	09:24 (25)	16:17			15:42
16	04:53	05:57	07:06	08:14		09:05 (25)	08:27			09:22
	22:32	21:24	19:57	18:31	17	09:22 (25)	16:15			15:42
17	04:54	06:00	07:09	08:16		09:07 (25)	08:30			09:23
	22:31	21:21	19:54	18:28	14	09:21 (25)	16:13			15:42
18	04:56	06:02	07:11	08:18		09:08 (25)	08:32			09:24
	22:29	21:19	19:51	18:25	11	09:19 (25)	16:11			15:42
19	04:58	06:04	07:13	08:21			08:34			09:25
	22:27	21:16	19:48	18:23			16:10			15:42
20	05:00	06:06	07:15	08:23			08:37			09:26
	22:25	21:13	19:45	18:20			16:08			15:43
21	05:02	06:09	07:17	08:25			08:39			09:26
	22:24	21:10	19:42	18:17			16:06			15:43
22	05:04	06:11	07:20	08:28			08:41			09:27
	22:22	21:08	19:39	18:15			16:04			15:44
23	05:06	06:13	07:22	08:30			08:43			09:27
	22:20	21:05	19:36	18:12			16:03			15:44
24	05:08	06:15	07:24	08:32			08:45			09:28
	22:18	21:02	19:33	18:09			16:01			15:45
25	05:10	06:18	07:26	07:35		09:15 (23)	08:48			09:28
	22:16	20:59	19:30	17:07	8	09:23 (23)	15:59			15:45
26	05:12	06:20	07:28	07:37		09:12 (23)	08:50			09:28
	22:14	20:57	19:28	17:04	14	09:26 (23)	15:58			15:46
27	05:14	06:22	07:31	07:40		09:10 (23)	08:52			09:28
	22:12	20:54	19:25	17:01	17	09:27 (23)	15:56			15:47
28	05:16	06:24	07:33	07:42		09:09 (23)	08:54			09:29
	22:10	20:51	19:22	16:59	20	09:29 (23)	15:55			15:48
29	05:18	06:27	07:35	07:44		09:09 (23)	08:56			09:29
	22:08	20:48	19:19	16:56	21	09:30 (23)	15:54			15:49
30	05:20	06:29	07:37	07:47		09:07 (23)	08:58			09:28
	22:05	20:45	19:16	16:54	23	09:30 (23)	15:53			15:50
31	05:22	06:31		07:49		09:07 (23)				09:28
	22:03	20:43		16:51	24	09:31 (23)				15:51
Potential sun hours	546	478	386	319			236			199
Total, worst case					337			219		
Sun reduction					0,50			0,50		
Oper. time red.					0,80			0,80		
Wind dir. red.					0,73			0,72		
Total reduction					0,29			0,29		
Total, real					98			63		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** AD - Buevegen 1500 (30)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February		March		April	May	June	July	August	September	October		November		December
1	09:28	08:46		07:35		08:28 (25)	07:07	05:44	04:40	04:32	05:24	06:33	07:39		07:52	09:00 (23)	09:00
	15:53	16:56	1	09:43 (23)	19	08:47 (25)	20:17	21:26	22:31	22:49	22:01	20:40	19:13		16:49	09:24 (23)	15:51
2	09:28	08:44		09:37 (23)		08:27 (25)	07:04	05:41	04:39	04:33	05:26	06:35	07:42		07:54	09:01 (23)	09:02
	15:54	16:59	10	09:47 (23)	20	08:47 (25)	20:19	21:28	22:32	22:48	21:59	20:37	19:10		16:46	09:24 (23)	15:50
3	09:27	08:41		09:36 (23)		08:27 (25)	07:01	05:39	04:37	04:34	05:29	06:38	07:44		07:56	09:01 (23)	09:04
	15:56	17:01	14	09:50 (23)	20	08:47 (25)	20:21	21:31	22:34	22:47	21:56	20:34	19:07		16:44	09:24 (23)	15:49
4	09:27	08:39		09:34 (23)		08:27 (25)	06:58	05:36	04:36	04:35	05:31	06:40	07:46		07:59	09:02 (23)	09:05
	15:57	17:04	17	09:51 (23)	19	08:46 (25)	20:24	21:33	22:35	22:47	21:54	20:31	19:05		16:42	09:24 (23)	15:48
5	09:26	08:37		09:33 (23)		08:27 (25)	06:55	05:34	04:35	04:36	05:33	06:42	07:48	09:10 (25)	08:01	09:02 (23)	09:07
	15:59	17:06	20	09:53 (23)	18	08:45 (25)	20:26	21:35	22:37	22:46	21:52	20:28	19:02	4 09:14 (25)	16:39	09:23 (23)	15:47
6	09:25	08:35		09:32 (23)		08:28 (25)	06:53	05:31	04:34	04:37	05:35	06:44	07:51	09:06 (25)	08:04	09:03 (23)	09:09
	16:00	17:08	21	09:53 (23)	16	08:44 (25)	20:28	21:38	22:38	22:45	21:49	20:26	18:59	12 09:18 (25)	16:37	09:22 (23)	15:46
7	09:25	08:32		09:31 (23)		08:29 (25)	06:50	05:29	04:33	04:39	05:37	06:47	07:53	09:05 (25)	08:06	09:05 (23)	09:10
	16:02	17:11	22	09:53 (23)	13	08:42 (25)	20:31	21:40	22:39	22:44	21:47	20:23	18:56	15 09:20 (25)	16:35	09:21 (23)	15:46
8	09:24	08:30		09:32 (23)		08:31 (25)	06:47	05:27	04:32	04:40	05:40	06:49	07:55	09:03 (25)	08:08	09:05 (23)	09:12
	16:04	17:13	22	09:54 (23)	8	08:39 (25)	20:33	21:42	22:41	22:43	21:44	20:20	18:53	17 09:20 (25)	16:32	09:19 (23)	15:45
9	09:23	08:28		09:31 (23)			06:44	05:24	04:31	04:41	05:42	06:51	07:58	09:02 (25)	08:11	09:08 (23)	09:14
	16:05	17:16	23	09:54 (23)			20:35	21:44	22:42	22:42	21:42	20:17	18:50	18 09:20 (25)	16:30	09:18 (23)	15:44
10	09:22	08:25		09:32 (23)			06:41	05:22	04:30	04:43	05:44	06:53	08:00	09:02 (25)	08:13		09:15
	16:07	17:18	23	09:55 (23)			20:38	21:47	22:43	22:41	21:39	20:14	18:48	19 09:21 (25)	16:28		15:44
11	09:21	08:23		09:31 (23)			06:38	05:20	04:30	04:44	05:46	06:55	08:02	09:01 (25)	08:16		09:16
	16:09	17:21	24	09:55 (23)			20:40	21:49	22:44	22:39	21:37	20:11	18:45	20 09:21 (25)	16:26		15:43
12	09:20	08:20		09:31 (23)			06:36	05:17	04:29	04:46	05:49	06:58	08:04	09:01 (25)	08:18		09:18
	16:11	17:23	23	09:54 (23)			20:42	21:51	22:45	22:38	21:34	20:08	18:42	20 09:21 (25)	16:24		15:43
13	09:19	08:18		09:31 (23)			06:33	05:15	04:28	04:47	05:51	07:00	08:07	09:01 (25)	08:20		09:19
	16:13	17:26	23	09:54 (23)			20:44	21:53	22:46	22:37	21:32	20:05	18:39	19 09:20 (25)	16:21		15:43
14	09:17	08:15		09:33 (23)			06:30	05:13	04:28	04:49	05:53	07:02	08:09	09:01 (25)	08:23		09:20
	16:15	17:28	21	09:54 (23)			20:47	21:55	22:47	22:35	21:29	20:02	18:36	18 09:19 (25)	16:19		15:42
15	09:16	08:13		09:33 (23)			06:27	05:11	04:28	04:51	05:55	07:04	08:11	09:02 (25)	08:25		09:21
	16:17	17:31	20	09:53 (23)			20:49	21:58	22:47	22:34	21:26	20:00	18:34	16 09:18 (25)	16:17		15:42
16	09:15	08:10		09:34 (23)			06:24	05:08	04:27	04:53	05:57	07:06	08:14	09:03 (25)	08:27		09:22
	16:19	17:33	17	09:51 (23)			20:51	22:00	22:48	22:32	21:24	19:57	18:31	13 09:16 (25)	16:15		15:42
17	09:13	08:08		09:36 (23)			06:22	05:06	04:27	04:54	06:00	07:09	08:16	09:05 (25)	08:30		09:23
	16:21	17:36	14	09:50 (23)			20:54	22:02	22:49	22:31	21:21	19:54	18:28	10 09:15 (25)	16:13		15:42
18	09:12	08:05		09:39 (23)			06:19	05:04	04:27	04:56	06:02	07:11	08:18		08:32		09:24
	16:23	17:38	8	09:47 (23)			20:56	22:04	22:49	22:29	21:19	19:51	18:25		16:11		15:42
19	09:10	08:02					06:16	05:02	04:27	04:58	06:04	07:13	08:21		08:34		09:25
	16:26	17:41					20:58	22:06	22:50	22:27	21:16	19:48	18:23		16:10		15:42
20	09:09	08:00					06:13	05:00	04:27	05:00	06:06	07:15	08:23		08:37		09:26
	16:28	17:43					21:01	22:08	22:50	22:25	21:13	19:45	18:20		16:08		15:43
21	09:07	07:57					06:10	04:58	04:27	05:02	06:09	07:17	08:25		08:39		09:26
	16:30	17:45					21:03	22:10	22:50	22:24	21:10	19:42	18:17		16:06		15:43
22	09:05	07:54					06:08	04:56	04:27	05:04	06:11	07:20	08:28		08:41		09:27
	16:32	17:48					21:05	22:12	22:51	22:22	21:08	19:39	18:15		16:04		15:44
23	09:04	07:52					06:05	04:54	04:27	05:06	06:13	07:22	08:30		08:43		09:27
	16:35	17:50					21:08	22:14	22:51	22:20	21:05	19:36	18:12		16:03		15:44
24	09:02	07:49		08:36 (25)			06:02	04:53	04:28	05:08	06:15	07:24	08:32	10:07 (23)	08:45		09:28
	16:37	17:53	4	08:40 (25)			21:10	22:16	22:51	22:18	21:02	19:33	18:09	11 10:18 (23)	16:01		15:45
25	09:00	07:46		08:32 (25)			06:00	04:51	04:28	05:10	06:18	07:26	07:35	09:05 (23)	08:48		09:28
	16:39	17:55	11	08:43 (25)			21:12	22:18	22:51	22:16	20:59	19:30	17:07	15 09:20 (23)	15:59		15:45
26	08:58	07:44		08:30 (25)			05:57	04:49	04:29	05:12	06:20	07:28	07:37	09:04 (23)	08:50		09:28
	16:42	17:58	15	08:45 (25)			21:14	22:20	22:51	22:14	20:57	19:28	17:04	18 09:22 (23)	15:58		15:46
27	08:56	07:41		08:29 (25)			05:54	04:47	04:29	05:14	06:22	07:31	07:40	09:02 (23)	08:52		09:28
	16:44	18:00	17	08:46 (25)			21:17	22:22	22:50	22:12	20:54	19:25	17:02	20 09:22 (23)	15:56		15:47
28	08:54	07:38		08:29 (25)			05:52	04:46	04:30	05:16	06:24	07:33	07:42	09:02 (23)	08:54		09:29
	16:46	18:02	18	08:47 (25)			21:19	22:24	22:50	22:10	20:51	19:22	16:59	21 09:23 (23)	15:55		15:48
29	08:52						05:49	04:44	04:30	05:18	06:27	07:35	07:44	09:02 (23)	08:56		09:29
	16:49						21:21	22:26	22:50	22:08	20:48	19:19	16:56	22 09:24 (23)	15:54		15:49
30	08:50						05:47	04:43	04:31	05:20	06:29	07:37	07:47	09:01 (23)	08:58		09:28
	16:51						21:24	22:27	22:49	22:05	20:45	19:16	16:54	23 09:24 (23)	15:53		15:50
31	08:48							04:41		05:22	06:31		07:49	09:01 (23)			09:28
	16:54							22:29		22:03	20:43		16:51	23 09:24 (23)			15:51
Potential sun hours	221	260		365			432	521	547	546	478	386	319		236		199
Total, worst case			388		133									354		172	
Sun reduction			0,50		0,50									0,50		0,50	
Oper. time red.			0,80		0,80									0,80		0,80	
Wind dir. red.			0,73		0,73									0,73		0,73	
Total reduction			0,29		0,29									0,29		0,29	
Total, real			113		39									103		50	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** AE - Buevegen 1498 (31)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February		March	April	May	June	July	August	September	October		November		December
1	09:28	08:46		07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:40		07:52	08:41 (23)	09:00
	15:53	16:56		18:05	20:17	21:26	22:31	22:49	22:01	20:40	19:13		16:49	8 08:49 (23)	15:51
2	09:28	08:44		07:33	07:04	05:41	04:39	04:33	05:26	06:35	07:42		07:54		09:02
	15:54	16:59		18:07	20:19	21:28	22:32	22:48	21:59	20:37	19:10		16:46		15:50
3	09:27	08:41		07:30	07:01	05:39	04:37	04:34	05:29	06:38	07:44		07:56		09:04
	15:56	17:01		18:10	20:21	21:31	22:34	22:47	21:56	20:34	19:07		16:44		15:49
4	09:27	08:39		07:27	06:58	05:36	04:36	04:35	05:31	06:40	07:46		07:59		09:05
	15:57	17:04		18:12	20:24	21:33	22:35	22:47	21:54	20:31	19:05		16:42		15:48
5	09:26	08:37		07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:48		08:01		09:07
	15:59	17:06		18:14	20:26	21:35	22:37	22:46	21:52	20:28	19:02		16:39		15:47
6	09:25	08:35		07:22	06:53	05:31	04:34	04:37	05:35	06:44	07:51		08:04		09:09
	16:00	17:09		18:17	20:28	21:38	22:38	22:45	21:49	20:26	18:59		16:37		15:46
7	09:25	08:32		07:19	06:50	05:29	04:33	04:39	05:37	06:47	07:53		08:06		09:10
	16:02	17:11		18:19	20:31	21:40	22:39	22:44	21:47	20:23	18:56		16:35		15:46
8	09:24	08:30		07:16	06:47	05:27	04:32	04:40	05:40	06:49	07:55		08:08		09:12
	16:04	17:13		18:21	20:33	21:42	22:41	22:43	21:44	20:20	18:53		16:32		15:45
9	09:23	08:28		07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:58		08:11		09:14
	16:05	17:16		18:24	20:35	21:44	22:42	22:42	21:42	20:17	18:50		16:30		15:44
10	09:22	08:25	09:11 (23)	07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00		08:13		09:15
	16:07	17:18	9 09:20 (23)	18:26	20:38	21:47	22:43	22:41	21:39	20:14	18:48		16:28		15:44
11	09:21	08:23	09:09 (23)	07:07	06:38	05:20	04:30	04:44	05:46	06:55	08:02		08:16		09:16
	16:09	17:21	13 09:22 (23)	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:45		16:26		15:43
12	09:20	08:20	09:07 (23)	07:05	06:36	05:17	04:29	04:46	05:49	06:58	08:04		08:18		09:18
	16:11	17:23	16 09:23 (23)	18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42		16:24		15:43
13	09:19	08:18	09:07 (23)	07:02	06:33	05:15	04:28	04:48	05:51	07:00	08:07		08:20		09:19
	16:13	17:26	18 09:25 (23)	18:33	20:44	21:53	22:46	22:37	21:32	20:05	18:39		16:21		15:43
14	09:17	08:15	09:06 (23)	06:59	06:30	05:13	04:28	04:49	05:53	07:02	08:09		08:23		09:20
	16:15	17:28	19 09:25 (23)	18:35	20:47	21:56	22:47	22:35	21:29	20:02	18:36		16:19		15:42
15	09:16	08:13	09:05 (23)	06:56	06:27	05:11	04:28	04:51	05:55	07:04	08:11		08:25		09:21
	16:17	17:31	20 09:25 (23)	18:38	20:49	21:58	22:47	22:34	21:26	20:00	18:34		16:17		15:42
16	09:15	08:10	09:04 (23)	06:53	06:24	05:08	04:27	04:53	05:58	07:06	08:14		08:27		09:22
	16:19	17:33	21 09:25 (23)	18:40	20:51	22:00	22:48	22:32	21:24	19:57	18:31		16:15		15:42
17	09:13	08:08	09:05 (23)	06:50	06:22	05:06	04:27	04:54	06:00	07:09	08:16		08:30		09:23
	16:21	17:36	21 09:26 (23)	18:42	20:54	22:02	22:49	22:31	21:21	19:54	18:28		16:13		15:42
18	09:12	08:05	09:05 (23)	06:47	06:19	05:04	04:27	04:56	06:02	07:11	08:18	09:42 (23)	08:32		09:24
	16:23	17:38	21 09:26 (23)	18:45	20:56	22:04	22:49	22:29	21:19	19:51	18:25	7 09:49 (23)	16:11		15:42
19	09:10	08:02	09:05 (23)	06:44	06:16	05:02	04:27	04:58	06:04	07:13	08:21	09:40 (23)	08:34		09:25
	16:26	17:41	20 09:25 (23)	18:47	20:58	22:06	22:50	22:27	21:16	19:48	18:23	12 09:52 (23)	16:10		15:42
20	09:09	08:00	09:05 (23)	06:42	06:13	05:00	04:27	05:00	06:06	07:15	08:23	09:37 (23)	08:37		09:26
	16:28	17:43	19 09:24 (23)	18:49	21:01	22:08	22:50	22:26	21:13	19:45	18:20	16 09:53 (23)	16:08		15:43
21	09:07	07:57	09:06 (23)	06:39	06:11	04:58	04:27	05:02	06:09	07:17	08:25	09:37 (23)	08:39		09:26
	16:30	17:46	17 09:23 (23)	18:52	21:03	22:10	22:50	22:24	21:10	19:42	18:17	18 09:55 (23)	16:06		15:43
22	09:05	07:54	09:08 (23)	06:36	06:08	04:56	04:27	05:04	06:11	07:20	08:28	09:35 (23)	08:41		09:27
	16:32	17:48	14 09:22 (23)	18:54	21:05	22:12	22:51	22:22	21:08	19:39	18:15	20 09:55 (23)	16:04		15:44
23	09:04	07:52	09:09 (23)	06:33	06:05	04:54	04:27	05:06	06:13	07:22	08:30	09:35 (23)	08:43		09:27
	16:35	17:50	11 09:20 (23)	18:56	21:08	22:14	22:51	22:20	21:05	19:36	18:12	20 09:55 (23)	16:03		15:44
24	09:02	07:49	09:14 (23)	06:30	06:02	04:53	04:28	05:08	06:15	07:24	08:32	09:34 (23)	08:45		09:28
	16:37	17:53	1 09:15 (23)	18:59	21:10	22:16	22:51	22:18	21:02	19:33	18:09	21 09:55 (23)	16:01		15:45
25	09:00	07:46		06:27	06:00	04:51	04:28	05:10	06:18	07:26	07:35	08:34 (23)	08:48		09:28
	16:39	17:55		19:01	21:12	22:18	22:51	22:16	20:59	19:31	17:07	21 08:55 (23)	15:59		15:45
26	08:58	07:44		06:24	05:57	04:49	04:29	05:12	06:20	07:28	07:37	08:35 (23)	08:50		09:28
	16:42	17:58		19:03	21:15	22:20	22:51	22:14	20:57	19:28	17:04	21 08:56 (23)	15:58		15:46
27	08:56	07:41		06:21	05:54	04:47	04:29	05:14	06:22	07:31	07:40	08:34 (23)	08:52		09:29
	16:44	18:00		19:05	21:17	22:22	22:50	22:12	20:54	19:25	17:02	21 08:55 (23)	15:57		15:47
28	08:54	07:38		06:18	05:52	04:46	04:30	05:16	06:24	07:33	07:42	08:35 (23)	08:54		09:29
	16:46	18:02		19:08	21:19	22:24	22:50	22:10	20:51	19:22	16:59	19 08:54 (23)	15:55		15:48
29	08:52			07:16	05:49	04:44	04:30	05:18	06:27	07:35	07:44	08:36 (23)	08:56		09:29
	16:49			20:10	21:21	22:26	22:50	22:08	20:48	19:19	16:56	18 08:54 (23)	15:54		15:49
30	08:50			07:13	05:47	04:43	04:31	05:20	06:29	07:37	07:47	08:37 (23)	08:58		09:28
	16:51			20:12	21:24	22:27	22:49	22:05	20:45	19:16	16:54	15 08:52 (23)	15:53		15:50
31	08:48			07:10		04:41		05:22	06:31		07:49	08:39 (23)			09:28
	16:54			20:15		22:29		22:03	20:43		16:51	12 08:51 (23)			15:51
Potential sun hours	221	260		365	432	521	547	546	478	386	319		236		199
Total, worst case			240									241		8	
Sun reduction			0,50									0,50		0,50	
Oper. time red.			0,80									0,80		0,80	
Wind dir. red.			0,74									0,74		0,74	
Total reduction			0,29									0,29		0,29	
Total, real			71									71		2	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** AF - Buevegen 1496 (32)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February		March	April	May	June	July	August	September	October		November	December
1	09:28	08:46		07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:40		07:52	09:00
	15:53	16:56		18:05	20:17	21:26	22:31	22:49	22:01	20:40	19:13		16:49	15:51
2	09:28	08:44		07:33	07:04	05:41	04:39	04:33	05:26	06:35	07:42		07:54	09:02
	15:54	16:59		18:07	20:19	21:28	22:32	22:48	21:59	20:37	19:10		16:46	15:50
3	09:27	08:41		07:30	07:01	05:39	04:37	04:34	05:29	06:38	07:44		07:56	09:04
	15:56	17:01		18:10	20:21	21:31	22:34	22:47	21:56	20:34	19:07		16:44	15:49
4	09:27	08:39		07:27	06:58	05:36	04:36	04:35	05:31	06:40	07:46		07:59	09:05
	15:57	17:04		18:12	20:24	21:33	22:35	22:47	21:54	20:31	19:05		16:42	15:48
5	09:26	08:37		07:24	06:55	05:34	04:35	04:36	05:33	06:42	07:49		08:01	09:07
	15:59	17:06		18:14	20:26	21:35	22:37	22:46	21:52	20:28	19:02		16:39	15:47
6	09:25	08:35		07:22	06:53	05:31	04:34	04:38	05:35	06:44	07:51		08:04	09:09
	16:00	17:09		18:17	20:28	21:38	22:38	22:45	21:49	20:26	18:59		16:37	15:46
7	09:25	08:32		07:19	06:50	05:29	04:33	04:39	05:37	06:47	07:53		08:06	09:10
	16:02	17:11		18:19	20:31	21:40	22:39	22:44	21:47	20:23	18:56		16:35	15:46
8	09:24	08:30		07:16	06:47	05:27	04:32	04:40	05:40	06:49	07:55		08:08	09:12
	16:04	17:13		18:21	20:33	21:42	22:41	22:43	21:44	20:20	18:53		16:32	15:45
9	09:23	08:28		07:13	06:44	05:24	04:31	04:41	05:42	06:51	07:58		08:11	09:14
	16:05	17:16		18:24	20:35	21:44	22:42	22:42	21:42	20:17	18:50		16:30	15:44
10	09:22	08:25		07:10	06:41	05:22	04:30	04:43	05:44	06:53	08:00		08:13	09:15
	16:07	17:18		18:26	20:38	21:47	22:43	22:41	21:39	20:14	18:48		16:28	15:44
11	09:21	08:23	09:07 (23)	07:07	06:38	05:20	04:30	04:44	05:46	06:55	08:02		08:16	09:16
	16:09	17:21	7 09:14 (23)	18:28	20:40	21:49	22:44	22:39	21:37	20:11	18:45		16:26	15:43
12	09:20	08:20	09:04 (23)	07:05	06:36	05:17	04:29	04:46	05:49	06:58	08:04		08:18	09:18
	16:11	17:23	12 09:16 (23)	18:31	20:42	21:51	22:45	22:38	21:34	20:08	18:42		16:24	15:43
13	09:19	08:18	09:03 (23)	07:02	06:33	05:15	04:28	04:48	05:51	07:00	08:07		08:20	09:19
	16:13	17:26	15 09:18 (23)	18:33	20:44	21:53	22:46	22:37	21:32	20:05	18:39		16:21	15:43
14	09:17	08:15	09:02 (23)	06:59	06:30	05:13	04:28	04:49	05:53	07:02	08:09		08:23	09:20
	16:15	17:28	17 09:19 (23)	18:35	20:47	21:56	22:47	22:35	21:29	20:02	18:36		16:19	15:42
15	09:16	08:13	09:01 (23)	06:56	06:27	05:11	04:28	04:51	05:55	07:04	08:11		08:25	09:21
	16:17	17:31	19 09:20 (23)	18:38	20:49	21:58	22:47	22:34	21:26	20:00	18:34		16:17	15:42
16	09:15	08:10	09:00 (23)	06:53	06:24	05:08	04:27	04:53	05:58	07:06	08:14		08:27	09:22
	16:19	17:33	20 09:20 (23)	18:40	20:51	22:00	22:48	22:32	21:24	19:57	18:31		16:15	15:42
17	09:13	08:08	09:01 (23)	06:50	06:22	05:06	04:27	04:54	06:00	07:09	08:16		08:30	09:23
	16:21	17:36	20 09:21 (23)	18:42	20:54	22:02	22:49	22:31	21:21	19:54	18:28		16:13	15:42
18	09:12	08:05	09:00 (23)	06:47	06:19	05:04	04:27	04:56	06:02	07:11	08:18	09:36 (23)	08:32	09:24
	16:23	17:38	20 09:20 (23)	18:45	20:56	22:04	22:49	22:29	21:19	19:51	18:25	10 09:46 (23)	16:11	15:42
19	09:10	08:02	09:00 (23)	06:44	06:16	05:02	04:27	04:58	06:04	07:13	08:21	09:34 (23)	08:34	09:25
	16:26	17:41	20 09:20 (23)	18:47	20:58	22:06	22:50	22:27	21:16	19:48	18:23	14 09:48 (23)	16:10	15:42
20	09:09	08:00	09:00 (23)	06:42	06:13	05:00	04:27	05:00	06:06	07:15	08:23	09:32 (23)	08:37	09:26
	16:28	17:43	19 09:19 (23)	18:49	21:01	22:08	22:50	22:26	21:13	19:45	18:20	17 09:49 (23)	16:08	15:43
21	09:07	07:57	09:01 (23)	06:39	06:11	04:58	04:27	05:02	06:09	07:17	08:25	09:32 (23)	08:39	09:26
	16:30	17:46	17 09:18 (23)	18:52	21:03	22:10	22:50	22:24	21:10	19:42	18:17	18 09:50 (23)	16:06	15:43
22	09:05	07:55	09:02 (23)	06:36	06:08	04:56	04:27	05:04	06:11	07:20	08:28	09:30 (23)	08:41	09:27
	16:32	17:48	16 09:18 (23)	18:54	21:05	22:12	22:51	22:22	21:08	19:39	18:15	20 09:50 (23)	16:04	15:44
23	09:04	07:52	09:03 (23)	06:33	06:05	04:54	04:27	05:06	06:13	07:22	08:30	09:30 (23)	08:43	09:27
	16:35	17:50	13 09:16 (23)	18:56	21:08	22:14	22:51	22:20	21:05	19:36	18:12	20 09:50 (23)	16:03	15:44
24	09:02	07:49	09:06 (23)	06:30	06:02	04:53	04:28	05:08	06:15	07:24	08:32	09:30 (23)	08:45	09:28
	16:37	17:53	8 09:14 (23)	18:59	21:10	22:16	22:51	22:18	21:02	19:33	18:09	21 09:51 (23)	16:01	15:45
25	09:00	07:46		06:27	06:00	04:51	04:28	05:10	06:18	07:26	07:35	08:30 (23)	08:48	09:28
	16:39	17:55		19:01	21:12	22:18	22:51	22:16	20:59	19:31	17:07	20 08:50 (23)	15:59	15:45
26	08:58	07:44		06:24	05:57	04:49	04:29	05:12	06:20	07:28	07:37	08:30 (23)	08:50	09:28
	16:42	17:58		19:03	21:15	22:20	22:51	22:14	20:57	19:28	17:04	20 08:50 (23)	15:58	15:46
27	08:56	07:41		06:21	05:54	04:47	04:29	05:14	06:22	07:31	07:40	08:30 (23)	08:52	09:29
	16:44	18:00		19:05	21:17	22:22	22:50	22:12	20:54	19:25	17:02	19 08:49 (23)	15:57	15:47
28	08:54	07:38		06:18	05:52	04:46	04:30	05:16	06:24	07:33	07:42	08:31 (23)	08:54	09:29
	16:46	18:02		19:08	21:19	22:24	22:50	22:10	20:51	19:22	16:59	17 08:48 (23)	15:55	15:48
29	08:52			07:16	05:49	04:44	04:31	05:18	06:27	07:35	07:44	08:33 (23)	08:56	09:29
	16:49			20:10	21:21	22:26	22:50	22:08	20:48	19:19	16:56	15 08:48 (23)	15:54	15:49
30	08:50			07:13	05:47	04:43	04:31	05:20	06:29	07:37	07:47	08:34 (23)	08:58	09:28
	16:51			20:12	21:24	22:27	22:49	22:05	20:45	19:16	16:54	11 08:45 (23)	15:53	15:50
31	08:48			07:10		04:41		05:22	06:31		07:49	08:37 (23)		09:28
	16:54			20:15		22:29		22:03	20:43		16:51	6 08:43 (23)		15:51
Potential sun hours	221	260		365	432	521	547	546	478	386	319		236	199
Total, worst case			223									228		
Sun reduction			0,50									0,50		
Oper. time red.			0,80									0,80		
Wind dir. red.			0,74									0,74		
Total reduction			0,29									0,29		
Total, real			66									67		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** AG - Hytte, ikke ferdig bygd. Eiendom 57/3 - Bjerkreim kommune (33)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January		February		March		April		May	June
1	09:28		12:11 (33)	08:45		12:16 (33)	07:35		15:43 (8)	07:07		18:42 (18)	05:44	04:39
	15:52	49	14:26 (15)	16:56	112	15:37 (36)	18:04	25	17:06 (10)	20:16	18	19:00 (18)	21:26	22:30
2	09:27		12:12 (33)	08:43		12:17 (33)	07:32		15:46 (8)	07:04		18:43 (18)	05:41	04:38
	15:54	54	14:28 (15)	16:58	113	15:38 (36)	18:07	35	17:10 (10)	20:19	14	18:57 (18)	21:28	22:32
3	09:27		12:11 (33)	08:41		12:19 (33)	07:30		16:31 (13)	07:01		18:47 (18)	05:38	04:37
	15:55	58	14:29 (15)	17:01	110	15:38 (36)	18:09	38	17:13 (10)	20:21	8	18:55 (18)	21:30	22:33
4	09:26		12:11 (33)	08:39		12:21 (33)	07:27		16:29 (13)	06:58			05:36	04:36
	15:57	61	14:29 (15)	17:03	107	15:39 (36)	18:12	46	17:15 (10)	20:23			21:33	22:35
5	09:26		12:10 (33)	08:36		12:25 (33)	07:24		16:27 (13)	06:55			05:34	04:35
	15:58	66	14:30 (15)	17:06	99	15:39 (36)	18:14	48	17:15 (10)	20:26			21:35	22:36
6	09:25		12:10 (33)	08:34		12:59 (27)	07:21		16:25 (13)	06:52			05:31	04:34
	16:00	70	14:31 (15)	17:08	92	15:39 (36)	18:16	50	17:15 (10)	20:28			21:37	22:38
7	09:24		12:10 (33)	08:32		12:59 (27)	07:18		16:23 (13)	06:49			05:29	04:33
	16:01	73	14:32 (15)	17:11	91	15:38 (36)	18:19	52	17:15 (10)	20:30			21:39	22:39
8	09:23		12:10 (33)	08:30		12:59 (27)	07:15		16:22 (13)	06:46			05:26	04:32
	16:03	78	14:33 (15)	17:13	90	15:38 (36)	18:21	52	17:14 (10)	20:32			21:42	22:40
9	09:22		12:09 (33)	08:27		13:00 (27)	07:13		16:20 (13)	06:44			05:24	04:31
	16:05	81	14:33 (15)	17:16	88	15:38 (36)	18:23	54	17:14 (10)	20:35			21:44	22:41
10	09:21		12:09 (33)	08:25		12:59 (27)	07:10		16:19 (13)	06:41			05:21	04:30
	16:07	84	14:34 (15)	17:18	97	15:58 (8)	18:26	54	17:13 (10)	20:37			21:46	22:42
11	09:20		12:09 (33)	08:22		12:59 (27)	07:07		16:18 (13)	06:38			05:19	04:29
	16:09	87	14:34 (15)	17:20	99	16:00 (8)	18:28	54	17:12 (10)	20:39			21:48	22:44
12	09:19		12:09 (33)	08:20		13:00 (27)	07:04		16:17 (13)	06:35			05:17	04:29
	16:11	91	14:35 (15)	17:23	100	16:03 (8)	18:30	54	17:11 (10)	20:42			21:51	22:44
13	09:18		12:09 (33)	08:17		13:00 (27)	07:01		16:16 (13)	06:32			05:15	04:28
	16:13	93	14:35 (15)	17:25	95	16:04 (8)	18:33	53	17:09 (10)	20:44			21:53	22:45
14	09:17		12:09 (33)	08:15		13:01 (27)	06:58		16:16 (13)	06:29			05:12	04:28
	16:15	96	14:36 (15)	17:28	90	16:05 (8)	18:35	50	17:06 (10)	20:46			21:55	22:46
15	09:16		12:09 (33)	08:12		13:02 (27)	06:56		16:16 (13)	06:27			05:10	04:27
	16:17	99	14:37 (15)	17:30	91	16:07 (8)	18:37	46	17:02 (13)	20:49			21:57	22:47
16	09:14		12:09 (33)	08:10		13:02 (27)	06:53		16:16 (13)	06:24			05:08	04:27
	16:19	101	14:37 (15)	17:33	91	16:07 (8)	18:40	46	17:02 (13)	20:51			21:59	22:48
17	09:13		12:09 (33)	08:07		13:03 (27)	06:50		16:16 (13)	06:21			05:06	04:27
	16:21	103	14:37 (15)	17:35	91	16:08 (8)	18:42	45	17:01 (13)	20:53			22:02	22:48
18	09:11		12:09 (33)	08:05		13:03 (27)	06:47		16:15 (13)	06:18			05:04	04:27
	16:23	104	14:37 (15)	17:38	91	16:08 (8)	18:44	48	17:56 (18)	20:56			22:04	22:49
19	09:10		12:09 (33)	08:02		13:05 (27)	06:44		16:15 (13)	06:16			05:02	04:26
	16:25	105	14:37 (15)	17:40	89	16:09 (8)	18:47	57	18:01 (18)	20:58			22:06	22:49
20	09:08		12:09 (33)	07:59		13:06 (27)	06:41		16:16 (13)	06:13			05:00	04:26
	16:27	107	14:37 (15)	17:43	88	16:09 (8)	18:49	60	18:03 (18)	21:00			22:08	22:50
21	09:07		12:09 (33)	07:57		13:07 (27)	06:38		16:16 (13)	06:10			04:58	04:27
	16:30	106	14:36 (15)	17:45	84	16:08 (8)	18:51	63	18:04 (18)	21:02			22:10	22:50
22	09:05		12:10 (33)	07:54		13:08 (27)	06:35		16:16 (13)	06:07			04:56	04:27
	16:32	106	14:36 (15)	17:48	82	16:08 (8)	18:54	63	18:05 (18)	21:05			22:12	22:50
23	09:03		12:10 (33)	07:51		13:09 (27)	06:32		16:17 (13)	06:05			04:54	04:27
	16:34	105	14:36 (15)	17:50	78	16:07 (8)	18:56	63	18:05 (18)	21:07			22:14	22:50
24	09:01		12:10 (33)	07:49		13:12 (27)	06:30		16:17 (13)	06:02			04:52	04:27
	16:37	106	14:35 (15)	17:52	74	16:08 (8)	18:58	63	18:05 (18)	21:09			22:16	22:50
25	08:59		12:11 (33)	07:46		13:14 (27)	06:27		16:18 (13)	05:59			04:50	04:28
	16:39	104	15:26 (36)	17:55	68	16:07 (8)	19:00	61	18:05 (18)	21:12			22:18	22:50
26	08:58		12:11 (33)	07:43		13:16 (27)	06:24		16:20 (13)	05:57			04:49	04:28
	16:41	103	15:28 (36)	17:57	62	16:06 (8)	19:03	59	18:06 (18)	21:14			22:20	22:50
27	08:56		12:12 (33)	07:41		13:19 (27)	06:21		16:22 (13)	05:54			04:47	04:29
	16:44	108	15:31 (36)	18:00	52	16:04 (8)	19:05	55	18:06 (18)	21:16			22:22	22:50
28	08:54		12:12 (33)	07:38		13:24 (27)	06:18		16:24 (13)	05:51			04:45	04:29
	16:46	111	15:33 (36)	18:02	40	17:03 (10)	19:07	49	18:05 (18)	21:19			22:23	22:50
29	08:52		12:13 (33)				07:15		17:27 (13)	05:49			04:44	04:30
	16:48	112	15:34 (36)				20:10	42	19:04 (18)	21:21			22:25	22:49
30	08:50		12:14 (33)				07:12		17:31 (13)	05:46			04:42	04:31
	16:51	115	15:36 (36)				20:12	32	19:03 (18)	21:23			22:27	22:49
31	08:47		12:15 (33)				07:09		18:41 (18)				04:41	
	16:53	116	15:37 (36)				20:14	20	19:01 (18)				22:29	
Potential sun hours	221			260			365			432			521	547
Total, worst case		2852			2464			1537			40			
Sun reduction		0,50			0,50			0,50			0,50			
Oper. time red.		0,80			0,80			0,80			0,80			
Wind dir. red.		0,59			0,57			0,58			0,61			
Total reduction		0,24			0,23			0,23			0,25			
Total, real		672			561			358			10			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** AG - Hytte, ikke ferdig bygd. Eiendom 57/3 - Bjerkreim kommune (33)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July	August	September			October		November		December		
1	04:32	05:24	06:33			07:39		16:56 (13)	07:51	12:29 (27)	08:59	11:51 (33)
	22:48	22:01	20:39			19:13	53	17:49 (10)	16:49 96	15:27 (8)	15:51 87	14:16 (15)
2	04:33	05:26	06:35			07:41		16:57 (13)	07:53	12:29 (27)	09:01	11:52 (33)
	22:48	21:58	20:37			19:10	54	17:51 (10)	16:46 89	15:07 (36)	15:50 84	14:16 (15)
3	04:34	05:28	06:37			07:44		16:57 (13)	07:56	12:28 (27)	09:03	11:53 (33)
	22:47	21:56	20:34			19:07	54	17:51 (10)	16:44 90	15:07 (36)	15:49 82	14:17 (15)
4	04:35	05:30	06:39			07:46		16:57 (13)	07:58	12:29 (27)	09:05	11:54 (33)
	22:46	21:54	20:31			19:04	54	17:51 (10)	16:41 91	15:08 (36)	15:48 78	14:17 (15)
5	04:36	05:33	06:42			07:48		16:58 (13)	08:01	12:29 (27)	09:07	11:55 (33)
	22:45	21:51	20:28			19:01	54	17:52 (10)	16:39 92	15:09 (36)	15:47 73	14:17 (15)
6	04:37	05:35	06:44			07:50		16:59 (13)	08:03	11:55 (33)	09:08	11:56 (33)
	22:45	21:49	20:25			18:58	52	17:51 (10)	16:37 101	15:09 (36)	15:46 71	14:17 (15)
7	04:38	05:37	06:46			07:53		16:59 (13)	08:06	11:51 (33)	09:10	11:57 (33)
	22:44	21:46	20:22			18:56	51	17:50 (10)	16:34 107	15:09 (36)	15:45 66	14:17 (15)
8	04:40	05:39	06:48			07:55		17:01 (13)	08:08	11:49 (33)	09:12	11:58 (33)
	22:43	21:44	20:19			18:53	49	17:50 (10)	16:32 112	15:09 (36)	15:44 62	14:17 (15)
9	04:41	05:41	06:51		18:41 (18)	07:57		17:02 (13)	08:10	11:48 (33)	09:13	11:59 (33)
	22:41	21:41	20:16	6	18:47 (18)	18:50	47	17:49 (10)	16:30 113	15:09 (36)	15:44 58	14:17 (15)
10	04:42	05:44	06:53		18:37 (18)	07:59		17:04 (13)	08:13	11:46 (33)	09:15	12:01 (33)
	22:40	21:39	20:14	13	18:50 (18)	18:47	43	17:48 (10)	16:27 115	15:08 (36)	15:43 54	14:17 (15)
11	04:44	05:46	06:55		18:35 (18)	08:02		16:24 (8)	08:15	11:46 (33)	09:16	12:01 (33)
	22:39	21:36	20:11	18	18:53 (18)	18:44	37	17:46 (10)	16:25 114	15:08 (36)	15:43 50	14:17 (15)
12	04:45	05:48	06:57		18:33 (18)	08:04		16:18 (8)	08:17	11:46 (33)	09:17	12:03 (33)
	22:38	21:34	20:08	21	18:54 (18)	18:42	26	17:42 (10)	16:23 114	15:08 (36)	15:42 46	14:17 (15)
13	04:47	05:50	06:59		17:24 (13)	08:06		14:04 (27)	08:20	11:44 (33)	09:19	12:04 (33)
	22:36	21:31	20:05	27	18:54 (18)	18:39	30	17:38 (10)	16:21 113	15:06 (36)	15:42 41	14:17 (15)
14	04:49	05:53	07:02		17:18 (13)	08:09		13:55 (27)	08:22	11:44 (33)	09:20	12:06 (33)
	22:35	21:29	20:02	41	18:54 (18)	18:36	44	16:36 (8)	16:19 111	15:05 (36)	15:42 37	14:17 (15)
15	04:50	05:55	07:04		17:14 (13)	08:11		13:50 (27)	08:25	11:44 (33)	09:21	12:08 (33)
	22:33	21:26	19:59	48	18:54 (18)	18:33	57	16:37 (8)	16:17 108	15:03 (36)	15:42 31	14:17 (15)
16	04:52	05:57	07:06		17:11 (13)	08:13		13:47 (27)	08:27	11:45 (33)	09:22	13:08 (27)
	22:32	21:23	19:56	54	18:54 (18)	18:30	64	16:38 (8)	16:15 103	15:02 (36)	15:42 23	14:16 (15)
17	04:54	05:59	07:08		17:08 (13)	08:16		13:44 (27)	08:29	11:44 (33)	09:23	13:09 (27)
	22:30	21:21	19:53	58	18:54 (18)	18:28	70	16:38 (8)	16:13 104	14:59 (36)	15:42 21	14:16 (15)
18	04:56	06:02	07:10		17:07 (13)	08:18		13:42 (27)	08:32	11:44 (33)	09:24	13:11 (27)
	22:29	21:18	19:50	61	18:54 (18)	18:25	76	16:39 (8)	16:11 106	14:09 (15)	15:42 19	14:15 (15)
19	04:58	06:04	07:12		17:05 (13)	08:20		13:39 (27)	08:34	11:45 (33)	09:25	13:12 (27)
	22:27	21:15	19:47	62	18:53 (18)	18:22	81	16:39 (8)	16:09 105	14:11 (15)	15:42 18	14:16 (15)
20	04:59	06:06	07:15		17:04 (13)	08:23		13:38 (27)	08:36	11:45 (33)	09:25	13:13 (27)
	22:25	21:13	19:45	63	18:52 (18)	18:20	83	16:39 (8)	16:07 106	14:11 (15)	15:42 16	14:15 (15)
21	05:01	06:08	07:17		17:02 (13)	08:25		13:36 (27)	08:38	11:45 (33)	09:26	13:15 (27)
	22:23	21:10	19:42	64	18:51 (18)	18:17	86	16:38 (8)	16:06 107	14:13 (15)	15:43 14	14:16 (15)
22	05:03	06:11	07:19		17:01 (13)	08:27		13:35 (27)	08:41	11:45 (33)	09:26	13:16 (27)
	22:21	21:07	19:39	63	18:49 (18)	18:14	89	16:39 (8)	16:04 107	14:13 (15)	15:43 14	14:17 (15)
23	05:05	06:13	07:21		16:59 (13)	08:30		13:34 (27)	08:43	11:46 (33)	09:27	13:15 (27)
	22:19	21:05	19:36	62	18:47 (18)	18:12	89	16:38 (8)	16:02 105	14:14 (15)	15:44 15	14:17 (15)
24	05:07	06:15	07:24		16:59 (13)	08:32		13:33 (27)	08:45	11:46 (33)	09:27	13:15 (27)
	22:18	21:02	19:33	59	18:46 (18)	18:09	92	16:38 (8)	16:01 104	14:14 (15)	15:44 16	14:17 (15)
25	05:09	06:17	07:26		16:58 (13)	07:34		12:33 (27)	08:47	11:47 (33)	09:28	13:14 (27)
	22:16	20:59	19:30	54	18:42 (18)	17:06	92	15:38 (8)	15:59 102	14:15 (15)	15:45 18	14:18 (15)
26	05:11	06:19	07:28		16:58 (13)	07:37		12:31 (27)	08:49	11:47 (33)	09:28	13:13 (27)
	22:14	20:56	19:27	45	17:43 (13)	17:04	92	15:36 (8)	15:58 101	14:15 (15)	15:46 21	14:19 (15)
27	05:13	06:22	07:30		16:57 (13)	07:39		12:31 (27)	08:51	11:48 (33)	09:28	13:13 (27)
	22:11	20:53	19:24	46	17:43 (13)	17:01	91	15:36 (8)	15:56 99	14:16 (15)	15:47 22	14:20 (15)
28	05:15	06:24	07:32		16:57 (13)	07:41		12:30 (27)	08:53	11:48 (33)	09:28	12:15 (33)
	22:09	20:51	19:21	46	17:43 (13)	16:59	90	15:34 (8)	15:55 97	14:16 (15)	15:48 27	14:22 (15)
29	05:17	06:26	07:35		16:57 (13)	07:44		12:30 (27)	08:55	11:50 (33)	09:28	12:13 (33)
	22:07	20:48	19:19	48	17:45 (10)	16:56	96	15:33 (8)	15:53 94	14:16 (15)	15:49 36	14:24 (15)
30	05:20	06:28	07:37		16:56 (13)	07:46		12:30 (27)	08:57	11:50 (33)	09:28	12:13 (33)
	22:05	20:45	19:16	52	17:48 (10)	16:53	99	15:32 (8)	15:52 91	14:16 (15)	15:50 41	14:25 (15)
31	05:22	06:31				07:49		12:29 (27)			09:28	12:12 (33)
	22:03	20:42				16:51	99	15:29 (8)			15:51 45	14:26 (15)
Potential sun hours	546	478	386			319		236		199		
Total, worst case				1011			2094		3097		1286	
Sun reduction				0,50			0,50		0,50		0,50	
Oper. time red.				0,80			0,80		0,80		0,80	
Wind dir. red.				0,59			0,57		0,59		0,59	
Total reduction				0,24			0,23		0,23		0,23	
Total, real				238			474		726		301	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** AH - Brusalivegen 201 (34)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February	March	April	May	June	July	August	September	October	November	December
1	09:28	08:46	07:35	07:07	05:44	04:40	04:32	05:24	06:33	07:39	07:51	09:00
	15:53	16:56	18:05	20:17	21:26	22:30	22:48	22:01	20:40	19:13 22 09:01 (63)	16:49	15:52
2	09:27	08:43	07:33 08:13 (63)	07:04	05:42	04:39	04:33	05:27	06:35	07:42 08:36 (60)	07:54	09:01
	15:54	16:59	18:07 6 08:19 (63)	20:19	21:28	22:32	22:48	21:58	20:37	19:10 25 09:01 (63)	16:47	15:50
3	09:27	08:41	07:30 08:09 (63)	07:01	05:39	04:38	04:34	05:29	06:38	07:44 08:34 (60)	07:56	09:03
	15:56	17:01	18:10 13 08:22 (63)	20:21	21:30	22:33	22:47	21:56	20:34	19:07 27 09:01 (63)	16:44	15:49
4	09:26	08:39	07:27 08:07 (63)	06:58	05:36	04:36	04:35	05:31	06:40	07:46 08:34 (60)	07:59	09:05
	15:57	17:04	18:12 16 08:23 (63)	20:24	21:33	22:35	22:46	21:54	20:31	19:05 28 09:02 (63)	16:42	15:48
5	09:26	08:37	07:24 08:00 (60)	06:55	05:34	04:35	04:37	05:33	06:42	07:48 08:34 (60)	08:01	09:07
	15:59	17:06	18:14 24 08:24 (63)	20:26	21:35	22:36	22:45	21:51	20:28	19:02 28 09:02 (63)	16:39	15:47
6	09:25	08:34	07:21 07:58 (60)	06:53	05:32	04:34	04:38	05:35	06:44	07:51 08:33 (60)	08:03	09:08
	16:00	17:09	18:17 26 08:24 (63)	20:28	21:37	22:38	22:45	21:49	20:25	18:59 28 09:01 (63)	16:37	15:47
7	09:24	08:32	07:19 07:57 (60)	06:50	05:29	04:33	04:39	05:38	06:47	07:53 08:34 (60)	08:06	09:10
	16:02	17:11	18:19 27 08:24 (63)	20:30	21:40	22:39	22:44	21:47	20:23	18:56 27 09:01 (63)	16:35	15:46
8	09:23	08:30	07:16 07:56 (60)	06:47	05:27	04:32	04:40	05:40	06:49	07:55 08:35 (60)	08:08	09:12
	16:04	17:14	18:21 28 08:24 (63)	20:33	21:42	22:40	22:43	21:44	20:20	18:53 25 09:00 (63)	16:32	15:45
9	09:23	08:27	07:13 07:56 (60)	06:44	05:24	04:31	04:42	05:42	06:51	07:57 08:36 (60)	08:11	09:13
	16:06	17:16	18:24 28 08:24 (63)	20:35	21:44	22:41	22:41	21:42	20:17	18:50 22 08:58 (63)	16:30	15:44
10	09:22	08:25	07:10 07:56 (60)	06:41	05:22	04:31	04:43	05:44	06:53	08:00 08:43 (63)	08:13	09:15
	16:07	17:18	18:26 27 08:23 (63)	20:37	21:46	22:43	22:40	21:39	20:14	18:48 14 08:57 (63)	16:28	15:44
11	09:21	08:23	07:07 07:57 (60)	06:38	05:20	04:30	04:45	05:46	06:55	08:02 08:44 (63)	08:15	09:16
	16:09	17:21	18:28 26 08:23 (63)	20:40	21:49	22:44	22:39	21:37	20:11	18:45 10 08:54 (63)	16:26	15:43
12	09:19	08:20	07:04 07:59 (60)	06:36	05:17	04:29	04:46	05:49	06:58	08:04	08:18	09:17
	16:11	17:23	18:31 23 08:22 (63)	20:42	21:51	22:45	22:38	21:34	20:08	18:42	16:24	15:43
13	09:18	08:18	07:02 07:37 (59)	06:33	05:15	04:29	04:48	05:51	07:00 08:12 (62)	08:07	08:20	09:19
	16:13	17:26	18:33 21 08:21 (63)	20:44	21:53	22:45	22:36	21:31	20:05 9 08:21 (62)	18:39	16:22	15:43
14	09:17	08:15	06:59 07:35 (59)	06:30	05:13	04:28	04:49	05:53	07:02 08:10 (62)	08:09	08:22	09:20
	16:15	17:28	18:35 20 08:18 (63)	20:47	21:55	22:46	22:35	21:29	20:02 13 08:23 (62)	18:36	16:19	15:43
15	09:16	08:13	06:56 07:33 (59)	06:27	05:11	04:28	04:51	05:55	07:04 08:08 (62)	08:11	08:25	09:21
	16:17	17:31	18:38 14 08:14 (63)	20:49	21:57	22:47	22:33	21:26	19:59 16 08:24 (62)	18:34	16:17	15:42
16	09:14	08:10	06:53 07:32 (59)	06:24	05:09	04:28	04:53	05:58	07:06 08:08 (62)	08:13 09:01 (61)	08:27	09:22
	16:19	17:33	18:40 12 07:44 (59)	20:51	22:00	22:48	22:32	21:24	19:57 17 08:25 (62)	18:31 9 09:10 (61)	16:15	15:42
17	09:13	08:07	06:50 07:32 (59)	06:22	05:06	04:27	04:54	06:00	07:08 08:07 (62)	08:16 09:00 (61)	08:29	09:23
	16:21	17:36	18:42 12 07:44 (59)	20:53	22:02	22:48	22:30	21:21	19:54 18 08:25 (62)	18:28 12 09:12 (61)	16:13	15:42
18	09:12	08:05 08:36 (61)	06:47 07:32 (59)	06:19	05:04	04:27	04:56	06:02	07:11 08:06 (62)	08:18 08:59 (61)	08:32	09:24
	16:24	17:38 3 08:39 (61)	18:45 11 07:43 (59)	20:56	22:04	22:49	22:29	21:18	19:51 19 08:25 (62)	18:25 13 09:12 (61)	16:12	15:42
19	09:10	08:02 08:33 (61)	06:44 07:26 (62)	06:16	05:02	04:27	04:58	06:04	07:13 08:05 (62)	08:20 08:59 (61)	08:34	09:25
	16:26	17:41 7 08:40 (61)	18:47 16 07:42 (59)	20:58	22:06	22:49	22:27	21:16	19:48 19 08:24 (62)	18:23 14 09:13 (61)	16:10	15:43
20	09:08	08:00 08:30 (61)	06:42 07:23 (62)	06:13	05:00	04:27	05:00	06:07	07:15 08:05 (62)	08:23 08:58 (61)	08:36	09:25
	16:28	17:43 11 08:41 (61)	18:49 17 07:40 (59)	21:00	22:08	22:50	22:25	21:13	19:45 18 08:23 (62)	18:20 14 09:12 (61)	16:08	15:43
21	09:07	07:57 08:27 (61)	06:39 07:21 (62)	06:11	04:58	04:27	05:02	06:09	07:17 08:05 (62)	08:25 08:59 (61)	08:39	09:26
	16:30	17:46 14 08:41 (61)	18:52 15 07:36 (62)	21:03	22:10	22:50	22:23	21:10	19:42 17 08:22 (62)	18:17 13 09:12 (61)	16:06	15:43
22	09:05	07:54 08:27 (61)	06:36 07:20 (62)	06:08	04:56	04:27	05:04	06:11	07:19 08:06 (62)	08:27 09:01 (61)	08:41	09:27
	16:32	17:48 14 08:41 (61)	18:54 17 07:37 (62)	21:05	22:12	22:50	22:22	21:08	19:39 16 08:22 (62)	18:15 10 09:11 (61)	16:04	15:44
23	09:03	07:52 08:28 (61)	06:33 07:19 (62)	06:05	04:55	04:28	05:06	06:13	07:22 08:07 (62)	08:30 09:04 (61)	08:43	09:27
	16:35	17:50 13 08:41 (61)	18:56 19 07:38 (62)	21:07	22:14	22:50	22:20	21:05	19:36 17 08:24 (59)	18:12 6 09:10 (61)	16:03	15:44
24	09:01	07:49 08:28 (61)	06:30 07:19 (62)	06:02	04:53	04:28	05:08	06:15	07:24 08:09 (62)	08:32 09:06 (61)	08:45	09:27
	16:37	17:53 13 08:41 (61)	18:58 19 07:38 (62)	21:10	22:16	22:50	22:18	21:02	19:33 16 08:25 (59)	18:09 2 09:08 (61)	16:01	15:45
25	09:00	07:46 08:29 (61)	06:27 07:18 (62)	06:00	04:51	04:28	05:10	06:18	07:26 08:15 (59)	07:35	08:47	09:28
	16:39	17:55 10 08:39 (61)	19:01 19 07:37 (62)	21:12	22:18	22:50	22:16	20:59	19:30 11 08:26 (59)	17:07	16:00	15:46
26	08:58	07:44 08:30 (61)	06:24 07:18 (62)	05:57	04:49	04:29	05:12	06:20	07:28 08:14 (59)	07:37	08:49	09:28
	16:42	17:58 7 08:37 (61)	19:03 19 07:37 (62)	21:14	22:20	22:50	22:14	20:57	19:28 12 08:26 (59)	17:04	15:58	15:46
27	08:56	07:41	06:21 07:18 (62)	05:54	04:48	04:29	05:14	06:22	07:31 08:14 (59)	07:39	08:52	09:28
	16:44	18:00	19:05 18 07:36 (62)	21:17	22:22	22:50	22:12	20:54	19:25 12 08:26 (59)	17:02	15:57	15:47
28	08:54	07:38	06:18 07:18 (62)	05:52	04:46	04:30	05:16	06:24	07:33 08:14 (59)	07:42	08:54	09:28
	16:47	18:02	19:08 16 07:34 (62)	21:19	22:23	22:50	22:09	20:51	19:22 11 08:25 (59)	16:59	15:55	15:48
29	08:52		07:16 08:19 (62)	05:49	04:44	04:31	05:18	06:27	07:35 08:14 (59)	07:44	08:56	09:28
	16:49		20:10 14 08:33 (62)	21:21	22:25	22:49	22:07	20:48	19:19 19 08:57 (63)	16:56	15:54	15:49
30	08:50		07:13 08:21 (62)	05:47	04:43	04:32	05:20	06:29	07:37 08:15 (59)	07:47	08:58	09:28
	16:51		20:12 9 08:30 (62)	21:24	22:27	22:49	22:05	20:45	19:16 21 08:59 (63)	16:54	15:53	15:50
31	08:48		07:10		04:41		05:22	06:31		07:49		09:28
	16:54		20:14		22:29		22:03	20:43		16:51		15:51
Potential sun hours	222	260	365	432	521	547	545	478	386	319	236	200
Total, worst case		92	532						281	349		
Sun reduction		0,50	0,50						0,50	0,50		
Oper. time red.		0,80	0,80						0,80	0,80		
Wind dir. red.		0,73	0,70						0,69	0,72		
Total reduction		0,29	0,28						0,28	0,29		
Total, real		27	149						78	100		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** AI - Vaule 218 (35)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February			March	April	May			June		
1	09:28			08:45		13:54 (27)	07:35	07:06	05:44			04:39		20:58 (78)
	15:52			16:56	18	14:12 (27)	18:04	20:16	21:26			22:30	7	21:05 (78)
2	09:27			08:43		13:56 (27)	07:32	07:04	05:41			04:38		20:59 (78)
	15:54			16:58	16	14:12 (27)	18:07	20:19	21:28			22:32	5	21:04 (78)
3	09:27			08:41		13:58 (27)	07:29	07:01	05:38			04:37		
	15:55			17:01	11	14:09 (27)	18:09	20:21	21:30			22:33		
4	09:26			08:39			07:27	06:58	05:36			04:36		
	15:57			17:03			18:12	20:23	21:33			22:35		
5	09:26			08:37			07:24	06:55	05:33			04:34		
	15:58			17:06			18:14	20:26	21:35			22:36		
6	09:25			08:34		15:24 (13)	07:21	06:52	05:31			04:33		
	16:00			17:08	6	15:30 (13)	18:16	20:28	21:37			22:38		
7	09:24			08:32		15:21 (13)	07:18	06:49	05:29			04:32		
	16:01			17:11	12	15:33 (13)	18:19	20:30	21:39			22:39		
8	09:23			08:30		15:19 (13)	07:15	06:46	05:26			04:31		
	16:03			17:13	15	15:34 (13)	18:21	20:32	21:42			22:40		
9	09:23			08:27		15:18 (13)	07:13	06:44	05:24			04:31		
	16:05			17:15	18	15:36 (13)	18:23	20:35	21:44			22:41		
10	09:22			08:25		15:17 (13)	07:10	06:41	05:21			04:30		21:27 (80)
	16:07			17:18	20	15:37 (13)	18:26	20:37	21:46			22:43	1	21:28 (80)
11	09:20			08:22		15:16 (13)	07:07	06:38	05:19			04:29		21:26 (80)
	16:09			17:20	21	15:37 (13)	18:28	20:39	21:48			22:44	2	21:28 (80)
12	09:19		13:53 (27)	08:20		15:17 (13)	07:04	06:35	05:17			04:29		21:27 (80)
	16:10	2	13:55 (27)	17:23	21	15:38 (13)	18:30	20:42	21:51			22:45	2	21:29 (80)
13	09:18		13:53 (27)	08:17		15:16 (13)	07:01	06:32	05:15			04:28		21:26 (80)
	16:12	5	13:58 (27)	17:25	22	15:38 (13)	18:33	20:44	21:53			22:45	3	21:29 (80)
14	09:17		13:51 (27)	08:15		15:16 (13)	06:58	06:29	05:12			04:27		21:27 (80)
	16:14	8	13:59 (27)	17:28	22	15:38 (13)	18:35	20:46	21:55			22:46	3	21:30 (80)
15	09:16		13:50 (27)	08:12		15:17 (13)	06:56	06:27	05:10			04:27		21:27 (80)
	16:17	13	14:03 (27)	17:30	21	15:38 (13)	18:37	20:49	21:57			22:47	4	21:31 (80)
16	09:14		13:49 (27)	08:10		15:17 (13)	06:53	06:24	05:08		20:58 (78)	04:27		21:28 (80)
	16:19	19	14:08 (27)	17:33	21	15:38 (13)	18:40	20:51	21:59	4	21:02 (78)	22:48	3	21:31 (80)
17	09:13		11:39 (38)	08:07		15:17 (13)	06:50	06:21	05:06		20:56 (78)	04:27		21:27 (80)
	16:21	27	14:10 (27)	17:35	20	15:37 (13)	18:42	20:53	22:02	8	21:04 (78)	22:48	4	21:31 (80)
18	09:11		11:35 (38)	08:05		15:17 (13)	06:47	06:18	05:04		20:55 (78)	04:26		21:27 (80)
	16:23	33	14:11 (27)	17:38	19	15:36 (13)	18:44	20:56	22:04	10	21:05 (78)	22:49	4	21:31 (80)
19	09:10		11:32 (38)	08:02		15:19 (13)	06:44	06:16	05:02		20:54 (78)	04:26		21:27 (80)
	16:25	36	14:11 (27)	17:40	17	15:36 (13)	18:47	20:58	22:06	11	21:05 (78)	22:49	6	21:34 (80)
20	09:08		11:28 (38)	07:59		15:21 (13)	06:41	06:13	05:00		20:54 (78)	04:26		21:28 (80)
	16:27	43	14:12 (27)	17:43	13	15:34 (13)	18:49	21:00	22:08	13	21:07 (78)	22:50	6	21:35 (80)
21	09:07		11:27 (38)	07:57		15:24 (13)	06:38	06:10	04:58		20:53 (78)	04:26		21:28 (80)
	16:30	44	14:13 (27)	17:45	6	15:30 (13)	18:51	21:02	22:10	14	21:07 (78)	22:50	6	21:35 (80)
22	09:05		11:28 (38)	07:54			06:35	06:07	04:56		20:53 (78)	04:27		21:28 (80)
	16:32	43	14:13 (27)	17:47			18:53	21:05	22:12	14	21:07 (78)	22:50	6	21:35 (80)
23	09:03		11:29 (38)	07:51			06:32	06:05	04:54		20:53 (78)	04:27		21:28 (80)
	16:34	43	14:14 (27)	17:50			18:56	21:07	22:14	14	21:07 (78)	22:50	6	21:35 (80)
24	09:01		11:30 (38)	07:49			06:30	06:02	04:52		20:53 (78)	04:27		21:29 (80)
	16:36	42	14:14 (27)	17:52			18:58	21:09	22:16	14	21:07 (78)	22:50	5	21:36 (80)
25	08:59		11:32 (38)	07:46			06:27	05:59	04:50		20:54 (78)	04:28		21:29 (80)
	16:39	39	14:15 (27)	17:55			19:00	21:12	22:18	14	21:08 (78)	22:50	4	21:33 (80)
26	08:58		11:33 (38)	07:43			06:24	05:57	04:49		20:53 (78)	04:28		21:30 (80)
	16:41	36	14:14 (27)	17:57			19:03	21:14	22:20	14	21:07 (78)	22:50	4	21:34 (80)
27	08:56		11:36 (38)	07:41			06:21	05:54	04:47		20:54 (78)	04:29		21:29 (80)
	16:44	30	14:14 (27)	18:00			19:05	21:16	22:22	13	21:07 (78)	22:50	4	21:33 (80)
28	08:54		13:51 (27)	07:38			06:18	05:51	04:45		20:54 (78)	04:29		21:30 (80)
	16:46	24	14:15 (27)	18:02			19:07	21:19	22:23	12	21:06 (78)	22:50	3	21:33 (80)
29	08:52		13:51 (27)				07:15	05:49	04:44		20:55 (78)	04:30		21:30 (80)
	16:48	23	14:14 (27)				20:10	21:21	22:25	11	21:06 (78)	22:49	2	21:32 (80)
30	08:50		13:52 (27)				07:12	05:46	04:42		20:56 (78)	04:31		21:30 (80)
	16:51	22	14:14 (27)				20:12	21:23	22:27	10	21:06 (78)	22:49	2	21:32 (80)
31	08:48		13:54 (27)				07:09		04:41		20:57 (78)			
	16:53	20	14:14 (27)				20:14		22:29	9	21:06 (78)			
Potential sun hours	221			260			365	432	521			547		
Total, worst case	552			319					185			92		
Sun reduction	0,50			0,50					0,50			0,50		
Oper. time red.	0,80			0,80					0,80			0,80		
Wind dir. red.	0,58			0,55					0,73			0,74		
Total reduction	0,23			0,22					0,29			0,29		
Total, real	128			69					54			27		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** AI - Vaule 218 (35)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July		August		September		October		November		December	
1	04:32		21:31 (80)	05:24	06:33		07:39		07:51		14:47 (13)	08:59
	22:48	1	21:32 (80)	22:01	20:39		19:13		16:48	19	15:06 (13)	15:51
2	04:33		21:31 (80)	05:26	06:35		07:41		07:53		14:48 (13)	09:01
	22:48	1	21:32 (80)	21:58	20:37		19:10		16:46	17	15:05 (13)	15:50
3	04:34		21:31 (80)	05:28	06:37		07:44		07:56		14:48 (13)	09:03
	22:47	1	21:32 (80)	21:56	20:34		19:07		16:44	16	15:04 (13)	15:49
4	04:35			05:30	06:39		07:46		07:58		14:50 (13)	09:05
	22:46			21:54	20:31		19:04		16:41	12	15:02 (13)	15:48
5	04:36			05:33	06:42		07:48		08:01		14:54 (13)	09:07
	22:45			21:51	20:28		19:01		16:39	5	14:59 (13)	15:47
6	04:37			05:35	06:44		07:50		08:03			09:08
	22:45			21:49	20:25		18:58		16:36			15:46
7	04:38			05:37	06:46		07:53		08:06		13:33 (27)	09:10
	22:44			21:46	20:22		18:56		16:34	3	13:36 (27)	15:45
8	04:40			05:39	06:48		07:55		08:08		13:29 (27)	09:12
	22:43			21:44	20:19		18:53		16:32	11	13:40 (27)	15:44
9	04:41			05:41	06:50		07:57		08:10		13:27 (27)	09:13
	22:41			21:41	20:16		18:50		16:30	15	13:42 (27)	15:44
10	04:42		21:08 (78)	05:44	06:53		07:59		08:13		13:25 (27)	09:15
	22:40	3	21:11 (78)	21:39	20:14		18:47		16:27	18	13:43 (27)	15:43
11	04:44		21:06 (78)	05:46	06:55		08:02		08:15		13:24 (27)	09:16
	22:39	6	21:12 (78)	21:36	20:11		18:44		16:25	21	13:45 (27)	15:43
12	04:45		21:05 (78)	05:48	06:57		08:04		08:17		13:24 (27)	09:17
	22:38	8	21:13 (78)	21:34	20:08		18:41		16:23	22	13:46 (27)	15:42
13	04:47		21:05 (78)	05:50	06:59		08:06		08:20		13:23 (27)	09:19
	22:36	9	21:14 (78)	21:31	20:05		18:39		16:21	23	13:46 (27)	15:42
14	04:49		21:04 (78)	05:53	07:01		08:09		08:22		13:23 (27)	09:20
	22:35	11	21:15 (78)	21:29	20:02		18:36		16:19	24	13:47 (27)	15:42
15	04:50		21:04 (78)	05:55	07:04		08:11		08:25		11:08 (38)	09:21
	22:33	12	21:16 (78)	21:26	19:59		18:33		16:17	31	13:47 (27)	15:42
16	04:52		21:03 (78)	05:57	07:06		08:13		08:27		11:06 (38)	09:22
	22:32	13	21:16 (78)	21:23	19:56		18:30		16:15	37	13:48 (27)	15:42
17	04:54		21:03 (78)	05:59	07:08		08:16		08:29		11:05 (38)	09:23
	22:30	13	21:16 (78)	21:21	19:53		18:28		16:13	39	13:48 (27)	15:42
18	04:56		21:03 (78)	06:01	07:10		08:18		08:32		11:04 (38)	09:24
	22:29	13	21:16 (78)	21:18	19:50		18:25		16:11	42	13:48 (27)	15:42
19	04:57		21:03 (78)	06:04	07:12		08:20		08:34		11:04 (38)	09:25
	22:27	14	21:17 (78)	21:15	19:47		18:22		16:09	43	13:49 (27)	15:42
20	04:59		21:03 (78)	06:06	07:15		08:23		08:36		11:03 (38)	09:25
	22:25	14	21:17 (78)	21:13	19:45		18:19		16:07	43	13:48 (27)	15:42
21	05:01		21:03 (78)	06:08	07:17		08:25	15:53 (13)	08:38		11:03 (38)	09:26
	22:23	14	21:17 (78)	21:10	19:42		18:17	9 16:02 (13)	16:06	44	13:49 (27)	15:43
22	05:03		21:03 (78)	06:10	07:19		08:27	15:51 (13)	08:41		11:04 (38)	09:27
	22:21	14	21:17 (78)	21:07	19:39		18:14	13 16:04 (13)	16:04	43	13:48 (27)	15:43
23	05:05		21:04 (78)	06:13	07:21		08:30	15:48 (13)	08:43		11:09 (38)	09:27
	22:20	13	21:17 (78)	21:05	19:36		18:11	17 16:05 (13)	16:02	36	13:48 (27)	15:44
24	05:07		21:05 (78)	06:15	07:23		08:32	15:47 (13)	08:45		11:13 (38)	09:27
	22:18	12	21:17 (78)	21:02	19:33		18:09	19 16:06 (13)	16:01	33	13:49 (27)	15:44
25	05:09		21:04 (78)	06:17	07:26		07:34	14:47 (13)	08:47		11:17 (38)	09:28
	22:16	11	21:15 (78)	20:59	19:30		17:06	20 15:07 (13)	15:59	27	13:48 (27)	15:45
26	05:11		21:05 (78)	06:19	07:28		07:37	14:46 (13)	08:49		13:28 (27)	09:28
	22:14	10	21:15 (78)	20:56	19:27		17:04	21 15:07 (13)	15:57	20	13:48 (27)	15:46
27	05:13		21:07 (78)	06:22	07:30		07:39	14:46 (13)	08:51		13:29 (27)	09:28
	22:11	6	21:13 (78)	20:53	19:24		17:01	22 15:08 (13)	15:56	13	13:42 (27)	15:47
28	05:15			06:24	07:32		07:41	14:45 (13)	08:53		13:30 (27)	09:28
	22:09			20:51	19:21		16:58	22 15:07 (13)	15:55	9	13:39 (27)	15:47
29	05:17			06:26	07:35		07:44	14:45 (13)	08:55		13:34 (27)	09:28
	22:07			20:48	19:18		16:56	22 15:07 (13)	15:53	5	13:39 (27)	15:49
30	05:20			06:28	07:37		07:46	14:46 (13)	08:57		13:34 (27)	09:28
	22:05			20:45	19:16		16:53	21 15:07 (13)	15:52	2	13:36 (27)	15:50
31	05:22			06:31			07:49	14:46 (13)				09:28
	22:03			20:42			16:51	20 15:06 (13)				15:51
Potential sun hours	546			478	386		319		236			199
Total, worst case		199						206		673		
Sun reduction		0,50						0,50		0,50		
Oper. time red.		0,80						0,80		0,80		
Wind dir. red.		0,73						0,55		0,57		
Total reduction		0,29						0,22		0,23		
Total, real		58						45		154		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** AJ - Heiavegen 543 (36)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February	March	April	May	June		July		August	September	October	November	December
1	09:27	08:45	07:35	07:06	05:44	04:40		04:32	20:43 (2)	05:24	06:33	07:39	07:51	08:59
	15:53	16:56	18:04	20:16	21:25	22:30		22:48	2 20:45 (2)	22:00	20:39	19:13	16:49	15:51
2	09:27	08:43	07:32	07:04	05:41	04:38		04:33	20:44 (2)	05:26	06:35	07:41	07:53	09:01
	15:54	16:58	18:07	20:19	21:28	22:31		22:47	1 20:45 (2)	21:58	20:36	19:10	16:46	15:50
3	09:26	08:41	07:29	07:01	05:39	04:37		04:34	20:44 (2)	05:28	06:37	07:43	07:56	09:03
	15:55	17:01	18:09	20:21	21:30	22:33		22:47	1 20:45 (2)	21:56	20:33	19:07	16:44	15:49
4	09:26	08:38	07:27	06:58	05:36	04:36		04:35		05:30	06:39	07:46	07:58	09:05
	15:57	17:03	18:11	20:23	21:32	22:34		22:46		21:53	20:31	19:04	16:41	15:48
5	09:25	08:36	07:24	06:55	05:34	04:35		04:36		05:33	06:42	07:48	08:00	09:06
	15:58	17:06	18:14	20:25	21:35	22:36		22:45		21:51	20:28	19:01	16:39	15:47
6	09:25	08:34	07:21	06:52	05:31	04:34		04:37		05:35	06:44	07:50	08:03	09:08
	16:00	17:08	18:16	20:28	21:37	22:37		22:44		21:48	20:25	18:58	16:37	15:46
7	09:24	08:32	07:18	06:49	05:29	04:33		04:39		05:37	06:46	07:52	08:05	09:10
	16:02	17:11	18:19	20:30	21:39	22:38		22:43		21:46	20:22	18:56	16:34	15:45
8	09:23	08:29	07:15	06:46	05:26	04:32		04:40		05:39	06:48	07:55	08:08	09:11
	16:03	17:13	18:21	20:32	21:41	22:40		22:42		21:44	20:19	18:53	16:32	15:45
9	09:22	08:27	07:12	06:44	05:24	04:31		04:41		05:41	06:50	07:57	08:10	09:13
	16:05	17:16	18:23	20:35	21:44	22:41		22:41		21:41	20:16	18:50	16:30	15:44
10	09:21	08:24	07:10	06:41	05:22	04:30		04:43		05:44	06:53	07:59	08:12	09:14
	16:07	17:18	18:26	20:37	21:46	22:42		22:40		21:39	20:13	18:47	16:27	15:43
11	09:20	08:22	07:07	06:38	05:19	04:29		20:39 (2)	04:44	05:46	06:55	08:01	08:15	09:16
	16:09	17:20	18:28	20:39	21:48	22:43	1	20:40 (2)	22:39	21:36	20:11	18:44	16:25	15:43
12	09:19	08:20	07:04	06:35	05:17	04:29		20:40 (2)	04:46	05:48	06:57	08:04	08:17	09:17
	16:11	17:23	18:30	20:41	21:50	22:44	1	20:41 (2)	22:37	21:34	20:08	18:41	16:23	15:43
13	09:18	08:17	07:01	06:32	05:15	04:28		20:39 (2)	04:47	05:50	06:59	08:06	08:20	09:18
	16:13	17:25	18:33	20:44	21:53	22:45	2	20:41 (2)	22:36	21:31	20:05	18:39	16:21	15:42
14	09:17	08:15	06:58	06:29	05:12	04:28		20:40 (2)	04:49	05:53	07:01	08:08	08:22	09:19
	16:15	17:28	18:35	20:46	21:55	22:46	2	20:42 (2)	22:34	21:28	20:02	18:36	16:19	15:42
15	09:15	08:12	06:55	06:27	05:10	04:27		20:40 (2)	04:51	05:55	07:04	08:11	08:24	09:20
	16:17	17:30	18:37	20:48	21:57	22:47	2	20:42 (2)	22:33	21:26	19:59	18:33	16:17	15:42
16	09:14	08:10	06:53	06:24	05:08	04:27		20:40 (2)	04:52	05:57	07:06	08:13	08:27	09:21
	16:19	17:33	18:40	20:51	21:59	22:47	3	20:43 (2)	22:31	21:23	19:56	18:30	16:15	15:42
17	09:12	08:07	06:50	06:21	05:06	04:27		20:40 (2)	04:54	05:59	07:08	08:15	08:29	09:22
	16:21	17:35	18:42	20:53	22:01	22:48	4	20:44 (2)	22:30	21:20	19:53	18:28	16:13	15:42
18	09:11	08:04	06:47	06:18	05:04	04:27		20:41 (2)	04:56	06:02	07:10	08:18	08:31	09:23
	16:23	17:38	18:44	20:55	22:03	22:48	3	20:44 (2)	22:28	21:18	19:50	18:25	16:11	15:42
19	09:09	08:02	06:44	06:16	05:02	04:27		20:41 (2)	04:58	06:04	07:12	08:20	08:33	09:24
	16:25	17:40	18:46	20:58	22:05	22:49	3	20:44 (2)	22:26	21:15	19:47	18:22	16:09	15:42
20	09:08	07:59	06:41	06:13	05:00	04:27		20:41 (2)	05:00	06:06	07:15	08:22	08:36	09:25
	16:27	17:43	18:49	21:00	22:07	22:49	3	20:44 (2)	22:25	21:12	19:44	18:20	16:07	15:43
21	09:06	07:56	06:38	06:10	04:58	04:27		20:41 (2)	05:01	06:08	07:17	08:25	08:38	09:25
	16:30	17:45	18:51	21:02	22:10	22:49	3	20:44 (2)	22:23	21:10	19:42	18:17	16:06	15:43
22	09:05	07:54	06:35	06:07	04:56	04:27		20:41 (2)	05:03	06:11	07:19	08:27	08:40	09:26
	16:32	17:47	18:53	21:05	22:12	22:50	3	20:44 (2)	22:21	21:07	19:39	18:14	16:04	15:43
23	09:03	07:51	06:32	06:05	04:54	04:27		20:42 (2)	05:05	06:13	07:21	08:29	08:42	09:27
	16:34	17:50	18:56	21:07	22:14	22:50	3	20:45 (2)	22:19	21:04	19:36	18:12	16:02	15:44
24	09:01	07:48	06:29	06:02	04:52	04:27		20:42 (2)	05:07	06:15	07:23	08:32	08:45	09:27
	16:37	17:52	18:58	21:09	22:15	22:50	3	20:45 (2)	22:17	21:02	19:33	18:09	16:01	15:44
25	08:59	07:46	06:27	05:59	04:51	04:28		20:42 (2)	05:09	06:17	07:26	07:34	08:47	09:27
	16:39	17:55	19:00	21:11	22:17	22:50	3	20:45 (2)	22:15	20:59	19:30	17:06	15:59	15:45
26	08:57	07:43	06:24	05:57	04:49	04:28		20:42 (2)	05:11	06:19	07:28	07:36	08:49	09:27
	16:41	17:57	19:03	21:14	22:19	22:50	3	20:45 (2)	22:13	20:56	19:27	17:04	15:58	15:46
27	08:55	07:40	06:21	05:54	04:47	04:29		20:42 (2)	05:13	06:22	07:30	07:39	08:51	09:28
	16:44	18:00	19:05	21:16	22:21	22:49	3	20:45 (2)	22:11	20:53	19:24	17:01	15:56	15:47
28	08:53	07:38	06:18	05:51	04:46	04:30		20:43 (2)	05:15	06:24	07:32	07:41	08:53	09:28
	16:46	18:02	19:07	21:18	22:23	22:49	2	20:45 (2)	22:09	20:50	19:21	16:59	15:55	15:48
29	08:51		07:15	05:49	04:44	04:30		20:43 (2)	05:18	06:26	07:34	07:44	08:55	09:28
	16:49		20:09	21:21	22:25	22:49	2	20:45 (2)	22:07	20:48	19:18	16:56	15:54	15:49
30	08:49		07:12	05:46	04:42	04:31		20:43 (2)	05:20	06:28	07:37	07:46	08:57	09:28
	16:51		20:12	21:23	22:26	22:48	2	20:45 (2)	22:05	20:45	19:16	16:53	15:52	15:50
31	08:47		07:09		04:41				05:22	06:31		07:48		09:27
	16:53		20:14		22:28				22:02	20:42		16:51		15:51
Potential sun hours	222	260	365	432	521	547		545		478	386	319	236	200
Total, worst case							51		4					
Sun reduction							0,50		0,50					
Oper. time red.							0,80		0,80					
Wind dir. red.							0,74		0,74					
Total reduction							0,29		0,29					
Total, real							15		1					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** AK - Heiavegen 541 (37)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February	March	April	May		June		July		August	September	October	November	December
1	09:27	08:45	07:35	07:06	05:44		04:40		20:27 (2)	04:32	20:32 (2)	05:24	06:33	07:39	07:51	08:59
	15:53	16:56	18:04	20:16	21:25		22:30	9	20:36 (2)	22:48	17 20:49 (2)	22:00	20:39	19:13	16:49	15:51
2	09:27	08:43	07:32	07:04	05:41		04:38		20:27 (2)	04:33	20:32 (2)	05:26	06:35	07:41	07:53	09:01
	15:54	16:58	18:07	20:19	21:28		22:31	11	20:38 (2)	22:47	16 20:48 (2)	21:58	20:36	19:10	16:46	15:50
3	09:26	08:41	07:29	07:01	05:39		04:37		20:27 (2)	04:34	20:33 (2)	05:28	06:37	07:43	07:56	09:03
	15:55	17:01	18:09	20:21	21:30		22:33	12	20:39 (2)	22:47	15 20:48 (2)	21:56	20:33	19:07	16:44	15:49
4	09:26	08:38	07:27	06:58	05:36		04:36		20:27 (2)	04:35	20:33 (2)	05:30	06:39	07:46	07:58	09:05
	15:57	17:03	18:11	20:23	21:32		22:34	12	20:39 (2)	22:46	14 20:47 (2)	21:53	20:31	19:04	16:41	15:48
5	09:25	08:36	07:24	06:55	05:34		04:35		20:27 (2)	04:36	20:33 (2)	05:33	06:42	07:48	08:00	09:06
	15:58	17:06	18:14	20:25	21:35		22:36	13	20:40 (2)	22:45	14 20:47 (2)	21:51	20:28	19:01	16:39	15:47
6	09:25	08:34	07:21	06:52	05:31		04:34		20:27 (2)	04:37	20:33 (2)	05:35	06:44	07:50	08:03	09:08
	16:00	17:08	18:16	20:28	21:37		22:37	13	20:40 (2)	22:44	14 20:47 (2)	21:48	20:25	18:58	16:37	15:46
7	09:24	08:32	07:18	06:49	05:29		04:33		20:28 (2)	04:39	20:33 (2)	05:37	06:46	07:52	08:05	09:10
	16:02	17:11	18:19	20:30	21:39		22:38	14	20:42 (2)	22:43	13 20:46 (2)	21:46	20:22	18:56	16:34	15:45
8	09:23	08:29	07:15	06:46	05:26		04:32		20:27 (2)	04:40	20:33 (2)	05:39	06:48	07:55	08:08	09:11
	16:03	17:13	18:21	20:32	21:41		22:40	15	20:42 (2)	22:42	13 20:46 (2)	21:44	20:19	18:53	16:32	15:45
9	09:22	08:27	07:12	06:44	05:24		04:31		20:27 (2)	04:41	20:34 (2)	05:41	06:50	07:57	08:10	09:13
	16:05	17:16	18:23	20:35	21:44		22:41	15	20:42 (2)	22:41	12 20:46 (2)	21:41	20:16	18:50	16:30	15:44
10	09:21	08:24	07:10	06:41	05:22		04:30		20:28 (2)	04:43	20:34 (2)	05:44	06:53	07:59	08:12	09:14
	16:07	17:18	18:26	20:37	21:46		22:42	15	20:43 (2)	22:40	12 20:46 (2)	21:39	20:13	18:47	16:27	15:43
11	09:20	08:22	07:07	06:38	05:19		04:29		20:28 (2)	04:44	20:34 (2)	05:46	06:55	08:01	08:15	09:16
	16:09	17:20	18:28	20:39	21:48		22:43	16	20:44 (2)	22:39	11 20:45 (2)	21:36	20:11	18:44	16:25	15:43
12	09:19	08:20	07:04	06:35	05:17		04:29		20:29 (2)	04:46	20:35 (2)	05:48	06:57	08:04	08:17	09:17
	16:11	17:23	18:30	20:41	21:50		22:44	16	20:45 (2)	22:37	5 20:42 (2)	21:34	20:08	18:41	16:23	15:43
13	09:18	08:17	07:01	06:32	05:15		04:28		20:28 (2)	04:47	20:35 (2)	05:50	06:59	08:06	08:20	09:18
	16:13	17:25	18:33	20:44	21:53		22:45	17	20:45 (2)	22:36	3 20:38 (2)	21:31	20:05	18:39	16:21	15:42
14	09:17	08:15	06:58	06:29	05:12		04:28		20:29 (2)	04:49	20:35 (2)	05:53	07:01	08:08	08:22	09:19
	16:15	17:28	18:35	20:46	21:55		22:46	17	20:46 (2)	22:34	2 20:37 (2)	21:28	20:02	18:36	16:19	15:42
15	09:15	08:12	06:55	06:27	05:10		04:27		20:29 (2)	04:51		05:55	07:04	08:11	08:24	09:20
	16:17	17:30	18:37	20:48	21:57		22:47	18	20:47 (2)	22:33		21:26	19:59	18:33	16:17	15:42
16	09:14	08:10	06:53	06:24	05:08		04:27		20:30 (2)	04:52		05:57	07:06	08:13	08:27	09:21
	16:19	17:33	18:40	20:51	21:59		22:47	17	20:47 (2)	22:31		21:23	19:56	18:30	16:15	15:42
17	09:12	08:07	06:50	06:21	05:06		04:27		20:30 (2)	04:54		05:59	07:08	08:15	08:29	09:22
	16:21	17:35	18:42	20:53	22:01		22:48	18	20:48 (2)	22:30		21:20	19:53	18:28	16:13	15:42
18	09:11	08:04	06:47	06:18	05:04		04:27		20:30 (2)	04:56		06:02	07:10	08:18	08:31	09:23
	16:23	17:38	18:44	20:55	22:03		22:48	18	20:48 (2)	22:28		21:18	19:50	18:25	16:11	15:42
19	09:09	08:02	06:44	06:16	05:02		04:27		20:30 (2)	04:58		06:04	07:12	08:20	08:34	09:24
	16:25	17:40	18:46	20:58	22:05		22:49	19	20:49 (2)	22:26		21:15	19:47	18:22	16:09	15:42
20	09:08	07:59	06:41	06:13	05:00		04:27		20:31 (2)	05:00		06:06	07:15	08:22	08:36	09:25
	16:27	17:43	18:49	21:00	22:07		22:49	18	20:49 (2)	22:25		21:12	19:44	18:19	16:07	15:42
21	09:06	07:56	06:38	06:10	04:58		04:27		20:31 (2)	05:01		06:08	07:17	08:25	08:38	09:25
	16:30	17:45	18:51	21:02	22:10		22:49	18	20:49 (2)	22:23		21:10	19:42	18:17	16:06	15:43
22	09:05	07:54	06:35	06:07	04:56		04:27		20:31 (2)	05:03		06:11	07:19	08:27	08:40	09:26
	16:32	17:47	18:53	21:05	22:12		22:50	18	20:49 (2)	22:21		21:07	19:39	18:14	16:04	15:43
23	09:03	07:51	06:32	06:05	04:54		04:27		20:30 (2)	05:05		06:13	07:21	08:29	08:42	09:27
	16:34	17:50	18:56	21:07	22:14		22:50	19	20:49 (2)	22:19		21:04	19:36	18:11	16:02	15:44
24	09:01	07:48	06:29	06:02	04:52		04:27		20:31 (2)	05:07		06:15	07:23	08:32	08:45	09:27
	16:37	17:52	18:58	21:09	22:15		22:50	19	20:50 (2)	22:17		21:02	19:33	18:09	16:01	15:44
25	08:59	07:46	06:27	05:59	04:51		04:28		20:31 (2)	05:09		06:17	07:26	07:34	08:47	09:27
	16:39	17:55	19:00	21:11	22:17		22:50	18	20:49 (2)	22:15		20:59	19:30	17:06	15:59	15:45
26	08:57	07:43	06:24	05:57	04:49		04:28		20:32 (2)	05:11		06:19	07:28	07:36	08:49	09:27
	16:41	17:57	19:03	21:14	22:19		22:50	18	20:50 (2)	22:13		20:56	19:27	17:04	15:58	15:46
27	08:55	07:40	06:21	05:54	04:47		04:29		20:31 (2)	05:13		06:22	07:30	07:39	08:51	09:28
	16:44	18:00	19:05	21:16	22:21		22:49	18	20:49 (2)	22:11		20:53	19:24	17:01	15:56	15:47
28	08:53	07:38	06:18	05:51	04:46		04:30		20:32 (2)	05:15		06:24	07:32	07:41	08:53	09:28
	16:46	18:02	19:07	21:18	22:23		22:49	17	20:49 (2)	22:09		20:50	19:21	16:59	15:55	15:48
29	08:51		07:15	05:49	04:44		04:30		20:32 (2)	05:18		06:26	07:34	07:44	08:55	09:28
	16:49		20:09	21:21	22:25		22:49	18	20:50 (2)	22:07		20:48	19:18	16:56	15:53	15:49
30	08:49		07:12	05:46	04:42	20:27 (2)	04:31		20:32 (2)	05:20		06:28	07:37	07:46	08:57	09:28
	16:51		20:12	21:23	22:26	2 20:29 (2)	22:48	17	20:49 (2)	22:05		20:45	19:16	16:53	15:52	15:50
31	08:47		07:09		04:41	20:27 (2)				05:22		06:31		07:48		09:27
	16:53		20:14		22:28	3 20:30 (2)				22:02		20:42		16:51		15:51
Potential sun hours	222	260	365	432	521		547			545		478	386	319	236	200
Total, worst case					5		483			161						
Sun reduction					0,50		0,50			0,50						
Oper. time red.					0,80		0,80			0,80						
Wind dir. red.					0,73		0,73			0,73						
Total reduction					0,29		0,29			0,29						
Total, real					1		142			47						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** AL - Buevegen 2100 (38)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January			February	March	April	May	June	July	August	September	October	November			December		
1	09:28		12:55 (13)	08:45	07:35	07:07	05:44	04:39	04:32	05:24	06:33	07:39	07:51			09:00		12:38 (13)
	15:52	16	13:11 (13)	16:56	18:04	20:16	21:26	22:30	22:48	22:01	20:39	19:13	16:48			15:51	20	12:58 (13)
2	09:27		12:55 (13)	08:43	07:32	07:04	05:41	04:38	04:33	05:26	06:35	07:41	07:54			09:01		12:39 (13)
	15:54	16	13:11 (13)	16:58	18:07	20:19	21:28	22:32	22:48	21:58	20:37	19:10	16:46			15:50	20	12:59 (13)
3	09:27		12:55 (13)	08:41	07:30	07:01	05:38	04:37	04:34	05:28	06:37	07:44	07:56			09:03		12:40 (13)
	15:55	17	13:12 (13)	17:01	18:09	20:21	21:30	22:33	22:47	21:56	20:34	19:07	16:44			15:49	20	13:00 (13)
4	09:26		12:55 (13)	08:39	07:27	06:58	05:36	04:36	04:35	05:30	06:39	07:46	07:58			09:05		12:40 (13)
	15:57	17	13:12 (13)	17:03	18:12	20:23	21:33	22:35	22:46	21:54	20:31	19:04	16:41			15:48	20	13:00 (13)
5	09:26		12:55 (13)	08:37	07:24	06:55	05:33	04:34	04:36	05:33	06:42	07:48	08:01			09:07		12:41 (13)
	15:58	18	13:13 (13)	17:06	18:14	20:26	21:35	22:36	22:46	21:51	20:28	19:01	16:39			15:47	19	13:00 (13)
6	09:25		12:55 (13)	08:34	07:21	06:52	05:31	04:33	04:37	05:35	06:44	07:50	08:03			09:09		12:41 (13)
	16:00	19	13:14 (13)	17:08	18:16	20:28	21:37	22:38	22:45	21:49	20:25	18:58	16:36			15:46	19	13:00 (13)
7	09:24		12:55 (13)	08:32	07:18	06:49	05:29	04:32	04:38	05:37	06:46	07:53	08:06			09:10		12:42 (13)
	16:01	20	13:15 (13)	17:11	18:19	20:30	21:40	22:39	22:44	21:46	20:22	18:56	16:34			15:45	18	13:00 (13)
8	09:24		12:56 (13)	08:30	07:16	06:46	05:26	04:31	04:40	05:39	06:48	07:55	08:08			09:12		12:43 (13)
	16:03	19	13:15 (13)	17:13	18:21	20:33	21:42	22:40	22:43	21:44	20:19	18:53	16:32			15:44	18	13:01 (13)
9	09:23		12:55 (13)	08:27	07:13	06:44	05:24	04:31	04:41	05:41	06:51	07:57	08:10			09:13		12:43 (13)
	16:05	20	13:15 (13)	17:16	18:23	20:35	21:44	22:42	22:42	21:42	20:17	18:50	16:30			15:44	17	13:00 (13)
10	09:22		12:56 (13)	08:25	07:10	06:41	05:21	04:30	04:42	05:44	06:53	07:59	08:13			09:15		12:44 (13)
	16:07	20	13:16 (13)	17:18	18:26	20:37	21:46	22:43	22:40	21:39	20:14	18:47	16:27			15:43	16	13:00 (13)
11	09:21		12:57 (13)	08:22	07:07	06:38	05:19	04:29	04:44	05:46	06:55	08:02	08:15			09:16		12:45 (13)
	16:09	20	13:17 (13)	17:20	18:28	20:39	21:49	22:44	22:39	21:36	20:11	18:44	16:25			15:43	16	13:01 (13)
12	09:19		12:57 (13)	08:20	07:04	06:35	05:17	04:29	04:45	05:48	06:57	08:04	08:18			09:17		12:45 (13)
	16:11	20	13:17 (13)	17:23	18:30	20:42	21:51	22:45	22:38	21:34	20:08	18:42	16:23			15:42	16	13:01 (13)
13	09:18		12:57 (13)	08:17	07:01	06:32	05:15	04:28	04:47	05:50	06:59	08:06	08:20			09:19		12:46 (13)
	16:12	20	13:17 (13)	17:25	18:33	20:44	21:53	22:46	22:36	21:31	20:05	18:39	16:21			15:42	15	13:01 (13)
14	09:17		12:58 (13)	08:15	06:58	06:29	05:12	04:28	04:49	05:53	07:02	08:09	08:22			09:20		12:47 (13)
	16:14	20	13:18 (13)	17:28	18:35	20:46	21:55	22:46	22:35	21:29	20:02	18:36	16:19			15:42	14	13:01 (13)
15	09:16		12:58 (13)	08:12	06:56	06:27	05:10	04:27	04:50	05:55	07:04	08:11	08:25			09:21		12:47 (13)
	16:17	20	13:18 (13)	17:30	18:37	20:49	21:57	22:47	22:34	21:26	19:59	18:33	16:17			15:42	14	13:01 (13)
16	09:14		12:58 (13)	08:10	06:53	06:24	05:08	04:27	04:52	05:57	07:06	08:13	08:27			09:22		12:48 (13)
	16:19	20	13:18 (13)	17:33	18:40	20:51	22:00	22:48	22:32	21:23	19:56	18:30	16:15			15:42	13	13:01 (13)
17	09:13		12:59 (13)	08:07	06:50	06:21	05:06	04:27	04:54	05:59	07:08	08:16	08:29			09:23		12:48 (13)
	16:21	19	13:18 (13)	17:35	18:42	20:53	22:02	22:48	22:30	21:21	19:53	18:28	16:13			15:42	14	13:02 (13)
18	09:11		12:59 (13)	08:05	06:47	06:18	05:04	04:26	04:56	06:02	07:10	08:18	08:32			09:24		12:49 (13)
	16:23	19	13:18 (13)	17:38	18:44	20:56	22:04	22:49	22:29	21:18	19:50	18:25	16:11			15:42	13	13:02 (13)
19	09:10		13:01 (13)	08:02	06:44	06:16	05:02	04:26	04:57	06:04	07:13	08:20	08:34		12:41 (13)	09:25		12:50 (13)
	16:25	18	13:19 (13)	17:40	18:47	20:58	22:06	22:49	22:27	21:15	19:48	18:22	16:09	9	12:50 (13)	15:42	12	13:02 (13)
20	09:08		13:02 (13)	07:59	06:41	06:13	05:00	04:26	04:59	06:06	07:15	08:23	08:36		12:39 (13)	09:25		12:51 (13)
	16:27	16	13:18 (13)	17:43	18:49	21:00	22:08	22:50	22:25	21:13	19:45	18:20	16:07	12	12:51 (13)	15:42	12	13:03 (13)
21	09:07		13:02 (13)	07:57	06:38	06:10	04:58	04:26	05:01	06:08	07:17	08:25	08:38		12:38 (13)	09:26		12:51 (13)
	16:30	15	13:17 (13)	17:45	18:51	21:03	22:10	22:50	22:23	21:10	19:42	18:17	16:06	15	12:53 (13)	15:43	12	13:03 (13)
22	09:05		13:04 (13)	07:54	06:35	06:07	04:56	04:27	05:03	06:11	07:19	08:27	08:41		12:38 (13)	09:27		12:52 (13)
	16:32	12	13:16 (13)	17:48	18:54	21:05	22:12	22:50	22:22	21:07	19:39	18:14	16:04	16	12:54 (13)	15:43	12	13:04 (13)
23	09:03		13:06 (13)	07:51	06:33	06:05	04:54	04:27	05:05	06:13	07:21	08:30	08:43		12:37 (13)	09:27		12:52 (13)
	16:34	9	13:15 (13)	17:50	18:56	21:07	22:14	22:50	22:20	21:05	19:36	18:12	16:02	18	12:55 (13)	15:44	12	13:04 (13)
24	09:01			07:49	06:30	06:02	04:52	04:27	05:07	06:15	07:24	08:32	08:45		12:38 (13)	09:28		12:52 (13)
	16:37			17:52	18:58	21:10	22:16	22:50	22:18	21:02	19:33	18:09	16:01	18	12:56 (13)	15:44	12	13:04 (13)
25	09:00			07:46	06:27	05:59	04:50	04:28	05:09	06:17	07:26	07:34	08:47		12:37 (13)	09:28		12:53 (13)
	16:39			17:55	19:00	21:12	22:18	22:50	22:16	20:59	19:30	17:06	15:59	19	12:56 (13)	15:45	13	13:06 (13)
26	08:58			07:43	06:24	05:57	04:49	04:28	05:11	06:19	07:28	07:37	08:49		12:38 (13)	09:28		12:53 (13)
	16:41			17:57	19:03	21:14	22:20	22:50	22:14	20:56	19:27	17:04	15:57	19	12:57 (13)	15:46	13	13:06 (13)
27	08:56			07:41	06:21	05:54	04:47	04:29	05:13	06:22	07:30	07:39	08:52		12:37 (13)	09:28		12:54 (13)
	16:44			18:00	19:05	21:16	22:22	22:50	22:12	20:54	19:24	17:01	15:56	20	12:57 (13)	15:47	13	13:07 (13)
28	08:54			07:38	06:18	05:51	04:45	04:29	05:15	06:24	07:32	07:42	08:54		12:37 (13)	09:28		12:53 (13)
	16:46			18:02	19:07	21:19	22:24	22:50	22:09	20:51	19:21	16:59	15:55	20	12:57 (13)	15:48	14	13:07 (13)
29	08:52				07:15	05:49	04:44	04:30	05:17	06:26	07:35	07:44	08:56		12:38 (13)	09:28		12:54 (13)
	16:48				20:10	21:21	22:25	22:49	22:07	20:48	19:19	16:56	15:53	20	12:58 (13)	15:49	14	13:08 (13)
30	08:50				07:12	05:46	04:42	04:31	05:20	06:28	07:37	07:46	08:58		12:38 (13)	09:28		12:54 (13)
	16:51				20:12	21:23	22:27	22:49	22:05	20:45	19:16	16:53	15:52	20	12:58 (13)	15:50	15	13:09 (13)
31	08:48				07:09		04:41		05:22	06:31		07:49				09:28		12:54 (13)
	16:53				20:14		22:29		22:03	20:42		16:51				15:51	15	13:09 (13)
Potential sun hours	221			260	365	432	521	547	546	478	386	319	236			199		
Total, worst case		410												206			471	
Sun reduction		0,50												0,50			0,50	
Oper. time red.		0,80												0,80			0,80	
Wind dir. red.		0,61												0,61			0,61	
Total reduction		0,24												0,24			0,24	
Total, real		99												50			114	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** AM - Eiendom 121/9 - Hå kommune (39)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February		March	April		May		June	
1	09:28	08:46		07:35	07:07		05:44		07:30 (1)	04:40		06:17 (37)
	15:53	16:56		18:05	20:17		21:26	32	08:02 (1)	22:30	22	06:39 (37)
2	09:27	08:43		07:33	07:04		05:42		07:32 (1)	04:39		06:16 (37)
	15:54	16:59		18:07	20:19		21:28	29	08:01 (1)	22:32	24	06:40 (37)
3	09:27	08:41		07:30	07:01		05:39		07:32 (1)	04:37		06:16 (37)
	15:56	17:01		18:10	20:21		21:31	27	07:59 (1)	22:34	25	06:41 (37)
4	09:26	08:39		07:27	06:58		05:36		07:33 (1)	04:36		06:16 (37)
	15:57	17:04		18:12	20:24		21:33	25	07:58 (1)	22:35	25	06:41 (37)
5	09:26	08:37		07:24	06:55		05:34		07:35 (1)	04:35		06:16 (37)
	15:59	17:06		18:14	20:26		21:35	21	07:56 (1)	22:36	27	06:43 (37)
6	09:25	08:34		07:21	06:53		05:32		07:37 (1)	04:34		06:16 (37)
	16:00	17:09		18:17	20:28		21:37	18	07:55 (1)	22:38	27	06:43 (37)
7	09:24	08:32		07:19	06:50		05:29		07:39 (1)	04:33		06:15 (37)
	16:02	17:11		18:19	20:31		21:40	12	07:51 (1)	22:39	28	06:43 (37)
8	09:24	08:30	09:03 (63)	07:16	06:47		05:27			04:32		06:15 (37)
	16:04	17:14	2 09:05 (63)	18:21	20:33		21:42			22:40	28	06:43 (37)
9	09:23	08:27	09:00 (63)	07:13	06:44		05:24			04:31		06:16 (37)
	16:06	17:16	7 09:07 (63)	18:24	20:35		21:44			22:42	28	06:44 (37)
10	09:22	08:25	08:58 (63)	07:10	06:41	07:48 (1)	05:22			04:31		06:15 (37)
	16:07	17:18	9 09:07 (63)	18:26	20:37	9 07:57 (1)	21:46			22:43	29	06:44 (37)
11	09:21	08:23	08:57 (63)	07:07	06:38	07:46 (1)	05:20			04:30		06:16 (37)
	16:09	17:21	12 09:09 (63)	18:28	20:40	15 08:01 (1)	21:49			22:44	29	06:45 (37)
12	09:20	08:20	08:55 (63)	07:04	06:36	07:42 (1)	05:17			04:29		06:15 (37)
	16:11	17:23	14 09:09 (63)	18:31	20:42	21 08:03 (1)	21:51			22:45	30	06:45 (37)
13	09:18	08:18	08:55 (63)	07:02	06:33	07:38 (1)	05:15			04:29		06:16 (37)
	16:13	17:26	14 09:09 (63)	18:33	20:44	26 08:04 (1)	21:53			22:46	30	06:46 (37)
14	09:17	08:15	08:56 (63)	06:59	06:30	07:35 (1)	05:13			04:28		06:16 (37)
	16:15	17:28	13 09:09 (63)	18:35	20:47	30 08:05 (1)	21:55			22:46	30	06:46 (37)
15	09:16	08:13	08:56 (63)	06:56	06:27	07:34 (1)	05:11			04:28		06:15 (37)
	16:17	17:31	13 09:09 (63)	18:38	20:49	32 08:06 (1)	21:57			22:47	31	06:46 (37)
16	09:14	08:10	08:56 (63)	06:53	06:24	07:33 (1)	05:09			04:28		06:16 (37)
	16:19	17:33	11 09:07 (63)	18:40	20:51	34 08:07 (1)	22:00			22:48	30	06:46 (37)
17	09:13	08:07	08:58 (63)	06:50	06:22	07:32 (1)	05:06			04:27		06:16 (37)
	16:21	17:36	7 09:05 (63)	18:42	20:54	35 08:07 (1)	22:02			22:48	30	06:46 (37)
18	09:12	08:05		06:47	06:19	07:31 (1)	05:04			04:27		06:16 (37)
	16:24	17:38		18:45	20:56	37 08:08 (1)	22:04			22:49	31	06:47 (37)
19	09:10	08:02		06:44	06:16	07:30 (1)	05:02			04:27		06:16 (37)
	16:26	17:41		18:47	20:58	38 08:08 (1)	22:06			22:49	31	06:47 (37)
20	09:08	08:00		06:42	06:13	07:30 (1)	05:00			04:27		06:16 (37)
	16:28	17:43		18:49	21:00	38 08:08 (1)	22:08			22:50	31	06:47 (37)
21	09:07	07:57		06:39	06:11	07:29 (1)	04:58			04:27		06:16 (37)
	16:30	17:46		18:52	21:03	39 08:08 (1)	22:10			22:50	31	06:47 (37)
22	09:05	07:54		06:36	06:08	07:29 (1)	04:56			04:27		06:17 (37)
	16:32	17:48		18:54	21:05	38 08:07 (1)	22:12			22:50	31	06:48 (37)
23	09:03	07:52		06:33	06:05	07:29 (1)	04:55			04:28		06:17 (37)
	16:35	17:50		18:56	21:07	39 08:08 (1)	22:14			22:50	31	06:48 (37)
24	09:02	07:49		06:30	06:02	07:28 (1)	04:53			04:28		06:17 (37)
	16:37	17:53		18:58	21:10	39 08:07 (1)	22:16			22:50	31	06:48 (37)
25	09:00	07:46		06:27	06:00	07:29 (1)	04:51			04:28		06:18 (37)
	16:39	17:55		19:01	21:12	38 08:07 (1)	22:18			22:50	31	06:49 (37)
26	08:58	07:44		06:24	05:57	07:28 (1)	04:49		06:25 (37)	04:29		06:18 (37)
	16:42	17:58		19:03	21:14	38 08:06 (1)	22:20	6	06:31 (37)	22:50	30	06:48 (37)
27	08:56	07:41		06:21	05:54	07:29 (1)	04:48		06:22 (37)	04:29		06:18 (37)
	16:44	18:00		19:05	21:17	37 08:06 (1)	22:22	11	06:33 (37)	22:50	31	06:49 (37)
28	08:54	07:38		06:18	05:52	07:29 (1)	04:46		06:20 (37)	04:30		06:18 (37)
	16:47	18:02		19:08	21:19	36 08:05 (1)	22:24	15	06:35 (37)	22:50	30	06:48 (37)
29	08:52			07:16	05:49	07:30 (1)	04:44		06:20 (37)	04:31		06:19 (37)
	16:49			20:10	21:21	34 08:04 (1)	22:25	17	06:37 (37)	22:49	30	06:49 (37)
30	08:50			07:13	05:47	07:29 (1)	04:43		06:19 (37)	04:31		06:19 (37)
	16:51			20:12	21:24	34 08:03 (1)	22:27	19	06:38 (37)	22:49	30	06:49 (37)
31	08:48			07:10			04:41		06:17 (37)			
	16:54			20:14			22:29	21	06:38 (37)			
Potential sun hours	221	260		365	432		521			547		
Total, worst case			102			687		253			872	
Sun reduction			0,50			0,50		0,50			0,50	
Oper. time red.			0,80			0,80		0,80			0,80	
Wind dir. red.			0,74			0,65		0,62			0,58	
Total reduction			0,29			0,26		0,25			0,23	
Total, real			30			177		63			202	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** AM - Eiendom 121/9 - Hå kommune (39)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July			August			September			October			November			December
1	04:32		06:20 (37)	05:24			06:33		07:45 (1)	07:39			07:51		08:28 (63)	09:00
	22:48	29	06:49 (37)	22:01			20:40	15	08:00 (1)	19:13			16:49	9	08:37 (63)	15:51
2	04:33		06:20 (37)	05:27			06:35		07:47 (1)	07:42			07:54		08:30 (63)	09:01
	22:48	30	06:50 (37)	21:58			20:37	9	07:56 (1)	19:10			16:47	6	08:36 (63)	15:50
3	04:34		06:20 (37)	05:29			06:38			07:44			07:56		08:33 (63)	09:03
	22:47	29	06:49 (37)	21:56			20:34			19:07			16:44	1	08:34 (63)	15:49
4	04:35		06:20 (37)	05:31			06:40			07:46			07:59			09:05
	22:46	29	06:49 (37)	21:54			20:31			19:05			16:42			15:48
5	04:36		06:21 (37)	05:33		07:52 (1)	06:42			07:48			08:01			09:07
	22:46	28	06:49 (37)	21:51	6	07:58 (1)	20:28			19:02			16:39			15:47
6	04:38		06:21 (37)	05:35		07:48 (1)	06:44			07:51			08:03			09:09
	22:45	27	06:48 (37)	21:49	14	08:02 (1)	20:25			18:59			16:37			15:47
7	04:39		06:22 (37)	05:38		07:46 (1)	06:47			07:53			08:06			09:10
	22:44	27	06:49 (37)	21:47	19	08:05 (1)	20:23			18:56			16:35			15:46
8	04:40		06:23 (37)	05:40		07:44 (1)	06:49			07:55			08:08			09:12
	22:43	26	06:49 (37)	21:44	22	08:06 (1)	20:20			18:53			16:32			15:45
9	04:42		06:23 (37)	05:42		07:42 (1)	06:51			07:57			08:11			09:13
	22:42	25	06:48 (37)	21:42	26	08:08 (1)	20:17			18:50			16:30			15:44
10	04:43		06:24 (37)	05:44		07:41 (1)	06:53			08:00			08:13			09:15
	22:40	24	06:48 (37)	21:39	28	08:09 (1)	20:14			18:48			16:28			15:44
11	04:45		06:25 (37)	05:46		07:40 (1)	06:55			08:02			08:15			09:16
	22:39	23	06:48 (37)	21:37	30	08:10 (1)	20:11			18:45			16:26			15:43
12	04:46		06:25 (37)	05:49		07:39 (1)	06:58			08:04			08:18			09:17
	22:38	22	06:47 (37)	21:34	32	08:11 (1)	20:08			18:42			16:24			15:43
13	04:48		06:26 (37)	05:51		07:38 (1)	07:00			08:07			08:20			09:19
	22:36	20	06:46 (37)	21:32	33	08:11 (1)	20:05			18:39			16:22			15:43
14	04:49		06:28 (37)	05:53		07:37 (1)	07:02			08:09			08:22			09:20
	22:35	18	06:46 (37)	21:29	35	08:12 (1)	20:02			18:36			16:19			15:43
15	04:51		06:28 (37)	05:55		07:36 (1)	07:04			08:11			08:25			09:21
	22:34	16	06:44 (37)	21:26	36	08:12 (1)	19:59			18:34			16:17			15:42
16	04:53		06:30 (37)	05:58		07:35 (1)	07:06			08:14			08:27			09:22
	22:32	14	06:44 (37)	21:24	37	08:12 (1)	19:57			18:31			16:15			15:42
17	04:54		06:32 (37)	06:00		07:35 (1)	07:09			08:16			08:29			09:23
	22:30	9	06:41 (37)	21:21	38	08:13 (1)	19:54			18:28			16:13			15:42
18	04:56			06:02		07:35 (1)	07:11			08:18			08:32			09:24
	22:29			21:18	39	08:14 (1)	19:51			18:25			16:12			15:42
19	04:58			06:04		07:35 (1)	07:13			08:21			08:34			09:25
	22:27			21:16	38	08:13 (1)	19:48			18:23			16:10			15:43
20	05:00			06:07		07:35 (1)	07:15			08:23			08:36			09:25
	22:25			21:13	38	08:13 (1)	19:45			18:20			16:08			15:43
21	05:02			06:09		07:34 (1)	07:17			08:25			08:39			09:26
	22:23			21:10	39	08:13 (1)	19:42			18:17			16:06			15:43
22	05:04			06:11		07:34 (1)	07:20			08:28			08:41			09:27
	22:22			21:08	38	08:12 (1)	19:39			18:15			16:04			15:44
23	05:06			06:13		07:34 (1)	07:22			08:30			08:43			09:27
	22:20			21:05	38	08:12 (1)	19:36			18:12			16:03			15:44
24	05:08			06:15		07:34 (1)	07:24			08:32		09:30 (63)	08:45			09:28
	22:18			21:02	37	08:11 (1)	19:33			18:09	3	09:33 (63)	16:01			15:45
25	05:10			06:18		07:34 (1)	07:26			07:35		08:27 (63)	08:47			09:28
	22:16			20:59	36	08:10 (1)	19:30			17:07	9	08:36 (63)	16:00			15:46
26	05:12			06:20		07:34 (1)	07:28			07:37		08:26 (63)	08:50			09:28
	22:14			20:57	35	08:09 (1)	19:28			17:04	12	08:38 (63)	15:58			15:46
27	05:14			06:22		07:35 (1)	07:31			07:39		08:25 (63)	08:52			09:28
	22:12			20:54	33	08:08 (1)	19:25			17:02	13	08:38 (63)	15:57			15:47
28	05:16			06:24		07:35 (1)	07:33			07:42		08:25 (63)	08:54			09:28
	22:10			20:51	32	08:07 (1)	19:22			16:59	14	08:39 (63)	15:55			15:48
29	05:18			06:27		07:36 (1)	07:35			07:44		08:24 (63)	08:56			09:28
	22:07			20:48	30	08:06 (1)	19:19			16:56	14	08:38 (63)	15:54			15:49
30	05:20			06:29		07:39 (1)	07:37			07:47		08:25 (63)	08:58			09:28
	22:05			20:45	26	08:05 (1)	19:16			16:54	13	08:38 (63)	15:53			15:50
31	05:22			06:31		07:42 (1)				07:49		08:26 (63)				09:28
	22:03			20:43	21	08:03 (1)				16:51	12	08:38 (63)				15:51
Potential sun hours	545			478			386			319			236			200
Total, worst case		396			836			24			90			16		
Sun reduction		0,50			0,50			0,50			0,50			0,50		
Oper. time red.		0,80			0,80			0,80			0,80			0,80		
Wind dir. red.		0,58			0,65			0,65			0,74			0,74		
Total reduction		0,23			0,26			0,26			0,29			0,29		
Total, real		92			216			6			26			5		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** AN - Brusalivegen 219 (40)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	January	February		March		April	May		June		
1	09:28	08:46		07:35	08:11 (62)	07:07	05:44		04:40		06:44 (1)
	15:53	16:56		18:05	6 08:17 (62)	20:17	21:26		22:30	33	07:17 (1)
2	09:27	08:43		07:33	08:08 (62)	07:04	05:42	07:06 (1)	04:39		06:44 (1)
	15:54	16:59		18:07	10 08:18 (62)	20:19	21:28	4 07:10 (1)	22:32	33	07:17 (1)
3	09:27	08:41		07:30	08:06 (62)	07:01	05:39	07:04 (1)	04:38		06:45 (1)
	15:56	17:01		18:10	13 08:19 (62)	20:21	21:31	7 07:11 (1)	22:33	31	07:16 (1)
4	09:26	08:39		07:27	08:05 (62)	06:58	05:37	07:02 (1)	04:36		06:45 (1)
	15:57	17:04		18:12	14 08:19 (62)	20:24	21:33	11 07:13 (1)	22:35	31	07:16 (1)
5	09:26	08:37		07:24	08:04 (62)	06:55	05:34	07:00 (1)	04:35		06:47 (1)
	15:59	17:06		18:14	15 08:19 (62)	20:26	21:35	15 07:15 (1)	22:36	30	07:17 (1)
6	09:25	08:34		07:21	08:04 (62)	06:53	05:32	06:59 (1)	04:34		06:47 (1)
	16:00	17:09		18:17	14 08:18 (62)	20:28	21:37	17 07:16 (1)	22:38	29	07:16 (1)
7	09:24	08:32		07:19	08:05 (62)	06:50	05:29	06:56 (1)	04:33		06:47 (1)
	16:02	17:11		18:19	12 08:17 (62)	20:31	21:40	20 07:16 (1)	22:39	29	07:16 (1)
8	09:24	08:30		07:16	08:05 (62)	06:47	05:27	06:54 (1)	04:32		06:48 (1)
	16:04	17:14		18:21	11 08:16 (62)	20:33	21:42	23 07:17 (1)	22:40	27	07:15 (1)
9	09:23	08:27		07:13	08:07 (62)	06:44	05:24	06:52 (1)	04:31		06:49 (1)
	16:06	17:16		18:24	6 08:13 (62)	20:35	21:44	25 07:17 (1)	22:42	27	07:16 (1)
10	09:22	08:25		07:10		06:41	05:22	06:50 (1)	04:31		06:49 (1)
	16:07	17:18		18:26		20:37	21:46	28 07:18 (1)	22:43	26	07:15 (1)
11	09:21	08:23		07:07		06:38	05:20	06:48 (1)	04:30		06:50 (1)
	16:09	17:21		18:28		20:40	21:49	30 07:18 (1)	22:44	25	07:15 (1)
12	09:20	08:20		07:04		06:36	05:17	06:46 (1)	04:29		06:50 (1)
	16:11	17:23		18:31		20:42	21:51	33 07:19 (1)	22:45	24	07:14 (1)
13	09:18	08:18		07:02		06:33	05:15	06:45 (1)	04:29		06:51 (1)
	16:13	17:26		18:33		20:44	21:53	34 07:19 (1)	22:46	24	07:15 (1)
14	09:17	08:15		06:59		06:30	05:13	06:43 (1)	04:28		06:52 (1)
	16:15	17:28		18:35		20:47	21:55	36 07:19 (1)	22:46	23	07:15 (1)
15	09:16	08:13	08:45 (63)	06:56		06:27	05:11	06:41 (1)	04:28		06:51 (1)
	16:17	17:31	5 08:50 (63)	18:38		20:49	21:57	38 07:19 (1)	22:47	23	07:14 (1)
16	09:14	08:10	08:42 (63)	06:53		06:24	05:09	06:40 (1)	04:28		06:52 (1)
	16:19	17:33	10 08:52 (63)	18:40		20:51	22:00	39 07:19 (1)	22:48	22	07:14 (1)
17	09:13	08:07	08:40 (63)	06:50		06:22	05:06	06:39 (1)	04:27		06:52 (1)
	16:21	17:36	12 08:52 (63)	18:42		20:54	22:02	40 07:19 (1)	22:48	22	07:14 (1)
18	09:12	08:05	08:40 (63)	06:47		06:19	05:04	06:40 (1)	04:27		06:53 (1)
	16:24	17:38	14 08:54 (63)	18:45		20:56	22:04	40 07:20 (1)	22:49	21	07:14 (1)
19	09:10	08:02	08:39 (63)	06:44		06:16	05:02	06:40 (1)	04:27		06:53 (1)
	16:26	17:41	15 08:54 (63)	18:47		20:58	22:06	40 07:20 (1)	22:49	21	07:14 (1)
20	09:08	08:00	08:39 (63)	06:42		06:13	05:00	06:40 (1)	04:27		06:53 (1)
	16:28	17:43	15 08:54 (63)	18:49		21:00	22:08	40 07:20 (1)	22:50	21	07:14 (1)
21	09:07	07:57	08:39 (63)	06:39		06:11	04:58	06:40 (1)	04:27		06:53 (1)
	16:30	17:46	14 08:53 (63)	18:52		21:03	22:10	39 07:19 (1)	22:50	21	07:14 (1)
22	09:05	07:54	08:39 (63)	06:36		06:08	04:56	06:40 (1)	04:27		06:54 (1)
	16:32	17:48	13 08:52 (63)	18:54		21:05	22:12	40 07:20 (1)	22:50	21	07:15 (1)
23	09:03	07:52	08:41 (63)	06:33		06:05	04:55	06:40 (1)	04:28		06:54 (1)
	16:35	17:50	11 08:52 (63)	18:56		21:07	22:14	39 07:19 (1)	22:50	21	07:15 (1)
24	09:02	07:49	08:42 (63)	06:30		06:02	04:53	06:41 (1)	04:28		06:54 (1)
	16:37	17:53	8 08:50 (63)	18:58		21:10	22:16	38 07:19 (1)	22:50	21	07:15 (1)
25	09:00	07:46		06:27		06:00	04:51	06:41 (1)	04:28		06:55 (1)
	16:39	17:55		19:01		21:12	22:18	38 07:19 (1)	22:50	21	07:16 (1)
26	08:58	07:44		06:24		05:57	04:49	06:42 (1)	04:29		06:54 (1)
	16:42	17:58		19:03		21:14	22:20	37 07:19 (1)	22:50	22	07:16 (1)
27	08:56	07:41		06:21		05:54	04:48	06:41 (1)	04:29		06:54 (1)
	16:44	18:00		19:05		21:17	22:22	37 07:18 (1)	22:50	23	07:17 (1)
28	08:54	07:38		06:18		05:52	04:46	06:42 (1)	04:30		06:54 (1)
	16:47	18:02		19:08		21:19	22:24	36 07:18 (1)	22:50	23	07:17 (1)
29	08:52			07:16		05:49	04:44	06:43 (1)	04:31		06:54 (1)
	16:49			20:10		21:21	22:25	35 07:18 (1)	22:49	24	07:18 (1)
30	08:50			07:13		05:47	04:43	06:43 (1)	04:32		06:54 (1)
	16:51			20:12		21:24	22:27	35 07:18 (1)	22:49	24	07:18 (1)
31	08:48			07:10			04:41	06:43 (1)			
	16:54			20:14			22:29	34 07:17 (1)			
Potential sun hours	221	260		365		432	521		547		
Total, worst case			117		101			928		743	
Sun reduction			0,50		0,50			0,50		0,50	
Oper. time red.			0,80		0,80			0,80		0,80	
Wind dir. red.			0,74		0,72			0,59		0,59	
Total reduction			0,29		0,29			0,24		0,24	
Total, real			34		29			220		176	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Project:
Moifjellet vindkraftverk

Licensed user:
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+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
20.01.2025 16:22/4.0.540

SHADOW - Calendar

Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker **Shadow receptor:** AN - Brusalivegen 219 (40)

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
644	231	315	644	959	714	721	455	378	420	574	938	6 993

	July		August		September	October		November	December
1	04:32		05:24		06:33	07:39		07:51	09:00
	22:48	25	07:19 (1)	22:01	32	07:29 (1)	20:40	19:13	16:49	15:52
2	04:33		05:27		06:35	07:42		07:54	09:01
	22:48	26	07:20 (1)	21:58	30	07:29 (1)	20:37	19:10	16:47	15:50
3	04:34		05:29		06:38	07:44		07:56	09:03
	22:47	27	07:20 (1)	21:56	27	07:28 (1)	20:34	19:07	16:44	15:49
4	04:35		05:31		06:40	07:46		07:59	09:05
	22:46	27	07:20 (1)	21:54	24	07:27 (1)	20:31	19:05	16:42	15:48
5	04:37		05:33		06:42	07:48		08:43 (62)	08:01	09:07
	22:46	28	07:21 (1)	21:51	22	07:27 (1)	20:28	19:02	9	08:52 (62)	16:39	15:47
6	04:38		05:35		07:07 (1)	06:44	07:51		08:41 (62)	08:03	09:09
	22:45	28	07:22 (1)	21:49	19	07:26 (1)	20:25	18:59	12	08:53 (62)	16:37	15:47
7	04:39		05:38		07:09 (1)	06:47	07:53		08:41 (62)	08:06	09:10
	22:44	30	07:23 (1)	21:47	16	07:25 (1)	20:23	18:56	13	08:54 (62)	16:35	15:46
8	04:40		05:40		07:10 (1)	06:49	07:55		08:40 (62)	08:08	09:12
	22:43	30	07:23 (1)	21:44	13	07:23 (1)	20:20	18:53	14	08:54 (62)	16:32	15:45
9	04:42		05:42		07:12 (1)	06:51	07:57		08:39 (62)	08:11	09:13
	22:42	32	07:24 (1)	21:42	10	07:22 (1)	20:17	18:50	15	08:54 (62)	16:30	15:44
10	04:43		05:44		07:14 (1)	06:53	08:00		08:40 (62)	08:13	09:15
	22:40	32	07:24 (1)	21:39	6	07:20 (1)	20:14	18:48	14	08:54 (62)	16:28	15:44
11	04:45		05:46		07:15 (1)	06:55	08:02		08:40 (62)	08:15	09:16
	22:39	33	07:25 (1)	21:37	3	07:18 (1)	20:11	18:45	12	08:52 (62)	16:26	15:43
12	04:46		05:49			06:58	08:04		08:42 (62)	08:18	09:17
	22:38	34	07:26 (1)	21:34			20:08	18:42	8	08:50 (62)	16:24	15:43
13	04:48		05:51			07:00	08:07		08:45 (62)	08:20	09:19
	22:36	35	07:26 (1)	21:32			20:05	18:39	4	08:49 (62)	16:22	15:43
14	04:49		05:53			07:02	08:09			08:22	09:20
	22:35	35	07:27 (1)	21:29			20:02	18:36			16:19	15:43
15	04:51		05:55			07:04	08:11			08:25	09:21
	22:34	36	07:27 (1)	21:26			19:59	18:34			16:17	15:42
16	04:53		05:58			07:06	08:14			08:27	09:22
	22:32	37	07:28 (1)	21:24			19:57	18:31			16:15	15:42
17	04:54		06:00			07:09	08:16		09:16 (63)	08:29	09:23
	22:30	38	07:28 (1)	21:21			19:54	18:28	3	09:19 (63)	16:13	15:42
18	04:56		06:02			07:11	08:18		09:12 (63)	08:32	09:24
	22:29	37	07:28 (1)	21:18			19:51	18:25	10	09:22 (63)	16:12	15:42
19	04:58		06:04			07:13	08:21		09:11 (63)	08:34	09:25
	22:27	38	07:29 (1)	21:16			19:48	18:23	12	09:23 (63)	16:10	15:43
20	05:00		06:07			07:15	08:23		09:10 (63)	08:36	09:25
	22:25	39	07:29 (1)	21:13			19:45	18:20	14	09:24 (63)	16:08	15:43
21	05:02		06:09			07:17	08:25		09:10 (63)	08:39	09:26
	22:23	39	07:29 (1)	21:10			19:42	18:17	14	09:24 (63)	16:06	15:43
22	05:04		06:11			07:19	08:28		09:09 (63)	08:41	09:27
	22:22	39	07:30 (1)	21:08			19:39	18:15	15	09:24 (63)	16:04	15:44
23	05:06		06:13			07:22	08:30		09:09 (63)	08:43	09:27
	22:20	39	07:29 (1)	21:05			19:36	18:12	15	09:24 (63)	16:03	15:44
24	05:08		06:15			07:24	08:32		09:09 (63)	08:45	09:28
	22:18	40	07:30 (1)	21:02			19:33	18:09	14	09:23 (63)	16:01	15:45
25	05:10		06:18			07:26	07:35		08:10 (63)	08:47	09:28
	22:16	40	07:30 (1)	20:59			19:30	17:07	12	08:22 (63)	16:00	15:46
26	05:12		06:20			07:28	07:37		08:13 (63)	08:49	09:28
	22:14	40	07:30 (1)	20:57			19:28	17:04	8	08:21 (63)	15:58	15:46
27	05:14		06:22			07:31	07:39		08:15 (63)	08:52	09:28
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28	05:16		06:24			07:33	07:42			08:54	09:28
	22:10	40	07:31 (1)	20:51			19:22	16:59			15:55	15:48
29	05:18		06:27			07:35	07:44			08:56	09:28
	22:07	38	07:30 (1)	20:48			19:19	16:56			15:54	15:49
30	05:20		06:29			07:37	07:47			08:58	09:28
	22:05	35	07:29 (1)	20:45			19:16	16:54			15:53	15:50
31	05:22		06:31					07:49				09:28
	22:03	33	07:29 (1)	20:43				16:51				15:51
Potential sun hours	545		478			386	319		236	200		
Total, worst case		1069		202				221				
Sun reduction		0,50		0,50				0,50				
Oper. time red.		0,80		0,80				0,80				
Wind dir. red.		0,59		0,59				0,73				
Total reduction		0,24		0,24				0,29				
Total, real		254		48				64				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Vedlegg 4.2

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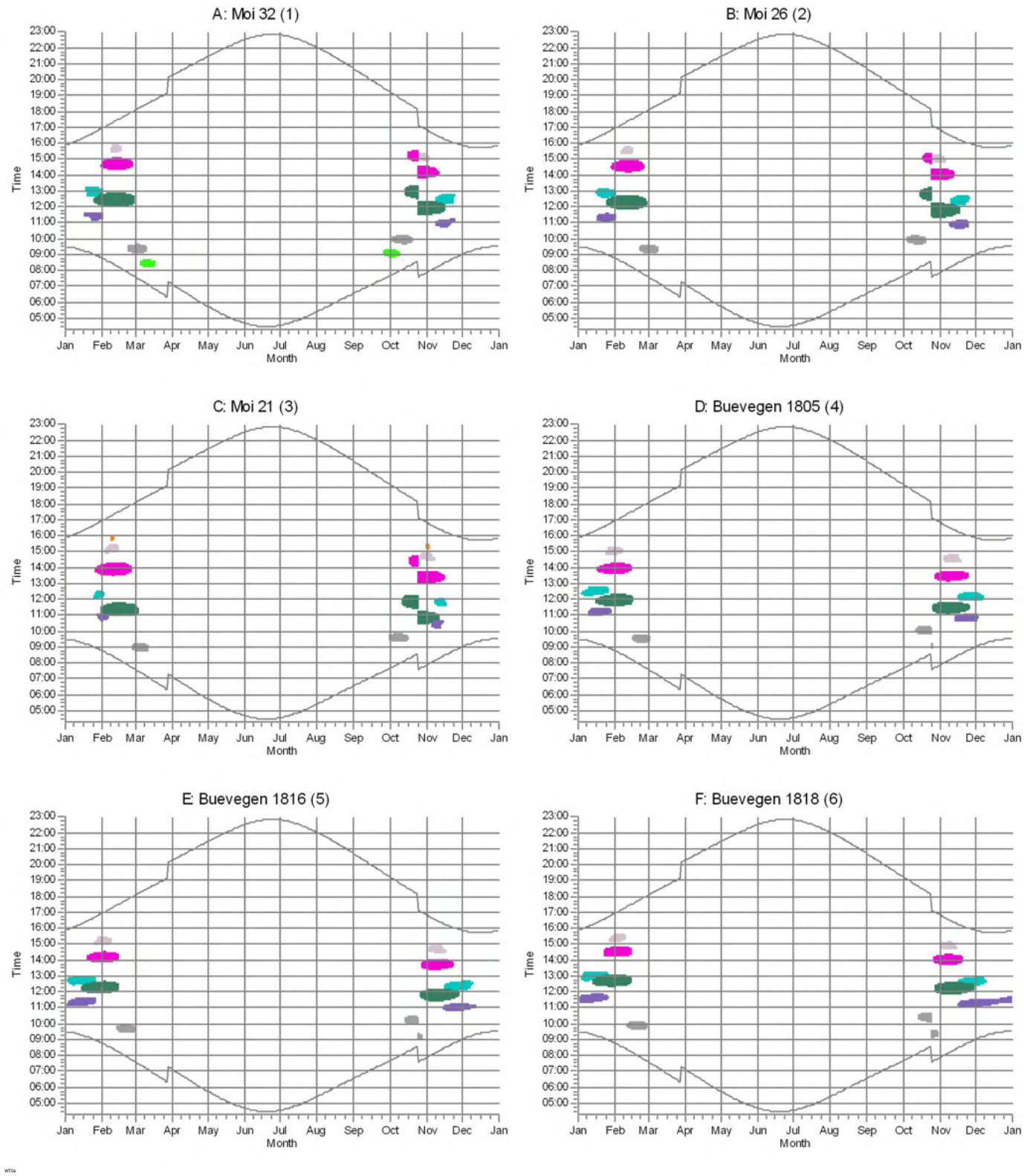
Calculation: Oppdatert layout - real case med vindrose - med nærliggende - oppdatert mottaker



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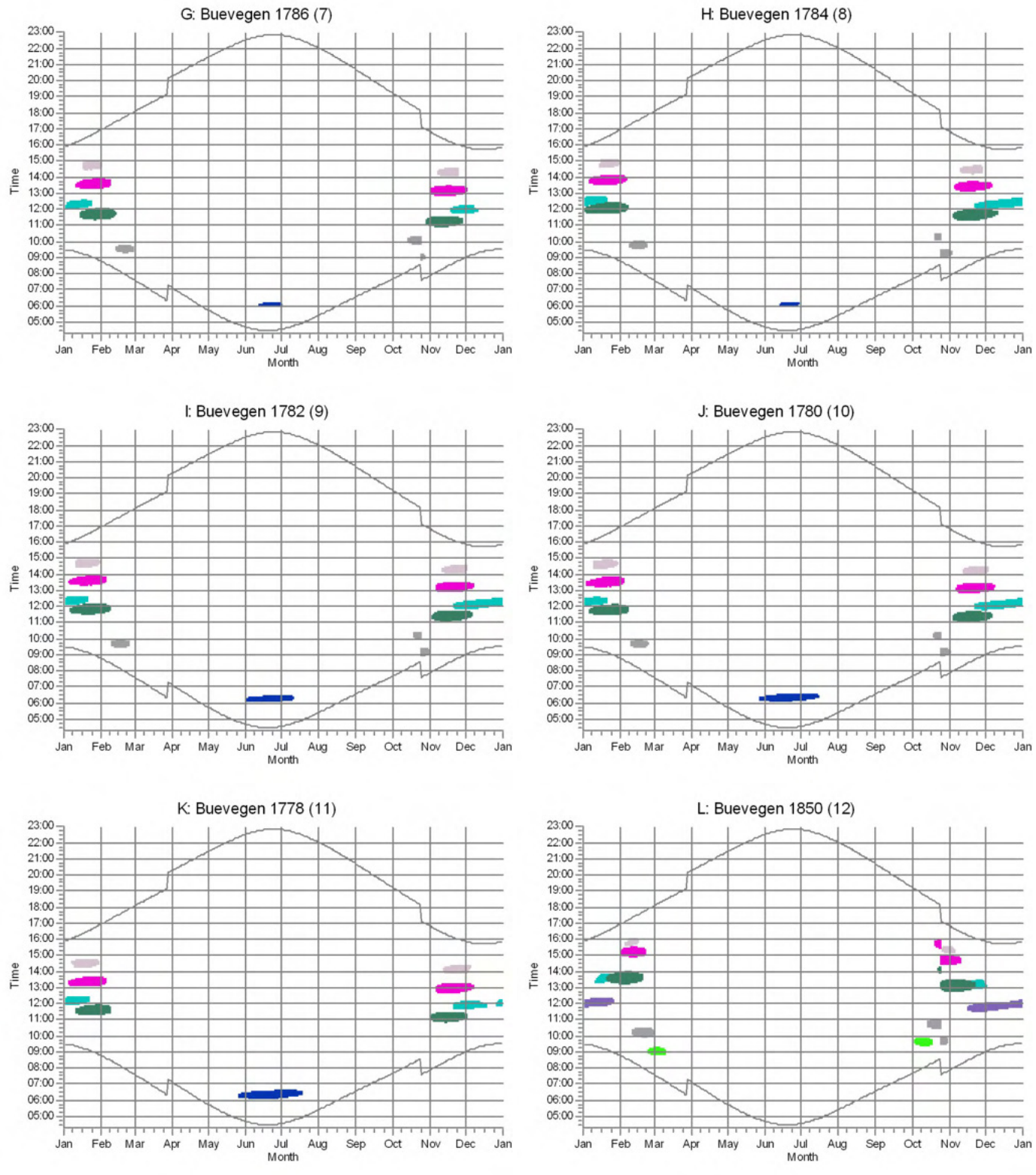

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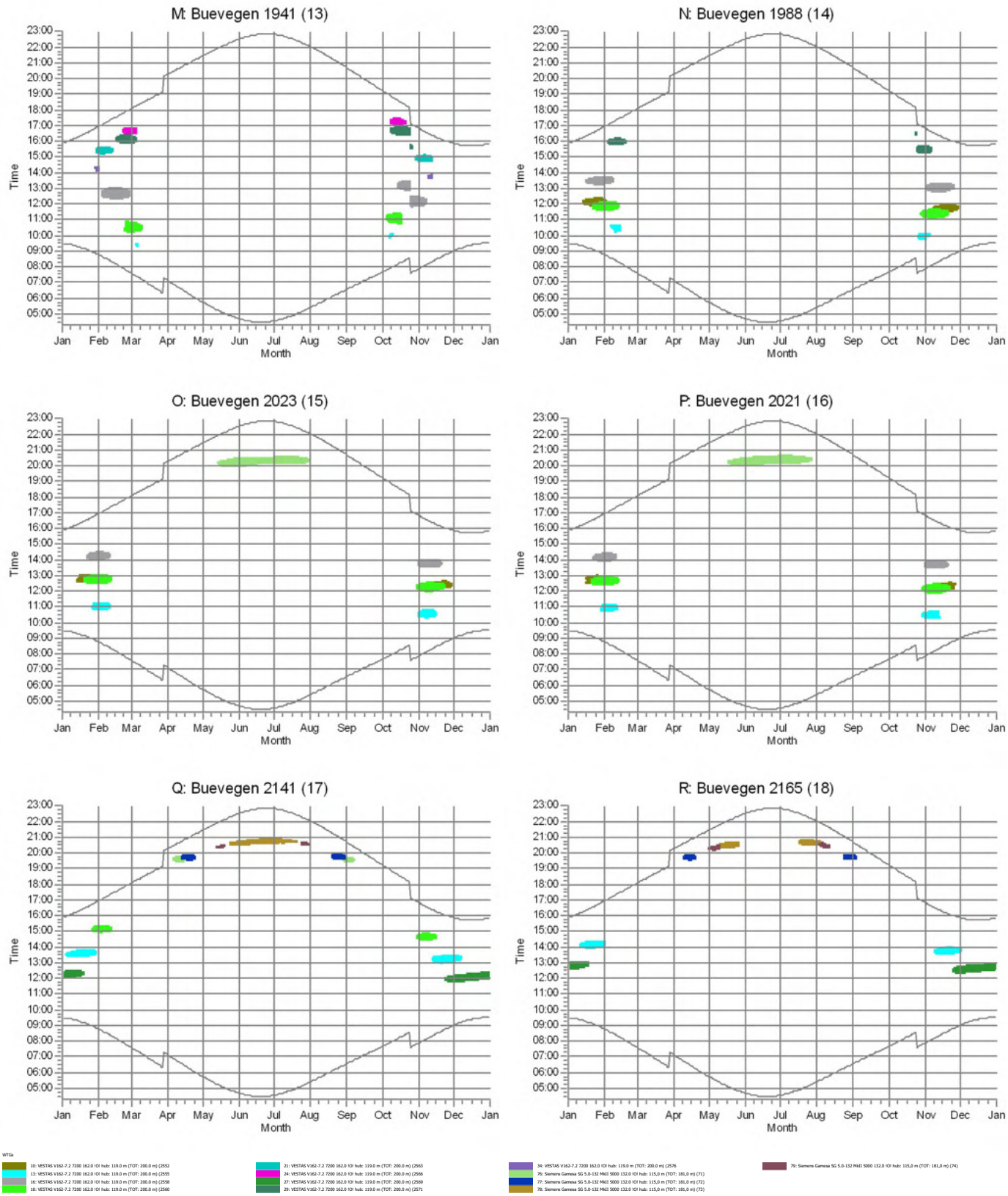

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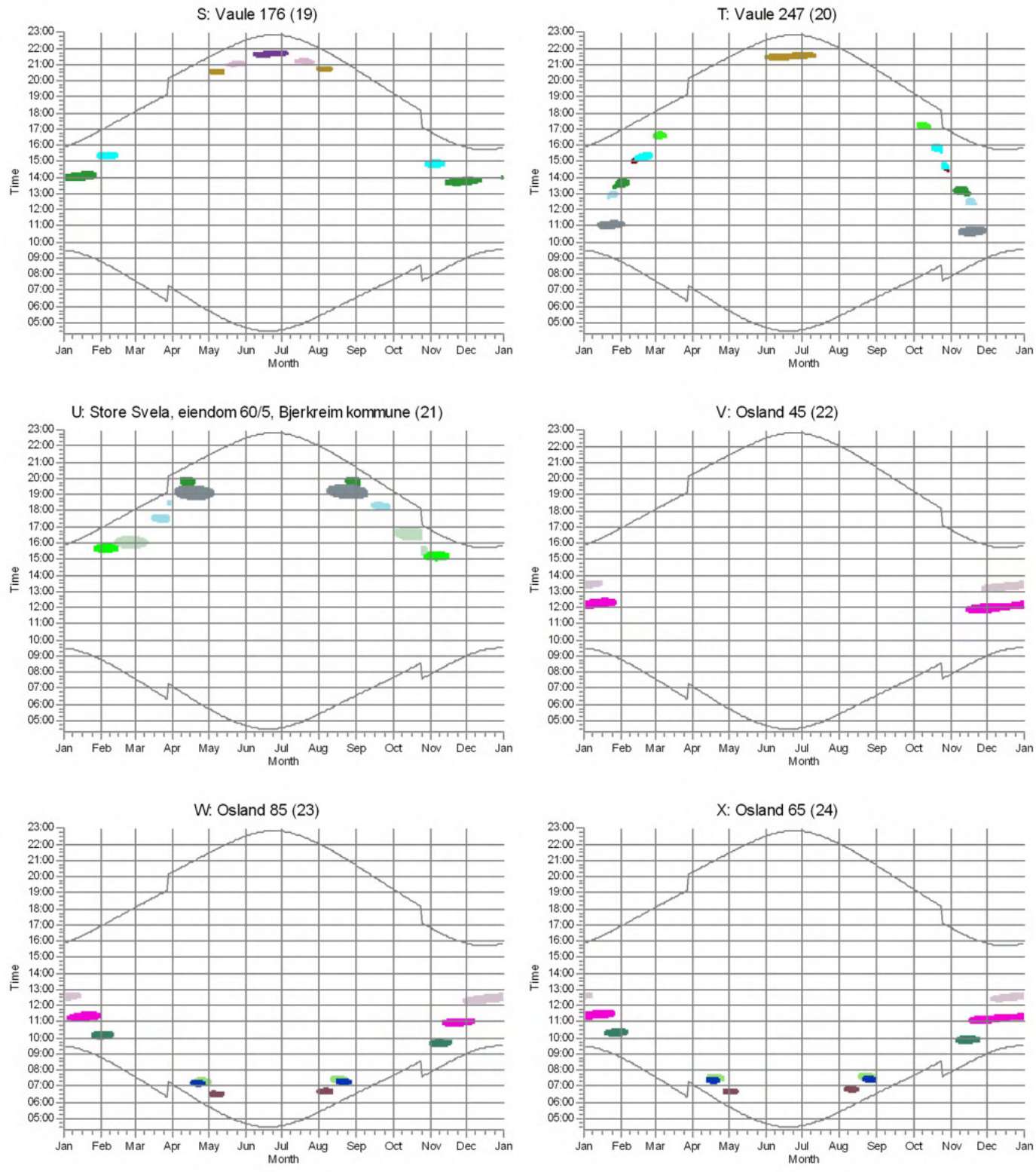

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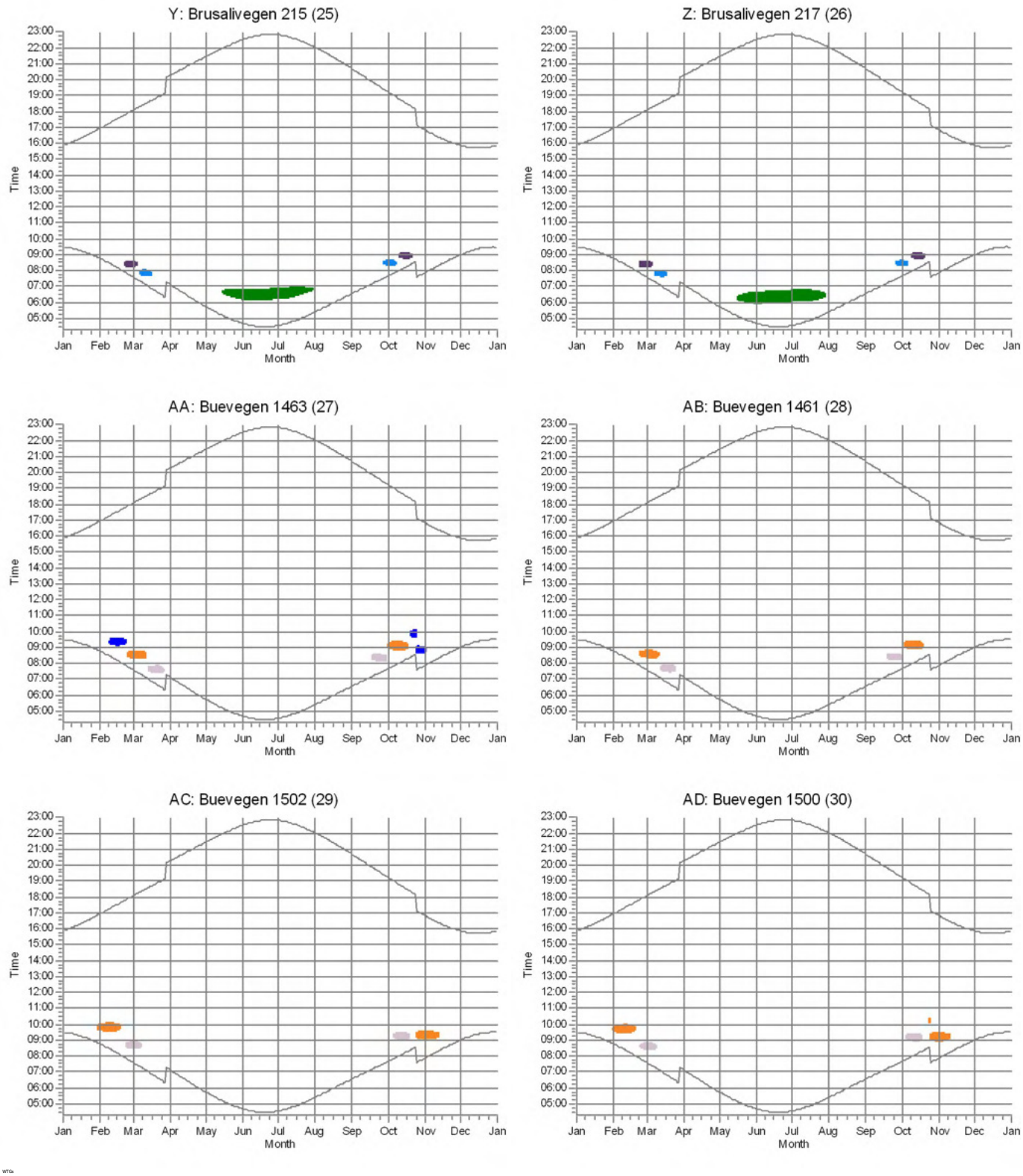

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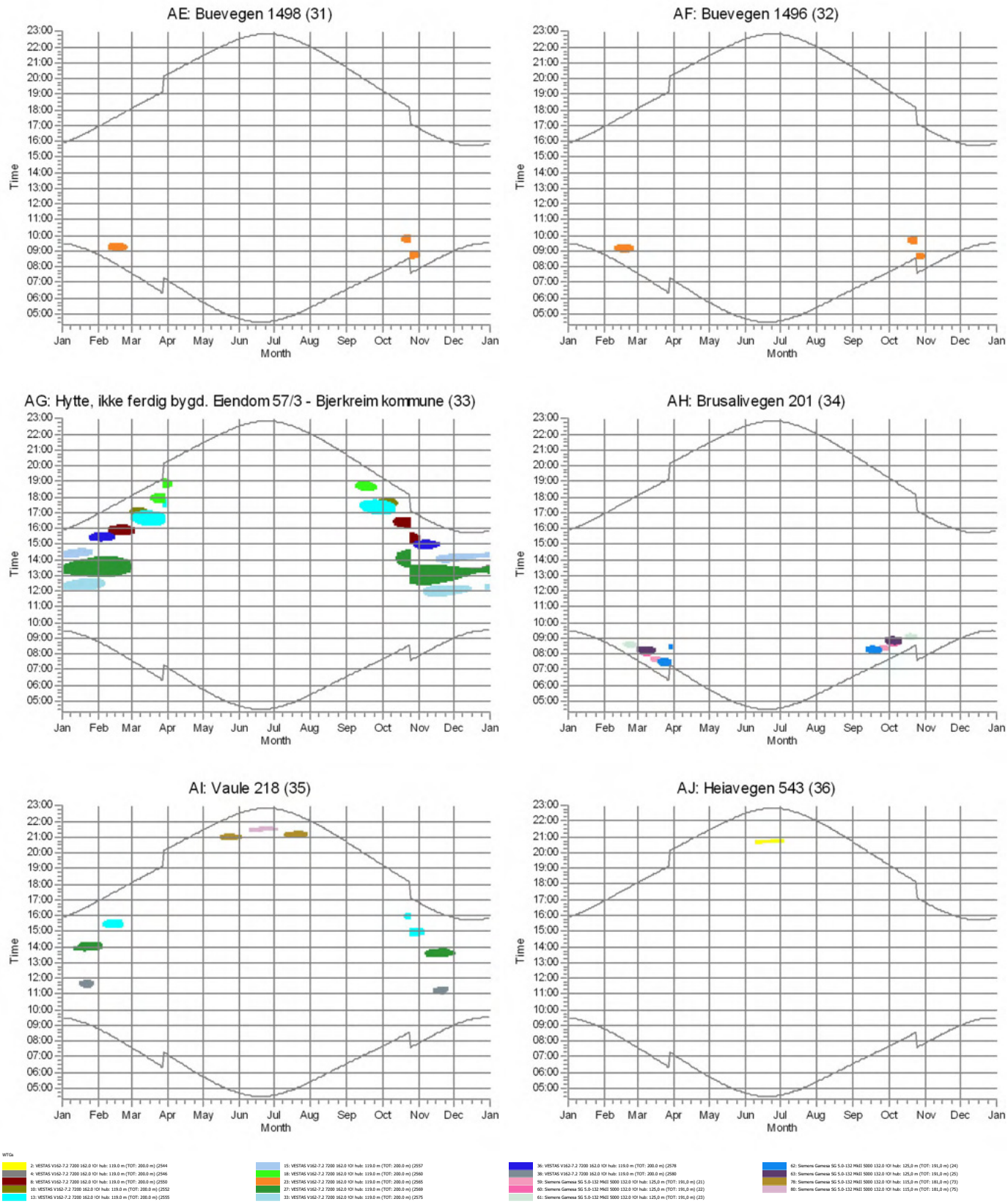

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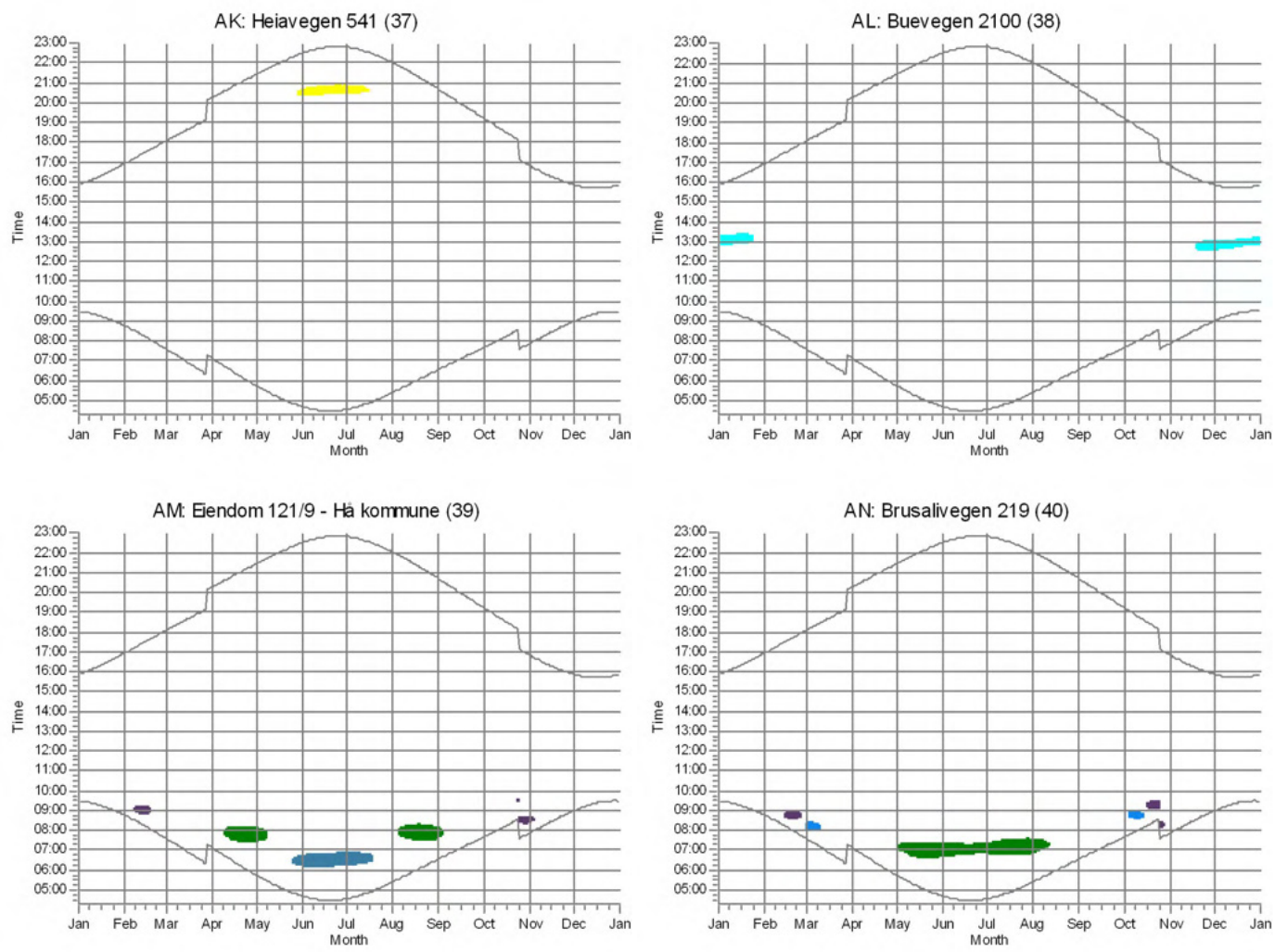

Fagrapport:

Eiendomsverdi

Utarbeidet på oppdrag fra Statkraft

Effekt på boligverdier ved etablering av Moifjellet vindkraftverk

oslo**economics**

Tittel: Effekt på boligverdier ved etablering av Moifjellet vindkraftverk
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Sammendrag

Vi har ved hjelp av en Delphi-undersøkelse analysert forventet effekt på boligverdier for primær- og fritidsboliger som berøres av etablering av vindkraftverk på Moifjellet. Estimatene viser forventede fall i boligverdi på mellom 3 og 26 prosent, og er avhengig av type bolig, hvordan boligene påvirkes av vindkraftverkene, og i hvilken grad de allerede er påvirket av eksisterende vindkraftverk i området. For boliger som både får økt støy, skyggekast og utsyn til turbinene på Moifjellet, er det estimerte verditapet på mellom 20 og 26 prosent. For boliger som kun får utsyn til vindturbinene er det estimerte verditapet mellom 3 og 15 prosent. Verditapet reduseres ettersom avstanden til vindkraftverket øker og påvirkningen avtar, og for primærboliger som ligger 6 til 10 kilometer fra vindkraftverket er det ikke statistisk grunnlag for å påvise et verditap.

Delphi-studien analyserer kun effekter på boligverdi for boliger som faktisk påvirkes av vindkraftverket gjennom skyggekast, støy og/eller synlighet. Ser vi på alle boliger innenfor en avstand på 3 kilometer fra vindkraftverket (uavhengig av hvordan de blir påvirket), finner vi et gjennomsnittlig estimert boligprisfall på mellom 16 og 22 prosent. For boliger som ligger lenger unna, mellom 3 og 6 kilometer, er det estimerte gjennomsnittlige boligprisfallet på 3-5 prosent. For primærboliger lenger enn 6 kilometer unna vindkraftverket er det ikke statistisk grunnlag for å påvise et verditap.

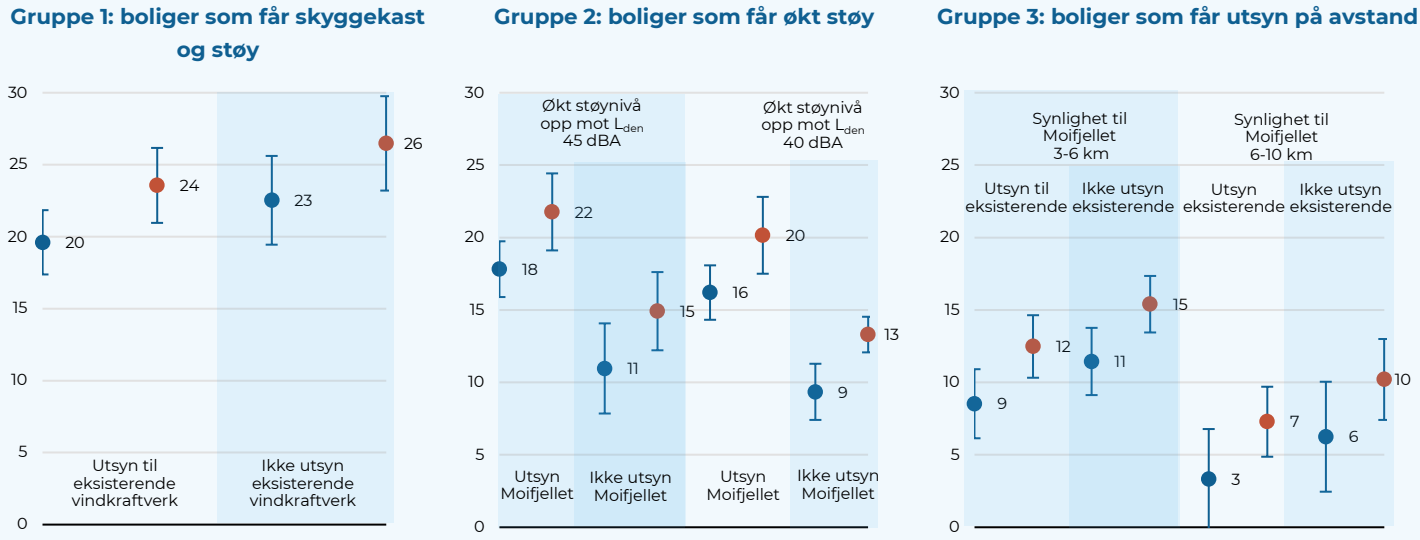
Statkraft ønsker å bygge vindkraft på Moifjellet i Bjerkreim kommune, i Rogaland. Vindkraftverkets planområde ligger i et område hvor det allerede er etablert flere vindkraftverk. Oslo Economics og Anders Dugstad ved NMBU har på oppdrag for Statkraft gjennomført en utredning som belyser effekten Moifjellet vindkraftverk forventes å ha på boligverdier på primær- og fritidsboliger i området.

Analysen er gjennomført som en Delphi-studie der vi estimerer forventede effekter på boligverdi basert på spørreundersøkelsesdata fra lokale eiendomsmeglere og andre eksperter. Metoden gjør det mulig å estimere en boligpriseffekt før tiltaket har funnet sted, i motsetning til blant annet studier basert på hedonisk prising som tar utgangspunkt i faktiske boligtransaksjoner. Undersøkelsen kan også designes slik at den tar hensyn til lokale forhold ved Moifjellet – både hvilken påvirkning ulike boliger i området vil få fra det planlagte vindkraftverket, og hvilken påvirkning de allerede har fra eksisterende vindkraftverk. Dette er vanskelig ved verdioverføring fra andre studier.

Forskningslitteraturen peker på støy, skyggekast og synlighet som de virkningene som har størst betydning for boligverdier i områder rundt vindkraftverk. Vi bruker disse virkningene og kombinasjonen av dem til å definere grupper av influerte boliger rundt Moifjellet. Gruppe 1 er boliger som får skyggekast og økt støy fra det planlagte vindkraftverket, gruppe 2 er boliger som får økt støy fra vindkraftverket og gruppe 3 er boliger som vil få utsyn til vindkraftverket på avstand. Innenfor gruppene er det variasjon i type bolig (fritidsbolig eller primærbolig) og hvordan boligene allerede er påvirket av de eksisterende vindkraftverkene i området.

For de ulike gruppene av influerte boliger innhenter vi vurderinger av forventede priseffekter fra en ekspertgruppe bestående av lokale og regionale eiendomsmeglere og andre fageksperter slik som tomteutviklere, takstmenn og andre med erfaring fra salg av bolig. I tråd med metode for Delphi-studier ble dette gjort gjennom en spørreundersøkelse som ble sendt ut i to omganger. I første omgang ba vi respondentene vurdere hvordan utbygging av Moifjellet vindkraftverk vil påvirke verdien til primær- og fritidsboliger i nærheten, avhengig av hvilke kombinasjoner av virkninger de får, og i hvilken grad boligene allerede er påvirket av eksisterende vindkraftverk. I andre runde fikk respondentene presentert de gjennomsnittlige svarene fra første runde og fikk mulighet til å korrigere svarene de ga i første runde. Svarene fra spørreundersøkelsen danner grunnlag for vår analyse av forventet effekt på boligverdi.

Figur 1-1: Estimerte prosentvise verdifall for boliger i de ulike gruppene



Merknad: Blå punkter er estimerte verdier for primærbolig og røde punkter er estimerte verdier for fritidsbolig. Blå søyler er 95 prosent konfidensintervall.

Estimerte priseffekter for boliger som får støy, skyggekast og utsyn til vindkraftverk

Hvordan ulike virkninger (støy, skyggekast og synlighet) slår inn på boligprisene i området er analysert ved å estimere en panelmodell med faste effekter. Basert på panelmodellen har vi estimert den samlede effekten på boligpriser i de ulike gruppene av influerte boliger.

Resultatene fra analysen er oppsummert i Figur 1-1. For primær- og fritidsboliger som får både skyggekast og støy, har vi beregnet et estimert verdifall på mellom 20 og 26 prosent, avhengig av boligtype og virkninger i dag. Det estimerte verdifallet er størst for fritidsboliger og for boliger som ikke har utsyn til vindkraftverkene som allerede finnes i området rundt Moifjellet. For boliger som får økt støynivå, men i liten grad skyggekast fra Moifjellet, ligger det estimerte verdifallet mellom 9 og 22 prosent.

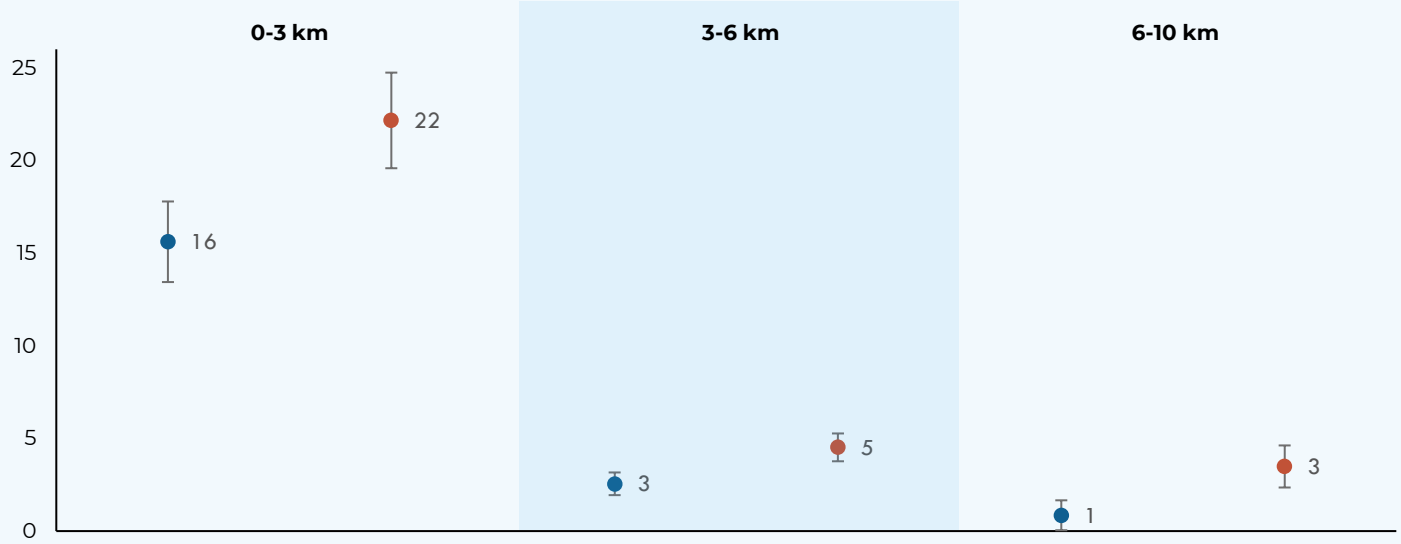
Boliger lenger unna vindkraftverket kan få utsyn til vindkraftverket, men vil ikke få støy eller skyggekast. Estimert verdifall for boliger som får utsyn til vindturbinene på Moifjellet er mellom 3 og 15 prosent. Verdifallet avhenger både av avstand til planområdet på Moifjellet, om boligene allerede har utsyn til eksisterende vindkraftverk og hvorvidt det er fritidsboliger eller primærboliger. For primærboliger mellom 6 og 10 kilometer fra Moifjellet som allerede har utsyn til eksisterende vindkraftverk, er det estimerte verditapet ikke signifikant ulikt null. Vi kan derfor ikke fastslå at det vil oppstå et fall i boligverdier for primærboliger som ligger mer enn 6 kilometer fra det planlagte vindkraftverket og som allerede har utsyn til eksisterende vindkraftverk.

Gjennomsnittlig priseffekt for boliger innenfor ulike avstander til vindkraftverket

Som del av utredningen har vi gjennomgått eksisterende forskning og litteratur der sammenhengen mellom utbygging av vindkraftverk og boligpriser er studert. En etablert metode for å studere dette forholdet er hedonisk prising, som studerer observerbare endringer i boligpriser eller observerbare forskjeller mellom pris for boliger som er berørt av et tiltak og ikke (for eksempel vindkraftutbygging). I en nasjonal kontekst er den mest relevante studien Andersen m.fl. (2024) som analyserer boligtransaksjoner for perioden 2010 til 2022 for alle boliger i nærheten av vindkraftverk som er bygget ut i Norge. Andersen m.fl. (2024) finner en negativ betalingsvillighet på mellom 12 og 17 prosent for boliger under 3 kilometer fra et vindkraftverk.

I Andersen m.fl. (2024) defineres influensområdet basert på avstand fra vindkraftverket, mens vår Delphi-analyse definerer influerte boliger basert på hvilke virkninger de får fra vindkraftverket (endring i skyggekast, støy og/eller synlighet). Avstand vil i mange tilfeller reflektere hvilke virkninger boligene får fra vindkraftverket, men dette vil også variere med blant annet topografi, terreng og annen bebyggelse. For å kunne sammenligne våre resultater med den tidligere studien, har vi med utgangspunkt i estimatene fra Delphi-studien, beregnet den samlede priseffekten for boliger innenfor gitte avstander fra vindkraftverket. Resultatene fra analysen er oppsummert i Figur 1-2. For boliger mellom 0 og 3 kilometer fra vindkraftverket finner vi et gjennomsnittlig verditap for primær- og fritidsboliger på henholdsvis 16 og 22 prosent, mens dette faller til henholdsvis 1 og 3 prosent når avstanden øker til mellom 6 og 10 kilometer.

Figur 1-2: Beregnet gjennomsnittlig verdifall for boliger innenfor intervaller av avstand



Merknad: Blå punkter er estimerte verdier for primærbolig og røde punkter er estimerte verdier for fritidsbolig. Blå søyler er 95 prosent konfidensintervall.

For primærboliger som ligger mindre enn 3 kilometer unna vindkraftverket er det gjennomsnittlige verdifallet på 16 prosent i vår studie, i samme størrelsesorden som funnene i den nasjonale studien av Andersen m.fl. som fant en negativ betalingsvillighet mellom 12 og 17 prosent for boliger under 3 kilometer fra et vindkraftverk (2024). Ettersom området rundt Moifjellet allerede er påvirket av flere vindkraftverk, kunne man i utgangspunktet forvente at effekten av vindkraftverket på boligpriser ville vært lavere i dette området enn for landsgjennomsnittet. På den annen side vil Delphi-studien i større grad enn studier basert på hedonisk prising ta hensyn til forventede verdifall som ikke realiseres i markedet. Dersom boligene som påvirkes mest av vindkraftverket får større problemer med salg og i mindre grad omsettes i markedet enn boliger som er upåvirket eller påvirkes i mindre grad, vil hedonisk prising underestimere effekten på boligverdier. Denne effekten kan spesielt forventes å være til stede for boliger nærmest vindkraftverket, i gruppen under 3 kilometer fra vindkraftverket.

For boliger som ligger mellom 6 og 10 kilometer fra vindkraftverket, er det estimerte gjennomsnittlige verdifallet 1 prosent for primærboliger. Verdien nærmer seg null og er ikke signifikant ulik null, noe som også samsvarer med studien av Andersen m.fl. (2024) som finner at effekten konvergerer mot null i en avstand på 5 til 7 kilometer fra vindkraftverket.

1. Bakgrunn og mandat

Statkraft ønsker å bygge vindkraft på Moifjellet i Bjerkreim kommune, i Rogaland. Området er preget av at det allerede er etablert flere vindkraftverk i området. Statkraft jobber nå med å utrede konsekvensene ved etablering av Moifjellet vindkraftverk. I den forbindelse har Oslo Economics og Anders Dugstad ved Norges miljø- og biovitenskapelige universitet (NMBU), gjennomført en utredning for Statkraft om forventet effekt på boligverdier i området ved bygging av vindkraftverket.

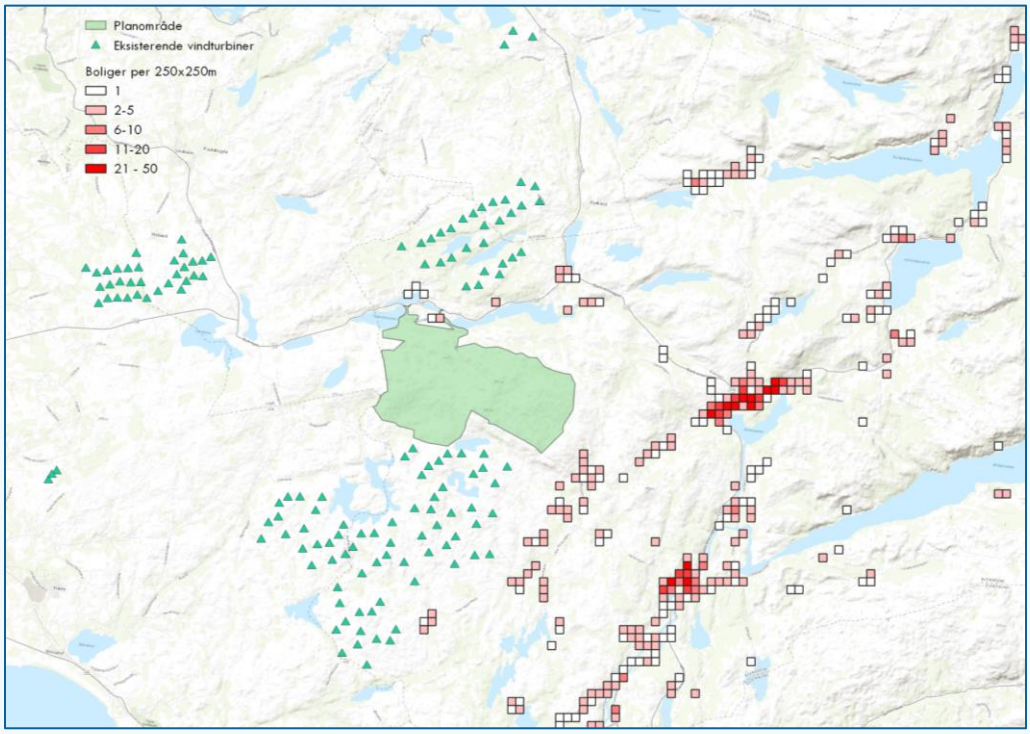
1.1 Bakgrunn for oppdraget

Statkraft utreder muligheten for å bygge vindkraft på Moifjellet i Bjerkreim kommune i Rogaland. Vindkraftverket som planlegges består av 30 til 40 vindturbiner med en turbinhøyde på 180 til 200 meter. Vindkraftverket dekker et planområde på 17 km^2 og er forventet å produsere ca. 850 GWh. Det tilsvarer årlig strømforbruk til over 53 000 husstander.

Moifjellet har flere allerede etablerte vindparker i nærheten. Søndre Bjerkreim vindkraftverk ligger rett sør for Moifjellet og har 70 turbiner. Nord for Moifjellet ligger Måkaknuten og Stigafjellet med til sammen 29 turbiner. Alle de tre vindkraftverkene ligger innenfor fem kilometer fra planområdet til Moifjellet vindkraftverk. I tillegg ligger Høg-Jæren vindkraftverk med 32 turbiner ca. 10 kilometer nordvest for Moifjellet. Figur 1-1 illustrerer planområdet for Moifjellet vindkraftverk (grønt område), eksisterende vindturbiner i omkringliggende vindkraftverk (grønne trekanter), og bebyggelse i området rundt (røde firkanter illustrer tetthet).

Bjerkreim kommune vedtok i mai 2024 planprogrammet for Moifjellet vindkraftverk. I planprogrammet er det fastsatt at effekter på boligverdi for både boliger og fritidsboliger skal utredes. Utredningen inngår som en del av konsekvensutredningen og Statkrafts konsesjonssøknad for Moifjellet vindkraftverk.

Figur 1-1: Området rundt Moifjellet vindkraftverk



Kilde: SSB, Befolkning på rutenett; NVE, vindturbiner; OpenStreetMap, bakgrunnskart. Illustrasjon Oslo Economics

1.2 Mandat, metode og informasjon

1.2.1 Vårt mandat

Oslo Economics og Anders Dugstad ved NMBU har på oppdrag for Statkraft gjennomført en utredning som belyser hvordan Moifjellet vindkraftverk forventes å påvirke boligverdier i området. Analysen inkluderer en vurdering av priseffekten på både primærboliger og fritidsboliger.

Mandatet for oppdraget har vært å analysere vindkraftverkets forventede effekt på boligverdier i området rundt vindkraftverket. En del av dette arbeidet har også vært å definere hvilke boliger rundt vindkraftverket som vil få effekt på boligverdien som følge av etablering av Moifjellet (influerte boliger). I vurderingen av antall berørte boliger bruker vi detaljerte analyser av støy, skyggekast og synlighet som Statkraft har fått utarbeidet som del av konsekvensutredningen.

1.2.2 Informasjonsinnhenting og metode

Den viktigste informasjonskilden for denne analysen er en spørreundersøkelse basert på Delphi-metoden (beskrevet i kapittel 2.3). Spørreundersøkelsen er gjennomført blant eiendomsmeglere og andre fageksperter som bedriver eiendomsrelatert virksomhet i områdene rundt det planlagte vindkraftverket eller i områder andre steder i landet hvor det er etablert vindkraft. Spørreundersøkelsen er blitt gjennomført i to runder, i tråd med forskningslitteraturen om Delphi-metoden (Navrud & Strand, 2018).

Som del av utredningen har vi gjennomgått eksisterende forskning og litteratur hvor sammenhengen mellom utbygging av vindkraftverk og boligpriser er studert. Vi har også gjennomført fire innledende intervjuer med eiendomsmeglere og fageksperter i Rogaland for å kartlegge hvordan de forventer at vindkraft-utbyggingen på Moifjellet vil kunne påvirke boligpriser i området rundt. Innsikten fra litteraturgjennomgangen og intervjuene har blitt benyttet i utformingen av spørreundersøkelsen.

I gjennomføring av prosjektet har vi hatt dialog med Statkraft og deres ekspertressurser for å sikre at informasjonen som presenteres i spørre-undersøkelsen er korrekt. Vi understreker samtidig at utforming av spørreundersøkelsen er det Oslo Economics og Anders Dugstad som har stått for, uten føringer fra Statkraft.

1.2.3 Rapportstruktur

I rapportens kapittel 2 presenterer vi ulike metoder for å vurdere hvordan etablering av vindkraft påvirker boligverdier og gir en oversikt over funn fra eksisterende forskning og litteratur. I kapittelet redegjør vi også for vårt valg av metode i denne studien.

I kapittel 3 presenterer vi hva som er de mest sentrale virkningene ved etablering av vindkraftverk, som forventes å kunne ha betydning for boligverdier. I kapittel 3 definerer vi influerte boliger rundt vindkraftverket og gir en oversikt over antall primær- og fritidsboliger som vi forventer vil bli berørt ved utbygging av Moifjellet vindkraftverk.

I kapittel 4 beskriver vi hvordan vi har utformet spørreundersøkelsen, utvalget av respondenter og hvordan resultatene fra spørreundersøkelsen er analysert.

Kapittel 5 presenterer resultatene fra analysene som er gjennomført, basert på svarene som er gitt i spørreundersøkelsen.

2. Metoder for å vurdere effekt på boligverdi

Det finnes få analyser av vindkraftverks effekt på boligpriser i Norge, og ingen etablerte metoder for å vurdere dette i planleggingsfasen av prosjekter. I samfunnsøkonomiske analyser brukes endringer i faktiske boligpriser som en måte å avsløre befolkningens betalingsvillighet for å unngå negative effekter på natur og miljø, for eksempel som følge av vindkraftutbygging. For å kunne ta hensyn til lokale forhold rundt det planlagte vindkraftverket på Moifjellet, vurderer vi en Delphi-studie som et godt supplement til en allerede gjennomført nasjonal studie av observert effekt av vindkraft på boligverdi.

2.1 Metoder for å vurdere påvirkning fra vindkraftverk

Vindkraftverk påvirker de som bor eller ferdes i nærheten, blant annet gjennom visuelle virkninger, støy og skyggekast. Hvor stor påvirkningen er avhenger av en rekke faktorer, som nærhet til vindkraftverket, topografi, synlighet og opplevd støy, men også folks preferanser og holdninger. Påvirkningen kan også avhenge av om det allerede er etablert vindkraft eller annen infrastruktur i samme område eller om vindkraftverket er planlagt etablert i et uberørt naturområde.

Etablering av vindkraft kan også påvirke verdier som ikke er direkte knyttet til bruk av området, ved at det forringer natur, artsmangfold og miljøgoder. Natur- og miljøgoder kan ha betydning for flere enn de som bruker området, gjennom at det er en verdi i seg selv at de eksisterer, både for dagens befolkning og/eller fremtidige generasjoner (Dugstad, et al., 2024).

For de som bor i nærheten av et vindkraftverk vil vindkraftverkets påvirkning på viktige natur- og miljøgoder i området kunne materialisere seg i en endring i boligverdi. I plan-/ utredningsprogrammet for Moifjellet vindkraftverk er det fastsatt at påvirkning på eiendomsverdi for bolig og fritid innenfor influensområdet skal utredes.

Det finnes i dag få analyser som estimerer forventet effekt på boligpriser av vindkraftverk i forkant av bygging, og det finnes ingen etablerte metoder for å estimere denne effekten direkte. I etterkant av utbygginger blir det imidlertid gjort studier av observerbare endringer i boligpriser eller observerbare forskjeller mellom pris for boliger som er berørt av et tiltak og ikke. Dette kan for eksempel være studier som sammenligner forskjeller i boligpriser mellom boliger som er påvirket av vindkraftverk og boliger som ikke er det, eller studier som sammenligner boligpris i bestemte områder før og etter at vindkraftverk er etablert.

I dette kapittelet presenterer vi ulike verdsettingsmetoder som kan være aktuelle for å vurdere hvilken effekt vindkraft på Moifjellet vil ha på boligverdier i området. Metodene som presenteres har ikke nødvendigvis som formål å studere et tiltaks effekt på boligverdier i seg selv, slik vi gjør i denne utredningen. Analyser av et tiltaks effekt på boligverdier kan imidlertid inngå i samfunnsøkonomiske analyser[1], som en metode for å avsløre befolkningens preferanser og deres verdsettelse av negative effekter på natur og miljø i deres nærområder. På den måten kan det være mulig å sette en kroneverdi på en del av tiltakets miljøvirkninger, som det normalt er vanskelig å prissette. Metoden som brukes for å avsløre preferanser gjennom å studere endringer i boligpriser, kalles *hedonisk prising*.

I kapittelet diskuterer vi også styrker og svakheter med de ulike metodene, og i hvilken grad de er egnet til å belyse effekten på eiendomsverdier av Moifjellet vindkraftverk. Med utgangspunkt i gjennomgangen velger vi en metode som vi går videre med i denne utredningen.

2.2 Hedonisk prising

Hedonisk prising tar utgangspunkt i observerte endringer i faktiske boligverdi. Denne metoden brukes i samfunnsøkonomiske analyser for å prissette en samling av ulike typer virkninger for de som bor i/nær de områdene som tiltaket påvirker. De som bor i nærheten av et vindkraftverk kan for eksempel få visuelle virkninger, støy, tap av rekreasjonsområder og eventuelle andre ulemper. Summen av disse ulempene antas å slå ut som redusert betalingsvilje for boligene nær

[1] Formålet med en samfunnsøkonomisk analyse er å vurdere alle virkninger av et tiltak og så langt som mulig verdsette virkningene. Verdsetting av virkninger gjøres etter betalingsvillighetsprinsippet, altså hvor mye befolkningen er villig til å betale for å unngå et tiltak eller en utbygging.

vindkraftverket og kan observeres gjennom forskjeller i boligverdier i nærheten av vindkraftverk.

Hedonisk prising brukes i verdsettingslitteraturen, som en metode for å avsløre folks preferanser. Utgangspunktet er en antakelse om at de ulempene som beboere opplever, kommer helt eller delvis til uttrykk gjennom endringer i boligprisene i etterkant av at det bygges et vindkraftverk i nærheten. Dette reflekterer den betalingsviljen boligkjøperne i området har for å unngå påvirkningen fra vindkraftverkene. Endringer i faktiske boligpriser reflekterer også det forventede privatøkonomiske tapet for personer som eier boliger i området (Bishop, et al., 2020).

Det er gjennomført flere internasjonale studier av sammenhengen mellom boligpriser og vindkraft-utbygging. Studiene benytter ulike variabler for sammenligning slik som tid, størrelse på vindkraftverk og geografi/topologi. Mange av studiene ser på effekten av ett vindkraftverk, mens andre tar for seg flere vindkraftverk i en region, et land eller flere land.

I 2023 ble det også publisert en norsk studie på dette temaet. Andersen et al. (2024) bruker en hedonisk prismodell for å estimere boligeieres betalingsvillighet for å unngå å bo nær et vindkraftverk i Norge, med data fra bolig-transaksjoner i nærheten av vindkraftverk i hele landet. Studien finner en negativ betalingsvillighet mellom 12 og 17 prosent for boliger under 3 kilometer fra et vindkraftverk. Den negative effekten går mot null når avstanden er opp mot 5 til 7 kilometer.

I tekstboksen på neste side oppsummeres funn fra den nylig gjennomført norske studien og internasjonale studier. Resultatene fra studiene er beskrevet ytterligere i Vedlegg A.

Svakheter med metoden

Ved hedonisk prising estimeres effekter av vindkraftverk på nominelle boligverdier. En utfordring er at det er mange forhold som påvirker boligpriser som det er vanskelig å kontrollere for i analysene. I Andersen et al. (2024) kontrolleres det for faktorer som er enkelt observerbare i data, som størrelse, etasje, antall soverom, veranda og lignende. I tillegg til disse faktorene er det mange andre faktorer som kan påvirke prisene, som utsikten fra boligen, vegetasjon i området, antall på visning og aktivitet i budrunden. Flere av disse faktorene kan kontrolleres for gjennom å bruke differanse-i-differanse-metoden som alternativ til hedonisk prising, noe Andersen et al. (2024) også gjør i sin analyse.[2]

Ved bruk av Hedonisk prising er datagrunnlaget de faktiske boligtransaksjonene i bestemte avstander til vindkraftverket, og dette brukes til å estimere en priseffekt også for usolgte boliger i samme avstand fra vindkraftverket. Det kan oppstå skjevheter i utvalget dersom det er systematiske forskjeller mellom de boligene som selges og de boligene som ikke selges i markedet. Et eksempel på dette er dersom boliger som får størst påvirkning av vindkraftverket, blir vanskelige å selge, og det skjer færre transaksjoner av disse enn de som får mindre påvirkning. Ved denne type *fortrengningseffekter* så vil estimater beregnet basert på faktiske transaksjoner kunne underestimere de faktiske effektene på boligpriser. Det kan være tilfelle dersom eierne av boligene som er betydelig påvirket av vindkraftverket får problemer med salg eller ikke er villige til å realisere de faktiske verdifallet i markedet, og velger å beholde boligen fremfor å selge.

Andersen, et al. (2024) viser til nettopp denne utfordringen med hedonisk prisingsmodeller i sin rapport og skriver: *«En annen utfordring er at man ikke nødvendigvis har data på alle salg, og at manglende observasjoner kan være korrelert med forklarende variabler. Ett eksempel kan være hvis boliger som ligger veldig nære vindkraftverk oftere enn andre ikke blir solgt på markedet, men blir revet på grunn av for mye støy til å kunne bo der eller forblir usolgt. Da vil vi en få en skjevhet i utvalget vårt og underestimere effekten av å bo nærme et vindkraftverk».*

2.3 Verdioverføring

Som alternativ til å anvende en hedonisk prismodell er det mulig å bruke verdioverføring fra tidligere studier. Verdioverføring innebærer å benytte resultater fra tidligere hedoniske prismodeller og anvende det på data for det gitte området.

Menon Economics (2024) beskriver fire former for verdioverføring:

- Enhetsverdioverføring
- Verdifunksjonsoverføring
- Meta-analyse
- Delphi-metoden

De ulike metodene for verdioverføring og hvordan de kan anvendes for boligverdi ved Moifjellet er beskrevet ytterligere i dette delkapittelet.

[2] Ved differanse-i-differanse-metoden sammenliknes prisveksten til boliger som blir påvirket av vindkraft mot upåvirkede boliger. Metoden gjør det mulig å kontrollere for ulike dimensjoner av faste effekter, noe Andersen et al. (2024) gjør.

Norsk studie av påvirkning på boligverdi av vindkraftverk

Andersen et al. (2024) har nylig publisert en studie der de bruker en hedonisk prismodell for å estimere boligeieres betalingsvillighet for å unngå å bo nær et vindkraftverk i Norge. Analysen er basert på data fra over 230 000 boligtransaksjoner, for boliger som ligger under 30 kilometer fra et landbasert vindkraftverk.[1] Datagrunnlaget som studien bygger på er hentet fra Finn.no i perioden mellom 2010 og 2022. Eiendomsdataene er kombinert med informasjon om vindkraftverkene fra NVEs vindkraftdatabase bestående av over 61 vindkraftverk i Norge.

Studien finner en negativ betalingsvillighet mellom 12 og 17 prosent for boliger under 3 kilometer fra et vindkraftverk. Den negative effekten er statistisk signifikant inntil en avstand på 4 til 6 kilometer fra vindkraftverket og går mot null når avstanden er 5 til 7 kilometer.

Studien finner at effektene på boligpriser er negativ og statistisk signifikant for alle vindkraftverk, men større for boliger som ligger nær vindkraftverk med mange turbiner (definert som mer enn 10 turbiner).

Det er nærliggende å forvente at ikke bare vindkraftverk som er bygget og i drift kan ha betyning for boligpriser, men at også planer om etablering av vindkraftverk kan ha betyning for boligverdier i et område. Andersen et al. (2024) har undersøket dette i sin studie og estimerer en modell for markedstilpasning over tid. I modellen antas byggestart å være to år før driftsstart og influensområdet er definert som inntil tre kilometer fra vindkraftverket. Studien finner at priseffekten som inntreffer under byggeprosessen er relativt liten og ikke signifikant (mellom 3,2 og 5,7 prosent negativ effekt avhengig av modell). Før byggestart er effekten tilnærmet lik null og ikke signifikant.

Oppsummering av funn fra internasjonale hedonisk prisingsstudier

Internasjonalt er det gjort en rekke analyser av vindkraftverks påvirkning på boligpriser ved bruk av hedoniske prismodeller. Studiene benytter ulike variabler for sammenligning slik som tid, størrelse på vindkraftverk og geografi/topologi. Mange av studiene ser på effekten av ett vindkraftverk, mens andre tar for seg flere vindkraftverk i en region, et land eller flere land.

Influensområde og priseffekt i ulike områder

Schutt (2023) viser også at det relevante influensområdet der boligpriser blir påvirket av vindkraftverk varierer mellom studiene som er gjennomført. Enkelte studier tar utgangspunkt i et forhåndsdefinert område, for eksempel 2 kilometer fra vindkraftverket, mens andre studier ser på effekten ved ulik avstand og bruker dette som grunnlag for å vurdere når priseffekten avtar eller ikke kan tilskrives vindkraftverket. Flere studier finner en ikke-signifikat priseffekt fra og med 3 til 4 kilometer fra vindkraftanlegget[1], mens enkelte studier finner en statistisk signifikant effekt helt ut til 6 til 8 kilometer fra anlegget (Westlund & Wilhelmsson, 2021).

Flere studier forsøker også å skille mellom priseffekten i urbane og rurale strøk, men resultatene er varierende. I en tysk studie finner Frondel et al. (2019) at den negative effekten av vindturbiner er betydelig høyere i rurale områder. Resultatet står i kontrast til funnene i en nederlandsk studie hvor effekten er *større* i urbane områder (Dröes & Koster, 2016). Variasjonen i resultatene fra de ulike studiene kan også avhenge av andre forhold, som at boligens sentralitet ofte har betydning for boligpriser mens vindkraft ofte bygges i mindre sentrale områder.

Vindkraftverkets størrelse

Flere studier finner at størrelsen på vindkraftverket påvirker effekten på boligpriser. En dansk studie finner at den negative påvirkningen øker med antall vindturbiner (Jensen, et al., 2018). Den norske studien utført av Andersen et al. (2024) skiller mellom store og små vindkraftverk, der store vindkraftverk er definert som vindkraftverk med mer enn 10 turbiner. De finner en større negativ priseffekt på boliger som ligger i nærheten av vindkraftverk med mange turbiner (Andersen, et al., 2024).

Store vindkraftverk med flere turbiner virker å påvirke boligverdiene negativt, samtidig som flere studier peker på at effekten er størst ved å gå fra ingen til én turbin. Blant annet understreker forskerne i en nederlandsk studie at det primært er den første turbinen som reduserer boligprisene (Dröes & Koster, 2021).

Fritidsbolig

Få internasjonale studier ser på effekten vindkraft har på boligverdien til fritidsboliger, men en dansk studie skiller mellom ferieboliger og ordinære boliger (Jensen, et al., 2018). Studien finner at boligprisen for ordinære boliger reduseres med mellom 0,2 og 1,1 prosent dersom det kommer en ny vindturbin innenfor 3 kilometer. Resultatene er lignende for feriehus, men ikke like tydelige, der studien kun finner signifikante resultater i noen av områdene de vurderte (Jensen, et al., 2018). I andre studier vises det til generelle holdninger blant fritidsboligeiere, der det eksempelvis er vist høyere motstand til vindkraft blant eiere av fritidsboliger sammenlignet eiere av ordinære boliger (Westlund & Wilhelmsson, 2021).

Priseffekt av ulike eksternaliteter

Enkelte studier ser kun på hvordan spesifikke virkninger av vindkraftverket påvirker boligverdier og skiller ikke på avstanden til vindkraftverket. Disse studiene tar høyde for at terreng, topografi og bebyggelse også kan påvirke hvor mye boliger blir berørt av et vindkraftverk. En dansk studie skiller mellom priseffekt som skyldes støy og visuell påvirkning (Jensen, et al., 2013). De finner at effekten av støy fra turbinene er assosisert med en reduksjon i boligprisene på 6,7 prosent i de mest eksponerte områdene, mens visuell påvirkning står for 3,15 prosent av boligpris-reduksjonen assosiert med bygging av et vindkraftverk. I en tysk studie finner forskerne at boligtomter med «ekstrem» til «middels» sikt til vindkraftverk har en prisnedgang på mellom 9 og 14 prosent (Sunak & Madlener, 2016). De tyske forskerne finner videre at mindre forandringer i vindkraftverks synlighet ikke har noen statistisk betydelig for boligprisene.

2.3.1 Enhets- og verdifunksjonsoverføring

De vanligste metodene for verdioverføring er enhetsverdioverføring eller funksjons-verdioverføring.

Enhetsverdioverføring innebærer å direkte benytte den estimerte gjennomsnittlige effekten av vindkraft på boligpriser fra en tidligere studie, for eksempel den estimerte effekten Andersen et al. (2024) finner i Norge som helhet. Utfordringen med denne fremgangsmåten er at man ikke får kontrollert for forskjeller i karakteristikker mellom områdene som studien baserer seg på og områdene der man ønsker å estimere effekten.

Funksjonsverdioverføring innebærer å bruke en allerede estimert statistisk regresjon fra en tidligere studie, som tar hensyn til varierende egenskaper ved både vindkraftverkene og de omkringliggende områdene (boligtype, størrelse, om det allerede er bygget vindkraft i området osv.). Med denne metoden kan man kontrollere for ulike karakteristikker og få mer presise og tilpassede verdier. Metoden forutsetter at variablene og egenskapene er inkludert i den opprinnelige hedoniske prismodellen, og at det er tilstrekkelig data for disse egenskapene i området som vurderes.

Begge metodene for verdioverføring forutsetter at det finnes gode studier med høy overføringsverdi til området som vurderes. Studien av Andersen et al. (2024) er den vi vurderer som mest relevant i denne sammenheng ettersom studien tar for seg vindkraft i Norge. Det er likevel noen forhold som gjør at vi vurderer studien som mindre relevant for å reflektere de lokale forholdene rundt Moifjellet som vi er opptatt av å undersøke her. Andersen et al. (2024) skiller ikke på effekter mellom områder hvor det allerede er etablert og ikke etablert vindkraft. Studien skiller heller ikke mellom primær- og fritidsboliger. Videre legger Andersen et al. (2024) til grunn at alle boliger innenfor en viss avstand til vindkraftverkene får den samme effekten, uavhengig av topografiske forhold eller andre faktorer som kan gjøre at effekten varierer på tvers av boliger innenfor samme område. Studien skiller altså ikke på boliger som i ulik grad får virkninger fra vindkraftverket i form av støy, skyggekast og/eller synlighet innenfor samme område. Vi vurderer derfor at overføringsverdien av Andersen et al. (2024) sin studie er usikker gitt formålet med denne utredningen.

Overføringsverdien fra internasjonale studier som er gjennomført er videre svært usikker. Natur, landskapsbilde og topografi, bebyggelse, innbyggernes preferanser og holdninger til vindkraft, og deres inntektsnivå er eksempler på faktorer som varierer på tvers av land og kan ha stor betydning for hvilken effekt vindkraftverk kan ha for verdien av omkringliggende boliger. Dette illustrer også metaanalysen som Schütt (2023) har gjennomført. Studien finner stor variasjon i samlet priseffekt på boligverdier på tvers av studier, jf. kapittel 2.2. Det er også få internasjonale studier som ser på effekter vi særlig er interesserte i her, spesielt på eiendomsverdier som allerede er påvirket av eksisterende vindkraftverk og som nå utsettes for ytterligere utbygging, samt virkningen på fritidsboliger.

2.3.2 Meta-analyse

En meta-analyse er en form for verdioverføring der funn fra flere tidligere verdsettingsstudier sammenstilles. Estimater på betalingsvillighet fra ulike verdsettingsstudier utgjør observasjonene i en meta-analyse for å estimere en samlet betalingsvillighetsfunksjon.

En utfordring med meta-analyser er å samle inn nok studier som undersøker det samme. Ulike verdsettingsstudier ser ofte på en konkret utbyggingssak, som kan gjøre det vanskelig å sammenstille disse analysene.

I 2023 ble det gjennomført en meta-analyse som ser på virkninger av vindkraftverk og endringer i boligpriser. Meta-analysen tar for seg resultater fra 25 internasjonale studier som benytter hedonisk prising som verdsettingsmetode. Denne studien viser sprikende resultater i effekten på boligpriser (Schütt, 2023). Meta-analysen viser at vindkraft har fra opptil 50 prosent negativ effekt til 50 prosent positiv effekt på boligpriser. Samlet finner metastudien en gjennomsnittlig negativ priseffekt på 0,68 prosent for boliger i en avstand på rundt 3 kilometer fra et vindkraftverk. Effekten faller til null etter rundt 4,5 kilometer.

Siden det nylig er gjennomført en meta-analyse av studier som ser på vindkraftverk og boligpriser, og det er få nye studier nasjonalt som er publisert etter 2023, vurderer vi at en ny meta-analyse ikke vil tilføre betydelig ny informasjon. Vi vurderer imidlertid at funnene fra Schütt (2023) kan benyttes som grunnlag for sammenligning.

2.3.3 Delphi-metoden

Innen miljøverdsetting sees Delphi-metoden på som en kombinasjon av betinget verdsetting og verdioverføring. Metoden innebærer å samle informasjon og meninger om et gitt tema fra en gruppe respondenter innenfor deres ekspertområde. I stedet for å spørre folk direkte om deres preferanser for en miljøendring, som man gjør i betinget verdsetting, bruker Delphi-metoden

et utvalg eksperter sin vurdering til å forutsi folks preferanser.

Metoden ble først brukt til å predikere utvikling innen forskning og teknologi av Dalkey og Helmer (1963), og har siden blitt brukt innen en rekke ulike fagområder, inkludert verdsetting av eksternaliteter, miljøgoder og økosystemtjenester (Barzilay, et al., 2012; Strand, et al., 2017; Navrud & Strand, 2018; Dugstad & Navrud, 2023). I dag brukes metoden ofte når kvantitative data er vanskelige eller kostbare å samle inn, eller når prediksjon av fremtidige hendelser er formålet.

Som argumentert av Barzilay et al. (2012), kan Delphi-metoden være nyttig for å evaluere effekten av lokale eksternaliteter på boligpriser, spesielt i lokalsamfunn med få boliger og boligtransaksjoner, i likhet med studieområdet på Moifjellet. Dugstad og Navrud (2023) viser at Delphi-metoden gir mer pålitelige estimater av ikke-bruksverdier for globale miljøgoder, i form av folks betalingsvillighet, enn tradisjonelle verdi-overføringsmetoder.

Delphi-metoden er illustrert i Figur 2-1. Det første steget i metoden er å definere og velge ut en ekspertgruppe som deltar gjennom prosessen. Ekspertene jobber anonymt gjennom de ulike delene. Metoden tar deretter utgangspunkt i informasjonen som er samlet inn fra de utvalgte ekspertene, for eksempel gjennom spørre-undersøkelser. Informasjonsinnsamlingen gjennomføres blant de samme respondentene i flere runder, for at disse skal utvikle en enighet og konsensus rundt vurderingene av et spesifikt tema. Mellom rundene får respondentene presentert en oppsummering av ekspertgruppas samlede svar i anonymisert format. Ekspertene blir deretter bedt om å vurdere sine svar og får mulighet til å justere disse (Navrud & Strand, 2018).

Prosessen gjentas til en viss grad av konsensus eller stabilitet oppnås. Ofte stopper prosessen når svarene blir mer samstemte og variasjonen mellom ekspertenes vurderinger reduseres.

Svakheter med metoden

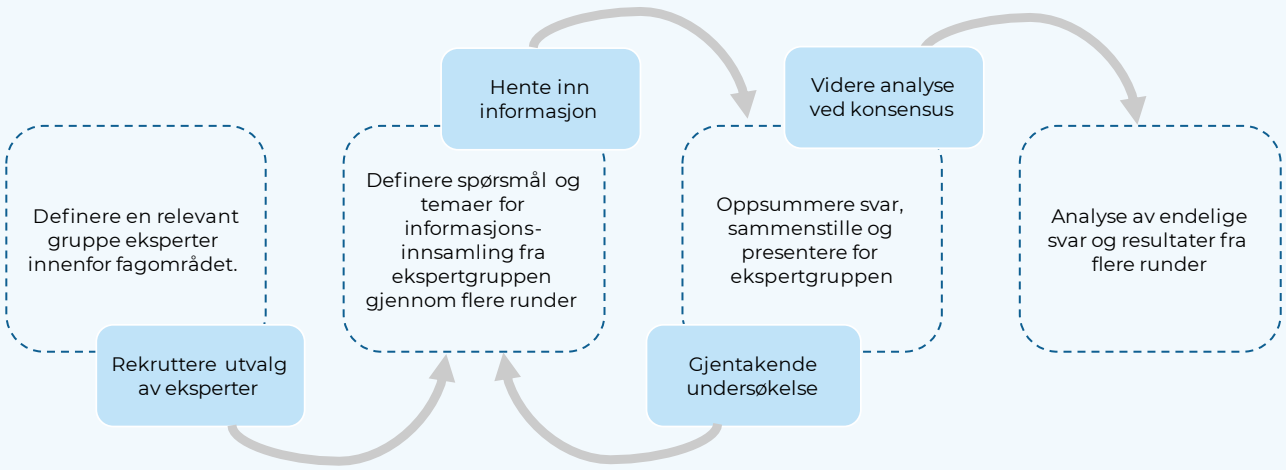
Delphi-metoden er i liten grad anvendt på miljøvirkninger og det finnes lite forskning på hvor godt egnet metoden er for denne type virkninger, med unntak av Dugstad & Navrud (2023) som finner at metoden gir prediksjon i tråd med tradisjonell verdioverføring. Dugstad & Navrud (2023) peker på behovet for å teste ut Delphi-metoden videre for å verdsette både lokale og globale fellesgoder.

Delphi-metoden er en form for betinget verdsetting som rettes mot eksperter. Metoden innebærer derfor noen av de samme svakhetene som tradisjonell betinget verdsetting, der estimatene bygger på personenes oppfatning og egen vurdering. En utfordring med denne type metode er at respondentene ikke nødvendigvis har et godt bilde av hva miljøgodet er verdt i penger, og at de kan ha insentiver til å uttrykke preferanser strategisk for å påvirke utfallet i en retning som de selv ønsker. Videre kan det være utfordringer knyttet til å rekruttere et tilstrekkelig antall eksperter, noe som kan begrense grunnlaget for statistiske analyser.

2.4 Valg av metode

Formålet med denne utredningen er å forstå hvordan etablering av vindkraft på Moifjellet vil påvirke boligverdier i områdene rundt

Figur 2-1: Oversikt over Delphi-metoden



Illustrasjon: Oslo Economics

vindkraftverket. Utredningen gjøres i forkant av utbyggingen, og faktiske effekter er dermed ikke observerbare i boligmarkedet.

Moifjellet vindkraftverk skiller seg fra andre vindkraftverk som er bygget i Norge ved at det allerede er etablert vindkraft i området rundt Moifjellet. Videre vil både primær- og fritidsboliger bli berørt av vindkraftutbyggingen. I analysen ønsker vi derfor å fange opp forventet priseffekt på både primær- og fritidsboliger ved etablering av Moifjellet vindkraftverk, hensyntatt at det allerede er bygget vindkraft i området. Vi ønsker også å undersøke om den forventede effekten er forskjellig for primær- og fritidsboliger.

2.4.1 Hedonisk prismodeller krever et stort datagrunnlag og gjennomføres i etterkant av utbyggingsprosjekter

Anvendelse av hedonisk prismodeller forutsetter tilgang på boligtransaksjonsdata hvor man kan sammenligne utvikling i boligpriser i områder med vindkraft mot sammenliknbare områder uten vindkraft. Ettersom vindkraftanlegget på Moifjellet ikke er utbygd, er det ikke mulig å analysere de faktiske effektene av vindkraftverket på boligverdien i dag.

En alternativ fremgangsmåte for å vurdere effekten på boligverdi av Moifjellet vindkraftverk er å bruke en hedonisk prismodell basert på andre områder med vindkraft som har liknende egenskaper. Metodens treffsikkerhet avhenger av et tilstrekkelig antall boligtransaksjoner. En utfordring for denne fremgangsmåten er at rundt eksisterende vindkraftverk i Norge er det ofte lite bebyggelse og svært begrenset med data på boligtransaksjoner.

Andersen et al. (2024) benytter et datasett med over 230 000 boligtransaksjoner i Norge. Dette er transaksjoner for alle boliger i områder inntil 30 kilometer fra de 61 konsesjonspliktige vindkraftverkene i hele landet over en 12 års periode. I Norge er det få boliger i nærheten av hvert vindkraftverk, og ved å anvende en hedonisk prismodell på kun et eller et lite utvalg av disse 61 vindkraftverkene, ville datagrunnlaget blitt betydelig redusert. Det er derfor usikkert hvor stor tilleggsverdi en slik lokal analyse vil gi og om man har nok data til å fange opp effektene.

For å analysere effekten på fritidsboliger kan en hedonisk prismodell for transaksjoner av fritidsboliger anvendes. Samtidig vil transaksjoner for fritidsboliger nær vindkraftverk i Norge som helhet være desto mer begrenset enn for primærboliger. I tillegg er det en rekke andre preferanser og forhold som påvirker prisene på fritidsboliger som kan være vanskelig å kontrollere for i en analyse. En nasjonal analyse av fritidsboliger vil derfor trolig være mindre relevant for dette spesifikke området.

For å gjøre en analyse tilpasset lokale forhold rundt Moifjellet har vi vurdert det som lite hensiktsmessig å gjennomføre en ny analyse ved bruk av hedonisk prising. Hovedgrunnen til denne vurderingen er begrensingen i datagrunnlaget som vil gi mindre robuste og trolig ikke-signifikante resultater. Studien av Andersen et al. (2024) er trolig det beste grunnlaget for å anvende en hedonisk prismodell i Norge som helhet, men der lokale tilpasninger er krevende.

Et alternativ til å anvende en hedonisk prismodell er å bruke verdioverføring fra tidligere studier som baserer seg på hedonisk prising. Verdioverføring innebærer å benytte resultater fra tidligere studier og anvende dataene for et gitt område.

Verdioverføring gjennom enhetsverdioverføring eller funksjonsverdioverføring forutsetter at det finnes gode studier med høy overføringsverdi til området som vurderes. Vi vurderer som beskrevet over at Andersen et al. (2024) sannsynligvis er det beste grunnlaget for å si noe om den gjennomsnittlige effekten vindkraft har på omkringliggende boliger i Norge, men at det er svært usikkert i hvilken grad estimatene kan reflektere den faktiske eller forventede boligpriseffekten av vindkraftutbygging på Moifjellet. Overføringsverdien fra de utenlandske studiene er enda mer usikker.

Vår vurdering er dermed at både studien som er gjennomført i Norge og andre internasjonale studier er lite egnet til å belyse de spesifikke lokale forholdene som er ønskelige å belyse i denne utredningen.

2.4.2 Delphi-metoden kan være et godt supplement for å fange opp de lokale forholdene

Delphi-metoden kan være egnet der kvantitative data er vanskelige å samle inn, jf. omtale i kapittel 2.2. Vi vurderer Delphi-metoden som et godt supplement til resultatene fra den nasjonale undersøkelsen av boligpriseffekten av vindkraftverk (Andersen, et al., 2024). Delphi-studien åpner for at de lokale forhold kan hensyntas i analysen. Dette muliggjør en lokal tilnærming i analysen, spesielt relatert til den marginale effekten gitt eksisterende vindkraftverk, og effekten på fritidsboliger.

Delphi-metoden kan fange opp noen flere virkninger der hedonisk prising potensielt kan underestimere priseffekten av at boligen er lokalisert nær et vindkraftverk. Boliger som ikke blir

lagt på markedet eller solgt i den aktuelle perioden vil ikke inngå i datasettet med faktiske boligtransaksjoner for hedonisk prising. Dersom det gjennomføres få eller ingen transaksjoner av de mest påvirkede boligene, kan det gi en skjevhet i utvalget og resultere i at priseffekten underestimeres, jf. 2.2 Gjennom informasjonsinnhenting i Delphi-studien blir ekspertgruppen bedt om å vurdere den samlede effekten. Vurdering av den samlede effeken vil også ta høyde for at noen eventuelt får problemer med salg, eller ikke vil selge til den prisen de tilbys dersom verdifallet er stort. Delphi-metoden vil i situasjoner der vindkraftverkets påvirkning gir utfordringer ved boligsalg potensielt gi en mer forventingsrett estimert priseffekt.

For å tilpasse til lokale forhold, innretter vi Delphi-undersøkelsen mot boliger som vil få spesifikke virkninger av vindkraftverket, i form av synlighet, støy, skyggekast, eller kombinasjoner av disse. Dette innebærer at vi kun estimerer priseffekten for eiendommer som faktisk påvirkes av vindkraftverket, og at boliger som er upåvirket ikke er inkludert i datagrunnlaget. Dette i motsetning til analyser med hedonisk prising, som estimerer gjennomsnittlige priseffekter for boliger i ulike avstander til vindkraftverket. Innenfor de ulike avstandskategoriene kan boligene, avhengig av sin lokalisering i forhold til vindkraftverket, i ulik grad være preget av virkninger som synlighet, støy og/eller skyggekast, og enkelte boliger kan også være helt upåvirket. Hvis mange boliger er upåvirket eller lite påvirket av vindkraftverket, vil dette isolert sett gi lavere estimerte effekter på boligprisene, enn estimater fra en Delphi-studie som kun estimerer forventede priseffekter på boliger som faktisk påvirkes.

3. Influerte boliger rundt Moifjellet vindkraftverk

Støy, skyggekast og synlighet er de virkningene av vindkraftutbygging som har størst betydning for boligverdier. Primær- og fritidsboliger i området rundt Moifjellet vil i ulik grad bli berørt av en vindkraftutbygging. Innenfor et område på 10 kilometer fra Moifjellet vindkraftverk ligger det omtrent 1 900 boliger. 83 prosent er primærboliger og 17 prosent er fritidsboliger. 28 boliger vil få skyggekast, økt støy og få utsyn til turbinene på Moifjellet. Ytterligere 83 boliger vil få økt støypåvirkning og 484 boliger vil få utsyn til vindkraftverket på Moifjellet.

Vurdering av ulike virkninger av vindkraft fra tidligere studier (litteraturgjennomgang)

Forskningen fra Heintzelman & Tutle (2012) og Jensen et al., (2013) viser at støy har en vesentlig innvirkning på boligpriser. Studiene fra Gibbons et al. (2015) og Sunak et al. (2016) trekker frem at skyggekast har stor betydning for boliger som ligger nær vindkraftverket. De to sistnevnte studiene fremhever også at synlighet til vindkraftverk er viktig, og ytterligere studier underbygger dette funnet som for eksempel av Hoen et al. (2011), Dong & Lang (2022) og Dröes & Koster (2016). Samtlige studier vi refererer til viser at støy, skyggekast og synlighet til vindkraftverket er viktige virkninger som er sentrale for virkningene etablering av vindkraftverk har på boligpriser.

3.1 Lokale virkninger

Vindkraftanlegg påvirker mennesker som bor eller ferdes i nærheten av anlegget på forskjellige måter. Virkninger av vindkraftverk inkluderer visuelle virkninger, opplevd støy og skyggekast fra turbinene (Zerrahn, 2017; Krekel & Zerrahn, 2017). Alle disse virkningene kan få utslag i boligverdier for boliger i området rundt et vindkraftverk.

Hvor stor effekten på boligverdier vil være avhenger av en rekke forhold. Påvirkningen og effekten på boligpriser vil ofte henge sammen med avstanden til vindkraftverket, jf. kapittel 2. Opplevd støy eller skyggekast vil bare gjelde for de boligene som ligger nærmest vindkraftverket, mens synlighet til vindkraftverket også kan ha betydning for boliger lengre unna. Andre forhold som personlige preferanser, generell oppfatning av vindkraft, bruk av friluftsområder i nærheten og nærhet til eksisterende vindkraftverk, kan også påvirke boligverdiene til boliger som blir berørt.

Gjennom bruk av Delphi-metoden ønsker vi å fange opp de lokale virkningene ved etablering av vindkraft på Moifjellet. Vi definerer influerte boliger[3] rundt Moifjellet basert på hvordan boliger påvirkes av henholdsvis støy, skyggekast og synlighet. Bakgrunnen for at disse faktorene er benyttet for å vurdere effekten på boligverdier, er funn fra litteraturgjennomgangen, NVEs vurderinger av arealbruk rundt vindkraftverk og innledende intervjuer med lokale eiendomsmeglere og tomteutviklere. Gjennomgående for alle kildene er at disse tre virkningene blir trukket frem som de viktige for boligpriser. Virkningene er nærmere omtalt i de påfølgende delkapitlene.

3.1.1 Skyggekast

Dersom vindturbiner står mellom solen og en bolig, kan turbinen kaste en bevegelig skygge over boligen. Dette vil oppleves som en sveipende skygge over en flate, eller som en hurtig veksling mellom sollys og skygge (NVE, 2014). Opplevelsen av skyggekast avhenger av en rekke forhold, blant annet vær, tid på året, avstand fra turbinen, driftsmønsteret til turbinen og størrelsen på turbinbladene.

De boligene som befinner seg nærmest vind-turbinene er de som er mest utsatte for skyggekast. Moderne turbiner kan kaste skygge opp til to kilometer fra turbinen (Norconsult AS, 2022). Intensiteten av skyggekast avtar med økende avstand fra turbinen. Når mindre enn 20 prosent av solen er dekket av vingebladet sett fra mottakeren, defineres det ikke lenger som skyggekast. Solens posisjon på himmelen og størrelsen på turbinen vil også være avgjørende for i hvilken retning og hvor langt skyggen fra turbinen når. Når solen står høyt på himmelen vil skyggen være kortere sammenlignet med når sola står lavt i horisonten på morgenen og kvelden.

Skyggekast inngår ofte i samlebetegnelsen *visuelle virkninger og* inkluderes i studier som omhandler plagereaksjoner av vindkraft. En studie fra Canada

[3] I konsekvensvurderinger og analyser av påvirkning er det vanlig å definere ett eller flere influensområder, for eksempel i ulike avstander til inngrepet. I denne analysen defineres influensområdet basert på omfanget av virkninger som boligene får fra vindkraftverket. Vi bruker derfor heller begrepet *influerte boliger*.

finner at det er en responssammenheng mellom graden av skyggekastplage og andre eksponeringsfaktorer og støysensitivitet hos mottakere (Michaud, et al., 2016). Disse funnene viser hvordan visuelle aspekter, som skyggekast, og andre virkninger som støy, kan betraktes som separate eksponeringer, men samtidig bidrar til å forsterke hverandre.

NVE stiller krav til at bygninger som utsettes for skyggekast ikke utsettes for faktisk skyggekast i mer enn 8 timer per år og for teoretisk skyggekast i mer enn 30 timer per år eller 30 minutter per dag[4] (NVE, 2014). Statkraft vil tilpasse driften av vindturbinene slik at grenseverdiene overholdes.

Grunnet solas plassering vil boliger som befinner seg nord og nordøst for Moifjellet kunne utsettes for skyggekast ved etableringen av vindkraftverket. En del av boligene som vil få skyggekast fra Moifjellet har allerede skyggekast fra eksisterende vindkraftverk i området (Stigafjellet og Måkaknuten). Ved etableringen av Moifjellet vil disse boligene få en økning i skyggekast.

3.1.2 Støy

Støy defineres som uønsket lyd som kan påvirke menneskets fysiske og psykiske velvære (Miljødirektoratet, 2000). Støy fra moderne vindmøller er bredspektret. Støyen skyldes aerodynamisk lyd fra vingene som avhenger av vingespissens hastighet, vingenes form og turbulensen i luften. Lyden fra turbinene vil oppfattes som en pulserende «svisjelyd», men ved flere turbiner vil den kunne oppfattes som en jevnere dur. Støyen inkluderer en lav motordur fra motoraggregatet inni vindmøllen (Miljødirektoratet, 2000).

På kort avstand fra turbinene vil støynivået være jevnt, mens det på lengre avstand vil avhenge av vindretning, vindhastighet, trykk- og temperatur-forhold og terreng (vegetasjonens evne til å absorbere støy) (NVE, 2024b). Støy er vanligvis merkbar innenfor en avstand på to til tre kilometer fra den nærmeste turbinen, men hvor langt støyen bærer avhenger av lokale forhold.

Støy fra vindturbiner oppgis i L_{den}, som inkluderer et påslag for lydnivåer på kvelden og på natten[5]. Støy opp til L_{den} 45 dBA anses som akseptabel støy hos en støyfølsom nabo (bolig, hytte, sykehjem, barnehage m.m.) til ett vindkraftverk og kategoriseres som «grønn sone».[6] Selv om støy i grønn sone er ansett som akseptabelt ved planlegging og utforming av vindkraftverk, er det anslått at opptil ti prosent av befolkningen (de mest støysensitive) vil kunne oppleve støyplage ved støy opptil L_{den} 45 dBA. Gul sone er en vurderingssone hvor bebyggelse med støyfølsomt bruksformål kan oppføres dersom avbøtende tiltak gir tilfreds-stillende støyforhold (Klima- og miljødepartementet, 2021). Dette er støy på mellom L_{den} 45 og 55 dBA. For disse støynivåene stilles det krav til utbygger om tiltak for å avbøte virkningene ved etablering av nye boliger, sykehus, fritids-boliger, skoler, barnehager og pleieinstitusjoner. Relevante tiltak kan for eksempel innebære at soverom og stue vender motsatt vei enn støykilden. Områder med støynivåer over L_{den} 55 dBA (rød sone) anses ikke egnet for bygninger med støyfølsomt bruksformål, og er definert som rød sone.

De fleste primær- og fritidsboligene som vil få støy fra Moifjellet vindkraftverk ligger i dag innenfor støysoner fra eksisterende vindkraftverk. Den samlede støybelastningen for disse boligene vil øke ved utbygging av Moifjellet vindkraftverk. For en del boliger vil samlet støybelastning innebære at støynivået går fra under grønn støysone til grønn støysone (lav plagegrad). Statkraft opplyser at det vil gjøres tilpasning i driften av vindturbiner slik at ingen boliger og øvrige bygg med støyfølsom bruk vil opplever støy over L_{den} 45 dBA.. Boliger som havner i rød støysone vil bli innløst dersom vindkraftverket bygges.

3.1.3 Synlighet

Vindkraftverk kan være synlig både på kort og lang avstand. Utenfor det som kan kategoriseres som nærområde for et vindkraftverk er det synlighet som er den dominerende virkningen. Det er flere faktorer som påvirker synligheten til turbinene, inkludert designet og høyden på turbinene, topografien i området og værforhold. Under norske forhold vil topografien og plasseringen av vindturbinene ha stor betydning for de visuelle virkningene (Norconsult, 2017). For eksempel vil de visuelle virkningene være betydelig større dersom vindkraftverket fyller synsfeltet eller utgjør et dominerende blikkfang i landskapet sammenlignet med de visuelle virkningene som oppstår dersom vindkraftverket drar nytte av den lokale topografien

[4] Teoretisk skyggekast er worst-case skyggekast og beregnes under følgende tre forutsetninger: i) Solen skinner konstant i alle timer med dagslys, ii) Turbinene er i konstant bevegelse og iii) Vindretningen er slik at turbinene alltid står vendt mot skyggekastmottaker.

[5] L_{den} er et støymål som sier noe om gjennomsnittlig lydtrykknivå gjennom hele døgnet (dag, kveld natt). Støy på kvelden og på natten tillegges hhv 5 og 10 dB ekstra støybelastning.

[6] Skalaen er logaritmisk som betyr at en økning på 3 dB innebærer en dobling av lydstyrken. I praksis oppleves en økning på 10 dB som en dobling av lydstyrken. (NVE, 2024b)

og etableres slik at det ikke synes fra lokal-befolkningens hovedsynsretning (Norconsult, 2017).

Norconsult (2017) viser at en avstand opptil 30 kilometer kan være relevant for visuell påvirkning. På så lang avstand vil turbinene kun være synlige i horisonten, og det er mange andre elementer som også vil påvirke det visuelle landskapsbildet. På nærmere hold vil vindturbinene være mer synlige, og et vindkraftverk kan dekke store deler av synsfeltet i en retning.

Mange av boligene som vil få utsyn til Moifjellet vindkraftverk har i dag utsyn til eksisterende vindkraftverk i området. Ved utbyggingen av Moifjellet vil disse boligene kunne se noen flere vindturbiner over et større område.

3.2 Influerte boliger

Både primær- og fritidsboliger i nærheten av Moifjellet vil i varierende grad påvirkes av vindkraftverket. Vi kategoriserer *influerte* boliger i grupper basert på de direkte virkningene de får av Moifjellet vindkraftverk (støy, synlighet, skyggekast), samt i hvilken grad de allerede berøres av eksisterende vindkraftverk (synlighet). Vi definerer altså ikke influensområdet som et fysisk avgrenset område rundt vindkraftverket, men kategoriserer heller boliger etter hva slags virkninger de vil få av vindkraftverket. Boliger som ikke vil få støy, skyggekast eller utsyn til Moifjellet vindkraftverk er ikke inkludert i gruppene av influerte boliger. I det videre bruker vi derfor begrepet *influerte boliger*, fremfor influensområde.

Ved å kun inkludere influerte boliger i utvalget, fremfor å se på effekter i ulike avstander til vindkraftverket, tar vi hensyn til lokale forhold som topografi, terreng og bebyggelse, som kan være avgjørende for hvilken påvirkning ulike boliger får. Samtidig vil kategoriene av influerte boliger også ta indirekte hensyn til avstand til vindkraftverket – der for eksempel boliger som får skyggekast og økt støy befinner seg i et begrenset område relativt nær vindkraftverket.

1: Boliger påvirket av skyggekast og støy
Den første gruppen omfatter primær- og fritidsboliger som vil få både skyggekast og støy fra vindkraftverket, i tillegg til utsyn til turbinene på Moifjellet. De fleste av disse boligene har allerede virkninger fra eksisterende vindkraftverk, både skyggekast og støy, men vil ved utbygging av Moifjellet vindkraftverk få en økt belastning.

Disse boligene vil få en økning i støynivå. Økningen vil være rundt L_{den} 5 dBA opp mot en total støybelastning på maks L_{den} 45 dBA. Dette støynivået tilsvarer NVEs definerte støygrense for hva som er en akseptabel støyplage. For de fleste vil dette støynivået oppleves som akseptabelt, men det kan oppleves som plagsomt for noen.

Boligene vil få skyggekast fra Moifjellet vindkraftverk, hvorav de fleste av disse allerede får skyggekast fra eksisterende vindkraftverk. I hvor stor grad boligene vil bli påvirket av skyggekast varierer og avhenger av blant annet vær og årstid. På en solfylt dag kan disse boligene få skyggekast i opptil 30 minutter.

Boligene vil også få utsyn til mange av turbinene på Moifjellet (> 10 turbiner). Enkelte av boligene har allerede utsyn til eksisterende vindkraftverk i området. I denne gruppen skiller vi derfor mellom boliger som har utsyn til turbiner ved eksisterende vindkraftverk og de som ikke har utsyn til noen turbiner i dag.

2: Boliger som får økt støy
Den andre gruppen omfatter boliger som vil bli påvirket av støy fra vindkraftverket. Dette er boliger som allerede kan ha støy og utsyn til eksisterende vindkraftverk i området. Økningen i støy vil for de fleste ligge opp mot L_{den} 5 dBA. Boligene vil i ingen eller liten grad bli påvirket av skyggekast fra Moifjellet.

Av boligene i denne gruppen skiller vi mellom boliger som vil få et samlet støynivå etter etablering av Moifjellet på mellom L_{den} 35-40 dBA og L_{den} 40-45

Arealbruk ved vindkraftverk

NVE opererer med fire kategorier av arealbruk knyttet til vindkraftverk:

1. Direkte fysiske inngrep
2. Direkte påvirket areal
3. Nærområdet
4. Visuelt influensområde

De to første kategoriene omfatter det avgrensede arealet som vindkraftverket og dens infrastruktur skal plasseres innenfor og de direkte fysiske inngrepene av arealbeslaget det medfører. Kategori tre inkluderer de som er bosatt i nærområdet rundt vindkraftanlegget, og som kan påvirkes av anlegget i form av visuelle virkinger, støy og/eller skyggekast. Den siste kategorien (4) favner et større område der de visuelle virkninger av vindturbinene er observerbare. NVE regner relevant avstand for det visuelle influensområdet som opp mot 30 kilometer fra anlegget. Påvirkning på boligverdi oppstår imidlertid i hovedsak innenfor nærområdet (kategori 3), og vi legger dette til grunn når vi definerer de influerte boligene i denne utredningen.

dBA.[7]. Boligene i denne gruppen har også utsyn til eksisterende vindkraftverk, men vi skiller mellom boliger som også vil ha utsyn til turbiner på Moifjellet og boliger som ikke vil ha utsyn til disse nye turbinene.

3: Boliger som har utsyn til Moifjellet på avstand
Den tredje gruppen omfatter boliger som vil ha utsyn til vindturbiner ved Moifjellet på avstand, men som ikke har andre virkninger fra vindkraftverket. Flere av disse boligene har i dag også utsyn til eksisterende vindkraftverk. Vi skiller derfor mellom boliger som har utsyn til eksisterende turbiner og boliger som ikke har det.

I denne gruppen er det stor variasjon i hvor synlige vindturbinene er, avhengig av hvor langt unna vindkraftverket boligene er lokalisert. I analysen deler vi dermed boligene i denne gruppen inn i to avstandsintervaller fra Moifjellet vindkraftverk. Disse intervallene er 3 til 6 km og 6 til 10 km.

Vi vurderer ikke området utenfor 10 kilometer som en del av de influerte boligene på bakgrunn av funn fra tidligere studier som ikke finner signifikant priseffekt utenfor dette området. For boliger med en avstand fra vindkraftverket på mellom 6 og 10 kilometer vil vi også vurdere om det er en reell effekt på boligpriser gjennom analysen.

3.3 Boliger rundt Moifjellet

Tidligere studier av hedonisk prising finner ingen priseffekter over 8 kilometer fra et vindkraftverk, og enkelte studier finner ingen effekter allerede etter 3 til 4 kilometer, jf. kapittel 2 (Westlund & Wilhelmsson, 2021). Som omtalt i kapittel 2 kan vårt valg av metode, der vi kun ser på berørte boliger, finne effekter i et større område enn hedonisk prisingsmodeller som regner ut et gjennomsnitt innenfor en avstand. Vi har derfor satt en grense for de influerte boligene på 10 kilometer, som er noe høyere en studiene av hedonisk prising. Gjennom analysen ønsker vi også å avdekke om priseffekten eventuelt avtar tidligere enn 10 kilometer fra vindkraftverket.

Antall primær- og fritidsboliger i området rundt Moifjellet som vil få ulike virkninger er basert på detaljerte analyser av støy, skyggekast og synlighet som Statkraft har fått gjennomført som del av konsekvensutredningen. Analysen av synlighet inkluderer alle boliger som vil ha noen grad av utsyn til vindturbinene på Moifjellet og skiller ikke mellom boliger som ser flere turbiner og boliger som kun ser deler av en turbin, eksempelvis en vingetupp. Vi forventer at effekten på boligverdier av vindkraftutbyggingen vil kunne variere innenfor samme område, avhengig av hvor godt utsyn boligene har til vindkraftverket.

Figur 3-1 illustrerer hvordan de influerte boligene kan fordele seg rundt vindkraftverket. I det følgende presenterer vi antall berørte boliger i de ulike gruppene av influerte boliger som definert i delkapittel 3.2.

1: Boliger påvirket av skyggekast og støy
Det er 28 boliger som vil få både skyggekast, økt støynivå og utsyn til Moifjellet vindkraftverk og faller inn under gruppe 1. Innenfor samme radius rundt vindkraftverket er det totalt 58 boliger. Av de berørte boligene har 25 boliger utsyn til eksisterende vindkraftverk i dag, hvorav 14 er fritidsboliger og 11 er primærboliger. Det er én fritidsbolig og to primærboliger som ikke har utsyn til eksisterende vindkraftverk og som vil få skyggekast og økt støy.

2: Boliger som påvirkes av økt støy
83 boliger rundt Moifjellet vil få økt støynivå over L_{den} 40 dBA, uten å bli påvirket av skyggekast og faller innenfor gruppe 2. Innenfor samme avstand rundt vindkraftverket er det i dag 111 boliger.

Boligene som påvirkes av støy fordeler seg som følger:

- 61 primærboliger vil få støynivå på L_{den} 40-45 dBA og få utsyn til turbiner ved Moifjellet
- 12 fritidsboliger vil få støynivå på L_{den} 40-45 dBA og få utsyn til turbiner ved Moifjellet
- 10 primærboliger vil få støynivå på L_{den} 40-45 dBA, men ikke få utsyn til turbiner ved Moifjellet

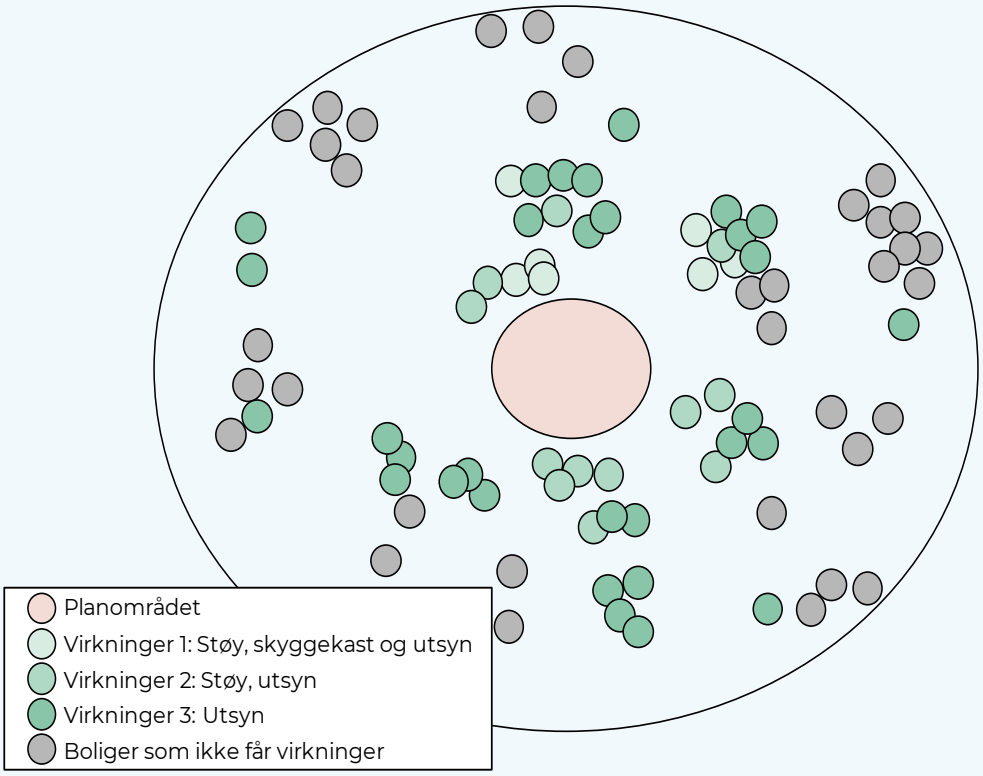
Det er ikke gjort detaljerte analyser av boliger som får støynivå lavere enn L_{den} 40 dBA, og vi har derfor ikke detaljerte tall for de berørte boligene som vil få støynivå mellom L_{den} 35 og 40 dBA.

3: Boliger som har utsyn til Moifjellet på avstand
Mellom 3 og 6 kilometer fra Moifjellet er det i dag 144 primærboliger og 25 fritidsboliger som vil få utsyn til Moifjellet, av totalt 628 boliger. Som beskrevet skilles det ikke mellom hvor synlig turbinene er fra boligen, og antallet inkluderer også eventuelle boliger som kun har begrenset utsyn til vindkraftverket ved at de for eksempel kun ser deler av en turbin eller tuppen av ett vingeblad. Av disse har 86 primærboliger og 22 fritidsboliger allerede utsyn til eksisterende vindkraftverk i området rundt. Samlet vil 14 prosent av boligene mellom 3 og 6

[7]Mennesker uten vesentlig hørselstap vil merke støy på L_{den} 40 dBA og 45 dBA. Kun de mest sensitiv hørsel vil kunne oppleve plage ved L_{den} 35 dBA. De færreste vil oppleve plage ved L_{den} 40 dBA og opptil 10 prosent ved L_{den} 45 dBA.

I området rundt Moifjellet vindkraftverk vil det være boliger som får flere virkninger (støy, skyggekast og synlighet), boliger som får enkelte virkninger og boliger som ikke får noen virkninger. Vi har definert influerte boliger basert på hva slags virkninger de får, gruppert i 3 grupper av virkninger. Figuren under illustrerer hvordan de influerte boligene kan fordeles rundt vindkraftverket, innenfor en avstand opp til 10 kilometer. Boliger i samme område kan få ulike grader av virkninger, for eksempel kan en nabo se vindkraftverket mens den andre naboen ikke gjør det. Merk at dette kun er en illustrasjon og den viser ikke hvor de influerte boligene rundt Moifjellet faktisk befinner seg.

Figur 3-1: Illustrasjon av ulike kategorier av influerte boliger rundt planområdet



Illustrasjon: Oslo Economics

kilometer fra Moifjellet som ikke ser noen vindturbiner i dag, få utsyn til Moifjellet.

Lenger ut, mellom 6 og 10 kilometer fra Moifjellet er det i dag 211 primærboliger og 104 fritidsboliger som vi få utsyn til Moifjellet, av totalt 1 136 boliger. De fleste – 185 av de berørte primærboligene og 96 av fritidsboligene, har i dag utsyn til eksisterende vindkraftverk i området rundt Moifjellet.

4. Utforming av spørreundersøkelsen

Delphi-metoden anvendes gjennom en spørreundersøkelse som sendes ut til lokale eiendomsmeglere og andre eksperter gjennom to runder. I undersøkelsen oppgir ekspertene forventet effekt på boligpriser gitt forskjellige situasjonsbeskrivelser som reflekterer lokale forhold rundt Moifjellet vindkraftverk og i hvilken grad primær- og fritidsboliger i nærområdet vil oppleve økt støy, skyggekast og/eller synlighet ved utbygging av vindkraftverket.

4.1 Utforming av spørreundersøkelse

4.1.1 Bakgrunnsinformasjon

I utforming av spørreundersøkelsen har vi tilstrebet at informasjonstekster og spørsmålene er så enkle og presise som mulig, for på den måten å legge til rette for at respondentene svarer mest mulig korrekt. Spørreundersøkelsen har blitt kvalitetssikret i flere omganger, og av flere personer, før utsendelse, for å sikre klarhet og unngå potensielle misoppfatninger i spørsmålsstillingen.

For å sikre at respondentene tar informerte beslutninger når de svarer ut undersøkelsen inkluderer undersøkelsen også viktig informasjon til respondenten om tema, herunder relevant informasjon om Statkrafts planer om etablering av vindkraft på Moifjellet, bebyggelse i området og andre lokale forhold som kan ha betydning for vurderingen. Undersøkelsen informerer også respondentene om estimater fra den nasjonale studien om effekt av landbasert vindkraftverk på boligpriser av Andersen, et al. (2024). Det gis også informasjon om hvordan Moifjellet vindkraftverk vil skille seg fra landsgjennomsnittet ved at det ligger i et område der det allerede er bygget ut flere vindkraftverk.

Spørreundersøkelsen inkluderer også enkelte bakgrunnsspørsmål om respondenten som er benyttet som kontrollvariabler ved analyse av resultatene. Bakgrunnsspørsmålene inkluderer blant annet informasjon om kjønn, alder, utdanning, yrke og arbeidserfaring.

4.1.2 Spørsmålssett

Vi har utformet spørreundersøkelsen med mål om å kunne vurdere de ulike virkingene av vindkraftverket på boligverdier (skyggekast, støy og synlighet). I tillegg har vi utformet undersøkelsen med mål om å kunne estimere den marginale effekten ved etablering av Moifjellet vindkraftverk, sammenlignet med dagens situasjon (hvor det allerede er eksisterende vindkraftverk i det aktuelle området).

For å estimere effekten av virkningene støy, skyggekast og synlighet til turbiner, skisserer vi tre spørsmålssett i spørreundersøkelsen som er direkte knyttet til grupperingen av virkninger som vi benytter til å definere de influerte boligene (se kapittel 3.2, og 0 for hele undersøkelsen). I hvert spørsmålssett presenterer vi en beskrivelse av påvirkningen for hver virkning (se Tabell 4-1). Dette inkluderer en beskrivelse av total støybelastning og endring i støy, skyggekast og synlighet til turbiner ved etablering av Moifjellet vindkraftverk. Vi beskriver også virkningene som de eksisterende vindkraftverkene har på primær- og fritidsboligene.

Hvert spørsmålssett knyttes også til en viss avstand fra vindkraftverket og et geografisk område på kartet. Dette er for å gi respondentene mer kontekst når de svarer på undersøkelsen, men betyr ikke at virkningene oppstår for alle boligene innenfor det geografiske området, eller at samme virkninger ikke kan oppstå andre steder. De geografiske områdene som er lagt ved spørre-undersøkelsen er eksempler på hvor de ulike kombinasjonene av virkninger kan oppstå.

Vi skiller mellom primær- og fritidsboliger. Etter at vi har presentert virkningene i hvert spørsmålssett, stiller vi spørsmål om forventet boligprisfall for hver av disse boligtypene.

Tidligere forskning og andre studier brukes til å sette noen ytre rammer for respondentene i undersøkelsen. I tråd med definisjon av de influerte boligene og funn fra tidligere studier setter vi en grense på maksimal avstand fra vindkraftverket på 10 kilometer. Vi setter også en øvre grense på hva respondentene kan oppgi av forventet negativ priseffekt på 50 prosent. Denne øvre grensen er også i tråd med forskningslitteraturen (Andersen, et al., 2024; Westlund & Wilhelmsson, 2021; Sunak & Madlener, 2016; Sunak & Madlener, 2013; Gibbons, 2015).

Spørsmålsett 1: Boliger som vil få økt støy, skyggekast og utsyn til mange turbiner
Det første spørsmålssettet tar for seg boliger med virkninger tilsvarende de beskrevet i den første gruppen av influerte boliger. Dette er boliger som vil få både økt støy, økt skyggekast og utsyn over mange turbiner. I spørreundersøkelsen er dette spørsmålssettet knyttet til området nord for Moifjellet.

I spørsmålssettet stiller vi spørsmål om forventet fall i boligverdi, både for boliger som har utsyn til eksisterende vindkraftverk og boliger som ikke har utsyn til turbiner i dag. For begge disse alternativene stiller vi spørsmål om forventet effekt på boligpriser ved etablering av Moifjellet vindkraftverk, og det skilles på primær- og fritidsbolig. Se Tabell 4-1 for inndelingen av spørsmålssett 1.

Spørsmålsett 2: Boliger som får økt støy og utsyn til mange av turbinene på Moifjellet
Spørsmålssett 2 tar for seg boliger som vil få både økt støy og synlighet til turbinene på Moifjellet, tilsvarende gruppe 2 av influerte boliger. I spørsmålssettet skiller vi mellom den totale støybelastningen for boliger på hhv. vest- og østsiden av vindkraftverket, der:

- Vestsiden får et støynivå opp mot L_{den} 45 dBA
- Østsiden får et støynivå opp mot L_{den} 40 dBA

Den marginale endringen ved etablering av Moifjellet er i begge tilfellene rundt L_{den} 5 dBA.

For boliger i disse områdene spør vi om forventet fall i boligverdi ved etablering av Moifjellet vindkraftverk, både for primær- og fritidsbolig.

For boliger på østsiden (med støynivå opp mot L_{den} 40 dBA) skiller vi mellom ulike grader av synlighet:

- Utsyn til mange turbiner i dag *og* vil få utsyn til mange turbiner ved Moifjellet (>10).
- Utsyn til mange turbiner i dag, men vil *ikke* ha utsyn til turbiner ved Moifjellet.

Se Tabell 4-1 for inndelingen av spørsmålssett 2.

Spørsmålsett 3: Boliger som vil få utsyn til vindturbiner på avstand
På en lengre avstand fra det planlagte vindkraft-verket på Moifjellet, vil boliger kunne få økt utsyn til turbiner, tilsvarende gruppe 3 influerte boliger. I spørreundersøkelsen skiller vi mellom boliger i to avstandsintervaller, 3-6 kilometer og 6-10 kilometer fra nærmeste turbin i Moifjellet vindkraftverk.

For boliger innenfor en radius på 3-6 km, stiller vi spørsmål om både primær- og fritidsbolig, for ulike grader av synlighet:

- Utsyn til flere turbiner ved Moifjellet og *ikke* utsyn til eksisterende vindkraftverk
- Utsyn til turbiner ved Moifjellet *og* turbiner fra eksisterende vindkraftverk
- Ikke utsyn til turbiner ved Moifjellet *eller* til eksisterende vindkraftverk

For boliger på lengre avstand, mellom 6 og 10 km, med utsyn til nye og eksisterende turbiner, stiller vi spørsmål om forventet fall i boligverdi for både

Tabell 4-1: Oversikt over virkninger fordelt på de tre spørsmålsettene vi skisserer i spørreundersøkelsen

Spørsmåls-sett	Avstand til nærmeste turbin på Moifjellet	Støybelastning	Opplevd skyggekast fra Moifjellet	Synlighet til turbiner fra Moifjellet	Synlighet til eksisterende anlegg
1	Inntil 3 km	Opptil L_{den} 45 dBA (økning ~ L_{den} 5 dBA)	Ja (også fra eksisterende)	Mange (>10 turbiner)	• Utsyn • Ingen utsyn
2	Inntil 3 km	Opptil L_{den} 45 dBA (økning ~ L_{den} 5 dBA) (vestsiden)	Nei	Mange (>10 turbiner)	Ja
	Inntil 3 km	Opptil L_{den} 40 dBA (økning ~ L_{den} 5 dBA) (østsiden)	Nei	• Ja, mange (>10 turbiner) • Ingen utsyn	Ja
3	3-6 km	Ingen	Nei	• Ja, flere (5-10 turbiner) • Ingen utsyn	• Utsyn • Ingen utsyn
	6-10 km	Ingen	Nei	Ja, i horisonten	Ja

primær- og fritidsbolig. Se Tabell 4-1 for inndelingen av spørsmålssett 3.

4.2 Utvalg av eksperter

Et viktig steg i Delphi-metoden er å definere og rekruttere et utvalg av eksperter som skal være kilden til informasjon. I vår analyse har vi valgt lokale eiendomsmeglere og andre eksperter med erfaring fra salg av boliger, som ekspertgruppe. For å utvide ekspertgruppen har vi inkludert eiendomsmeglere fra et utvalg andre kommuner hvor det har vært lignende vindkraftutbygging som rundt Moifjellet.

Spørreundersøkelsen ble sendt ut til en ekspertgruppe bestående av 75 respondenter, der to tredeler har lokal kunnskap fra Rogaland. Ekspertgruppen består primært av eiendoms-meglere som opererer i Bjerkreim og kommunene rundt, herunder kommuner i Jæren, Nord-Jæren og Dalane. I tillegg ble undersøkelsen sendt ut til eiendomsmeglere i Sirdal i Agder, Fosen og Åfjord i Trøndelag og Stord og Fitjar i Vestland.

4.2.1 Distribuering av spørreundersøkelsen

Ekspertene ble kontaktet på bakgrunn av et omfattende nettsøk. Spørreundersøkelsen ble sendt ut via Questback. Utsendingen av spørre-undersøkelsen har blitt supplert med en oppfølging på telefon og purring per e-post kort tid etter.

I tråd med Delphi-metoden blir spørre-undersøkelsen gjennomført i to runder. I den første runden av undersøkelsen blir respondentene, i henhold til forskningslitteraturen, bedt om å gjennomføre undersøkelsen uten dialog med andre eiendomsmeglere eller fageksperter. I den andre runden av spørreundersøkelsen får hver respondent informasjon om svarfordelingen til hele ekspertgruppen i anonymisert form, samt en påminnelse om hva de svarte i den første runden av spørreundersøkelsen. Respondentene får dermed mulighet til å justere svarene sine fra den første runden. Generelt anses svar i den andre runden som mer pålitelige, da svarene konvergerer nærmere den faktiske effekten ved at deltakerne har fått mulighet til å revidere sine svar basert på den samlede ekspertisen (Dugstad & Navrud, 2023).

For å forsikre oss om at rekkefølgen på spørsmålsettene respondentene får presentert ikke er ledende, deler vi respondentgruppen i to og distribuerer undersøkelsen med randomisert rekkefølge på spørsmålsettene.

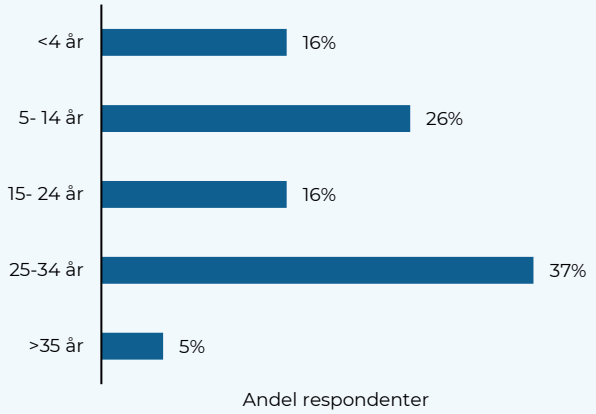
4.2.2 Respondenter

I den første runden av spørreundersøkelsen fikk vi 19 svar, som gir en svarprosent på litt over 25 prosent. I den andre runden fikk vi 17 svar.

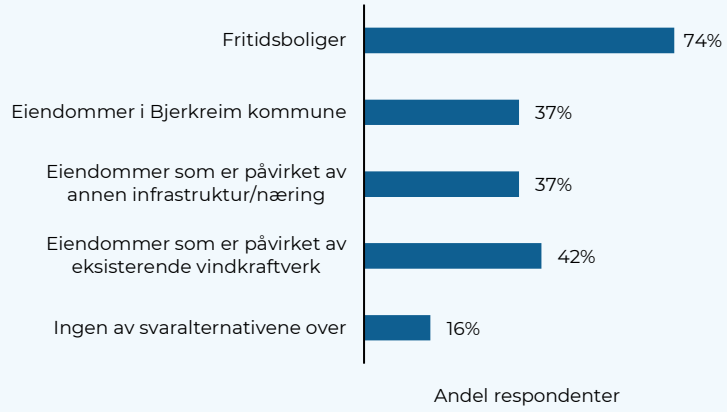
Av respondentene var det 47 prosent (10 av 19 respondenter) som hadde kjennskap til Statkrafts planer om utbygging av Moifjellet vindkraftverk, og kun 5 prosent (1 av 19 respondenter) som hadde kjennskap til den landsdekkende studien om effekt av landbasert vindkraftverk på boligpriser.

68 prosent av respondentene er eiendomsmeglere (13 av 19 respondenter), og resterende andel er tomteutviklere, takstmenn og annet. Som Figur 4-1 viser, har en andel på 58 prosent arbeidet i mer enn 15 år i bransjen (11 av 19 respondenter).

Figur 4-1: Antall år respondentene har arbeidet i bransjen



Figur 4-2: Respondentenes erfaring med salg av eiendommer



Merk: respondentene kan krysse av på flere kategorier

Merknad: Respondentene kan oppgi erfaring i flere kategorier. Kilde: Spørreundersøkelse gjennomført av Oslo Economics

Videre svarer 37 prosent av respondentene at de har erfaring med å selge eiendommer i Bjerkreim kommune (7 av 19 respondenter) (se Figur 4-2). Hhv. 37 og 42 prosent sier de har erfaring med salg av eiendommer som er påvirket av eksisterende vindkraftverk og eiendommer som er påvirket av annen infrastruktur/næring (7 og 8 respondenter). 74 prosent av respondentene har erfaring med salg av fritidsboliger (14 av 19 respondenter).

4.2.3 Tilstrekkelig stort utvalg

Det er viktig å ha et tilstrekkelig stort utvalg av eksperter for å muliggjøre videre analyser. I forkant av analysen anså vi et utvalg på omtrent 20 som tilstrekkelig i henhold til Navrud & Strand (2018). Vi endte like under dette nivået med hhv. 19 og 17 respondenter i de to rundene med spørreundersøkelsen.

Delphi-metoden forsøker gjennom å samle et bredt spekter av synspunkter fra ekspertressurser å oppnå konsensus om den *faktiske* effekten av det spørreundersøkelsen prøver å undersøke. Et lite utvalg begrenser variasjonen og representasjonen av relevant ekspertise og perspektiver, og kan redusere validiteten av resultatene. I et lite utvalg er det også en risiko knyttet til at enkeltpersoners meninger får uforholdsmessig stor innflytelse på resultatene. En svakhet med dette utvalget som består av få, stort sett lokale eiendomsmeglere, er at enkelte av respondentenes egne oppfatninger eller egeninteresser kan dominere resultatene mot en skjev fremstilling av den *faktiske* effekten. I vårt utvalg er det også en risiko for at kandidater som på forhånd har sterke oppfatninger og meninger er mer tilbøyelige til å delta i undersøkelsen, sammenlignet med eiendomsmeglere som fikk tilsendt spørreundersøkelsen, men valgte å ikke delta.

Formålet med vår analyse var å undersøke effektene ved Moifjellet spesielt, og som et supplement til nasjonale vurderinger. Det var derfor viktig for oss med lokal kunnskap i området/ lignende områder og kjennskap til effekt fra vindkraftverk for å sikre at analysen fanger opp de lokale forholdene. For et lite område som Moifjellet og Bjerkreim kommune reduserer dette den potensielle ekspertgruppen. Vi diskuterer utvalget av eksperter opp mot resultatene fra analysen ytterligere til slutt i rapporten.

4.3 Metode for å analysere svar fra spørreundersøkelsen

For analyse av svarene fra spørreundersøkelsen bruker vi en panelmodell. Data fra spørreundersøkelsen er transformert til paneldata, der svaret på hvert spørsmål om effekt på boligverdi utgjør en observasjon. Vi kategoriserer virkningene for hvert spørsmål basert på beskrivelsene av hhv. avstand, støy, skyggekast, synlighet, og opplevde virkninger til eksisterende vindturbiner i hver kategori.

Avstand fra vindturbinene er oppgitt i intervaller i kategoriene. I modellen er avstand kategorisert basert på den gjennomsnittlige avstanden i hvert intervall. For eksempel vil boliger som befinner seg 3-6 kilometer fra nærmeste vindturbin få verdien 4,5, som er gjennomsnittet av 3 og 6.

De øvrige virkningene er definert som binære variabler som tar verdien 1 dersom virkningen er til stede og 0 ellers. Eksempelvis får boliger som får skyggekast verdien 1 og boliger som ikke får skyggekast verdien 0 på denne variabelen. For å skille på støynivået etter etablering av Moifjellet vindkraftverk har vi laget to forskjellige variabler der «støy 1» svarer til økning i støy opp til L_{den} 40 og «støy 2» svarer til støy opp til L_{den} 45. Vi definerer også en binær variabel for om boligen er en primærbolig eller fritidsbolig.

Etter transformasjon til paneldata, ender vi opp med et paneldatasett med 648 observasjoner. Resultatene fra den første og den andre runden av undersøkelsen er inkludert i paneldatasettet, der den første runden av spørreundersøkelsen er inkludert som en kontrollvariabel.

For å analysere hvordan de ulike effektene påvirker verdireduksjon på boliger, estimerer vi en panelmodell med faste effekter, forklart som følgende:

$$y_{it} = \mathbf{x}_{it}\beta + v_i + \varepsilon_{it},$$

der y_{it} er reduksjon i boligverdi estimert av respondent i i spørsmål t, $\mathbf{x}$ er en vektor med forklaringsvariabler (inkludert eksternaliteter) og β er estimerbare koeffisienter som viser hvordan de ulike forklaringsvariablene påvirker verditap. Individfaste effekter er inkludert gjennom v_i, mens ε_{it} er støyleddet som fanger opp andre ting som påvirker estimert reduksjon i boligverdi for respondent i som respondenten vet, men ikke økonometrikeren. Ved bruk av faste effekter kontrollerer vi for egenskaper som ikke endres over tid for hver respondent (for eksempel kjønn, alder, utdanning og erfaring), men som likevel kan påvirke deres svar. Faste-effektmodeller er standard praksis for analysering av paneldata (Wooldridge, 2010).

I analysen bruker vi den estimerte modellen til å predikere verditap for ulike sett av virkninger. Resultatene oppgis som gjennomsnittlig verditap og 95 prosent konfidensintervall.

5. Effekt på boligverdi ved etablering av Moifjellet vindkraftverk

Analysen av spørreundersøkelsesdata viser et forventet fall i boligverdi for boliger som påvirkes av vindkraftutbyggingen på Moifjellet. Det estimerte verditapet er størst for boliger som ligger nært vindkraftverket og som vil få både økt støy, skyggekast og synlighet til turbinene. Verditapet reduseres ettersom avstanden til vindkraft-verket øker, og for primærboliger som ligger 6 til 10 kilometer fra vindkraftverket er det ikke statistisk grunnlag for å si at disse vil få et verditap. Verdifallet er mindre for primærboliger enn fritidsboliger.

5.1 Estimerte priseffekter av støy, skyggekast og utsyn til vindkraftverk

Basert på resultatene fra spørreundersøkelsen (oppsummert i Vedlegg D) har vi analysert hvordan de ulike virkningene (støy, skyggekast og synlighet) slår inn på boligprisene i området ved å estimere en panelmodell med faste effekter, som beskrevet i kapittel 4.3. I dette kapittelet beskrives først regresjonsresultatene fra panelmodellen som predikerer effekten av virkningene hver for seg. Deretter setter vi de ulike virkningene sammen og estimerer den samlede effekten på boligpriser i de ulike gruppene av influerte boliger. Til slutt i kapittelet sammenligner vi resultatene med studien av hedonisk prising.

Boligverdi

Rundt det planlagte vindkraftverket på Moifjellet er det omtrent 1 200 primærboliger og 140 fritidsboliger innenfor en avstand på 6 kilometer fra vindkraftverket. Det er få boligtransaksjoner i området nær det planlagte vindkraftverket, og det er dermed begrenset data på dagens boligverdier i området. Siden datagrunnlaget rundt Moifjellet er begrenset bruker vi data for et større område for å vurdere boligverdien på berørte boliger i dag. I området rundt 10 kilometer fra planområdet er det primært eneboliger, med en gjennomsnittlig boligpris på 3,3 millioner kroner (Ambita, 2024). Det er mindre omsetning av fritidsboliger i området nært Moifjellet, men i Bjerkreim kommune som helhet er den gjennomsnittlige verdien på fritidsboliger 1,9 millioner kroner (SSB, 2024).

Tabell 5-1: Panelregresjonsmodell av reduksjon i boligverdi

Variabel	Verdi
Konstant	11.82*** (1.77)
Avstand (km)	-1.49*** (0.43)
Støy1 (< L_{den} 40 dBA)	3.97*** (1.27)
Støy2 (<L_{den} 45 dBA)	5.58** (2.24)
Skyggekast	1.79 (1.20)
Synlighet	6.85*** (1.23)
Synlighet til eksisterende turbin	-2.92*** (0.75)
Fritidsbolig	3.95*** (1.02)
Runde 2	-0.546 0.062

Merk: *p<0.1, **p<0.05, ***p<0.01. Standardfeil oppgitt i parentes er gruppert på individnivå. R2 = 0.51. Antall observasjoner = 648

Modellen er basert på et sett av spørsmål om boliger som får ulike kombinasjoner av virkninger, og er egnet til å estimere priseffekten for boliger som får disse virkningene. Den er i mindre grad egnet til å beregne priseffekter for upåvirkede boliger (boliger som ikke får støy, skyggekast eller synlighet til Moifjellet).

5.1.1 Regresjonsresultater

Tabell 5-1 oppsummerer regresjonsresultatene fra panelmodellen. Resultatene kan forstås som hvordan tilstedeværelse av en enkelt virkning isolert sett og avstand (i kilometer) endrer den estimerte effekten for en enkelt bolig ut fra en konstant. Hver enkelt verdi kan forstås som endring i prosentpoeng. Med utgangspunkt i regresjons-

resultatene kan vi regne ut forventet prosentvis boligpriseffekt av en samling av virkninger[8].

Verdireduksjon på boliger som følge av vindkraftverket reduseres med økt avstand, noe som samsvarer med tidligere forskning (for eksempel Andersen et al (2024)). Når avstanden øker med 1 kilometer reduseres det estimerte boligverdifallet med 1,5 prosentpoeng. Resultatet er statistisk signifikant.

Videre øker verdireduksjonen når en av de negative virkningene skyggekast, støy og synlighet er til stede, der hver av disse virkningene isolert sett øker effekten på boligprisen med mellom 2 og 7 prosentpoeng. Denne er statistisk signifikant for støy og synlighet. Korrelasjon mellom støynivå og skyggekast relativt høy, som fører til at vi ikke finner statistisk signifikant effekt av skyggekast isolert sett i modellen. Effekten av skyggekast må derfor tolkes med forsiktighet og sees i sammenheng med støynivå.

Våre funn om en verdireduksjon som følge av støy på mellom 4 og 6 prosentpoeng er i tråd med en tidligere dansk studie som finner at effekten av støy fra turbinene er assosiert med en reduksjon i boligprisene på 6,7 prosent i de mest eksponerte områdene (Jensen, et al., 2013). Vi finner at utsyn til vindkraftverket alene øker den negative priseffekten med 6,85 prosentpoeng. Dersom boligen allerede har utsyn til eksisterende vindkraftverk i området rundt Moifjellet er verdireduksjonen mindre. For boliger som allerede har utsyn til eksisterende vindkraftverk faller den negative priseffekten med nær 3 prosentpoeng. Modellen viser at reduksjonen i boligverdi er statistisk signifikant og større for fritidsboliger enn primærboliger. For en fritidsbolig er verdi-reduksjonen om lag 4 prosentpoeng høyere enn for en tilsvarende primærbolig.

Det er verdt å merke at modellen er estimert på bakgrunn av 19 respondenter som svarte på en rekke scenarioer med presentasjon av ulikt omfang av negative effekter. Som et resultat får vi 648 observasjoner. Likevel vil resultatene være høyst avhengig av vurderingene til de 19 respondentene. Gitt det begrensede utvalget vil resultatene derfor være sensitive for potensielle skjevheter i respondentenes svar, spesielt knyttet til usikkerhet og eventuelle egeninteresser relatert til tematikken.

[8] Modellen er basert på et sett av spørsmål om boliger som får ulike kombinasjoner av virkninger, og er egnet til å estimere priseffekten for boliger som får disse virkningene.

5.1.2 Gjennomgang av priseffekt for de influerte boligene

I denne delen presenterer vi estimert effekt på boligverdi for primær- og fritidsboliger i de tre gruppene av influerte boliger. Estimert prosentvis fall i boligverdi med konfidensintervall i hvert område er vist i Figur 5-1 til Figur 5-3. Blå punkter er estimerte verdier for primærbolig og røde punkter er estimerte verdier for fritidsbolig. De blå søylene rundt punktene viser 95 prosent konfidensintervall for de estimerte verdiene.

1: Boliger som får skyggekast og støy

For primær- og fritidsboliger som får både skyggekast og støy, har vi beregnet et estimert verdifall på mellom 20 og 26 prosent, avhengig av boligtype og synlighet til eksisterende vindkraftverk (Figur 5-1). Verditapet er estimert for boliger som i gjennomsnitt ligger 2 kilometer[9] fra vindkraftverket og får skyggekast og økning i støy opp mot L_{den} 45 dBA. Disse boligene er påvirket av støy fra andre vindkraftverk i området i dag, men vil få en økning i støynivået. Verditapet vil reduseres dersom avstanden øker eller støynivået faller.

For primærboliger som får både økt støy, skyggekast og utsyn til turbiner, og som har disse virkningene fra eksisterende vindkraftverk, er det estimert en reduksjon i boligverdi på 20 prosent [17,4; 21,8]. For fritidsboliger med samme virkninger (skyggekast, støy og synlighet) er det estimerte verdifallet på 24 prosent [21,0; 26,2].

Boliger som ikke har utsyn til eksisterende vindkraftverk i området, får et høyere estimert verdifall ved etablering av Moifjellet vindkraftverk. For primærboliger som får skyggekast, støy opp mot L_{den} 45 dBA og utsyn til turbiner ved Moifjellet, men som ikke har utsyn til eksisterende vindkraftverk er det estimert et verditap på 23 prosent [19,4; 25,6]. For fritidsboliger som ikke har utsyn til eksisterende vindkraftverk, er det estimerte verditapet på 26 prosent [23,2; 29,8].

2: Boliger som får økt støy

For boliger som får økt støynivå (opp mot L_{den} 45 dBA), men i liten grad skyggekast fra Moifjellet, ligger det estimerte verdifallet for primær- og fritidsboliger mellom 9 og 22 prosent (Figur 5-2). Estimert verdifall er beregnet for boliger med en gjennomsnittlig avstand på 2 kilometer til vindkraftverket som får økt støy og som har utsyn til eksisterende vindkraftverk.[9]

For boliger som vil få en økning i støy på rundt L_{den} 5 dBA, opp mot samlet støy på L_{den} 45 dBA, og som får utsyn til Moifjellet, er verditapet estimert til hhv.

[9] Boliger i gruppe 1 ligger mellom 1 og 3 kilometer fra vindkraftverket. Verditapet er estimert for midtpunktet i intervallet av avstand.

18 [15,9; 19,7] og 22 [19,1; 24,4] prosent for primær- og fritidsboliger. For boliger med samme støypåvirkning, men som ikke får utsyn til Moifjellet, er verditapet estimert til hhv. 11 [7,9; 14,1] og 15 [12,2; 17,6] prosent for primær- og fritidsboliger.

For boliger med et lavere samlet støynivå, opp mot L_{den} 40 dBA etter etablering av Moifjellet, er det estimerte verditapet lavere. For boliger som vil få utsyn til turbiner på Moifjellet er verditapet estimert til hhv. 16 [14,3; 18,1] og 20 [17,5; 22,8] prosent for primær- og fritidsboliger. For boliger med samme støypåvirkning, men som ikke vil ha utsyn til Moifjellet er verditapet estimert til hhv. 9 [7,4; 11,3] og 13 [12,1; 14,5] prosent for primær- og fritidsboliger.

3: Boliger som får utsyn til Moifjellet på avstand

Estimert verdifall for boliger som får utsyn til vindturbinene på Moifjellet er mellom 3 og 15 prosent (Figur 5-3). Verdifallet avhenger både av avstand til planområdet på Moifjellet, om boligene allerede har utsyn til eksisterende vindkraftverk og hvorvidt det er fritidsboliger eller primærboliger. Verditapet er estimert innenfor to avstandsintervaller, der den estimerte verdien er basert på midtpunktet i intervallet på henholdsvis 4,5 og 8 kilometer.

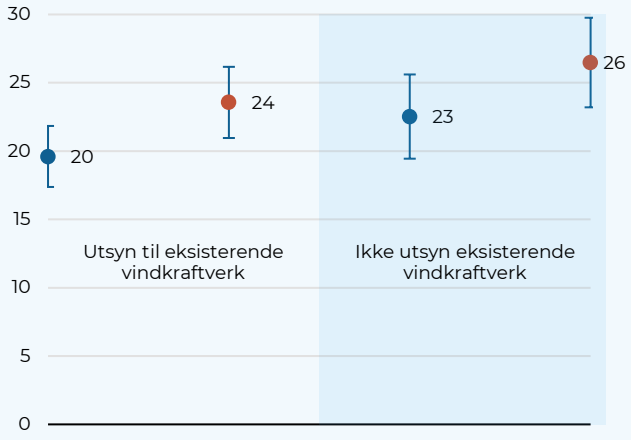
For boliger innenfor en avstand på 3 til 6 kilometer fra Moifjellet vindkraftverk, som både har utsyn til eksisterende vindkraftverk og vil ha utsyn til vindturbiner på Moifjellet, er estimert verdifall på 9 prosent [6,1; 10,9] for primærboliger og 12 prosent [10,3; 14,6] for fritidsboliger. For boliger som vil få samme virkninger, men som ligger 6 til 10 kilometer fra Moifjellet vindkraftverk er verditapet estimert til 3 prosent [-0,1; 6,8] for primærboliger og 7 prosent [4,9; 9,7] for fritidsboliger. Det estimerte verditapet for primærboliger i dette området er ikke signifikant ulik fra null. Vi kan derfor ikke fastslå at det vil oppstå et fall i boligverdier ved utbygging vindkraftverket for primærboliger mellom 6 og 10 kilometer fra Moifjellet, som vil få utsyn til både Moifjellet og eksisterende vindkraftverk.

For boliger 3 til 6 kilometer fra Moifjellet som i dag ikke har utsyn til eksisterende vindkraftverk, men som vil ha utsyn til Moifjellet vindkraftverk, er verditapet estimert til 11 [9,1; 13,8] prosent for primærboliger og 15 prosent [13,4; 17,4] for fritidsboliger. For boliger som vil få samme virkninger, men som ligger 6 til 10 kilometer fra Moifjellet, er verditapet estimert til 6 prosent [2,5; 10,0] for primærboliger og 10 prosent [7,4; 13;09] for fritidsboliger.

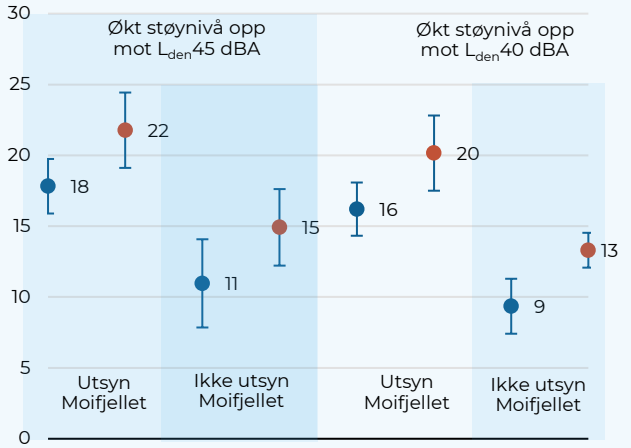
5.1.3 Usikkerhet i analysen

Resultatene er basert på en statistisk regresjonsmodell der den avhengige variabelen er

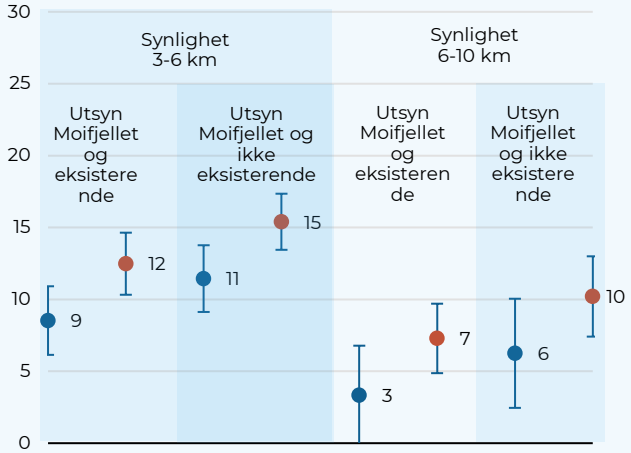
Figur 5-1: Estimerte prosentvise verdifall for gruppe 1: boliger som får skyggekast og støy



Figur 5-2: Estimerte prosentvise verdifall for gruppe 2: boliger som får støy



Figur 5-3: Estimerte prosentvise verdifall for gruppe 3: boliger som får utsyn på avstand



Merknad: Blå punkter er estimerte verdier for primærbolig og røde punkter er estimerte verdier for fritidsbolig. Blå søyler er 95 prosent konfidensintervall.

estimert boligverditap rapportert av eiendomsmeglere, og uavhengige variabler er ulike eksterne virkninger (støy, synlighet og skyggekast) og deres nivå. Analysen antar ingen avbøtende tiltak. Ved å redusere støy, synlighet og skyggekast gjennom avbøtende tiltak, kan verditapene reduseres.

Det er usikkert hvordan verditapet vil utvikle seg over tid. Så lenge de negative virkningene av støy, skyggekast eller synlighet ikke blir redusert, vil ikke priseffekten endres. Tilpasning av boliger for å skjerme virkningene kan endre verditapet over tid, men denne effekten er vanskelig å observere. Schütt (2023) kontrollerte for om verditapet endres over tid i sin meta-regresjon og fant ingen statistisk signifikant effekt. Dette tyder på begrenset tilpasning i markedet over tid.

Det er viktig å påpeke at våre estimater er basert på uttrykte forventinger av ekspertgruppen og ikke faktiske boligtransaksjoner. Dette gjør at estimatene i større grad kan være påvirket av ekspertenes egne interesser, for eksempel hvis enkelte eiendomsmeglere har økonomiske interesser knyttet til tematikken. Dette er en generell svakhet med uttrykte preferansemetoder (Johnston, et al., 2017). Ettersom vi har et relativt lite utvalg, kan dette forsterke sensitiviteten for slike egeninteresser. Samtidig samsvarer resultatene godt med tidligere forskning, noe som styrker validiteten. At ekspertene viser omfangssensitivitet, ved å verdsette mer omfattende negative eksternaliteter høyere, bidrar også til å styrke validiteten (Dugstad, et al., 2021). For å fastslå hvorvidt egeninteresser faktisk påvirker resultatene, kreves det mer forskning på Delphi-metoden innen miljøverdsetting.

5.2 Gjennomsnittlig verdifall basert på avstand

5.2.1 Forskjeller mellom Delphi-studien og hedonisk prising

Vår analyse basert på Delphi-metoden, skiller seg fra analyser basert på metode for hedonisk prising av faktiske boligtransaksjoner. Dette er blant annet metoden som er brukt av Andersen m.fl. (2024), som ser på effekten av landbasert vindkraft på boligpriser i Norge.

En viktig forskjell mellom disse analysene er hvordan influensområdene er definert. I den nasjonale hedonisk prisingsstudien defineres influensområdet utelukkende basert på avstand fra vindkraftverket, mens vår Delphi-analyse definerer influerte boliger basert på påvirkningen boligene vil få (endring i virkningene skyggekast, støy, synlighet eller kombinasjoner av disse). Avstand vil i mange tilfeller reflektere hvilke virkninger boligene får fra vindkraftverket, men dette vil også variere med blant annet topografi, terreng og annen bebyggelse.

Ved bruk av hedonisk prising beregnes altså en gjennomsnittlig effekt for *alle* boliger innenfor en gitt avstand fra vindkraftverket, der de ulike boligene kan være berørt i ulik grad av vindkraftverkene. For eksempel kan enkelte boliger være lokalisert slik at de både får utsyn, støy og skyggekast av vindkraftverket, mens andre boliger som følge av topografien i området, kan være nær upåvirket. For eiendommer som er særlig påvirket vil derfor hedonisk prising underestimere priseffekten, mens den kan overestimeres for upåvirkede eiendommer.

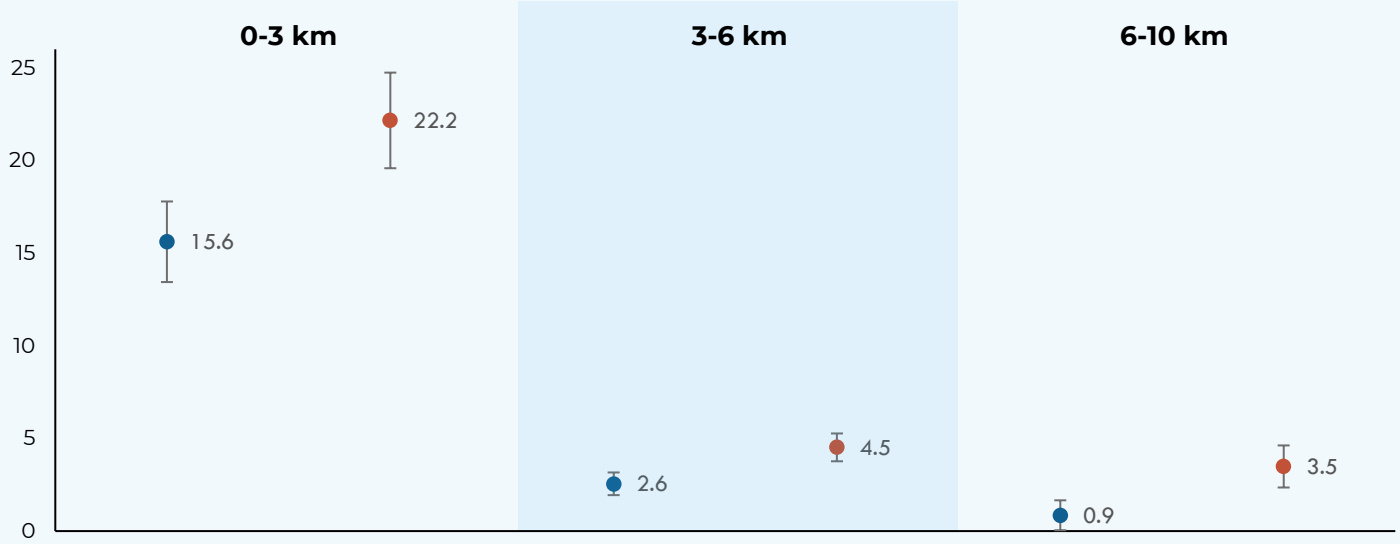
Hedonisk prising baseres også på faktiske boligtransaksjoner som kan observeres i boligmarkedet. Metoden tar ikke høyde for at det kan være enkelte eiendommer som ikke er blitt omsatt som følge av vindkraftutbyggingen. Utelatte omsetninger kan gi skjevheter i estimatene basert på hedonisk prising dersom boliger med særlig stort verdifall i mindre grad selges i markedet. Utfordringer med salg av boliger kan særlig være relevant for boligene som ligger nærmest vindkraftverket.

Ettersom det ikke er et en-til-en-forhold mellom boliger som er inkludert i de influerte boligene i Delphi-studien (de som får spesifikke virkninger) og boliger som er inkludert i influensområdet i studien basert på hedonisk prising (de i visse avstander til vindkraftverket), kan heller ikke resultatene sammenliknes direkte. For å i større grad kunne sammenligne resultatene, har vi derfor med utgangspunkt i estimatene fra Delphi-studien, beregnet den samlede priseffekten for boliger innenfor gitte avstander fra vindkraftverket og beregnet gjennomsnittet av disse.

Selv ved beregning av gjennomsnittlige verdier for boligprisfall innenfor avstandsintervaller, er det fortsatt forskjeller mellom metodene som kan påvirke resultatene. Det er blant annet grunn til å tro at Delphi-analysen (helt eller delvis) kan fange opp fortrengingseffekter[10], som tradisjonell hedonisk prisingsstudier ikke kan fange opp. Gjennom spørreundersøkelsen er eiendoms-meglere bedt om å vurdere den samlede effekten

[10] Fortrengningseffekter innebærer et verdifall for boliger som ikke blir solgt i markedet, enten fordi det oppstår problemer med salg av boligen etter at vindkraftverket etableres eller at eier ikke ønsker å selge til markedspris dersom verdifallet er stort, jf. også beskrivelse i 2.2

Figur 5-4: Beregnet gjennomsnittlig verdifall innenfor intervaller av avstand



Merknad: Blå punkter er estimerte verdier for primærbolig og røde punkter er estimerte verdier for fritidsbolig. Blå søyler er 95 prosent konfidensintervall.

for eiendommer som får ulike virkninger, og dette kan også ta høyde for at noen eventuelt får problemer med salg.

5.2.2 Gjennomsnittlig priseffekt

For å beregne gjennomsnittlig priseffekt har vi sett på alle primær- og fritidsboliger innenfor tre ulike intervaller av avstand til Moifjellet, herunder 0-3 kilometer, 3-6 kilometer og 6-10 kilometer. Hver bolig er beskrevet med virkningene som vil oppstå og et tilhørende estimert boligprisfall fra kapittel 5.1.2. Innenfor de ulike intervallene av avstand er det også boliger som ikke vil få noen av virkningene støy, skyggekast eller utsyn til vindkraftverket. Analysen vår forklarer boligprisfall som følge av ulike virkninger fra vindkraftverket, og det er derfor lagt til grunn at det ikke vil være et boligprisfall for boligene som ikke får virkingene støy, skyggekast eller synlighet. For alle boligene innenfor et avstandsintervall samlet, er det beregnet et gjennomsnittlig verdifall. Beregning av gjennomsnittlig verdifall er beskrevet ytterligere i Vedlegg B og oppsummert i Figur 5-4.

For primærboliger som ligger nærmest det planlagte vindkraftverket, mindre enn 3 kilometer unna, er det estimert et gjennomsnittlig verdifall på 15,6 prosent [13,4; 17,8]. Dette samsvarer med resultatene i studien av Andersen, et al. (2024) som fant en negativ betalingsvillighet mellom 12 og 17 prosent for boliger under 3 kilometer fra et vindkraftverk. Hedonisk prising kan underestimere effekten nære vindkraftverket, ved at fortrenings-effekter ikke hensyntas i analysen. For fritidsboliger innenfor 3 kilometer fra Moifjellet er det estimert et gjennomsnittlig verdifall på 22,2 prosent [19,6; 24,7].

Med økt avstand til vindkraftverket faller den gjennomsnittlige verdien, både som følge av at den estimerte verdien fra Delphi-studien faller og at andelen påvirkede boliger faller. For boliger som ligger mellom 3 og 6 kilometer unna vindkraftverket er det estimert et gjennomsnittlig verdifall på 2,6 prosent [1,9; 3,2] for primærboliger og 4,5 prosent [3,8; 5,3] for fritidsboliger. For boliger som ligger lenger unna, mellom 6 og 10 kilometer fra vindkraftverket, er det estimerte verdifallet for primærboliger 0,9 prosent [0,0; 1.7] og fritidsboliger 3,5 prosent [2,4; 4,6]. At verdien for primærbolig i dette området nærmer seg null, samsvarer også med studien av Andersen m.fl. (2024) som finner at effekten konvergerer mot null i en avstand på 5 til 7 kilometer fra vindkraftverket.

5.3 Avsluttende vurderinger

Vi har benyttet en Delphi-metodikk for å beregne forventet effekt på boligpriser for primærboliger og fritidsboliger rundt det planlagte Moifjellet vindkraftverk. Delphi-metoden innebærer her å spørre eiendomsmeglere og andre fageksperter om hvordan de forventer at boligpriser i det aktuelle området vil påvirkes for boliger som får ulike virkinger av vindkraftverket. Svarene fra spørreundersøkelsen danner grunnlag for vår analyse av forventet effekt på boligverdi for boliger som får ulike virkninger (støy, skyggekast og synlighet) av vindkraftverket. Hvordan de ulike virkningene slår inn på boligprisene i området er analysert ved å estimere en panelmodell med faste effekter.

Vi estimerer et forventet fall i boligverdier på mellom 3 og 26 prosent for primær- og fritidsboliger som berøres av støy, skyggekast eller utsyn til det planlagte Moifjellet vindkraftverk. Verdifallet er størst for boliger som ligger nær vindkraftverket og som får økt støy og skyggekast.

Verdifallet er lavere dersom boligene allerede har utsyn til eksisterende vindkraftverk og/eller befinner seg lengre unna planområdet for vindkraftutbyggingen. Verdifallet er større for fritidsboliger enn for primærboliger.

En nylig gjennomført nasjonal studie av Andersen m.fl. (2024) fant en negativ betalingsvillighet på mellom 12 og 17 prosent for boliger som ligger under 3 kilometer fra et vindkraftverk.[11] For å kunne sammenlikne resultatene fra vår Delphi-analyse med denne studien beregner vi gjennomsnittlige verditap innenfor ulike avstandsintervaller fra vindkraftverket. Vi estimerer et gjennomsnittlig verdifall på 15,6 prosent [13,4; 17,8] for primærboliger som ligger mindre enn 3 kilometer fra vindkraftverket, noe som er i samme størrelsesorden som funnene i den nasjonale studien.

Ettersom området rundt Moifjellet allerede er påvirket av flere vindkraftverk, kunne man i utgangspunktet forvente at effekten av vindkraftverket på boligpriser ville vært lavere enn for landsgjennomsnittet. På den annen side vil Delphi-studien i større grad enn studier basert på hedonisk prising ta hensyn til forventede verdifall som ikke realiseres i markedet. Dersom boligene som påvirkes mest av vindkraftverket får større problemer med salg og i mindre grad omsettes i markedet enn boliger som er upåvirket eller påvirkes i mindre grad, vil hedonisk prising underestimere effekten på boligverdier. Denne effekten kan spesielt forventes å være til stede for boliger nærmest vindkraftverket, med en avstand under 3 kilometer fra vindkraftverket.

Andre virkninger som kan påvirke boligverdier

I spørreskjemaene til ekspertgruppen har utgangspunktet for vurdering av boligprisfall vært i hvilken grad boligen påvirkes av økt støy, skyggekast og utsyn til vindkraftverk. Det kan også tenkes at andre eksterne virkninger av vindkraftverket kan påvirke boligverdi.

Eksempelvis kan tap av rekreasjonsområder også påvirke verdifall på primær- og fritidsboliger. Tap av rekreasjonsområder kan særlig påvirke boliger nær vindkraftverket, da bruken av naturområder typisk øker med nærhet til området, og det kan være vanskelig å isolere effektene av dette fra de som følger av støy, nærhet og synlighet (Iversen & Dugstad, 2024; Dugstad, et al., 2024). I vår analyse har vi ikke spurt spesifikt om hvordan tap av rekreasjonsområder påvirker boligpriser, nettopp fordi det er vanskeligere å isolere effekten. Vi forventer at effekten av dette i stor grad er internalisert i estimatene, særlig eventuell påvirkning på nærrekreasjonsområder rundt boligene.

Det kan også finnes positive eksterne virkninger av vindkraft, som potensielt billigere strøm, lokal verdiskaping og inntekt til kommunen gjennom produksjonsavgift og grunnrenteskatt. Hvorvidt disse effektene demper estimert verditap på berørte boliger, er høyst usikkert. Det er imidlertid mulig at slike spillover-effekter kan oppstå, der verdifall for boliger i nærheten av vindkraftverk delvis blir oppveid av økte boligpriser for boliger som ikke eksponeres direkte for de samme eksternalitetene. Dette kan ha fordelingsvirkninger, ettersom gevinster og tap ikke nødvendigvis fordeles likt mellom ulike grupper av boligeiere.

Virkningene kan reduseres ved avbøtende tiltak og erstatning

Vår analyse er basert på virkningene slik de er beskrevet i Statkrafts planer per i dag. Avbøtende tiltak eller andre tilpasninger som reduserer de negative virkningene fra vindkraftverket, vil også redusere det forventede verditapet på boligene i området rundt Moifjellet.

For den enkelte boligeier kan en negativ priseffekt også reduseres gjennom annen kompensasjon og erstatning. Grunneiere som får kompensasjon ved etablering av vindkraftverket på deres eiendommer, kan få en positiv samlet effekt på eiendomsverdien. Enkelte av boligene som vil få størst virkninger av vindkraftverket vil også kjøpes ut av Statkraft gjennom egne avtaler med boligeiere. Vi har ikke vurdert den samlede effekten for grunneiere eller andre som får annen kompensasjon, kun den direkte effekten på boligpriser som følge av støy, skyggekast og synlighet boligen vil få fra vindkraftverket.

Bruk av analysen inn i samfunnsøkonomiske vurderinger

Denne studien er gjennomført for å svare ut krav om å utrede hvilken effekt det planlagte vindkraftverket vil ha på boligverdier i området. Som beskrevet i kapittel 2 benyttes studier av boligpriseffekter gjerne som en metodikk inn i samfunnsøkonomiske analyser for å verdsette betydningen av miljø- og arealinngrep. Ved anvendelse av denne studien til et slikt formål, vil resultatene potensielt kunne reflektere de samlede «nærføringseffektene» av vindkraftverket. Dette inkluderer virkningene for de som bor i området,

[11] Studien bruker hedonisk prising basert på data fra alle eiendomstransaksjoner mellom 2010 og 2022 for boliger nær etablerte vindkraftverk i Norge.

både støy, skyggekast, synlighet og påvirkning på rekreasjonsområder i nærheten. Studien vil i mindre grad kunne brukes til å si noe om effekten på ikke-bruksverdier i området, eller negative miljøeffekter for de som er tilreisende eller bor lenger unna. Dersom resultatene benyttes inn i de samfunnsøkonomiske analysene er det viktig å vurdere i hvilken grad anslagene dekker virkninger som vanligvis vurderes som ikke-prissatte, for å unngå dobbelttelling av miljøvirkningene.

6. Referanser

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Vedlegg A Litteraturgjennomgang

Dette vedlegget gir en oppsummering av de internasjonale studiene vi har gått gjennom og de viktigste funnene fra hver studie. Hovedfunnene fra studiene er også oppsummert i Tabell 6-1.

Meta-regresjonsanalysen til Schütt (2023) finner en gjennomsnittlig negativ priseffekt på 0,68 prosent for boliger i en avstand på rundt 3 kilometer fra et vindkraftverk. Effekten faller til null etter rundt rundt 4,5 kilometer. Resultatet er basert på 720 estimater fra 25 ulike studier med hedonisk prising. Dette estimatet forutsetter at modellene som brukes i de ulike studiene er satt opp riktig, og at det ikke er noe publiseringsbias. Dette er sterke, men nødvendige forutsetninger.

En dansk studie finner finner at landbasert vind har en negativ effekt på boligpriser innenfor 3 kilometer (Jensen, et al., 2018). Den negative effekten øker med antall vindturbiner, men med avtakende effekt. Jensen et al. (2018) ser også på effekt avhengig av om det gjelder ferie- eller ordinære boliger. For ordinære boliger finner de at boligprisene reduseres med mellom 0,2 og 1,1 prosent dersom det kommer en ny vindturbin innenfor 3 kilometer . Effekten avtar med antallet turbiner som allerede er innenfor 3 kilometer s radius. Resultatene er lignende for feriehus, men ikke like tydelige. Effkten er signifikant i tre av de fem områdene de ser på (i motsetning til fem av fem områder for ordinære boliger).

En tidligere dansk studie skiller mellom priseffekt som skyldes støy og visuell påvirkning (Jensen, et al., 2013). De finner at effekten av støy fra turbinene er assosisert med en reduksjon i boligprisene på 6,69 prosent i de mest eksponerte områdene. Visuell påvirkning står for 3,15 prosentpoeng av boligprisreduksjonen assosiert med bygging av et vindkraftverk. Denne negative priseffekten reduseres med 0,24 prosentpoeng per 100 meter fra vindturbinen for boliger med sikt til turbinen.

En svensk studie finner signifikante priseffekter i et større område rundt vindkraftverkene. Studien finner statistisk signifikant effekt helt ut til 6-8 kilometer (Westlund & Wilhelmsson, 2021). Effekt her ligger på 2-6 prosent. På distanser over 8 kilometer finner forskerne ingen statistisk signifikante estimater, og det er null effekt ved avstander større enn 14 kilometer.

I en tysk studie forsøker Frondel et al. (2019) å skille mellom urbane og rurale områder. De finner at den negative effekten av vindturbiner er betydelig høyere i rurale områder. Effekten på boligpriser nær urbane områder er betydelig svakere og statistisk insignfikant. Dette står i kontrast til funnene i Dröes & Koster (2016), hvor effekten er *større* i urbane områder. I forklaringen deres trekker Frondel et al. (2019) frem at urbane områder allerede er utviklet, så synet av en vindturbin endrer ikke nødvendvis det overordnede inntrykket av landskapet. De trekker også frem at urbane områder har høyere bygningstetthet, som kan dekke til synet av vinturbiner.

En nederlansk og en tysk studie forsøker å se på effekten i forkant av at vindturbinene bygges. Dröes & Koster (2016) viser at boligprisene er signifikant lavere allerede to år før konstruksjon av en ny turbin. Tidligere enn to år er det ikke noen statistisk signifikant effekt. Sunak & Madlener (2013) finner derimot ikke støtte for noen forventningseffekt. Effekten de finner er tydeligere for større turbiner og i urbane områder.

Ulik priseffekt avhengig av turbinstørrelse trekkes også frem i en annen nederlandsk studie (Dröes & Koster, 2021). De finner en boligpriseffekt på 1,8 prosent med et 2 kilometers influensområde. De påpeker også at turbiner har blitt høyere over tid, så den visuelle og støymessige effekten vil være større nå enn tidligere. De finner at større turbiner har en større effekt på boligpriser. Mens mindre turbiner, definert som mindre enn 50 meter, har en gjennomsnittlig effekt på mindre enn 1 prosent (ikke statistisk signifikant), har middels store turbiner (50-150 meter) en statistisk signifikant effekt på rundt 2 prosent. Store turbiner på over 150 meter, derimot, har en statistisk signifikant effekt på rundt 5 prosent, med et influensområde på rundt 2 kilometer. Effekten av mindre turbiner faller fort til null etter 1 kilometer – i tillegg til å ikke være statistisk signifikant innenfor dette influensområdet. De understreker, i likhet med andre artikler, at det er primært den første turbinen som reduserer boligprisene.

I en tysk studie bruker Sunak & Madlener (2016) en annen tilnærming ved å kategorisere ulike tomter (ikke boliger) etter hvor synlige nærmeste vindkraftverk er for dem. Det er derfor ikke noe relevant influensområde eller distanse for når effekten på boligtomter går til null. Det er kun synligheten som betyr noe. De finner at boligtomter med «ekstrem» til «middels» sikt til vindkraftverk ser

Tabell 6-1: Oversikt over eksisterende litteratur

Artikkel	Priseffekt	Influens-område	Null effekt	Land	Omfang	Periode
Andersen et al. (2024)	-15 % for <1 km	4 kilometer	5-7 km	Norge	Nasjonalt	
Westlund & Wilhelmsson (2021)	-14 %	2 km	6-8 km	Sverige	Nasjonalt	
Jensen et al. (2018)	Negativ	3 km	N/A	Danmark	Enkelte kommuner	
Jensen et al. (2013)	-3,15 % pga. visuell påvirkning og mellom -3 og -7 % pga. støy (avhengig av støynivå)	2,5 km	N/A	Danmark	Nasjonalt	2000-2011
Frondel et al. (2019)	-7,10 % for <1 km	N/A	8-9 km	Tyskland	Nasjonalt	2007-2015
Dröes & Koster (2021)	-1,8 %	2 km	2,25 km	Nederland	Nasjonalt	1985-2019
Dröes & Koster (2016)	-1,4 %	2 km		Nederland	Nasjonalt	1985-2011
Schütt (2023)	-0,68 %			N/A (metastudie)		
Gibbons (2015)	Mellom -5 og -6 %	2 km	8-14 km	England, Wales	Nasjonalt	2000-2012
Dong & Chang (2022)	Mellom -0,4 og -12,4 %			USA	Enkeltsak	2005-2020
Sunak & Madlener (2013)	Mellom -21,5 og -29,7 % for <1 kilometer (for tomt heller enn bolig)	N/A	1,5 km	Tyskland	To byer i vest-tysk stat	
Sunak & Madlener (2016)	Mellom -9 og -14 % for eiendommer med synlighet mellom «ekstremt» og «middels»	N/A	N/A	Tyskland	Tre byer i vest-tysk stat	1992-2010

en prisnedgang på mellom 9 og 14 prosent. Mindre forandringer i vindkraftverks synlighet har ingen statistisk betydelig effekt på boligpris.

Vedlegg B Beregnet gjennomsnittlig verdifall

I Tabell 6-2 til Tabell 6-4 summerer vi opp alle primær- og fritidsboliger innenfor hvert intervall av avstand fra vindkraftverket. Boligene er fordelt i ulike grupper, basert på hvilke virkninger som kan oppstå for den enkelte bolig (beskrevet under «Virkninger»). Virkningene har igjen betydning for estimert boligverdifall som utbyggingen på Moifjellet kan føre med seg, som beregnet i Delphi-analysen. Tabellen inkluderer også boliger innenfor avstandsintervallet som ikke vil få økt støy, skyggekast eller synlighet til vindkraftverket. Analysen vår forklarer boligprisfall som følge av ulike virkninger fra vindkraftverket, og det er derfor lagt til grunn at det ikke vil være et boligprisfall for boligene som ikke får virkingene støy, skyggekast eller synlighet.

For alle boligene, fordelt på primær- og fritidsboliger, er det beregnet et gjennomsnittlig verdifall innenfor hvert intervall av avstand.

Tabell 6-2: Estimert verdifall for ulike grupper av boliger 0-3 km fra Moifjellet

Virkninger	Antall primærboliger	Estimert prisfall (95 % KI)	Antall fritidsboliger	Estimert prisfall (95 % KI)
Skyggekast, støy, synlighet	2	22,5 (19,4; 25,6)	1	26,5 (23,2; 29,8)
Skyggekast, støy, synlighet, eksisterende synlighet	11	19,6 (17,4; 21,8)	14	23,6 (21,0; 26,2)
Støy, synlighet	4	20,7 (17,9; 23,5)	1	24,7 (21,4; 27,9)
Støy, synlighet, eksisterende synlighet	48	17,8 (15,9; 19,7)	11	21,8 (19,1; 24,4)
Støy, eksisterende synlighet	10	11,0 (7,9; 14,1)	0	
Synlighet	3	15,2 (12,1; 18,2)	0	
Synlighet og eksisterende synlighet	8	12,2 (8,8; 15,7)	0	
Upåvirket	7	0	1	0
Sum boliger og gjennomsnittlig verdifall	**93**	**15,6 (13,4; 17,8)**	**28**	**22,2 (19,6; 24,7)**

Tabell 6-3: Estimert verdifall for ulike grupper av boliger 3-6 km fra Moifjellet

Virkninger	Antall primærboliger	Estimert prisfall (95 % KI)	Antall fritidsboliger	Estimert prisfall (95 % KI)
Støy, synlighet	0		0	
Støy, synlighet, eksisterende synlighet	9	14,1 (11,1; 17,2)	0	
Synlighet	55	11,4 (9,1; 13,8)	3	15,4 (13,4; 17,4)
Synlighet og eksisterende synlighet	78	8,5 (6,1; 10,9)	22	12,5 (10,3; 14,6)
Upåvirket	415	0	46	0
Sum boliger og gjennomsnittlig verdifall	**557**	**2,6 (1,9; 3,2)**	**71**	**4,5 (3,8; 5,3)**

Tabell 6-4: Estimert verdifall for ulike grupper av boliger 6-10 km fra Moifjellet

Virkninger	Antall primærboliger	Estimert prisfall (95 % KI)	Antall fritidsboliger	Estimert prisfall (95 % KI)
Synlighet	26	6,3 (2,5; 10,0)	8	10,2 (7,4; 13,0)
Synlighet og eksisterende synlighet	185	3.3 (-0,1; 6,8)	96	7.3 (4,9; 9,7)
Upåvirket	701	0	120	0
Sum boliger og gjennomsnittlig verdifall	**912**	**0.9 (0,0; 1,7)**	**224**	**3,5 (2,4; 4,6)**

Vedlegg C Spørreundersøkelse design – Runde 1

Side 1

oslo**economics**

Spørreundersøkelse om påvirkning fra vindkraftverk på eiendomsverdi

Takk for at du vil delta i spørreundersøkelsen!

Vi minner om at spørreundersøkelsen vil bestå av to runder, hvor dette er den første runden. Runde 2 vil sendes ut mot slutten av september. I Runde 2 vil du bli presentert resultatene fra denne undersøkelsen og ha mulighet til å justere svarene du har gitt.

Spørreundersøkelsene tar ca. 10 minutter å svare på per runde. Vi ber deg lese nøye gjennom informasjonen i denne undersøkelsen.

Neste

Side 2

oslo**economics**

Spørreundersøkelse om påvirkning fra vindkraftverk på eiendomsverdi

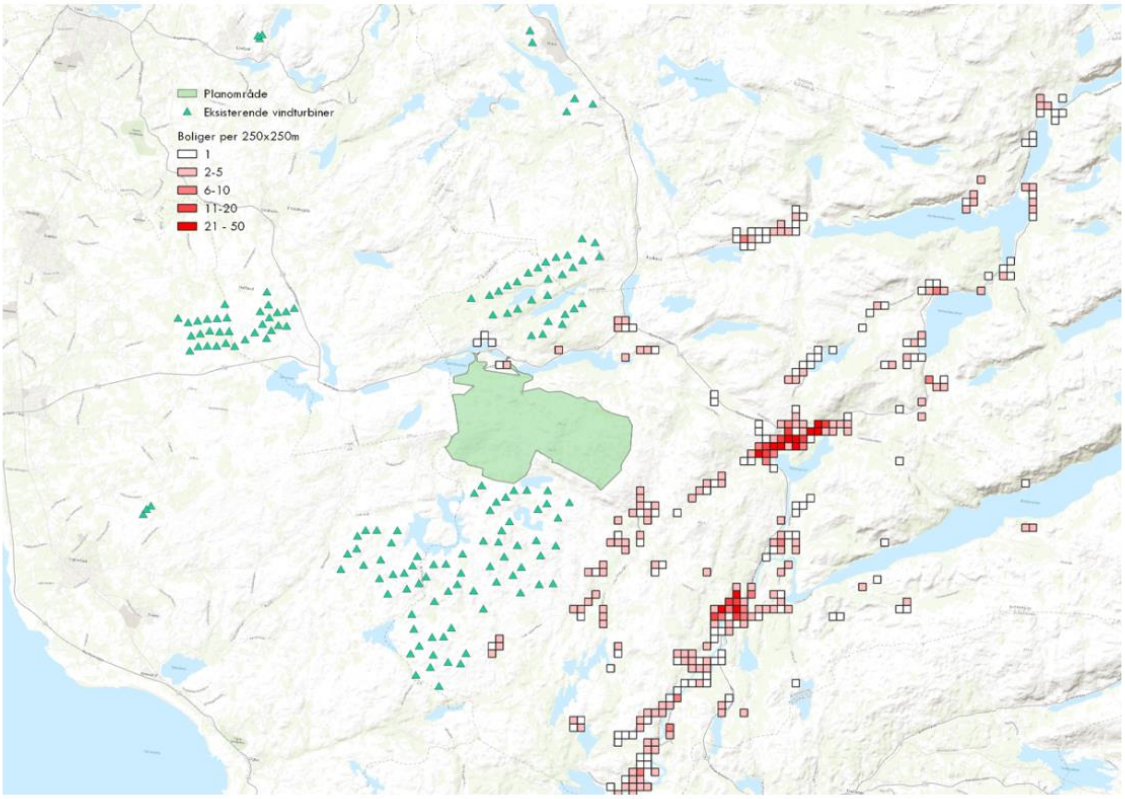
Om Moifjellet vindkraftverk og det berørte området

Moifjellet vindkraftverk vil bestå av:

- 30-40 turbiner
- Et planområde på ca. 17 km2
- Produksjon på ca. 850 GWh (tilsvarende årlig strømforbruk til 53 000 husstander)
- Turbinhøyde (vingetipp) på inntil 200 meter

I nærheten av det planlagte vindkraftverket er det allerede bygget flere vindkraftverk. Rett sør for Moifjellet ligger Bjerkreim vindkraftverk med 70 turbiner. Nord for Moifjellet ligger Måsakuten og Stigafjellet med totalt 29 turbiner. Disse ligger innenfor 5 km fra det planlagte vindkraftverket og har en høyde til vingetippen på omtrent 190 meter. Høg-Jæren vindkraftverk med 32 turbiner ligger ca. 10 km nordvest for Moifjellet og har turbiner med høyde på 125 meter (vingetipp). Rundt det planlagte vindkraftverket på Moifjellet er det omtrent 1200 boliger og 150 fritidsboliger innenfor en avstand på 6 km fra vindkraftverket.

- I området på omtrent 10 km rundt planområdet er det primært eneboliger, med en gjennomsnittlig eiendomspris på 3,3 millioner kroner.
- Det er mindre omsetning av fritidsboliger i området nært Moifjellet, men i Bjerkreim kommune som helhet er den gjennomsnittlige verdien på omtrent 1,9 millioner kroner.



Bildebeskrivelse: Grønt område er planområdet rundt Moifjellet. Vindturbiner fra eksisterende vindkraft er illustrert som grønne trekanter. De hvite og røde firkantene indikerer bebyggelse og tetthet (se gradering øverst til venstre).

Vi viser her noen eksempelbilder av hvordan området rundt Moifjellet ser ut i dag, uten Moifjellet vindkraftverk. Bildet til venstre viser Moifjellet sett fra bebyggelse. Bildet til høyre viser Bjerkreim vindkraftverk, som ligger rett sør for Moifjellet , sett fra bebyggelse.

1) * Kjenner du til Statkrafts planer om utbygging av Moifjellet vindkraftverk?

- ◯ Ja
- ◯ Nei

Tilbake Neste

20 % fullført

Side 3

oslo**economics**

Spørreundersøkelse om påvirkning fra vindkraftverk på eiendomsverdi

Studie av påvirkning av vindkraftverk

Før vi kommer til hoveddelen av undersøkelsen ønsker vi å informere om eksiterende forskning på effekten landbasert vindkraft har på boligpriser i Norge. I en landsdekkende studie finner forskerne en gjennomsnittlig priseffekt på helårsboliger på 15 prosent innenfor 1 kilometer fra vindkraftverket. Priseffekten faller med økende avstand til vindkraftverkene. 4 til 6 kilometer fra vindkraftverket finner ikke forskerne at det er grunnlag for å si at etablering av vindkraftverk påvirker prisen på boliger. Studien finner en større negativ priseffekt på boliger som ligger i nærheten av vindkraftverk med flere enn 10 vindturbiner, sammenlignet med mindre vindkraftverk bestående av færre enn 10 turbiner.

Studien er gjennomført for alle vindkraftverk i Norge, med omsetningsdata for perioden 2010-2022, med over 230000 boligtransaksjoner for boliger under 30 km fra et vindkraftverk. Moifjellet skiller seg fra landsgjennomsnittet ved at det ligger i et område der det allerede er bygget flere vindkraftverk. Moifjellet og de omkringliggende vindkraftverkene er alle i kategorien «store vindkraftverk» med mer enn 10 turbiner.

2) * Kjenner du til eller har du hørt om denne studien eller resultatene fra den?

- ○ Ja
- ○ Nei

Tilbake Neste

30 % fullført

Side 4

oslo**economics**

Spørreundersøkelse om påvirkning fra vindkraftverk på eiendomsverdi

Vi vil nå presentere 4 ulike områder med boliger og fritidsboliger som, på tvers av områdene, vil oppleve ulike negative effekter av vindkraftverket. Vi vil forklare de negative effektene for hvert område og det er viktig at du leser informasjonen nøye. Deretter vil vi for hvert område be deg om å oppgi hvor mye du forventer boligene vil tape seg i verdi etter utbyggingen av vindkraftverket på Moifjellet. Vi ønsker at du oppgir forventet tap i verdi for henholdsvis helårsboliger og fritidsboliger.

Tilbake Neste

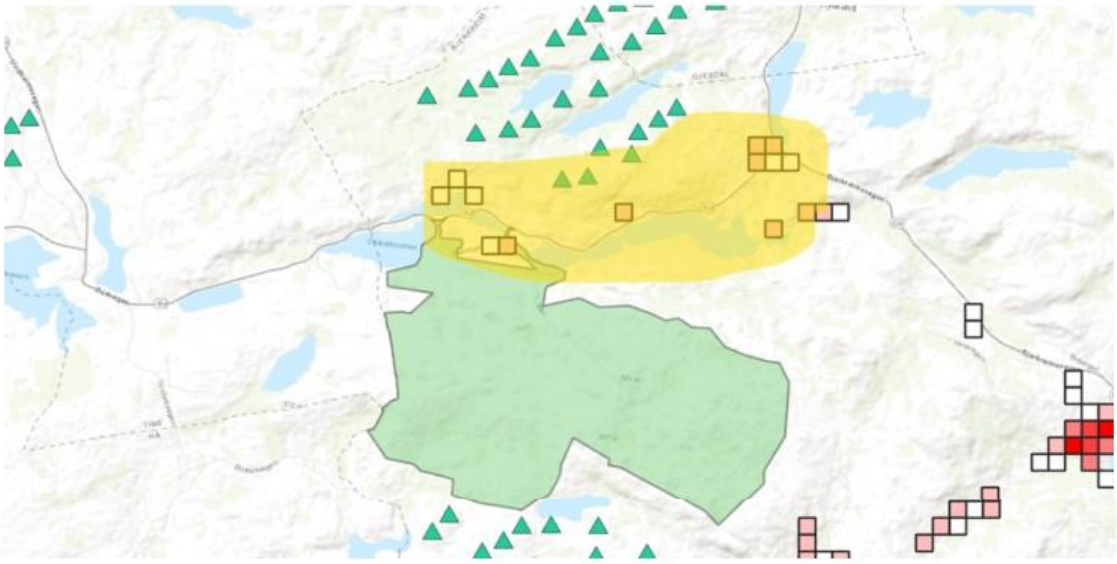
40 % fullført

oslo**economics**

Spørreundersøkelse om påvirkning fra vindkraftverk på eiendomsverdi

Boliger som vil oppleve skyggekast, økning i støy, og som vil se mange turbiner (området Bue, Vaule, Osland)

Boliger på nord- og nordøstsiden av Moifjellet, som ligger innenfor en radius på rundt 3 km fra nærmeste turbin i det planlagte vindkraftverket, vil kunne oppleve økt støy, skyggekast og vil få utsikt til mange av turbinene på Moifjellet.



Bildebeskrivelse: grønt område er planområdet rundt Moifjellet og grønne trekanter er eksisterende vindturbiner. Boligene du nå vurderer befinner seg i det gule området.

Støy: Boligene i dette området opplever allerede støy fra eksisterende vindkraftverk. Støyen fra eksisterende vindkraftverk tilsvarer støyen fra et moderne kjøleskap eller lett regn, og kan oppleves plagsomt for enkelte (rundt 40 dB). Utbygging av Moifjellet vindkraftverk kan føre til at støynivået øker merkbart (opptil 5 dB). Støyen etter utbygging kan sammenlignes med støyen fra et eldre kjøleskap eller summing i et bibliotek. Dette tilsvarer et støynivå rundt NVEs definerte støygrense på 45 dB, som for de fleste vil oppleves som akseptabelt, men som likevel kan oppleves forstyrrende og plagsomt for noen.

Skyggekast: En del boliger i dette området er allerede påvirket av skyggekast fra eksisterende vindkraftverk. Ved etablering av Moifjellet vil mange oppleve økt skyggekast, både for de som er påvirket i dag og noen som ikke er påvirket av skyggekast i dag. I hvilken grad boligene opplever skyggekast vil variere fra bolig til bolig og avhenge av værforhold og tid på året. På en solfylt dag kan enkelte boliger oppleve skyggekast i opp til 30 minutter. Samlet over et helt år vil ingen oppleve skyggekast på over 8 timer.

Utsyn til turbiner: Boligene i dette området har i dag utsyn til eksisterende vindkraftverk. Boligene vil kunne se mange av turbinene på Moifjellet (over 10 turbiner).

4) * For helårsboliger i dette området, hvor mye tror du boligene i gjennomsnitt vil tape seg i verdi etter utbyggingen av vindkraftverket på Moifjellet? (Svaret oppgis i prosentvis nedgang)

0 50

5) * For fritidsboliger i dette området, hvor mye tror du boligene i gjennomsnitt vil tape seg i verdi etter utbyggingen av vindkraftverket på Moifjellet? (Svaret oppgis i prosentvis nedgang)

0 50

Enkelte av boligene i dette området ser ingen turbiner fra eksisterende vindkraftverk, men vil få utsyn til mange turbiner ved Moifjellet vindkraftverk. Beskrivelsen av støy og skyggekast over er fortsatt gjeldende.

6) * For helårsboliger i dette området, hvor mye tror du boligene i gjennomsnitt vil tape seg i verdi etter utbyggingen av vindkraftverket på Moifjellet? (Svaret oppgis i prosentvis nedgang)

0 50

7) * For fritidsboliger i dette området, hvor mye tror du boligene i gjennomsnitt vil tape seg i verdi etter utbyggingen av vindkraftverket på Moifjellet? (Svaret oppgis i prosentvis nedgang)

0 50

Tilbake Neste

50 % fullført

Side 6

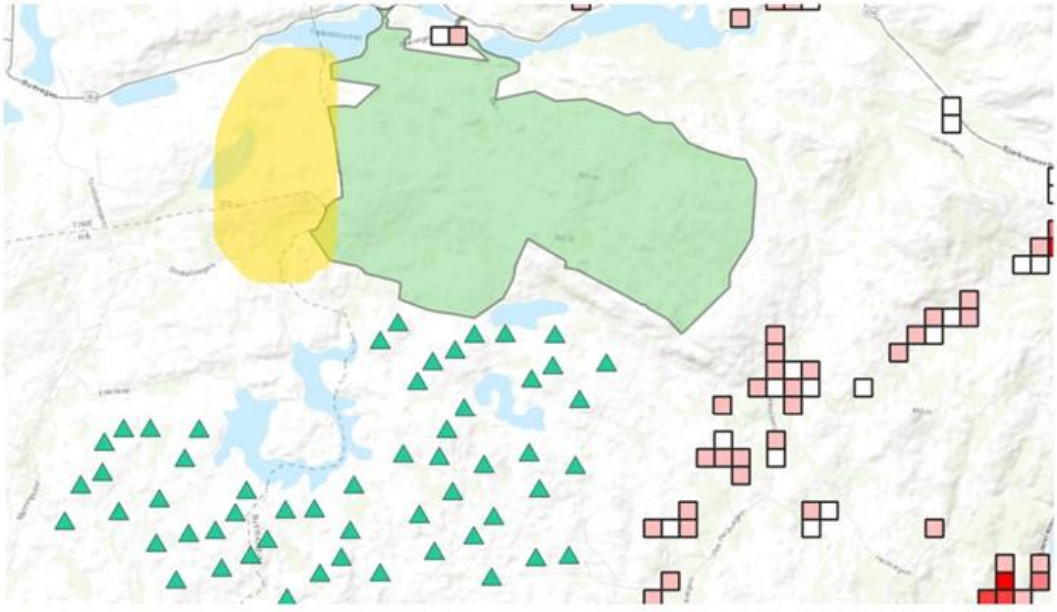
oslo**economics**

Spørreundersøkelse om påvirkning fra vindkraftverk på eiendomsverdi

Boliger som opplever økt støy, og som ser mange turbinene på Moifjellet (området rundt Brusali)

I området vest- og sørøst for Moifjellet vil boliger som ligger innenfor en radius på 3 km fra nærmeste turbin kunne oppleve økt støynivå ved utbygging av vindkraft på Moifjellet. Turbinene på Moifjellet vil også være godt synlig fra boligene. Boligene vil i ingen eller liten grad bli påvirket av skyggekast fra Moifjellet.

Først ønsker vi at du vurderer området på vestsiden av Moifjellet – Brusali:



Bildebeskrivelse: grønt område er planområdet rundt Moifjellet og grønne trekanter er eksisterende vindturbiner. Boligene du nå vurderer befinner seg i det gule området.

Støy: Boligene i dette området opplever allerede støy fra eksisterende vindkraftverk. Støyen fra eksisterende vindkraftverk tilsvarer støyen fra et moderne kjøleskap eller lett regn, og kan oppleves plagsomt for enkelte (rundt 40 dB). Utbygging av Moifjellet vindkraftverk kan føre til at støynivået øker merkbart (opptil 5 dB). Støyen etter utbygging kan sammenlignes med støyen fra et eldre kjøleskap eller summing i et bibliotek. Dette tilsvarer et støynivå rundt NVEs definerte støygrense på 45 dB, som for de fleste vil oppleves som akseptabelt, men som likevel kan oppleves som plagsomt for noen.

Skyggekast: Boligene opplever i liten grad skyggekast fra eksisterende vindkraftverk og vil i ingen eller liten grad bli påvirket av skyggekast fra vindkraftverket på Moifjellet.

Utsyn til turbiner: Boligene har i dag utsyn til Bjerkreim vindkraftverk og ser svært mange turbiner fra boligene. De vil også få utsyn til mange av turbinene ved Moifjellet vindkraftverk (mer enn 10 turbiner).

8) * For helårsboliger i dette området, hvor mye tror du boligene vil tape seg i verdi etter utbyggingen av vindkraftverket på Moifjellet? (Svaret oppgis i prosentvis nedgang)

0 50

9) * For fritidsboliger i dette området, hvor mye tror du boligene vil tape seg i verdi etter utbyggingen av vindkraftverket på Moifjellet? (Svaret oppgis i prosentvis nedgang)

0 50

Tilbake Neste

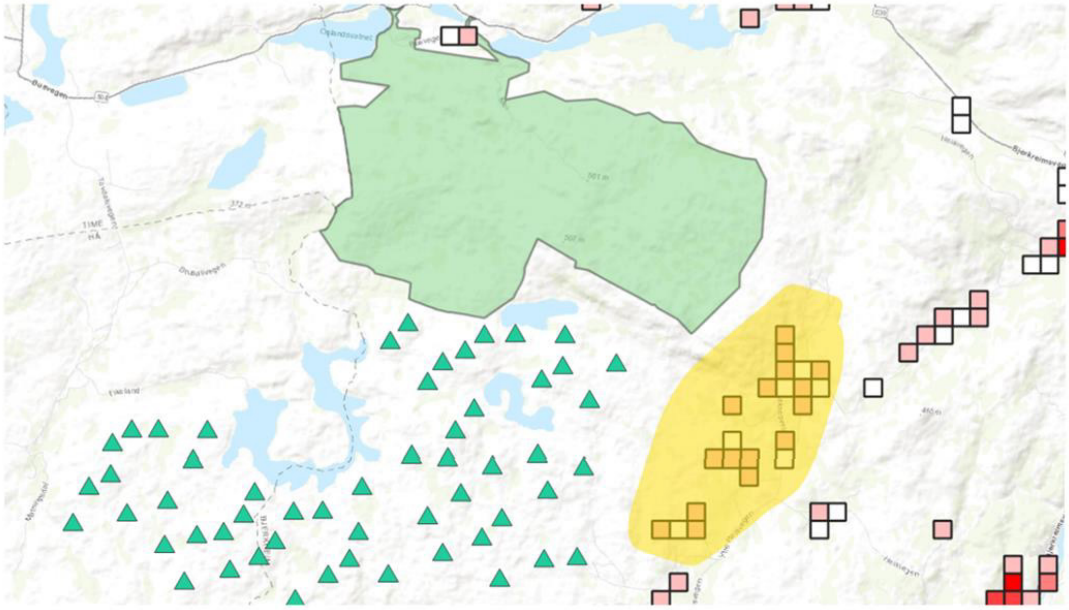
60 % fullført

oslo**economics**

Spørreundersøkelse om påvirkning fra vindkraftverk på eiendomsverdi

Boliger som opplever økt støy og synlighet fra flere turbiner (området Laksesvela)

Nå ønsker vi at du vurderer området på sørøstsiden av Moifjellet – Laksesvela. Boligene i dette området har et lavere beregnet støynivå sammenlignet med Brusali som du nettopp vurderte, både i dag og ved etablering av Moifjellet.



Bildebeskrivelse: grønt område er planområdet rundt Moifjellet og grønne trekanter er eksisterende vindturbiner. Boligene du nå vurderer befinner seg i det gule området.

Støy: Boligene har i dag et støynivå som kan sammenlignes med lydnivået av hvisking (30-35 dB) og vil oppleve en økning opp mot lydnivået til et moderne kjøleskap eller lett regn (opp mot 40 dB). Økningen i støynivået er likt som for Brusali (opptil 5 dB), men fra et lavere beregnet støynivå i dag.

Skyggekast: Boligene opplever i liten grad skyggekast fra vindkraftverk i dag og vil i ingen eller liten grad oppleve skyggekast fra vindkraftverket på Moifjellet.

Utsyn til turbiner: Boliger i dette området har i dag utsyn til Bjerkreim vindkraftverk og ser svært mange turbiner fra boligene. De vil også få utsyn til mange turbiner på Moifjellet (mer enn 10).

10) * For helårsboliger i dette området, hvor mye tror du boligene vil tape seg i verdi etter utbyggingen av vindkraftverket på Moifjellet? (Svaret oppgis i prosentvis nedgang)

0 50

11) * For fritidsboliger i dette området, hvor mye tror du boligene vil tape seg i verdi etter utbyggingen av vindkraftverket på Moifjellet? (Svaret oppgis i prosentvis nedgang)

0 50

Enkelte av boligene i dette området vil oppleve økt støy, tilsvarende som beskrevet over, men vil ikke ha utsyn til turbinene i Moifjellet vindkraftverk. Disse har i dag utsyn til Bjerkreim vindkraftverk.

12) * For helårsboliger i dette området, hvor mye tror du boligene vil tape seg i verdi etter utbyggingen av vindkraftverket på Moifjellet? (Svaret oppgis i prosentvis nedgang)

0 50

13) * For fritidsboliger i dette området, hvor mye tror du boligene vil tape seg i verdi etter utbyggingen av vindkraftverket på Moifjellet? (Svaret oppgis i prosentvis nedgang)

0 50

Tilbake Neste

70 % fullført

Side 8

oslo**economics**

Spørreundersøkelse om påvirkning fra vindkraftverk på eiendomsverdi

Boliger som ser vindturbiner fra sin bolig (blant annet området rundt Vikeså og Bjerkreim)

Innenfor en radius på 3-6 km fra det planlagte vindkraftverket på Moifjellet vil boliger ikke påvirkes av skyggekast eller støy fra vindkraftverket. Dette inkluderer områdene rundt de større tettstedene i kommunen, Vikeså og Bjerkreim. Synligheten til det planlagte vindkraftverket og eksisterende vindkraftverk varierer for boligene. Vi ønsker at du vurderer dette i tre forskjellige eksempler, der utsyn til turbiner er det som skiller boligene.

En del boliger vil få utsyn til turbiner ved Moifjellet, uten at boligene ser noen av de eksisterende vindkraftverkene.

14) * For helårsboliger i dette området, hvor mye tror du boligene vil tape seg i verdi etter utbyggingen av vindkraftverket på Moifjellet? (Svaret oppgis i prosentvis nedgang)

0 50

15) * For fritidsboliger i dette området, hvor mye tror du boligene vil tape seg i verdi etter utbyggingen av vindkraftverket på Moifjellet? (Svaret oppgis i prosentvis nedgang)

0 50

Mange boliger ser i dag allerede flere turbiner fra eksisterende vindkraftverk. Ved utbygging av Moifjellet vil de se flere vindturbiner i et større område.

16) * For helårsboliger i dette området, hvor mye tror du boligene vil tape seg i verdi etter utbyggingen av vindkraftverket på Moifjellet? (Svaret oppgis i prosentvis nedgang)

0 50

17) * For fritidsboliger i dette området, hvor mye tror du boligene vil tape seg i verdi etter utbyggingen av vindkraftverket på Moifjellet? (Svaret oppgis i prosentvis nedgang)

0 50

Flere boliger i dette området vil ikke se noen av turbinene ved Moifjellet vindkraftverk, og ser heller ikke turbiner fra andre vindkraftverk i området rundt. Dette inkluderer boliger i tettstedene Vikeså og Bjerkreim.

18) * For helårsboliger i dette området, hvor mye tror du boligene vil tape seg i verdi etter utbyggingen av vindkraftverket på Moifjellet? (Svaret oppgis i prosentvis nedgang)

0 50

19) * For fritidsboliger i dette området, hvor mye tror du boligene vil tape seg i verdi etter utbyggingen av vindkraftverket på Moifjellet? (Svaret oppgis i prosentvis nedgang)

0 50

Lengre fra vindkraftverket (6-10 km) vil turbinene fortsatt være synlig i horisonten. Flere av disse boligene har allerede i dag utsyn til turbiner fra vindkraftverkene som allerede er bygget i området.

20) * For helårsboliger i dette området, hvor mye tror du boligene vil tape seg i verdi etter utbyggingen av vindkraftverket på Moifjellet? (Svaret oppgis i prosentvis nedgang)

0 50

21) * For fritidsboliger i dette området, hvor mye tror du boligene vil tape seg i verdi etter utbyggingen av vindkraftverket på Moifjellet? (Svaret oppgis i prosentvis nedgang)

0 50

Tilbake Neste

80 % fullført

osloeconomics

Spørreundersøkelse om påvirkning fra vindkraftverk på eiendomsverdi

22) * Hvilket kjønn er du?

- ○ Kvinne
- ○ Mann
- ○ Ønsker ikke å oppgi

23) * Hvilken alder er du?

- ○ under 30
- ○ 30 - 39
- ○ 40- 49
- ○ 50- 59
- ○ 60 +

24) * Hvilket utdanningsnivå har du?

- ○ Videregående skole
- ○ Fagbrev
- ○ Bachelor
- ○ Master/PhD
- ○ Annet

25) * Hvilken stilling har du?

- ○ Tomteutvikler
- ○ Eiendomsmegler
- ○ Eiendomsmeglerfullmektig
- ○ Takstmann
- ○ Annet

26) * Hvor lenge har du jobbet i denne bransjen?

0/255

27) * Hvilken kommune jobber du i?

- ☐ Bjerkreim
- ☐ Time
- ☐ Hå
- ☐ Klepp
- ☐ Gjesdal
- ☐ Egersund
- ☐ Annet

28) * Hva slags eiendommer jobber du primært med?

- [ ] Oppføring av nye boliger
- [ ] Salg av eksisterende boliger
- [ ] Oppføring av nye hytter
- [ ] Salg av eksisterende hytter
- [ ] Annet

29) * Har du erfaring med salg av eiendommer innenfor en eller flere av disse kategoriene?

- [ ] Eiendommer som er påvirket av eksisterende vindkraftverk
- [ ] Eiendommer som er påvirket av annen infrastruktur/næring
- [ ] Eiendommer i Bjerkreim kommune
- [ ] Fritidsboliger
- [ ] Ingen av svaralternativene ovenfor

Tilbake Neste

90 % fullført

Side 10

osloeconomics

Spørreundersøkelse om påvirkning fra vindkraftverk på eiendomsverdi

30) Har du noen tilbakemeldinger på undersøkelsen?

0/4000

Tilbake Send

100 % fullført

Side 11

Spørreundersøkelse om påvirkning fra vindkraftverk på eiendomsverdi

Tusen takk for at du svarte på første runde av spørreundersøkelsen!

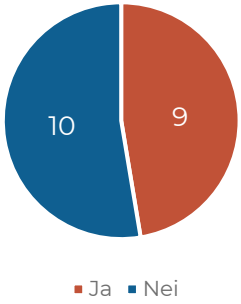
Du vil bli kontaktet igjen om et par uker for runde to av spørreundersøkelsen.

Vedlegg D Svar fra spørreundersøkelsene

D.1 Runde 1

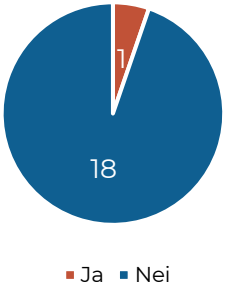
I denne runden var det 19 respondenter. Svarfordelingen for respondentene er gitt her.

Kjenner du til Statkrafts planer om utbygging av Moifjellet vindkraftverk?



Kjenner du til eller har du hørt om studien eller resultatene fra den?

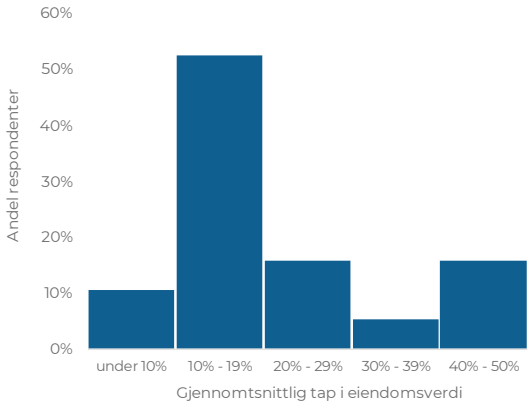
Merknad: «Studien» viser her til den landsdekkende studie som nylig er gjennomført og baserer seg på boligpriser

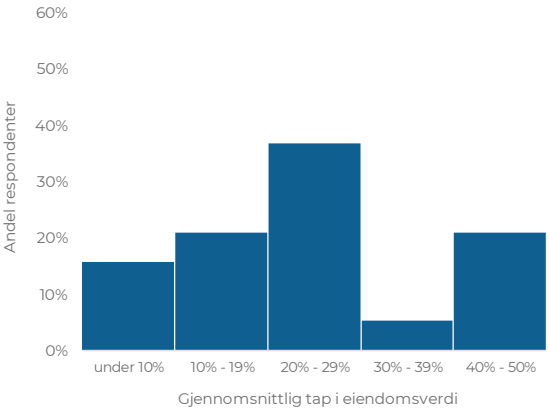


Boliger som vil oppleve skyggekast, økning i støy og som vi se mange turbiner (Området Bue, Vaule, Osland)

Spørsmål		Gjennomsnitt	Median	10-persentil	90-persentil
4	Verditap primærboliger	20%	15%	9%	40%
5	Verditap fritidsboliger	24%	20%	8%	50%

Figur 6-1: Svarfordeling spørsmål 4 (venstre) og spørsmål 5 (høyre) for alle respondenter

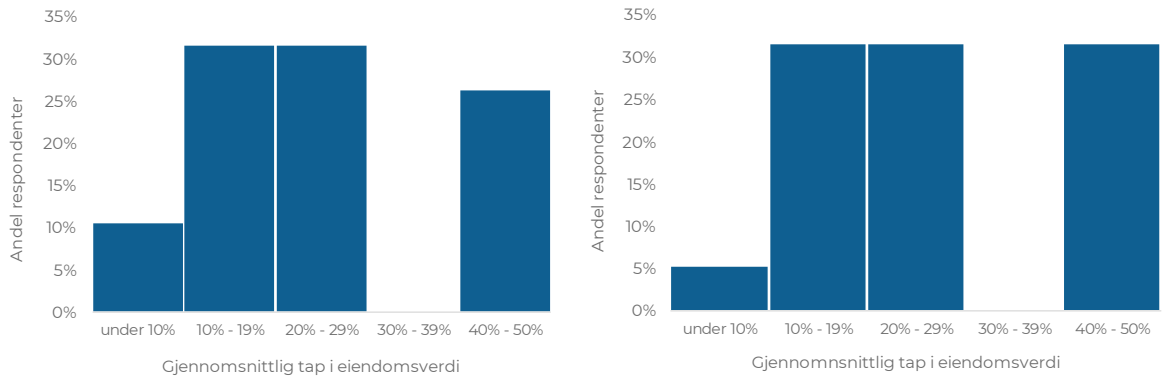




Enkelte av boligene i dette området ser ingen turbiner fra eksisterende vindkraftverk, men vil få utsyn til mange turbiner ved Moifjellet vindkraftverk. Beskrivelsen av støy og skyggekast over er fortsatt gjeldende.

Spørsmål		Gjennomsnitt	Median	10-persentil	90-persentil
6	Verditap primærboliger	23%	20%	10%	43%
7	Verditap fritidsboliger	27%	20%	12%	50%

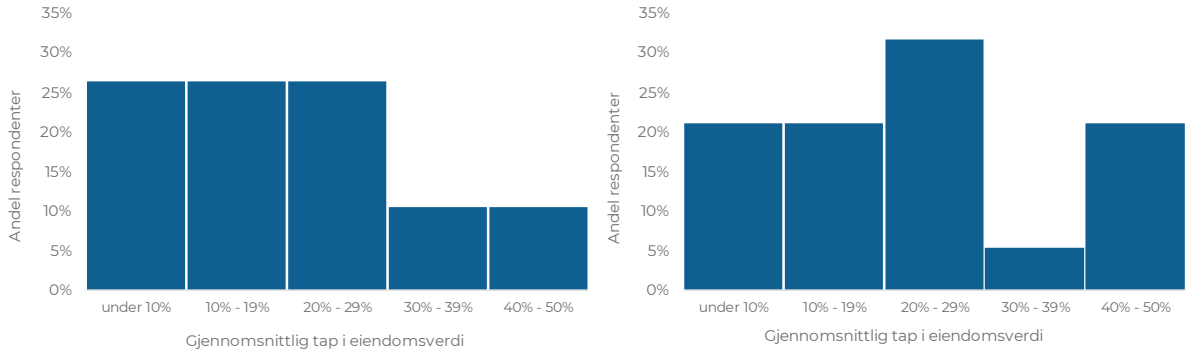
Figur 6-2: Svarfordeling spørsmål 6 (venstre) og spørsmål 7 (høyre) for alle respondenter



Boliger som opplever økt støy og ser mange av turbinene på Moifjellet (området rundt Brusali)

Spørsmål		Gjennomsnitt	Median	10-persentil	90-persentil
8	Verditap primærboliger	17%	15%	3%	33%
9	Verditap fritidsboliger	23%	20%	5%	50%

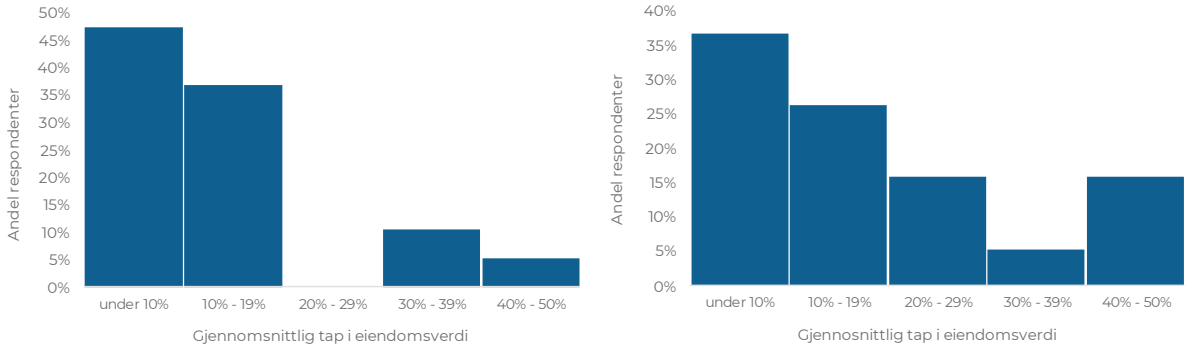
Figur 6-3: Svarfordeling spørsmål 8 (venstre) og 9 (høyre) for alle respondenter



Boliger som opplever økt støy og synlighet fra flere turbiner (området Laksesvela)

Spørsmål		Gjennomsnitt	Median	10-persentil	90-persentil
10	Verditap primærboliger	13%	10%	5%	32%
11	Verditap fritidsboliger	17%	10%	4%	43%

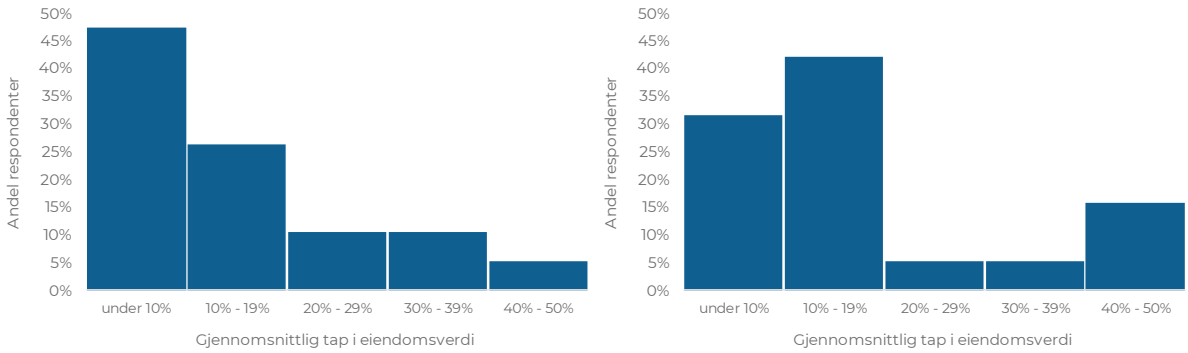
Figur 6-4: Svarfordeling spørsmål 10 (venstre) og 11 (høyre) for alle respondenter



Enkelte av boligene i dette området vil oppleve økt støy, som beskrevet over, men vil ikke ha utsyn til turbinene i Moifjellet vindkraftverk. Disse har i dag utsyn til Bjerkreim vindkraftverk.

Spørsmål		Gjennomsnitt	Median	10-persentil	90-persentil
12	Verditap primærboliger	13%	10%	3%	32%
13	Verditap fritidsboliger	17%	10%	3%	45%

Figur 6-5: Svarfordeling spørsmål 12 (venstre) og 13 (høyre) for alle respondenter

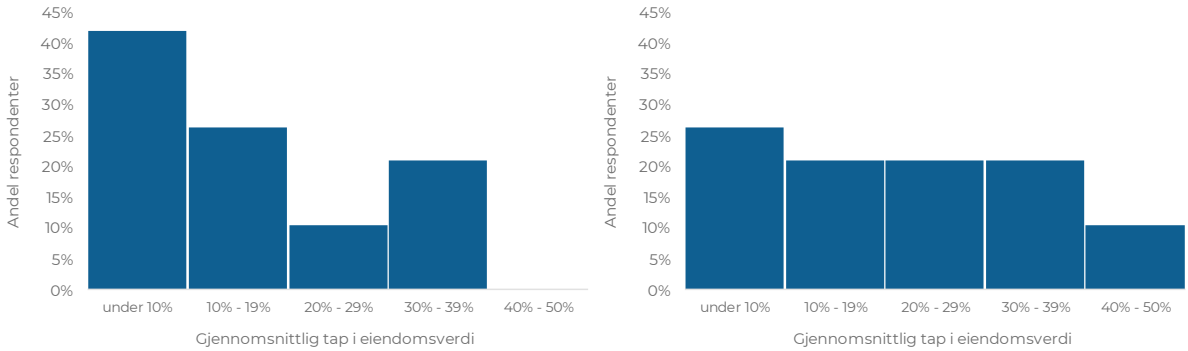


Boliger som ser vindturbiner fra sin bolig (blant annet området rundt Vikeså og langs Bjerkreimselva)

En del boliger vil få utsyn til turbiner ved Moifjellet, uten at boligene ser noen av de eksisterende vindkraftverkene.

Spørsmål		Gjennomsnitt	Median	10-persentil	90-persentil
14	Verditap primærboliger	13%	10%	3%	32%
15	Verditap fritidsboliger	17%	10%	3%	45%

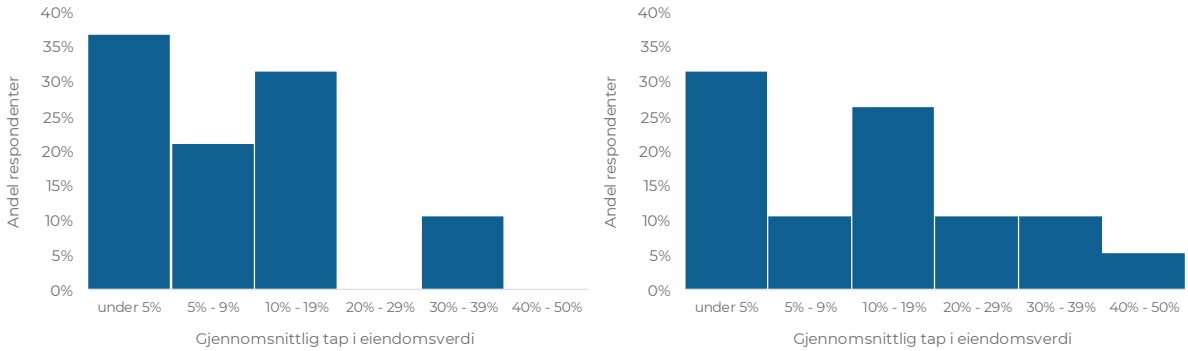
Figur 6-6: Svarfordeling spørsmål 14 (venstre) og 15 (høyre) for alle respondenter



Mange boliger ser i dag allerede flere turbiner fra eksisterende vindkraftverk. Ved utbygging av Moifjellet vil de se flere vindturbiner i et større område.

Spørsmål		Gjennomsnitt	Median	10-persentil	90-persentil
16	Verditap primærboliger	9%	5%	0%	22%
17	Verditap fritidsboliger	13%	10%	1%	33%

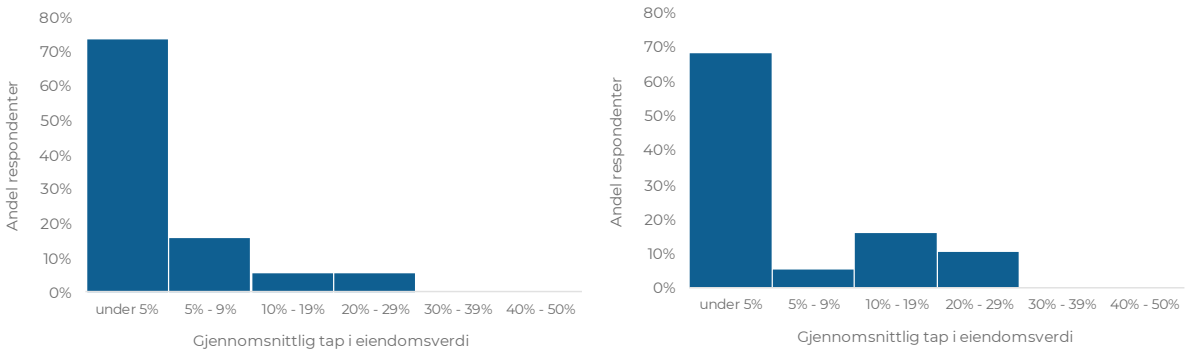
Figur 6-7: Svarfordeling spørsmål 16 (venstre) og 17 (høyre) for alle respondenter



Flere boliger i dette området vil ikke se noen av turbinene ved Moifjellet vindkraftverk, og ser heller ikke turbiner fra andre vindkraftverk i området rundt. Dette inkluderer boliger i tettstedene Vikeså og Bjerkreim

Spørsmål		Gjennomsnitt	Median	10-persentil	90-persentil
18	Verditap primærboliger	3%	0%	0%	7%
19	Verditap fritidsboliger	4%	0%	0%	17%

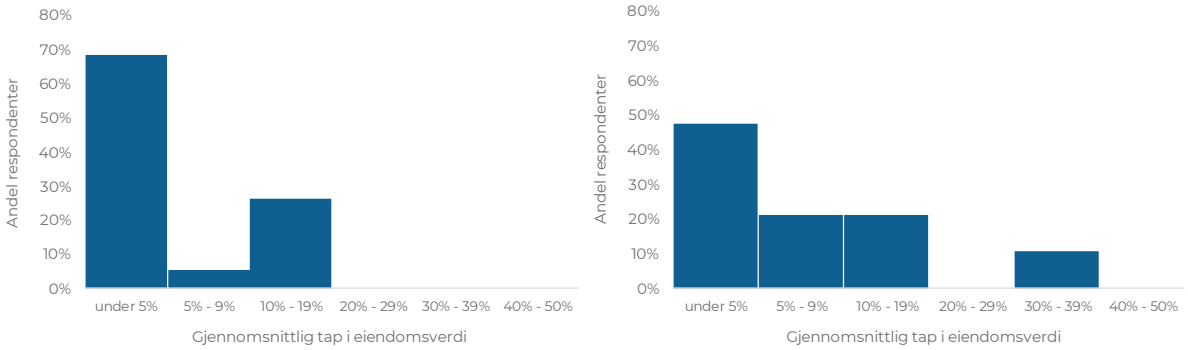
Figur 6-8: Svarfordeling spørsmål 18 (venstre) og 19 (høyre) for alle respondenter



Lengre fra vindkraftverket (6-10 km) vil turbinene fortsatt være synlig i horisonten. Flere av disse boligene har allerede i dag utsyn til turbiner fra vindkraftverkene som allerede er bygget i området.

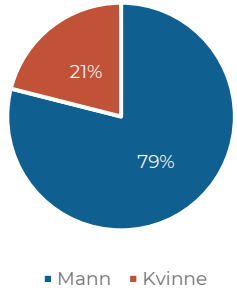
Spørsmål		Gjennomsnitt	Median	10-persentil	90-persentil
20	Verditap primærboliger	3%	0%	0%	7%
21	Verditap fritidsboliger	4%	0%	0%	17%

Figur 6-9: Svarfordeling spørsmål 20 (venstre) og 21 (høyre) for alle respondenter

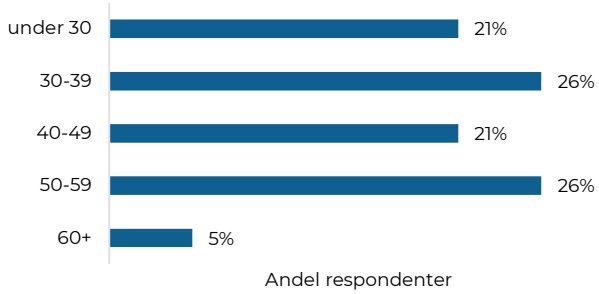


Overordnet om respondentene

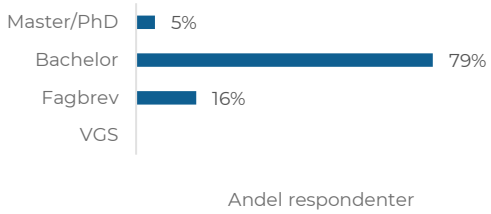
Kjønnsfordeling



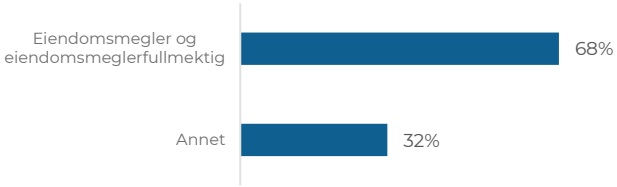
Aldersfordeling



Utdanningsnivå

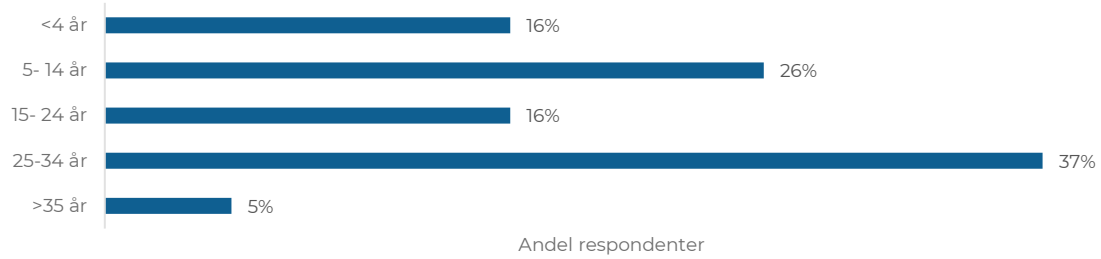


Stilling

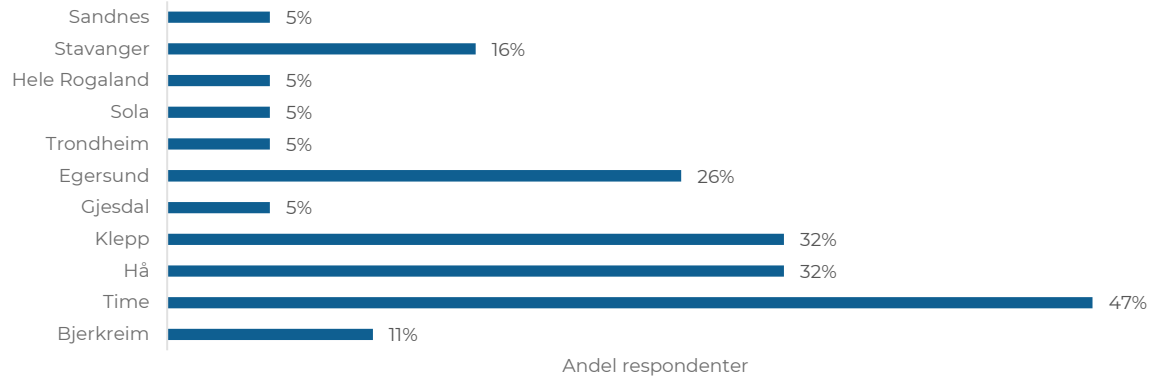


Merk: *Annet* inkluderer kategoriene tomteutvikler og takstmann

Antall år i bransjen

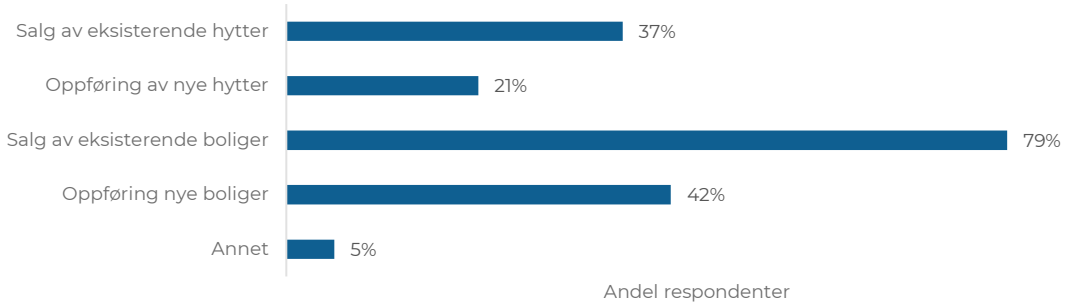


Hvilke kommuner jobber de i?



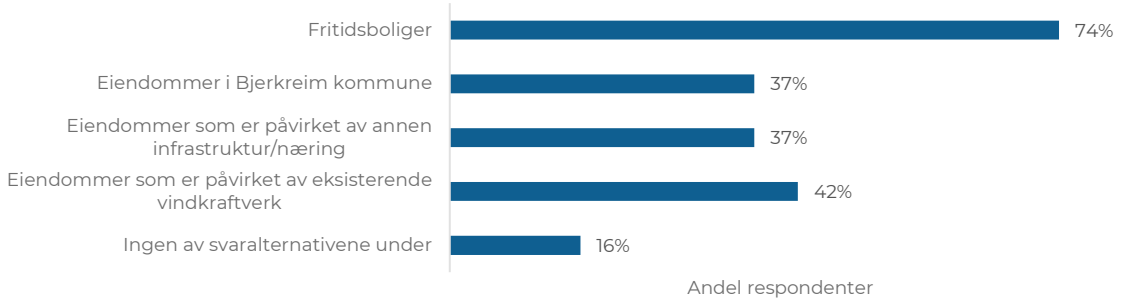
Merk: Noen respondenter arbeider i flere kommuner

Hvilke eiendommer jobber de primært med?



Merk: Enkelte respondenter jobber med eiendommer i flere kategorier. «Annet» inkluderer taksering av boliger, fritidsboliger og landbruk.

Erfaring med salg av eiendommer innenfor en eller flere av disse kategoriene?



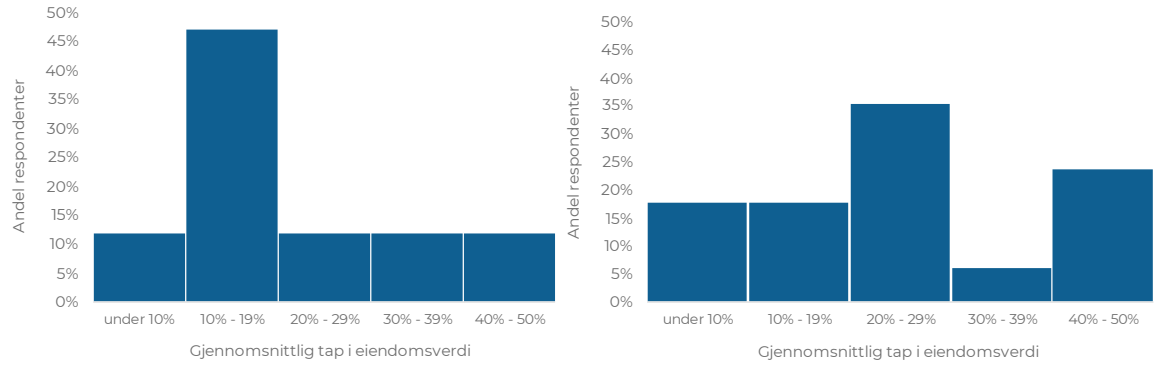
D.2 Runde 2

I denne runden var det 17 respondenter.

Boliger som vil oppleve skyggekast, økning i støy og som vi se mange turbiner (Området Bue, Vaule, Osland)

Spørsmål		Gjennomsnitt	Median	10-persentil	90-persentil
4	Verditap primærboliger	19%	15%	9%	37%
5	Verditap fritidsboliger	24%	20%	8%	47%

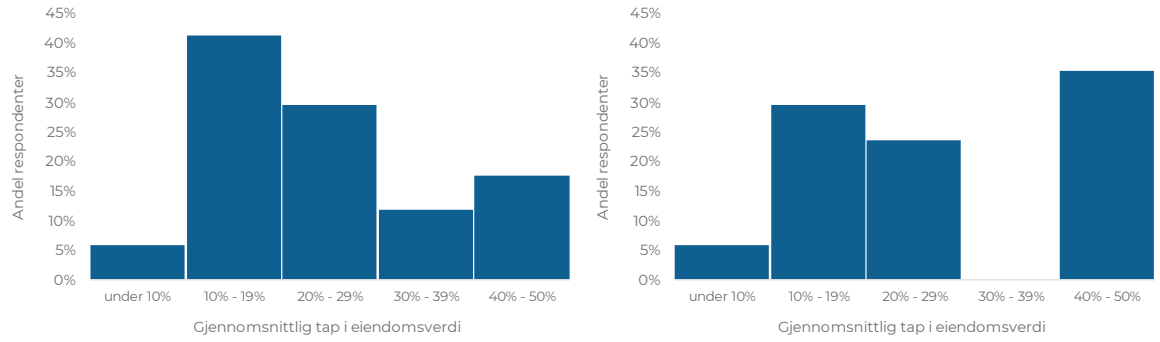
Figur 6-10 Svarfordeling spørsmål 4 (venstre) og spørsmål 5 (høyre) for alle respondenter



Enkelte av boligene i dette området ser ingen turbiner fra eksisterende vindkraftverk, men vil få utsyn til mange turbiner ved Moifjellet vindkraftverk. Beskrivelsen av støy og skyggekast over er fortsatt gjeldende.

Spørsmål		Gjennomsnitt	Median	10-persentil	90-persentil
6	Verditap primærboliger	23%	20%	13%	41%
7	Verditap fritidsboliger	27%	20%	14%	47%

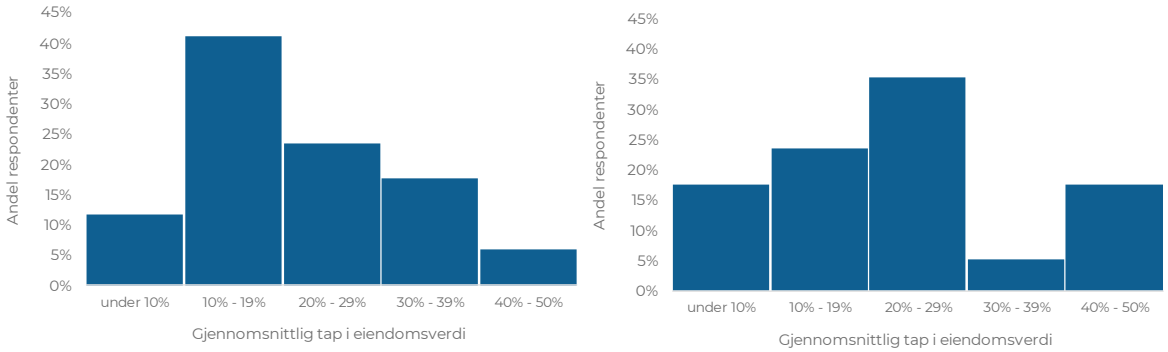
Figur 6-11: Svarfordeling spørsmål 6 (venstre) og spørsmål 7 (høyre) for alle respondenter



Boliger som opplever økt støy og ser mange av turbinene på Moifjellet (området rundt Brusali)

Spørsmål		Gjennomsnitt	Median	10-persentil	90-persentil
8	Verditap primærboliger	18%	16%	8%	30%
9	Verditap primærboliger	22%	20%	5%	44%

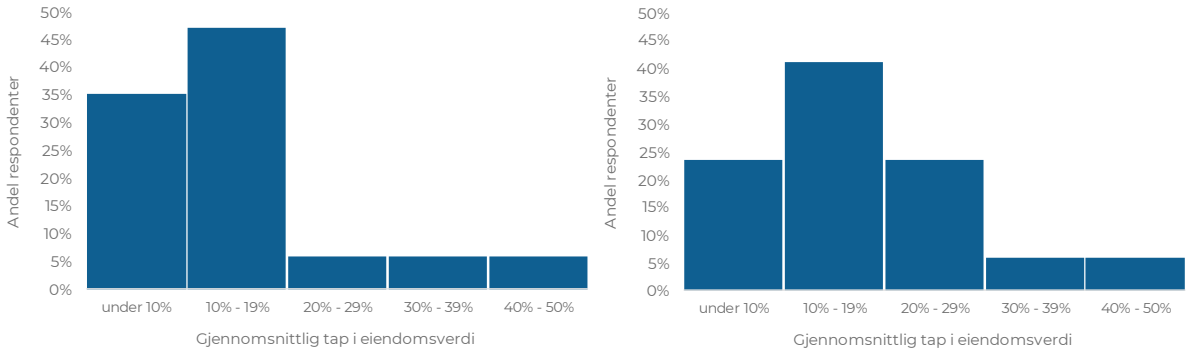
Figur 6-12: Svarfordeling spørsmål 8 (venstre) og 9 (høyre) for alle respondenter



Boliger som opplever økt støy og synlighet fra flere turbiner (området Laksesvela)

Spørsmål		Gjennomsnitt	Median	10-persentil	90-persentil
10	Verditap primærboliger	14%	10%	5%	29%
11	Verditap primærboliger	16%	12%	4%	31%

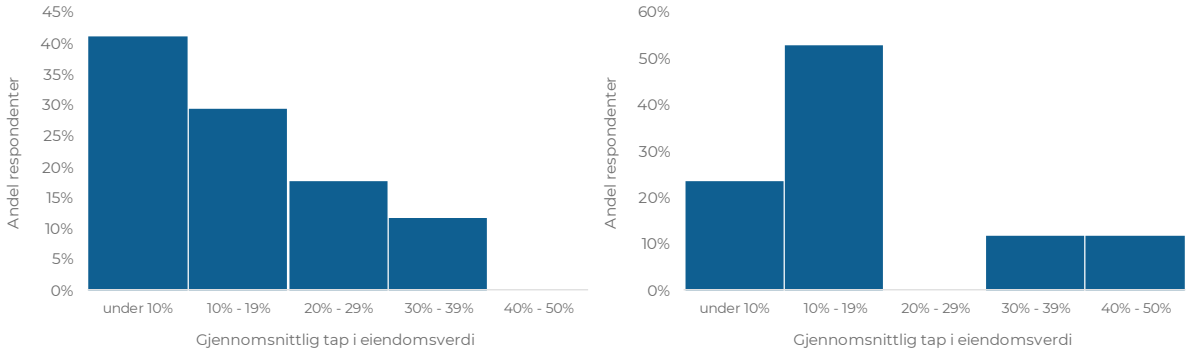
Figur 6-13: Svarfordeling spørsmål 10 (venstre) og 11 (høyre) for alle respondenter



Enkelte av boligene i dette området vil oppleve økt støy, som beskrevet over, men vil ikke ha utsyn til turbinene i Moifjellet vindkraftverk. Disse har i dag utsyn til Bjerkreim vindkraftverk.

Spørsmål		Gjennomsnitt	Median	10-persentil	90-persentil
12	Verditap primærboliger	13%	10%	4%	29%
13	Verditap primærboliger	17%	10%	2%	38%

Figur 6-14: Svarfordeling spørsmål 12 (venstre) og 13 (høyre) for alle respondenter

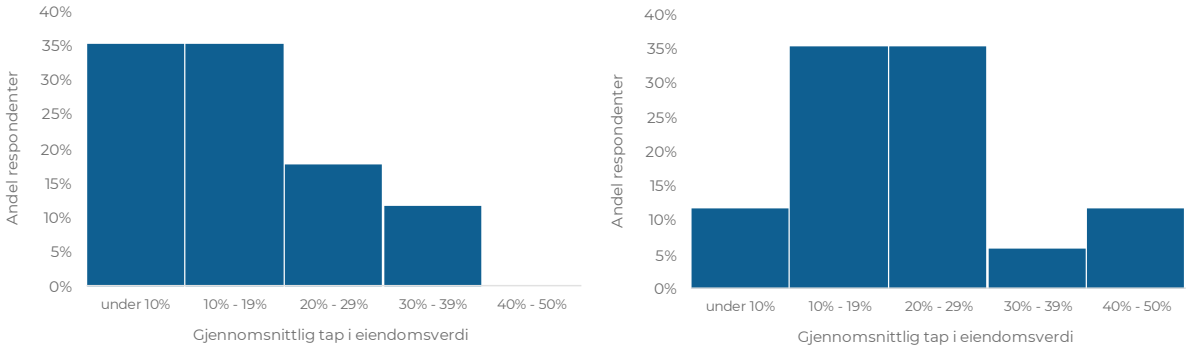


Boliger som ser vindturbiner fra sin bolig (blant annet området rundt Vikeså og langs Bjerkreimselva)

En del boliger vil få utsyn til turbiner ved Moifjellet, uten at boligene ser noen av de eksisterende vindkraftverkene.

Spørsmål		Gjennomsnitt	Median	10-persentil	90-persentil
14	Verditap primærboliger	14%	10%	4%	29%
15	Verditap primærboliger	20%	20%	7%	38%

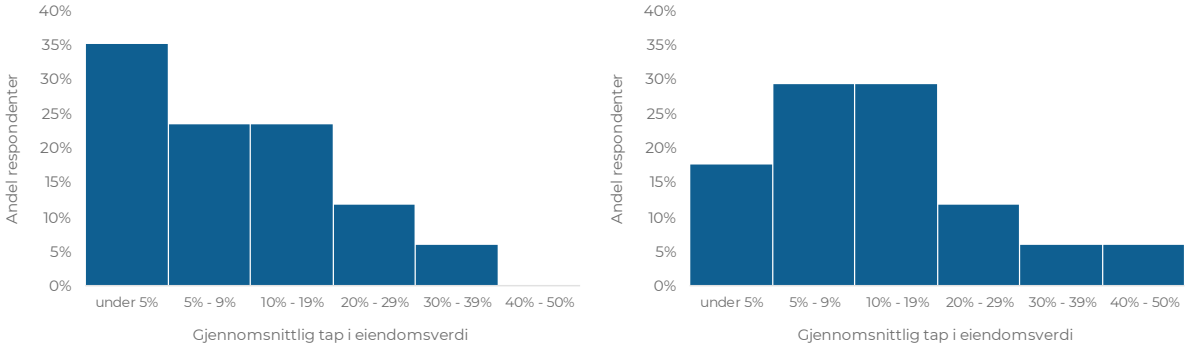
Figur 6-15: Svarfordeling spørsmål 14 (venstre) og 15 (høyre) for alle respondenter



Mange boliger ser i dag allerede flere turbiner fra eksisterende vindkraftverk. Ved utbygging av Moifjellet vil de se flere vindturbiner i et større område.

Spørsmål		Gjennomsnitt	Median	10-persentil	90-persentil
16	Verditap primærboliger	9%	5%	0%	21%
17	Verditap fritidsboliger	13%	10%	3%	29%

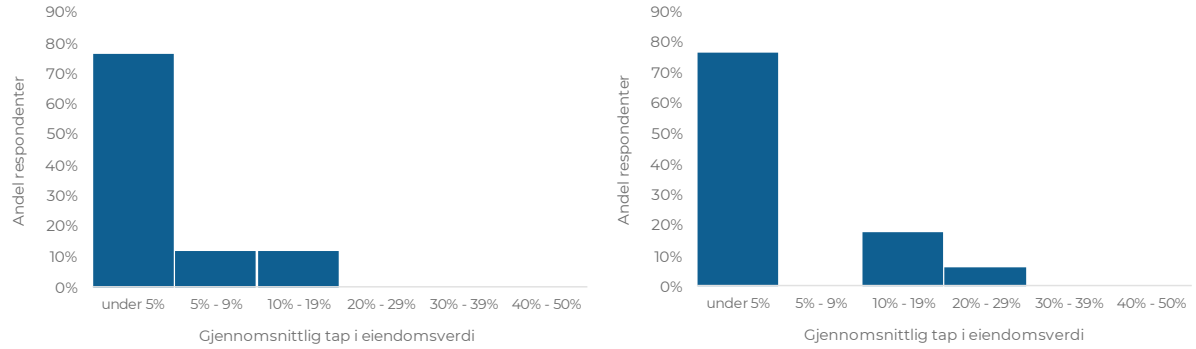
Figur 6-16: Svarfordeling spørsmål 16 (venstre) og 17 (høyre) for alle respondenter



Flere boliger i dette området vil ikke se noen av turbinene ved Moifjellet vindkraftverk, og ser heller ikke turbiner fra andre vindkraftverk i området rundt. Dette inkluderer boliger i tettstedene Vikeså og Bjerkreim

Spørsmål		Gjennomsnitt	Median	10-persentil	90-persentil
18	Verditap primærboliger	2%	0%	0%	7%
19	Verditap fritidsboliger	4%	0%	0%	15%

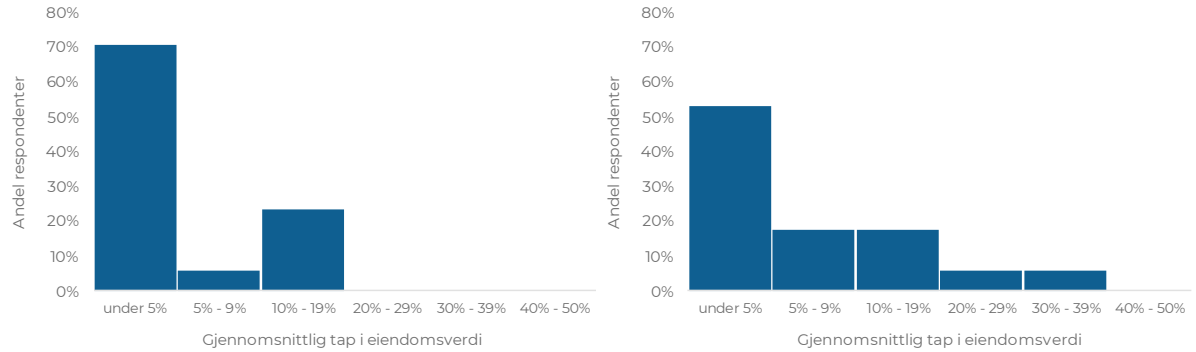
Figur 6-17: Svarfordeling spørsmål 18 (venstre) og 19 (høyre) for alle respondenter



Lengre fra vindkraftverket (6-10 km) vil turbinene fortsatt være synlig i horisonten. Flere av disse boligene har allerede i dag utsyn til turbiner fra vindkraftverkene som allerede er bygget i området.

Spørsmål		Gjennomsnitt	Median	10-persentil	90-persentil
20	Verditap primærboliger	4%	2%	0%	10%
21	Verditap fritidsboliger	7%	2%	0%	19%

Figur 6-18: Svarfordeling spørsmål 20 (venstre) og 21 (høyre) for alle respondenter



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Transportanalyse

MOIFJELLET

TRANSPORT STUDY

MAMMOET

SMARTER | SAFER | STRONGER

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SMARTER | SAFER | STRONGER

From
Mammoet Denmark
Sjællandsvej 5
7330 Brande
Denmark

Phone
045 9718 1346

To
Statkraft AS
Lilleaker
NO-2016 Oslo
Norway

Our reference 16000451
Your reference N/A

Date 29 August 2024
Subject Moifjellet Transport Study

Dear Recipient,

Please find our comments related to the forwarded route survey report for the Moifjellet project.

The comments focus on the reasons why the Port of Risavika have been considered as port of entry instead of Port of Sirevåg or Port of Egersund.

Sincerely yours,

Mammoet Denmark

Anders Bräuner
Senior Sales and Tendering Manager

Mammoet Denmark

Thomas Simonsen
Operations Manager

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1.2	Project proposed port / Risavika	6
2.	**CONCLUSION**	**8**

TASK SUMMARY

Route survey from nearest suitable port to Moifjellet project location.

Mammoet were handed the task of identifying the nearest suitable port for transporting wind turbine components to the Moifjellet project.

Furthermore, Mammoet were responsible for performing a route survey to determine the required road modifications for allowing a smooth and safe transport execution of the oversized components.

The Siemens Gamesa Renewable Energy 5X platform, with a 170-meter rotor, was used throughout the route survey, as this is the longest blade currently being transported in the Nordic countries. The difference in transport dimensions for the Vestas Wind System V162 or Nordex N163 blades are minimum, why no major changes to the route should be expected if considering these makes and models instead.

The following tower design was considered for the survey.

SECTION:	WEIGHT:	LENGTH:	LARGE Ø:	SMALL Ø:
Base section	84.958 kg	13.564 mm	4.700 mm	4.700 mm
Mid-1 section	84.328 kg	18.200 mm	4.700 mm	4.436 mm
Mid-2 section	84.548 kg	23.800 mm	4.436 mm	4.427 mm
Mid-3 section	71.771 kg	26.880 mm	4.427 mm	4.021 mm
Top section	63.863 kg	29.970 mm	4.021 mm	3.503 mm

The route survey was executed on the 31st of August and 1st of September, during when major road construction works were ongoing on the E39 south of Stavanger. As the purpose of the construction work is to upgrade the existing infrastructure no route restrictions are expected once the planned work is complete.

The considered route has been chosen based on what is most suitable and feasible considering the overall project execution but remains subject to possible restrictions set out by the Norwegian authorities.

1. PORT OF ENTRY

Ports considered for shipping in wind turbine generators for the Moifjellet project.

Mammoet have considered the following points when determining which port could be deemed most suitable as port of entry for the Moifjellet project:

- Infrastructure from the exit of the port area to the current considered access points for the site.
- Restrictions for vessels used for shipping the wind turbine generators to Norway.
- Storage capabilities for storing the wind turbine generators prior to transport.
- Handling capabilities for discharging vessel, shifting of components, and reloading prior to transport.

1.1 PORTS CONSIDERED AS UNSUITABLE

The following ports have not been considered as unsuitable due to reasons specified for each individual port.

1.1.1 Port of Sirevåg

Despite being the closest of the three considered ports, Mammoet have considered the Port of Sirevåg as unsuitable due to the following reasons.

- The oversized transports will have to travel close to Stavanger to cross the railroad tracks running between Stavanger and Egersund. This because the following crossing points cannot be considered:
  - Bridge at Brusand (https://maps.app.goo.gl/dp8NTjaSsq8HNCvt6) due to the convex radius and required width for passing.
  - Bridge near Vigrestad (https://maps.app.goo.gl/nV3Tin8pMQEo52aR8) due to height limitations.
  - Bridge in Varhaug (https://maps.app.goo.gl/6VMCvsy3rKu3Ugm89) due to the convex radius.
- The infrastructure for leaving the port of Sirevåg will require several road modifications to allow the transport to safely depart the port. This includes blasting away rock areas and widening of turns.
  - The guard fences at the bridge on Nordsjøvegen north of Sirevåg will have to be removed to allow for the oversail of the blades.
- Due to the location of the storage area, the quay, and the exit road, it will be challenging to handle the long blades in the port, while still allowing enough storage area for the tower sections and main components to be handled efficiently.
- Due to the small quay area, it will be challenging to discharge the incoming vessels carrying wind turbine components with land-based cranes, resulting in the need for geared vessels that cannot accommodate sufficient cargo.

1.1.2 Port of Egersund

The Port of Egersund is one of the ports in Norway that have handled most wind turbine components in recent time, Mammoet does however not find it suitable due to the following reasons:

- Restrictions for crossing the Eigerøy bridge.
  - Due to the development in blade lengths, a substantial amount of rocks will have to be blasted in order for the blade transport to be able to clear the right turn in the roundabout when entering the bridge.
    - Depending on how much clearance can be blasted, it may also be necessary to remove guardrails on the bridge to allow for the oversail.
  - Continuous transports exceeding 100 tons, the heaviest up to 160 tons, are not allowed to cross the bridge. This has resulted in components for the Bjerkreim project, Maakaknuten project and Stigafjellet project having to be barged pass the bridge to Langholmen.
    - Barging requirements and constraints:

        - If barging only units exceeding 100 tons, a total of 320 units will have to be barged, which could be as much as 250-300 trips to Langholmen from Port of Egersund.
        - If the longer blades must be barged across, that is an additional 120 units, which would also require a considerable long barge than the one used for the towers and main components.
        - Besides added time and costs for operating the barging setup, it also presents and increased HSE risk.
    - The area around Langholmen have been developed further since the above projects were carried out, making it more difficult to pass through. A fire station has been built at Langholmen. This could create a dangerous situation if fire trucks have to respond to an emergency at the same time as the oversized transports enter Eigerøyveien, leaving little or no space for them to pass.
    - The barging operation will have a significant operational and commercial impact on the overall project execution, due to reduced flexibility when planning transports, and the costs for setting up the needed barge setup.
- Due to the construction of new industrial facilities and roads inside the port area in Egersund, there is significant less storage area available compared to earlier, while the space required to maneuver the oversized transports during discharge has become much more restrictive.
- Besides the challenges already described for crossing the Eigerøy bridge, several locations have been identified as critical when transporting blades from Egersund:
    - Bridge at Krossmoveien (https://maps.app.goo.gl/8aeKMDAvB9ZxvTNA8), the oversail and overhang of the blade will be close to the powerlines on both side of the bridge. The guardrails will have to be removed in minimum one side to allow for the oversail of the blade.
    - House on Krossmoveien (https://maps.app.goo.gl/h5abJtJYYSHysQAKA), the blade will oversail the house, unless road can be widened, requiring blasting.
    - Left turn at E39 (https://maps.app.goo.gl/tLZH6fRWtSP9CMZb8) will have to be widened significantly, or the parking area will have to be used to drive on and a curfew arranged for the full project duration.
    - Curve in Vikeså (https://maps.app.goo.gl/P3UMPxryWt6t3G9X9), the blade will get in contact with the concrete embankment in the left side of the road.

1.2 PROJECT PROPOSED PORT / RISAVIKA

When assessing the overall possibilities and restrictions for the transport to the Moifjellet project, Mammoet would recommend shipping the components for the wind turbine to the Risavika Harbour in Stavanger.

1.2.1 Quayside and storage areas

The port in Risavika can accommodate the required vessel size for shipping in the wind turbine generators.

- Water depth, minimum 10 meters at the shallowest locations, but average is 14 meters.
- No navigational restrictions (E.g. ice, snow, height, tidal or priority).
- Quay length, up to 285 meters and with RO/RO capabilities.
- Heavy-lift quayside with up to 70 tons point loads, and remaining quay strength averaging 10 tons per square meter.
- Approximately 50.000 square meters of storage area, with a possible addition of 30.000 square meters.
    - Availability and required amount of storage area will be discussed in detail with the port when execution dates are firm.

1.2.2 Transport route to site from Risavika

Mammoet have performed a route survey from Risavika to the Moifjellet site which has been submitted to Statkraft.

Based on the route survey Mammoet finds the route from Risavika to site suitable for transporting the considered oversized components.

Mammoet also considers Risavika more suitable from a future service perspective, as sending spare parts like generators or similar loads to site via Risavika compared to Sirevåg or Egersund is a considerably more flexible solution. This because there are shore cranes available in Risavika for lifting these units on and off small coaster vessels, or they can be shipped to Risavika by use of existing RO/RO liner service vessels.

Mammoet have previously used and proven the proposed transport route from Risavika for the tower sections installed on the Skurvenuten project. This accounts for about 60% of the transport route.

2. CONCLUSION

Transport of wind turbine generators from Port of Risavika to the Moifjellet site

Based on the provided route survey report and the content of this report it can be concluded that wind turbine generators with similar dimensions and transport configurations as considered in the route survey can be safely transported to the Moifjellet wind farm from the Port of Risavika.

The above conclusion is based on obtaining permission for the proposed transport route from all relevant authorities and third-party landowners. Since blades transports with the blade-dolly system is new in Norway, this system must be approved by Statens Vegvesen.

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Route Survey

Moifjellet

SG170 - 6.0MW 115mhh

Statkraft

Rev.	Date	Change	Responsible	Checked
00	29-08-2024	First issue.	TBS-Mammoet	ABB-Mammoet

Public

MAMMOET

Introduction

The Road study was carried out to determine the extent of required road modifications for safe transportation of SG 170 6.0 MW 115MHH Wind Turbine components to Moifjellet wind park.

Project Data

Date of route survey:	Week 31 - 2024.
Responsible for route survey:	Thomas Simonsen, Mammoet.
Project name:	Moifjellet Wind Farm
Pick up point of components:	Port of Risavika
Site location:	Approx. 6 kilometres from the E39
Transport distance:	52,5 kilometres.
Turbine model:	SG 170 – 6.0 MW 115MHH
Participants in the route survey:	Thomas Simonsen, Mammoet. Anders Braüner, Mammoet
Route survey measurements is based on:	See configuration on page 4 - 5

Cargo information:

SECTION:	WEIGHT:	LENGTH:	WIDTH:	HEIGHT:
Base section	84.958 kg	13.564 mm	4.700 mm	4.700 mm
Mid-1 section	84.328 kg	18.200 mm	4.700 mm	4.436 mm
Mid-2 section	84.548 kg	23.800 mm	4.436 mm	4.427 mm
Mid-3 section	71.771 kg	26.880 mm	4.427 mm	4.021 mm
Top section	63.863 kg	29.970 mm	4.021 mm	3.503 mm
Blade	29.282 kg	83.362 mm	4.476 mm	4.000 mm

Public

Report layout

Google Maps links

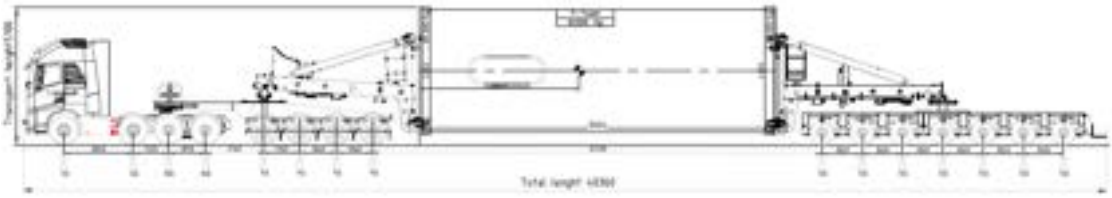
All points in this route survey is marked with
In order to find the specific point in this survey simply just press the icon.

Attached Files

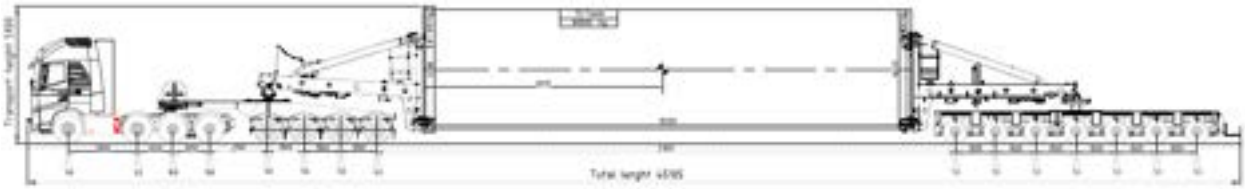
Attached AutoCAD drawings (SPA / RM) is to illustrate the swept path and to give a detailed description of the extend of road modification on the specific point.

Shapes & Figures

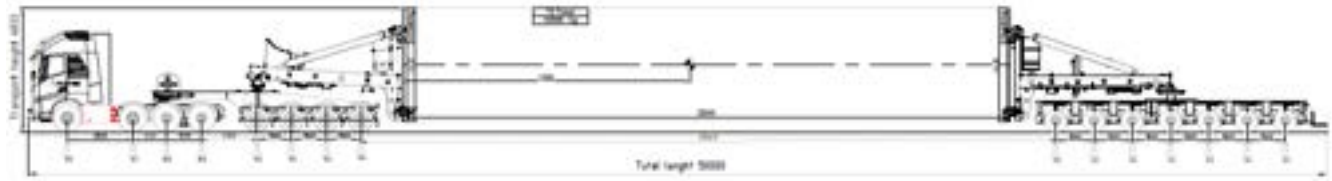
Yellow arrow:	Indication of forward driving.
Red arrow:	Indication of reverse driving.
Red box:	Indication of street furniture, sign etc. that must be removed.
Dotted red box:	Removable signs or street furniture.
Blue area:	Indication of area that must be made suitable to drive on.
Dotted blue line:	Over sail line, removal of embankment, rocks, mountain wall etc.
Green box/line:	Indication of tree cutting/trimming.
Dotted black or red arrow:	Measurements, meters.
Dotted black line:	Measurements from/to.
Dotted red line:	Indication of over head utility/power line.
Dotted purple arrow:	Parking ban.
Dotted purple Box:	No parking



Total weight: 154.640 Kg



Total weight: 152.840 Kg



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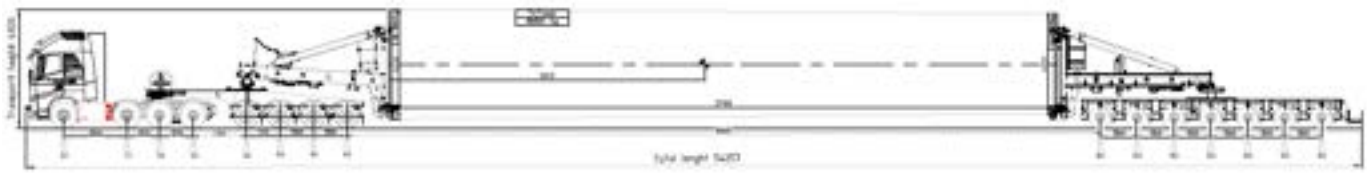
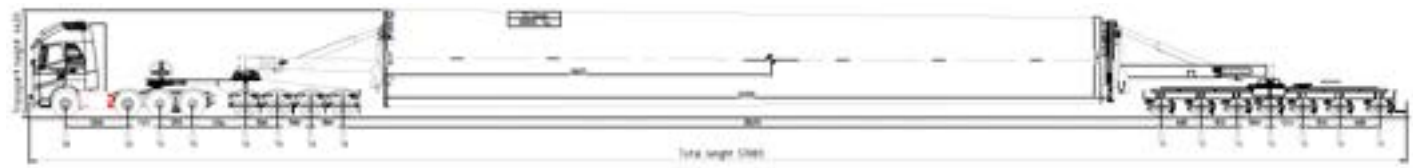
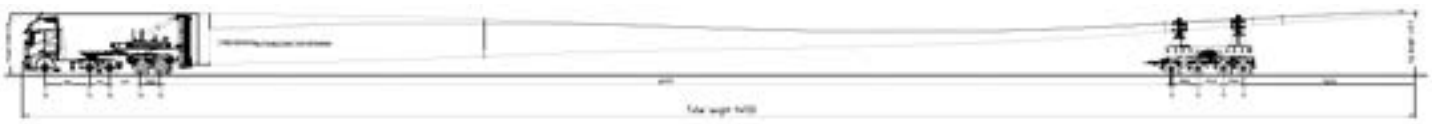


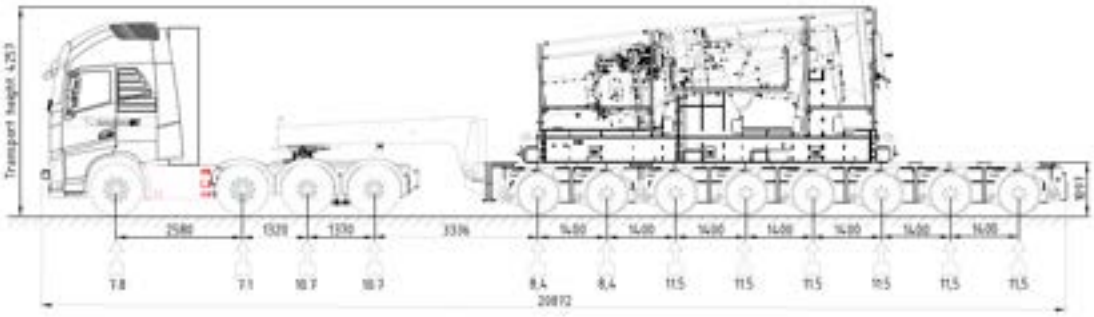
Total weight: 141.840 Kg



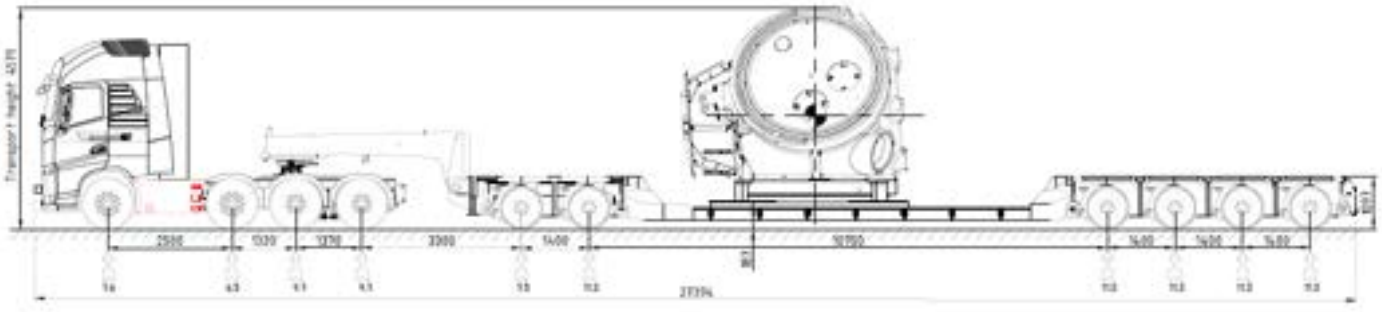
Total weight: 106.300 Kg



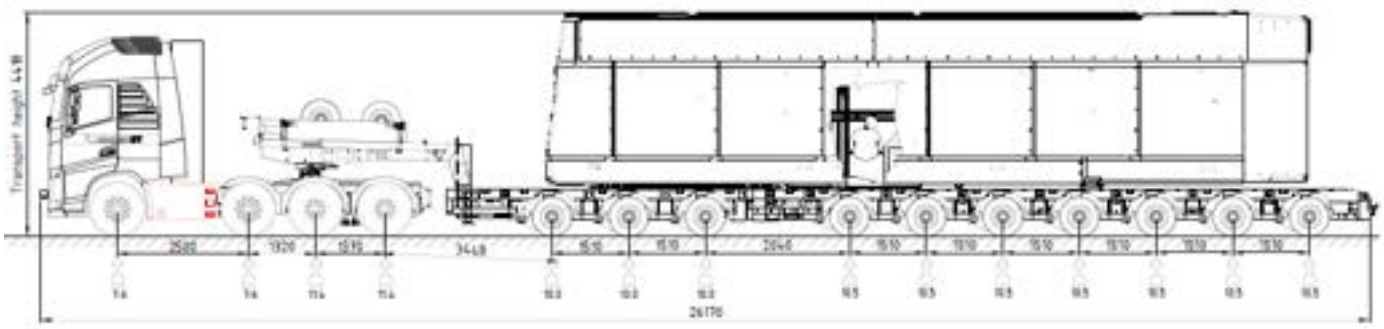
Total weight: 65.000 Kg



Total weight: 122.800 Kg



Total weight: 117.400 Kg



Total weight: 141.500 Kg

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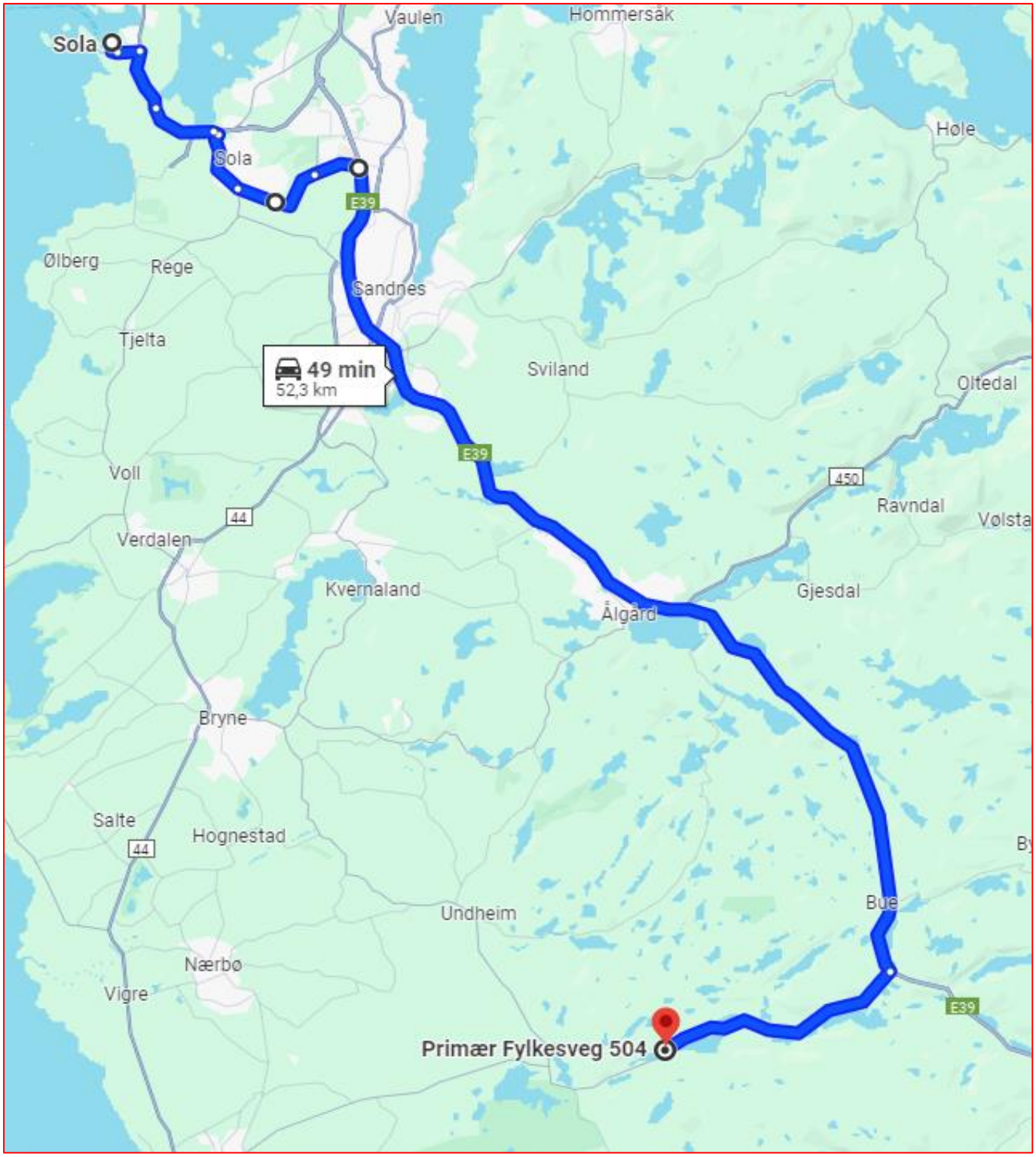
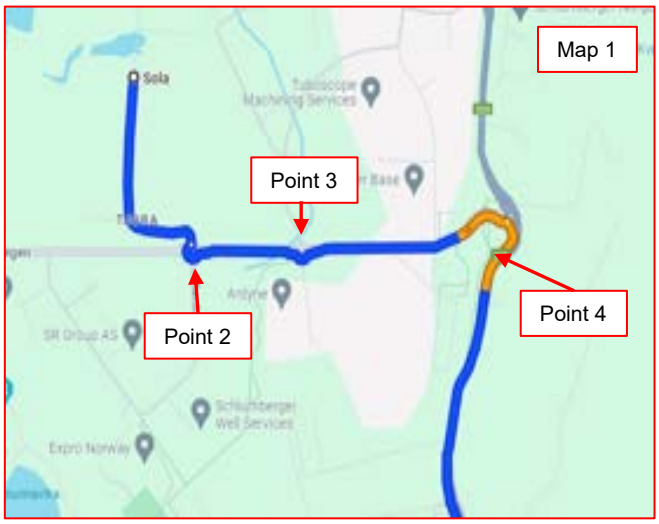
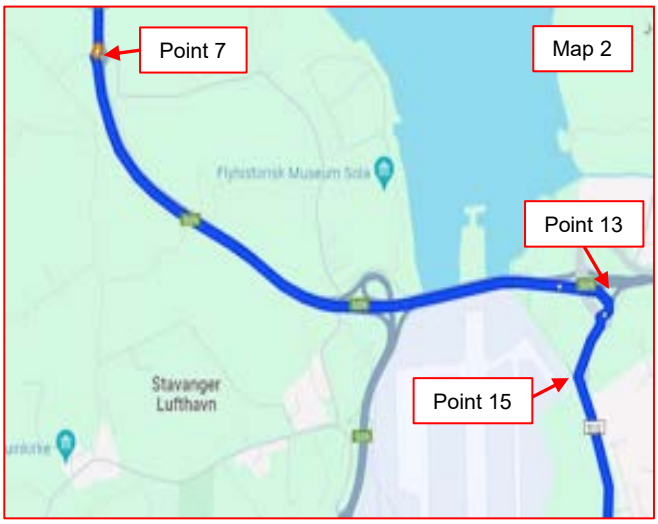
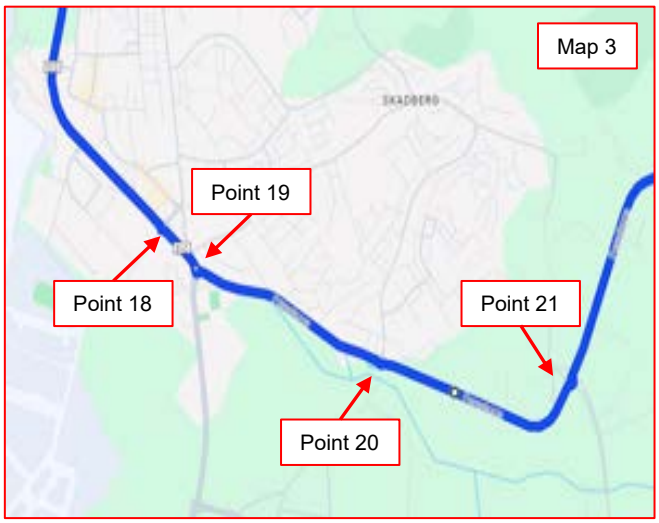
Route map from Port of Risavika to Moifjellet Wind Park.

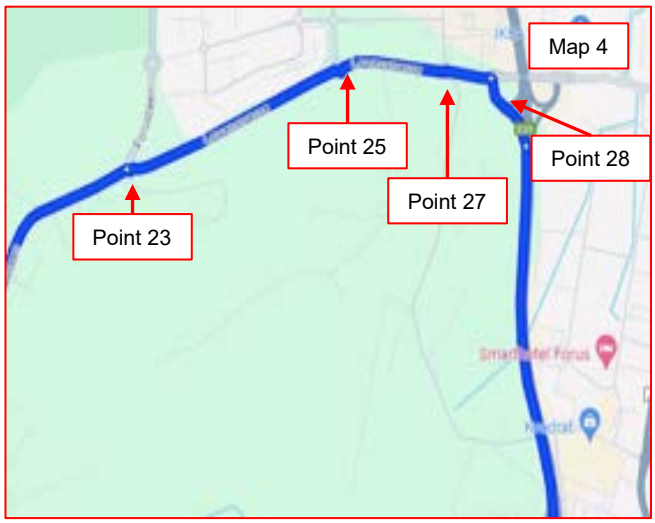


Public

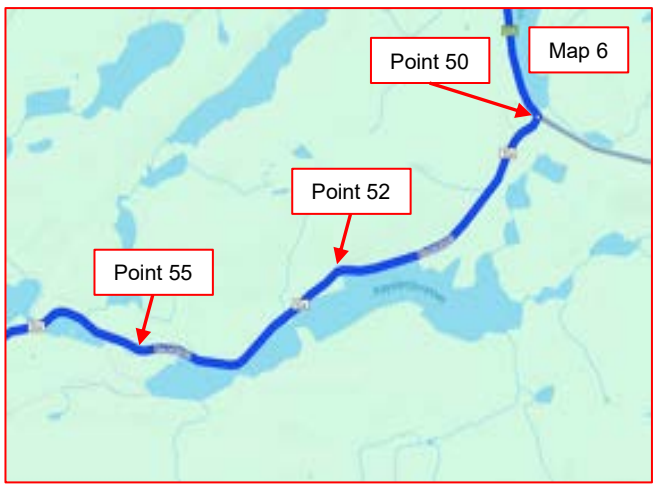

Map 1
Point 3
Point 2
Point 4


Point 7
Map 2
Point 13
Point 15
Stavanger Lufthavn

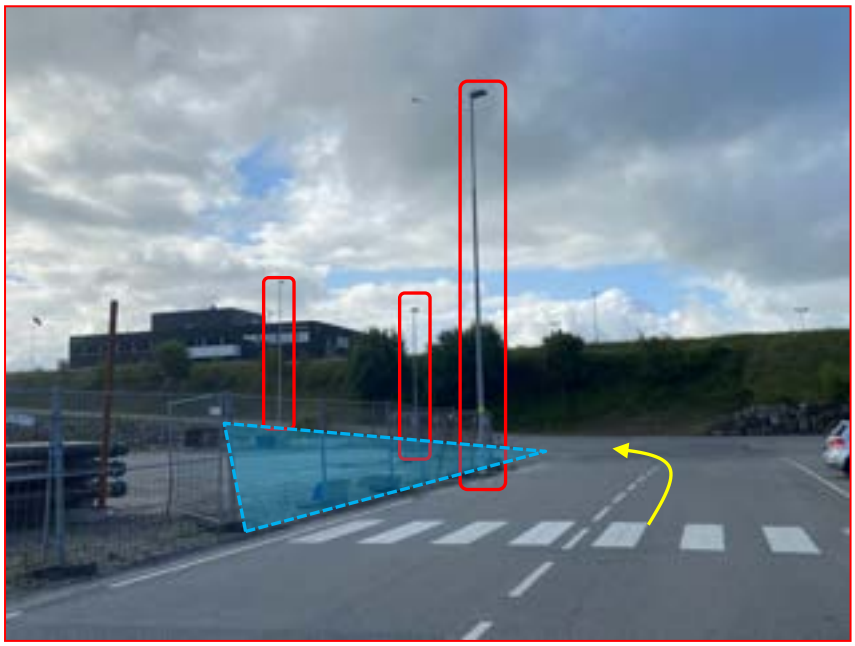

Map 3
Point 19
Point 18
Point 21
Point 20


Map 4
Point 25
Point 28
Point 27
Point 23

Point 42
Map 5
Point 43
Point 45


Point 50
Map 6
Point 52
Point 55

Point 1 - Exit at Port of Risavika near Tjora

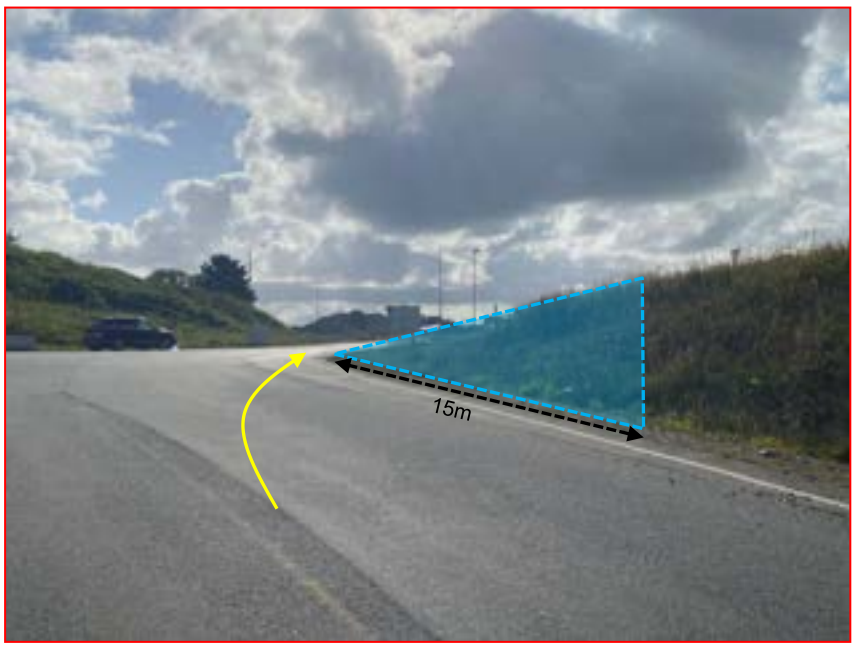


Actions or Info

Transports will turn left towards the exit of the port.

- 3 light poles must be removed to allow for oversail.
- Fence must be removed to allow over sail.

Point 2.1 – Exit at Port of Risavika near Tjora



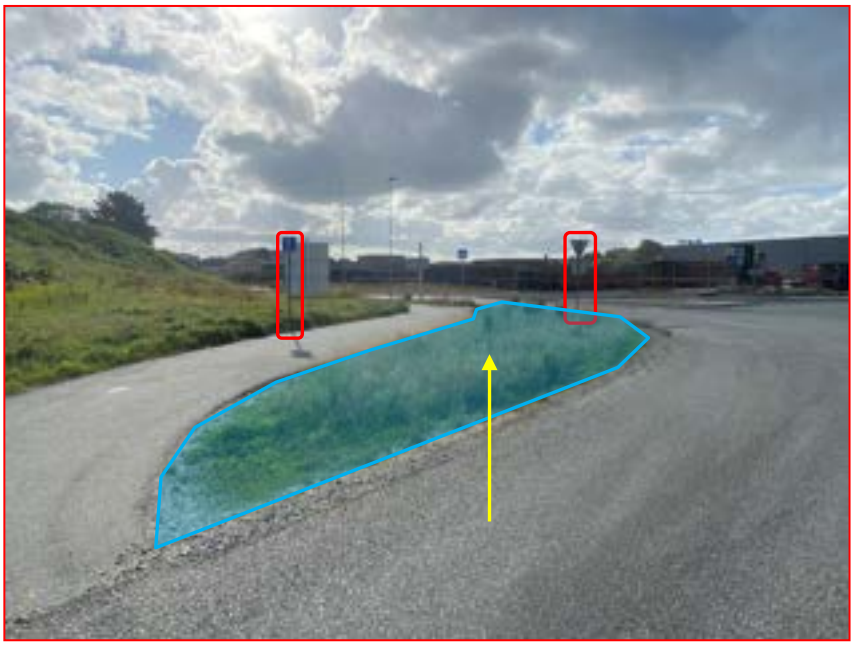
Actions or Info

Transports will enter the roundabout coming from the port of Risavika.

- Embankment must be lovered down to road level to allwo for oversail.

See attached PDF file: Point 2.

Point 2.2 - Exit Port of Tananger onto Kontinentalvegen near Tjora



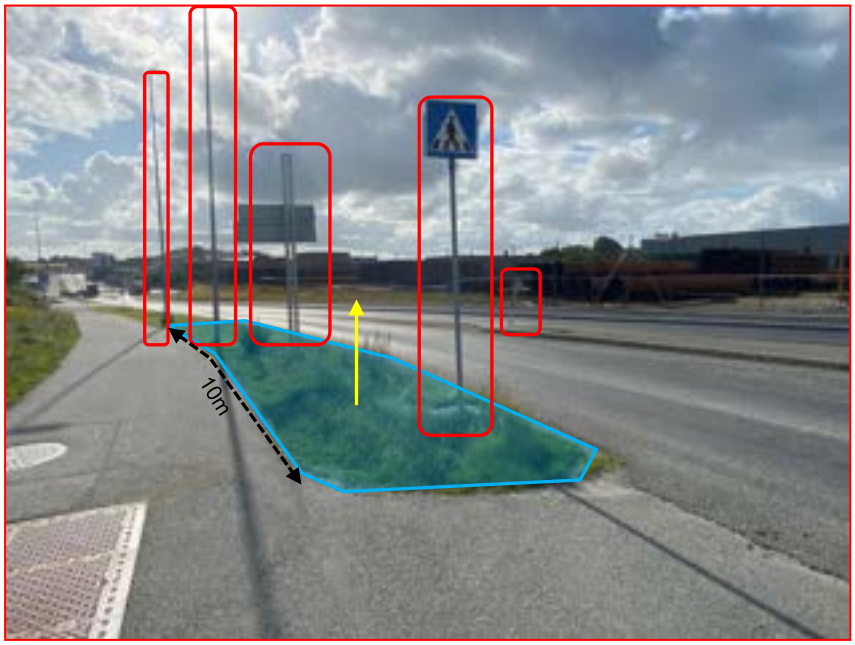
Actions or Info

The transports will turn left in the roundabout.

- Driving against flow of traffic requried.
- 2 signs must be made removable to allow for oversail.
- The grass verge must be in road level and made suitable to drive on.

See attached PDF file: Point 2.

Point 2.3 - Exit Port of Tananger onto Kontinentalvegen near Tanager



Actions or Info

The transports will turn left in the roundabout.

- Driving against flow of traffic requried.
- 3 signs must be made removable to allow for oversail.
- 2 lamp posts must be removed to allow for oversail.
- The grass verge must be in road level and made suitable to drive on.

See attached PDF file: Point 2.

Point 3 – Kontinentalvegen near Tanager

Actions or Info

The transports will go straight in the roundabout.

- 1 sign must be made removable to allow for blade overhang.

Point 4 – Kontinentalvegen onto Route 509 near Tanager

Actions or Info

The transports will turn right towards the airport.

- The roundabout is currently under construction, but no further restrictions expected upon completion.
- 2 signs must be made removable to allow for blade overhang/oversail.

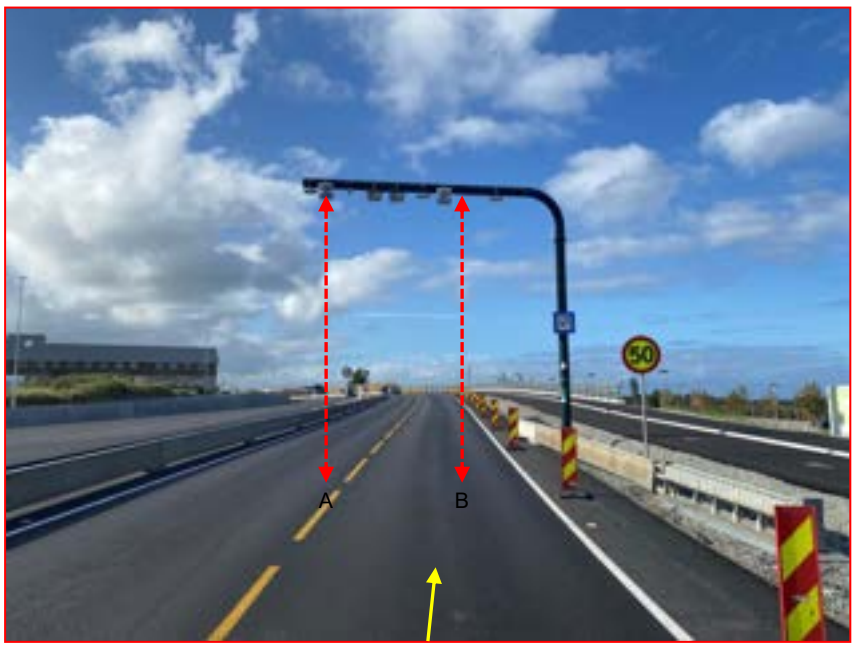
Point 5 – Route 509 near Snøde

Actions or Info

The transports will continue towards the airport on route 509.

- Route 509 is currently construction, but no restrictions expected upon completion, as the current road is being upgraded.

Point 6 – Route 509 near Snøde



Actions or Info

The transports will continue towards the airport on route 509.

- Obstacle clearances:

A. 6,87m
B. 6,90m

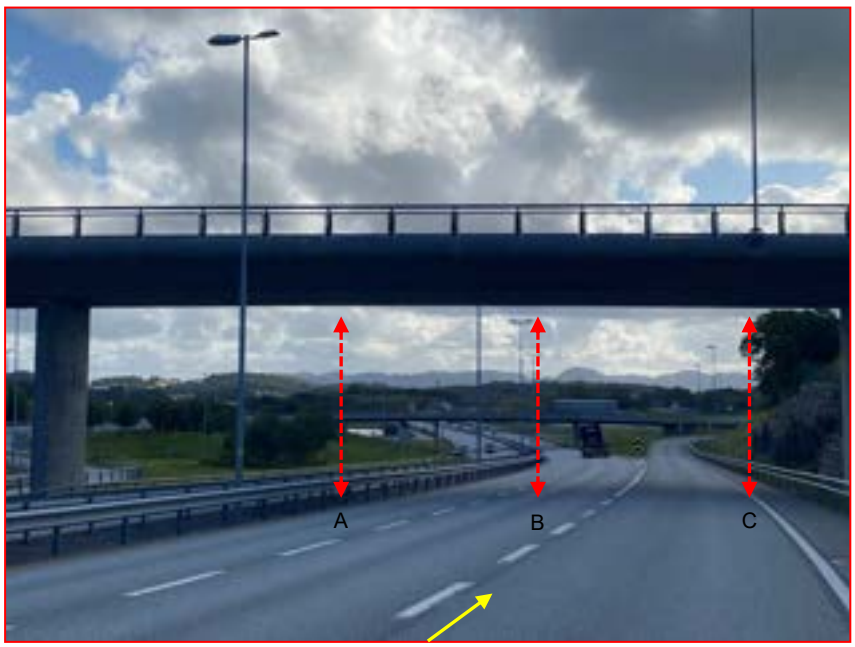
Point 7 – Route 509 near Snøde

Actions or Info

The transports will pass through the roundabout in their own side of the road.

- 1 sign must be made removable to allow for blade overhang.
- Vegetation in center of roundabout must be trimmed to a maximum height of 0,8 meters above streel level.

Point 8 – Route 509 near Sola



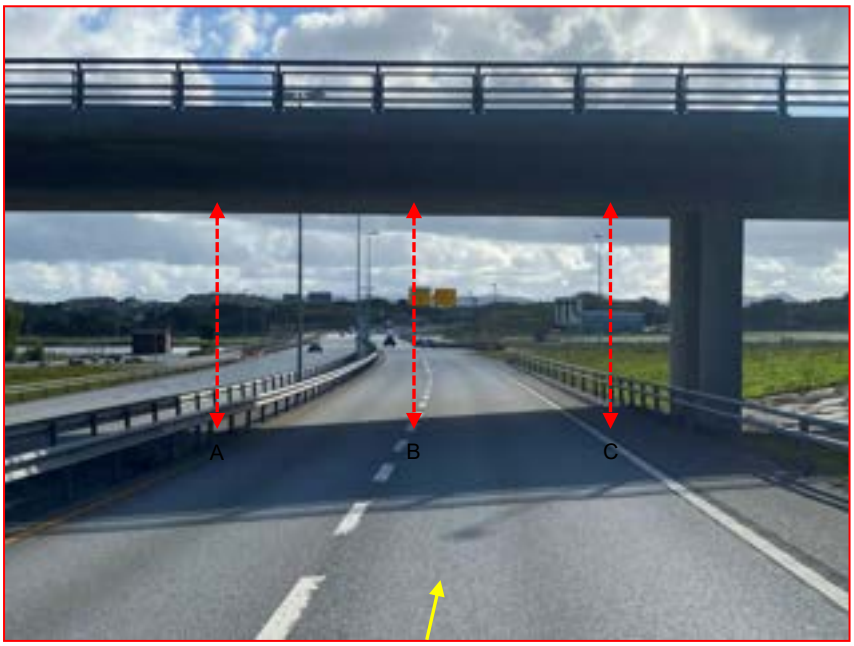
Actions or Info

The transports will continue towards the airport on route 509.

- Obstacle clearances:

A. 6,74m
B. 6,52m
C. 6,34m

Point 9 – Route 509 near Sola



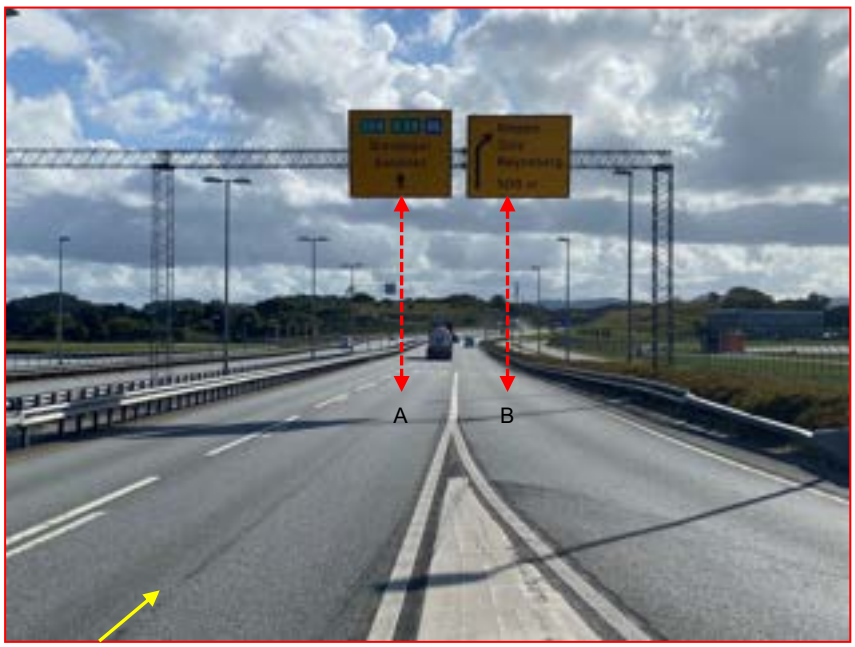
Actions or Info

The transports will continue towards the airport on route 509.

- Obstacle clearances:

A. 6,74m
B. 6,52m
C. 6,34m

Point 10 – Route 509 near Sola



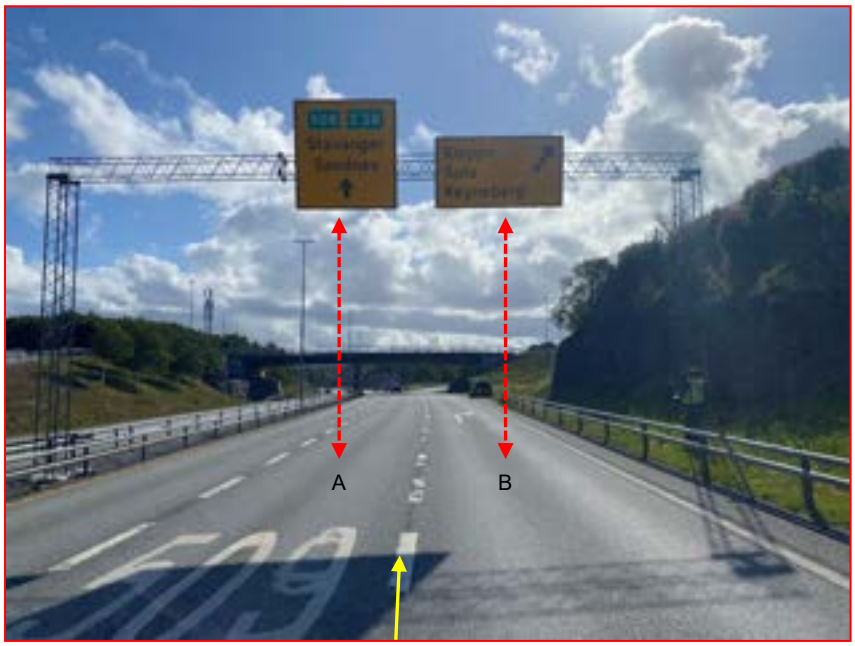
Actions or Info

The transports will on route 509 passing the airport.

- Obstacle clearances:

A. 5,96m
B. 5,90m

Point 11 – Route 509 near Sola



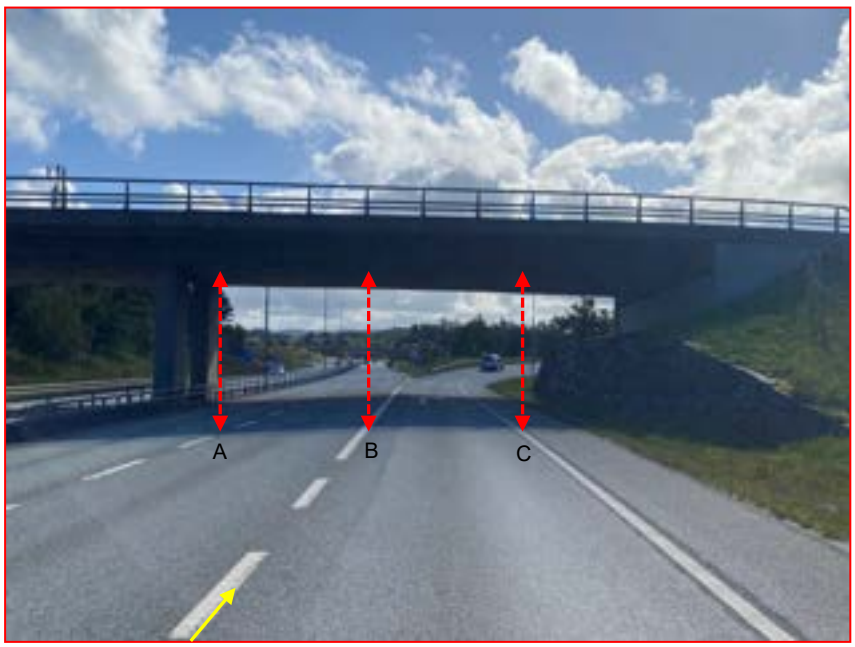
Actions or Info

The tranpsorts will prepare to leave route 509 at the junction towards route 510.

- Obstacle clearances:

A. 5,73m
B. 5,88m

Point 12 – Route 509 near Sola

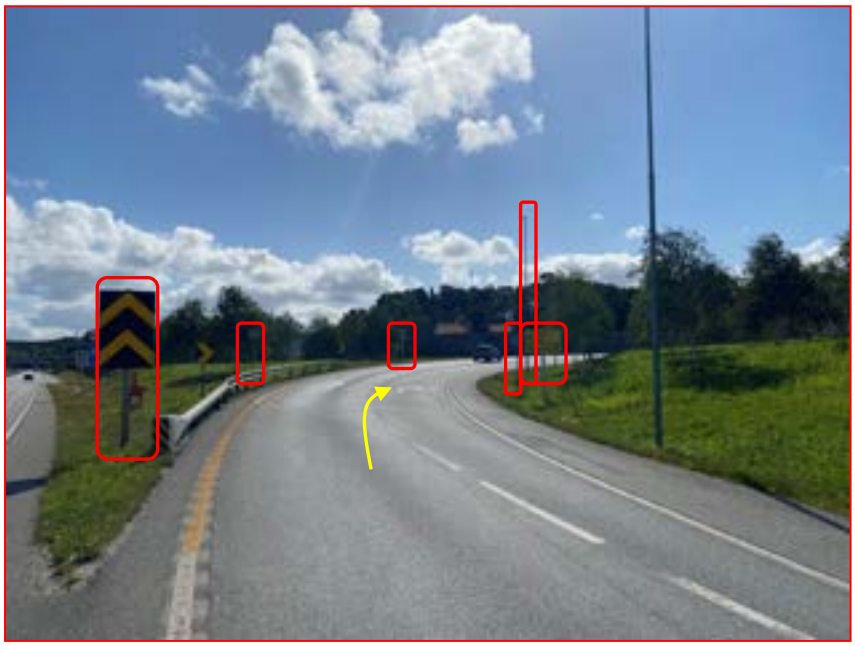


Actions or Info

The tranpsorts will prepare to leave route 509 at the junction towards route 510

Obstacle clearances:
A. 5,25m
B. 5,30m
C. 5,21m

Point 13.1 – Route 509 onto Route 510 near Sola



Actions or Info

The transports will enter the junction leading towards route 510.

- 2 signs in the right side of the road must be made removable to allow for blade overhang.
- 1 light pole must be removed to allow for blade overhang.
- 3 signs in the left side of the road must be lowered to 1,5m to allow for blade oversail.

See attached PDF file: Point 13.

Point 13.2 – Route 509 onto Route 510 near Sola

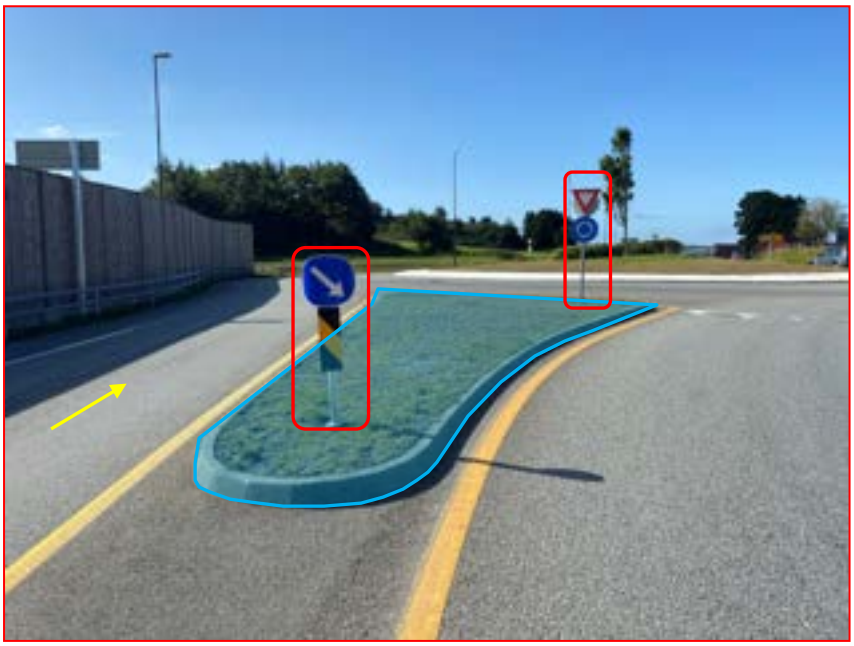
Actions or Info

The transports will pass onto the wrong lane when entering the roundabout.

- Driving against flow of traffic required.
- 1 sign must be removable to allow for blade oversail.
- 2 light pole must be removed to allow for blade oversail.

See attached PDF file: Point 13.

Point 13.3 – Route 509 onto Route 510 near Sola



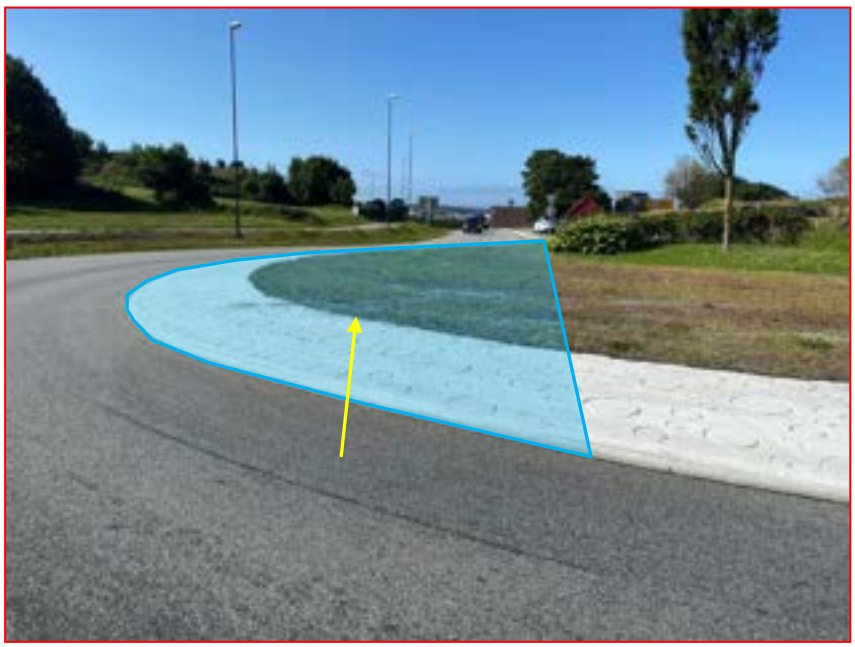
Actions or Info

The transports will clear the roundabout in the opposite lane.

- Driving against flow of traffic required.
- 2 signs must be made removable to allow space for the transports.
- Traffic island must be in road level and suitable to drive on.

See attached PDF file: Point 13.

Point 13.4 – Route 509 onto Route 510 near Sola



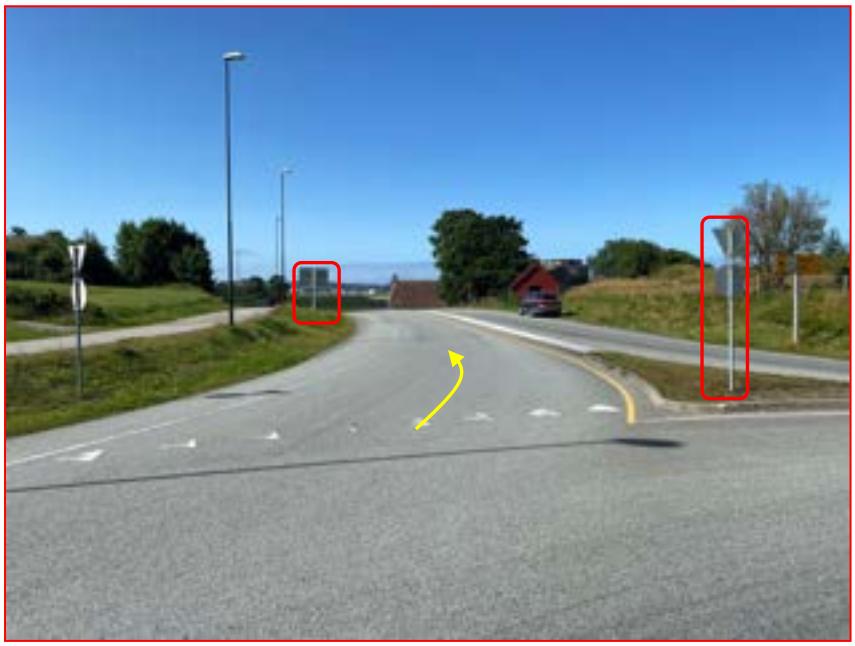
Actions or Info

The transports will clear the roundabout in the opposite lane.

- Driving against flow of traffic required.
- Center of roundabout must be in road level and be suitable to drive on.

See attached PDF file: Point 13.

Point 14 – Route 510 near Sola.



Actions or Info

The transports will leave the roundabout and remain in the opposite lane up until point 15.

- Driving against flow of traffic until next roundabout requried.
- 2 signs must be made removable to allow for blade overhang/oversail.

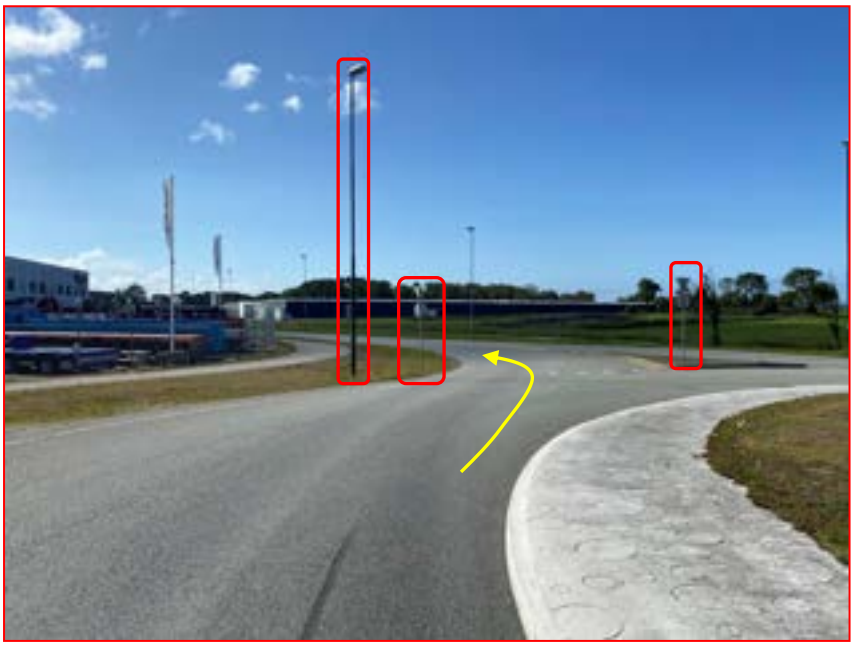
Point 15.1 – Route 510 near Sola.

Actions or Info

The transports will enter and exit the roundabout in the opposite lane.

- Driving against flow of traffic requried.

Point 15.2 – Route 510 near Sola



Actions or Info

The transports will enter and exit the roundabout in the opposite lane.

- Driving against flow of traffic required.
- 2 signs must be made removable to allow for blade overhang/oversail.
- 1 light pole must be removed to allow for blade ovesail.

Point 16 – Route 510 near Sola

Actions or Info

The transports will continue on route 510, now back in the right lane.

- 4 signs in center reservation must be mde removable to allow for blade oversail.

Point 17 – Route 510 near Sola

Actions or Info

The transports will continue on route 510, now back in the right lane.

- 2 signs in center reservation must be made removable to allow for blade oversail.

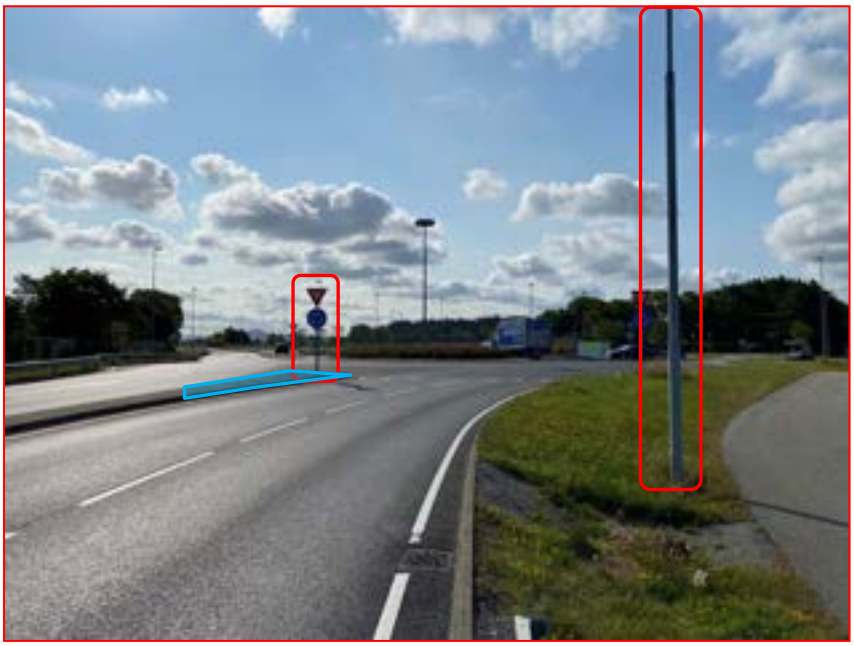
Point 18 – Route 510 near Sola

Actions or Info

The transports will enter the roundabout in theur own lane.

- 1 sign must be removable to allow for blade overhang.
- Traffic island must be kept in road level.

Point 19.1 – Route 510 near Sola



Actions or Info

The transports will pass into the opposite lane when entering the roundabout.

- Driving against flow of traffic required.
- 1 sign must be made removable to allow for blade oversail.
- 1 light pole must be removed to allow for blade overhang.
- The marked area will have to be made level with the road and suitable to travel on.

See attached PDF file: Point 19.

Point 19.2 – Route 510 near Sola

Actions or Info

The transports will leave the roundabout in the opposite lane and pass back into the right lane at the end of the traffic island.

- Driving against flow of traffic required.
- 2 signs must be removable to allow for blade overhang/oversail.

See attached PDF file: Point 19.

Point 20.1 – Fv 443 near Sola

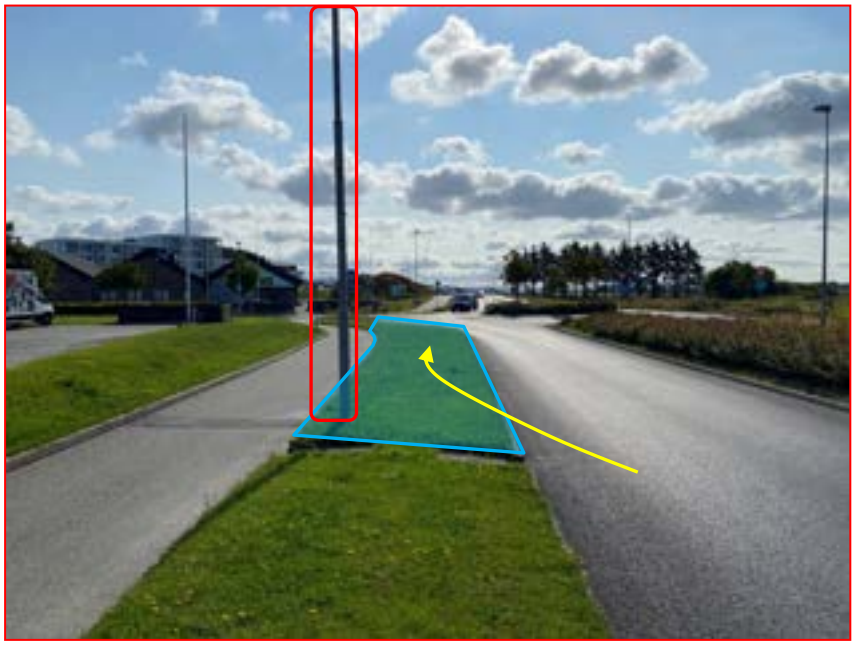
Actions or Info

The transports will pass onto the opposite land in order to get a better approach to the oncoming roundabout.

- These modifications are made to avoid removing trees in center of the roundabout.
- Driving against flow of traffic required.
- 1 sign must be removable to allow for blade oversail.

See attached PDF file: Point 20.

Point 20.2 – Fv 443 near Sola



Actions or Info

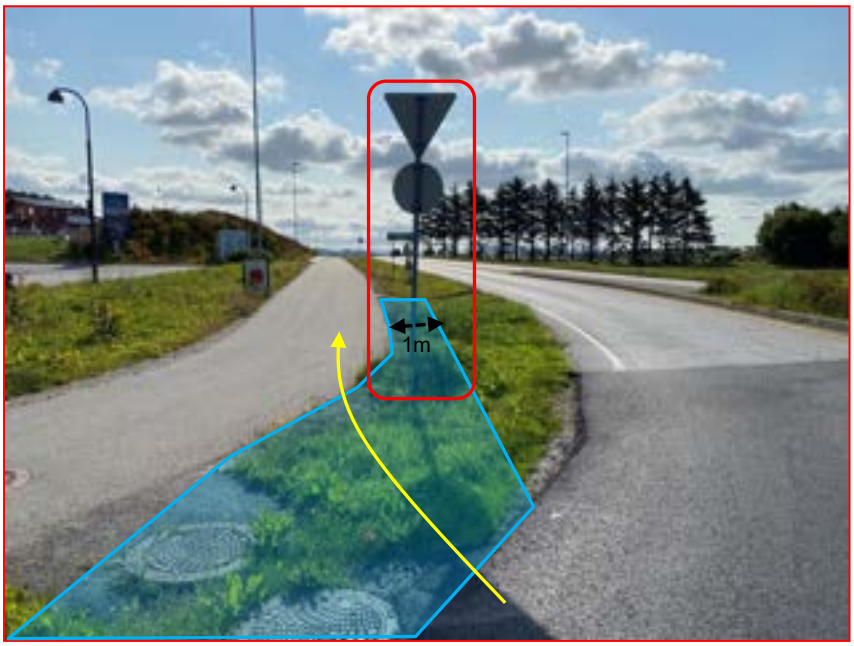
The transports will remain in the opposite land in order to get a better approach to the oncoming roundabout.

- Driving against flow of traffic required.
- 1 light pole must be removed to allow for blade overhang.
- The grass verge must be suitable to drive on and not higher than curb stone.
- The curbstone must be ramped to allow as smooth entry onto the blue area.
- Side walk must be approved to drive on.

See attached PDF file: Point 20.

MAMMOET

Point 20.3 – Fv 443 near Sola



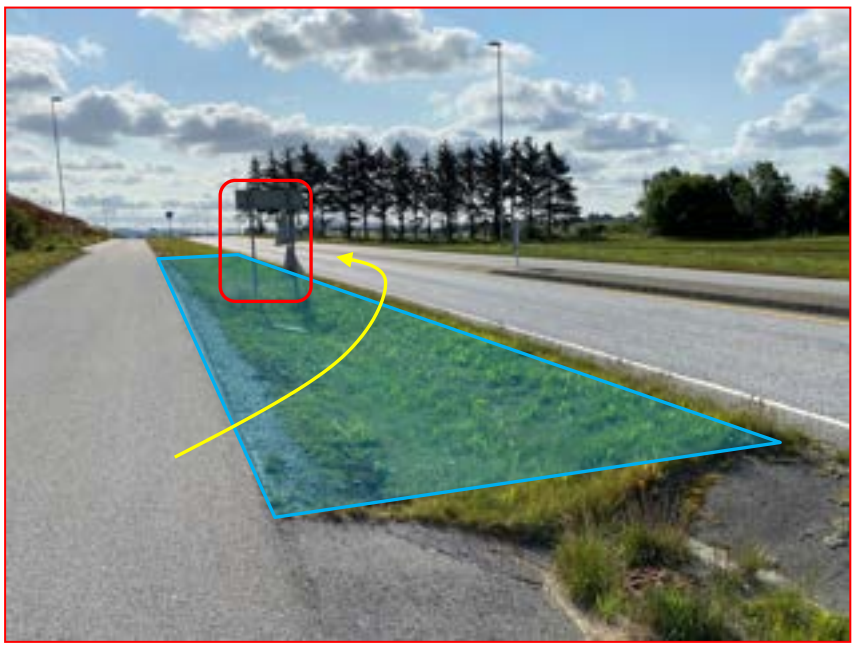
Actions or Info

The transports will leave the roundabout in the opposite lane, using the side walk as well.

- Driving against flow of traffic required.
- 1 sign must be made removable to allow space for the transport.
- Sewer cover must be re-inforced and protected.
- The grass verge must be made suitable to drive on.
- Side walk must be approved to drive on.

See attached PDF file: Point 20.

Point 20.4 – Fv 443 near Sola



Actions or Info

The transports will drive back onto the road, leaving the side walk in the marked area.

- Driving against flow of traffic required.
- 2 signs must be removable to allow space for the truck as well as oversail for the blade.
- The grass verge must be in road level and made suitable to drive on.

Public

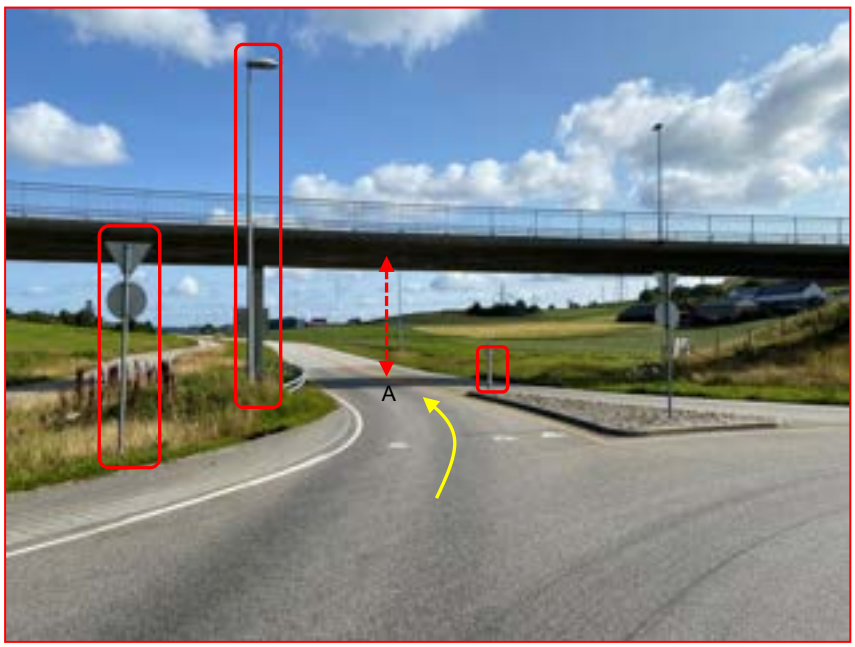
Point 21.1 – Fv 443 near Sandnes

Actions or Info

The transports will enter the roundabout in the opposite lane to avoid road modifications.

- Driving against flow of traffic required.

Point 21.2 – Fv 443 near Sandnes



Actions or *Info*

The transports will leave the roundabout in the opposite lane to avoid road modifications.

- Driving against flow of traffic requied-
- 2 signs must be removable to allow for blade oversail/overhang.
- 1 light pole must be removed to allow for blade oversail.

- Obstacle clearances:

A. 6,18m

Point 22 – Fv 443 near Sandnes

Actions or Info

The transports will continue on Forusbeen.

Obstacle clearances:
A. 6,85m

Point 23.1 – Fv 443 near Sandnes

Actions or Info

The transports will enter the roundabout in the right lane.

- 4 signs must be removable to allow for blade overhang/oversail.
- Tree must be trimmed into the trunk and to a height of 4,5 meters.

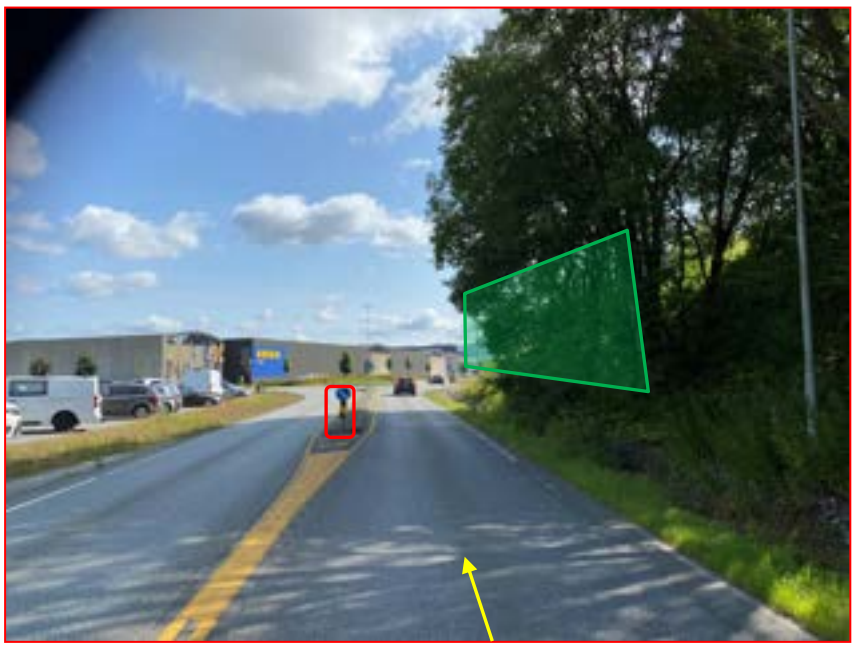
Point 23.2 – Fv 443 near Sandnes

Actions or Info

Transports will leave the roundabout and onto Løwenstrasse in the right land.

- 2 signs must be removable to allow for blade oversail.

Point 24 – Fv 443 near Sandnes



Actions or Info

The transports will continue on Løwenstrasse.

- 1 sign must be removable to allow room for the tower trucks.
- Trees must be trimmed into the trunk and in a height of 4,50 meters.

Point 25 – Fv 443 near Sandnes

Actions or Info

The transports will enter and leave the roundabout on Løwenstrasse in the right lane.

- 3 signs must be removable to allow for blade overhang/oversail.

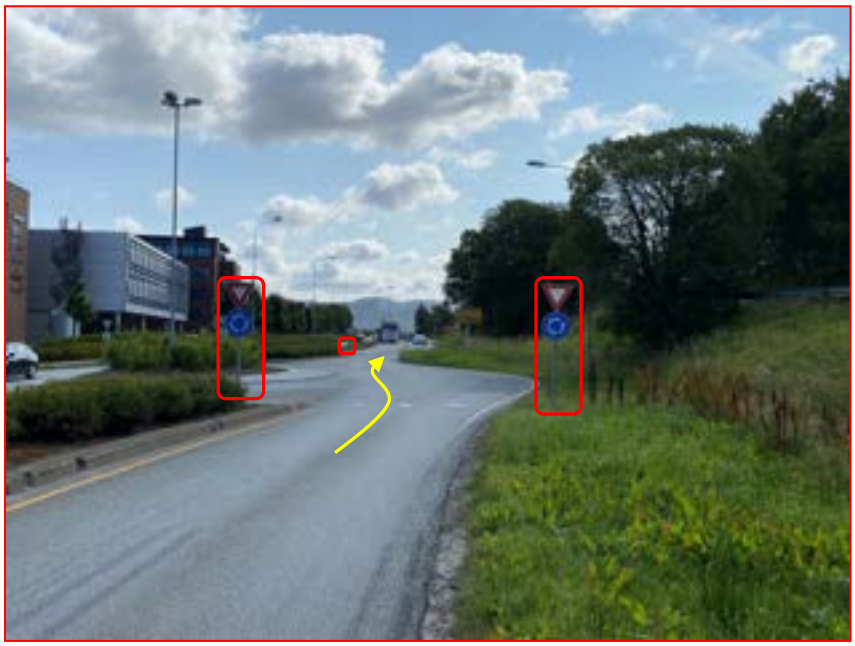
Point 26 – Fv 443 near Sandnes

Actions or Info

The transports will continue on Løwenstrasse.

- 1 sign must be removed to allow for blade oversail.

Point 27 – Fv 443 near Sandnes



Actions or Info

The transports will enter and leave the roundabout on Løwenstrasse in the right lane.

- 3 signs must be removable to allow for blade oversail/overhang.

Point 28.1 – From Fv 443 onto E39 near Sandnes

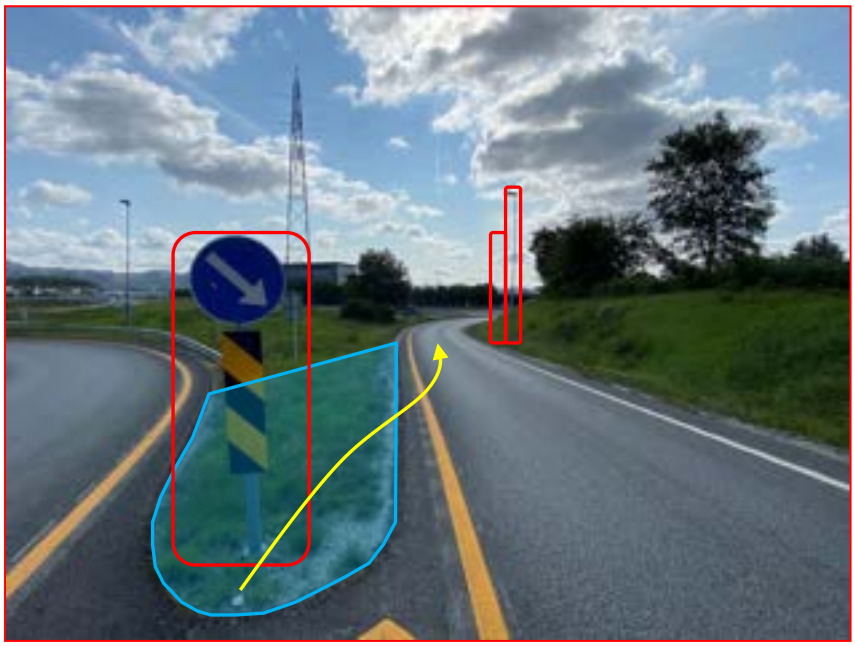
Actions or Info

The transports will turn right in the roundabout to enter the E39.

- Driving against flow of traffic required.
- 4 signs must be removable to allow for blade oversail/overhang.
- 1 light pole must be removed to allow for blade overhang.

See attached PDF file: Point 28.

Point 28.2 – Onto the E39 near Sandnes



Actions or Info

The transports will drive down the access ramp to enter the E39.

- Driving against flow of traffic required.
- 1 sign must be removable to allow the transports space to pass.
- 2 light poles must be removed to allow room for blade oversail.
- Drivable area must be in road level and be suitable drive on.

See attached PDF file: Point 28.

Point 28.3 – Onto the E39 near Sandnes

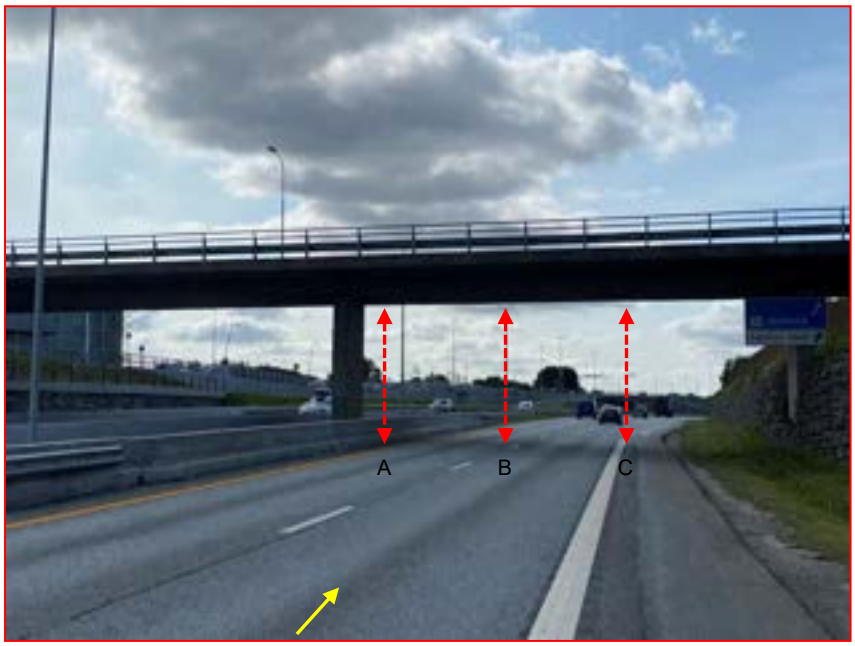
Actions or Info

The transports will drive down the access ramp to enter the E39.

- Drivable area must be in road level and be suitable to drive on.

See attached PDF file: Point 28.

Point 29 – South on E39 near Sandnes



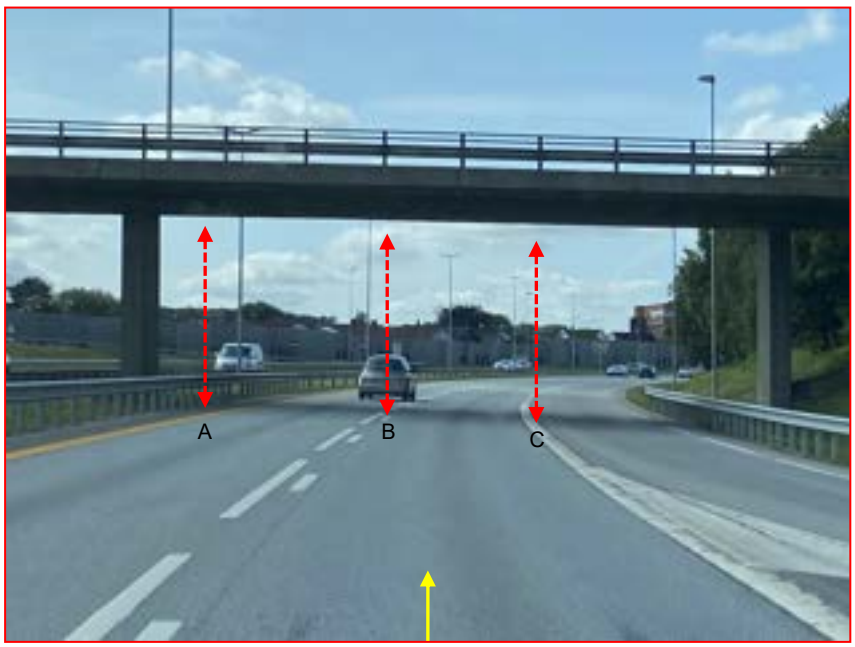
Actions or Info

The transports will continue south on the E39

- Obstacle clearances:

A. 5,35m
B. 5,40m
C. 5,45m

Point 30 – South on E39 near Sandnes



Actions or Info

The transports will continue south on the E39

- Obstacle clearances:

A. 4,82m
B. 4,90m
C. 4,82m

Point 31 – South on E39 near Sandnes

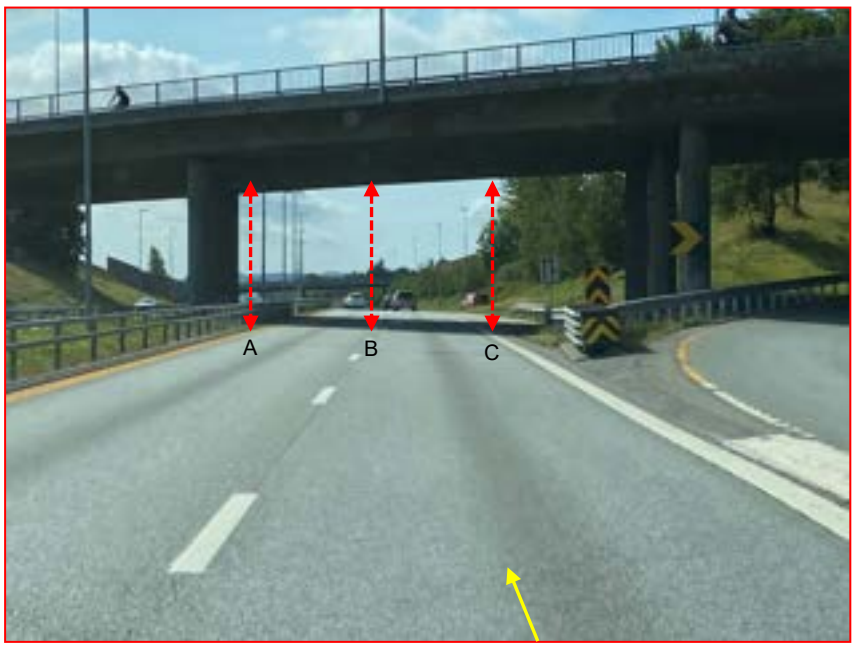
Actions or Info

The transports will continue south on the E39

- Obstacle clearances:

A. 5,50m
B. 5,25m
C. 5,00m

Point 32 – South on E39 near Sandnes



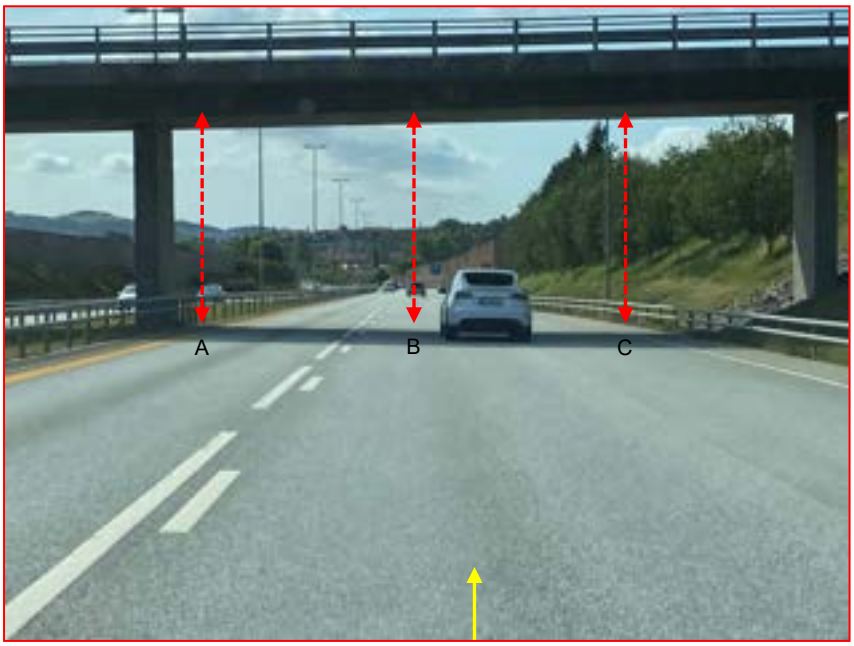
Actions or Info

The transports will continue south on the E39

- Obstacle clearances:

A. 5,85m
B. 5,95m
C. 6,05m

Point 33 – South on E39 near Sandnes



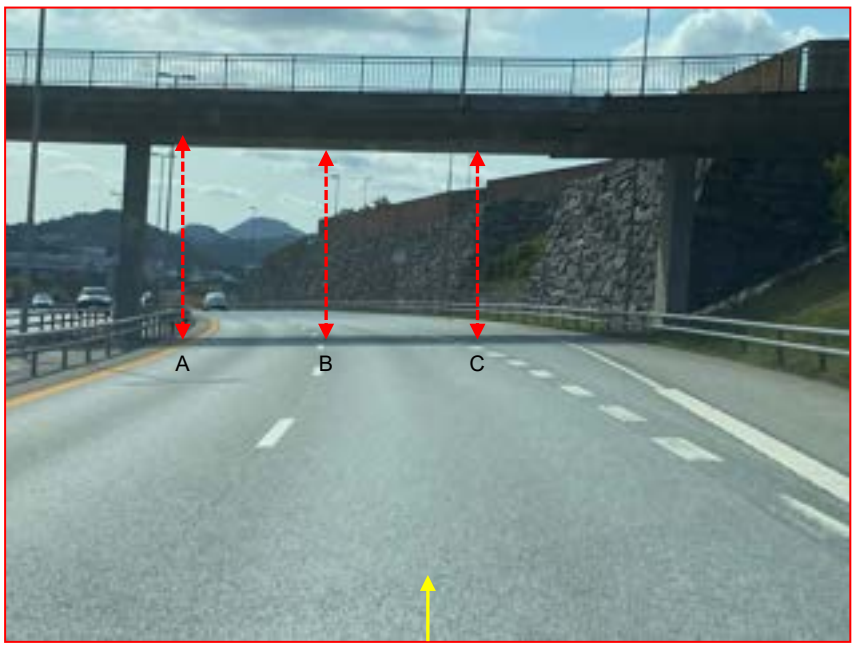
Actions or Info

The transports will continue south on the E39

- Obstacle clearances:

A. 5,12m
B. 5,20m
C. 5,12m

Point 34 – South on E39 near Sandnes



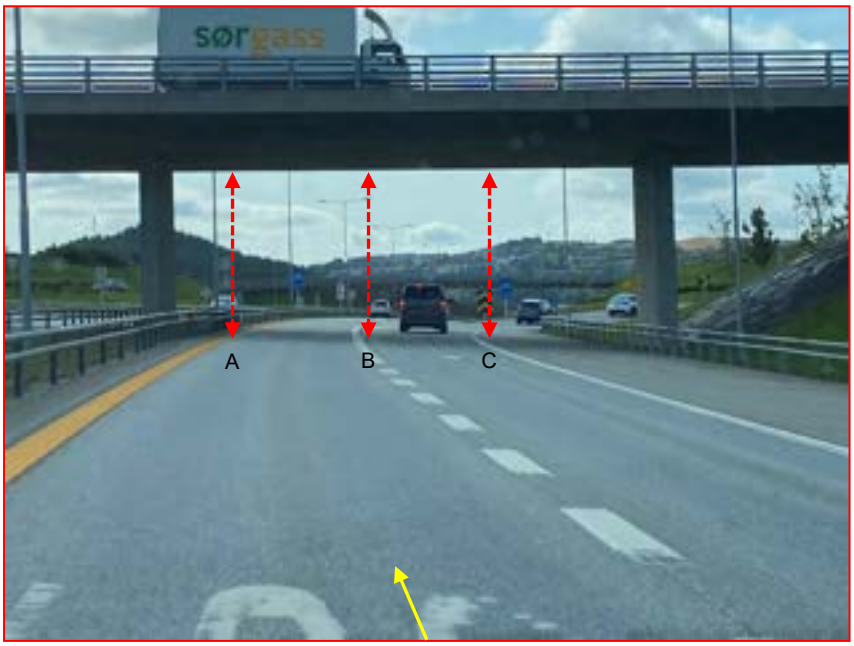
Actions or Info

The transports will continue south on the E39

- Obstacle clearances:

A. 6,20m
B. 6,30m
C. 6,30m

Point 35 – South on E39 near Sandnes



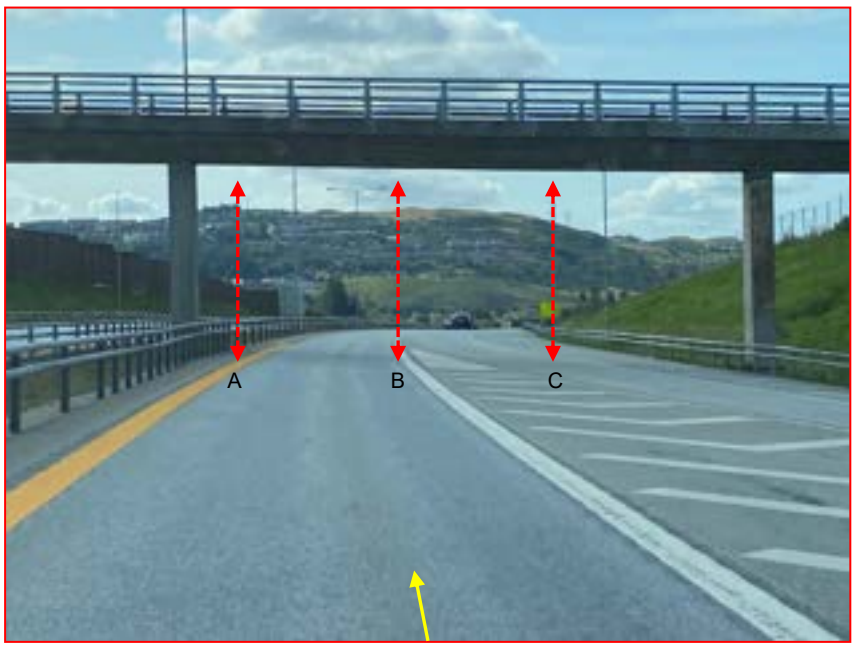
Actions or Info

The transports will continue south on the E39

- Obstacle clearances:

A. 5,25m
B. 5,30m
C. 5,21m

Point 36 – South on E39 near Sandnes



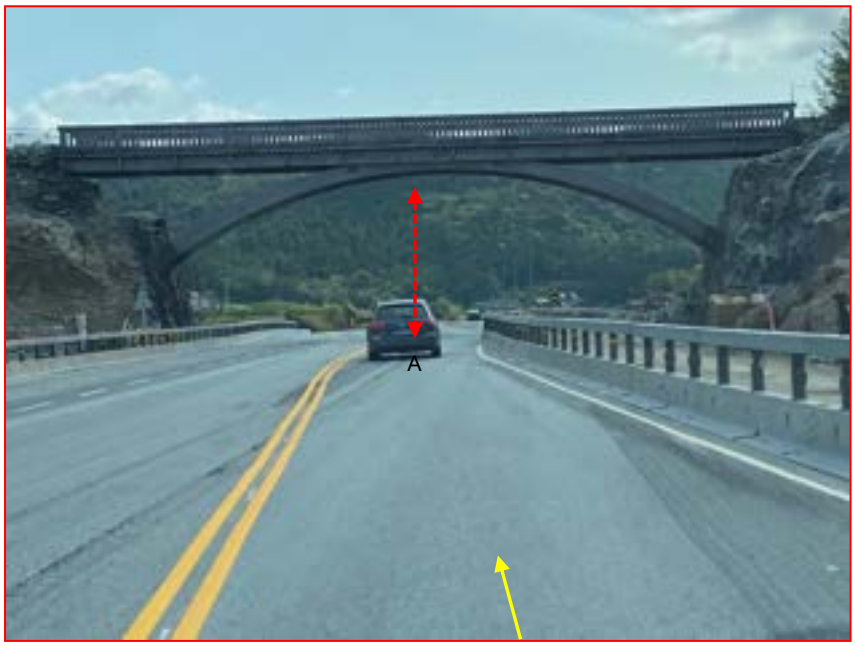
Actions or *Info*

The transports will continue south on the E39

- Obstacle clearances:

A. 5,25m
B. 5,30m
C. 5,21m

Point 37 – South on E39 near Håbet



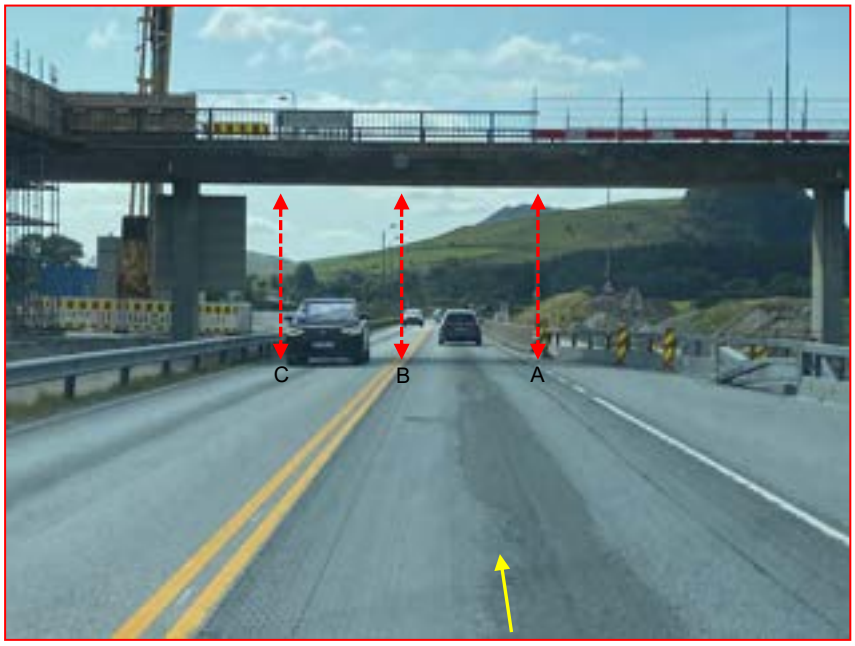
Actions or Info

The transports will continue south on the E39

- Obstacle clearances:

A. 6,80m

Point 38 – South on E39 near Håbet



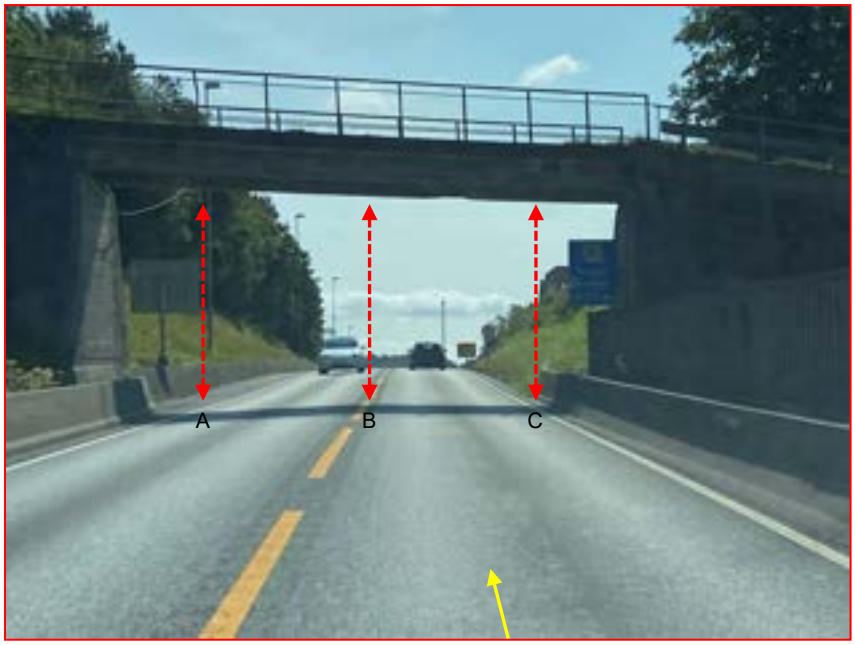
Actions or Info

The transports will continue south on the E39

- Obstacle clearances:

A. 5,10m
B. 5,10m
C. 5,10m

Point 39 – South on E39 near Opstad



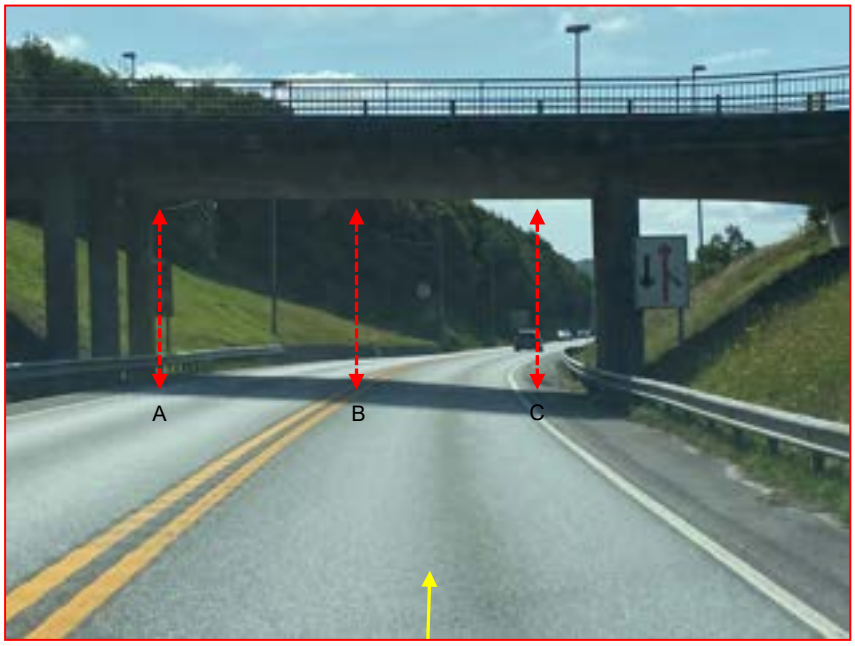
Actions or Info

The transports will continue south on the E39

- Obstacle clearances:

A. 4,80m
B. 4,80m
C. 4,80m

Point 40 – South on E39 near Opstad



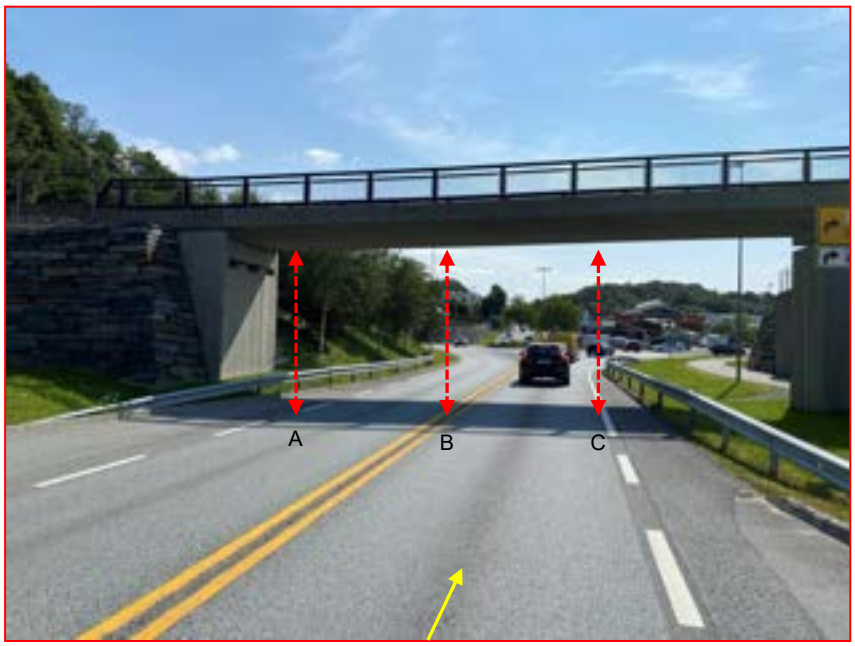
Actions or Info

The transports will continue south on the E39

- Obstacle clearances:

A. 4,98m
B. 4,79m
C. 4,75m

Point 41 – South on E39 near Ålgård



Actions or Info

The transports will continue south on the E39

- Obstacle clearances:

A. 4,93m
B. 4,95m
C. 4,95m

Point 42.1 – South on E39 near Ålgård

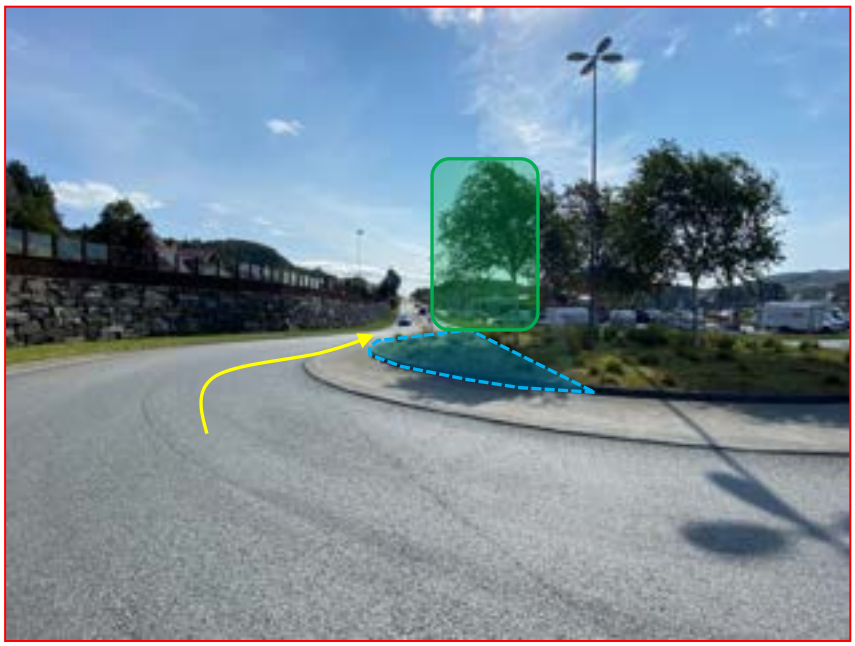
Actions or Info

The transports will pass the roundabout in the opposite lane to minimize the required road modifications.

- Driving against flow of traffic requried.
- 1 sign must be made removable to allow space for the transports to pass.
- 1 light pole must be removed to allow for blade overhang.

See attached PDF file: Point 42.

Point 42.2 – South on E39 near Ålgård



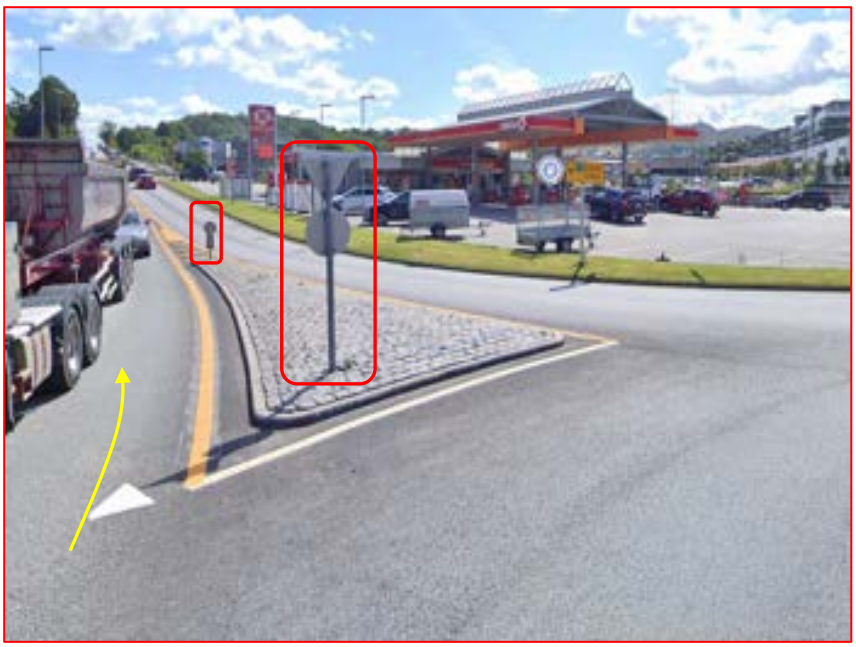
Actions or Info

The transports will pass the roundabout in the opposite lane to minimize the required road modifications.

- Driving against flow of traffic is requried.
- The marked oversail area cannot be higher than 0,80 meters from road level.
- Trees must be removed in center of roundabout in over sail area.

See attached PDF file: Point 42.

Point 42.3 – South on E39 near Ålgård



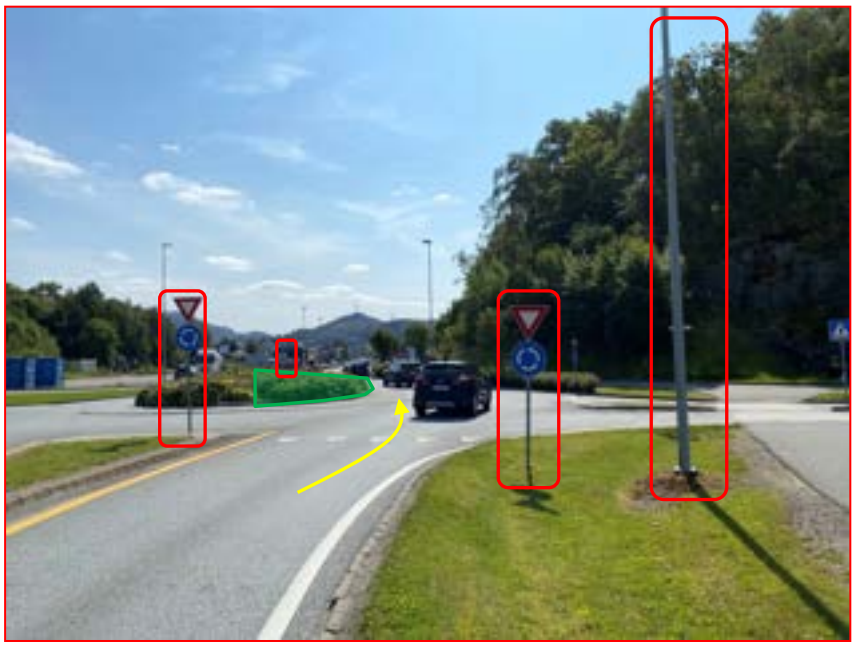
Actions or Info

The transports will pass the roundabout in the opposite lane to minimize the required road modifications.

- Driving against flow of traffic is required.
- 2 signs must be removable to allow overhang/oversail for blades.

See attached PDF file: Point 42.

Point 43 – South on E39 near Ålgård



Actions or Info

The transports will pass the roundabout in the right lane.

- 3 signs must be made removable to allow for blade overhang/oversail.
- 1 light pole must be removed to allow for blade overhang.
- Vegetation in center of the roundabout cannot exceed a height of 0,80 meters.

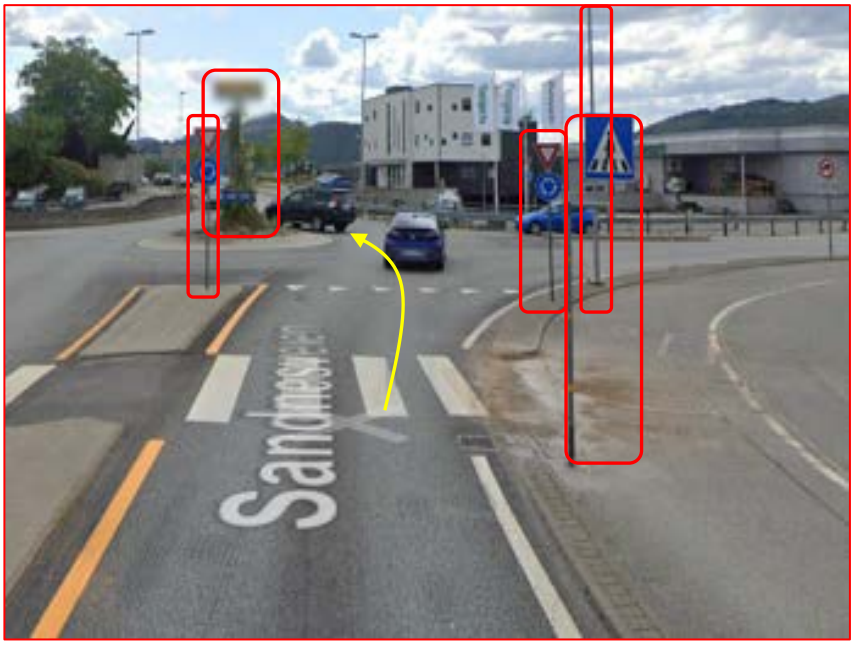
Point 44 – South on E39 near Ålgård

Actions or Info

The transports will continue south on the E39.

- 1 sign must be made removable.

Point 45 – South on E39 near Fiske

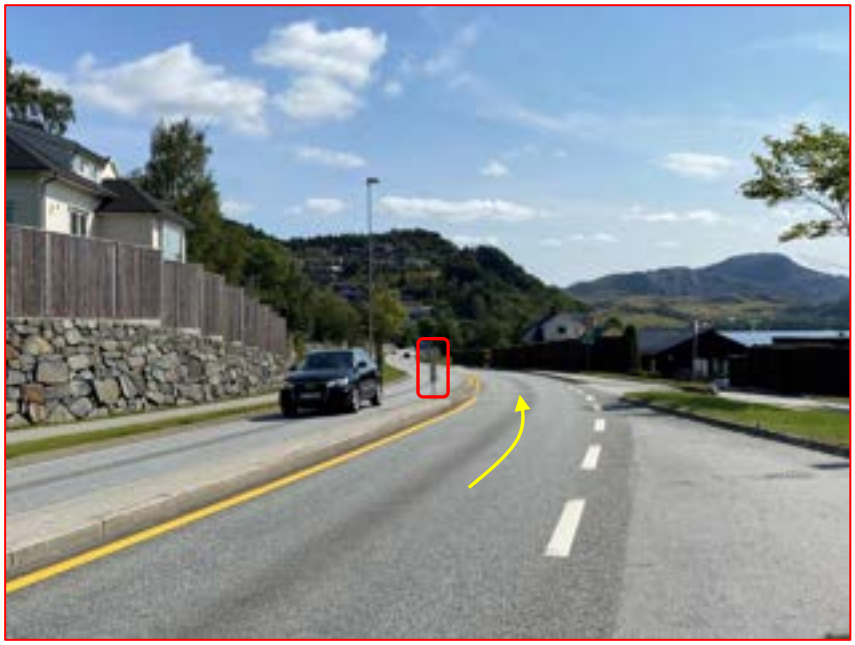


Actions or Info

The transports will pass the roundabout in the right lane.

- 4 signs must be made removable to allow for blade oversail/overhang.
- 1 light pole must be removed to allow for blade overhang.

Point 46 – South on E39 near Fiske



Actions or Info

The transports will continue south on the E39.

- 1 sign must be made removable.

Point 47 – South on E39 near Fiske

Actions or Info

The transports will continue south on the E39.

- 1 sign must be made removable.

Point 48 – South on E39 near Gjesdal

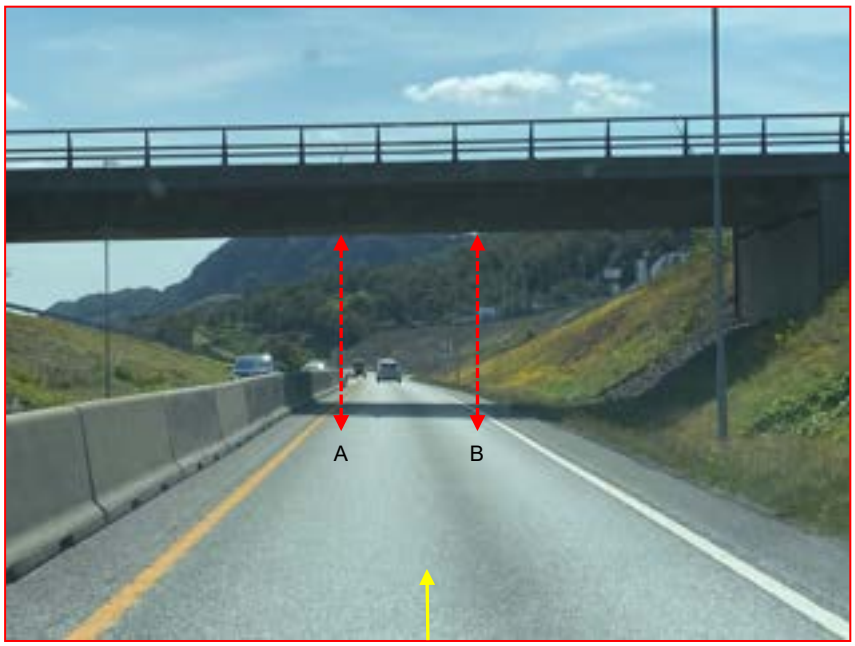
Actions or Info

The transports will continue south on the E39.

- 3 light poles must be removed.

MAMMOET

Point 49 – South on E39 near Gjesdal



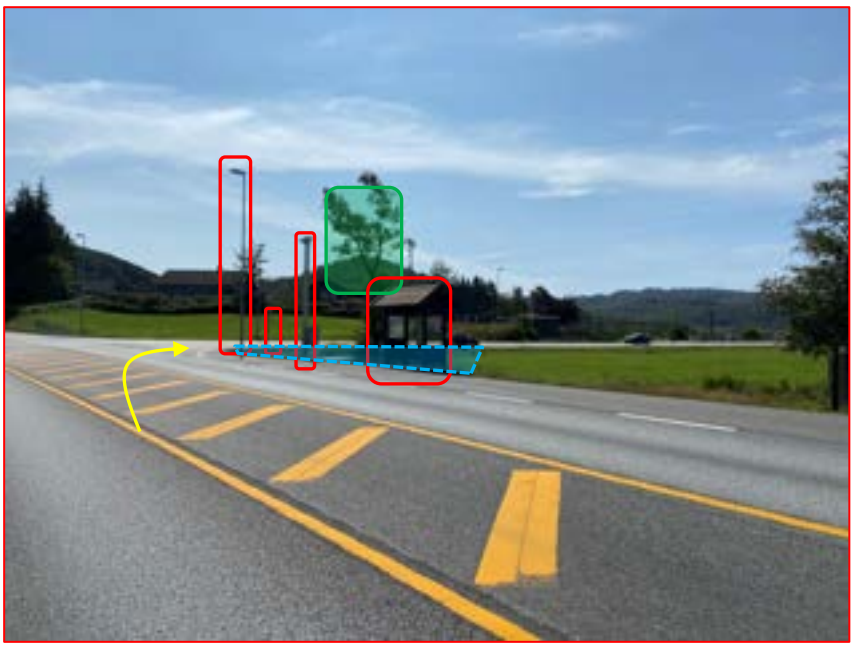
Actions or Info

The transports will continue south on the E39.

- Obstacle clearances:

A. 5,25m
B. 5,30m

Point 50 – Right turn onto Rv504 near Bue



Actions or Info

The transports will turn right onto Buevegen.

- 1 sign must be made removable.
- 2 light poles must be removed.
- 1 tree must be removed.
- 1 bus shelter must be relocated to outside the over sail area.

See attached PDF file: Point 50.

Public

Point 51 – Rv504 near Bue

Actions or Info

The transports will continue on route 504 towards the site entrance.

- 2 signs must be made removable.

Point 52 – Rv504 near Bue

Actions or Info

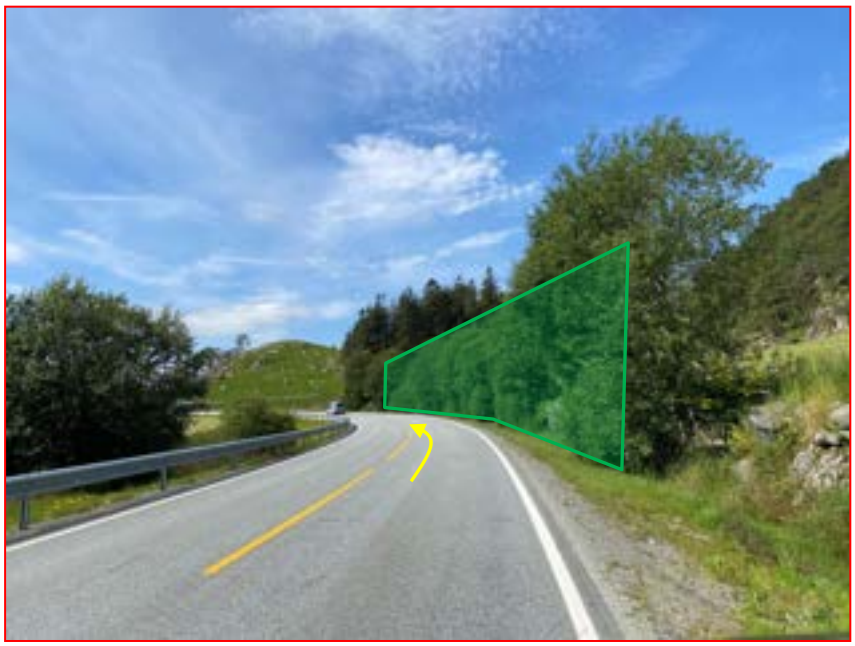
Transports will follow the right curve on route 504 towards site. There are two options for passing this curve.

Option 1:
- Rocks blasted away to allow over sail.

Option 2:
- Road must be extended outside the crashbarrier, where there is considerable height difference.

See attached PDF file: Point 52.

Point 53 – Rv504 near Bue



Actions or Info

The transports will follow the left curve.

- Trees must be trimmed into the trunk to allow tip over sail.

Point 54 – Relevant route point for access 1

Actions or Info

The transports will turn left onto the site roads.

- The access turn will have to the built according to the site specific requirements for the appointed supplier.

Point 55 – Rv504 near Helland

Actions or Info

Transports will follow the right curve on route 504 towards site. There are two options for passing this curve.

Option 1:
- Rocks blasted away to allow over sail.

Option 2:
- Road must be extended outside the crashbarrier, where the height difference is limited.

See attached PDF file: Point 55.

Point 56 – Relevant route point for access 2

Actions or Info

The transports will turn left onto the site roads.

- The access turn will have to the built according to the site specific requirements for the appointed supplier.

Measured in 18°

Cable overview

NO.:	HEIGHT:	HIGH VOLTAGE:	CRITICAL:	GOOGLE LINK:
1	9,59m	Yes	No	https://maps.app.goo.gl/ry84a6RMCTp3K7zN9
2	18,39m	Yes	No	https://maps.app.goo.gl/jJUX7tJGJ7N9U9pj8
3	6,51m		No	https://maps.app.goo.gl/1xJjbcamqtGAPgf5A
4	10,33m	Yes	No	https://maps.app.goo.gl/TXgJPmfusvh7rCvt6
5	7,56m		No	https://maps.app.goo.gl/XV54x3F82UjxohRp6
6	6,56m		No	https://maps.app.goo.gl/459wG2oeRstGUPTJ8

MAMMOET

Conclusion

The route is suitable for transport of wind turbine components of SG170 6.0 MW – 115MHH to Moifjellet if the road modifications described in the document are carried out.

Besides the already highlighted modifications mentioned in this report, Mammoet have the following comments:

- Mammoet recommend to transport the base and mid-section towers by use of clamp-sets with hydraulic suspension, due to the road camber on route 509 between points 4 and 7.
- The base tower and mid-section 1 must be transported without tower feet mounted.
- All bridge clearances on the E39 are based on measurements taken by the Norwegian Authorities which is shared on the homepage www.Vegkart.no .
    - No cables were measured on the E39, but all were deemed to have the necessary clearance.
- All cables are measured in approximately 18°
- The modifications required in point 20 can be reduced significantly if the trees are removed and half of the center island made suitable to drive on.
- Tree trimming should be expected between points 42 and 43, but the exact amount should be determined closer to the actual execution.
- Towers with a diameter up to 5,15 meters can be transported to site by using an alternative route (https://maps.app.goo.gl/qUkeDWadEg1PEDHJ7). This would however require the railroad bridge in Varhaug to be levelled out, due to the steep convex radius of the bridge. The proposed route will travel on Nordsjøvegen which is very narrow and might have to be widened in areas and lay-bys built to allow traffic to pass the transports. The expected travelling time is longer than for the proposed route.
- It is expected that blades, tower sections and main components are able to travel to the full distance to site without the need for breaks, why possible parking areas and lay-by's have not been considered during the survey.
- Due to the nature of the transport and the, in areas, narrow roads between the port and site there will be a need for well planned and executed traffic management.
- This route survey only covers the areas and modifications required for transporting the described wind turbine generators to site and is subject to obtaining permits for all relevant Norwegian authorities, third-party landowner agreements where needed, approved bridge calculations and permits issued from Statens Vegvesen for the transport equipment considered.

Public

MAP LEGEND: Body over sail | Tip over sail | Drivable area

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PROJECT: Moifjellet

TITLE: Point 2. RM

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MAP LEGEND: Body over sail | Tip over sail | Drivable area

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MAP LEGEND:

Body over sail

Tip over sail

Drivable area

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MAP LEGEND: Body over sail | Tip over sail | Drivable area

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MAP LEGEND:

Body over sail

Tip over sail

Drivable area

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PROJECT: Moifjellet

TITLE: Point 28. RM

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MAP LEGEND:

Body over sail

Tip over sail

Drivable area

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PROJECT: Moifjellet

TITLE: Point 42. RM

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MAP LEGEND:

Body over sail

Tip over sail

Drivable area

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PROJECT: Moifjellet

TITLE: Point 50. RM

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Over sail area
Clearance 1,5m above road level
Approx 630m2

Over sail area
Clearance must be in road level
Rocks must be blasted 5,5m from the white line
Approx 510m2

MAP LEGEND:

Body over sail

Tip over sail

Drivable area

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TITLE: Option 1
Point 52. RM

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MAP LEGEND:

Body over sail

Tip over sail

Drivable area

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TITLE: Option 2
Point 52. RM

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PROJECT: Moifjellet

TITLE: Option 1
Point 55. RM

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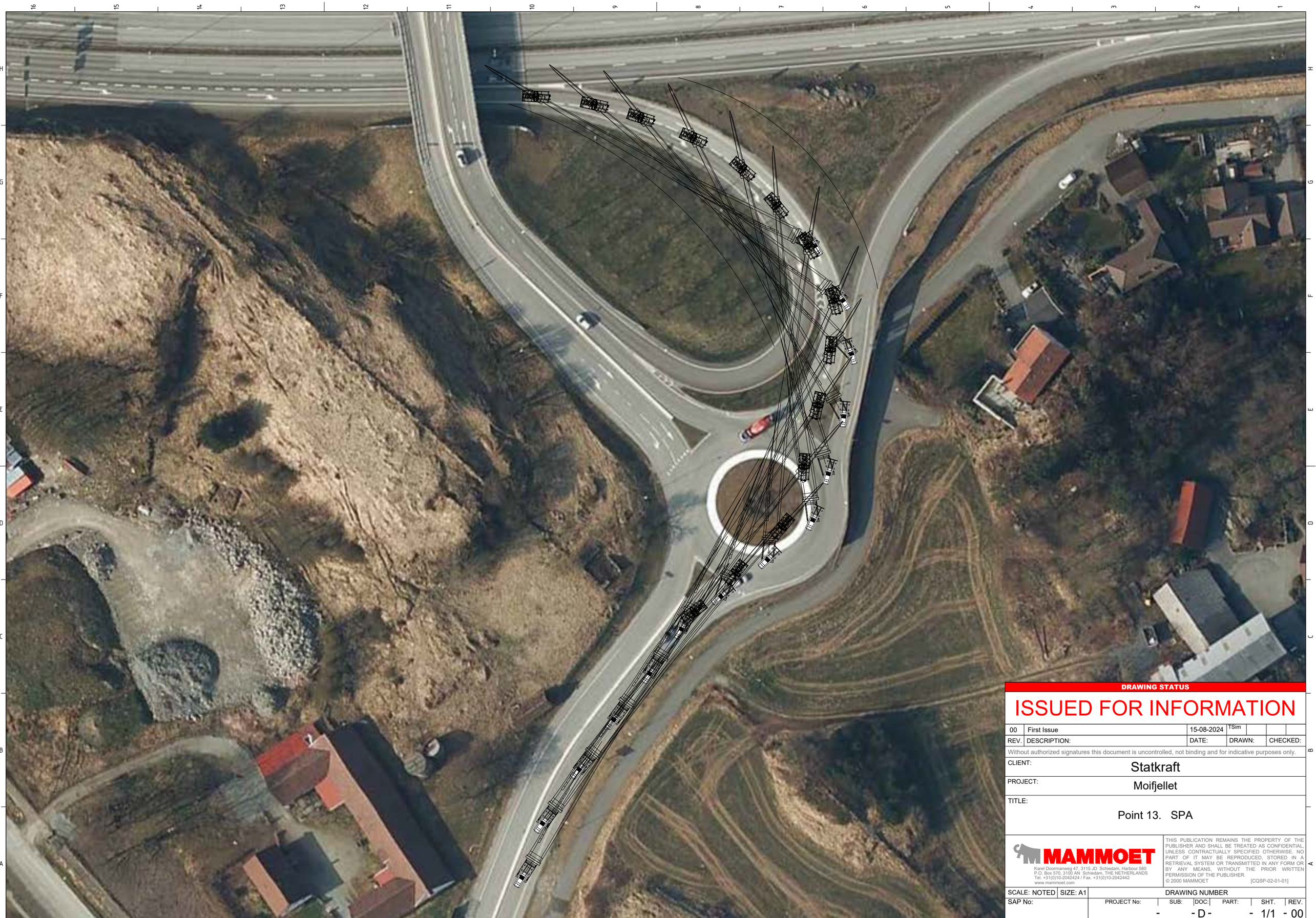

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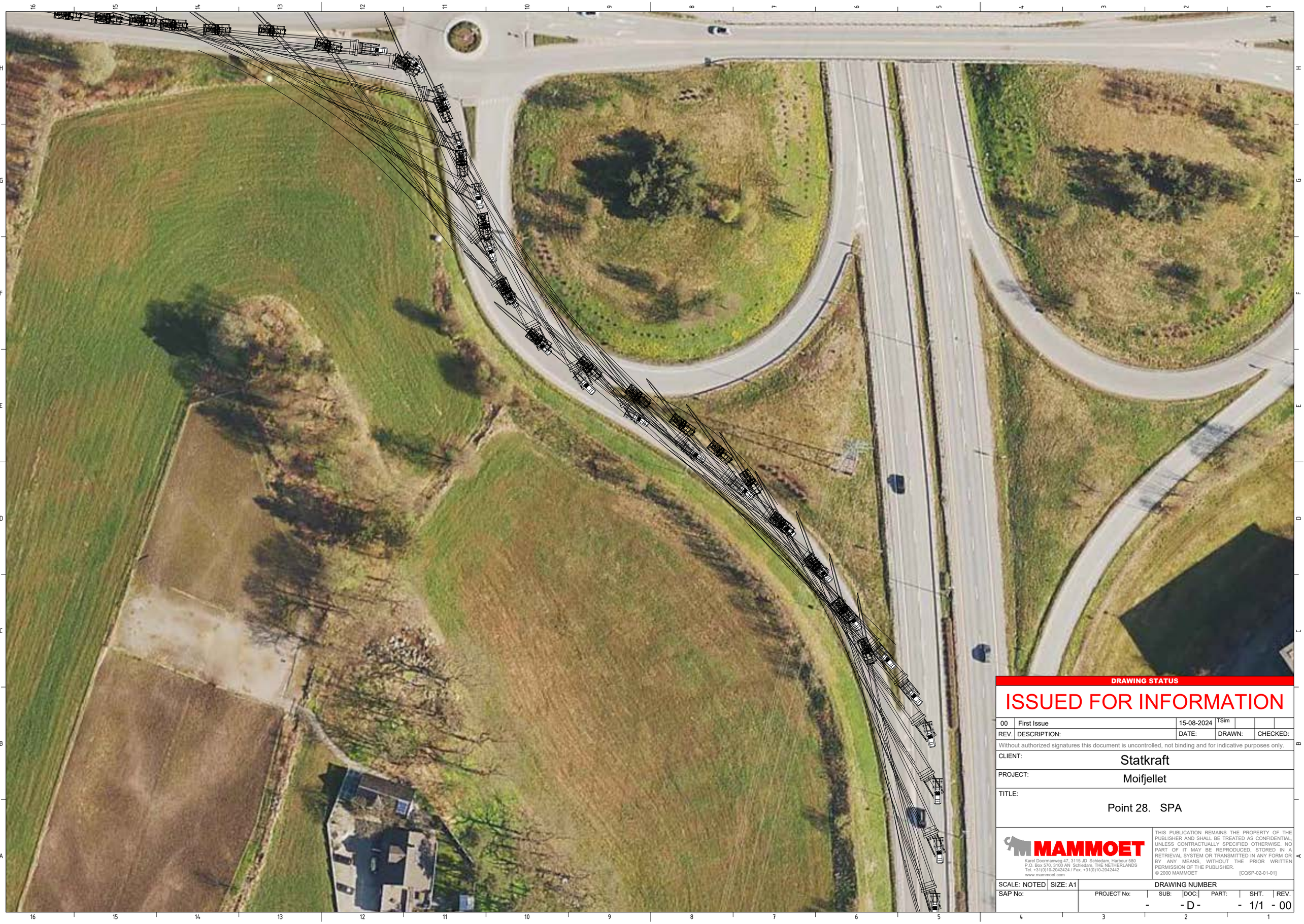

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PROJECT: Moifjellet

TITLE: Point 42. SPA

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PROJECT: Moifjellet

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PROJECT: Moifjellet

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Point 52. SPA

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Point 52. SPA

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PROJECT: Moifjellet

TITLE: Option 1
Point 55. SPA

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CLIENT: Statkraft

PROJECT: Moifjellet

TITLE: Option 2
Point 55. SPA

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Fagrapport:

Værradar

Impact of the Proposed Moifjellet Wind Farm on the Hægebostad Weather Radar

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30 SEP 2024

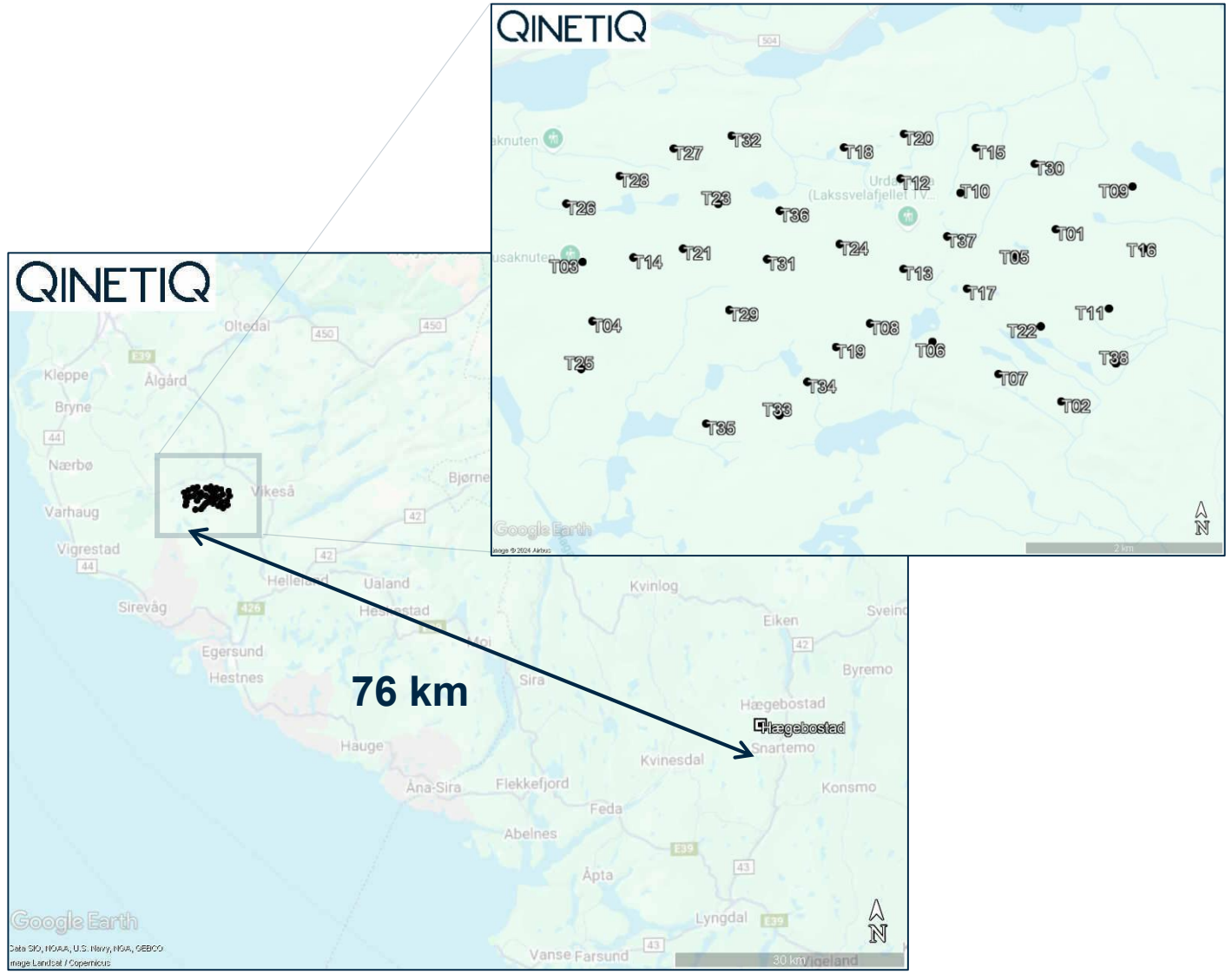
QINETIQ

Introduction

QINETIQ IN CONFIDENCE

Background

- Statkraft intends to develop the Moifjellet wind farm: 38 turbines with a maximum height of 200m
- The Moifjellet wind farm project definition is taken from [1]
- The locations and dimensions of other wind farms in the vicinity are also taken from [1]
- The Norwegian Meteorological Institute (NMI) are concerned that the project will have a negative impact on the operation of the Hægebostad weather radar [2].



[1] Savage, V. (QinetiQ), “Impact of the Proposed Moifjellet Wind Farm on the Skykula Military Radar”, September 2024, QinetiQ/23/02032/2
[2] Magnus, L. M. (Statkraft), “Updated radar assessment for Moifjellet wind farm”, email to Savage, V. (QinetiQ), 25 JUL 2024

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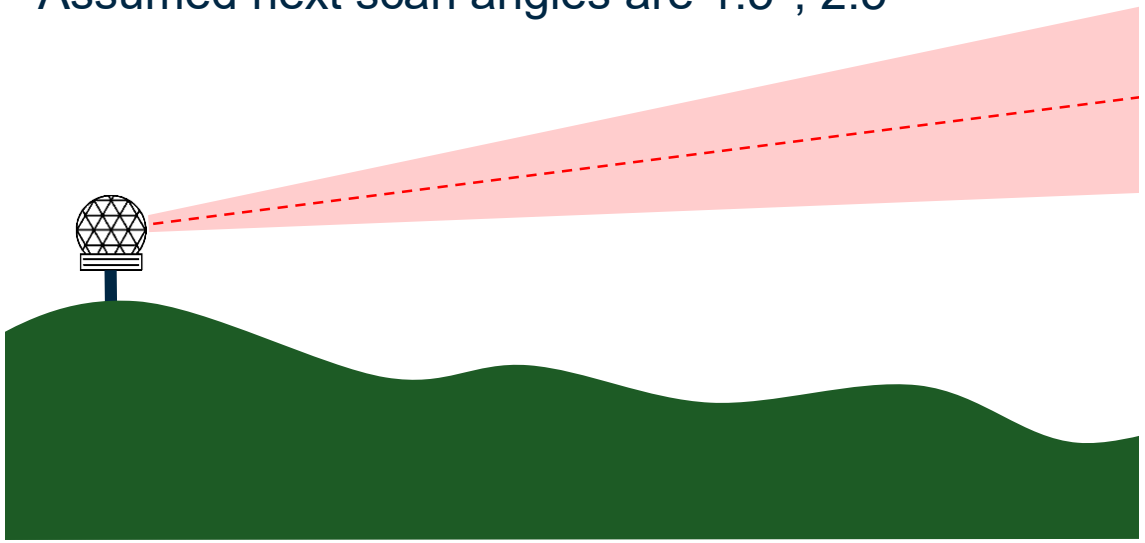
Hægebostad Weather Radar

- Radar location WGS84
  58.360145°N 7.164810°E [1]
- Antenna height = 631m above sea level
- Frequency = 5.64 GHz (C-band)
- Beam width = 1.0°
- Lowest scan elevation angle = 0.5°
- Assumed next scan angles are 1.5°, 2.5°

The radar uses a ‘pencil’ beam, narrow in horizontal and vertical angle. The radar makes one full 360° horizontal rotation at the lowest scan angle. It then makes rotations at increasing elevation angles to build-up a 3D radar picture of precipitation.



[1] Magnus, L. M. (Statkraft), “Updated radar assessment for Moifjellet wind farm”, email to Savage, V. (QinetiQ), 25 JUL 2024

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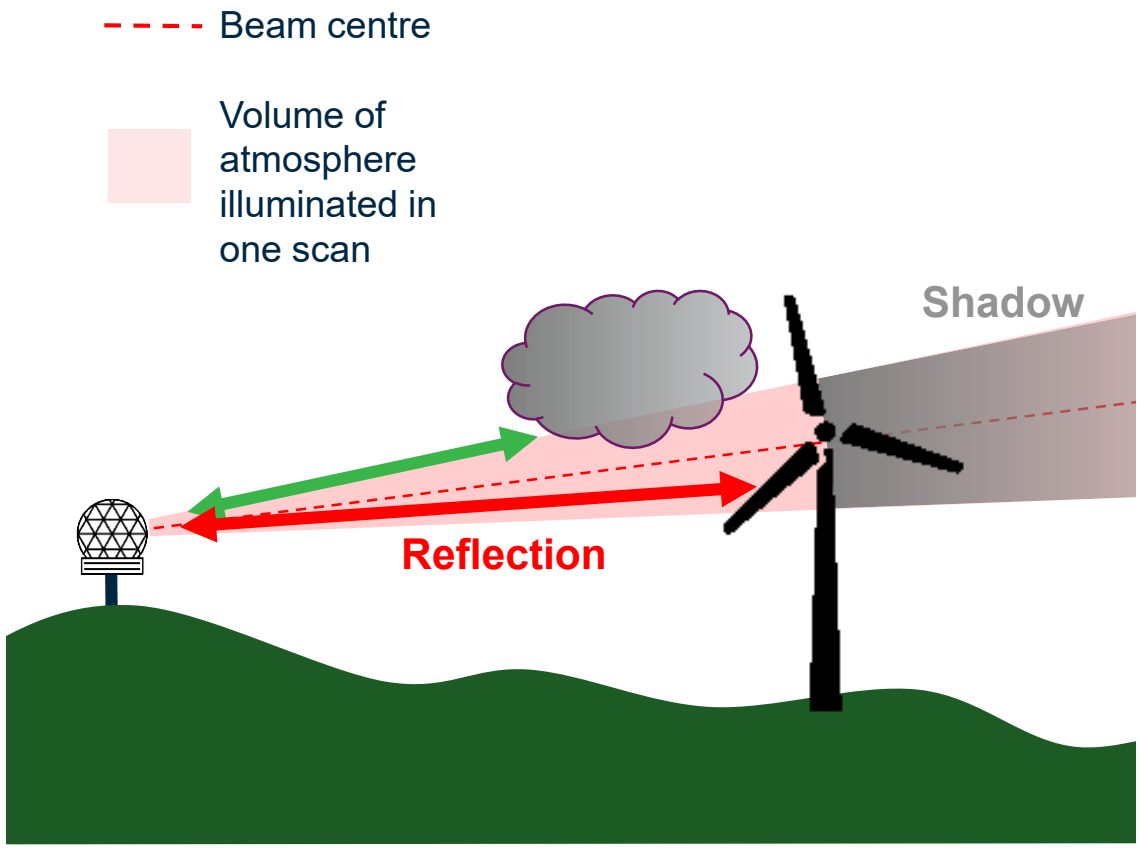
Wind Turbine Impacts

- **Green** = intended operation = reflections from precipitation (rain, hail, mist etc.)
- Wind turbines have two main impacts
  - **Red** = reflection from turbine = fictitious <u>increase</u> in precipitation estimate
  - **Grey** = shadow (signal blockage) behind the turbine = <u>decrease</u> in precipitation estimate



Wind farm visibility

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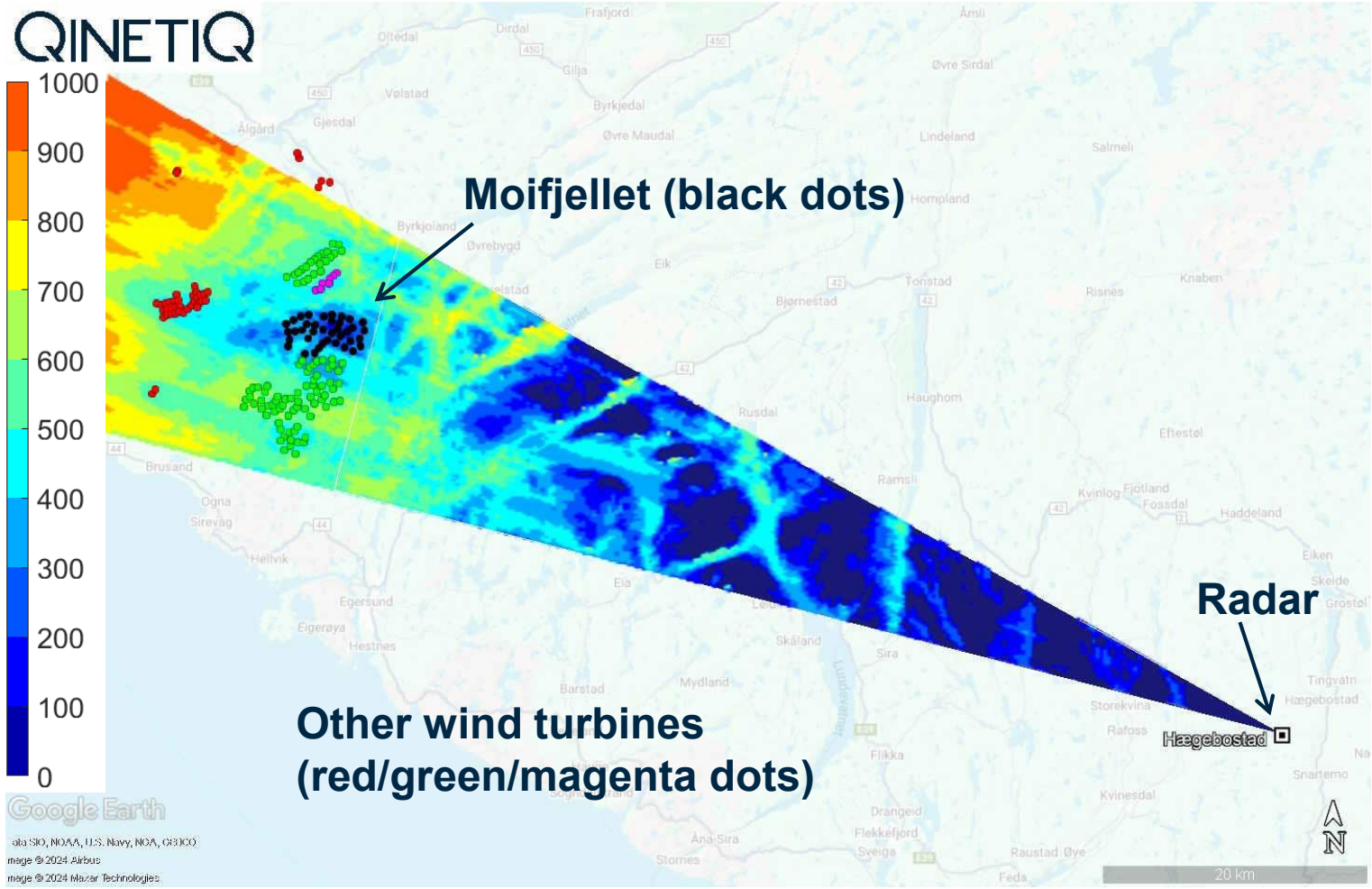
Turbine Visibility (1/4)

- Colour shows height to radar line of sight (LOS) from the Hægebostad weather radar
- For example, yellow areas indicate where an object 700m or smaller is not in LoS (not directly visible) from the Hægebostad weather radar



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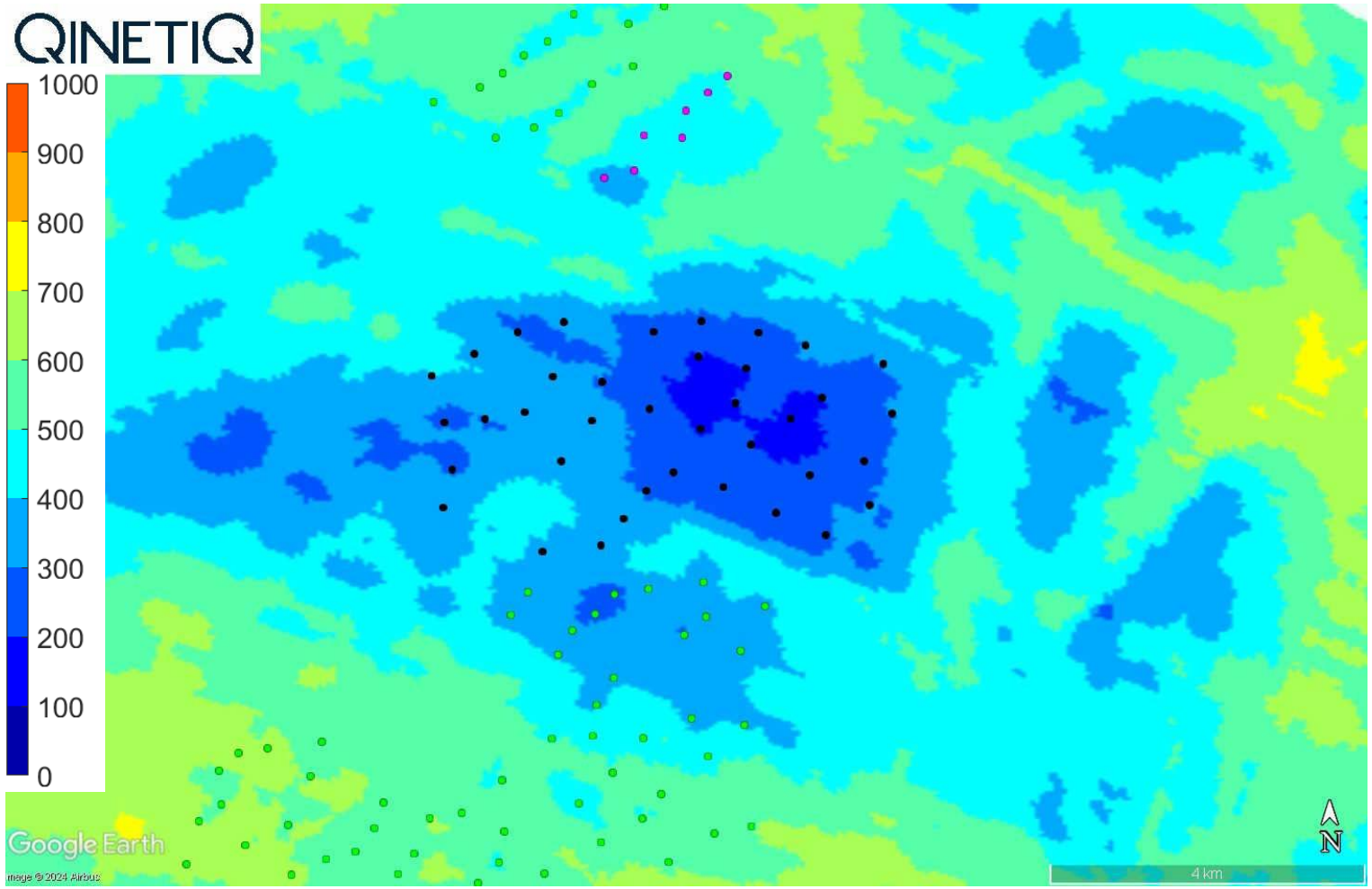
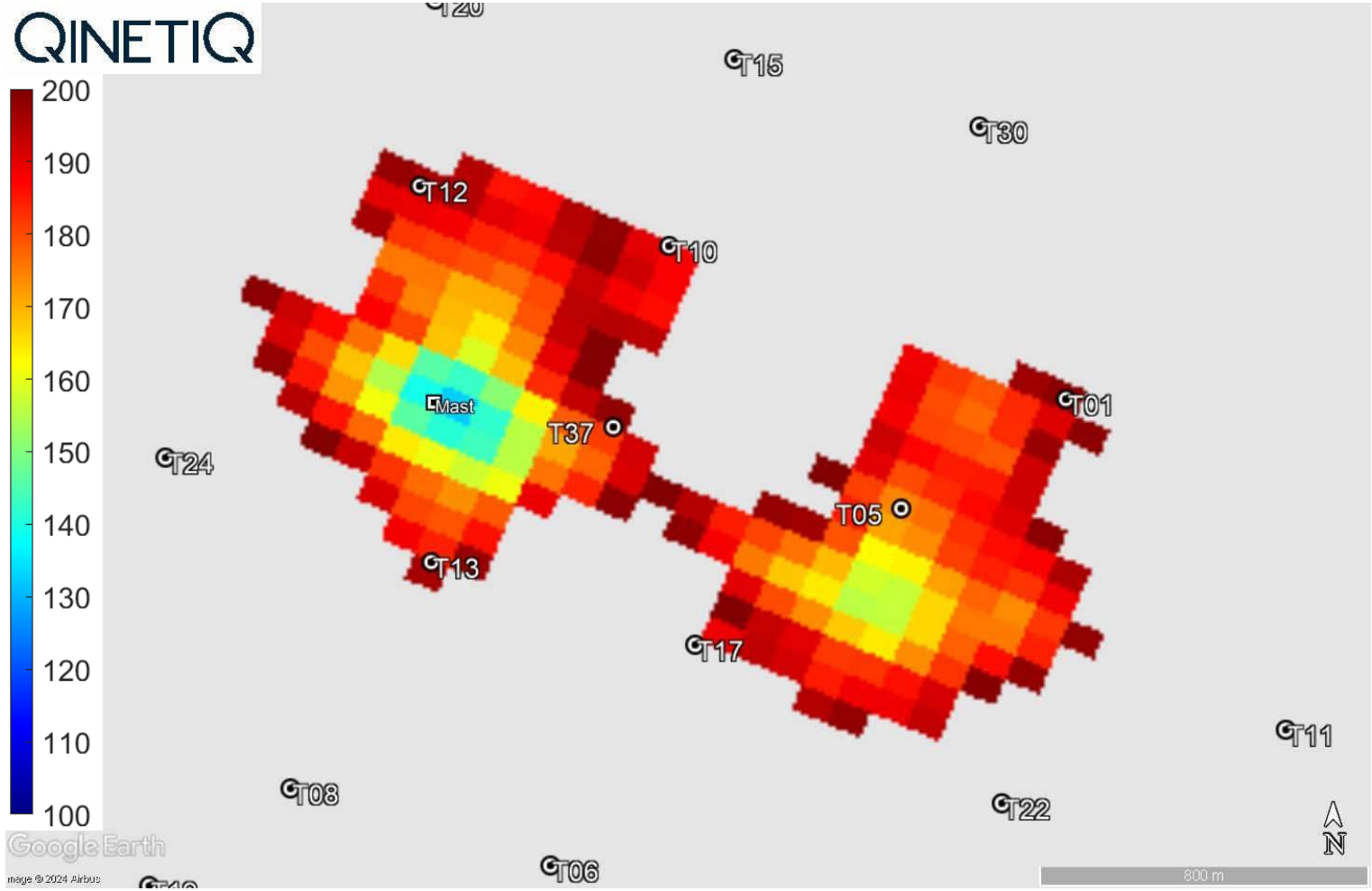
Turbine Visibility (2/4)

- The radar LoS in the vicinity of the proposed Moifjellet wind farm varies from 174m to 391m
- All other wind farms are out of radar LoS from the weather radar



Turbine Visibility (3/4)

- Radar LOS detail – only turbines T01, T05, T10, T12, T13, T17 and T37 are directly visible from the radar (HTLOS ≤ 200m)



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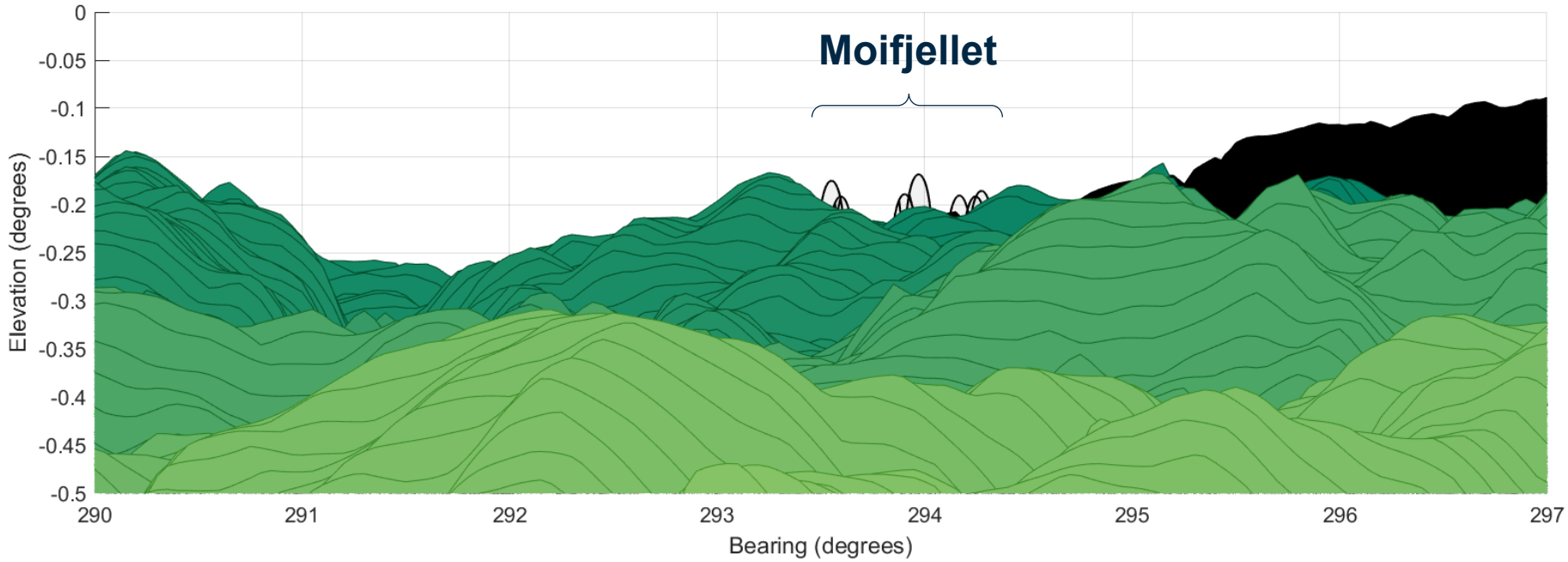
Turbine Visibility (4/4)

- Radar view. Visible turbines:
  - Azimuth (horizontal) sector 0.9° [293.4°N to 294.3°N]
  - Elevation (vertical) sector 0.06° [-0.23° to -0.17°]



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Shadowing

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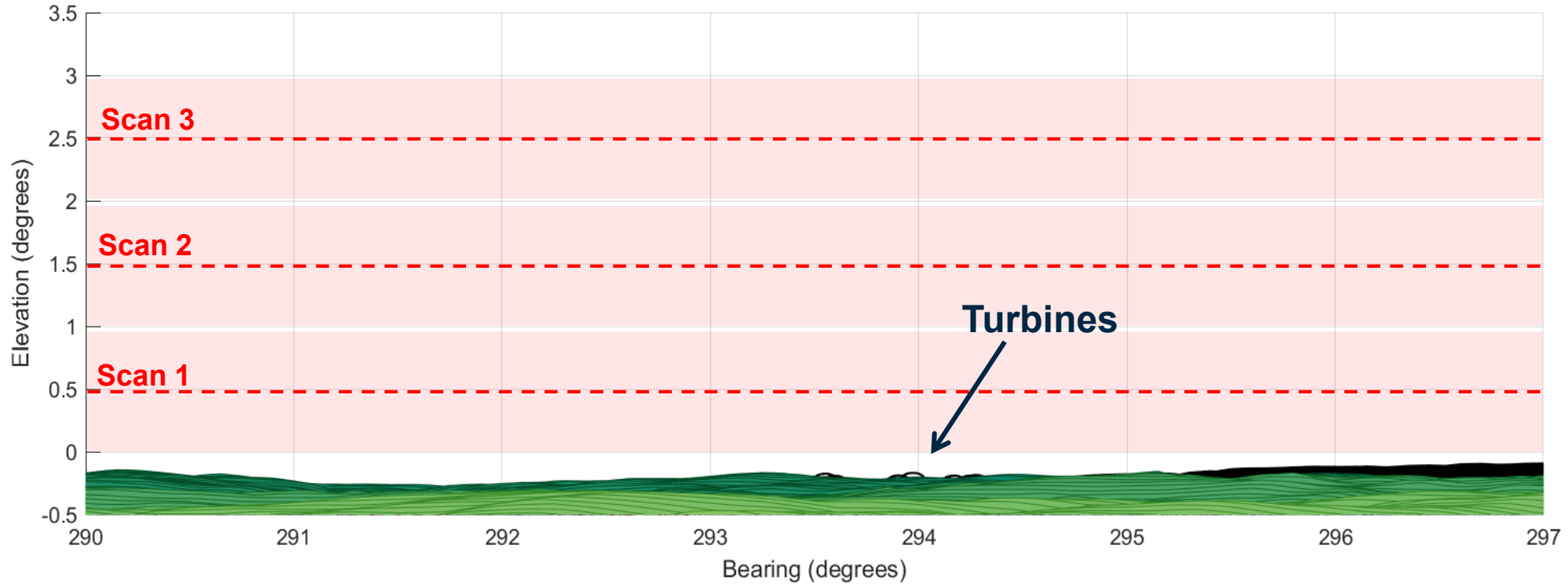
Scan angles

- Visible turbines are entirely underneath the lowest scan angle
- Impact judged to be negligible



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Reflections

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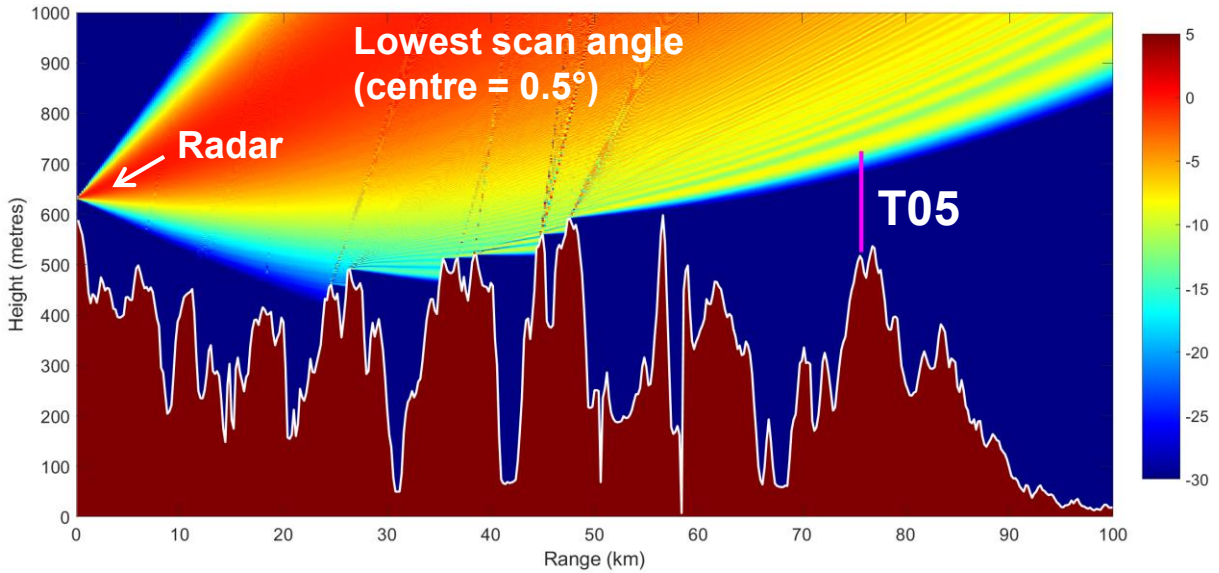
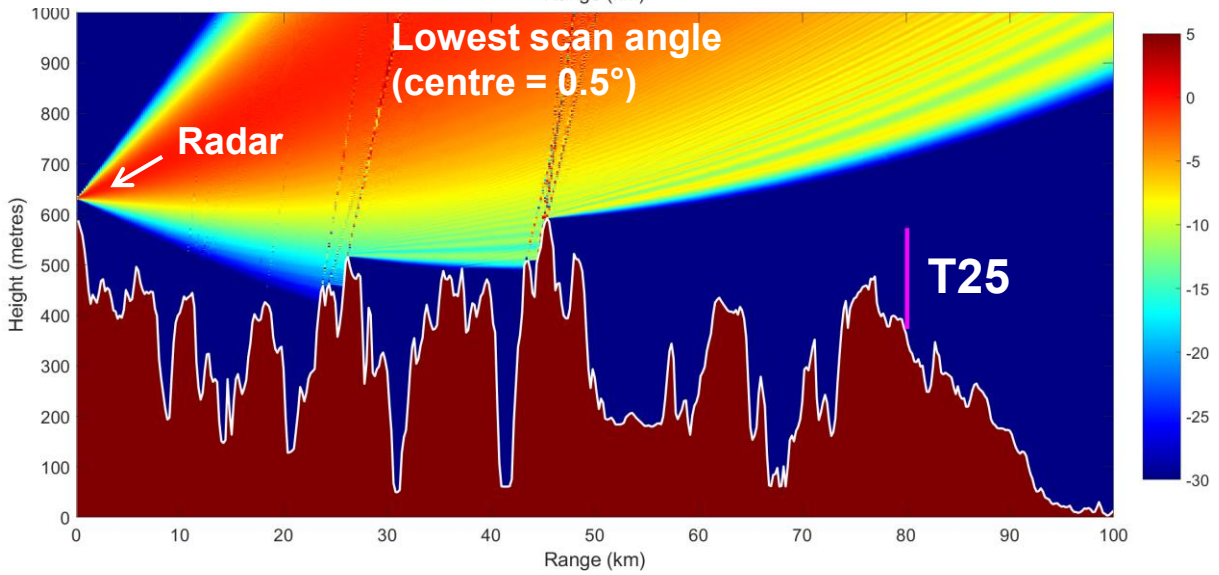
Signal propagation

- Representative* radar signal propagation at lowest scan angle shown to right, for T05 (most visible turbine) and T25 (out of LOS on similar bearing)
- Colour indicates 2-way power signal strength relative to free-space (no terrain)





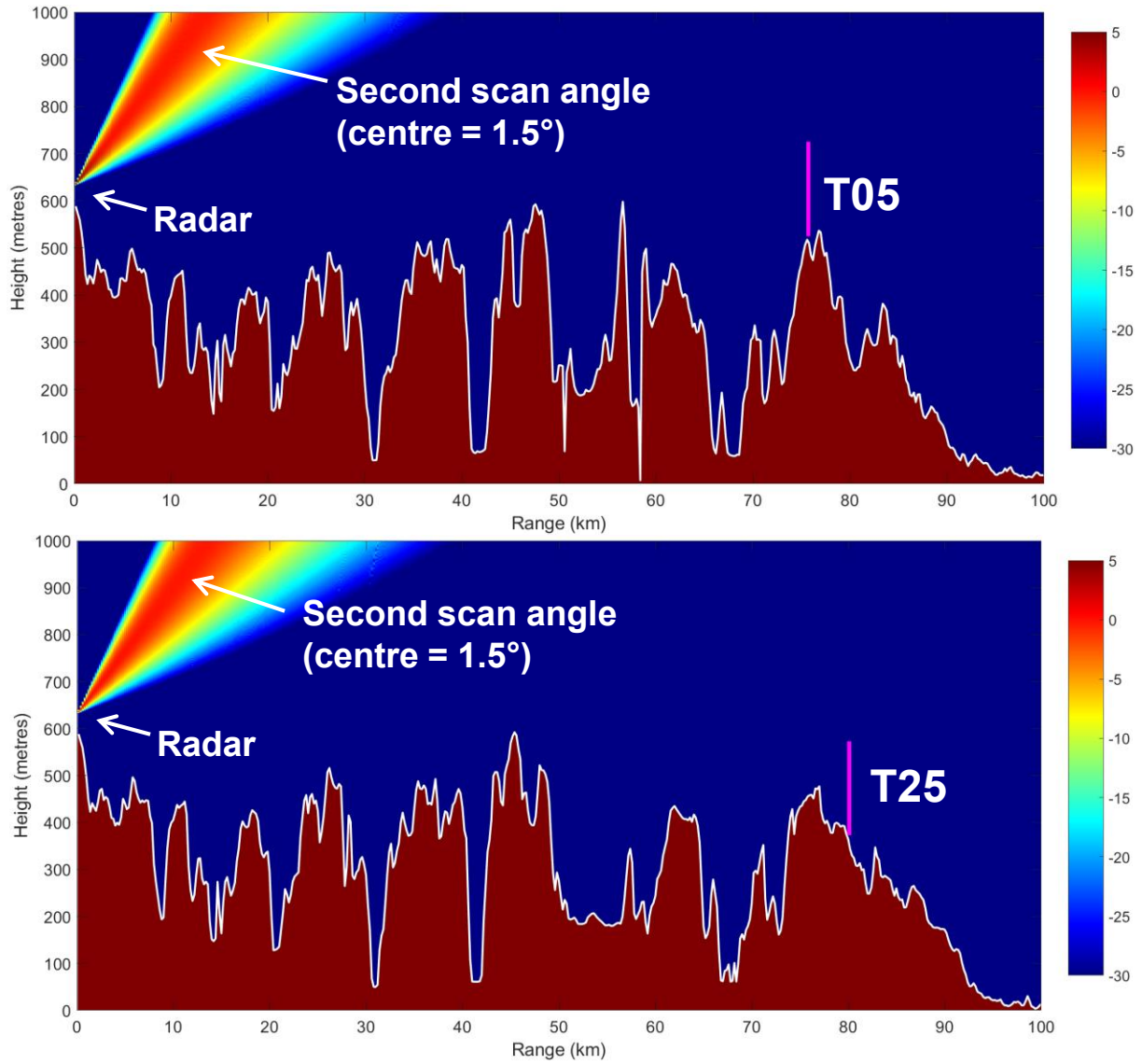
This slide shows some radar signal reaches the turbines in radar LoS. Compare with Slide 12 which uses a simpler “3dB half-width” antenna beam model. The red/orange colour in this slide corresponds to the pink polygon “Scan 1” in Slide 12.

Radar signals appear to bend “up” in the figures. This is a result of Earth curvature and atmospheric refraction

* the beam pattern has not been provided for this assessment. A typical weather radar pencil beam with 1° beam width is used in this example

Signal propagation

- Analysis repeated with second scan angle
- Unlikely to see significant reflections at this scan angle (or higher scan angles)

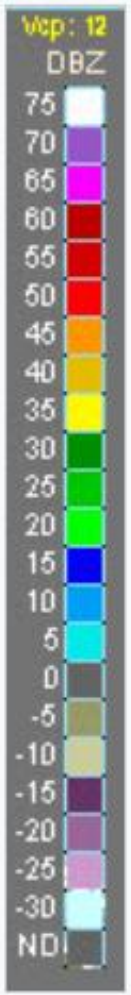


Reflection strength

- Reflectivity (dBZ) from turbines estimated based on scaling strength of reflections from measurements
- Estimate for Moifjellet for 7x turbines in radar LoS (see Slide 9)
    - 53 dBZ (maximum infrequent blade flash) ≈ “heavy rain”
    - 33 dBZ (average blade reflection) ≈ “moderate rain”

  Clutter impacts will appear at the location of the turbines (see next slide)

- Turbines out of LOS: reflections possible due to diffraction over the terrain, but strength will be significantly reduced



Reflectivity in dBZ and Rainrate

L_Z (dBZ)	*R* (mm/h)	*R* (in/h)	Intensity
5	0.07	< 0.01	Trace accumulation or mist
10	0.15	< 0.01	Trace accumulation or mist
15	0.3	0.01	Trace accumulation
20	0.6	0.02	Light rain
25	1.3	0.05	Light rain
30	2.7	0.10	Light to moderate rain
35	5.6	0.22	Moderate rain
40	11.53	0.45	Moderate to heavy rain
45	23.7	0.92	Heavy rain
50	48.6	1.90	Heavy rain, small hail possible
55	100	4	Very heavy rain, hail possible.
60	205	8	Very heavy rain, hail likely.
65	421	16.6	Very heavy rain, hail very likely, large hail possible.

https://en.wikipedia.org/wiki/DBZ_(meteorology)

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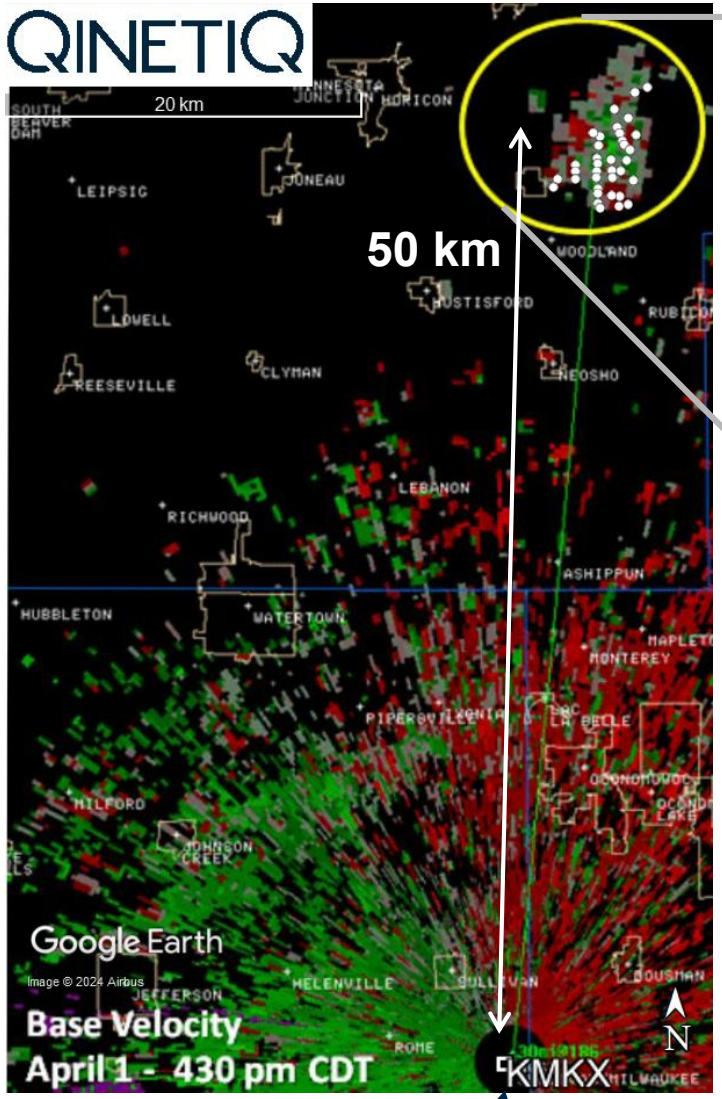
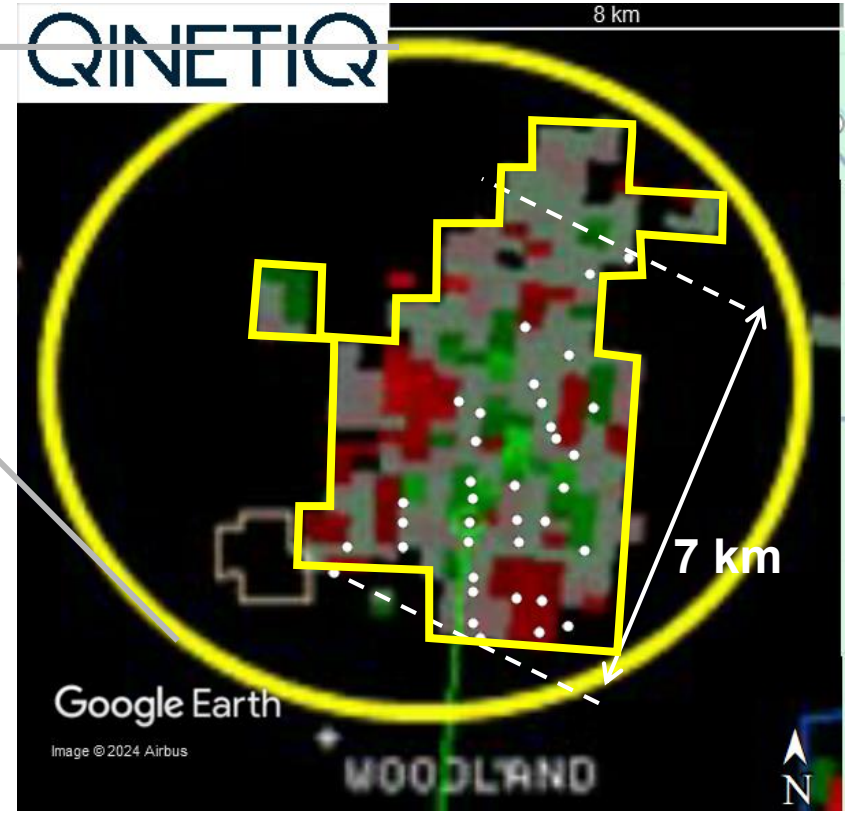
Reflection strength

- Example of wind farm clutter from United States National Weather Service (NWS)
- Clutter (yellow polygon) local to wind turbines (white dots); extending a few km from the turbine locations





Data from
https://www.weather.gov/mkx/windfarm

Radar

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Acceptability

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Acceptability

- What level of interference is acceptable?
- The acceptance criteria are not known
- For comparison: the impacts would be acceptable in e.g. France* and the UK (safeguarding distances = 20km for a C-band radar).

*

	Distance minimale d'éloignement en kilomètres
Radar de bande de fréquence C	20
Radar de bande de fréquence S	30
Radar de bande de fréquence X	10

https://www.legifrance.gouv.fr/loda/id/JORFTEXT000024507365

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Summary

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Summary

- Statkraft intend to develop the Moifjellet wind farm approximately 76km north west from the Hægebostad weather radar
- The NMI are concerned that the project will have a negative impact on the operation of the radar
- A top level estimate of the impact concludes
  - Visibility (Slides 6 to 10): Seven* turbines in radar LOS.
  - Shadowing (Slide 11 to 12): No significant impact. Turbines are entirely below the strongest part of the lowest elevation scan angle
  - Clutter (Slide 13 to 17). Reflections from the turbines are possible, likely to be within a few km from the turbines. Reflection strength estimates in table to right
- Acceptability (Slide 19)
  - NMI acceptance criteria not known
  - The impacts would be acceptable in e.g. France / UK …
  - … but it is for NMI to determine the acceptable interference levels for their radar

Impact	Turbines in direct radar LOS*	Remaining turbines
Maximum (infrequent) reflection from rotating blade flash	53 dBZ ≈ “heavy rain”	Reflections possible due to diffraction over terrain but less than from turbines in LOS.
Average reflection	33 dBZ ≈ “moderate rain”	

*T01, T05, T10, T12, T13, T17 and T37

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