

Rapport

Nye Hitra 1 vindkraftverk

OPPDRAAGSGIVER

Statkraft Energi AS

EMNE

Skyggekast

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Rapport

OPPDAG	Nye Hitra 1 vindkraftverk	DOKUMENTKODE	10258198-01-RIEn-RAP-001
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SAMMENDRAG

På oppdrag fra Statkraft Energi AS er det utført en skyggekastanalyse for nye Hitra 1 vindkraftverk i Hitra kommune, Trøndelag 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 om oppdatert kunnskapsgrunnlag om skyggekast fra vindturbiner anvendt i fastsettelse av influensområde.

Rapporten kartlegger hvor og i hvilken grad skyggekast kan oppstå fra nye Hitra 1 vindkraftverk. Det er gjennomført analyser der det er vurdert hvordan skyggekast påvirker nærliggende boliger, friluftsområder og andre relevante steder. Det er utarbeidet kart som viser omfanget av skyggekast i de ulike scenarioene. I tillegg er det gjort en vurdering på omfanget av sumvirkninger av skyggekast fra eksisterende Hitra 2 vindkraftverk.

Skyggekastanalysen viser at områdene i umiddelbar nærhet til nye Hitra 1 vindkraftverk vil bli utsatt for skyggekast. Når det ikke tas hensyn til sumvirkninger fra Hitra 2 vindkraftverk er det ingen mottakere som overskrider NVEs anbefalte grenseverdi. Ser man derimot på sumvirkningen av nye Hitra 1 vindkraftverk og Hitra 2 vindkraftverk viser analysen at én mottaker vil overskride NVEs anbefalte grenseverdi. Det er allerede på plass en avtale og er ikke behov for ytterligere avbøtende tiltak for denne mottakeren. Analysen viser at boligene nord for vindkraftverket vil oppleve skyggekast, men vil ligge under grenseverdiene både med og uten sumvirkninger.

Flere friluftsområder og turruter kan også bli påvirket av skyggekast fra nye Hitra 1 vindkraftverk.

Det er kun én mottaker som overskrider anbefalte grenseverdiene, og det foreligger allerede en avtale for denne. Det er derfor ikke behov for ytterligere avbøtende tiltak. Samtidig er det områder som påvirkes av skyggekast, og her kan avbøtende tiltak bidra til å redusere belastningen. Før utbygging kan skyggekastkalendere utarbeides for å vise når skyggekast er forventet å kunne inntreffe. Sammen med automatiserte lyssensorer kan turbinene stoppes dersom det både er klarvær og man ser i skyggekastkalenderen at en mottaker kan være utsatt. Dette vil minimere ulempene for naboer og andre berørte.

REV.	DATO	BESKRIVELSE	UTARBEIDET AV	KONTROLLERT AV	GODKJENT AV
02	16.03.26	Endelig versjon etter mindre justeringer	Martine Bjugg	Håvard Finanger	Håvard Finanger
01	13.02.26	Revisjon etter kommentarer fra Statkraft	Martine Bjugg	Jonas Ghini	Håvard Finanger
00	21.11.25	Leveranse av rapport	Martine Bjugg	Jonas Ghini	Håvard Finanger



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1 Bakgrunn

Det planlegges en fornyelse av det eksisterende Hitra 1 vindkraftverk, som ligger på Eldsfjellet i Hitra kommune, Trøndelag fylke. Fornyelsen innebærer utskifting av turbinene og etablering av nye turbiner innenfor samme område.

I forbindelse med konsekvensutredningen av nye Hitra 1 vindkraftverk er det utført en skyggekastanalyse for det planlagte vindkraftverket. I samme området er også Hitra 2 vindkraftverk etablert. Selv om Hitra 2 ikke inngår direkte i tiltaket, vil sumvirkninger bli tatt i betraktning i utredningen.

Analysen er gjort i henhold til NVE sin veileder nr. 2/2014 som ble utarbeidet for å vurdere skyggekast fra vindturbiner, og den følger kravene fastsatt i planprogrammet fra både kommunen og NVE.

For utredningen av skyggekast er det lagt til grunn et utredningsutlegg på inntil 15 turbiner. Turbinene har en totalhøyde på 220 meter til vingetipp, en rotordiameter på inntil 175 meter og en kapasitet på inntil 7 MW. Figur 3-1 viser det analyserte turbinutlegget.

For sumvirkninger og sammenligning med dagens situasjon og nullalternativet er det lagt til grunn turbinspesifikasjonene til de eksisterende Hitra 1 og Hitra 2. For Hitra 1 er det benyttet en turbin med totalhøyde 111 meter til vingetipp og rotordiameter på 82 meter. For Hitra 2 er det benyttet en turbin med totalhøyde på 145,5 meter til vingetipp og rotordiameter på 117 meter.

Dagens Hitra vindkraftverk består av Hitra 1 og Hitra 2. Hitra 1 begynner å nærme seg slutten av konsesjonsperioden, mens Hitra 2 vil fortsatt driftes videre. Det medfører at nullalternativet vil være et Hitra vindkraftverk med kun Hitra 2.

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 fra andre høye byggverk og installasjoner med sine roterende blader. Normalt vil man bare observere den direkte bevegelsen når man ser rett på turbinene. Men, dersom en observatør står bak turbinen i forhold til solen slik at turbinens rotor kommer mellom observatøren og solskiven (for eksempel når solen står lavt på himmelen kveldstid), vil observatøren kunne oppleve skyggekast. Rotorbladene sveiper foran solskiven og kaster en bevegelig skygge som projiseres mot observatøren 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 avgrensede 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, 2022b) 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:

- Kulturminner/kulturmiljøer med stor opplevelsesverdi/pedagogisk verdi
- Kirker, kirkegårder, parker, idrettsanlegg og lekeplasser
- 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. 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». I tillegg blir arealet skyggen dekker mindre.



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

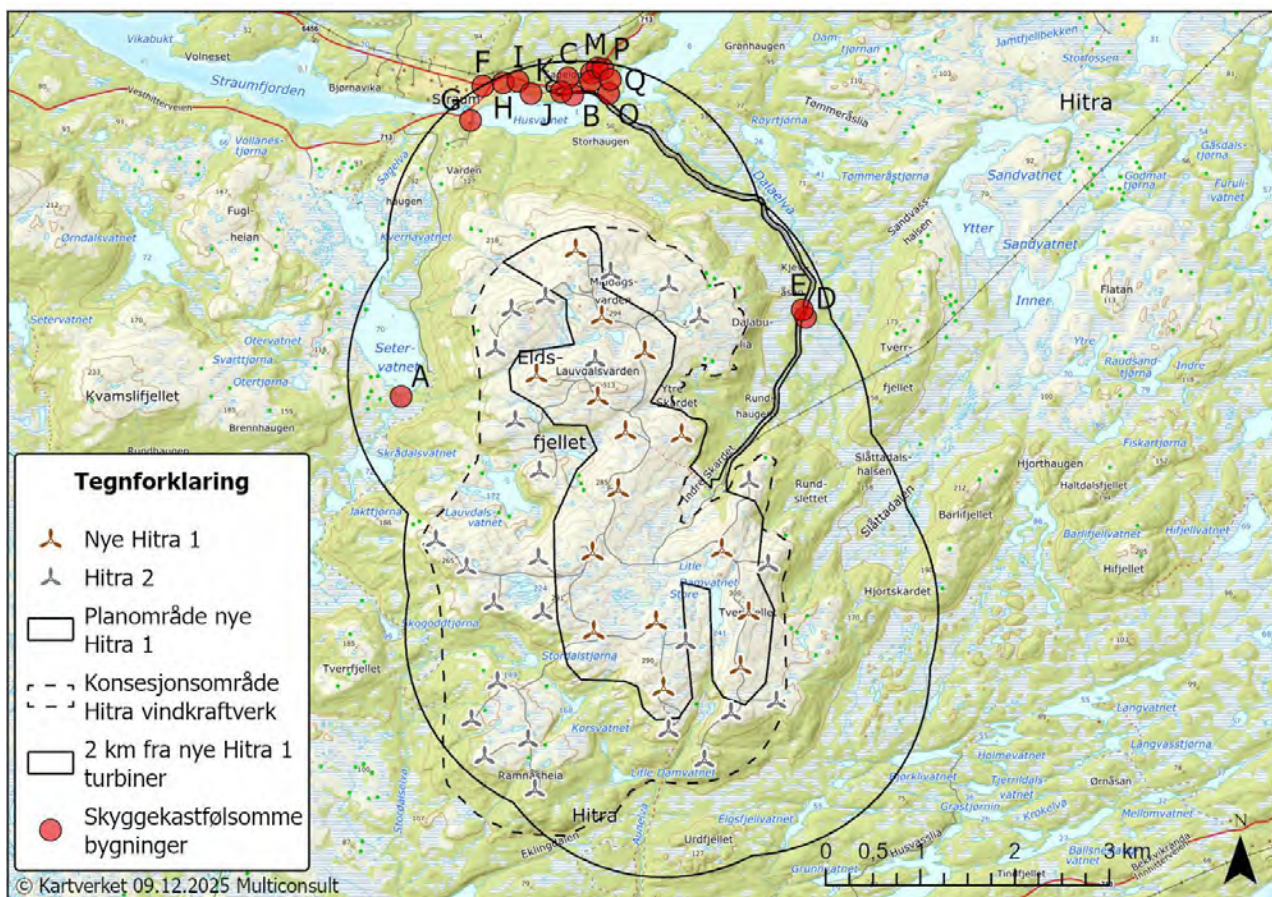
NVEs veileder beskriver noen detaljer rundt fremgangsmåten for skyggekastberegninger.

- 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 m¹ 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], 2022a). Figur 3-1 viser området som er relevant for skyggekastanalysen, der det er lagt til grunn en avstand på 2000 meter og de skyggekastfølsomme bygningene innenfor denne avstanden.

¹ Som omtalt i avsnitt 3 vil analysen her ta utgangspunkt i et strengere avstandskrav enn det NVE legger opp til, det vil bli benyttet 2000 meter.



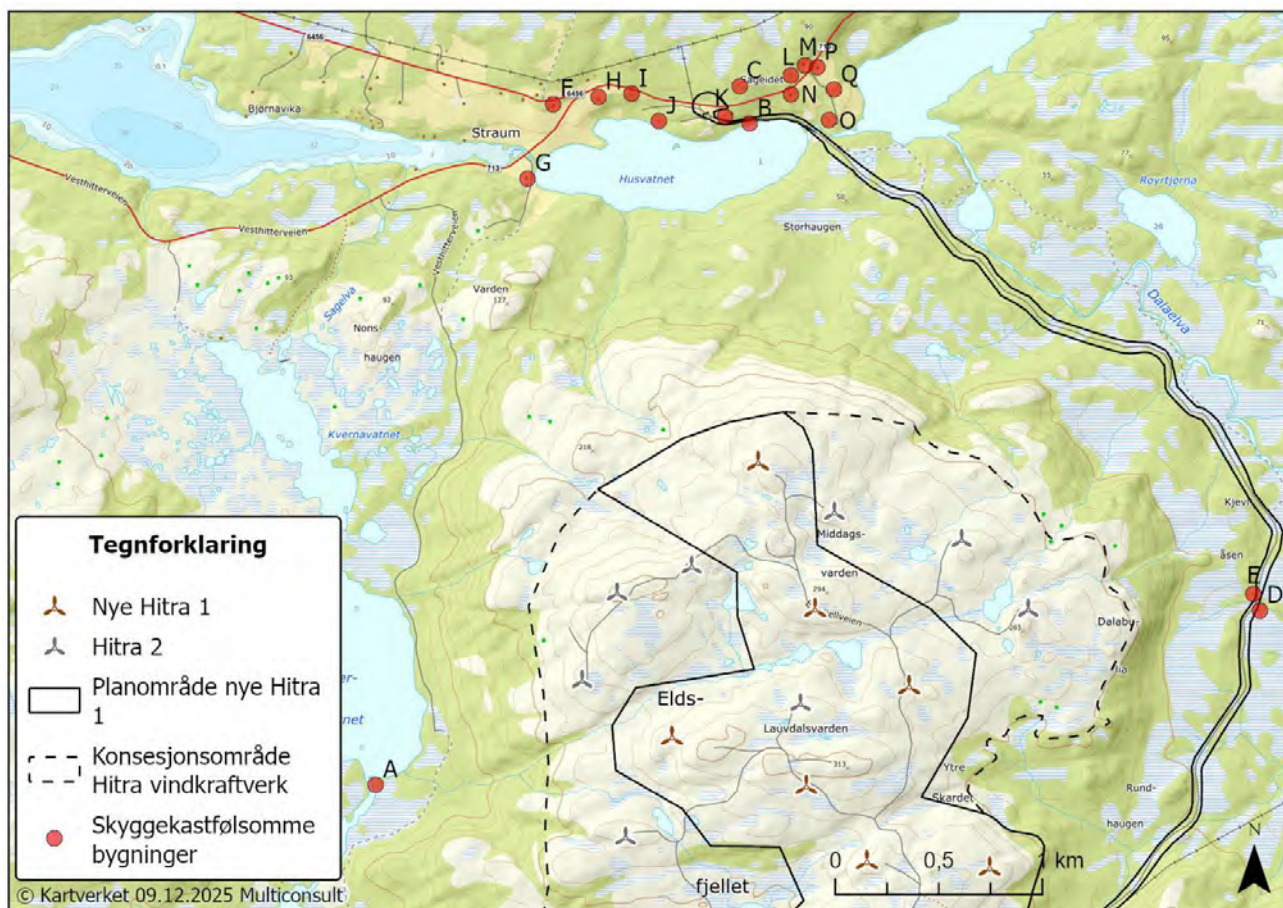
Figur 3-1: Området som er relevant for skyggekastanalysen og skyggekastfølsomme mottakere, med en avstand på 2000 meter fra turbinene.

Eksisterende Hitra 2 vindkraftverk vil bli tatt med i betraktningen ved vurdering av sumvirkninger. Siden turbinene fra Hitra 1 og Hitra 2 står spredt innimellom hverandre på Eldsfjellet, er det forventet at begge anleggene vil bidra til skyggekast. Derfor må begge inngå i vurderingen av skyggekast i området. I den delen av analysen som ser på sumvirkninger av Hitra 1 og Hitra 2 vil Hitra 2 sitt bidrag til skyggekast vurderes innenfor en radius på 2 km fra Hitra 1. Vi ser ikke på en radius på 2 km fra Hitra 2 individuelt, siden dette er for langt unna Hitra 1 til at relevante sumvirkninger oppstår

3.1 Definerte skyggekastmottakere

Figur 3-2 viser de identifiserte skyggekastmottakere rundt Hitra 1. Tabell 3-1 viser en oversikt over mottakerne, deres posisjon og avstand til nærmeste turbin. Mottakerne er i all hovedsak lokalisert nord for vindkraftverket. Det er noen få mottakere på øst- og vestsiden av vindkraftverket.

Totalt er det 17 aktuelle skyggekastfølsomme mottakere for nye Hitra 1 vindkraftverk. Alle mottakerne er vist i Figur 3-2.



Figur 3-2: De identifiserte skyggekastfølsomme mottakerne innenfor 2000 meter fra de nye turbinene.

I tråd med NVEs krav for beregningsmetodikk (se avsnitt 2.3) for verst tenkelig scenario utføres beregningene med skyggekastmottakerne vist i Figur 3-2 definert som «drivhus», hvor hver mottaker er et 2x2 meter vindu som alltid peker rett mot skyggekildden/turbinen. For det realistiske scenarioet, der solskinnsansynligheten er 50% og driftstiden satt til 7000 timer, brukes samme størrelse og mål på mottakerne som for verst tenkelig scenario.

Tabell 3-1: Oversikt over skyggekastmottakere, deres lokasjon og avstand til nærmeste vindturbin.

Koordinatsystemet er EU39, UTM 33.

	Mottaker	Lokasjon		Avstand til nærmeste turbin (m)
		Østlig	Nordlig	
A	Eiendom 32/93 – Skogs- og utmarkskoie	188 883	7 060 319	1 453
B	Eldsfjellveien 47 – Fritidsbygg	190 985	7 063 332	1 641
C	Vesthitterveien 141 – Fritidsbygg	190 951	7 063 519	1 826
D	Eldsfjellveien 86 – Fritidsbygg	193 219	7 060 757	1 733
E	Eldsfjellveien 85 – Fritidsbygg	193 197	7 060 840	1 723
F	Straumfjordveien 4 – Våningshus	190 046	7 063 516	1 999
G	Vesthitterveien 182 – Enebolig	189 889	7 063 168	1 771
H	Vesthitterveien 168 – Enebolig	190 266	7 063 530	1 933
I	Vesthitterveien 162 – Fritidsbygg	190 427	7 063 529	1 888
J	Eldsfjellveien 3 – Fritidsbygg	190 548	7 063 386	1 722



K	Eldsfjellveien 8 – Fritidsbygg	190 868	7 063 376	1 681
L	Vesthitterveien 135 – Fritidsbygg	191 204	7 063 546	1 881
M	Vesthitterveien 131 – Enebolig	191 276	7 063 587	1 935
N	Vesthitterveien 154 – Enebolig	191 194	7 063 456	1 790
O	Vesthitterveien 142 – Fritidsbygg	191 366	7 063 313	1 692
P	Vesthitterveien 132 – Enebolig	191 334	7 063 573	1 935
Q	Vesthitterveien 136 – Fritidsbygg	191 404	7 063 458	1 842

4 Modellering

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

4.1 Hvordan beregningene utføres

Beregningen av skyggekast 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 Hitra vindkraftverk, er det lagt til grunn et influensområde som dekker en avstand på omtrent 10 x 10 km. Dette gir tilstrekkelig rom for å inkludere de omkringliggende omgivelsene som kan ha innvirkning på resultatene. Influensområdet deles inn i et rutenett med 30 x 30 meter oppløsning. Dette rutenettet utgjør en stor samling individuelle punkt (altså små «lapper» á 30 x 30 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-minuttersbolker². Etter at alle punkt i rutenettet har gått gjennom en slik solbaneberegning blir det satt sammen kart som beskriver forskjellige karakteristikk ved skyggekastbelastningen.

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

5 Resultater for nye Hitra 1 vindkraftverk

I dette kapittelet presenteres skyggekastberegningene for nye Hitra 1 vindkraftverk. Det er ikke tatt hensyn til sumvirkninger i dette kapittelet, de vises i kapittel 7. Resultatene, og diskusjonen rundt disse, som presenteres i dette kapitlet starter med kart over maksimal teoretisk skyggekastbelastning

² Selv om beregningen forenkles ved å hoppe tre dager av gangen og beregnes med 2-minutters oppløsning innenfor hver tredje dag, blir det totale resultatet justert for dette. Analysen antar at dersom det inntreffer 2 minutter skyggekast den ene dagen, så antas det at de to andre dagene, som ikke sjekkes eksplisitt, har samme belastning.



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 mottakerne vist i Tabell 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 Hitra 1 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 2 x 2 meter vindu 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.

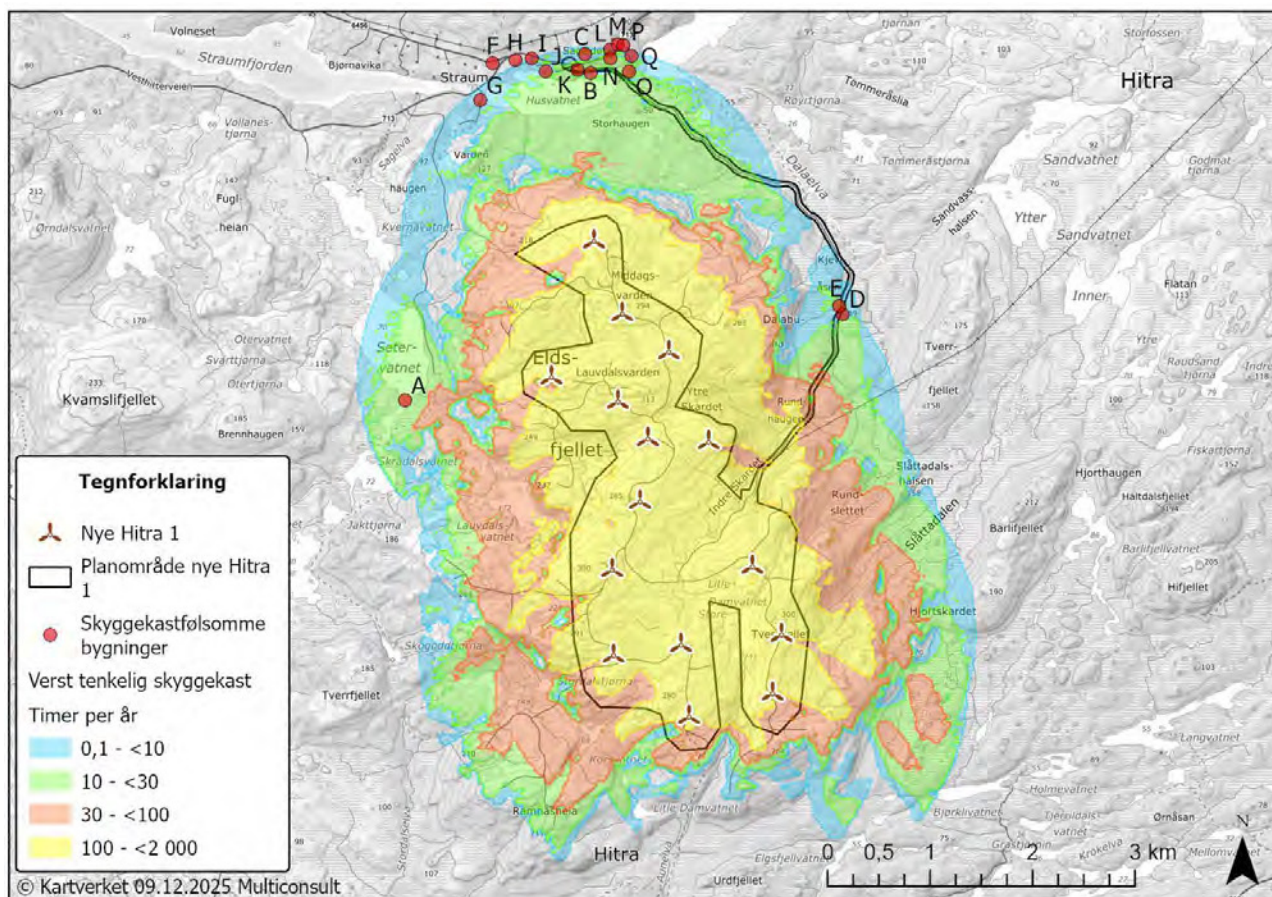
5.1 Verst tenkelig scenario

5.1.1 Kart

Figur 5-1 viser kartet over teoretisk verst tenkelig skyggekast, målt i antall timer per år. For denne beregningen antas det at solen skinner alle timer mellom sol opp- og nedgang i løpet av en dag og at turbinen alltid står vinkelrett på mottakerpunktet. 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.

Boligene nord for planområdet kan bli påvirket, men simuleringen viser at alle boligene ligger innenfor grønn og blå soner for skyggekast. Dette innebærer at påvirkningen er under anbefalte grenseverdier. Fra figuren kan man se at det er størst utstrekning av skyggekast mot nord, men her dominerer grønne og blå soner. Østlige og vestlige deler av området har størst utbredelse av røde og gule soner, som indikerer overskridelse av grenseverdiene. Skyggekast på øst- og vestsiden er dominert av kvelds- og morgensol gjennom året, mens på nordsiden av anlegget oppstår det stort sett bare skyggekast midt på dagen vinterstid når sola står lavt. Men da er også dagene korte, tillegg til at det bare er et relativt lite antall turbiner som i praksis er nær nok mottakerne til å være innenfor 2 km-grensen.



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

5.1.2 Individuelle mottakere

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 per år 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 uavhengig av intensitet. Det sier ikke i seg selv noe om intensiteten per dag. Det tredje delresultatet er vist i kolonnen «Timer/dag (verste dag)» (på format *timer:minutter*). Dette angir den maksimale belastningen på én enkelt dag – altså den dagen med mest skyggekast.

Tabell 5-1: Maksimalt teoretisk skyggekast for skyggekastmottakerne for Hitra 1 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	Eiendom 32/93	17:05	47	0:29
B	Eldsfjellveien 47	11:09	34	0:25
C	Vesthitterveien 141	10:23	35	0:23
D	Eldsfjellveien 86	11:11	48	0:23
E	Eldsfjellveien 85	10:14	45	0:23

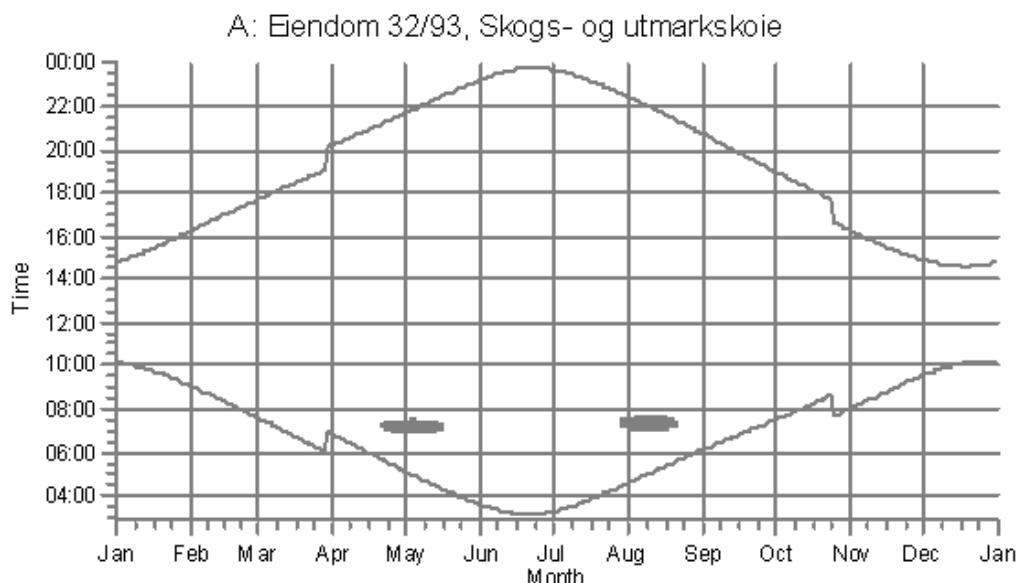


F	Straumfjordveien 4	0:00	0	0:00
G	Vesthitterveien 182	8:39	29	0:23
H	Vesthitterveien 168	0:00	0	0:00
I	Vesthitterveien 162	0:00	0	0:00
J	Eldsfjellveien 3	9:59	34	0:24
K	Eldsfjellveien 8	11:06	35	0:25
L	Vesthitterveien 135	0:00	0	0:00
M	Vesthitterveien 131	0:00	0	0:00
N	Vesthitterveien 154	10:20	34	0:23
O	Vesthitterveien 142	10:38	34	0:24
P	Vesthitterveien 132	0:00	0	0:00
Q	Vesthitterveien 136	9:41	34	0:23

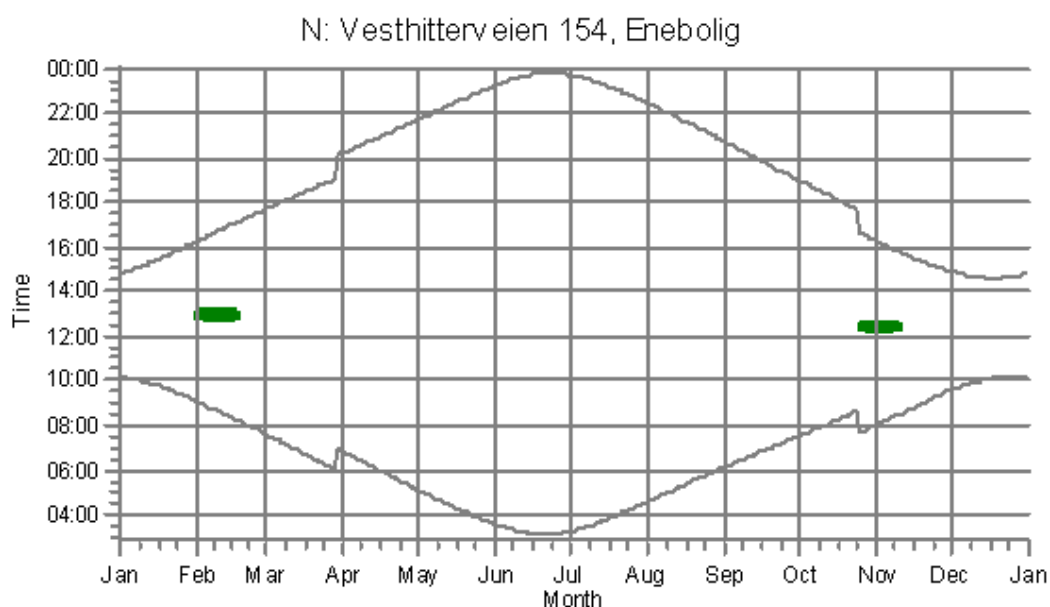
Det er anslått at alle 17 mottakerne ligger under NVEs anbefalte grenseverdi for teoretisk maksimalt skyggekast når man bare tar nye Hitra 1 til betraktning. Det er flere som er opp mot grensen av hva som er anbefalt for timer per dag. Spesielt mottaker A (eiendom 32/93) som kan på det verste oppleve 29 min med skyggekast på en dag, der grenseverdien er 30 min.

Mange av de utsatte boligene og fritidsbygningene er lokalisert i en klynge nord for vindkraftverket, noe som gjør det sannsynlig at de vil oppleve skyggekast i samme tidsperiode i løpet av dagen. Grunnet boligenes posisjon i forhold til vindkraftverket og solens bane vil de mottakerne som opplever skyggekast oppleve det på dagtid, mellom 10–14. Mottakernes lokalisering kombinert med solens bevegelsesmønster gjør at belastningen av skyggekast på mottakerne er høyest i løpet av vinterhalvåret da solen står lavt selv midt på dagen og skyggene strekker seg langt. Da strekker skyggen fra vindturbinene seg lenger og mottakerne i nord opplever skyggekast. De fleste av mottakerne vil oppleve skyggekast kun om vinteren, mens noen få vil kunne merke det også sent om høsten og tidlig om våren.

Figur 5-2 og 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 vindturbiner som vil bidra til skyggekast, som man ser av figurene er det to ulike turbiner som vil føre til skyggekast. De tynne grå kurvene representerer sol opp- og nedgang hver dag, og området mellom kurvene i y-retning er da timene med dagslys en gitt dag. Mottakerne A og N (eiendom 32/93 og Vesthitterveien 154) er valgt for å illustrere den forventede skyggekastbelastningen for de områdene som ligger vest og nord 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. Som man ser fra Figur 5-2 vil mottaker A (eiendom 32/93) vil oppleve skyggekast i august og mai, tidlig på morgenen mellom 6–8. En fullstendig oversikt over når hver mottaker kan forvente skyggekast for alle fire scenarioene legges ved rapporten som vedlegg. For grafisk framstilling av forventet skyggekast for dette scenarioet se vedlegg 1.2 *Skyggekastkalender – Grafisk – Verst tenkelig scenario Hitra 1 vindkraftverk*.



Figur 5-2: Forventet tidspunkt for skyggekast for mottaker A (eiendom 32/93). Mottakeren er lokalisert vest for vindkraftverket.



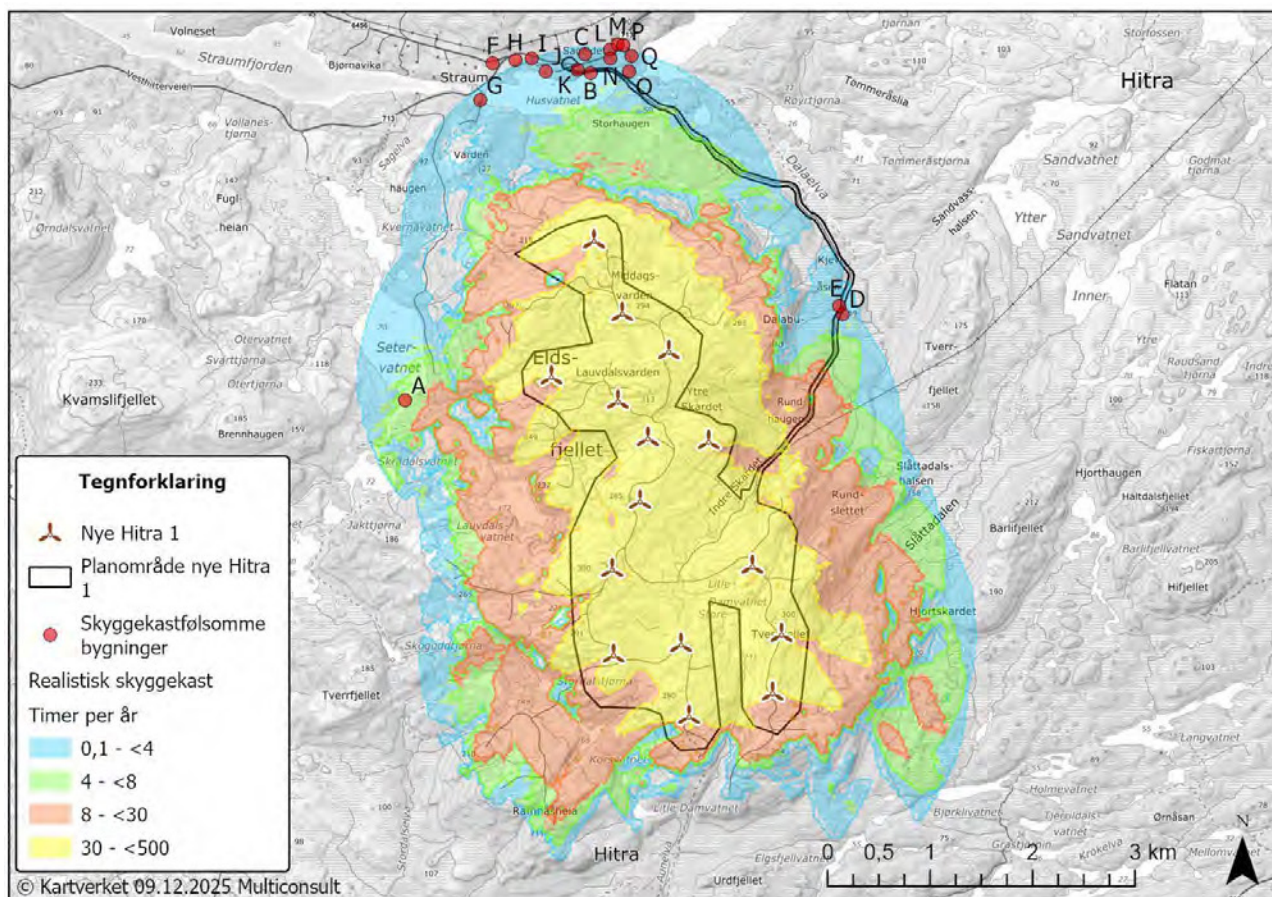
Figur 5-3: Forventet tidspunkt skyggekast for mottaker N (Vesthitterveien 154). Mottakeren er lokalisert nord for vindkraftverket.

5.2 Realistisk scenario

5.2.1 Kart

Figur 5-4 viser et tilsvarende kart som Figur 5-1, men nå er en solskinnssannsynlighet på 50% og 7000 timer driftstid med turbinorientering gitt av 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 opppe på fjellområdet også forekommer i det realistiske scenariet. Områdene med mest belastning ligger i hovedsak innenfor vindkraftverkets planområde. De fleste mottakerne er i områder der belastningen er liten.



Figur 5-4: Skyggekastbelastning under realistisk forhold, målt i antall timer per år.

5.2.2 Individuelle mottakere

I det realistiske scenarioet justeres tallene i tabellen for verst tenkelig skyggekastbelastning (se Tabell 5-1) med 50% solskinnssannsynlighet og en årlig driftstid på 7000 timer basert på vindrosen. Dette gir en mer realistisk belastning enn for det verst tenkelig scenarioet.

Tabell 5-2 oppsummerer resultatet av den realistiske beregningen.

Tabell 5-2: Realistisk skyggekast for skyggekastmottakerne for nye Hitra 1 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	Eiendom 32/93	4:48	17:05
B	Eldsfjellveien 47	2:44	11:09
C	Vesthitterveien 141	2:31	10:23
D	Eldsfjellveien 86	3:11	11:11



E	Eldsfjellveien 85	2:54	10:14
F	Straumfjordveien 4	0:00	0:00
G	Vesthitterveien 182	1:49	8:39
H	Vesthitterveien 168	0:00	0:00
I	Vesthitterveien 162	0:00	0:00
J	Eldsfjellveien 3	2:13	9:59
K	Eldsfjellveien 8	2:39	11:06
L	Vesthitterveien 135	0:00	0:00
M	Vesthitterveien 131	0:00	0:00
N	Vesthitterveien 154	2:36	10:20
O	Vesthitterveien 142	2:43	10:38
P	Vesthitterveien 132	0:00	0:00
Q	Vesthitterveien 136	2:28	9:41

I det realistiske scenarioet observeres samme hovedtrender som i det maksimale teoretiske scenarioet. Alle mottakerne holder seg under NVEs anbefalte grenseverdi på 8 timer årlig skyggekast. For det verst tenkelige scenarioet var flere mottakere var i nærheten av den anbefalte grenseverdien for antall minutter per dag, men var godt under grenseverdien for antall timer per år. For mottakerne i det realistiske scenarioet er det ingen som er tett opp mot den anbefalte grenseverdien.

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.

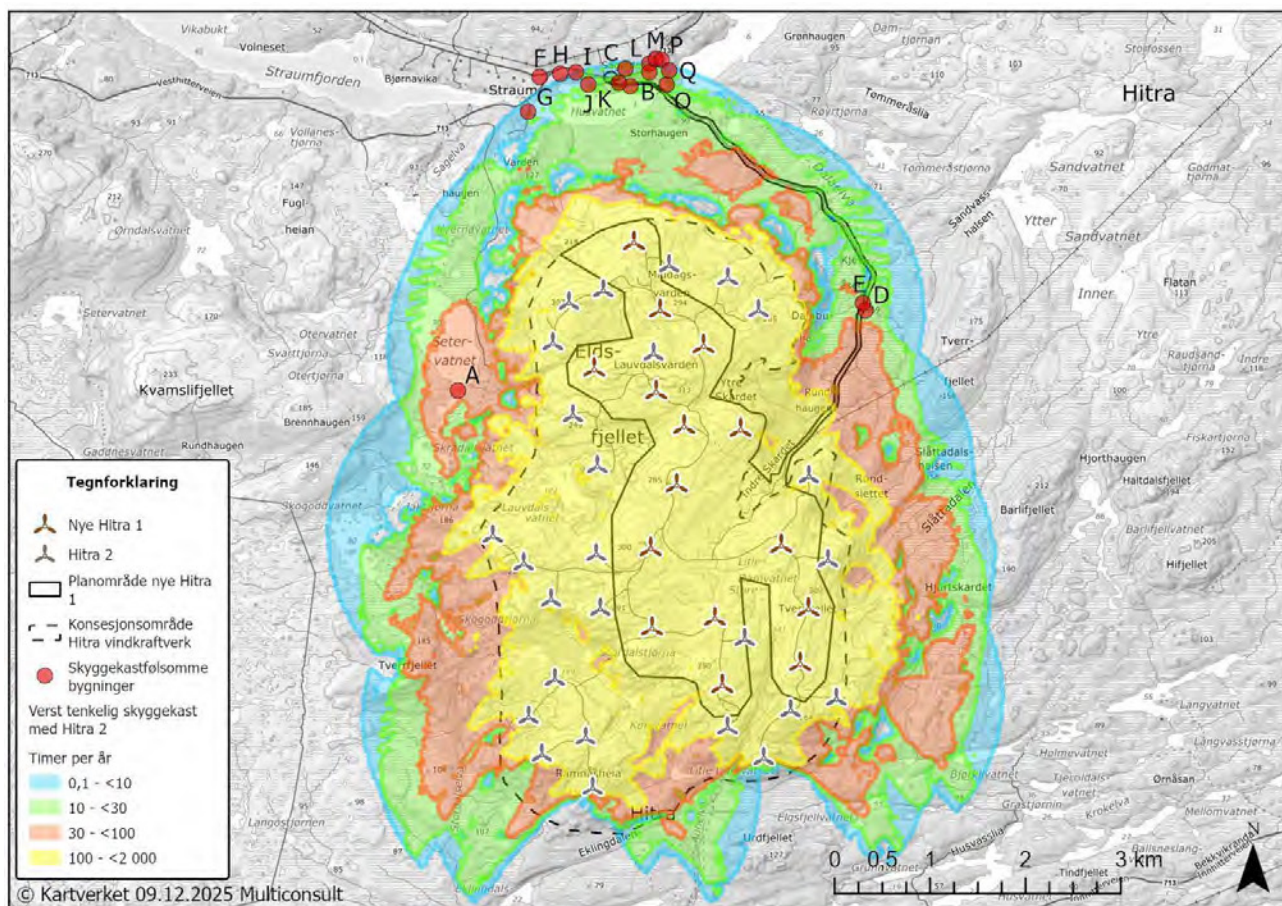
6 Resultater med sumvirkninger fra Hitra 2 vindkraftverk

I dette kapitlet presenteres skyggekastberegningene for nye Hitra 1 vindkraftverk sammen med virkningen av skyggekast fra eksisterende Hitra 2 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 fra de to vindkraftverkene.

6.1 Verst tenkelig scenario

6.1.1 Kart

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 både nye Hitra 1 og Hitra 2 vindkraftverk.



Figur 6-1: Teoretisk verst tenkelig skyggekast med hensyn til Hitra 2 vindkraftverk med definerte skyggekastmottakere.

Når man tar hensyn til Hitra 2 vindkraftverk ser man en større utstrekning av arealer som ligger over anbefalt grenseverdi, spesielt røde arealer har blitt større sammenlignet med Figur 5-1. Dette er naturlig siden disse to vindkraftverkene hver for seg vil lage skyggekast som nå legges sammen for en større total belastning. Figuren viser at skyggekast vil få større utbredelse både over fjellområdet og i områdene øst og vest for vindkraftverkene.

6.1.2 Individuelle mottakere

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 Hitra 2 vindkraftverk. Resultatene er vist med de samme oppsettet som delresultatene i avsnitt 5.1.2, 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 nye Hitra 1 vindkraftverk med hensyn til Hitra 2 vindkraftverk. Kolonne 6, 7 og 8 (i grått) er hentet fra tabell 5-1 for skyggekast for nye Hitra 1 uten Hitra 2 vindkraftverk for sammenligningsgrunnlag.

	Mottaker	Timer/år	Dager/år	Timer/dag (verste dag)	Timer/år	Dager/år	Timer/dag (verste dag)
A	Eiendom 32/93	50:09	158	0:29	17:05	47	0:29
B	Elds fjellveien 47	11:09	34	0:25	11:09	34	0:25



C	Vesthitterveien 141	10:23	35	0:23	10:23	35	0:23
D	Eldsfjellveien 86	26:56	99	0:25	11:11	48	0:23
E	Eldsfjellveien 85	26:03	99	0:25	10:14	45	0:23
F	Straumfjordveien 4	0:00	0	0:00	0:00	0	0:00
G	Vesthitterveien 182	8:39	29	0:23	8:39	29	0:23
H	Vesthitterveien 168	0:00	0	0:00	0:00	0	0:00
I	Vesthitterveien 162	0:00	0	0:00	0:00	0	0:00
J	Eldsfjellveien 3	9:59	34	0:24	9:59	34	0:24
K	Eldsfjellveien 8	11:06	35	0:25	11:06	35	0:25
L	Vesthitterveien 135	0:00	0	0:00	0:00	0	0:00
M	Vesthitterveien 131	0:00	0	0:00	0:00	0	0:00
N	Vesthitterveien 154	10:20	34	0:23	10:20	34	0:23
O	Vesthitterveien 142	10:38	34	0:24	10:38	34	0:24
P	Vesthitterveien 132	0:00	0	0:00	0:00	0	0:00
Q	Vesthitterveien 136	9:41	34	0:23	9:41	34	0:23

Tabellen viser at flere mottakere har samme skyggekastbelastning også når Hitra 2 tas med, som betyr at det bare er Hitra 1 de faktisk mottar skyggekast fra. Det er tre mottakere som opplever mer skyggekast. Det er mottaker A, D og E. De tre mottakerne er lokalisert vest (A) og øst (D og E) for planområdet. Det er kun én mottaker som overskrider de anbefalte grenseverdiene, mottaker A.

Basert på den maksimerte teoretiske analysen vil det ikke bli stor endring for mottakerne når man ser på sumeffekten av de to vindkraftverkene. 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 Hitra 2 vindkraftverk, kan det for noen få mottakere oppstå endringer på mengden skyggekast gjennom året. 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.

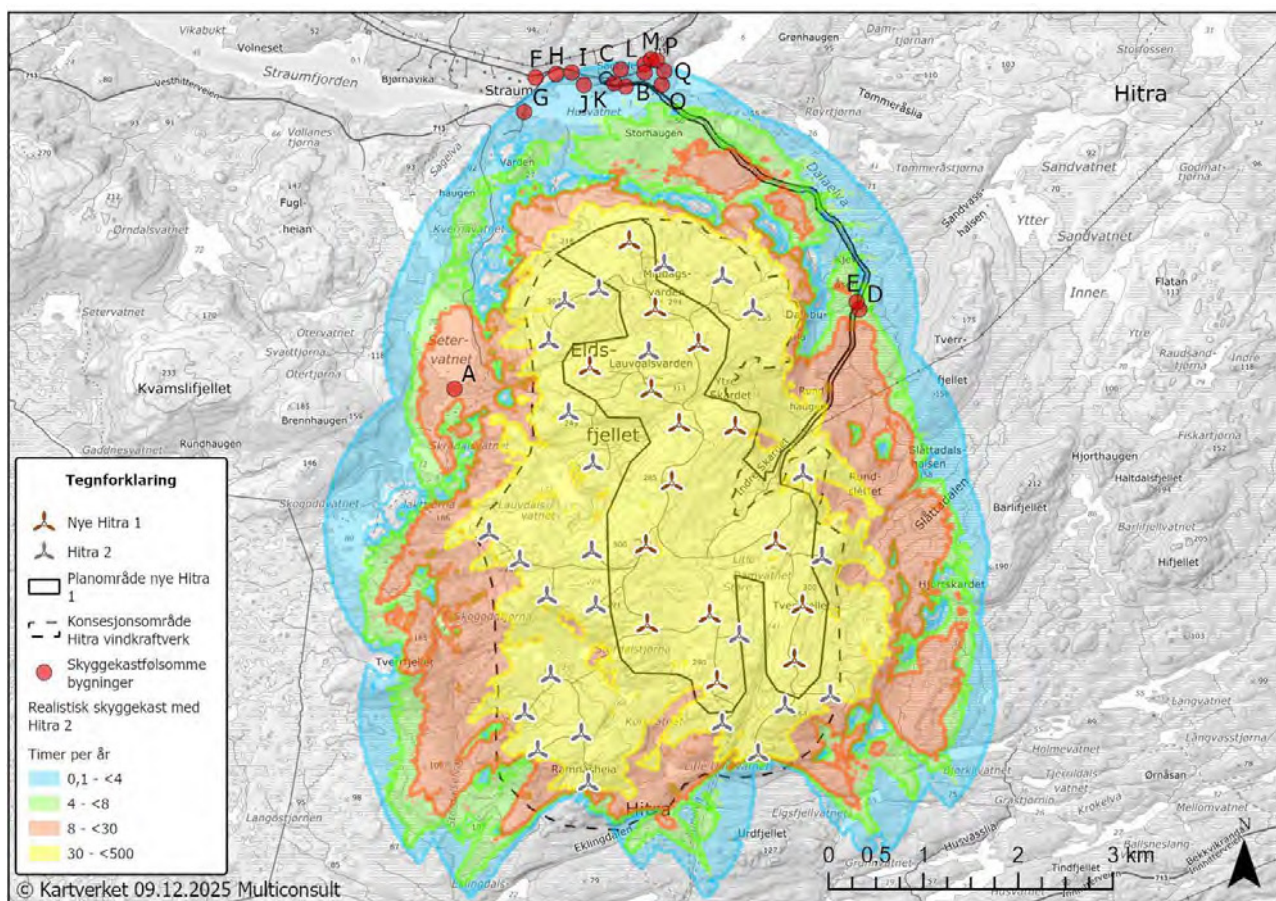
6.2 Realistisk scenario

6.2.1 Kart

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 ser man kun en liten endring. Kartet viser at arealene er noe redusert. Spesielt ser man at andelen av røde og gule områder har minsket, og disse strekker seg ikke like langt ut som tidligere. Denne reduksjonen er imidlertid ikke betydelig nok til å være visuelt fremtredende.

Dersom man sammenligner med de tilsvarende figurene i kapittel 5 (som omtaler skyggekast fra nye Hitra 1 vindkraftverk alene) ser man derimot en litt større endring. De arealene som viser utsatte områder er større og strekker seg lengre utover fjellområdet. Dette antyder at sumvirkninger fra begge vindkraftverkene vil kunne påvirke nærområdene, men trolig ikke medføre en stor endring for mottakerne.



Figur 6-2: Realistisk skyggekastbelastning med hensyn til Hitra 2 vindkraftverk med definerte skyggekastmottakere, målt i timer per år.

6.2.2 Individuelle mottakere

Tabell 6-2 oppsummerer resultatet av det realistiske scenarioet. Det er benyttet samme metodikk som i avsnitt 5.2.2. 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. Tabellen viser i tillegg økningen av forventet skyggekasttimer per år når man tar med sumvirkninger. Mottakeren som anses å være mest utsatt for skyggekast opplever nesten 14 timer per år (mottaker A). Denne skog- og utmarkskoien ligger vest for planområdet, omtrent 1453 meter unna nærmeste nye Hitra 1-turbin, og 1117 meter unna nærmeste Hitra 2-turbin og det er derfor forventet at belastningen vil være høy her.

Tabell 6-2: Realistisk skyggekastbelastning for skyggekastmottakerne for nye Hitra 1 vindkraftverk sammen med det eksisterende Hitra 2 vindkraftverk. Tabellen viser økning i antatt skyggekast når det tas hensyn til sumvirkninger.

	Mottaker	Timer/år	Økning
A	Eiendom 32/93	13:42	08:53



B	Eldsfjellveien 47	2:44	-
C	Vesthitterveien 141	2:31	-
D	Eldsfjellveien 86	7:20	04:09
E	Eldsfjellveien 85	7:10	04:16
F	Straumfjordveien 4	0:00	-
G	Vesthitterveien 182	1:49	-
H	Vesthitterveien 168	0:00	-
I	Vesthitterveien 162	0:00	-
J	Eldsfjellveien 3	2:13	-
K	Eldsfjellveien 8	2:39	-
L	Vesthitterveien 135	0:00	-
M	Vesthitterveien 131	0:00	-
N	Vesthitterveien 154	2:36	-
O	Vesthitterveien 142	2:43	-
P	Vesthitterveien 132	0:00	-
Q	Vesthitterveien 136	2:28	-

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.

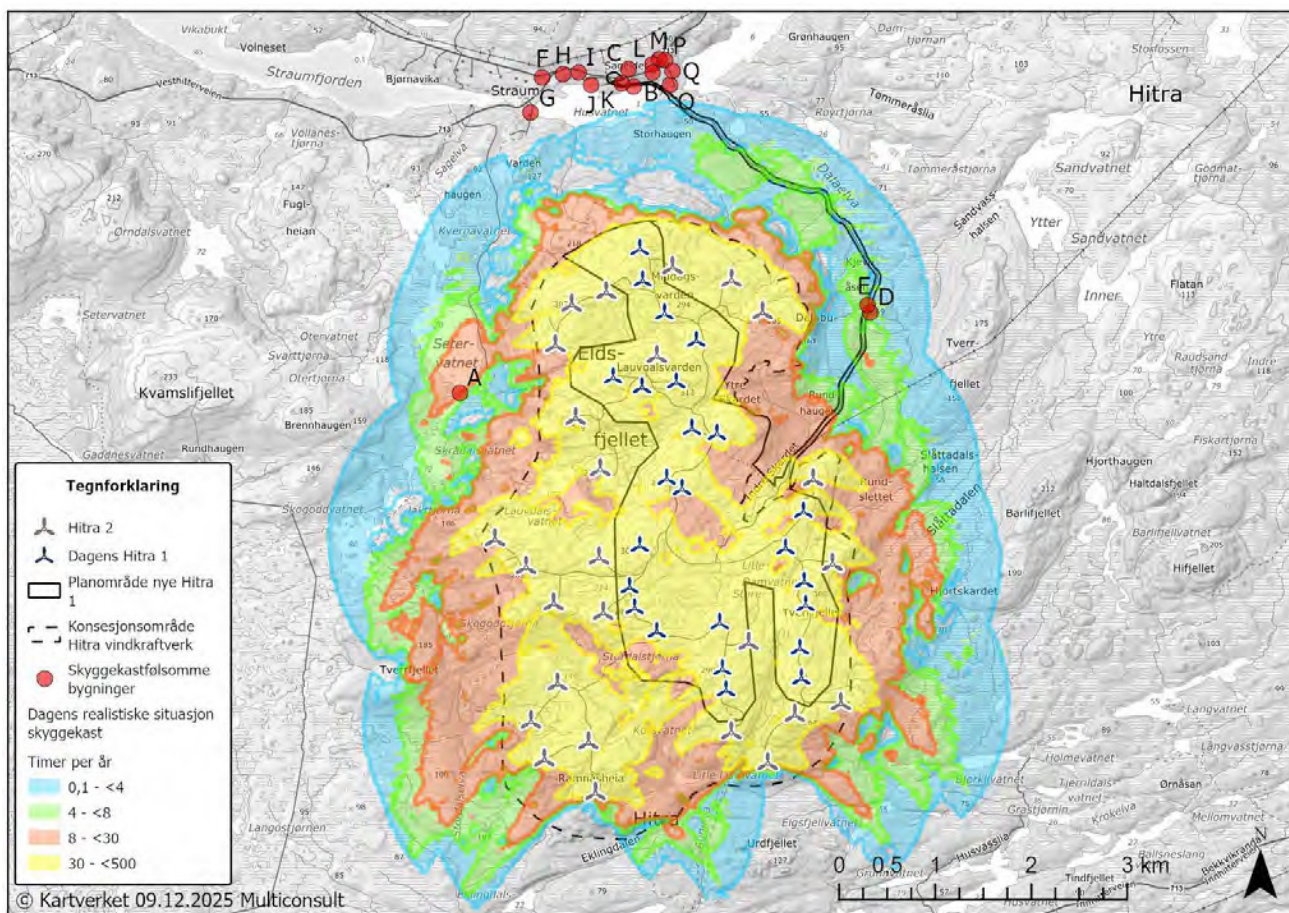
Tabellen viser at det kun er tre mottakere som vil oppleve endringer når man ser på de samlede virkningene fra Hitra 2. Dette er de samme mottakerne som ble identifisert i den maksimale teoretiske simuleringen. Av disse er det bare mottaker A som får en endring som medfører overskridelse av anbefalte grenseverdier. Mottaker D og E vil få mer enn syv timer med skyggekast per år, men dette ligger fortsatt under grenseverdien på åtte timer.

7 Dagens situasjon

For beregningen av dagens situasjon er det lagt til grunn eksisterende Hitra 1 vindkraftverk og Hitra 2 vindkraftverk. Spesifikasjonene rundt turbinene er nevnt i avsnitt 1.

7.1 Realistisk scenario

For å gi et godt sameligningsgrunnlag er det gjort simuleringer for dagens situasjon med eksisterende Hitra 1 og Hitra 2. Det er bare gjort realistiske simuleringer, altså med en solskinns sannsynlighet på 50% tatt med og driftstid på totalt 7000 timer, basert på vindrosen og driftstid per sektor/vindretning.



Figur 7-1: Realistisk skyggekastbelastning for dagens situasjon med eksisterende Hitra 1 og Hitra 2, målt i timer per år.

Figuren viser at simuleringen av dagens situasjon med eksisterende vindkraftverk gir mindre utstrekning av områder utsatt for skyggekast. De røde og gule områdene, som indikerer høy belastning, er betydelig redusert.

Tabell 7-1 viser at dagens situasjon med de eksisterende vindkraftverkene gir begrenset skyggekast for de definerte mottakerne. De fleste mottakerne opplever ingen skyggekast. Kun tre mottakere (A, D og E) er berørt, og bare én av dem overstiger grenseverdiene. Denne mottakeren, mottaker A, er den samme som også vil være over grenseverdiene ved en eventuell utbygging av nye Hitra 1.

Tabell 7-1: Realistisk skyggekast for dagens situasjon med eksisterende Hitra 1 og Hitra 2.

	Mottaker	Timer/år
A	Eiendom 32/93	8:53
B	Eldsfjellveien 47	0:00
C	Vesthitterveien 141	0:00
D	Eldsfjellveien 86	4:09
E	Eldsfjellveien 85	4:16
F	Straumfjordveien 4	0:00
G	Vesthitterveien 182	0:00



H	Vesthitterveien 168	0:00
I	Vesthitterveien 162	0:00
J	Eldsfjellveien 3	0:00
K	Eldsfjellveien 8	0:00
L	Vesthitterveien 135	0:00
M	Vesthitterveien 131	0:00
N	Vesthitterveien 154	0:00
O	Vesthitterveien 142	0:00
P	Vesthitterveien 132	0:00
Q	Vesthitterveien 136	0:00

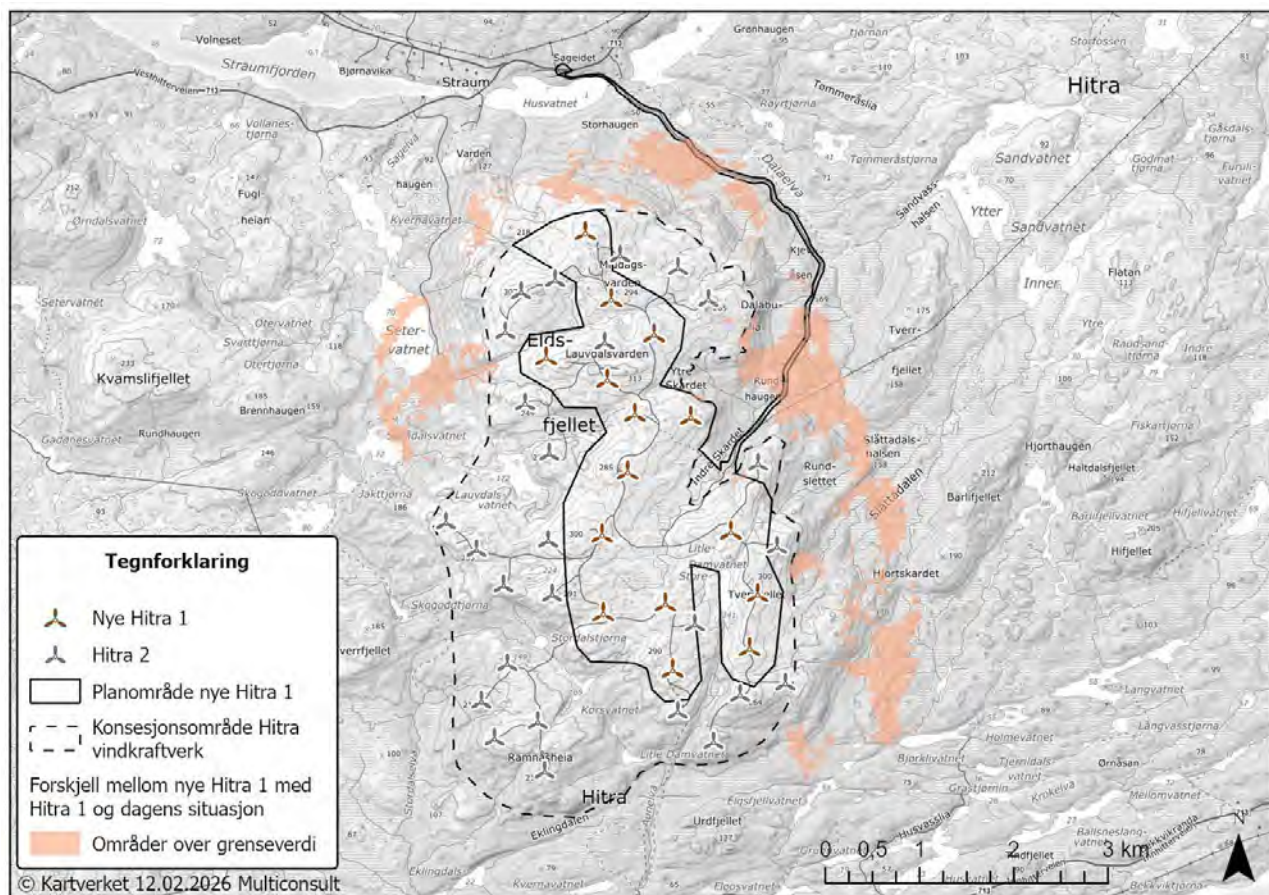
Sammenlignet med dagens situasjon viser analysen at utbyggingen av nye Hitra 1 vil føre til en økt utbredelse av skyggekast. Den største utbredelsen gjelder imidlertid områder hvor påvirkningen fortsatt ligger under anbefalte grenseverdier. Gjennom simuleringene er det kun én mottaker, mottaker A, som fremstår som særlig utsatt. Dette er en mottaker som allerede opplever skyggekast i dag, og den nye utbyggingen vil medføre en økning i belastningen, i henhold til beregningen vil mottakeren gå fra 8:53 til 13:42 timer per år.

Ifølge simuleringen av dagens situasjon ligger mottaker A over anbefalt grenseverdi allerede i dag. Når Hitra 2 inkluderes i beregningene for nye Hitra 1 vindkraftverk (se avsnitt 6.2.2), tilsvarer økningen det mottaker A opplever i dag, noe som indikerer at dagens turbiner fra Hitra 1 ikke bidrar til skyggekast på denne mottakeren. Det foreligger en avtale for denne mottakeren som følge av skyggekast fra Hitra 2.

Mottakere som ligger nord for vindkraftverket opplever i dag ikke skyggekast, men vil kunne få noe skyggekast gjennom året som følge av utbyggingen. Denne påvirkningen er imidlertid under grenseverdiene, som vist i Tabell 6-2.

Sammenlignet med dagens eksisterende vindkraftverk vil nye Hitra 1 medføre en økning i samlet skyggekastbelastning. For mottakere som ikke har skyggekast i dag, vil den nye belastningen skal være relativt lav, rundt 2 timer per år under realistiske forhold, og innenfor grenseverdiene. For mottakere som allerede er berørt, vil det kunne merkes en økning. Mottaker D og E går fra rundt fire timer til omtrent syv timer med skyggekast per år, nær en dobling. Ifølge de detaljerte resultatene i vedlegg Skyggekastkalender – Grafisk – Realistisk scenario med Hitra 2 vindkraftverk viser at skyggekast for disse to mottakerne hovedsakelig forekomme på ettermiddager om høsten og våren.

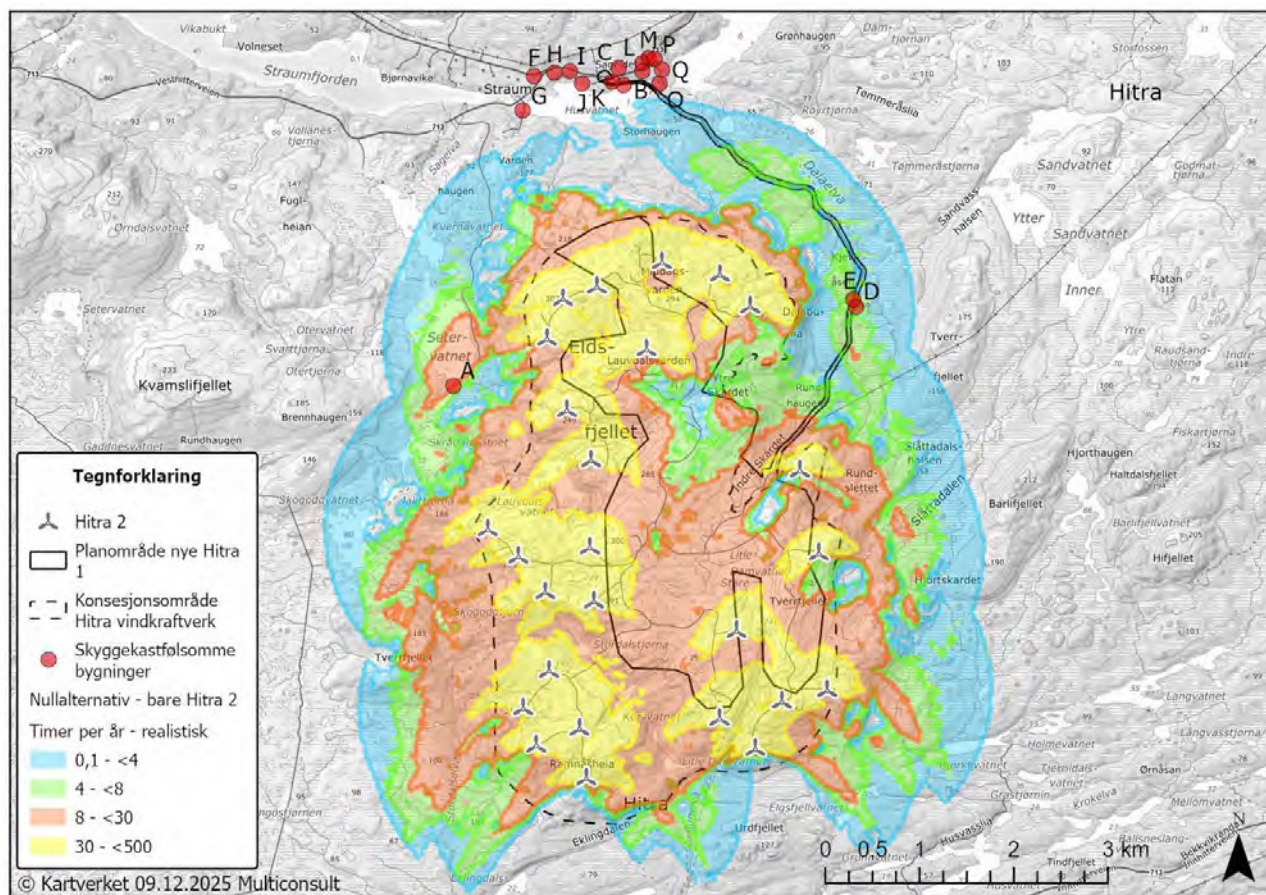
For å sammenligne dagens situasjon og det nye Hitra 1 vindkraftverket er det vurdert hvilke områder som vil oppleve en endring og som vil overskride anbefalte grenseverdier ved en eventuell utbygging. Som vist i Figur 7-2, er det særlig områdene mot øst og delvis mot nord som forventes å oppleve størst endring. Dette gjelder spesielt flere strekninger langs adkomstveien.



Figur 7-2: Områder som kommer over grenseverdi for skyggekast ved utbygging av nye Hitra 1 vindkraftverk ved sammenligning av dagens situasjon. Merk at det ikke er gjort skille på hvor mange timer skyggekast bare at det overskrider grenseverdier for skyggekast.

8 Nullalternativet

Nullalternativet er sammenligningsgrunnlaget i konsekvensutredningen. Siden konsesjonen for gamle Hitra 1 vindkraftverk snart går ut på dato, vil nullalternativet være et Hitra vindkraftverk med kun Hitra 2. Dette innebærer fjerning av de 24 vindturbinene i dagens Hitra 1 slik at kun de 26 vindturbinene i Hitra 2 står igjen.



Figur 8-1: Nullalternativet med realistiske forhold, målt i timer per år.

Fra kartet ser man at Hitra 2 ikke påvirker boligene i nord. Boligene langs adkomstveien blir påvirket av skyggekast, men under grenseverdier. Mottaker A ligger i rød sone og vil skyggekast over grenseverdiene i nullalternativet, men som nevnt foreligger det en avtale for denne allerede.

Tabell 8-1. Realistisk skyggekastbelastning for nullalternativet.

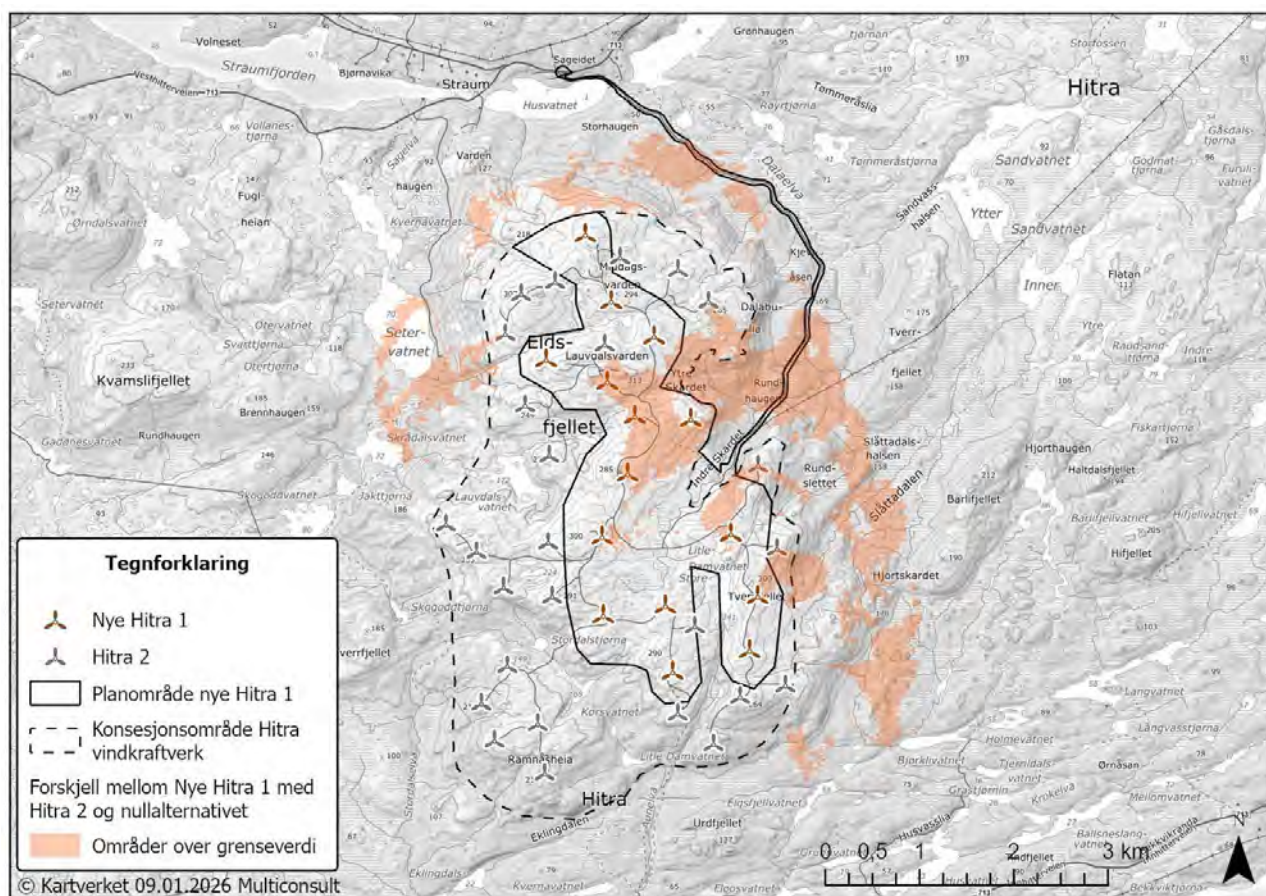
	Mottaker	Timer/år
A	Eiendom 32/93	8:53
B	Elds fjellveien 47	0:00
C	Vesthitterveien 141	0:00
D	Elds fjellveien 86	4:09
E	Elds fjellveien 85	4:16
F	Straumfjordveien 4	0:00
G	Vesthitterveien 182	0:00
H	Vesthitterveien 168	0:00
I	Vesthitterveien 162	0:00
J	Elds fjellveien 3	0:00
K	Elds fjellveien 8	0:00



L	Vesthitterveien 135	0:00
M	Vesthitterveien 131	0:00
N	Vesthitterveien 154	0:00
O	Vesthitterveien 142	0:00
P	Vesthitterveien 132	0:00
Q	Vesthitterveien 136	0:00

Det kommer fram av sammenligning mellom nullalternativet og dagens situasjon at eksisterende Hitra 1 ikke bidrar med skyggekast på nærliggende boliger. Det er bare Hitra 2 som bidrar med belastning på de nærliggende boligene.

For å oppnå en god sammenligning mellom nullalternativet og det nye Hitra 1 vindkraftverket er det vurdert hvilke områder som vil overskride anbefalte grenseverdier ved en eventuell utbygging. Som vist i Figur 8-2, er det særlig områdene mot øst og delvis mot nord som forventes å oppleve størst endring. Dette gjelder spesielt flere strekninger langs adkomstveien.



Figur 8-2: Forskjell mellom nye Hitra 1 vindkraftverk med Hitra 2 og nullalternativet. Merk at det ikke er gjort skille på hvor mange timer skyggekast bare at det overskrider grenseverdier for skyggekast.

9 Avbøtende tiltak

Det er kun én mottaker som overskrider anbefalte grenseverdiene, og det foreligger allerede en avtale for denne. Det er derfor ikke behov for ytterligere avbøtende tiltak. Samtidig er det områder som påvirkes av skyggekast, og her kan avbøtende tiltak bidra til å redusere belastningen. Før utbygging



kan skyggekastkalendere utarbeides for å vise når skyggekast er forventet å kunne inntreffe. Sammen med automatiserte lyssensorer kan turbinene stoppes dersom det både er klarvær og man ser i skyggekastkalenderen at en mottaker kan være utsatt. Dette vil minimere ulempene for naboer og andre berørte.

10 Påvirkning på bebyggelse og friluftsliv

Siden det er flere boliger i nærheten av vindkraftverket, forventes det at bebyggelsen kan påvirkes av skyggekast. Også flere friluftsområder kan bli utsatt. Gjennom kartlegging av friluftsliv er Eldsjellet gitt «noe verdi» og Håvikfjellet til Sætervassdraget gitt «stor verdi»³.

Deler av disse områdene er innenfor områder som kan oppleve skyggekast over anbefalt grenseverdi. I tillegg kan tre 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. Det er viktig å påpeke at store deler av områdene allerede i dag utsettes for skyggekast fra det eksisterende anlegget. Utbyggingen av nye Hitra 1 vil medføre en liten økning av skyggekastbelastning i disse områdene. Flere av turrutene i området følger dessuten dagens adkomstveier til anlegget.

11 Konklusjon

Skyggekastanalysen viser at en mottaker rundt nye Hitra 1 vindkraftverk kan bli utsatt for skyggekast. Det er en av 17 identifiserte skyggekastfølsomme mottakere som utsettes for belastning som overskrider NVEs anbefalte grenseverdi for skyggekast når man tar hensyn til Hitra 2 vindkraftverk. Det foreligger en avtale med denne mottakeren, og er ikke behov for ytterligere avbøtende tiltak for denne. Når man bare ser på nye Hitra 1 vindkraftverk er det ingen mottakere som overskrider grenseverdiene. Mesteparten av mottakerne som kan oppleve skyggekast vil oppleve det midt på dagen gjennom vinterhalvåret, men noen få vil oppleve skyggekast på morgen og ettermiddag/kveld i sommerhalvåret. Den største utbredelsen av skyggekast skjer mot nord med lave belastningsnivåer, mens østlige og vestlige deler har flest overskridelser, hovedsakelig på grunn av morgen- og kveldssol. Områdene med høyest belastning ligger hovedsakelig på fjellområdet innenfor planområdet. På nordsiden oppstår skyggekast midt på dagen vinterstid, begrenset av korte dager og få turbiner innenfor 2 km.

Sammenlignet med dagens situasjon og nullalternativet viser analysen at utbyggingen av nye Hitra 1 vindkraftverk vil føre til en økt utbredelse av skyggekast. Den største utbredelsen gjelder imidlertid områder hvor påvirkningen fortsatt ligger under anbefalte grenseverdier.

Det er ikke nødvendig med avbøtende tiltak, men kan innføres dersom for å minske belastningen. Før utbygging kan det lages skyggekastkalendre som viser når skyggekast er forventet å inntreffe. Sammen med automatiserte lyssensorer kan turbinene stoppes dersom det både er klarvær og man ser i skyggekastkalenderen at en mottaker kan være utsatt. Dette vil minimere ulempene for naboer og andre berørte.

Flere friluftsområder og turruter kan bli påvirket av skyggekast fra nye Hitra 1 vindkraftverk, særlig i perioder med direkte sollys. Dette kan skape ubehag for turgåere, som kan oppleve forstyrrende skyggeeffekter når de ferdes langs disse rutene. Det er viktig å påpeke at store deler av områdene allerede i dag utsettes for skyggekast fra det eksisterende anlegget. Utbyggingen av nye Hitra 1 vil medføre en mindre økning av skyggekast i disse områdene.

³ For utdypende informasjon om friluftsområdene se egen utredning om friluftsliv, *Nye Hitra 1 vindkraftverk – KU – Friluftsliv*.



12 Vedlegg

- 1.1 Skyggekastkalender – Tabell – Verst tenkelig scenario Hitra 1 vindkraftverk**
Dokument: *10258198-01-RIEn-RAP-001-Vedlegg-1.1_Tabell-Hitra1-worst-case*
Vedlegget representerer råresultatet fra WindPRO sin SHADOW-modul der hver skyggekastmottaker har sin egen kalender.
- 1.2 Skyggekastkalender – Grafisk – Verst tenkelig scenario Hitra 1 vindkraftverk**
Dokument: *10258198-01-RIEn-RAP-001-Vedlegg-1.2_Grafisk-Hitra1-worst-case*
Vedlegget representerer råresultatet fra WindPRO sin SHADOW-modul der hver skyggekastmottaker har sin egen belastningsfigur som eksempelvis vist i Figur 5-2.
- 2.1 Skyggekastkalender – Tabell – Realistisk scenario Hitra 1 vindkraftverk**
Dokument: *10252119-01-RIVIND-RAP-001-Vedlegg-2.1_Tabell-Hitra1-real-case*
Vedlegget representerer råresultatet fra WindPRO sin SHADOW-modul der hver skyggekastmottaker har sin egen kalender.
- 2.2 Skyggekastkalender – Grafisk – Realistisk scenario Hitra 1 vindkraftverk**
Dokument: *10258198-01-RIEn-RAP-001-Vedlegg-2.2_Grafisk-Hitra1-real-case*
Vedlegget representerer råresultatet fra WindPRO sin SHADOW-modul der hver skyggekastmottaker har sin egen belastningsfigur som eksempelvis vist i Figur 5-2.
- 3.1 Skyggekastkalender – Tabell – Verst tenkelig scenario med Hitra 2 vindkraftverk**
Dokument: *10258198-01-RIEn-RAP-001-Vedlegg-3.1_Tabell-med-Hitra2-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 Hitra 2 vindkraftverk**
Dokument: *10258198-01-RIEn-RAP-001-Vedlegg-3.2_Grafisk-med-Hitra2-worst-case*
Vedlegget representerer råresultatet fra WindPRO sin SHADOW-modul der hver skyggekastmottaker har sin egen belastningsfigur som eksempelvis vist i Figur 5-2.
- 4.1 Skyggekastkalender – Tabell – Realistisk scenario med Hitra 2 vindkraftverk**
Dokument: *10258198-01-RIEn-RAP-001-Vedlegg-4.1_Tabell-med-Hitra2-real-case*
Vedlegget representerer råresultatet fra WindPRO sin SHADOW-modul der hver skyggekastmottaker har sin egen kalender.
- 4.2 Skyggekastkalender – Grafisk – Realistisk scenario med Hitra 2 vindkraftverk**
Dokument: *10258198-01-RIEn-RAP-001-Vedlegg-4.2_Grafisk-med-Hitra2-real-case*
Vedlegget representerer råresultatet fra WindPRO sin SHADOW-modul der hver skyggekastmottaker har sin egen belastningsfigur som eksempelvis vist i Figur 5-2.



13 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. (2022a). *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. (2022b). *Skyggekast fra vindturbiner*. NVE.

<https://www.nve.no/energi/energisystem/kunnskapsgrunnlag-om-virkninger-av-vindkraft-paa-land/skyggekast-fra-vindturbiner/>



Vedlegg 1.1

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - uten Hitra 2 vkv Shadow receptor: A - Eiendom 32/93, Skogs- og utmarkskoie
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	10:09 14:49	09:04 16:15	07:35 17:43	06:48 20:13	05:05 21:42	06:57 (4) 07:25 (4)	03:33 23:15	03:15 23:42	04:35 22:26	07:11 (4) 07:30 (4)	06:07 20:42	07:31 18:58	08:02 16:15	09:34 14:55
2	10:08 14:51	09:01 16:18	07:31 17:46	06:45 20:16	05:02 21:46	06:57 (4) 07:25 (4)	03:31 23:18	03:17 23:41	04:38 22:23	07:11 (4) 07:32 (4)	06:10 20:39	07:34 18:55	08:06 16:12	09:36 14:53
3	10:07 14:53	08:58 16:22	07:28 17:49	06:41 20:19	04:59 21:49	06:58 (4) 07:26 (4)	03:29 23:20	03:18 23:40	04:41 22:20	07:09 (4) 07:32 (4)	06:13 20:36	07:37 18:51	08:09 16:09	09:39 14:51
4	10:06 14:55	08:55 16:25	07:25 17:52	06:38 20:22	04:55 21:52	06:57 (4) 07:26 (4)	03:27 23:23	03:20 23:38	04:44 22:17	07:09 (4) 07:33 (4)	06:16 20:32	07:40 18:48	08:12 16:06	09:41 14:49
5	10:05 14:57	08:52 16:28	07:21 17:55	06:34 20:25	04:52 21:55	06:57 (4) 07:25 (4)	03:24 23:27	03:22 23:37	04:47 22:14	07:08 (4) 07:33 (4)	06:19 20:29	07:43 18:45	08:15 16:02	09:44 14:48
6	10:04 14:59	08:49 16:31	07:18 17:58	06:31 20:28	04:49 21:58	06:57 (4) 07:24 (4)	03:22 23:27	03:24 23:35	04:50 22:10	07:07 (4) 07:34 (4)	06:21 20:25	07:45 18:41	08:18 15:59	09:46 14:46
7	10:02 15:02	08:46 16:34	07:15 18:01	06:27 20:31	04:46 22:01	06:58 (4) 07:24 (4)	03:21 23:30	03:26 23:33	04:54 22:07	07:06 (4) 07:34 (4)	06:24 20:22	07:48 18:38	08:21 15:56	09:48 14:45
8	10:01 15:04	08:43 16:38	07:11 18:04	06:24 20:33	04:42 22:04	06:58 (4) 07:23 (4)	03:19 23:32	03:28 23:31	04:57 22:04	07:06 (4) 07:34 (4)	06:27 20:18	07:51 18:34	08:24 15:53	09:51 14:43
9	09:59 15:06	08:40 16:41	07:08 18:07	06:20 20:36	04:39 22:07	06:59 (4) 07:23 (4)	03:17 23:34	03:30 23:29	05:00 22:01	07:07 (4) 07:35 (4)	06:30 20:15	07:54 18:31	08:27 15:50	09:53 14:42
10	09:57 15:09	08:37 16:44	07:04 18:09	06:17 20:39	04:36 22:10	06:59 (4) 07:22 (4)	03:16 23:36	03:33 23:27	05:03 21:57	07:06 (4) 07:34 (4)	06:33 20:11	07:57 18:27	08:31 15:47	09:55 14:41
11	09:56 15:12	08:34 16:47	07:01 18:12	06:13 20:42	04:33 22:13	07:00 (4) 07:20 (4)	03:14 23:37	03:35 23:25	05:06 21:54	07:06 (4) 07:34 (4)	06:35 20:08	08:00 18:24	08:34 15:44	09:57 14:40
12	09:54 15:14	08:31 16:50	06:57 18:15	06:10 20:45	04:30 22:17	07:02 (4) 07:20 (4)	03:13 23:39	03:38 23:22	05:09 21:51	07:06 (4) 07:34 (4)	06:38 20:04	08:03 18:21	08:37 15:42	09:59 14:39
13	09:52 15:17	08:27 16:53	06:54 18:18	06:07 20:48	04:26 22:20	07:03 (4) 07:18 (4)	03:12 23:40	03:40 23:20	05:12 21:47	07:06 (4) 07:33 (4)	06:41 20:01	08:05 18:17	08:40 15:39	10:00 14:38
14	09:50 15:20	08:24 16:57	06:51 18:21	06:03 20:51	04:23 22:23	07:04 (4) 07:15 (4)	03:11 23:42	03:43 23:18	05:15 21:44	07:07 (4) 07:33 (4)	06:44 19:57	08:08 18:14	08:43 15:36	10:02 14:38
15	09:48 15:23	08:21 17:00	06:47 18:24	06:00 20:54	04:20 22:26	07:09 (4) 07:12 (4)	03:10 23:43	03:46 23:15	05:18 21:41	07:07 (4) 07:33 (4)	06:47 19:54	08:11 18:11	08:46 15:33	10:03 14:37
16	09:46 15:25	08:18 17:03	06:44 18:27	05:56 20:57	04:17 22:29	03:09 23:44	03:48 23:13	03:48 23:13	05:21 21:37	07:07 (4) 07:31 (4)	06:49 19:50	08:14 18:07	08:49 15:30	10:05 14:37
17	09:43 15:28	08:15 17:06	06:40 18:30	05:53 21:00	04:14 22:32	03:08 23:45	03:51 23:10	03:51 23:10	05:24 21:34	07:08 (4) 07:30 (4)	06:52 19:47	08:17 18:04	08:52 15:28	10:06 14:37
18	09:41 15:31	08:11 17:09	06:37 18:33	05:49 21:03	04:11 22:35	03:08 23:46	03:54 23:07	03:54 23:07	05:27 21:30	07:10 (4) 07:29 (4)	06:55 19:43	08:20 18:00	08:56 15:25	10:07 14:36
19	09:39 15:34	08:08 17:12	06:33 18:36	05:46 21:06	04:08 22:38	03:07 23:47	03:57 23:05	03:57 23:05	05:30 21:27	07:10 (4) 07:27 (4)	06:58 19:40	08:23 17:57	08:59 15:22	10:08 14:36
20	09:36 15:37	08:05 17:15	06:30 18:39	05:42 21:09	04:05 22:41	03:07 23:47	03:59 23:02	03:59 23:02	05:32 21:24	07:13 (4) 07:24 (4)	07:00 19:36	08:26 17:54	09:02 15:20	10:09 14:37
21	09:34 15:40	08:02 17:18	06:26 18:41	05:39 21:12	04:02 22:44	03:07 23:47	04:02 22:59	04:02 22:59	05:35 21:20	07:24 (4) 07:03	07:00 19:33	08:29 17:51	09:05 15:17	10:10 14:37
22	09:31 15:43	07:58 17:21	06:23 18:44	05:36 21:15	03:59 22:47	03:07 23:48	04:05 22:56	04:05 22:56	05:38 21:17	07:06 19:29	07:06 17:47	08:32 17:47	09:08 15:15	10:10 14:37
23	09:29 15:47	07:55 17:25	06:19 18:47	05:32 21:18	03:57 22:50	03:07 23:48	04:08 22:54	04:08 22:54	05:41 21:13	07:09 19:26	07:09 17:44	08:35 17:44	09:11 15:12	10:11 14:38
24	09:26 15:50	07:52 17:28	06:16 18:50	05:29 21:21	03:54 22:53	03:08 23:47	04:11 22:51	04:11 22:51	05:44 21:10	07:12 19:23	07:12 17:41	08:38 17:41	09:14 15:10	10:11 14:38
25	09:24 15:53	07:48 17:31	06:12 18:53	05:25 21:24	03:51 22:56	03:08 23:47	04:14 22:48	04:14 22:48	05:47 21:07	07:14 19:19	07:14 16:37	09:17 15:07	09:17 15:07	10:11 14:39
26	09:21 15:56	07:45 17:34	06:09 18:56	05:22 21:27	03:48 22:59	03:09 23:47	04:18 22:45	04:18 22:45	05:50 21:03	07:17 19:16	07:17 16:34	09:20 15:05	09:20 15:05	10:11 14:40
27	09:18 15:59	07:42 17:37	06:05 18:59	05:19 21:30	03:46 23:02	03:10 23:46	04:20 22:42	04:20 22:42	05:53 21:00	07:20 19:12	07:20 16:31	09:23 15:03	09:23 15:03	10:11 14:41
28	09:15 16:02	07:38 17:40	06:02 19:02	05:15 21:33	03:43 23:05	03:11 23:45	04:23 22:39	04:23 22:39	05:56 20:56	07:23 19:09	07:23 16:28	09:25 15:01	09:25 15:01	10:11 14:43
29	09:13 16:05	07:35 18:04	06:09 19:09	05:12 21:36	03:40 23:07	03:12 23:45	04:26 22:36	04:26 22:36	05:59 21:07	07:26 19:05	07:26 16:24	09:28 14:59	09:28 14:59	10:11 14:44
30	09:10 16:09	07:32 18:07	06:06 19:14	05:09 21:39	03:38 23:10	03:14 23:44	04:29 22:33	04:29 22:33	06:02 21:04	07:28 19:02	07:28 16:21	09:31 14:57	09:31 14:57	10:10 14:45
31	09:07 16:12	07:29 18:10	06:02 19:20	05:06 21:40	03:36 23:13	03:13 23:47	04:32 22:29	04:32 22:29	06:04 21:06	07:29 19:02	07:29 16:18	09:32 14:58	09:32 14:58	10:10 14:47
Potential sun hours	178	241	363	449	563	612	599	505	479	392	306	203	146	
Total, worst case				176	333		37							

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)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: Nye Hitra 1
Description: Fornyelse av Hitra 1 vindkraftverk

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
27.10.2025 17:10/4.0.552

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - uten Hitra 2 kvv **Shadow receptor:** E - Eldsfjellveien 85, Fritidsbygg
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	10:09 14:49	09:04 16:15	07:35 17:42	15:26 (6) 20:13	06:48 17:42	18:06 (3) 21:42	03:33 23:15	03:14 23:42	04:35 22:26	06:07 20:42	07:31 18:58	08:02 16:15
2	10:08 14:50	09:01 16:18	07:31 17:45	15:29 (6) 20:16	06:44 17:45	18:07 (3) 21:45	03:30 23:18	03:16 23:41	04:38 22:23	06:10 20:39	07:34 18:55	08:05 16:11
3	10:07 14:52	08:58 16:21	07:28 17:48	15:36 (6) 20:19	06:41 17:48	18:17 (3) 21:48	03:28 23:20	03:18 23:40	04:41 22:20	06:13 20:35	07:37 18:51	08:08 16:08
4	10:06 14:54	08:55 16:24	07:24 17:51	20:16 20:21	06:37 17:51	18:12 (3) 21:51	04:55 23:23	03:26 23:38	04:44 22:16	06:15 20:32	07:39 18:48	08:11 16:05
5	10:05 14:57	08:52 16:28	07:21 17:54	20:24 20:24	06:34 17:54	18:17 (3) 21:55	04:52 23:25	03:21 23:36	04:47 22:13	06:18 20:28	07:42 18:44	08:15 16:02
6	10:03 14:59	08:49 16:31	07:18 17:57	20:27 20:27	06:30 17:57	18:17 (3) 21:58	04:48 23:27	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41	08:18 15:59
7	10:02 15:01	08:46 16:34	07:14 18:00	20:27 20:30	06:27 18:00	18:17 (3) 21:58	04:45 23:29	03:20 23:33	04:53 22:07	06:24 20:21	07:48 18:37	08:21 15:56
8	10:00 15:03	08:43 16:37	07:11 18:03	20:33 20:33	06:23 18:03	18:17 (3) 21:58	04:42 23:31	03:18 23:31	04:56 22:04	06:27 20:18	07:51 18:34	08:24 15:53
9	09:59 15:06	08:40 16:40	07:07 18:06	20:36 20:36	06:20 18:06	18:17 (3) 21:58	04:39 23:33	03:17 23:29	04:59 22:00	06:29 20:14	07:54 18:31	08:27 15:50
10	09:57 15:08	08:37 16:44	07:04 18:09	20:39 20:39	06:17 18:09	18:17 (3) 21:58	04:36 23:35	03:15 23:27	05:02 21:57	06:32 20:11	07:56 18:27	08:30 15:47
11	09:55 15:11	08:33 16:47	07:00 18:12	20:42 20:42	06:13 18:12	18:17 (3) 21:58	04:32 23:37	03:14 23:25	05:05 21:54	06:35 20:07	07:59 18:24	08:33 15:44
12	09:53 15:14	08:30 16:50	06:57 18:15	20:45 20:45	06:10 18:15	18:17 (3) 21:58	04:29 23:39	03:12 23:22	05:08 21:50	06:38 20:04	08:02 18:20	08:37 15:41
13	09:52 15:16	08:27 16:53	06:54 18:18	20:48 20:48	06:06 18:18	18:17 (3) 21:58	04:26 23:40	03:11 23:20	05:11 21:47	06:41 20:00	08:05 18:17	08:40 15:38
14	09:50 15:19	08:24 16:56	06:50 18:21	20:51 20:51	06:03 18:21	18:17 (3) 21:58	04:23 23:42	03:10 23:17	05:14 21:44	06:43 19:57	08:08 18:14	08:43 15:35
15	09:47 15:22	08:21 16:59	06:47 18:24	20:54 20:54	05:59 18:24	18:17 (3) 21:58	04:20 23:43	03:09 23:15	05:17 21:40	06:46 19:54	08:11 18:10	08:46 15:33
16	09:45 15:25	08:18 17:03	06:43 18:27	20:57 20:57	05:56 18:27	18:17 (3) 21:58	04:17 23:44	03:08 23:12	05:20 21:37	06:49 19:50	08:14 18:07	08:49 15:30
17	09:43 15:28	08:14 17:06	06:40 18:30	21:00 21:00	05:52 18:30	18:17 (3) 21:58	04:14 23:45	03:08 23:10	05:23 21:34	06:52 19:47	08:17 18:03	08:52 15:27
18	09:41 15:31	08:11 17:09	06:36 18:32	21:03 21:03	05:49 18:32	18:17 (3) 21:58	04:11 23:46	03:07 23:07	05:26 21:30	06:55 19:43	08:20 18:00	08:55 15:24
19	09:38 15:34	08:08 17:12	06:33 18:35	21:06 21:06	05:46 18:35	18:17 (3) 21:58	04:08 23:46	03:07 23:05	05:29 21:27	06:57 19:40	08:23 17:57	08:58 15:22
20	09:36 15:37	08:05 17:15	06:29 18:38	21:09 21:09	05:42 18:38	18:17 (3) 21:58	04:05 23:47	03:07 23:02	05:32 21:23	07:00 19:36	08:26 17:53	09:01 15:19
21	09:34 15:40	08:01 17:18	06:26 18:41	21:12 21:12	05:39 18:41	18:17 (3) 21:58	04:02 23:47	03:07 22:59	05:35 21:20	07:03 19:33	08:29 17:50	09:04 15:17
22	09:31 15:43	07:58 17:21	06:23 18:44	21:15 21:15	05:35 18:44	18:17 (3) 21:58	03:59 23:47	03:07 22:56	05:38 21:17	07:06 19:29	08:32 17:47	09:08 15:14
23	09:29 15:46	07:55 17:24	06:19 18:47	21:18 21:18	05:32 18:47	18:17 (3) 21:58	03:56 23:47	03:07 22:53	05:41 21:13	07:08 19:26	08:35 17:44	09:11 15:12
24	09:26 15:49	07:51 17:27	06:16 18:50	21:21 21:21	05:28 18:50	18:17 (3) 21:58	03:53 23:47	03:07 22:50	05:44 21:10	07:11 19:22	08:38 17:40	09:13 15:09
25	09:23 15:52	07:48 17:30	06:12 18:53	21:24 21:24	05:25 18:53	18:17 (3) 21:58	03:51 23:47	03:08 22:47	05:47 21:06	07:14 19:19	07:41 16:37	09:16 15:07
26	09:21 15:56	07:45 17:33	06:09 18:55	21:27 21:27	05:22 18:55	18:17 (3) 21:58	03:48 23:47	03:09 22:44	05:50 21:03	07:17 19:15	07:44 16:34	09:19 15:05
27	09:18 15:59	07:41 17:36	06:05 18:58	21:30 21:30	05:18 18:58	18:17 (3) 21:58	03:45 23:46	03:10 22:41	05:53 20:59	07:20 19:12	07:47 16:31	09:22 15:02
28	09:15 16:02	07:38 17:39	06:02 19:01	21:33 21:33	05:15 19:01	18:17 (3) 21:58	03:43 23:46	03:11 22:41	05:55 20:59	07:22 19:12	07:50 16:27	09:25 15:00
29	09:12 16:05	07:35 17:36	06:00 19:04	21:36 21:36	05:12 19:04	18:17 (3) 21:58	03:40 23:46	03:12 22:41	05:58 20:56	07:25 19:08	07:53 16:24	09:28 14:58
30	09:10 16:08	07:33 17:33	05:58 19:04	21:39 21:39	05:08 19:04	18:17 (3) 21:58	03:38 23:46	03:13 22:41	06:01 20:53	07:28 19:01	07:56 16:21	09:31 14:56
31	09:07 16:11	07:30 17:30	05:51 19:01	21:42 21:42	05:05 19:01	18:17 (3) 21:58	03:35 23:46	03:10 22:41	06:04 20:46	07:31 19:01	07:59 16:18	09:39 14:46
Potential sun hours	178	241	363	449	563	612	600	505	392	47	306	203
Total, worst case		239	32	34							262	145

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - uten Hitra 2 kvv **Shadow receptor:** F - Straumfjordveien 4, Våningshus
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	10:09 14:49	09:04 16:15	07:35 17:43	06:48 20:13	05:05 21:43	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:43	07:31 18:58	08:03 16:15	09:34 14:54
2	10:08 14:50	09:01 16:18	07:31 17:46	06:45 20:16	05:02 21:46	03:30 23:18	03:16 23:42	04:38 22:23	06:10 20:39	07:34 18:55	08:06 16:12	09:37 14:52
3	10:07 14:52	08:58 16:21	07:28 17:49	06:41 20:19	04:58 21:49	03:28 23:21	03:18 23:40	04:41 22:20	06:13 20:36	07:37 18:51	08:09 16:08	09:39 14:50
4	10:06 14:54	08:55 16:24	07:25 17:52	06:38 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:16 20:32	07:40 18:48	08:12 16:05	09:42 14:49
5	10:05 14:57	08:52 16:28	07:21 17:55	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44	08:15 16:02	09:44 14:47
6	10:04 14:59	08:49 16:31	07:18 17:58	06:31 20:28	04:49 21:58	03:22 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41	08:18 15:59	09:46 14:46
7	10:02 15:01	08:46 16:34	07:14 18:01	06:27 20:31	04:45 22:01	03:20 23:30	03:25 23:33	04:53 22:07	06:24 20:22	07:48 18:38	08:21 15:56	09:49 14:44
8	10:01 15:03	08:43 16:37	07:11 18:03	06:24 20:33	04:42 22:04	03:18 23:32	03:28 23:31	04:56 22:04	06:27 20:18	07:51 18:34	08:24 15:53	09:51 14:43
9	09:59 15:06	08:40 16:41	07:08 18:06	06:20 20:36	04:39 22:07	03:17 23:34	03:30 23:29	04:59 22:01	06:30 20:15	07:54 18:31	08:28 15:50	09:53 14:42
10	09:58 15:08	08:37 16:44	07:04 18:09	06:17 20:39	04:36 22:11	03:15 23:36	03:32 23:27	05:02 21:57	06:33 20:11	07:57 18:27	08:31 15:47	09:55 14:41
11	09:56 15:11	08:34 16:47	07:01 18:12	06:13 20:42	04:32 22:14	03:13 23:38	03:35 23:25	05:05 21:54	06:35 20:08	08:00 18:24	08:34 15:44	09:57 14:39
12	09:54 15:14	08:31 16:50	06:57 18:15	06:10 20:45	04:29 22:17	03:12 23:39	03:37 23:23	05:08 21:51	06:38 20:04	08:03 18:21	08:37 15:41	09:59 14:39
13	09:52 15:17	08:28 16:53	06:54 18:18	06:06 20:48	04:26 22:20	03:11 23:41	03:40 23:20	05:11 21:47	06:41 20:01	08:05 18:17	08:40 15:38	10:01 14:38
14	09:50 15:19	08:24 16:56	06:50 18:21	06:03 20:51	04:23 22:23	03:10 23:42	03:42 23:18	05:14 21:44	06:44 19:57	08:08 18:14	08:43 15:36	10:02 14:37
15	09:48 15:22	08:21 17:00	06:47 18:24	05:59 20:54	04:20 22:26	03:09 23:44	03:45 23:16	05:17 21:41	06:46 19:54	08:11 18:10	08:46 15:33	10:04 14:37
16	09:46 15:25	08:18 17:03	06:44 18:27	05:56 20:57	04:17 22:29	03:08 23:45	03:48 23:13	05:20 21:37	06:49 19:50	08:14 18:07	08:50 15:30	10:05 14:36
17	09:44 15:28	08:15 17:06	06:40 18:30	05:53 21:00	04:14 22:32	03:07 23:46	03:51 23:10	05:23 21:34	06:52 19:47	08:17 18:04	08:53 15:27	10:06 14:36
18	09:41 15:31	08:11 17:09	06:37 18:33	05:49 21:03	04:11 22:35	03:07 23:46	03:53 23:08	05:26 21:31	06:55 19:43	08:20 18:00	08:56 15:25	10:08 14:36
19	09:39 15:34	08:08 17:12	06:33 18:36	05:46 21:06	04:08 22:38	03:07 23:47	03:56 23:05	05:29 21:27	06:58 19:40	08:23 17:57	08:59 15:22	10:09 14:36
20	09:37 15:37	08:05 17:15	06:30 18:38	05:42 21:09	04:05 22:41	03:06 23:48	03:59 23:02	05:32 21:24	07:00 19:36	08:26 17:54	09:02 15:19	10:09 14:36
21	09:34 15:40	08:02 17:18	06:26 18:41	05:39 21:12	04:02 22:44	03:06 23:48	04:02 23:00	05:35 21:20	07:03 19:33	08:29 17:50	09:05 15:17	10:10 14:36
22	09:32 15:43	07:58 17:21	06:23 18:44	05:35 21:15	03:59 22:48	03:06 23:48	04:05 22:57	05:38 21:17	07:06 19:29	08:32 17:47	09:08 15:14	10:11 14:37
23	09:29 15:46	07:55 17:24	06:19 18:47	05:32 21:18	03:56 22:50	03:07 23:48	04:08 22:54	05:41 21:14	07:09 19:26	08:35 17:44	09:11 15:12	10:11 14:37
24	09:26 15:49	07:52 17:27	06:16 18:50	05:29 21:21	03:53 22:53	03:07 23:48	04:11 22:51	05:44 21:10	07:12 19:22	08:38 17:40	09:14 15:09	10:12 14:38
25	09:24 15:52	07:48 17:31	06:12 18:53	05:25 21:24	03:51 22:56	03:08 23:48	04:14 22:48	05:47 21:07	07:14 19:19	07:41 16:37	09:17 15:07	10:12 14:39
26	09:21 15:56	07:45 17:34	06:09 18:56	05:22 21:27	03:48 22:59	03:08 23:47	04:17 22:45	05:50 21:03	07:17 19:16	07:44 16:34	09:20 15:05	10:12 14:40
27	09:18 15:59	07:42 17:37	06:05 18:59	05:18 21:30	03:45 23:02	03:09 23:47	04:20 22:42	05:53 21:00	07:20 19:12	07:47 16:31	09:23 15:02	10:12 14:41
28	09:16 16:02	07:38 17:40	06:02 19:02	05:15 21:33	03:43 23:05	03:10 23:46	04:23 22:39	05:56 20:56	07:23 19:09	07:50 16:27	09:26 15:00	10:12 14:42
29	09:13 16:05		06:58 20:04	05:12 21:36	03:40 23:08	03:12 23:45	04:26 22:36	05:58 20:53	07:26 19:05	07:53 16:24	09:28 14:58	10:11 14:43
30	09:10 16:08		06:55 20:07	05:08 21:39	03:37 23:10	03:13 23:44	04:29 22:33	06:01 20:49	07:28 19:02	07:56 16:21	09:31 14:56	10:11 14:45
31	09:07 16:12		06:51 20:10		03:35 23:13		04:32 22:30	06:04 20:46		07:59 16:18		10:10 14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
Total, worst case												

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - uten Hitra 2 vkv Shadow receptor: G - Vesthitterveien 182, Enebolig

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	10:09 14:49	09:04 16:15	07:35 17:43	09:51 (1) 10:14 (1)	06:48 20:13	05:05 21:43	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:43	07:31 18:58	08:03 16:15
2	10:08 14:50	09:01 16:18	07:31 17:46	09:52 (1) 10:14 (1)	06:45 20:16	05:02 21:46	03:30 23:18	03:16 23:42	04:38 22:23	06:10 20:39	07:34 18:55	08:06 16:12
3	10:07 14:52	08:58 16:21	07:28 17:49	09:52 (1) 10:13 (1)	06:41 20:19	04:58 21:49	03:28 23:21	03:18 23:40	04:41 22:20	06:13 20:36	07:37 18:51	08:09 16:08
4	10:06 14:54	08:55 16:24	07:25 17:52	09:53 (1) 10:13 (1)	06:38 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:16 20:32	07:40 18:48	08:12 16:05
5	10:05 14:57	08:52 16:28	07:21 17:55	09:53 (1) 10:11 (1)	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44	08:15 16:02
6	10:04 14:59	08:49 16:31	07:18 17:58	09:55 (1) 10:10 (1)	06:31 20:28	04:49 21:58	03:22 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41	08:18 15:59
7	10:02 15:01	08:46 16:34	07:14 18:01	09:57 (1) 10:06 (1)	06:27 20:31	04:45 22:01	03:20 23:30	03:25 23:33	04:53 22:07	06:24 20:22	07:48 18:38	08:21 15:56
8	10:01 15:04	08:43 16:37	07:11 18:03	10:06 (1) 20:31	06:24 22:01	04:42 22:04	03:18 23:32	03:28 23:31	04:56 22:04	06:27 20:18	07:51 18:34	08:24 15:53
9	09:59 15:06	08:40 16:41	07:08 18:06	20:31 22:01	06:20 22:07	04:39 22:34	03:17 23:29	03:30 23:29	04:59 22:01	06:30 20:15	07:54 18:31	08:28 15:50
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11	09:56 15:11	08:34 16:47	07:01 18:12	20:31 22:14	06:13 22:14	04:32 22:38	03:14 23:25	03:35 23:25	05:05 21:54	06:35 20:08	08:00 18:24	08:34 15:44
12	09:54 15:14	08:31 16:50	06:57 18:15	20:31 22:17	06:10 22:17	04:29 22:39	03:12 23:23	03:37 23:23	05:08 21:51	06:38 20:04	08:03 18:21	08:37 15:41
13	09:52 15:17	08:28 16:53	06:54 18:18	20:31 22:20	06:06 22:20	04:26 23:41	03:11 23:20	03:40 23:20	05:11 21:47	06:41 20:01	08:05 18:17	08:40 15:38
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Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
Total, worst case		128	128							263		

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

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	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker
			(WTG causing flicker last time)

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - uten Hitra 2 kvv Shadow receptor: H - Vesthitterveien 168, Enebolig

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

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3	10:07 14:52	08:58 16:21	07:28 17:49	06:41 20:19	04:58 21:49	03:28 23:21	03:18 23:40	04:41 22:20	06:13 20:36	07:37 18:51	08:09 16:08	09:39 14:50
4	10:06 14:54	08:55 16:24	07:25 17:52	06:38 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:16 20:32	07:40 18:48	08:12 16:05	09:42 14:49
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31	09:07 16:12		06:51 20:10		03:35 23:13		04:32 22:30	06:04 20:46		07:59 16:18		10:10 14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
Total, worst case												

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)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - uten Hitra 2 kvv Shadow receptor: I - Vesthitterveien 162, Fritidsbygg

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	10:09 14:49	09:04 16:15	07:35 17:43	06:48 20:13	05:05 21:43	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:43	07:31 18:58	08:03 16:15	09:34 14:54
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SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - uten Hitra 2 vkv Shadow receptor: J - Eldsfjellveien 3, Fritidsbygg

Assumptions for shadow calculations

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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

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2	10:08 14:50	09:01 16:18		07:31 17:46	06:44 20:16	05:02 21:46	03:30 23:18	03:16 23:42	04:38 22:23	06:10 20:39	07:34 18:55		08:06 16:12	11:10 (1)	09:36 14:52
3	10:07 14:52	08:58 16:21		07:28 17:49	06:41 20:19	04:58 21:49	03:28 23:21	03:18 23:40	04:41 22:20	06:13 20:36	07:37 18:51		08:09 16:08	11:02 (1)	09:39 14:50
4	10:06 14:54	08:55 16:24		07:25 17:52	06:38 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:16 20:32	07:40 18:48		08:12 16:05	11:03 (1)	09:42 14:49
5	10:05 14:56	08:52 16:28		07:21 17:55	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44		08:15 16:02		09:44 14:47
6	10:04 14:59	08:49 16:31		07:18 17:58	06:31 20:28	04:49 21:58	03:22 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41		08:18 15:59		09:46 14:46
7	10:02 15:01	08:46 16:34		07:14 18:00	06:27 20:31	04:45 22:01	03:20 23:30	03:25 23:33	04:53 22:07	06:24 20:22	07:48 18:38		08:21 15:56		09:49 14:44
8	10:01 15:03	08:43 16:37	4	11:31 (1) 11:35 (1)	07:11 18:03	06:24 20:33	04:42 22:04	03:18 23:32	03:28 23:31	04:56 22:04	06:27 20:18	07:51 18:34	08:24 15:53		09:51 14:43
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13	09:52 15:16	08:27 16:53	20	11:23 (1) 11:44 (1)	06:54 18:18	06:06 20:48	04:26 22:20	03:11 23:41	03:40 23:20	05:11 21:47	06:41 20:01	08:05 18:17	08:40 15:38		10:01 14:38
14	09:50 15:19	08:24 16:56	21	11:22 (1) 11:44 (1)	06:50 18:21	06:03 20:51	04:23 22:23	03:10 23:42	03:42 23:18	05:14 21:44	06:44 19:57	08:08 18:14	08:43 15:36		10:02 14:37
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16	09:46 15:25	08:18 17:03	23	11:21 (1) 11:45 (1)	06:44 18:27	05:56 20:57	04:17 22:29	03:08 23:45	03:48 23:13	05:20 21:37	06:49 19:50	08:14 18:07	08:49 15:30		10:05 14:36
17	09:44 15:28	08:15 17:06	24	11:21 (1) 11:44 (1)	06:40 18:30	05:53 21:00	04:14 22:32	03:07 23:46	03:51 23:10	05:23 21:34	06:52 19:47	08:17 18:04	08:53 15:27		10:06 14:36
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Potential sun hours	178	241		363	449	564	613	600	505	392	306		203		145
Total, worst case			297									275	27		

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - uten Hitra 2 vkv Shadow receptor: K - Eldsfjellveien 8, Fritidsbygg

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	10:09 14:49	09:04 16:15	07:35 17:43	06:48 20:13	05:05 21:43	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:42	07:31 18:58	08:02 16:15	11:34 (1) 14:54
2	10:08 14:50	09:01 16:18	07:31 17:46	06:44 20:16	05:02 21:46	03:30 23:18	03:16 23:42	04:38 22:23	06:10 20:39	07:34 18:55	08:06 16:11	11:34 (1) 14:52
3	10:07 14:52	08:58 16:21	07:28 17:49	06:41 20:19	04:58 21:49	03:28 23:21	03:18 23:40	04:41 22:20	06:13 20:36	07:37 18:51	08:09 16:08	11:35 (1) 14:50
4	10:06 14:54	08:55 16:24	07:25 17:52	06:38 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:16 20:32	07:40 18:48	08:12 16:05	11:36 (1) 14:49
5	10:05 14:56	08:52 16:28	07:21 17:55	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44	08:15 16:02	11:37 (1) 14:47
6	10:04 14:59	08:49 16:31	07:18 17:57	06:31 20:28	04:49 21:58	03:23 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41	08:18 15:59	11:39 (1) 14:46
7	10:02 15:01	08:46 16:34	07:14 18:00	06:27 20:30	04:45 22:01	03:20 23:30	03:25 23:33	04:53 22:07	06:24 20:22	07:48 18:38	08:21 15:56	11:43 (1) 14:44
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17	09:44 15:28	08:15 17:06	06:40 18:30	05:53 21:00	04:14 22:32	03:07 23:46	03:50 23:10	05:23 21:34	06:52 19:47	08:17 18:04	08:53 15:27	14:36
18	09:41 15:31	08:11 17:09	06:37 18:33	05:49 21:03	04:11 22:35	03:07 23:46	03:53 23:08	05:26 21:31	06:55 19:43	08:20 18:00	08:56 15:24	14:36
19	09:39 15:34	08:08 17:12	06:33 18:36	05:46 21:06	04:08 22:38	03:07 23:47	03:56 23:05	05:29 21:27	06:58 19:40	08:23 17:57	08:59 15:22	14:36
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21	09:34 15:40	08:01 17:18	06:26 18:41	05:39 21:12	04:02 22:44	03:06 23:48	04:02 22:59	05:35 21:20	07:03 19:33	08:29 17:50	12:43 (1) 12:50 (1)	09:05 15:17
22	09:32 15:43	07:58 17:21	06:23 18:44	05:35 21:15	03:59 22:47	03:06 23:48	04:05 22:57	05:38 21:17	07:06 19:29	08:32 17:47	12:39 (1) 12:52 (1)	09:08 15:14
23	09:29 15:46	07:55 17:24	06:19 18:47	05:32 21:18	03:56 22:50	03:07 23:48	04:08 22:54	05:41 21:13	07:09 19:26	08:35 17:44	12:37 (1) 12:54 (1)	09:11 15:12
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31	09:07 16:12		06:51 20:10	03:35 23:13			04:32 22:30	06:04 20:46		07:59 16:18	11:33 (1) 11:57 (1)	14:45 14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
Total, worst case		330							222		114	

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - uten Hitra 2 kvv Shadow receptor: L - Vesthitterveien 135, Fritidsbygg

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	10:09	09:04	07:35	06:48	05:05	03:33	03:14	04:35	06:07	07:31	08:02	09:34
	14:48	16:15	17:43	20:13	21:42	23:16	23:43	22:26	20:42	18:58	16:15	14:54
2	10:08	09:01	07:31	06:44	05:02	03:30	03:16	04:38	06:10	07:34	08:06	09:36
	14:50	16:18	17:46	20:16	21:46	23:18	23:42	22:23	20:39	18:55	16:11	14:52
3	10:07	08:58	07:28	06:41	04:58	03:28	03:17	04:41	06:13	07:37	08:09	09:39
	14:52	16:21	17:49	20:19	21:49	23:21	23:40	22:20	20:36	18:51	16:08	14:50
4	10:06	08:55	07:25	06:37	04:55	03:26	03:19	04:44	06:15	07:40	08:12	09:42
	14:54	16:24	17:52	20:22	21:52	23:23	23:39	22:17	20:32	18:48	16:05	14:49
5	10:05	08:52	07:21	06:34	04:52	03:24	03:21	04:47	06:18	07:42	08:15	09:44
	14:56	16:28	17:54	20:25	21:55	23:26	23:37	22:14	20:29	18:44	16:02	14:47
6	10:04	08:49	07:18	06:31	04:48	03:22	03:23	04:50	06:21	07:45	08:18	09:46
	14:59	16:31	17:57	20:28	21:58	23:28	23:35	22:10	20:25	18:41	15:59	14:46
7	10:02	08:46	07:14	06:27	04:45	03:20	03:25	04:53	06:24	07:48	08:21	09:49
	15:01	16:34	18:00	20:30	22:01	23:30	23:33	22:07	20:22	18:37	15:56	14:44
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	15:03	16:37	18:03	20:33	22:04	23:32	23:31	22:04	20:18	18:34	15:53	14:43
9	09:59	08:40	07:08	06:20	04:39	03:16	03:30	04:59	06:30	07:54	08:27	09:53
	15:06	16:40	18:06	20:36	22:07	23:34	23:29	22:01	20:15	18:31	15:50	14:42
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	15:11	16:47	18:12	20:42	22:14	23:38	23:25	21:54	20:08	18:24	15:44	14:39
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	15:14	16:50	18:15	20:45	22:17	23:39	23:23	21:51	20:04	18:20	15:41	14:38
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	15:22	16:59	18:24	20:54	22:26	23:43	23:16	21:41	19:54	18:10	15:33	14:37
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17	09:44	08:15	06:40	05:52	04:14	03:07	03:50	05:23	06:52	08:17	08:53	10:06
	15:28	17:06	18:30	21:00	22:32	23:46	23:10	21:34	19:47	18:04	15:27	14:36
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	15:31	17:09	18:33	21:03	22:35	23:46	23:08	21:30	19:43	18:00	15:24	14:36
19	09:39	08:08	06:33	05:46	04:08	03:06	03:56	05:29	06:58	08:23	08:59	10:08
	15:34	17:12	18:35	21:06	22:38	23:47	23:05	21:27	19:40	17:57	15:22	14:36
20	09:37	08:05	06:30	05:42	04:05	03:06	03:59	05:32	07:00	08:26	09:02	10:09
	15:37	17:15	18:38	21:09	22:41	23:48	23:02	21:24	19:36	17:54	15:19	14:36
21	09:34	08:01	06:26	05:39	04:02	03:06	04:02	05:35	07:03	08:29	09:05	10:10
	15:40	17:18	18:41	21:12	22:44	23:48	22:59	21:20	19:33	17:50	15:17	14:36
22	09:32	07:58	06:23	05:35	03:59	03:06	04:05	05:38	07:06	08:32	09:08	10:11
	15:43	17:21	18:44	21:15	22:47	23:48	22:57	21:17	19:29	17:47	15:14	14:37
23	09:29	07:55	06:19	05:32	03:56	03:07	04:08	05:41	07:09	08:35	09:11	10:11
	15:46	17:24	18:47	21:18	22:50	23:48	22:54	21:13	19:26	17:44	15:12	14:37
24	09:26	07:52	06:16	05:29	03:53	03:07	04:11	05:44	07:11	08:38	09:14	10:11
	15:49	17:27	18:50	21:21	22:53	23:48	22:51	21:10	19:22	17:40	15:09	14:38
25	09:24	07:48	06:12	05:25	03:50	03:08	04:14	05:47	07:14	07:41	09:17	10:12
	15:52	17:30	18:53	21:24	22:56	23:48	22:48	21:07	19:19	16:37	15:07	14:39
26	09:21	07:45	06:09	05:22	03:48	03:08	04:17	05:50	07:17	07:44	09:20	10:12
	15:56	17:33	18:56	21:27	22:59	23:47	22:45	21:03	19:15	16:34	15:05	14:40
27	09:18	07:42	06:05	05:18	03:45	03:09	04:20	05:53	07:20	07:47	09:23	10:12
	15:59	17:36	18:59	21:30	23:02	23:47	22:42	21:00	19:12	16:31	15:02	14:41
28	09:16	07:38	06:02	05:15	03:42	03:10	04:23	05:55	07:23	07:50	09:26	10:11
	16:02	17:40	19:01	21:33	23:05	23:46	22:39	20:56	19:09	16:27	15:00	14:42
29	09:13		06:58	05:12	03:40	03:11	04:26	05:58	07:25	07:53	09:28	10:11
	16:05		20:04	21:36	23:08	23:45	22:36	20:53	19:05	16:24	14:58	14:43
30	09:10		06:55	05:08	03:37	03:13	04:29	06:01	07:28	07:56	09:31	10:11
	16:08		20:07	21:39	23:10	23:44	22:33	20:49	19:02	16:21	14:56	14:45
31	09:07		06:51		03:35		04:32	06:04		07:59		10:10
	16:11		20:10		23:13		22:30	20:46		16:18		14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
Total, worst case												

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - uten Hitra 2 kvv Shadow receptor: M - Vesthitterveien 131, Enebolig
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	10:09 14:48	09:04 16:15	07:35 17:43	06:48 20:13	05:05 21:42	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:42	07:31 18:58	08:02 16:15	09:34 14:54
2	10:08 14:50	09:01 16:18	07:31 17:46	06:44 20:16	05:02 21:46	03:30 23:18	03:16 23:42	04:38 22:23	06:10 20:39	07:34 18:55	08:06 16:11	09:36 14:52
3	10:07 14:52	08:58 16:21	07:28 17:49	06:41 20:19	04:58 21:49	03:28 23:21	03:17 23:40	04:41 22:20	06:13 20:36	07:37 18:51	08:09 16:08	09:39 14:50
4	10:06 14:54	08:55 16:24	07:25 17:52	06:37 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:15 20:32	07:40 18:48	08:12 16:05	09:42 14:49
5	10:05 14:56	08:52 16:28	07:21 17:54	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44	08:15 16:02	09:44 14:47
6	10:04 14:59	08:49 16:31	07:18 17:57	06:31 20:28	04:48 21:58	03:22 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41	08:18 15:59	09:46 14:45
7	10:02 15:01	08:46 16:34	07:14 18:00	06:27 20:30	04:45 22:01	03:20 23:30	03:25 23:33	04:53 22:07	06:24 20:22	07:48 18:37	08:21 15:56	09:49 14:44
8	10:01 15:03	08:43 16:37	07:11 18:03	06:24 20:33	04:42 22:04	03:18 23:32	03:28 23:31	04:56 22:04	06:27 20:18	07:51 18:34	08:24 15:53	09:51 14:43
9	09:59 15:06	08:40 16:40	07:08 18:06	06:20 20:36	04:39 22:07	03:16 23:34	03:30 23:29	04:59 22:01	06:30 20:15	07:54 18:31	08:27 15:50	09:53 14:42
10	09:58 15:08	08:37 16:44	07:04 18:09	06:17 20:39	04:36 22:10	03:15 23:36	03:32 23:27	05:02 21:57	06:32 20:11	07:57 18:27	08:31 15:47	09:55 14:40
11	09:56 15:11	08:34 16:47	07:01 18:12	06:13 20:42	04:32 22:14	03:13 23:38	03:35 23:25	05:05 21:54	06:35 20:08	08:00 18:24	08:34 15:44	09:57 14:39
12	09:54 15:14	08:31 16:50	06:57 18:15	06:10 20:45	04:29 22:17	03:12 23:39	03:37 23:23	05:08 21:51	06:38 20:04	08:02 18:20	08:37 15:41	09:59 14:38
13	09:52 15:16	08:27 16:53	06:54 18:18	06:06 20:48	04:26 22:20	03:11 23:41	03:40 23:20	05:11 21:47	06:41 20:01	08:05 18:17	08:40 15:38	10:01 14:38
14	09:50 15:19	08:24 16:56	06:50 18:21	06:03 20:51	04:23 22:23	03:10 23:42	03:42 23:18	05:14 21:44	06:44 19:57	08:08 18:14	08:43 15:35	10:02 14:37
15	09:48 15:22	08:21 16:59	06:47 18:24	05:59 20:54	04:20 22:26	03:09 23:43	03:45 23:16	05:17 21:41	06:46 19:54	08:11 18:10	08:46 15:33	10:04 14:37
16	09:46 15:25	08:18 17:03	06:43 18:27	05:56 20:57	04:17 22:29	03:08 23:45	03:48 23:13	05:20 21:37	06:49 19:50	08:14 18:07	08:49 15:30	10:05 14:36
17	09:44 15:28	08:15 17:06	06:40 18:30	05:52 21:00	04:14 22:32	03:07 23:46	03:50 23:10	05:23 21:34	06:52 19:47	08:17 18:04	08:53 15:27	10:06 14:36
18	09:41 15:31	08:11 17:09	06:37 18:33	05:49 21:03	04:11 22:35	03:07 23:46	03:53 23:08	05:26 21:30	06:55 19:43	08:20 18:00	08:56 15:24	10:07 14:36
19	09:39 15:34	08:08 17:12	06:33 18:35	05:46 21:06	04:08 22:38	03:06 23:47	03:56 23:05	05:29 21:27	06:58 19:40	08:23 17:57	08:59 15:22	10:08 14:36
20	09:36 15:37	08:05 17:15	06:30 18:38	05:42 21:09	04:05 22:41	03:06 23:48	03:59 23:02	05:32 21:24	07:00 19:36	08:26 17:54	09:02 15:19	10:09 14:36
21	09:34 15:40	08:01 17:18	06:26 18:41	05:39 21:12	04:02 22:44	03:06 23:48	04:02 22:59	05:35 21:20	07:03 19:33	08:29 17:50	09:05 15:17	10:10 14:36
22	09:32 15:43	07:58 17:21	06:23 18:44	05:35 21:15	03:59 22:47	03:06 23:48	04:05 22:57	05:38 21:17	07:06 19:29	08:32 17:47	09:08 15:14	10:11 14:37
23	09:29 15:46	07:55 17:24	06:19 18:47	05:32 21:18	03:56 22:50	03:07 23:48	04:08 22:54	05:41 21:13	07:09 19:26	08:35 17:44	09:11 15:12	10:11 14:37
24	09:26 15:49	07:52 17:27	06:16 18:50	05:29 21:21	03:53 22:53	03:07 23:48	04:11 22:51	05:44 21:10	07:11 19:22	08:38 17:40	09:14 15:09	10:11 14:38
25	09:24 15:52	07:48 17:30	06:12 18:53	05:25 21:24	03:50 22:56	03:08 23:48	04:14 22:48	05:47 21:07	07:14 19:19	07:41 16:37	09:17 15:07	10:12 14:39
26	09:21 15:56	07:45 17:33	06:09 18:56	05:22 21:27	03:48 22:59	03:08 23:47	04:17 22:45	05:50 21:03	07:17 19:15	07:44 16:34	09:20 15:05	10:12 14:40
27	09:18 15:59	07:42 17:36	06:05 18:59	05:18 21:30	03:45 23:02	03:09 23:47	04:20 22:42	05:53 21:00	07:20 19:12	07:47 16:31	09:23 15:02	10:12 14:41
28	09:16 16:02	07:38 17:40	06:02 19:01	05:15 21:33	03:42 23:05	03:10 23:46	04:23 22:39	05:55 20:56	07:23 19:09	07:50 16:27	09:26 15:00	10:11 14:42
29	09:13 16:05		06:58 20:04	05:12 21:36	03:40 23:08	03:11 23:45	04:26 22:36	05:58 20:53	07:25 19:05	07:53 16:24	09:28 14:58	10:11 14:43
30	09:10 16:08		06:55 20:07	05:08 21:39	03:37 23:10	03:13 23:44	04:29 22:33	06:01 20:49	07:28 19:02	07:56 16:21	09:31 14:56	10:11 14:45
31	09:07 16:11		06:51 20:10		03:35 23:13		04:32 22:30	06:04 20:46		07:59 16:18		10:10 14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
Total, worst case												

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)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - uten Hitra 2 vkv Shadow receptor: N - Vesthitterveien 154, Enebolig

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	10:09 14:48	09:04 16:15	12:53 (1) 13:01 (1)	07:35 17:43	06:48 20:13	05:05 21:42	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:42	07:31 18:58	08:02 16:15
2	10:08 14:50	09:01 16:18	12:51 (1) 13:04 (1)	07:31 17:46	06:44 20:16	05:02 21:46	03:30 23:18	03:16 23:42	04:38 22:23	06:10 20:39	07:34 18:55	08:06 16:11
3	10:07 14:52	08:58 16:21	12:49 (1) 13:05 (1)	07:28 17:49	06:41 20:19	04:58 21:49	03:28 23:21	03:17 23:40	04:41 22:20	06:13 20:36	07:37 18:51	08:09 16:08
4	10:06 14:54	08:55 16:24	12:48 (1) 13:06 (1)	07:25 17:52	06:37 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:16 20:32	07:40 18:48	08:12 16:05
5	10:05 14:56	08:52 16:28	12:48 (1) 13:08 (1)	07:21 17:54	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44	08:15 16:02
6	10:04 14:59	08:49 16:31	12:47 (1) 13:08 (1)	07:18 17:57	06:31 20:28	04:48 21:58	03:22 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41	08:18 15:59
7	10:02 15:01	08:46 16:34	12:46 (1) 13:08 (1)	07:14 18:00	06:27 20:30	04:45 22:01	03:20 23:30	03:25 23:33	04:53 22:07	06:24 20:22	07:48 18:37	08:21 15:56
8	10:01 15:03	08:43 16:37	12:47 (1) 13:09 (1)	07:11 18:03	06:24 20:33	04:42 22:04	03:18 23:32	03:28 23:31	04:56 22:04	06:27 20:18	07:51 18:34	08:24 15:53
9	09:59 15:06	08:40 16:40	12:46 (1) 13:09 (1)	07:08 18:06	06:20 20:36	04:39 22:07	03:16 23:34	03:30 23:29	04:59 22:01	06:30 20:15	07:54 18:31	08:27 15:50
10	09:58 15:08	08:37 16:44	12:47 (1) 13:10 (1)	07:04 18:09	06:17 20:39	04:36 22:10	03:15 23:36	03:32 23:27	05:02 21:57	06:32 20:11	07:57 18:27	08:31 15:47
11	09:56 15:11	08:34 16:47	12:47 (1) 13:09 (1)	07:01 18:12	06:13 20:42	04:32 22:14	03:13 23:38	03:35 23:25	05:05 21:54	06:35 20:08	08:00 18:24	08:34 15:44
12	09:54 15:14	08:31 16:50	12:47 (1) 13:09 (1)	06:57 18:15	06:10 20:45	04:29 22:17	03:12 23:39	03:37 23:23	05:08 21:51	06:38 20:04	08:02 18:20	08:37 15:41
13	09:52 15:16	08:27 16:53	12:48 (1) 13:09 (1)	06:54 18:18	06:06 20:48	04:26 22:20	03:11 23:41	03:40 23:20	05:11 21:47	06:41 20:01	08:05 18:17	08:40 15:38
14	09:50 15:19	08:24 16:56	12:48 (1) 13:07 (1)	06:50 18:21	06:03 20:51	04:23 22:23	03:10 23:42	03:42 23:18	05:14 21:44	06:44 19:57	08:08 18:14	08:43 15:35
15	09:48 15:22	08:21 16:59	12:50 (1) 13:07 (1)	06:47 18:24	05:59 20:54	04:20 22:26	03:09 23:43	03:45 23:15	05:17 21:41	06:46 19:54	08:11 18:10	08:46 15:33
16	09:46 15:25	08:18 17:03	12:51 (1) 13:05 (1)	06:43 18:27	05:56 20:57	04:17 22:29	03:08 23:45	03:48 23:13	05:20 21:37	06:49 19:50	08:14 18:07	08:49 15:30
17	09:44 15:28	08:15 17:06	12:54 (1) 13:02 (1)	06:40 18:30	05:52 21:00	04:14 22:32	03:07 23:46	03:50 23:10	05:23 21:34	06:52 19:47	08:17 18:04	08:53 15:27
18	09:41 15:31	08:11 17:09	12:54 (1) 13:03 (1)	06:37 18:33	05:49 21:03	04:11 22:35	03:07 23:46	03:53 23:08	05:26 21:30	06:55 19:43	08:20 18:00	08:56 15:24
19	09:39 15:34	08:08 17:12	12:54 (1) 13:03 (1)	06:33 18:35	05:46 21:06	04:08 22:38	03:06 23:47	03:56 23:05	05:29 21:27	06:58 19:40	08:23 17:57	08:59 15:22
20	09:36 15:37	08:05 17:15	12:54 (1) 13:03 (1)	06:30 18:38	05:42 21:09	04:05 22:41	03:06 23:47	03:59 23:02	05:32 21:24	07:00 19:36	08:26 17:54	09:02 15:19
21	09:34 15:40	08:01 17:18	12:54 (1) 13:03 (1)	06:26 18:41	05:39 21:12	04:02 22:44	03:06 23:48	04:02 22:59	05:35 21:20	07:03 19:33	08:29 17:50	09:05 15:17
22	09:32 15:43	07:58 17:21	12:54 (1) 13:03 (1)	06:23 18:44	05:35 21:15	03:59 22:47	03:06 23:48	04:05 22:57	05:38 21:17	07:06 19:29	08:32 17:47	09:08 15:14
23	09:29 15:46	07:55 17:24	12:54 (1) 13:03 (1)	06:19 18:47	05:32 21:18	03:56 22:50	03:07 23:48	04:08 22:54	05:41 21:13	07:09 19:26	08:35 17:44	09:11 15:12
24	09:26 15:49	07:52 17:27	12:54 (1) 13:03 (1)	06:16 18:50	05:29 21:21	03:53 22:53	03:07 23:48	04:11 22:51	05:44 21:10	07:11 19:22	08:38 17:40	09:14 15:09
25	09:24 15:52	07:48 17:30	12:54 (1) 13:03 (1)	06:12 18:53	05:25 21:24	03:50 22:56	03:08 23:48	04:14 22:48	05:47 21:07	07:14 19:19	07:41 16:37	10 12:23 (1) 12:33 (1)
26	09:21 15:56	07:45 17:33	12:54 (1) 13:03 (1)	06:09 18:56	05:22 21:27	03:48 22:59	03:08 23:47	04:17 22:45	05:50 21:03	07:17 19:15	07:44 16:34	12:21 (1) 12:35 (1)
27	09:18 15:59	07:42 17:36	12:54 (1) 13:03 (1)	06:05 18:59	05:18 21:30	03:45 23:02	03:09 23:47	04:20 22:42	05:53 21:00	07:20 19:12	07:47 16:31	14 12:19 (1) 12:36 (1)
28	09:16 16:02	07:38 17:40	12:54 (1) 13:03 (1)	06:02 19:01	05:15 21:33	03:42 23:05	03:10 23:46	04:23 22:39	05:55 20:56	07:23 19:09	07:50 16:27	17 12:17 (1) 12:37 (1)
29	09:13 16:05	07:35 17:40	12:54 (1) 13:03 (1)	06:01 19:04	05:14 21:36	03:40 23:08	03:11 23:45	04:26 22:36	05:58 20:53	07:25 19:05	07:53 16:24	20 12:17 (1) 12:38 (1)
30	09:10 16:08	07:32 17:40	12:54 (1) 13:03 (1)	06:00 19:07	05:13 21:39	03:37 23:10	03:13 23:44	04:29 22:33	06:01 20:49	07:28 19:02	07:56 16:21	21 12:17 (1) 12:39 (1)
31	09:07 16:11	07:30 17:40	12:54 (1) 13:03 (1)	06:00 19:07	05:13 21:39	03:37 23:10	03:13 23:44	04:29 22:33	06:01 20:49	07:28 19:02	07:56 16:21	22 12:17 (1) 12:39 (1)
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
Total, worst case		309								127	184	

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - uten Hitra 2 vkv **Shadow receptor:** O - Vesthitterveien 142, Fritidsbygg

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	10:09 14:48	09:04 16:15	07:35 17:43	06:48 20:13	05:05 21:42	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:42	07:31 18:58		
2	10:08 14:50	09:01 16:18	07:31 17:46	06:44 20:16	05:02 21:46	03:30 23:18	03:16 23:41	04:38 22:23	06:10 20:39	07:34 18:55	19	13:03 (1)
3	10:07 14:52	08:58 16:21	07:28 17:49	06:41 20:19	04:58 21:49	03:28 23:21	03:17 23:40	04:41 22:20	06:13 20:35	07:37 18:51	16	13:01 (1)
4	10:06 14:54	08:55 16:24	07:25 17:52	06:37 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:15 20:32	07:40 18:48	13	13:00 (1)
5	10:05 14:56	08:52 16:28	07:21 17:54	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44	6	12:57 (1)
6	10:04 14:59	08:49 16:31	07:18 17:57	06:31 20:28	04:48 21:58	03:22 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41		
7	10:02 15:01	08:46 16:34	13:20 (1) 07:14	06:27 20:30	04:45 22:01	03:20 23:30	03:25 23:33	04:53 22:07	06:24 20:22	07:48 18:37		
8	10:01 15:03	08:43 16:37	13:17 (1) 07:11	06:24 20:33	04:42 22:04	03:18 23:32	03:28 23:31	04:56 22:04	06:27 20:18	07:51 18:34		
9	09:59 15:06	08:40 16:40	13:15 (1) 07:08	06:20 20:36	04:39 22:07	03:16 23:34	03:30 23:29	04:59 22:01	06:30 20:15	07:54 18:31		
10	09:58 15:08	08:37 16:44	13:15 (1) 07:04	06:17 20:39	04:36 22:10	03:15 23:36	03:32 23:27	05:02 21:57	06:32 20:11	07:57 18:27		
11	09:56 15:11	08:34 16:47	13:14 (1) 07:01	06:13 20:42	04:32 22:14	03:13 23:38	03:35 23:25	05:05 21:54	06:35 20:08	08:00 18:24		
12	09:54 15:14	08:31 16:50	13:13 (1) 06:57	06:10 20:45	04:29 22:17	03:12 23:39	03:37 23:23	05:08 21:51	06:38 20:04	08:02 18:20		
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14	09:50 15:19	08:24 16:56	13:12 (1) 06:50	06:03 20:51	04:23 22:23	03:10 23:42	03:42 23:18	05:14 21:44	06:44 19:57	08:08 18:14		
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17	09:43 15:28	08:15 17:06	13:12 (1) 06:40	05:52 21:00	04:14 22:32	03:07 23:45	03:50 23:10	05:23 21:34	06:52 19:47	08:17 18:04		
18	09:41 15:31	08:11 17:09	13:13 (1) 06:37	05:49 21:03	04:11 22:35	03:07 23:46	03:53 23:08	05:26 21:30	06:55 19:43	08:20 18:00		
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21	09:34 15:40	08:01 17:18	13:15 (1) 06:26	05:39 21:12	04:02 22:44	03:06 23:48	04:02 22:59	05:35 21:20	07:03 19:33	08:29 17:50	14	14:01 (1)
22	09:32 15:43	07:58 17:21	13:17 (1) 06:23	05:35 21:15	03:59 22:47	03:06 23:48	04:05 22:57	05:38 21:17	07:06 19:29	08:32 17:47	18	14:04 (1)
23	09:29 15:46	07:55 17:24	13:21 (1) 06:19	05:32 21:18	03:56 22:50	03:07 23:48	04:08 22:54	05:41 21:13	07:09 19:26	08:35 17:44	20	14:05 (1)
24	09:26 15:49	07:52 17:27	13:27 (1) 06:16	05:29 21:21	03:53 22:53	03:07 23:48	04:11 22:51	05:44 21:10	07:11 19:22	08:38 17:40	22	14:05 (1)
25	09:24 15:52	07:48 17:30	06:12 18:53	05:25 21:24	03:50 22:56	03:08 23:48	04:14 22:48	05:47 21:07	07:14 19:19	07:41 16:37	23	14:06 (1)
26	09:21 15:56	07:45 17:33	06:09 18:56	05:22 21:27	03:48 22:59	03:08 23:47	04:17 22:45	05:50 21:03	07:17 19:15	07:44 16:34	24	14:06 (1)
27	09:18 15:59	07:41 17:36	06:05 18:59	05:18 21:30	03:45 23:02	03:09 23:47	04:20 22:42	05:53 21:00	07:20 19:12	07:47 16:31	24	14:06 (1)
28	09:16 16:02	07:38 17:39	06:02 19:01	05:15 21:33	03:42 23:05	03:10 23:46	04:23 22:39	05:55 20:56	07:23 19:09	07:50 16:27	24	14:05 (1)
29	09:13 16:05		06:58 20:04	05:12 21:36	03:40 23:08	03:11 23:45	04:26 22:36	05:58 20:53	07:25 19:05	07:53 16:24	23	14:05 (1)
30	09:10 16:08		06:55 20:07	05:08 21:39	03:37 23:10	03:13 23:44	04:29 22:33	06:01 20:49	07:28 19:02	07:56 16:21	22	14:05 (1)
31	09:07 16:11		06:51 20:10	03:35 23:13			04:32 22:30	06:04 20:46		07:59 16:18	21	14:04 (1)
Potential sun hours	178	241	363	449	564	613	600	505	392	306	268	203
Total, worst case		316									54	145

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - uten Hitra 2 vkv **Shadow receptor:** P - Vesthitterveien 132, Enebolig
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	10:09	09:04	07:35	06:48	05:05	03:33	03:14	04:35	06:07	07:31	08:02	09:34
	14:48	16:15	17:43	20:13	21:42	23:16	23:43	22:26	20:42	18:58	16:15	14:54
2	10:08	09:01	07:31	06:44	05:02	03:30	03:16	04:38	06:10	07:34	08:06	09:36
	14:50	16:18	17:46	20:16	21:46	23:18	23:42	22:23	20:39	18:55	16:11	14:52
3	10:07	08:58	07:28	06:41	04:58	03:28	03:17	04:41	06:13	07:37	08:09	09:39
	14:52	16:21	17:49	20:19	21:49	23:21	23:40	22:20	20:35	18:51	16:08	14:50
4	10:06	08:55	07:25	06:37	04:55	03:26	03:19	04:44	06:15	07:40	08:12	09:42
	14:54	16:24	17:52	20:22	21:52	23:23	23:39	22:17	20:32	18:48	16:05	14:49
5	10:05	08:52	07:21	06:34	04:52	03:24	03:21	04:47	06:18	07:42	08:15	09:44
	14:56	16:28	17:54	20:25	21:55	23:26	23:37	22:14	20:29	18:44	16:02	14:47
6	10:04	08:49	07:18	06:31	04:48	03:22	03:23	04:50	06:21	07:45	08:18	09:46
	14:59	16:31	17:57	20:28	21:58	23:28	23:35	22:10	20:25	18:41	15:59	14:45
7	10:02	08:46	07:14	06:27	04:45	03:20	03:25	04:53	06:24	07:48	08:21	09:49
	15:01	16:34	18:00	20:30	22:01	23:30	23:33	22:07	20:22	18:37	15:56	14:44
8	10:01	08:43	07:11	06:24	04:42	03:18	03:27	04:56	06:27	07:51	08:24	09:51
	15:03	16:37	18:03	20:33	22:04	23:32	23:31	22:04	20:18	18:34	15:53	14:43
9	09:59	08:40	07:08	06:20	04:39	03:16	03:30	04:59	06:30	07:54	08:27	09:53
	15:06	16:40	18:06	20:36	22:07	23:34	23:29	22:01	20:15	18:31	15:50	14:41
10	09:58	08:37	07:04	06:17	04:36	03:15	03:32	05:02	06:32	07:57	08:31	09:55
	15:08	16:44	18:09	20:39	22:10	23:36	23:27	21:57	20:11	18:27	15:47	14:40
11	09:56	08:34	07:01	06:13	04:32	03:13	03:35	05:05	06:35	08:00	08:34	09:57
	15:11	16:47	18:12	20:42	22:14	23:38	23:25	21:54	20:08	18:24	15:44	14:39
12	09:54	08:31	06:57	06:10	04:29	03:12	03:37	05:08	06:38	08:02	08:37	09:59
	15:14	16:50	18:15	20:45	22:17	23:39	23:23	21:51	20:04	18:20	15:41	14:38
13	09:52	08:27	06:54	06:06	04:26	03:11	03:40	05:11	06:41	08:05	08:40	10:01
	15:16	16:53	18:18	20:48	22:20	23:41	23:20	21:47	20:01	18:17	15:38	14:38
14	09:50	08:24	06:50	06:03	04:23	03:10	03:42	05:14	06:44	08:08	08:43	10:02
	15:19	16:56	18:21	20:51	22:23	23:42	23:18	21:44	19:57	18:14	15:35	14:37
15	09:48	08:21	06:47	05:59	04:20	03:09	03:45	05:17	06:46	08:11	08:46	10:04
	15:22	16:59	18:24	20:54	22:26	23:43	23:16	21:41	19:54	18:10	15:33	14:37
16	09:46	08:18	06:43	05:56	04:17	03:08	03:48	05:20	06:49	08:14	08:49	10:05
	15:25	17:03	18:27	20:57	22:29	23:45	23:13	21:37	19:50	18:07	15:30	14:36
17	09:44	08:15	06:40	05:52	04:14	03:07	03:50	05:23	06:52	08:17	08:53	10:06
	15:28	17:06	18:30	21:00	22:32	23:46	23:10	21:34	19:47	18:04	15:27	14:36
18	09:41	08:11	06:37	05:49	04:11	03:07	03:53	05:26	06:55	08:20	08:56	10:07
	15:31	17:09	18:33	21:03	22:35	23:46	23:08	21:30	19:43	18:00	15:24	14:36
19	09:39	08:08	06:33	05:46	04:08	03:06	03:56	05:29	06:57	08:23	08:59	10:08
	15:34	17:12	18:35	21:06	22:38	23:47	23:05	21:27	19:40	17:57	15:22	14:36
20	09:36	08:05	06:30	05:42	04:05	03:06	03:59	05:32	07:00	08:26	09:02	10:09
	15:37	17:15	18:38	21:09	22:41	23:48	23:02	21:24	19:36	17:54	15:19	14:36
21	09:34	08:01	06:26	05:39	04:02	03:06	04:02	05:35	07:03	08:29	09:05	10:10
	15:40	17:18	18:41	21:12	22:44	23:48	22:59	21:20	19:33	17:50	15:17	14:36
22	09:32	07:58	06:23	05:35	03:59	03:06	04:05	05:38	07:06	08:32	09:08	10:11
	15:43	17:21	18:44	21:15	22:47	23:48	22:57	21:17	19:29	17:47	15:14	14:37
23	09:29	07:55	06:19	05:32	03:56	03:07	04:08	05:41	07:09	08:35	09:11	10:11
	15:46	17:24	18:47	21:18	22:50	23:48	22:54	21:13	19:26	17:44	15:12	14:37
24	09:26	07:52	06:16	05:29	03:53	03:07	04:11	05:44	07:11	08:38	09:14	10:11
	15:49	17:27	18:50	21:21	22:53	23:48	22:51	21:10	19:22	17:40	15:09	14:38
25	09:24	07:48	06:12	05:25	03:50	03:08	04:14	05:47	07:14	07:41	09:17	10:12
	15:52	17:30	18:53	21:24	22:56	23:48	22:48	21:07	19:19	16:37	15:07	14:39
26	09:21	07:45	06:09	05:22	03:48	03:08	04:17	05:50	07:17	07:44	09:20	10:12
	15:56	17:33	18:56	21:27	22:59	23:47	22:45	21:03	19:15	16:34	15:05	14:40
27	09:18	07:41	06:05	05:18	03:45	03:09	04:20	05:53	07:20	07:47	09:23	10:12
	15:59	17:36	18:59	21:30	23:02	23:47	22:42	21:00	19:12	16:31	15:02	14:41
28	09:16	07:38	06:02	05:15	03:42	03:10	04:23	05:55	07:23	07:50	09:26	10:11
	16:02	17:39	19:01	21:33	23:05	23:46	22:39	20:56	19:09	16:27	15:00	14:42
29	09:13		06:58	05:12	03:40	03:11	04:26	05:58	07:25	07:53	09:28	10:11
	16:05		20:04	21:36	23:08	23:45	22:36	20:53	19:05	16:24	14:58	14:43
30	09:10		06:55	05:08	03:37	03:13	04:29	06:01	07:28	07:56	09:31	10:11
	16:08		20:07	21:39	23:10	23:44	22:33	20:49	19:02	16:21	14:56	14:45
31	09:07		06:51		03:35		04:32	06:04		07:59		10:10
	16:11		20:10		23:13		22:30	20:46		16:18		14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
Total, worst case												

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - uten Hitra 2 vkv Shadow receptor: Q - Vesthitterveien 136, Fritidsbygg

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	10:09 14:48	09:04 16:15	07:35 17:43	06:48 20:13	05:05 21:42	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:42	07:31 18:58	08:02 16:15	12:42 (1) 13:05 (1)	09:34 14:54
2	10:08 14:50	09:01 16:18	07:31 17:46	06:44 20:16	05:02 21:46	03:30 23:18	03:16 23:42	04:38 22:23	06:10 20:39	07:34 18:55	08:06 16:11	12:42 (1) 13:04 (1)	09:36 14:52
3	10:07 14:52	08:58 16:21	07:28 17:49	06:41 20:19	04:58 21:49	03:28 23:21	03:17 23:40	04:41 22:20	06:13 20:35	07:37 18:51	08:09 16:08	12:43 (1) 13:04 (1)	09:39 14:50
4	10:06 14:54	08:55 16:24	07:25 17:51	06:37 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:15 20:32	07:40 18:48	08:12 16:05	12:43 (1) 13:04 (1)	09:42 14:49
5	10:05 14:56	08:52 16:28	07:21 17:54	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44	08:15 16:02	12:43 (1) 13:02 (1)	09:44 14:47
6	10:04 14:59	08:49 16:31	07:18 17:57	06:31 20:28	04:48 21:58	03:22 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41	08:18 15:59	12:45 (1) 13:02 (1)	09:46 14:46
7	10:02 15:01	08:46 16:34	07:14 18:00	06:27 20:30	04:45 22:01	03:20 23:30	03:25 23:33	04:53 22:07	06:24 20:22	07:48 18:37	08:21 15:56	12:46 (1) 13:01 (1)	09:49 14:44
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9	09:59 15:06	08:40 16:40	07:08 18:06	06:20 20:36	04:39 22:07	03:16 23:34	03:30 23:29	04:59 22:01	06:30 20:15	07:54 18:31	08:27 15:50	12:52 (1) 12:56 (1)	09:53 14:42
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12	09:54 15:14	08:31 16:50	06:57 18:15	06:10 20:45	04:29 22:17	03:12 23:39	03:37 23:23	05:08 21:51	06:38 20:04	08:02 18:20	08:37 15:41	12:56 (1)	09:59 14:38
13	09:52 15:16	08:27 16:53	06:54 18:18	06:06 20:48	04:26 22:20	03:11 23:41	03:40 23:20	05:11 21:47	06:41 20:01	08:05 18:17	08:40 15:38	12:56 (1)	10:01 14:38
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15	09:48 15:22	08:21 16:59	06:47 18:24	05:59 20:54	04:20 22:26	03:09 23:43	03:45 23:15	05:17 21:41	06:46 19:54	08:11 18:10	08:46 15:33	12:56 (1)	10:04 14:37
16	09:46 15:25	08:18 17:03	06:43 18:27	05:56 20:57	04:17 22:29	03:08 23:45	03:48 23:13	05:20 21:37	06:49 19:50	08:14 18:07	08:49 15:30	12:56 (1)	10:05 14:36
17	09:44 15:28	08:15 17:06	06:40 18:30	05:52 21:00	04:14 22:32	03:07 23:46	03:50 23:10	05:23 21:34	06:52 19:47	08:17 18:04	08:53 15:27	12:56 (1)	10:06 14:36
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19	09:39 15:34	08:08 17:12	06:33 18:35	05:46 21:06	04:08 22:38	03:06 23:47	03:56 23:05	05:29 21:27	06:57 19:40	08:23 17:57	08:59 15:22	12:56 (1)	10:08 14:36
20	09:36 15:37	08:05 17:15	06:30 18:38	05:42 21:09	04:05 22:41	03:06 23:47	03:59 23:02	05:32 21:24	07:00 19:36	08:26 17:54	09:02 15:19	12:56 (1)	10:09 14:36
21	09:34 15:40	08:01 17:18	06:26 18:41	05:39 21:12	04:02 22:44	03:06 23:48	04:02 22:59	05:35 21:20	07:03 19:33	08:29 17:50	09:05 15:17	12:56 (1)	10:10 14:36
22	09:32 15:43	07:58 17:21	06:23 18:44	05:35 21:15	03:59 22:47	03:06 23:48	04:05 22:57	05:38 21:17	07:06 19:29	08:32 17:47	09:08 15:14	12:56 (1)	10:11 14:37
23	09:29 15:46	07:55 17:24	06:19 18:47	05:32 21:18	03:56 22:50	03:07 23:48	04:08 22:54	05:41 21:13	07:09 19:26	08:35 17:44	09:11 15:12	12:56 (1)	10:11 14:37
24	09:26 15:49	07:52 17:27	06:16 18:50	05:29 21:21	03:53 22:53	03:07 23:48	04:11 22:51	05:44 21:10	07:11 19:22	08:38 17:40	13:51 (1) 13:58 (1)	12:56 (1)	10:11 14:38
25	09:24 15:52	07:48 17:30	06:12 18:53	05:25 21:24	03:50 22:56	03:08 23:48	04:14 21:07	05:47 19:19	07:14 16:37	07:41 16:37	12:47 (1) 13:00 (1)	12:56 (1)	10:12 14:39
26	09:21 15:56	07:45 17:33	06:09 18:56	05:22 21:27	03:48 22:59	03:08 23:47	04:17 22:45	05:50 21:03	07:17 19:15	07:44 16:34	12:46 (1) 13:02 (1)	12:56 (1)	10:12 14:40
27	09:18 15:59	07:41 17:36	06:05 18:59	05:18 21:30	03:45 23:02	03:09 23:47	04:20 22:42	05:53 21:00	07:20 19:12	07:47 16:31	12:44 (1) 13:03 (1)	12:56 (1)	10:12 14:41
28	09:16 16:02	07:38 17:39	06:02 19:01	05:15 21:33	03:42 23:05	03:10 23:46	04:23 22:39	05:55 20:56	07:23 19:09	07:50 16:27	12:43 (1) 13:03 (1)	12:56 (1)	10:11 14:42
29	09:13 16:05		06:58 20:04	05:12 21:36	03:40 23:08	03:11 23:45	04:26 22:36	05:58 20:53	07:25 19:05	07:53 16:24	12:43 (1) 13:04 (1)	12:56 (1)	10:11 14:43
30	09:10 16:08		06:55 20:07	05:08 21:39	03:37 23:10	03:13 23:44	04:29 22:33	06:01 20:49	07:28 19:02	07:56 16:21	12:43 (1) 13:05 (1)	12:56 (1)	10:11 14:45
31	09:07 16:11		06:51 20:10	03:35 23:13			04:32 22:30	06:04 20:46		07:59 16:18	12:42 (1) 13:04 (1)	12:56 (1)	10:10 14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145	
Total, worst case		288								140	153		

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

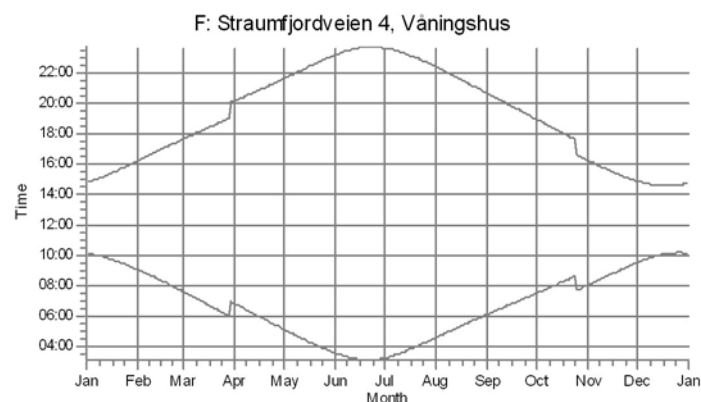
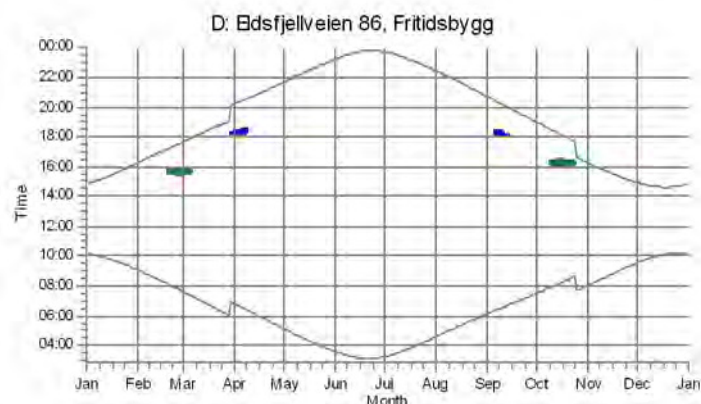
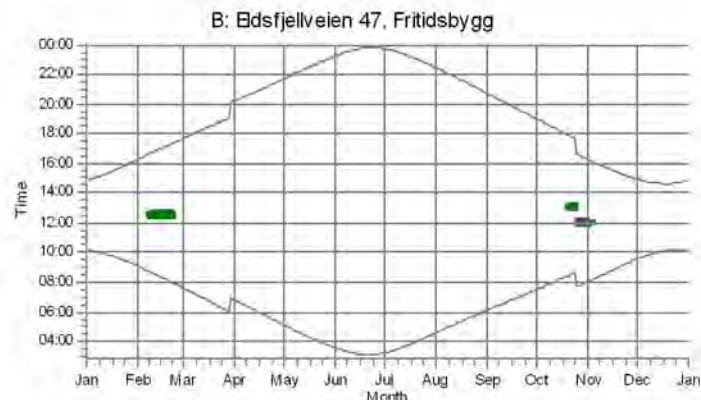
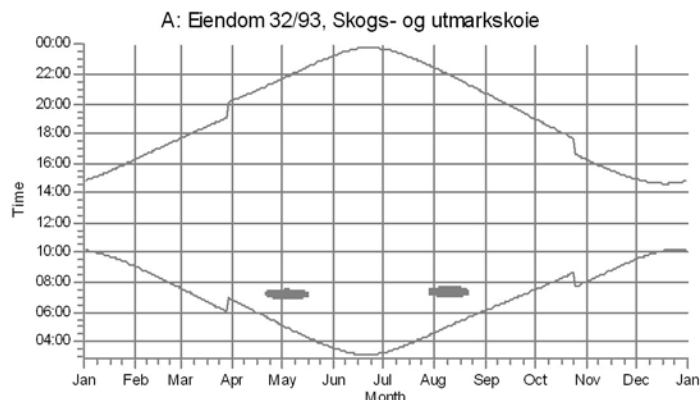
Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker
			(WTG causing flicker last time)



Vedlegg 1.2

SHADOW - Calendar, graphical

Calculation: Nye Hitra 1 - worst case - uten Hitra 2 vkv



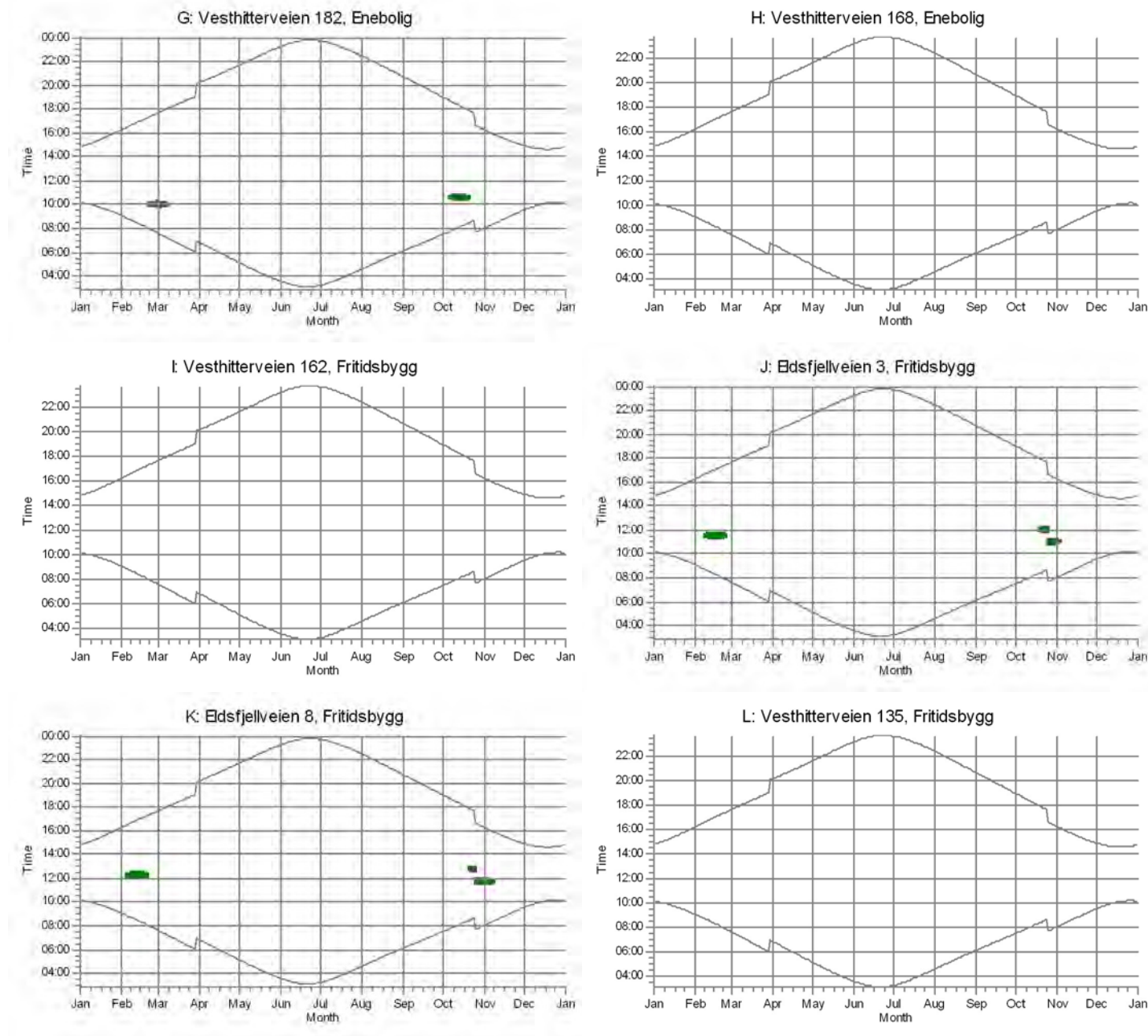
WTGs

1: NORDEX N175/6.X 6800 175.0 !-! hub: 132,5 m (TOT: 220,0 m) (1)
 3: NORDEX N175/6.X 6800 175.0 !-! hub: 132,5 m (TOT: 220,0 m) (3)

4: NORDEX N175/6.X 6800 175.0 !-! hub: 132,5 m (TOT: 220,0 m) (4)
 6: NORDEX N175/6.X 6800 175.0 !-! hub: 132,5 m (TOT: 220,0 m) (6)

SHADOW - Calendar, graphical

Calculation: Nye Hitra 1 - worst case - uten Hitra 2 vkv



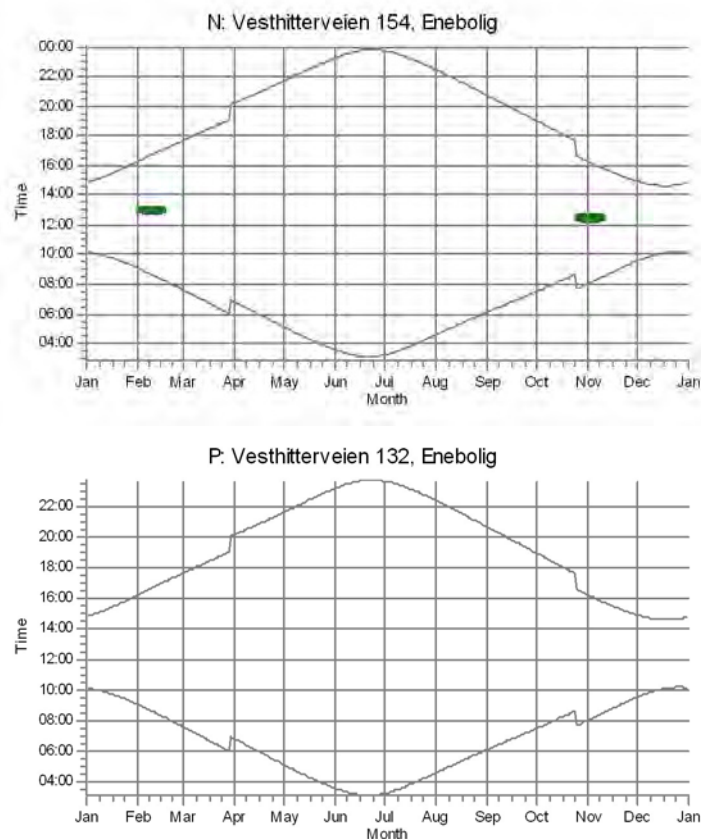
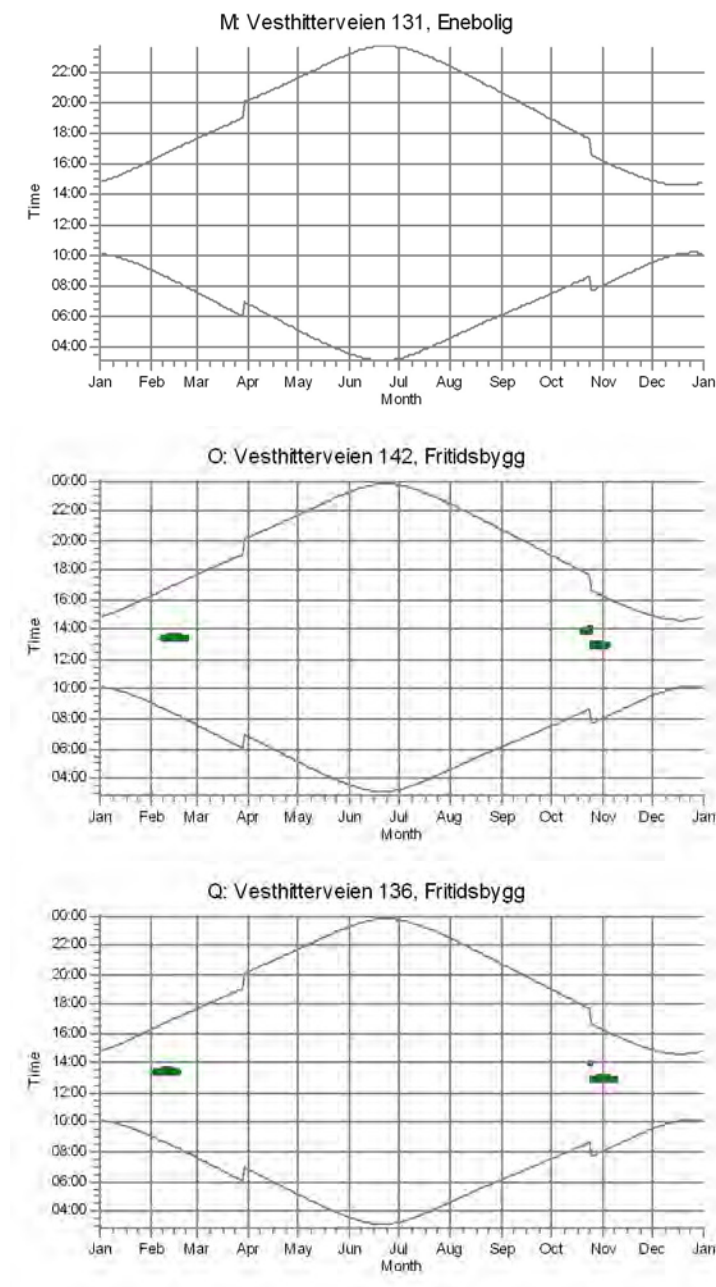
WTGs



1: NORDEX N175/6.X 6800 175.0 !-! hub: 132,5 m (TOT: 220,0 m) (1)

SHADOW - Calendar, graphical

Calculation: Nye Hitra 1 - worst case - uten Hitra 2 vkv



WTGs

1: NORDEX N175/6.X 6800 175.0 !-! hub: 132,5 m (TOT: 220,0 m) (1)



Vedlegg 2.1

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - uten Hitra 2 vkv Shadow receptor: F - Straumfjordveien 4, Våningshus

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
259 364 581 497 609 497 357 770 1 435 798 476 357 7 000

	January	February	March	April	May	June	July	August	September	October	November	December
1	10:09	09:04	07:35	06:48	05:05	03:33	03:14	04:35	06:07	07:31	08:03	09:34
	14:49	16:15	17:43	20:13	21:43	23:16	23:43	22:26	20:43	18:58	16:15	14:54
2	10:08	09:01	07:31	06:45	05:02	03:30	03:16	04:38	06:10	07:34	08:06	09:37
	14:50	16:18	17:46	20:16	21:46	23:18	23:42	22:23	20:39	18:55	16:12	14:52
3	10:07	08:58	07:28	06:41	04:58	03:28	03:18	04:41	06:13	07:37	08:09	09:39
	14:52	16:21	17:49	20:19	21:49	23:21	23:40	22:20	20:36	18:51	16:08	14:50
4	10:06	08:55	07:25	06:38	04:55	03:26	03:19	04:44	06:16	07:40	08:12	09:42
	14:54	16:24	17:52	20:22	21:52	23:23	23:39	22:17	20:32	18:48	16:05	14:49
5	10:05	08:52	07:21	06:34	04:52	03:24	03:21	04:47	06:18	07:42	08:15	09:44
	14:57	16:28	17:55	20:25	21:55	23:26	23:37	22:14	20:29	18:44	16:02	14:47
6	10:04	08:49	07:18	06:31	04:49	03:22	03:23	04:50	06:21	07:45	08:18	09:46
	14:59	16:31	17:58	20:28	21:58	23:28	23:35	22:10	20:25	18:41	15:59	14:46
7	10:02	08:46	07:14	06:27	04:45	03:20	03:25	04:53	06:24	07:48	08:21	09:49
	15:01	16:34	18:01	20:31	22:01	23:30	23:33	22:07	20:22	18:38	15:56	14:44
8	10:01	08:43	07:11	06:24	04:42	03:18	03:28	04:56	06:27	07:51	08:24	09:51
	15:03	16:37	18:03	20:33	22:04	23:32	23:31	22:04	20:18	18:34	15:53	14:43
9	09:59	08:40	07:08	06:20	04:39	03:17	03:30	04:59	06:30	07:54	08:28	09:53
	15:06	16:41	18:06	20:36	22:07	23:34	23:29	22:01	20:15	18:31	15:50	14:42
10	09:58	08:37	07:04	06:17	04:36	03:15	03:32	05:02	06:33	07:57	08:31	09:55
	15:08	16:44	18:09	20:39	22:11	23:36	23:27	21:57	20:11	18:27	15:47	14:41
11	09:56	08:34	07:01	06:13	04:32	03:13	03:35	05:05	06:35	08:00	08:34	09:57
	15:11	16:47	18:12	20:42	22:14	23:38	23:25	21:54	20:08	18:24	15:44	14:39
12	09:54	08:31	06:57	06:10	04:29	03:12	03:37	05:08	06:38	08:03	08:37	09:59
	15:14	16:50	18:15	20:45	22:17	23:39	23:23	21:51	20:04	18:21	15:41	14:39
13	09:52	08:28	06:54	06:06	04:26	03:11	03:40	05:11	06:41	08:05	08:40	10:01
	15:17	16:53	18:18	20:48	22:20	23:41	23:20	21:47	20:01	18:17	15:38	14:38
14	09:50	08:24	06:50	06:03	04:23	03:10	03:42	05:14	06:44	08:08	08:43	10:02
	15:19	16:56	18:21	20:51	22:23	23:42	23:18	21:44	19:57	18:14	15:36	14:37
15	09:48	08:21	06:47	05:59	04:20	03:09	03:45	05:17	06:46	08:11	08:46	10:04
	15:22	17:00	18:24	20:54	22:26	23:44	23:16	21:41	19:54	18:10	15:33	14:37
16	09:46	08:18	06:44	05:56	04:17	03:08	03:48	05:20	06:49	08:14	08:50	10:05
	15:25	17:03	18:27	20:57	22:29	23:45	23:13	21:37	19:50	18:07	15:30	14:36
17	09:44	08:15	06:40	05:53	04:14	03:07	03:51	05:23	06:52	08:17	08:53	10:06
	15:28	17:06	18:30	21:00	22:32	23:46	23:10	21:34	19:47	18:04	15:27	14:36
18	09:41	08:11	06:37	05:49	04:11	03:07	03:53	05:26	06:55	08:20	08:56	10:08
	15:31	17:09	18:33	21:03	22:35	23:46	23:08	21:31	19:43	18:00	15:25	14:36
19	09:39	08:08	06:33	05:46	04:08	03:07	03:56	05:29	06:58	08:23	08:59	10:09
	15:34	17:12	18:36	21:06	22:38	23:47	23:05	21:27	19:40	17:57	15:22	14:36
20	09:37	08:05	06:30	05:42	04:05	03:06	03:59	05:32	07:00	08:26	09:02	10:09
	15:37	17:15	18:38	21:09	22:41	23:48	23:02	21:24	19:36	17:54	15:19	14:36
21	09:34	08:02	06:26	05:39	04:02	03:06	04:02	05:35	07:03	08:29	09:05	10:10
	15:40	17:18	18:41	21:12	22:44	23:48	23:00	21:20	19:33	17:50	15:17	14:36
22	09:32	07:58	06:23	05:35	03:59	03:06	04:05	05:38	07:06	08:32	09:08	10:11
	15:43	17:21	18:44	21:15	22:48	23:48	22:57	21:17	19:29	17:47	15:14	14:37
23	09:29	07:55	06:19	05:32	03:56	03:07	04:08	05:41	07:09	08:35	09:11	10:11
	15:46	17:24	18:47	21:18	22:50	23:48	22:54	21:14	19:26	17:44	15:12	14:37
24	09:26	07:52	06:16	05:29	03:53	03:07	04:11	05:44	07:12	08:38	09:14	10:12
	15:49	17:27	18:50	21:21	22:53	23:48	22:51	21:10	19:22	17:40	15:09	14:38
25	09:24	07:48	06:12	05:25	03:51	03:08	04:14	05:47	07:14	07:41	09:17	10:12
	15:52	17:31	18:53	21:24	22:56	23:48	22:48	21:07	19:19	16:37	15:07	14:39
26	09:21	07:45	06:09	05:22	03:48	03:08	04:17	05:50	07:17	07:44	09:20	10:12
	15:56	17:34	18:56	21:27	22:59	23:47	22:45	21:03	19:16	16:34	15:05	14:40
27	09:18	07:42	06:05	05:18	03:45	03:09	04:20	05:53	07:20	07:47	09:23	10:12
	15:59	17:37	18:59	21:30	23:02	23:47	22:42	21:00	19:12	16:31	15:02	14:41
28	09:16	07:38	06:02	05:15	03:43	03:10	04:23	05:56	07:23	07:50	09:26	10:12
	16:02	17:40	19:02	21:33	23:05	23:46	22:39	20:56	19:09	16:27	15:00	14:42
29	09:13		06:58	05:12	03:40	03:12	04:26	05:58	07:26	07:53	09:28	10:11
	16:05		20:04	21:36	23:08	23:45	22:36	20:53	19:05	16:24	14:58	14:43
30	09:10		06:55	05:08	03:37	03:13	04:29	06:01	07:28	07:56	09:31	10:11
	16:08		20:07	21:39	23:10	23:44	22:33	20:49	19:02	16:21	14:56	14:45
31	09:07		06:51		03:35		04:32	06:04		07:59		10:10
	16:12		20:10		23:13		22:30	20:46		16:18		14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - uten Hitra 2 kvk Assumptions for shadow calculations

Shadow receptor: G - Vesthitterveien 182, Enebolig 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 259 364 581 497 609 497 357 770 1 435 798 476 357 7 000

	January	February	March	April	May	June	July	August	September	October	November	December
1	10:09 14:49	09:04 16:15	07:35 17:43	09:51 (1) 10:14 (1)	06:48 20:13	05:05 21:43	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:43	07:31 18:58	08:03 16:15
2	10:08 14:50	09:01 16:18	07:31 17:46	09:52 (1) 10:14 (1)	06:45 20:16	05:02 21:46	03:30 23:18	03:16 23:42	04:38 22:23	06:10 20:39	07:34 18:55	08:06 16:12
3	10:07 14:52	08:58 16:21	07:28 17:49	09:52 (1) 10:13 (1)	06:41 20:19	04:58 21:49	03:28 23:21	03:18 23:40	04:41 22:20	06:13 20:36	07:37 18:51	08:09 16:08
4	10:06 14:54	08:55 16:24	07:25 17:52	09:53 (1) 10:13 (1)	06:38 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:16 20:32	07:40 18:48	08:12 16:05
5	10:05 14:57	08:52 16:28	07:21 17:55	09:53 (1) 10:11 (1)	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44	08:15 16:02
6	10:04 14:59	08:49 16:31	07:18 17:58	09:55 (1) 10:10 (1)	06:31 20:28	04:49 21:58	03:22 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41	08:18 15:59
7	10:02 15:01	08:46 16:34	07:14 18:01	09:57 (1) 10:06 (1)	06:27 20:31	04:45 22:01	03:20 23:30	03:25 23:33	04:53 22:07	06:24 20:22	07:48 18:38	08:21 15:56
8	10:01 15:04	08:43 16:37	07:11 18:03	09:57 (1) 10:06 (1)	06:24 20:33	04:42 22:04	03:18 23:32	03:28 23:31	04:56 22:04	06:27 20:18	07:51 18:34	08:24 15:53
9	09:59 15:06	08:40 16:41	07:08 18:06	09:59 (1) 10:06 (1)	06:20 20:36	04:39 22:07	03:17 23:34	03:30 23:29	04:59 22:01	06:30 20:15	07:54 18:31	08:28 15:50
10	09:58 15:09	08:37 16:44	07:04 18:09	09:58 (1) 10:06 (1)	06:17 20:39	04:36 22:11	03:15 23:36	03:32 23:27	05:02 21:57	06:33 20:11	07:57 18:27	08:31 15:47
11	09:56 15:11	08:34 16:47	07:01 18:12	09:56 (1) 10:04 (1)	06:13 20:42	04:32 22:14	03:14 23:38	03:35 23:25	05:05 21:54	06:35 20:08	08:00 18:24	08:34 15:44
12	09:54 15:14	08:31 16:50	06:57 18:15	09:54 (1) 10:02 (1)	06:10 20:45	04:29 22:17	03:12 23:39	03:37 23:23	05:08 21:51	06:38 20:04	08:03 18:21	08:37 15:41
13	09:52 15:17	08:28 16:53	06:54 18:18	09:52 (1) 10:00 (1)	06:06 20:48	04:26 22:20	03:11 23:41	03:40 23:20	05:11 21:47	06:41 20:01	08:05 18:17	08:40 15:38
14	09:50 15:19	08:24 16:56	06:50 18:21	09:50 (1) 10:00 (1)	06:03 20:51	04:23 22:23	03:10 23:42	03:42 23:18	05:14 21:44	06:44 19:57	08:08 18:14	08:43 15:36
15	09:48 15:22	08:21 17:00	06:47 18:24	09:48 (1) 10:00 (1)	05:59 20:54	04:20 22:26	03:09 23:44	03:45 23:16	05:17 21:41	06:46 19:54	08:11 18:10	08:46 15:33
16	09:46 15:25	08:18 17:03	06:44 18:27	09:46 (1) 10:00 (1)	05:56 20:57	04:17 22:29	03:08 23:45	03:48 23:13	05:20 21:37	06:49 19:50	08:14 18:07	08:49 15:30
17	09:44 15:28	08:15 17:06	06:40 18:30	09:44 (1) 10:00 (1)	05:53 21:00	04:14 22:32	03:08 23:46	03:51 23:10	05:23 21:34	06:52 19:47	08:17 18:04	08:53 15:27
18	09:41 15:31	08:11 17:09	06:37 18:33	09:41 (1) 10:00 (1)	05:49 21:03	04:11 22:35	03:07 23:46	03:53 23:08	05:26 21:31	06:55 19:43	08:20 18:00	08:56 15:25
19	09:39 15:34	08:08 17:12	06:33 18:36	09:39 (1) 10:00 (1)	05:46 21:06	04:08 22:38	03:07 23:47	03:56 23:05	05:29 21:27	06:58 19:40	08:23 17:57	08:59 15:22
20	09:37 15:37	08:05 17:15	06:30 18:38	09:37 (1) 10:00 (1)	05:42 21:09	04:05 22:41	03:06 23:48	03:59 23:02	05:32 21:24	07:00 19:36	08:26 17:54	09:02 15:19
21	09:34 15:40	08:02 17:18	06:26 18:41	09:34 (1) 10:00 (1)	05:39 21:12	04:02 22:44	03:06 23:48	04:02 22:59	05:35 21:20	07:03 19:33	08:29 17:50	09:05 15:17
22	09:32 15:43	07:58 17:21	06:23 18:44	09:32 (1) 10:00 (1)	05:35 21:15	03:59 22:47	03:07 23:48	04:05 22:57	05:38 21:17	07:06 19:29	08:32 17:47	09:08 15:14
23	09:29 15:46	07:55 17:24	06:19 18:47	09:29 (1) 10:00 (1)	05:32 21:18	03:56 22:50	03:07 23:48	04:08 22:54	05:41 21:14	07:09 19:26	08:35 17:44	09:11 15:12
24	09:26 15:49	07:52 17:27	06:16 18:50	09:26 (1) 10:00 (1)	05:29 21:21	03:53 22:53	03:07 23:48	04:11 22:51	05:44 21:10	07:12 19:22	08:38 17:40	09:14 15:09
25	09:24 15:52	07:48 17:31	06:12 18:53	09:24 (1) 10:00 (1)	05:25 21:24	03:51 22:56	03:08 23:48	04:14 22:48	05:47 21:07	07:14 19:19	07:41 16:37	09:17 15:07
26	09:21 15:56	07:45 17:34	06:09 18:56	09:21 (1) 10:00 (1)	05:22 21:27	03:48 22:59	03:09 23:47	04:17 22:45	05:50 21:03	07:17 19:16	07:44 16:34	09:20 15:05
27	09:18 15:59	07:42 17:37	06:05 18:59	09:18 (1) 10:00 (1)	05:19 21:30	03:45 23:02	03:09 23:47	04:20 22:42	05:53 21:00	07:20 19:12	07:47 16:31	09:23 15:02
28	09:16 16:02	07:38 17:40	06:02 19:02	09:16 (1) 10:00 (1)	05:15 21:33	03:43 23:05	03:10 23:46	04:23 22:39	05:56 20:56	07:23 19:09	07:50 16:27	09:26 15:00
29	09:13 16:05	07:35 17:37	05:58 19:04	09:13 (1) 10:00 (1)	05:12 21:36	03:40 23:08	03:12 23:45	04:26 22:36	05:58 20:53	07:26 19:05	07:53 16:24	09:28 14:58
30	09:10 16:08	07:32 17:32	05:55 19:01	09:10 (1) 10:00 (1)	05:08 21:39	03:38 23:10	03:13 23:44	04:29 22:33	06:01 20:49	07:28 19:02	07:56 16:21	09:31 14:56
31	09:07 16:12	07:29 17:29	05:51 19:01	09:07 (1) 10:00 (1)	05:05 21:33	03:35 23:13	03:11 23:40	04:32 22:30	06:04 20:46	07:59 16:18	07:59 16:18	10:10 14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
Total, worst case		128	128							263		
Sun reduction		0,50	0,50							0,50		
Oper. time red.		0,80	0,80							0,80		
Wind dir. red.		0,53	0,53							0,53		
Total reduction		0,21	0,21							0,21		
Total, real		27	27							55		

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - uten Hitra 2 vkv Shadow receptor: I - Vesthitterveien 162, Fritidsbygg

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
259 364 581 497 609 497 357 770 1 435 798 476 357 7 000

	January	February	March	April	May	June	July	August	September	October	November	December
1	10:09 14:49	09:04 16:15	07:35 17:43	06:48 20:13	05:05 21:43	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:43	07:31 18:58	08:03 16:15	09:34 14:54
2	10:08 14:50	09:01 16:18	07:31 17:46	06:44 20:16	05:02 21:46	03:30 23:18	03:16 23:42	04:38 22:23	06:10 20:39	07:34 18:55	08:06 16:12	09:36 14:52
3	10:07 14:52	08:58 16:21	07:28 17:49	06:41 20:19	04:58 21:49	03:28 23:21	03:18 23:40	04:41 22:20	06:13 20:36	07:37 18:51	08:09 16:08	09:39 14:50
4	10:06 14:54	08:55 16:24	07:25 17:52	06:38 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:16 20:32	07:40 18:48	08:12 16:05	09:42 14:49
5	10:05 14:56	08:52 16:28	07:21 17:55	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44	08:15 16:02	09:44 14:47
6	10:04 14:59	08:49 16:31	07:18 17:58	06:31 20:28	04:49 21:58	03:22 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41	08:18 15:59	09:46 14:46
7	10:02 15:01	08:46 16:34	07:14 18:00	06:27 20:31	04:45 22:01	03:20 23:30	03:25 23:33	04:53 22:07	06:24 20:22	07:48 18:38	08:21 15:56	09:49 14:44
8	10:01 15:03	08:43 16:37	07:11 18:03	06:24 20:33	04:42 22:04	03:18 23:32	03:28 23:31	04:56 22:04	06:27 20:18	07:51 18:34	08:24 15:53	09:51 14:43
9	09:59 15:06	08:40 16:40	07:08 18:06	06:20 20:36	04:39 22:07	03:16 23:34	03:30 23:29	04:59 22:01	06:30 20:15	07:54 18:31	08:28 15:50	09:53 14:42
10	09:58 15:08	08:37 16:44	07:04 18:09	06:17 20:39	04:36 22:11	03:15 23:36	03:32 23:27	05:02 21:57	06:32 20:11	07:57 18:27	08:31 15:47	09:55 14:40
11	09:56 15:11	08:34 16:47	07:01 18:12	06:13 20:42	04:32 22:14	03:13 23:38	03:35 23:25	05:05 21:54	06:35 20:08	08:00 18:24	08:34 15:44	09:57 14:39
12	09:54 15:14	08:31 16:50	06:57 18:15	06:10 20:45	04:29 22:17	03:12 23:39	03:37 23:23	05:08 21:51	06:38 20:04	08:03 18:21	08:37 15:41	09:59 14:39
13	09:52 15:16	08:27 16:53	06:54 18:18	06:06 20:48	04:26 22:20	03:11 23:41	03:40 23:20	05:11 21:47	06:41 20:01	08:05 18:17	08:40 15:38	10:01 14:38
14	09:50 15:19	08:24 16:56	06:50 18:21	06:03 20:51	04:23 22:23	03:10 23:42	03:42 23:18	05:14 21:44	06:44 19:57	08:08 18:14	08:43 15:36	10:02 14:37
15	09:48 15:22	08:21 17:00	06:47 18:24	05:59 20:54	04:20 22:26	03:09 23:44	03:45 23:16	05:17 21:41	06:46 19:54	08:11 18:10	08:46 15:33	10:04 14:37
16	09:46 15:25	08:18 17:03	06:44 18:27	05:56 20:57	04:17 22:29	03:08 23:45	03:48 23:13	05:20 21:37	06:49 19:50	08:14 18:07	08:49 15:30	10:05 14:36
17	09:44 15:28	08:15 17:06	06:40 18:30	05:53 21:00	04:14 22:32	03:07 23:46	03:50 23:10	05:23 21:34	06:52 19:47	08:17 18:04	08:53 15:27	10:06 14:36
18	09:41 15:31	08:11 17:09	06:37 18:33	05:49 21:03	04:11 22:35	03:07 23:46	03:53 23:08	05:26 21:31	06:55 19:43	08:20 18:00	08:56 15:25	10:07 14:36
19	09:39 15:34	08:08 17:12	06:33 18:36	05:46 21:06	04:08 22:38	03:07 23:47	03:56 23:05	05:29 21:27	06:58 19:40	08:23 17:57	08:59 15:22	10:08 14:36
20	09:37 15:37	08:05 17:15	06:30 18:38	05:42 21:09	04:05 22:41	03:06 23:48	03:59 23:02	05:32 21:24	07:00 19:36	08:26 17:54	09:02 15:19	10:09 14:36
21	09:34 15:40	08:02 17:18	06:26 18:41	05:39 21:12	04:02 22:44	03:06 23:48	04:02 22:59	05:35 21:20	07:03 19:33	08:29 17:50	09:05 15:17	10:10 14:36
22	09:32 15:43	07:58 17:21	06:23 18:44	05:35 21:15	03:59 22:47	03:06 23:48	04:05 22:57	05:38 21:17	07:06 19:29	08:32 17:47	09:08 15:14	10:11 14:37
23	09:29 15:46	07:55 17:24	06:19 18:47	05:32 21:18	03:56 22:50	03:07 23:48	04:08 22:54	05:41 21:14	07:09 19:26	08:35 17:44	09:11 15:12	10:11 14:37
24	09:26 15:49	07:52 17:27	06:16 18:50	05:29 21:21	03:53 22:53	03:07 23:48	04:11 22:51	05:44 21:10	07:12 19:22	08:38 17:40	09:14 15:09	10:12 14:38
25	09:24 15:52	07:48 17:30	06:12 18:53	05:25 21:24	03:51 22:56	03:08 23:48	04:14 22:48	05:47 21:07	07:14 19:19	07:41 16:37	09:17 15:07	10:12 14:39
26	09:21 15:56	07:45 17:34	06:09 18:56	05:22 21:27	03:48 22:59	03:08 23:47	04:17 22:45	05:50 21:03	07:17 19:16	07:44 16:34	09:20 15:05	10:12 14:40
27	09:18 15:59	07:42 17:37	06:05 18:59	05:18 21:30	03:45 23:02	03:09 23:47	04:20 22:42	05:53 21:00	07:20 19:12	07:47 16:31	09:23 15:02	10:12 14:41
28	09:16 16:02	07:38 17:40	06:02 19:02	05:15 21:33	03:43 23:05	03:10 23:46	04:23 22:39	05:56 20:56	07:23 19:09	07:50 16:27	09:26 15:00	10:12 14:42
29	09:13 16:05		06:58 20:04	05:12 21:36	03:40 23:08	03:12 23:45	04:26 22:36	05:58 20:53	07:25 19:05	07:53 16:24	09:28 14:58	10:11 14:43
30	09:10 16:08		06:55 20:07	05:08 21:39	03:37 23:10	03:13 23:44	04:29 22:33	06:01 20:49	07:28 19:02	07:56 16:21	09:31 14:56	10:11 14:45
31	09:07 16:12		06:51 20:10		03:35 23:13		04:32 22:30	06:04 20:46		07:59 16:18		10:10 14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - uten Hitra 2 vkv **Shadow receptor:** L - Vesthitterveien 135, Fritidsbygg
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
259 364 581 497 609 497 357 770 1 435 798 476 357 7 000

	January	February	March	April	May	June	July	August	September	October	November	December
1	10:09	09:04	07:35	06:48	05:05	03:33	03:14	04:35	06:07	07:31	08:02	09:34
	14:48	16:15	17:43	20:13	21:42	23:16	23:43	22:26	20:42	18:58	16:15	14:54
2	10:08	09:01	07:31	06:44	05:02	03:30	03:16	04:38	06:10	07:34	08:06	09:36
	14:50	16:18	17:46	20:16	21:46	23:18	23:42	22:23	20:39	18:55	16:11	14:52
3	10:07	08:58	07:28	06:41	04:58	03:28	03:17	04:41	06:13	07:37	08:09	09:39
	14:52	16:21	17:49	20:19	21:49	23:21	23:40	22:20	20:36	18:51	16:08	14:50
4	10:06	08:55	07:25	06:37	04:55	03:26	03:19	04:44	06:15	07:40	08:12	09:42
	14:54	16:24	17:52	20:22	21:52	23:23	23:39	22:17	20:32	18:48	16:05	14:49
5	10:05	08:52	07:21	06:34	04:52	03:24	03:21	04:47	06:18	07:42	08:15	09:44
	14:56	16:28	17:54	20:25	21:55	23:26	23:37	22:14	20:29	18:44	16:02	14:47
6	10:04	08:49	07:18	06:31	04:48	03:22	03:23	04:50	06:21	07:45	08:18	09:46
	14:59	16:31	17:57	20:28	21:58	23:28	23:35	22:10	20:25	18:41	15:59	14:46
7	10:02	08:46	07:14	06:27	04:45	03:20	03:25	04:53	06:24	07:48	08:21	09:49
	15:01	16:34	18:00	20:30	22:01	23:30	23:33	22:07	20:22	18:37	15:56	14:44
8	10:01	08:43	07:11	06:24	04:42	03:18	03:28	04:56	06:27	07:51	08:24	09:51
	15:03	16:37	18:03	20:33	22:04	23:32	23:31	22:04	20:18	18:34	15:53	14:43
9	09:59	08:40	07:08	06:20	04:39	03:16	03:30	04:59	06:30	07:54	08:27	09:53
	15:06	16:40	18:06	20:36	22:07	23:34	23:29	22:01	20:15	18:31	15:50	14:42
10	09:58	08:37	07:04	06:17	04:36	03:15	03:32	05:02	06:32	07:57	08:31	09:55
	15:08	16:44	18:09	20:39	22:10	23:36	23:27	21:57	20:11	18:27	15:47	14:40
11	09:56	08:34	07:01	06:13	04:32	03:13	03:35	05:05	06:35	08:00	08:34	09:57
	15:11	16:47	18:12	20:42	22:14	23:38	23:25	21:54	20:08	18:24	15:44	14:39
12	09:54	08:31	06:57	06:10	04:29	03:12	03:37	05:08	06:38	08:02	08:37	09:59
	15:14	16:50	18:15	20:45	22:17	23:39	23:23	21:51	20:04	18:20	15:41	14:38
13	09:52	08:27	06:54	06:06	04:26	03:11	03:40	05:11	06:41	08:05	08:40	10:01
	15:16	16:53	18:18	20:48	22:20	23:41	23:20	21:47	20:01	18:17	15:38	14:38
14	09:50	08:24	06:50	06:03	04:23	03:10	03:42	05:14	06:44	08:08	08:43	10:02
	15:19	16:56	18:21	20:51	22:23	23:42	23:18	21:44	19:57	18:14	15:35	14:37
15	09:48	08:21	06:47	05:59	04:20	03:09	03:45	05:17	06:46	08:11	08:46	10:04
	15:22	16:59	18:24	20:54	22:26	23:43	23:16	21:41	19:54	18:10	15:33	14:37
16	09:46	08:18	06:43	05:56	04:17	03:08	03:48	05:20	06:49	08:14	08:49	10:05
	15:25	17:03	18:27	20:57	22:29	23:45	23:13	21:37	19:50	18:07	15:30	14:36
17	09:44	08:15	06:40	05:52	04:14	03:07	03:50	05:23	06:52	08:17	08:53	10:06
	15:28	17:06	18:30	21:00	22:32	23:46	23:10	21:34	19:47	18:04	15:27	14:36
18	09:41	08:11	06:37	05:49	04:11	03:07	03:53	05:26	06:55	08:20	08:56	10:07
	15:31	17:09	18:33	21:03	22:35	23:46	23:08	21:30	19:43	18:00	15:24	14:36
19	09:39	08:08	06:33	05:46	04:08	03:06	03:56	05:29	06:58	08:23	08:59	10:08
	15:34	17:12	18:35	21:06	22:38	23:47	23:05	21:27	19:40	17:57	15:22	14:36
20	09:37	08:05	06:30	05:42	04:05	03:06	03:59	05:32	07:00	08:26	09:02	10:09
	15:37	17:15	18:38	21:09	22:41	23:48	23:02	21:24	19:36	17:54	15:19	14:36
21	09:34	08:01	06:26	05:39	04:02	03:06	04:02	05:35	07:03	08:29	09:05	10:10
	15:40	17:18	18:41	21:12	22:44	23:48	22:59	21:20	19:33	17:50	15:17	14:36
22	09:32	07:58	06:23	05:35	03:59	03:06	04:05	05:38	07:06	08:32	09:08	10:11
	15:43	17:21	18:44	21:15	22:47	23:48	22:57	21:17	19:29	17:47	15:14	14:37
23	09:29	07:55	06:19	05:32	03:56	03:07	04:08	05:41	07:09	08:35	09:11	10:11
	15:46	17:24	18:47	21:18	22:50	23:48	22:54	21:13	19:26	17:44	15:12	14:37
24	09:26	07:52	06:16	05:29	03:53	03:07	04:11	05:44	07:11	08:38	09:14	10:11
	15:49	17:27	18:50	21:21	22:53	23:48	22:51	21:10	19:22	17:40	15:09	14:38
25	09:24	07:48	06:12	05:25	03:50	03:08	04:14	05:47	07:14	07:41	09:17	10:12
	15:52	17:30	18:53	21:24	22:56	23:48	22:48	21:07	19:19	16:37	15:07	14:39
26	09:21	07:45	06:09	05:22	03:48	03:08	04:17	05:50	07:17	07:44	09:20	10:12
	15:56	17:33	18:56	21:27	22:59	23:47	22:45	21:03	19:15	16:34	15:05	14:40
27	09:18	07:42	06:05	05:18	03:45	03:09	04:20	05:53	07:20	07:47	09:23	10:12
	15:59	17:36	18:59	21:30	23:02	23:47	22:42	21:00	19:12	16:31	15:02	14:41
28	09:16	07:38	06:02	05:15	03:42	03:10	04:23	05:55	07:23	07:50	09:26	10:11
	16:02	17:40	19:01	21:33	23:05	23:46	22:39	20:56	19:09	16:27	15:00	14:42
29	09:13		06:58	05:12	03:40	03:11	04:26	05:58	07:25	07:53	09:28	10:11
	16:05		20:04	21:36	23:08	23:45	22:36	20:53	19:05	16:24	14:58	14:43
30	09:10		06:55	05:08	03:37	03:13	04:29	06:01	07:28	07:56	09:31	10:11
	16:08		20:07	21:39	23:10	23:44	22:33	20:49	19:02	16:21	14:56	14:45
31	09:07		06:51		03:35		04:32	06:04		07:59		10:10
	16:11		20:10		23:13		22:30	20:46		16:18		14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - uten Hitra 2 vkv Shadow receptor: O - Vesthitterveien 142, Fritidsbygg

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
259 364 581 497 609 497 357 770 1 435 798 476 357 7 000

	January	February	March	April	May	June	July	August	September	October	November	December	
1	10:09 14:48	09:04 16:15	07:35 17:43	06:48 20:13	05:05 21:42	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:42	07:31 18:58	08:02 16:15	12:44 (1) 13:03 (1)	09:34 14:54
2	10:08 14:50	09:01 16:18	07:31 17:46	06:44 20:16	05:02 21:46	03:30 23:18	03:16 23:41	04:38 22:23	06:10 20:39	07:34 18:55	08:06 16:11	12:45 (1) 13:01 (1)	09:36 14:52
3	10:07 14:52	08:58 16:21	07:28 17:49	06:41 20:19	04:58 21:49	03:28 23:21	03:17 23:40	04:41 22:20	06:13 20:35	07:37 18:51	08:09 16:08	12:47 (1) 13:00 (1)	09:39 14:50
4	10:06 14:54	08:55 16:24	07:25 17:52	06:37 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:15 20:32	07:40 18:48	08:12 16:05	12:51 (1) 12:57 (1)	09:42 14:49
5	10:05 14:56	08:52 16:28	07:21 17:54	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44	08:15 16:02		09:44 14:47
6	10:04 14:59	08:49 16:31	07:18 17:57	06:31 20:28	04:48 21:58	03:22 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41	08:18 15:59		09:46 14:46
7	10:02 15:01	08:46 16:34	7 13:20 (1) 13:27 (1)	07:14 18:00	06:27 22:01	04:45 23:30	03:20 23:33	04:53 22:07	06:24 20:22	07:48 18:37	08:21 15:56		09:49 14:44
8	10:01 15:03	08:43 16:37	13:17 (1) 13:31 (1)	07:11 18:03	06:24 22:04	04:42 23:32	03:18 23:31	04:56 22:04	06:27 20:18	07:51 18:34	08:24 15:53		09:51 14:43
9	09:59 15:06	08:40 16:40	13:15 (1) 13:32 (1)	07:08 18:06	06:20 22:07	04:39 23:34	03:16 23:29	04:59 22:01	06:30 20:15	07:54 18:31	08:27 15:50		09:53 14:42
10	09:58 15:08	08:37 16:44	13:15 (1) 13:34 (1)	07:04 18:09	06:17 22:10	04:36 23:36	03:15 23:27	05:02 21:57	06:32 20:11	07:57 18:27	08:31 15:47		09:55 14:40
11	09:56 15:11	08:34 16:47	13:14 (1) 13:34 (1)	07:01 18:12	06:13 20:42	04:32 23:38	03:13 23:25	05:05 21:54	06:35 20:08	08:00 18:24	08:34 15:44		09:57 14:39
12	09:54 15:14	08:31 16:50	13:13 (1) 13:35 (1)	06:57 18:15	06:10 20:45	04:29 23:39	03:12 23:23	05:08 21:51	06:38 20:04	08:02 18:20	08:37 15:41		09:59 14:39
13	09:52 15:16	08:27 16:53	13:13 (1) 13:36 (1)	06:54 18:18	06:06 20:48	04:26 23:41	03:11 23:20	05:11 21:47	06:41 20:01	08:05 18:17	08:40 15:38		10:01 14:38
14	09:50 15:19	08:24 16:56	13:12 (1) 13:36 (1)	06:50 18:21	06:03 20:51	04:23 23:42	03:10 23:18	05:14 21:44	06:44 19:57	08:08 18:14	08:43 15:35		10:02 14:37
15	09:48 15:22	08:21 16:59	13:13 (1) 13:37 (1)	06:47 18:24	05:59 20:54	04:20 23:43	03:09 23:15	05:17 21:41	06:46 19:54	08:11 18:10	08:46 15:33		10:04 14:37
16	09:46 15:25	08:18 17:03	13:12 (1) 13:36 (1)	06:43 18:27	05:56 20:57	04:17 23:45	03:08 23:13	05:20 21:37	06:49 19:50	08:14 18:07	08:49 15:30		10:05 14:36
17	09:43 15:28	08:15 17:06	13:12 (1) 13:35 (1)	06:40 18:30	05:52 22:32	04:14 23:45	03:07 23:10	05:23 21:34	06:52 19:47	08:17 18:04	08:53 15:27		10:06 14:36
18	09:41 15:31	08:11 17:09	13:13 (1) 13:36 (1)	06:37 18:33	05:49 22:35	04:11 23:46	03:05 23:08	05:26 21:30	06:55 19:43	08:20 18:00	08:56 15:24		10:07 14:36
19	09:39 15:34	08:08 17:12	13:13 (1) 13:34 (1)	06:33 18:35	05:46 22:38	04:08 23:47	03:06 23:05	05:29 21:27	06:57 19:40	08:23 17:57	9 13:50 (1) 13:59 (1)	08:59 15:22	10:08 14:36
20	09:36 15:37	08:05 17:15	13:15 (1) 13:34 (1)	06:30 18:38	05:42 22:41	04:05 23:47	03:06 23:02	05:32 21:24	07:00 19:36	08:26 17:54	13:47 (1) 14:01 (1)	09:02 15:19	10:09 14:36
21	09:34 15:40	08:01 17:18	13:15 (1) 13:32 (1)	06:26 18:41	05:39 22:44	04:02 23:48	04:02 22:59	05:35 21:20	07:03 19:33	08:29 17:50	13:46 (1) 14:04 (1)	09:05 15:17	10:10 14:36
22	09:32 15:43	07:58 17:21	13:17 (1) 13:30 (1)	06:23 18:44	05:35 22:47	03:59 23:48	04:05 22:57	05:38 21:17	07:06 19:29	08:32 17:47	13:44 (1) 14:04 (1)	09:08 15:14	10:11 14:37
23	09:29 15:46	07:55 17:24	13:21 (1) 13:27 (1)	06:19 18:47	05:32 22:50	03:56 23:48	04:08 22:54	05:41 21:13	07:09 19:26	08:35 17:44	13:43 (1) 14:05 (1)	09:11 15:12	10:11 14:37
24	09:26 15:49	07:52 17:27	6 13:27 (1)	06:16 18:50	05:29 22:53	03:53 23:48	04:11 22:51	05:44 21:10	07:11 19:22	08:38 17:40	13:43 (1) 14:06 (1)	09:14 15:09	10:11 14:38
25	09:24 15:52	07:48 17:30		06:12 18:53	05:25 22:56	03:50 23:48	04:14 22:48	05:47 21:07	07:14 19:19	07:41 16:37	12:42 (1) 13:06 (1)	09:17 15:07	10:12 14:39
26	09:21 15:56	07:45 17:33		06:09 18:56	05:22 22:59	03:48 23:47	04:17 22:45	05:50 21:03	07:17 19:15	07:44 16:34	12:42 (1) 13:06 (1)	09:20 15:05	10:12 14:40
27	09:18 15:59	07:41 17:36		06:05 18:59	05:18 23:02	03:45 23:47	04:20 22:42	05:53 21:00	07:20 19:12	07:47 16:31	12:42 (1) 13:06 (1)	09:23 15:02	10:12 14:41
28	09:16 16:02	07:38 17:39		06:02 19:01	05:15 23:33	03:42 23:46	04:23 22:39	05:55 20:56	07:23 19:09	07:50 16:27	12:41 (1) 13:05 (1)	09:25 15:00	10:11 14:42
29	09:13 16:05			06:58 20:04	05:12 21:36	03:40 23:08	04:26 23:45	05:58 20:53	07:25 19:05	07:53 16:24	12:42 (1) 13:05 (1)	09:28 14:58	10:11 14:43
30	09:10 16:08			06:55 20:07	05:08 21:39	03:37 23:10	04:29 23:44	06:01 22:33	07:28 19:02	07:56 16:21	12:43 (1) 13:05 (1)	09:31 14:56	10:11 14:45
31	09:07 16:11			06:51 20:10		03:35 23:13		06:04 22:30	07:59 20:46	16:18 13:04 (1)	12:43 (1)		10:10 14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203		145
Total, worst case													
Sun reduction		316 0,50								268 0,50	54 0,50		
Oper. time red.		0,80								0,80	0,80		
Wind dir. red.		0,64								0,64	0,64		
Total reduction		0,26								0,26	0,26		
Total, real		81								69	14		

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - uten Hitra 2 vkv **Shadow receptor:** P - Vesthitterveien 132, Enebolig
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
259 364 581 497 609 497 357 770 1 435 798 476 357 7 000

	January	February	March	April	May	June	July	August	September	October	November	December
1	10:09 14:48	09:04 16:15	07:35 17:43	06:48 20:13	05:05 21:42	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:42	07:31 18:58	08:02 16:15	09:34 14:54
2	10:08 14:50	09:01 16:18	07:31 17:46	06:44 20:16	05:02 21:46	03:30 23:18	03:16 23:42	04:38 22:23	06:10 20:39	07:34 18:55	08:06 16:11	09:36 14:52
3	10:07 14:52	08:58 16:21	07:28 17:49	06:41 20:19	04:58 21:49	03:28 23:21	03:17 23:40	04:41 22:20	06:13 20:35	07:37 18:51	08:09 16:08	09:39 14:50
4	10:06 14:54	08:55 16:24	07:25 17:52	06:37 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:15 20:32	07:40 18:48	08:12 16:05	09:42 14:49
5	10:05 14:56	08:52 16:28	07:21 17:54	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44	08:15 16:02	09:44 14:47
6	10:04 14:59	08:49 16:31	07:18 17:57	06:31 20:28	04:48 21:58	03:22 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41	08:18 15:59	09:46 14:45
7	10:02 15:01	08:46 16:34	07:14 18:00	06:27 20:30	04:45 22:01	03:20 23:30	03:25 23:33	04:53 22:07	06:24 20:22	07:48 18:37	08:21 15:56	09:49 14:44
8	10:01 15:03	08:43 16:37	07:11 18:03	06:24 20:33	04:42 22:04	03:18 23:32	03:27 23:31	04:56 22:04	06:27 20:18	07:51 18:34	08:24 15:53	09:51 14:43
9	09:59 15:06	08:40 16:40	07:08 18:06	06:20 20:36	04:39 22:07	03:16 23:34	03:30 23:29	04:59 22:01	06:30 20:15	07:54 18:31	08:27 15:50	09:53 14:41
10	09:58 15:08	08:37 16:44	07:04 18:09	06:17 20:39	04:36 22:10	03:15 23:36	03:32 23:27	05:02 21:57	06:32 20:11	07:57 18:27	08:31 15:47	09:55 14:40
11	09:56 15:11	08:34 16:47	07:01 18:12	06:13 20:42	04:32 22:14	03:13 23:38	03:35 23:25	05:05 21:54	06:35 20:08	08:00 18:24	08:34 15:44	09:57 14:39
12	09:54 15:14	08:31 16:50	06:57 18:15	06:10 20:45	04:29 22:17	03:12 23:39	03:37 23:23	05:08 21:51	06:38 20:04	08:02 18:20	08:37 15:41	09:59 14:38
13	09:52 15:16	08:27 16:53	06:54 18:18	06:06 20:48	04:26 22:20	03:11 23:41	03:40 23:20	05:11 21:47	06:41 20:01	08:05 18:17	08:40 15:38	10:01 14:38
14	09:50 15:19	08:24 16:56	06:50 18:21	06:03 20:51	04:23 22:23	03:10 23:42	03:42 23:18	05:14 21:44	06:44 19:57	08:08 18:14	08:43 15:35	10:02 14:37
15	09:48 15:22	08:21 16:59	06:47 18:24	05:59 20:54	04:20 22:26	03:09 23:43	03:45 23:16	05:17 21:41	06:46 19:54	08:11 18:10	08:46 15:33	10:04 14:37
16	09:46 15:25	08:18 17:03	06:43 18:27	05:56 20:57	04:17 22:29	03:08 23:45	03:48 23:13	05:20 21:37	06:49 19:50	08:14 18:07	08:49 15:30	10:05 14:36
17	09:44 15:28	08:15 17:06	06:40 18:30	05:52 21:00	04:14 22:32	03:07 23:46	03:50 23:10	05:23 21:34	06:52 19:47	08:17 18:04	08:53 15:27	10:06 14:36
18	09:41 15:31	08:11 17:09	06:37 18:33	05:49 21:03	04:11 22:35	03:07 23:46	03:53 23:08	05:26 21:30	06:55 19:43	08:20 18:00	08:56 15:24	10:07 14:36
19	09:39 15:34	08:08 17:12	06:33 18:35	05:46 21:06	04:08 22:38	03:06 23:47	03:56 23:05	05:29 21:27	06:57 19:40	08:23 17:57	08:59 15:22	10:08 14:36
20	09:36 15:37	08:05 17:15	06:30 18:38	05:42 21:09	04:05 22:41	03:06 23:48	03:59 23:02	05:32 21:24	07:00 19:36	08:26 17:54	09:02 15:19	10:09 14:36
21	09:34 15:40	08:01 17:18	06:26 18:41	05:39 21:12	04:02 22:44	03:06 23:48	04:02 22:59	05:35 21:20	07:03 19:33	08:29 17:50	09:05 15:17	10:10 14:36
22	09:32 15:43	07:58 17:21	06:23 18:44	05:35 21:15	03:59 22:47	03:06 23:48	04:05 22:57	05:38 21:17	07:06 19:29	08:32 17:47	09:08 15:14	10:11 14:37
23	09:29 15:46	07:55 17:24	06:19 18:47	05:32 21:18	03:56 22:50	03:07 23:48	04:08 22:54	05:41 21:13	07:09 19:26	08:35 17:44	09:11 15:12	10:11 14:37
24	09:26 15:49	07:52 17:27	06:16 18:50	05:29 21:21	03:53 22:53	03:07 23:48	04:11 22:51	05:44 21:10	07:11 19:22	08:38 17:40	09:14 15:09	10:11 14:38
25	09:24 15:52	07:48 17:30	06:12 18:53	05:25 21:24	03:50 22:56	03:08 23:48	04:14 22:48	05:47 21:07	07:14 19:19	07:41 16:37	09:17 15:07	10:12 14:39
26	09:21 15:56	07:45 17:33	06:09 18:56	05:22 21:27	03:48 22:59	03:08 23:47	04:17 22:45	05:50 21:03	07:17 19:15	07:44 16:34	09:20 15:05	10:12 14:40
27	09:18 15:59	07:41 17:36	06:05 18:59	05:18 21:30	03:45 23:02	03:09 23:47	04:20 22:42	05:53 21:00	07:20 19:12	07:47 16:31	09:23 15:02	10:12 14:41
28	09:16 16:02	07:38 17:39	06:02 19:01	05:15 21:33	03:42 23:05	03:10 23:46	04:23 22:39	05:55 20:56	07:23 19:09	07:50 16:27	09:26 15:00	10:11 14:42
29	09:13 16:05		06:58 20:04	05:12 21:36	03:40 23:08	03:11 23:45	04:26 22:36	05:58 20:53	07:25 19:05	07:53 16:24	09:28 14:58	10:11 14:43
30	09:10 16:08		06:55 20:07	05:08 21:39	03:37 23:10	03:13 23:44	04:29 22:33	06:01 20:49	07:28 19:02	07:56 16:21	09:31 14:56	10:11 14:45
31	09:07 16:11		06:51 20:10		03:35 23:13		04:32 22:30	06:04 20:46		07:59 16:18		10:10 14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
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

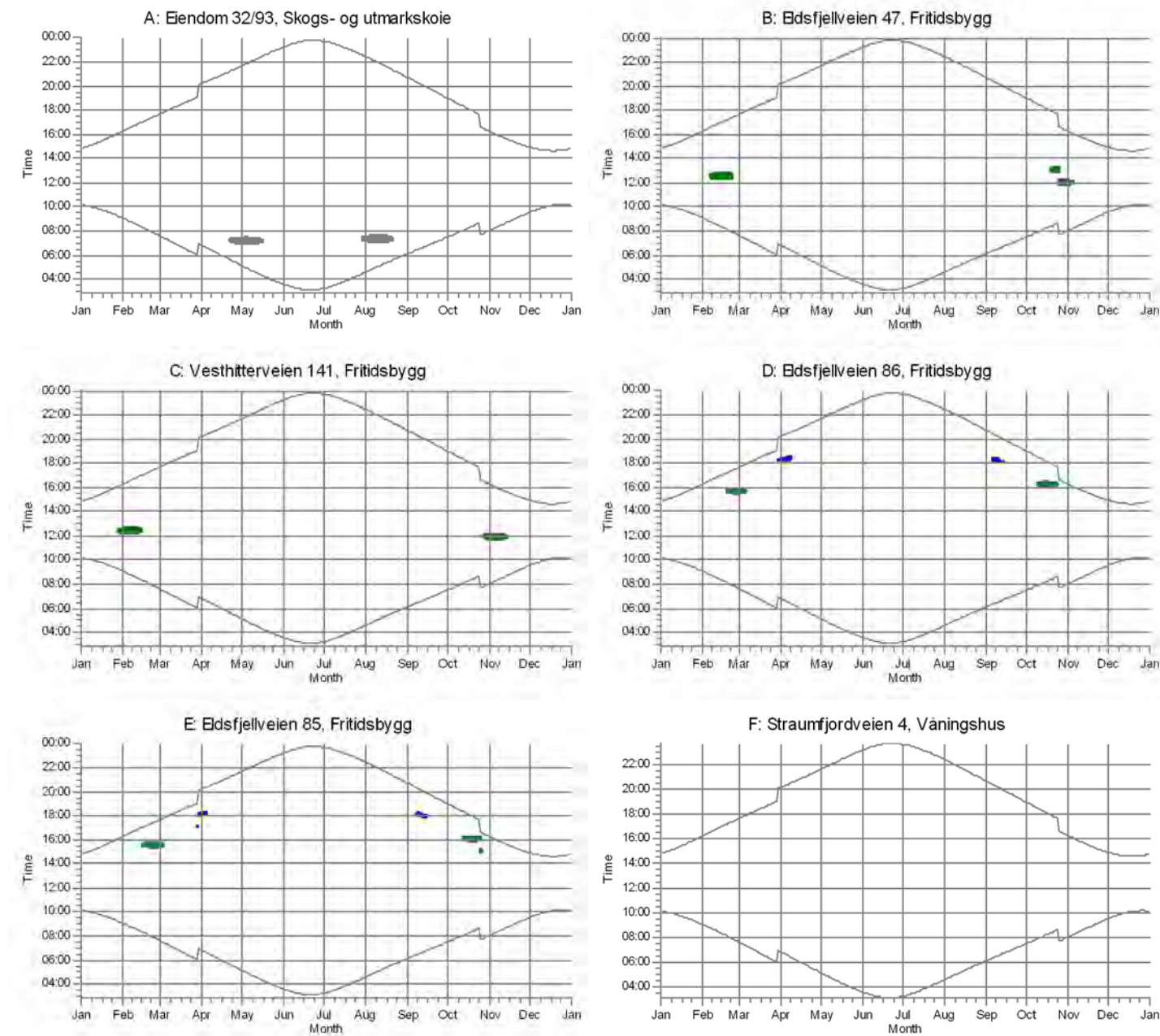
Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		



Vedlegg 2.2

SHADOW - Calendar, graphical

Calculation: Nye Hitra 1 - real case - uten Hitra 2 kvv



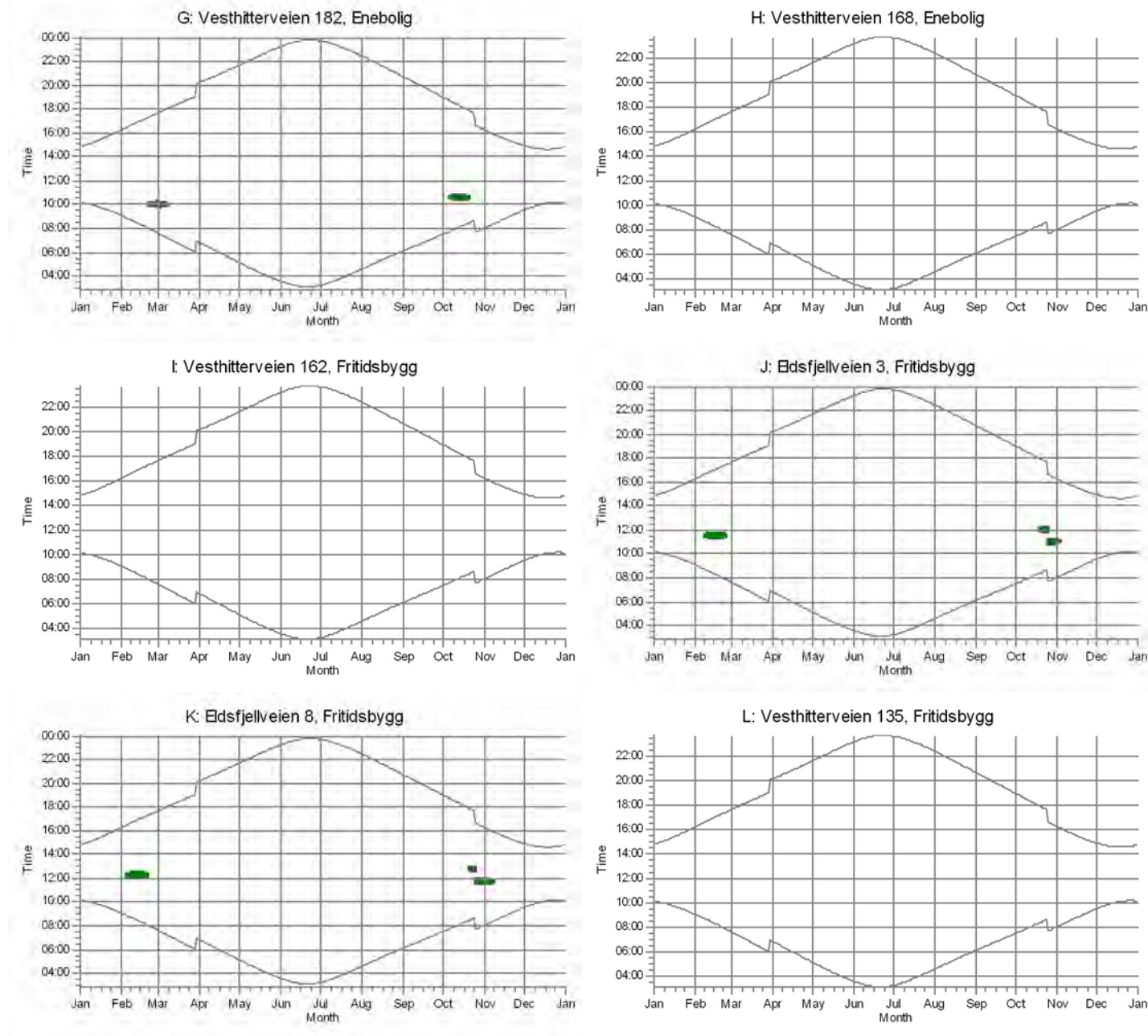
WTGs

1: NORDEX N175/6.X 6800 175.0 !-! hub: 132,5 m (TOT: 220,0 m) (1)
3: NORDEX N175/6.X 6800 175.0 !-! hub: 132,5 m (TOT: 220,0 m) (3)

4: NORDEX N175/6.X 6800 175.0 !-! hub: 132,5 m (TOT: 220,0 m) (4)
6: NORDEX N175/6.X 6800 175.0 !-! hub: 132,5 m (TOT: 220,0 m) (6)

SHADOW - Calendar, graphical

Calculation: Nye Hitra 1 - real case - uten Hitra 2 vkv

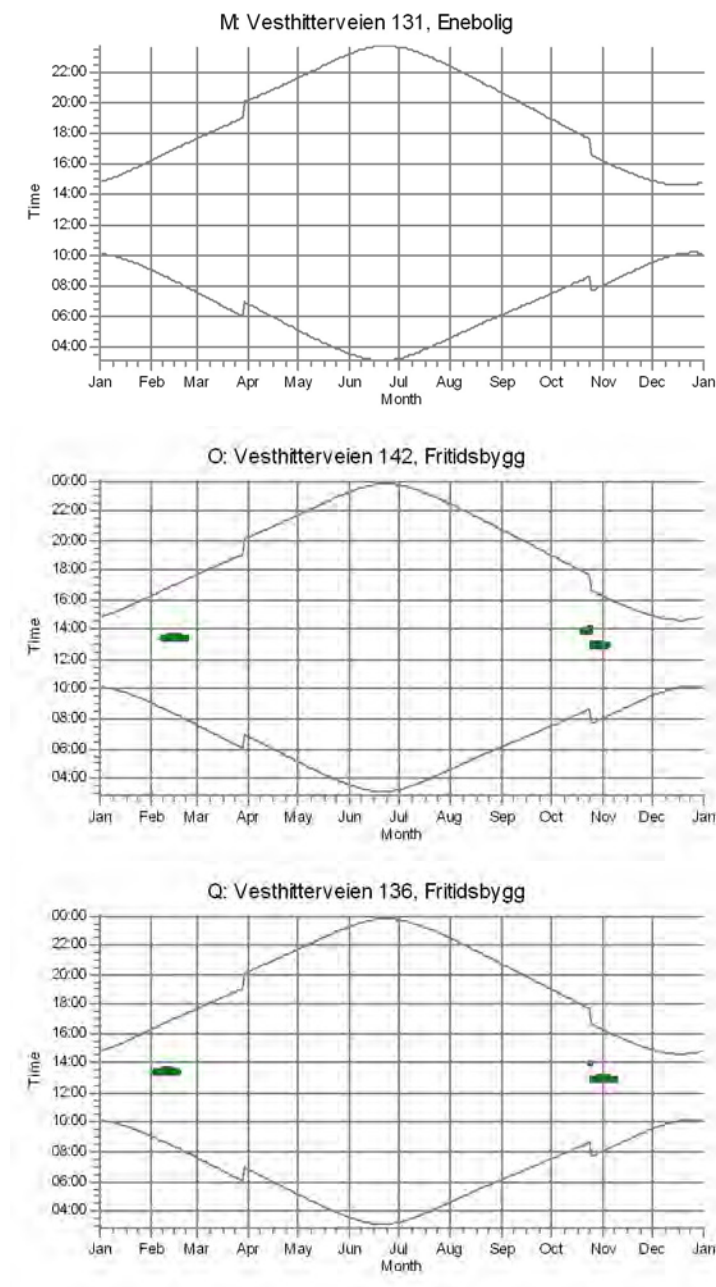


WTGs

1: NORDEX N175/6.X 6800 175.0 !-! hub: 132,5 m (TOT: 220,0 m) (1)

SHADOW - Calendar, graphical

Calculation: Nye Hitra 1 - real case - uten Hitra 2 vkv



WTGs

1: NORDEX N175/6.X 6800 175.0 !-! hub: 132,5 m (TOT: 220,0 m) (1)



Vedlegg 3.1

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - med Hitra 2 vkv **Shadow receptor:** A - Eiendom 32/93, Skogs- og utmarkskoie
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	10:09	09:04	11:31 (33)	07:35	06:48	08:20 (26)	05:05	06:57 (4)	03:33	05:59 (35)	
	14:49	16:15	18 11:49 (33)	17:43	20:13	21 08:41 (26)	21:42	28 07:25 (4)	23:15	19 06:18 (35)	
2	10:08	09:01	11:31 (33)	07:31	06:45	08:20 (26)	05:02	06:57 (4)	03:31	05:59 (35)	
	14:51	16:18	18 11:49 (33)	17:46	20:16	22 08:42 (26)	21:46	28 07:25 (4)	23:18	20 06:19 (35)	
3	10:07	08:58	11:32 (33)	07:28	06:41	08:20 (26)	04:59	06:58 (4)	03:29	05:59 (35)	
	14:53	16:22	18 11:50 (33)	17:49	20:19	22 08:42 (26)	21:49	28 07:26 (4)	23:20	20 06:19 (35)	
4	10:06	08:55	11:32 (33)	07:25	06:38	08:19 (26)	04:55	06:57 (4)	03:27	05:59 (35)	
	14:55	16:25	17 11:49 (33)	17:52	20:22	22 08:41 (26)	21:52	29 07:26 (4)	23:23	21 06:20 (35)	
5	10:05	08:52	11:33 (33)	07:21	06:34	08:20 (26)	04:52	06:57 (4)	03:24	05:59 (35)	
	14:57	16:28	16 11:49 (33)	17:55	20:25	20 08:40 (26)	21:55	28 07:25 (4)	23:25	22 06:21 (35)	
6	10:04	08:49	11:33 (33)	07:18	06:31	08:19 (26)	04:49	06:57 (4)	03:22	05:59 (35)	
	14:59	16:31	15 11:48 (33)	17:58	20:28	20 08:39 (26)	21:58	27 07:24 (4)	23:27	22 06:21 (35)	
7	10:02	08:46	11:34 (33)	07:15	06:27	08:20 (26)	04:46	06:58 (4)	03:21	05:58 (35)	
	15:02	16:34	13 11:47 (33)	18:01	20:31	18 08:38 (26)	22:01	26 07:24 (4)	23:30	23 06:21 (35)	
8	10:01	08:43	11:37 (33)	07:11	06:24	08:22 (26)	04:42	06:58 (4)	03:19	05:58 (35)	
	15:04	16:38	9 11:46 (33)	18:04	20:33	15 08:37 (26)	22:04	25 07:23 (4)	23:32	23 06:21 (35)	
9	09:59	08:40		07:08	06:20	08:23 (26)	04:39	06:59 (4)	03:17	05:58 (35)	
	15:06	16:41		18:07	20:36	10 08:33 (26)	22:07	24 07:23 (4)	23:34	24 06:22 (35)	
10	09:57	08:37		07:04	06:17		04:36	06:59 (4)	03:16	05:58 (35)	
	15:09	16:44		18:09	20:39		22:10	23 07:22 (4)	23:36	24 06:22 (35)	
11	09:56	08:34		07:01	06:13		04:33	07:00 (4)	03:14	05:59 (35)	
	15:12	16:47		18:12	20:42		22:13	20 07:20 (4)	23:37	24 06:23 (35)	
12	09:54	08:31		06:57	06:10		04:30	07:02 (4)	03:13	05:59 (35)	
	15:14	16:50		18:15	20:45		22:17	18 07:20 (4)	23:39	24 06:23 (35)	
13	09:52	08:27		06:54	06:07	08:25 (40)	04:26	07:03 (4)	03:12	05:58 (35)	
	15:17	16:53		18:18	20:48	6 08:36 (40)	22:20	15 07:18 (4)	23:40	25 06:23 (35)	
14	09:50	08:24		06:51	06:03	08:26 (40)	04:23	07:04 (4)	03:11	05:59 (35)	
	15:20	16:57		18:21	20:51	6 08:32 (40)	22:23	11 07:15 (4)	23:42	25 06:24 (35)	
15	09:48	08:21		06:47	06:00		04:20	07:09 (4)	03:10	05:58 (35)	
	15:23	17:00		18:24	20:54		22:26	3 07:12 (4)	23:43	25 06:23 (35)	
16	09:46	08:18		06:44	05:56		04:17		03:09	05:59 (35)	
	15:25	17:03		18:27	20:57		22:29		23:44	25 06:24 (35)	
17	09:43	08:15		06:40	05:53		04:14		03:08	05:59 (35)	
	15:28	17:06		18:30	21:00		22:32		23:45	25 06:24 (35)	
18	09:41	08:11		06:37	05:49		04:11		03:08	06:00 (35)	
	15:31	17:09		18:33	21:03		22:35		23:46	25 06:25 (35)	
19	09:39	08:08		06:33	05:46		04:08		03:07	06:00 (35)	
	15:34	17:12		18:36	21:06		22:38		23:47	25 06:25 (35)	
20	09:36	08:05		06:30	05:42		04:05		03:07	06:00 (35)	
	15:37	17:15		18:39	21:09		22:41		23:47	25 06:25 (35)	
21	09:34	08:02		06:26	05:39		04:02		03:07	06:00 (35)	
	15:40	17:18		18:41	21:12		22:44		23:47	25 06:25 (35)	
22	09:31	07:58		06:23	05:36		03:59		03:07	06:00 (35)	
	15:43	17:21		18:44	21:15	2	07:14 (4)	22:47	23:48	25 06:25 (35)	
23	09:29	07:55		06:19	05:32		07:07 (4)	03:57	03:07	06:01 (35)	
	15:47	17:25		18:47	21:18	12	07:19 (4)	22:50	23:48	25 06:26 (35)	
24	09:26	07:52		06:16	05:29		07:05 (4)	03:54	03:08	06:01 (35)	
	15:50	17:28		18:50	21:21	17	07:22 (4)	22:53	23:47	25 06:26 (35)	
25	09:24	07:48		06:12	05:25		07:03 (4)	03:51	03:08	06:00 (35)	
	15:53	17:31		18:53	21:24	20	07:23 (4)	22:56	23:47	26 06:26 (35)	
26	09:21	07:45		06:09	05:22		07:02 (4)	03:48	03:09	06:01 (35)	
	15:56	17:34		18:56	21:27	22	07:24 (4)	22:59	23:47	25 06:26 (35)	
27	09:18	11:42 (33)	07:42	06:05	05:19		07:00 (4)	03:46		06:05 (35)	03:10
	15:59	3 11:45 (33)	17:37	18:59	2 07:34 (26)	21:30	07:24 (4)	23:02	7 06:12 (35)	23:46	25 06:27 (35)
28	09:15	11:33 (33)	07:38	06:02	07:27 (26)	05:15	06:59 (4)	03:43	06:03 (35)	03:11	06:02 (35)
	16:02	14 11:47 (33)	17:40	19:02	11 07:38 (26)	21:33	07:24 (4)	23:05	11 06:14 (35)	23:45	25 06:27 (35)
29	09:13	11:32 (33)		06:59	08:25 (26)	05:12	06:58 (4)	03:40	06:01 (35)	03:12	06:03 (35)
	16:05	16 11:48 (33)		20:04	15 08:40 (26)	21:36	07:25 (4)	23:07	14 06:15 (35)	23:45	24 06:27 (35)
30	09:10	11:31 (33)		06:55	08:23 (26)	05:09	06:58 (4)	03:38	06:01 (35)	03:14	06:03 (35)
	16:09	17 11:48 (33)		20:07	18 08:41 (26)	21:39	07:25 (4)	23:10	16 06:17 (35)	23:44	24 06:27 (35)
31	09:07	11:32 (33)		06:52	08:22 (26)			03:36		06:00 (35)	
	16:12	17 11:49 (33)		20:10	20 08:42 (26)			23:13	17 06:17 (35)		
Potential sun hours	178		241	363		449		563		612	
Total, worst case	67		124	78		346		398		715	

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - med Hitra 2 vkv Shadow receptor: A - Eiendom 32/93, Skogs- og utmarkskoie
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	03:15	06:03 (35)	04:35	07:11 (4)	06:07	07:31	09:15 (40)	08:02		09:34		
	23:42	24 06:27 (35)	22:26	19 07:30 (4)	20:42	18:58	1 09:16 (40)	16:15				14:55
2	03:17	06:03 (35)	04:38	07:11 (4)	06:10	07:34		08:06		11:09 (33)	09:36	
	23:41	24 06:27 (35)	22:23	21 07:32 (4)	20:39	18:55		16:12	3	11:12 (33)	14:53	
3	03:18	06:03 (35)	04:41	07:09 (4)	06:13	08:21 (26)	07:37	08:09		11:06 (33)	09:39	
	23:40	24 06:27 (35)	22:20	23 07:32 (4)	20:36	10 08:31 (26)	18:51	16:09	10	11:16 (33)	14:51	
4	03:20	06:03 (35)	04:44	07:09 (4)	06:16	08:19 (26)	07:40	08:12		11:04 (33)	09:41	
	23:38	24 06:27 (35)	22:17	24 07:33 (4)	20:32	15 08:34 (26)	18:48	16:06	14	11:18 (33)	14:49	
5	03:22	06:04 (35)	04:47	07:08 (4)	06:19	08:18 (26)	07:43	08:15		11:03 (33)	09:44	
	23:37	23 06:27 (35)	22:14	25 07:33 (4)	20:29	17 08:35 (26)	18:45	16:02	15	11:18 (33)	14:48	
6	03:24	06:04 (35)	04:50	07:07 (4)	06:21	08:16 (26)	07:45	08:18		11:02 (33)	09:46	
	23:35	23 06:27 (35)	22:10	27 07:34 (4)	20:25	19 08:35 (26)	18:41	15:59	17	11:19 (33)	14:46	
7	03:26	06:05 (35)	04:54	07:06 (4)	06:24	08:15 (26)	07:48	08:21		11:02 (33)	09:48	
	23:33	22 06:27 (35)	22:07	28 07:34 (4)	20:22	21 08:36 (26)	18:38	15:56	18	11:20 (33)	14:45	
8	03:28	06:05 (35)	04:57	07:06 (4)	06:27	08:15 (26)	07:51	08:24		11:02 (33)	09:51	
	23:31	22 06:27 (35)	22:04	28 07:34 (4)	20:18	21 08:36 (26)	18:34	15:53	18	11:20 (33)	14:43	
9	03:30	06:06 (35)	05:00	07:07 (4)	06:30	08:13 (26)	07:54	08:27		11:02 (33)	09:53	
	23:29	21 06:27 (35)	22:01	28 07:35 (4)	20:15	22 08:35 (26)	18:31	15:50	18	11:20 (33)	14:42	
10	03:33	06:07 (35)	05:03	07:06 (4)	06:33	08:13 (26)	07:57	08:31		11:02 (33)	09:55	
	23:27	20 06:27 (35)	21:57	28 07:34 (4)	20:11	22 08:35 (26)	18:27	15:47	18	11:20 (33)	14:41	
11	03:35	06:07 (35)	05:06	07:06 (4)	06:35	08:14 (26)	08:00	08:34		11:02 (33)	09:57	
	23:25	19 06:26 (35)	21:54	28 07:34 (4)	20:08	21 08:35 (26)	18:24	15:44	18	11:20 (33)	14:40	
12	03:38	06:08 (35)	05:09	07:06 (4)	06:38	08:13 (26)	08:03	08:37		11:03 (33)	09:59	
	23:22	17 06:25 (35)	21:51	28 07:34 (4)	20:04	20 08:33 (26)	18:21	15:42	17	11:20 (33)	14:39	
13	03:40	06:09 (35)	05:12	07:06 (4)	06:41	08:14 (26)	08:05	08:40		11:04 (33)	10:00	
	23:20	16 06:25 (35)	21:47	27 07:33 (4)	20:01	18 08:32 (26)	18:17	15:39	15	11:19 (33)	14:38	
14	03:43	06:10 (35)	05:15	07:07 (4)	06:44	08:15 (26)	08:08	08:43		11:05 (33)	10:02	
	23:18	14 06:24 (35)	21:44	26 07:33 (4)	19:57	16 08:31 (26)	18:14	15:36	14	11:19 (33)	14:38	
15	03:46	06:11 (35)	05:18	07:07 (4)	06:47	08:16 (26)	08:11	08:46		11:15 (33)	10:03	
	23:15	12 06:23 (35)	21:41	26 07:33 (4)	19:54	12 08:28 (26)	18:11	15:33	3	11:18 (33)	14:37	
16	03:48	06:13 (35)	05:21	07:07 (4)	06:49	08:19 (26)	08:14	08:49			10:05	
	23:13	9 06:22 (35)	21:37	24 07:31 (4)	19:50	6 08:25 (26)	18:07	15:30			14:37	
17	03:51	06:16 (35)	05:24	07:08 (4)	06:52		08:17	08:52			10:06	
	23:10	3 06:19 (35)	21:34	22 07:30 (4)	19:47		18:04	15:28			14:37	
18	03:54		05:27	07:10 (4)	06:55		08:20	08:56			10:07	
	23:07		21:30	19 07:29 (4)	19:43		18:00	15:25			14:36	
19	03:57		05:30	07:10 (4)	06:58		08:23	08:59			10:08	
	23:05		21:27	17 07:27 (4)	19:40		17:57	15:22			14:36	
20	03:59		05:32	07:13 (4)	07:00		08:26	09:02			10:09	
	23:02		21:24	11 07:24 (4)	19:36		17:54	15:20			14:37	
21	04:02		05:35		07:03		08:29	09:05			10:10	
	22:59		21:20		19:33		17:51	15:17			14:37	
22	04:05		05:38		07:06		08:32	09:08			10:10	
	22:56		21:17		19:29		17:47	15:15			14:37	
23	04:08		05:41		07:09		08:35	09:11			10:11	
	22:54		21:13		19:26		17:44	15:12			14:38	
24	04:11		05:44		07:12		08:38	09:14			10:11	
	22:51		21:10		19:23		17:41	15:10			14:38	
25	04:14		05:47		07:14		07:41	09:17			10:11	
	22:48		21:07		19:19		16:37	15:07			14:39	
26	04:17		05:50		07:17		07:44	09:20			10:11	
	22:45		21:03		19:16		16:34	15:05			14:40	
27	04:20		05:53		07:20		07:47	09:23			10:11	
	22:42		21:00		19:12		16:31	15:03			14:41	
28	04:23		05:56		07:23		07:50	09:25			10:11	
	22:39		20:56		19:09		16:28	15:01			14:43	
29	04:26	07:16 (4)	05:59		07:26		07:53	09:28			10:11	
	22:36	8 07:24 (4)	20:53		19:05		16:24	14:59			14:44	
30	04:29	07:14 (4)	06:02		07:28	09:05 (40)	07:56	09:31			10:10	
	22:33	13 07:27 (4)	20:49		19:02	9 09:14 (40)	16:21	14:57			14:45	
31	04:32	07:12 (4)	06:04				07:59				10:10	
	22:29	16 07:28 (4)	20:46				16:18				14:47	
Potential sun hours	599		505		392		306		203	198		146
Total, worst case	354		479		249		1					

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - med Hitra 2 vkv Shadow receptor: D - Eldsfjellveien 86, Fritidsbygg

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	10:09	09:04			07:35	15:31 (6)	06:48		18:14 (3)	05:05	19:40 (28)	03:33		
	14:49	16:15			17:42	20	15:51 (6)	20:13	6	18:20 (3)	21:42	17	19:57 (28)	23:15
2	10:08	09:01			07:31	15:32 (6)	06:44		18:14 (3)	05:02	19:40 (28)	03:30		
	14:50	16:18			17:45	18	15:50 (6)	20:16	9	18:23 (3)	21:45	19	19:59 (28)	23:18
3	10:07	08:58			07:28	15:33 (6)	06:41		18:14 (3)	04:58	19:40 (28)	03:28		
	14:52	16:21			17:48	16	15:49 (6)	20:19	10	18:24 (3)	21:48	19	19:59 (28)	23:20
4	10:06	08:55			07:24	15:34 (6)	06:37		18:15 (3)	04:55	19:41 (28)	03:26		
	14:54	16:24			17:51	12	15:46 (6)	20:21	11	18:26 (3)	21:51	17	19:58 (28)	23:23
5	10:05	08:52			07:21	15:39 (6)	06:34		18:16 (3)	04:52	19:41 (28)	03:24		
	14:57	16:28			17:54	3	15:42 (6)	20:24	13	18:29 (3)	21:55	16	19:57 (28)	23:25
6	10:03	08:49			07:18		06:30		18:17 (3)	04:48	19:43 (28)	03:22		
	14:59	16:31			17:57		20:27	13	18:30 (3)	21:58	14	19:57 (28)	23:27	
7	10:02	08:46			07:14		06:27		18:20 (3)	04:45	19:43 (28)	03:20		
	15:01	16:34			18:00		20:30	8	18:28 (3)	22:01	13	19:56 (28)	23:29	
8	10:00	08:43			07:11		06:23			04:42	19:45 (28)	03:18		
	15:03	16:37			18:03		20:33			22:04	9	19:54 (28)	23:31	
9	09:59	08:40			07:07		06:20			04:39		03:17		
	15:06	16:40			18:06		20:36			22:07		23:33		
10	09:57	08:37			07:04		06:17			04:36		03:15		
	15:08	16:44			18:09		20:39			22:10		23:35		
11	09:55	08:33			07:00		06:13			04:32		03:14		
	15:11	16:47			18:12		20:42			22:13		23:37		
12	09:53	08:30			06:57		06:10			04:29		03:12		
	15:14	16:50			18:15		20:45			22:16		23:39		
13	09:52	08:27			06:54		06:06			04:26		03:11		
	15:16	16:53			18:18		20:48			22:19		23:40		
14	09:50	08:24			06:50		06:03		18:55 (38)	04:23		03:10		
	15:19	16:56			18:21		20:51	2	18:57 (38)	22:23		23:42		
15	09:47	08:21			06:47		05:59		18:52 (38)	04:20		03:09		
	15:22	16:59			18:24		20:54	9	19:01 (38)	22:26		23:43		
16	09:45	08:18			06:43		05:56		18:50 (38)	04:17		03:08		
	15:25	17:03			18:27		20:57	14	19:04 (38)	22:29		23:44		
17	09:43	08:14			06:40		05:52		18:49 (38)	04:14		03:08		
	15:28	17:06			18:30		21:00	20	19:09 (38)	22:32		23:45		
18	09:41	08:11			06:36		05:49		18:48 (38)	04:11		03:07		
	15:31	17:09			18:32		21:03	22	19:10 (38)	22:35		23:46		
19	09:38	08:08		15:38 (6)	06:33		05:46		18:47 (38)	04:08		03:07		
	15:34	17:12	9	15:47 (6)	18:35		21:06	24	19:11 (38)	22:38		23:46		
20	09:36	08:04		15:35 (6)	06:29		05:42		18:47 (38)	04:05		03:07		
	15:37	17:15	14	15:49 (6)	18:38		21:09	24	19:11 (38)	22:41		23:47		
21	09:34	08:01		15:34 (6)	06:26		05:39		18:47 (38)	04:02		03:07		
	15:40	17:18	17	15:51 (6)	18:41		21:12	24	19:11 (38)	22:44		23:47		
22	09:31	07:58		15:32 (6)	06:23		05:35		18:47 (38)	03:59		03:07		
	15:43	17:21	19	15:51 (6)	18:44		21:15	24	19:11 (38)	22:47		23:47		
23	09:29	07:55		15:32 (6)	06:19		05:32		18:47 (38)	03:56		03:07		
	15:46	17:24	21	15:53 (6)	18:47		21:18	24	19:11 (38)	22:50		23:47		
24	09:26	07:51		15:31 (6)	06:16		05:28		18:46 (38)	03:53		03:07		
	15:49	17:27	21	15:52 (6)	18:50		21:21	23	19:09 (38)	22:53		23:47		
25	09:23	07:48		15:30 (6)	06:12		05:25		18:47 (38)	03:51		03:08		
	15:52	17:30	22	15:52 (6)	18:53		21:24	22	19:09 (38)	22:56		23:47		
26	09:21	07:45		15:30 (6)	06:09		05:22		18:47 (38)	03:48		03:09		
	15:56	17:33	23	15:53 (6)	18:55		21:27	22	19:45 (28)	22:59		23:47		
27	09:18	07:41		15:30 (6)	06:05		05:18		18:48 (38)	03:45		03:10		
	15:59	17:36	22	15:52 (6)	18:58		21:30	23	19:47 (28)	23:02		23:46		
28	09:15	07:38		15:31 (6)	06:02		05:15		18:50 (38)	03:43		03:11		
	16:02	17:39	21	15:52 (6)	19:01		21:33	24	19:50 (28)	23:04		23:45		
29	09:12				06:58		05:12		18:52 (38)	03:40		03:12		
	16:05				20:04		21:36	23	19:52 (28)	23:07		23:44		
30	09:10				06:55		18:14 (3)		18:55 (38)	03:38		03:13		
	16:08				20:07	1	18:15 (3)		19:55 (28)	23:10		23:43		
31	09:07				06:51		18:14 (3)			03:35				
	16:11				20:10	4	18:18 (3)			23:13				
Potential sun hours	178	241			363		449		563			612		
Total, worst case		189			74		413		124					

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)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - med Hitra 2 vkv Shadow receptor: D - Eldsfjellveien 86, Fritidsbygg

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	03:14 23:42	04:35 22:26	06:07 20:42	07:31 18:58	08:02 16:15	09:33 14:54
2	03:16 23:41	04:38 22:23	06:10 20:39	07:34 18:55	08:05 16:11	09:36 14:52
3	03:18 23:39	04:41 22:20	06:13 20:35	07:37 18:51	08:08 16:08	09:39 14:50
4	03:20 23:38	04:44 22:16	19:56 (28) 20:02 (28)	06:15 20:32	07:39 18:48	08:11 16:05
5	03:21 23:36	04:47 22:13	19:54 (28) 20:05 (28)	06:18 20:28	18:16 (3) 18:24 (3)	07:42 18:44
6	03:23 23:35	04:50 22:10	19:52 (28) 20:05 (28)	06:21 20:25	18:13 (3) 18:26 (3)	07:45 18:41
7	03:26 23:33	04:53 22:07	19:51 (28) 20:06 (28)	06:24 20:21	18:11 (3) 18:24 (3)	07:48 18:37
8	03:28 23:31	04:56 22:04	19:51 (28) 20:07 (28)	06:27 20:18	18:09 (3) 18:21 (3)	07:51 18:34
9	03:30 23:29	04:59 22:00	19:50 (28) 20:07 (28)	06:29 20:14	18:08 (3) 18:18 (3)	07:54 18:31
10	03:32 23:27	05:02 21:57	19:49 (28) 20:08 (28)	06:32 20:11	18:07 (3) 18:16 (3)	07:56 18:27
11	03:35 23:24	05:05 21:54	19:49 (28) 20:08 (28)	06:35 20:07	18:06 (3) 18:12 (3)	07:59 18:24
12	03:37 23:22	05:08 21:50	19:49 (28) 20:05 (28)	06:38 20:04	18:06 (3) 18:09 (3)	08:02 18:20
13	03:40 23:20	05:11 21:47	19:02 (38) 20:03 (28)	06:41 20:00	18:06 (3) 18:07 (3)	08:05 18:17
14	03:42 23:17	05:14 21:44	18:59 (38) 20:00 (28)	06:43 19:57	08:08 18:14	16:03 (6) 16:25 (6)
15	03:45 23:15	05:17 21:40	18:57 (38) 19:56 (28)	06:46 19:54	08:11 18:10	16:02 (6) 16:25 (6)
16	03:48 23:12	05:20 21:37	18:56 (38) 19:54 (28)	06:49 19:50	08:14 18:07	16:02 (6) 16:24 (6)
17	03:51 23:10	05:23 21:34	18:55 (38) 19:52 (28)	06:52 19:47	08:17 18:03	16:02 (6) 16:24 (6)
18	03:53 23:07	05:26 21:30	18:53 (38) 19:15 (38)	06:55 19:43	08:20 18:00	16:03 (6) 16:24 (6)
19	03:56 23:05	05:29 21:27	18:53 (38) 19:16 (38)	06:57 19:40	08:23 17:57	16:03 (6) 16:23 (6)
20	03:59 23:02	05:32 21:23	18:52 (38) 19:16 (38)	07:00 19:36	08:26 17:53	16:03 (6) 16:22 (6)
21	04:02 22:59	05:35 21:20	18:51 (38) 19:16 (38)	07:03 19:33	08:29 17:50	16:04 (6) 16:20 (6)
22	04:05 22:56	05:38 21:17	18:51 (38) 19:16 (38)	07:06 19:29	08:32 17:47	16:06 (6) 16:19 (6)
23	04:08 22:53	05:41 21:13	18:51 (38) 19:15 (38)	07:08 19:26	08:35 17:44	16:09 (6) 16:15 (6)
24	04:11 22:50	05:44 21:10	18:51 (38) 19:14 (38)	07:11 19:22	08:38 17:40	15:12 15:09
25	04:14 22:47	05:47 21:06	18:51 (38) 19:14 (38)	07:14 19:19	07:41 16:37	09:16 15:07
26	04:17 22:44	05:50 21:03	18:51 (38) 19:10 (38)	07:17 19:15	07:44 16:34	09:19 15:05
27	04:20 22:41	05:53 20:59	18:52 (38) 19:06 (38)	07:20 19:12	07:47 16:31	09:22 15:02
28	04:23 22:38	05:55 20:56	18:54 (38) 19:03 (38)	07:22 19:08	07:50 16:27	09:25 15:00
29	04:26 22:35	05:58 20:53	18:56 (38) 18:58 (38)	07:25 19:05	07:53 16:24	09:28 14:58
30	04:29 22:32	06:01 20:49	07:28 19:01	07:56 16:21	09:31 14:56	10:10 14:45
31	04:32 22:29	06:04 20:46		07:59 16:18		10:10 14:46
Potential sun hours	600	505	392	306	203	145
Total, worst case		478	75	263		

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

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

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - med Hitra 2 vkv Shadow receptor: E - Eldsfjellveien 85, Fritidsbygg

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	10:09	09:04			07:35	15:26 (6)	06:48		18:06 (3)	05:05		19:31 (28)	03:33
	14:49	16:15			17:42	12 15:38 (6)	20:13	8	18:14 (3)	21:42	17	19:48 (28)	23:15
2	10:08	09:01			07:31	15:29 (6)	06:44		18:07 (3)	05:02		19:31 (28)	03:30
	14:50	16:18			17:45	7 15:36 (6)	20:16	10	18:17 (3)	21:45	16	19:47 (28)	23:18
3	10:07	08:58			07:28		06:41		18:08 (3)	04:58		19:32 (28)	03:28
	14:52	16:21			17:48		20:19	11	18:19 (3)	21:48	14	19:46 (28)	23:20
4	10:06	08:55			07:24		06:37		18:12 (3)	04:55		19:33 (28)	03:26
	14:54	16:24			17:51		20:21	5	18:17 (3)	21:51	11	19:44 (28)	23:23
5	10:05	08:52			07:21		06:34			04:52		19:36 (28)	03:24
	14:57	16:28			17:54		20:24			21:55	5	19:41 (28)	23:25
6	10:03	08:49			07:18		06:30			04:48			
	14:59	16:31			17:57		20:27			21:58			23:27
7	10:02	08:46			07:14		06:27			04:45			03:20
	15:01	16:34			18:00		20:30			22:01			23:29
8	10:00	08:43			07:11		06:23			04:42			03:18
	15:03	16:37			18:03		20:33			22:04			23:31
9	09:59	08:40			07:07		06:20		18:41 (38)	04:39			03:17
	15:06	16:40			18:06		20:36	5	18:46 (38)	22:07			23:33
10	09:57	08:37			07:04		06:17		18:39 (38)	04:36			03:15
	15:08	16:44			18:09		20:39	12	18:51 (38)	22:10			23:35
11	09:55	08:33			07:00		06:13		18:36 (38)	04:32			03:14
	15:11	16:47			18:12		20:42	16	18:52 (38)	22:13			23:37
12	09:53	08:30			06:57		06:10		18:35 (38)	04:29			03:12
	15:14	16:50			18:15		20:45	20	18:55 (38)	22:16			23:39
13	09:52	08:27			06:54		06:06		18:34 (38)	04:26			03:11
	15:16	16:53			18:18		20:48	23	18:57 (38)	22:19			23:40
14	09:50	08:24			06:50		06:03		18:33 (38)	04:23			03:10
	15:19	16:56			18:21		20:51	24	18:57 (38)	22:23			23:42
15	09:47	08:21			06:47		05:59		18:33 (38)	04:20			03:09
	15:22	16:59			18:24		20:54	24	18:57 (38)	22:26			23:43
16	09:45	08:18		15:30 (6)	06:43		05:56		18:32 (38)	04:17			03:08
	15:25	17:03	7	15:37 (6)	18:27		20:57	25	18:57 (38)	22:29			23:44
17	09:43	08:14		15:27 (6)	06:40		05:52		18:33 (38)	04:14			03:08
	15:28	17:06	13	15:40 (6)	18:30		21:00	24	18:57 (38)	22:32			23:45
18	09:41	08:11		15:25 (6)	06:36		05:49		18:32 (38)	04:11			03:07
	15:31	17:09	16	15:41 (6)	18:32		21:03	24	18:56 (38)	22:35			23:46
19	09:38	08:08		15:24 (6)	06:33		05:46		18:32 (38)	04:08			03:07
	15:34	17:12	18	15:42 (6)	18:35		21:06	24	18:56 (38)	22:38			23:46
20	09:36	08:05		15:23 (6)	06:29		05:42		18:33 (38)	04:05			03:07
	15:37	17:15	20	15:43 (6)	18:38		21:09	22	18:55 (38)	22:41			23:47
21	09:34	08:01		15:23 (6)	06:26		05:39		18:33 (38)	04:02			03:07
	15:40	17:18	21	15:44 (6)	18:41		21:12	21	18:54 (38)	22:44			23:47
22	09:31	07:58		15:22 (6)	06:23		05:35		18:35 (38)	03:59			03:07
	15:43	17:21	22	15:44 (6)	18:44		21:15	18	18:53 (38)	22:47			23:47
23	09:29	07:55		15:22 (6)	06:19		05:32		18:36 (38)	03:56			03:07
	15:46	17:24	22	15:44 (6)	18:47		21:18	18	19:36 (28)	22:50			23:47
24	09:26	07:51		15:22 (6)	06:16		05:28		18:37 (38)	03:53			03:07
	15:49	17:27	22	15:44 (6)	18:50		21:21	17	19:37 (28)	22:53			23:47
25	09:23	07:48		15:21 (6)	06:12		05:25		18:41 (38)	03:51			03:08
	15:52	17:30	22	15:43 (6)	18:53		21:24	12	19:39 (28)	22:56			23:47
26	09:21	07:45		15:22 (6)	06:09		05:22		19:30 (28)	03:48			03:09
	15:56	17:33	21	15:43 (6)	18:55		21:27	11	19:41 (28)	22:59			23:47
27	09:18	07:41		15:23 (6)	06:05		05:18		19:30 (28)	03:45			03:10
	15:59	17:36	18	15:41 (6)	18:58		21:30	13	19:43 (28)	23:02			23:46
28	09:15	07:38		15:24 (6)	06:02		05:15		19:30 (28)	03:43			03:11
	16:02	17:39	17	15:41 (6)	19:01	1	17:05 (3)	21:33	16	19:46 (28)	23:04		23:45
29	09:12				06:58		18:04 (3)	05:12		19:30 (28)	03:40		03:12
	16:05				20:04	2	18:06 (3)	21:36	19	19:49 (28)	23:07		23:44
30	09:10				06:55		18:05 (3)	05:08		19:30 (28)	03:38		03:13
	16:08				20:07	4	18:09 (3)	21:39	18	19:48 (28)	23:10		23:43
31	09:07				06:51		18:06 (3)			03:35			
	16:11				20:10	6	18:12 (3)			23:13			
Potential sun hours	178	241			363		449			563			612
Total, worst case		239			32		440			63			

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)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - med Hitra 2 vkv Shadow receptor: E - Eldsfjellveien 85, Fritidsbygg

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	03:14	04:35	06:07	18:36 (38)	07:31	08:02	09:33		
	23:42	22:26	20:42	16 18:52 (38)	18:58	16:15	14:54		
2	03:16	04:38	06:10	18:37 (38)	07:34	08:05	09:36		
	23:41	22:23	20:39	12 18:49 (38)	18:55	16:11	14:52		
3	03:18	04:41	06:13	18:39 (38)	07:37	08:08	09:39		
	23:40	22:20	20:35	5 18:44 (38)	18:51	16:08	14:50		
4	03:20	04:44	06:15		07:39	08:11	09:41		
	23:38	22:16	20:32		18:48	16:05	14:49		
5	03:21	04:47	06:18		07:42	08:15	09:44		
	23:36	22:13	20:28		18:44	16:02	14:47		
6	03:23	04:50	06:21		07:45	08:18	09:46		
	23:35	22:10	20:25		18:41	15:59	14:46		
7	03:26	04:53	06:24		07:48	08:21	09:48		
	23:33	22:07	20:21		18:37	15:56	14:44		
8	03:28	04:56	19:45 (28)	06:27	18:07 (3)	07:51	08:24	09:50	
	23:31	22:04	7 19:52 (28)	20:18	4 18:11 (3)	18:34	15:53	14:43	
9	03:30	04:59	19:42 (28)	06:29	18:03 (3)	07:54	08:27	09:53	
	23:29	22:00	12 19:54 (28)	20:14	11 18:14 (3)	18:31	15:50	14:42	
10	03:32	05:02	19:41 (28)	06:32	18:01 (3)	07:56	08:30	09:55	
	23:27	21:57	14 19:55 (28)	20:11	10 18:11 (3)	18:27	15:47	14:41	
11	03:35	05:05	19:40 (28)	06:35	17:58 (3)	07:59	08:33	09:56	
	23:25	21:54	16 19:56 (28)	20:07	8 18:06 (3)	18:24	15:44	14:40	
12	03:37	05:08	19:39 (28)	06:38	17:57 (3)	08:02	16:01 (6)	08:37	09:58
	23:22	21:50	17 19:56 (28)	20:04	7 18:04 (3)	18:20	10 16:11 (6)	15:41	14:39
13	03:40	05:11	19:38 (28)	06:41	17:56 (3)	08:05	15:58 (6)	08:40	10:00
	23:20	21:47	19 19:57 (28)	20:00	5 18:01 (3)	18:17	15 16:13 (6)	15:38	14:38
14	03:42	05:14	19:38 (28)	06:43	17:55 (3)	08:08	15:56 (6)	08:43	10:02
	23:17	21:44	19 19:57 (28)	19:57	2 17:57 (3)	18:14	18 16:14 (6)	15:35	14:37
15	03:45	05:17	19:37 (28)	06:46		08:11	15:55 (6)	08:46	10:03
	23:15	21:40	16 19:53 (28)	19:54		18:10	19 16:14 (6)	15:33	14:37
16	03:48	05:20	19:37 (28)	06:49		08:14	15:54 (6)	08:49	10:05
	23:12	21:37	13 19:50 (28)	19:50		18:07	21 16:15 (6)	15:30	14:36
17	03:51	05:23	19:38 (28)	06:52		08:17	15:53 (6)	08:52	10:06
	23:10	21:34	10 19:48 (28)	19:47		18:03	22 16:15 (6)	15:27	14:36
18	03:53	05:26	18:46 (38)	06:55		08:20	15:53 (6)	08:55	10:07
	23:07	21:30	15 19:45 (28)	19:43		18:00	23 16:16 (6)	15:24	14:36
19	03:56	05:29	18:43 (38)	06:57		08:23	15:53 (6)	08:58	10:08
	23:05	21:27	18 19:43 (28)	19:40		17:57	22 16:15 (6)	15:22	14:36
20	03:59	05:32	18:41 (38)	07:00		08:26	15:53 (6)	09:01	10:09
	23:02	21:23	19 19:41 (28)	19:36		17:53	21 16:14 (6)	15:19	14:36
21	04:02	05:35	18:39 (38)	07:03		08:29	15:53 (6)	09:04	10:10
	22:59	21:20	19 18:58 (38)	19:33		17:50	21 16:14 (6)	15:17	14:36
22	04:05	05:38	18:38 (38)	07:06		08:32	15:54 (6)	09:08	10:10
	22:56	21:17	21 18:59 (38)	19:29		17:47	20 16:14 (6)	15:14	14:37
23	04:08	05:41	18:36 (38)	07:08		08:35	15:54 (6)	09:11	10:11
	22:53	21:13	23 18:59 (38)	19:26		17:44	18 16:12 (6)	15:12	14:37
24	04:11	05:44	18:36 (38)	07:11		08:38	15:55 (6)	09:13	10:11
	22:50	21:10	23 18:59 (38)	19:22		17:40	15 16:10 (6)	15:09	14:38
25	04:14	05:47	18:35 (38)	07:14		07:41	14:57 (6)	09:16	10:11
	22:47	21:06	25 19:00 (38)	19:19		16:37	12 15:09 (6)	15:07	14:39
26	04:17	05:50	18:34 (38)	07:17		07:44	15:00 (6)	09:19	10:11
	22:44	21:03	25 18:59 (38)	19:15		16:34	5 15:05 (6)	15:05	14:40
27	04:20	05:53	18:34 (38)	07:20		07:47		09:22	10:11
	22:41	20:59	25 18:59 (38)	19:12		16:31		15:02	14:41
28	04:23	05:55	18:34 (38)	07:22		07:50		09:25	10:11
	22:38	20:56	25 18:59 (38)	19:08		16:27		15:00	14:42
29	04:26	05:58	18:34 (38)	07:25		07:53		09:28	10:11
	22:35	20:53	23 18:57 (38)	19:05		16:24		14:58	14:43
30	04:29	06:01	18:34 (38)	07:28		07:56		09:31	10:10
	22:32	20:49	23 18:57 (38)	19:01		16:21		14:56	14:45
31	04:32	06:04	18:35 (38)			07:59			10:10
	22:29	20:46	20 18:55 (38)			16:18			14:46
Potential sun hours	600	505	392		306		203		145
Total, worst case		447	80	262					

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)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - med Hitra 2 vkv **Shadow receptor:** F - Straumfjordveien 4, Våningshus

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	10:09 14:49	09:04 16:15	07:35 17:43	06:48 20:13	05:05 21:43	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:43	07:31 18:58	08:03 16:15	09:34 14:54
2	10:08 14:50	09:01 16:18	07:31 17:46	06:45 20:16	05:02 21:46	03:30 23:18	03:16 23:42	04:38 22:23	06:10 20:39	07:34 18:55	08:06 16:12	09:37 14:52
3	10:07 14:52	08:58 16:21	07:28 17:49	06:41 20:19	04:58 21:49	03:28 23:21	03:18 23:40	04:41 22:20	06:13 20:36	07:37 18:51	08:09 16:08	09:39 14:50
4	10:06 14:54	08:55 16:24	07:25 17:52	06:38 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:16 20:32	07:40 18:48	08:12 16:05	09:42 14:49
5	10:05 14:57	08:52 16:28	07:21 17:55	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44	08:15 16:02	09:44 14:47
6	10:04 14:59	08:49 16:31	07:18 17:58	06:31 20:28	04:49 21:58	03:22 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41	08:18 15:59	09:46 14:46
7	10:02 15:01	08:46 16:34	07:14 18:01	06:27 20:31	04:45 22:01	03:20 23:30	03:25 23:33	04:53 22:07	06:24 20:22	07:48 18:38	08:21 15:56	09:49 14:44
8	10:01 15:03	08:43 16:37	07:11 18:03	06:24 20:33	04:42 22:04	03:18 23:32	03:28 23:31	04:56 22:04	06:27 20:18	07:51 18:34	08:24 15:53	09:51 14:43
9	09:59 15:06	08:40 16:41	07:08 18:06	06:20 20:36	04:39 22:07	03:17 23:34	03:30 23:29	04:59 22:01	06:30 20:15	07:54 18:31	08:28 15:50	09:53 14:42
10	09:58 15:08	08:37 16:44	07:04 18:09	06:17 20:39	04:36 22:11	03:15 23:36	03:32 23:27	05:02 21:57	06:33 20:11	07:57 18:27	08:31 15:47	09:55 14:41
11	09:56 15:11	08:34 16:47	07:01 18:12	06:13 20:42	04:32 22:14	03:13 23:38	03:35 23:25	05:05 21:54	06:35 20:08	08:00 18:24	08:34 15:44	09:57 14:39
12	09:54 15:14	08:31 16:50	06:57 18:15	06:10 20:45	04:29 22:17	03:12 23:39	03:37 23:23	05:08 21:51	06:38 20:04	08:03 18:21	08:37 15:41	09:59 14:39
13	09:52 15:17	08:28 16:53	06:54 18:18	06:06 20:48	04:26 22:20	03:11 23:41	03:40 23:20	05:11 21:47	06:41 20:01	08:05 18:17	08:40 15:38	10:01 14:38
14	09:50 15:19	08:24 16:56	06:50 18:21	06:03 20:51	04:23 22:23	03:10 23:42	03:42 23:18	05:14 21:44	06:44 19:57	08:08 18:14	08:43 15:36	10:02 14:37
15	09:48 15:22	08:21 17:00	06:47 18:24	05:59 20:54	04:20 22:26	03:09 23:44	03:45 23:16	05:17 21:41	06:46 19:54	08:11 18:10	08:46 15:33	10:04 14:37
16	09:46 15:25	08:18 17:03	06:44 18:27	05:56 20:57	04:17 22:29	03:08 23:45	03:48 23:13	05:20 21:37	06:49 19:50	08:14 18:07	08:50 15:30	10:05 14:36
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31	09:07 16:12		06:51 20:10		03:35 23:13		04:32 22:30	06:04 20:46		07:59 16:18		10:10 14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
Total, worst case												

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - med Hitra 2 vkv **Shadow receptor:** G - Vesthitterveien 182, Enebolig

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	10:09 14:49	09:04 16:15	07:35 17:43	09:51 (1) 10:14 (1)	06:48 20:13	05:05 21:43	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:43	07:31 18:58	08:03 16:15
2	10:08 14:50	09:01 16:18	07:31 17:46	09:52 (1) 10:14 (1)	06:45 20:16	05:02 21:46	03:30 23:18	03:16 23:42	04:38 22:23	06:10 20:39	07:34 18:55	08:06 16:12
3	10:07 14:52	08:58 16:21	07:28 17:49	09:52 (1) 10:13 (1)	06:41 20:19	04:58 21:49	03:28 23:21	03:18 23:40	04:41 22:20	06:13 20:36	07:37 18:51	08:09 16:08
4	10:06 14:54	08:55 16:24	07:25 17:52	09:53 (1) 10:13 (1)	06:38 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:16 20:32	07:40 18:48	08:12 16:05
5	10:05 14:57	08:52 16:28	07:21 17:55	09:53 (1) 10:11 (1)	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44	08:15 16:02
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Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
Total, worst case		128	128							263		

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - med Hitra 2 vkv Shadow receptor: H - Vesthitterveien 168, Enebolig

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	10:09 14:49	09:04 16:15	07:35 17:43	06:48 20:13	05:05 21:43	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:43	07:31 18:58	08:03 16:15	09:34 14:54
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	Minutes with flicker		

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - med Hitra 2 vkv Shadow receptor: I - Vesthitterveien 162, Fritidsbygg

Assumptions for shadow calculations

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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
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7	10:02 15:01	08:46 16:34	07:14 18:00	06:27 20:31	04:45 22:01	03:20 23:30	03:25 23:33	04:53 22:07	06:24 20:22	07:48 18:38	08:21 15:56	09:49 14:44
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31	09:07 16:12		06:51 20:10		03:35 23:13		04:32 22:30	06:04 20:46		07:59 16:18		10:10 14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
Total, worst case												

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)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - med Hitra 2 vkv Shadow receptor: J - Eldsfjellveien 3, Fritidsbygg

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	10:09 14:49	09:04 16:15		07:35 17:43	06:48 20:13	05:05 21:43	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:42	07:31 18:58		08:03 16:15	15	10:55 (1) 11:10 (1)	09:34 14:54
2	10:08 14:50	09:01 16:18		07:31 17:46	06:44 20:16	05:02 21:46	03:30 23:18	03:16 23:42	04:38 22:23	06:10 20:39	07:34 18:55		08:06 16:12	11	10:57 (1) 11:08 (1)	09:36 14:52
3	10:07 14:52	08:58 16:21		07:28 17:49	06:41 20:19	04:58 21:49	03:28 23:21	03:18 23:40	04:41 22:20	06:13 20:36	07:37 18:51		08:09 16:08		11:02 (1) 11:03 (1)	09:39 14:50
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Potential sun hours	178	241		363	449	564	613	600	505	392	306		275		203	145
Total, worst case			297										27			

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - med Hitra 2 vkv Shadow receptor: K - Eldsfjellveien 8, Fritidsbygg

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	10:09 14:49	09:04 16:15	07:35 17:43	06:48 20:13	05:05 21:43	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:42	07:31 18:58	08:02 16:15	11:34 (1) 14:54
2	10:08 14:50	09:01 16:18	07:31 17:46	06:44 20:16	05:02 21:46	03:30 23:18	03:16 23:42	04:38 22:23	06:10 20:39	07:34 18:55	08:06 16:11	11:34 (1) 14:52
3	10:07 14:52	08:58 16:21	07:28 17:49	06:41 20:19	04:58 21:49	03:28 23:21	03:18 23:40	04:41 22:20	06:13 20:36	07:37 18:51	08:09 16:08	11:35 (1) 14:50
4	10:06 14:54	08:55 16:24	07:25 17:52	06:38 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:16 20:32	07:40 18:48	08:12 16:05	11:36 (1) 14:49
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22	09:32 15:43	07:58 17:21	06:23 18:44	05:35 21:15	03:59 22:47	03:06 23:48	04:05 22:57	05:38 21:17	07:06 19:29	08:32 17:47	12:39 (1) 12:52 (1)	09:08 15:14
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24	09:26 15:49	07:52 17:27	06:16 18:50	05:29 21:21	03:53 22:53	03:07 23:48	04:11 22:51	05:44 21:10	07:11 19:22	08:38 17:40	12:36 (1) 12:56 (1)	09:14 15:09
25	09:24 15:52	07:48 17:30	06:12 18:53	05:25 21:24	03:50 22:56	03:08 23:48	04:14 22:48	05:47 21:07	07:14 19:19	07:41 16:37	11:35 (1) 11:56 (1)	09:17 15:07
26	09:21 15:56	07:45 17:33	06:09 18:56	05:22 21:27	03:48 22:59	03:08 23:47	04:17 22:45	05:50 21:03	07:17 19:15	07:44 16:34	11:34 (1) 11:57 (1)	09:20 15:05
27	09:18 15:59	07:42 17:37	06:05 18:59	05:18 21:30	03:45 23:02	03:09 23:47	04:20 22:42	05:53 21:00	07:20 19:12	07:47 16:31	11:33 (1) 11:57 (1)	09:23 15:02
28	09:16 16:02	07:38 17:40	06:02 19:01	05:15 21:33	03:42 23:05	03:10 23:46	04:23 22:39	05:56 20:56	07:23 19:09	07:50 16:27	11:33 (1) 11:57 (1)	09:26 15:00
29	09:13 16:05		06:58 20:04	05:12 21:36	03:40 23:08	03:12 23:45	04:26 22:36	05:58 20:53	07:25 19:05	07:53 16:24	11:33 (1) 11:57 (1)	09:28 14:58
30	09:10 16:08		06:55 20:07	05:08 21:39	03:37 23:10	03:13 23:44	04:29 22:33	06:01 20:49	07:28 19:02	07:56 16:21	11:33 (1) 11:58 (1)	09:31 14:56
31	09:07 16:12		06:51 20:10	03:35 23:13			04:32 22:30	06:04 20:46		07:59 16:18	11:33 (1) 11:57 (1)	14:45 14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	222	203
Total, worst case		330									114	145

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - med Hitra 2 vkv Shadow receptor: N - Vesthitterveien 154, Enebolig

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	10:09 14:48	09:04 16:15	12:53 (1) 13:01 (1)	07:35 17:43	06:48 20:13	05:05 21:42	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:42	07:31 18:58	08:02 16:15
2	10:08 14:50	09:01 16:18	12:51 (1) 13:04 (1)	07:31 17:46	06:44 20:16	05:02 21:46	03:30 23:18	03:16 23:42	04:38 22:23	06:10 20:39	07:34 18:55	08:06 16:11
3	10:07 14:52	08:58 16:21	12:49 (1) 13:05 (1)	07:28 17:49	06:41 20:19	04:58 21:49	03:28 23:21	03:17 23:40	04:41 22:20	06:13 20:36	07:37 18:51	08:09 16:08
4	10:06 14:54	08:55 16:24	12:48 (1) 13:06 (1)	07:25 17:52	06:37 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:16 20:32	07:40 18:48	08:12 16:05
5	10:05 14:56	08:52 16:28	12:48 (1) 13:08 (1)	07:21 17:54	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44	08:15 16:02
6	10:04 14:59	08:49 16:31	12:47 (1) 13:08 (1)	07:18 17:57	06:31 20:28	04:48 21:58	03:22 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41	08:18 15:59
7	10:02 15:01	08:46 16:34	12:46 (1) 13:08 (1)	07:14 18:00	06:27 20:30	04:45 22:01	03:20 23:30	03:25 23:33	04:53 22:07	06:24 20:22	07:48 18:37	08:21 15:56
8	10:01 15:03	08:43 16:37	12:47 (1) 13:09 (1)	07:11 18:03	06:24 20:33	04:42 22:04	03:18 23:32	03:28 23:31	04:56 22:04	06:27 20:18	07:51 18:34	08:24 15:53
9	09:59 15:06	08:40 16:40	12:46 (1) 13:09 (1)	07:08 18:06	06:20 20:36	04:39 22:07	03:16 23:34	03:30 23:29	04:59 22:01	06:30 20:15	07:54 18:31	08:27 15:50
10	09:58 15:08	08:37 16:44	12:47 (1) 13:10 (1)	07:04 18:09	06:17 20:39	04:36 22:10	03:15 23:36	03:32 23:27	05:02 21:57	06:32 20:11	07:57 18:27	08:31 15:47
11	09:56 15:11	08:34 16:47	12:47 (1) 13:09 (1)	07:01 18:12	06:13 20:42	04:32 22:14	03:13 23:38	03:35 23:25	05:05 21:54	06:35 20:08	08:00 18:24	08:34 15:44
12	09:54 15:14	08:31 16:50	12:47 (1) 13:09 (1)	06:57 18:15	06:10 20:45	04:29 22:17	03:12 23:39	03:37 23:23	05:08 21:51	06:38 20:04	08:02 18:20	08:37 15:41
13	09:52 15:16	08:27 16:53	12:48 (1) 13:09 (1)	06:54 18:18	06:06 20:48	04:26 22:20	03:11 23:41	03:40 23:20	05:11 21:47	06:41 20:01	08:05 18:17	08:40 15:38
14	09:50 15:19	08:24 16:56	12:48 (1) 13:07 (1)	06:50 18:21	06:03 20:51	04:23 22:23	03:10 23:42	03:42 23:18	05:14 21:44	06:44 19:57	08:08 18:14	08:43 15:35
15	09:48 15:22	08:21 16:59	12:50 (1) 13:07 (1)	06:47 18:24	05:59 20:54	04:20 22:26	03:09 23:43	03:45 23:15	05:17 21:41	06:46 19:54	08:11 18:10	08:46 15:33
16	09:46 15:25	08:18 17:03	12:51 (1) 13:05 (1)	06:43 18:27	05:56 20:57	04:17 22:29	03:08 23:45	03:48 23:13	05:20 21:37	06:49 19:50	08:14 18:07	08:49 15:30
17	09:44 15:28	08:15 17:06	12:54 (1) 13:02 (1)	06:40 18:30	05:52 21:00	04:14 22:32	03:07 23:46	03:50 23:10	05:23 21:34	06:52 19:47	08:17 18:04	08:53 15:27
18	09:41 15:31	08:11 17:09	12:54 (1) 13:03 (1)	06:37 18:33	05:49 21:03	04:11 22:35	03:07 23:46	03:53 23:08	05:26 21:30	06:55 19:43	08:20 18:00	08:56 15:24
19	09:39 15:34	08:08 17:12	12:54 (1) 13:03 (1)	06:33 18:35	05:46 21:06	04:08 22:38	03:06 23:47	03:56 23:05	05:29 21:27	06:58 19:40	08:23 17:57	08:59 15:22
20	09:36 15:37	08:05 17:15	12:54 (1) 13:03 (1)	06:30 18:38	05:42 21:09	04:05 22:41	03:06 23:47	03:59 23:02	05:32 21:24	07:00 19:36	08:26 17:54	09:02 15:19
21	09:34 15:40	08:01 17:18	12:54 (1) 13:03 (1)	06:26 18:41	05:39 21:12	04:02 22:44	03:06 23:48	04:02 22:59	05:35 21:20	07:03 19:33	08:29 17:50	09:05 15:17
22	09:32 15:43	07:58 17:21	12:54 (1) 13:03 (1)	06:23 18:44	05:35 21:15	03:59 22:47	03:06 23:48	04:05 22:57	05:38 21:17	07:06 19:29	08:32 17:47	09:08 15:14
23	09:29 15:46	07:55 17:24	12:54 (1) 13:03 (1)	06:19 18:47	05:32 21:18	03:56 22:50	03:07 23:48	04:08 22:54	05:41 21:13	07:09 19:26	08:35 17:44	09:11 15:12
24	09:26 15:49	07:52 17:27	12:54 (1) 13:03 (1)	06:16 18:50	05:29 21:21	03:53 22:53	03:07 23:48	04:11 22:51	05:44 21:10	07:11 19:22	08:38 17:40	09:14 15:09
25	09:24 15:52	07:48 17:30	12:54 (1) 13:03 (1)	06:12 18:53	05:25 21:24	03:50 22:56	03:08 23:48	04:14 22:48	05:47 21:07	07:14 19:19	07:41 16:37	10 12:23 (1) 12:33 (1)
26	09:21 15:56	07:45 17:33	12:54 (1) 13:03 (1)	06:09 18:56	05:22 21:27	03:48 22:59	03:08 23:47	04:17 22:45	05:50 21:03	07:17 19:15	07:44 16:34	12:21 (1) 12:35 (1)
27	09:18 15:59	07:42 17:36	12:54 (1) 13:03 (1)	06:05 18:59	05:18 21:30	03:45 23:02	03:09 23:47	04:20 22:42	05:53 21:00	07:20 19:12	07:47 16:31	14 12:19 (1) 12:36 (1)
28	09:16 16:02	07:38 17:40	12:54 (1) 13:03 (1)	06:02 19:01	05:15 21:33	03:42 23:05	03:10 23:46	04:23 22:39	05:55 20:56	07:23 19:09	07:50 16:27	17 12:17 (1) 12:37 (1)
29	09:13 16:05	07:35 17:38	12:54 (1) 13:03 (1)	06:01 19:04	05:14 21:36	03:40 23:08	03:11 23:45	04:26 22:36	05:58 20:53	07:25 19:05	07:53 16:24	20 12:17 (1) 12:38 (1)
30	09:10 16:08	07:32 17:40	12:54 (1) 13:03 (1)	06:00 19:07	05:13 21:39	03:37 23:10	03:13 23:44	04:29 22:33	06:01 20:49	07:28 19:02	07:56 16:21	21 12:17 (1) 12:39 (1)
31	09:07 16:11	07:29 17:42	12:54 (1) 13:03 (1)	06:00 19:07	05:13 21:39	03:37 23:10	03:13 23:44	04:29 22:33	06:01 20:49	07:28 19:02	07:56 16:21	22 12:17 (1) 12:39 (1)
Potential sun hours	178	241	309	363	449	564	613	600	505	392	306	127
Total, worst case												184

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - worst case - med Hitra 2 vkv Shadow receptor: O - Vesthitterveien 142, Fritidsbygg

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	10:09 14:48	09:04 16:15	07:35 17:43	06:48 20:13	05:05 21:42	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:42	07:31 18:58		
2	10:08 14:50	09:01 16:18	07:31 17:46	06:44 20:16	05:02 21:46	03:30 23:18	03:16 23:41	04:38 22:23	06:10 20:39	07:34 18:55	19	13:03 (1)
3	10:07 14:52	08:58 16:21	07:28 17:49	06:41 20:19	04:58 21:49	03:28 23:21	03:17 23:40	04:41 22:20	06:13 20:35	07:37 18:51	16	13:01 (1)
4	10:06 14:54	08:55 16:24	07:25 17:52	06:37 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:15 20:32	07:40 18:48	13	13:00 (1)
5	10:05 14:56	08:52 16:28	07:21 17:54	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44	6	12:57 (1)
6	10:04 14:59	08:49 16:31	07:18 17:57	06:31 20:28	04:48 21:58	03:22 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41		
7	10:02 15:01	08:46 16:34	13:20 (1) 07:14	06:27 20:30	04:45 22:01	03:20 23:30	03:25 23:33	04:53 22:07	06:24 20:22	07:48 18:37		
8	10:01 15:03	08:43 16:37	13:17 (1) 07:11	06:24 20:33	04:42 22:04	03:18 23:32	03:28 23:31	04:56 22:04	06:27 20:18	07:51 18:34		
9	09:59 15:06	08:40 16:40	13:15 (1) 07:08	06:20 20:36	04:39 22:07	03:16 23:34	03:30 23:29	04:59 22:01	06:30 20:15	07:54 18:31		
10	09:58 15:08	08:37 16:44	13:15 (1) 07:04	06:17 20:39	04:36 22:10	03:15 23:36	03:32 23:27	05:02 21:57	06:32 20:11	07:57 18:27		
11	09:56 15:11	08:34 16:47	13:14 (1) 07:01	06:13 20:42	04:32 22:14	03:13 23:38	03:35 23:25	05:05 21:54	06:35 20:08	08:00 18:24		
12	09:54 15:14	08:31 16:50	13:13 (1) 06:57	06:10 20:45	04:29 22:17	03:12 23:39	03:37 23:23	05:08 21:51	06:38 20:04	08:02 18:20		
13	09:52 15:16	08:27 16:53	13:13 (1) 06:54	06:06 20:48	04:26 22:20	03:11 23:41	03:40 23:20	05:11 21:47	06:41 20:01	08:05 18:17		
14	09:50 15:19	08:24 16:56	13:12 (1) 06:50	06:03 20:51	04:23 22:23	03:10 23:42	03:42 23:18	05:14 21:44	06:44 19:57	08:08 18:14		
15	09:48 15:22	08:21 16:59	13:13 (1) 06:47	05:59 20:54	04:20 22:26	03:09 23:43	03:45 23:15	05:17 21:41	06:46 19:54	08:11 18:10		
16	09:46 15:25	08:18 17:03	13:12 (1) 06:43	05:56 20:57	04:17 22:29	03:08 23:45	03:48 23:13	05:20 21:37	06:49 19:50	08:14 18:07		
17	09:43 15:28	08:15 17:06	13:12 (1) 06:40	05:52 21:00	04:14 22:32	03:07 23:45	03:50 23:10	05:23 21:34	06:52 19:47	08:17 18:04		
18	09:41 15:31	08:11 17:09	13:13 (1) 06:37	05:49 21:03	04:11 22:35	03:07 23:46	03:53 23:08	05:26 21:30	06:55 19:43	08:20 18:00		
19	09:39 15:34	08:08 17:12	13:13 (1) 06:33	05:46 21:06	04:08 22:38	03:06 23:47	03:56 23:05	05:29 21:27	06:57 19:40	08:23 17:57		
20	09:36 15:37	08:05 17:15	13:15 (1) 06:30	05:42 21:09	04:05 22:41	03:06 23:47	03:59 23:02	05:32 21:24	07:00 19:36	08:26 17:54	9	13:59 (1)
21	09:34 15:40	08:01 17:18	13:15 (1) 06:26	05:39 21:12	04:02 22:44	03:06 23:48	04:02 22:59	05:35 21:20	07:03 19:33	08:29 17:50	14	14:01 (1)
22	09:32 15:43	07:58 17:21	13:17 (1) 06:23	05:35 21:15	03:59 22:47	03:06 23:48	04:05 22:57	05:38 21:17	07:06 19:29	08:32 17:47	18	14:04 (1)
23	09:29 15:46	07:55 17:24	13:21 (1) 06:19	05:32 21:18	03:56 22:50	03:07 23:48	04:08 22:54	05:41 21:13	07:09 19:26	08:35 17:44	20	14:04 (1)
24	09:26 15:49	07:52 17:27	13:27 (1) 06:16	05:29 21:21	03:53 22:53	03:07 23:48	04:11 22:51	05:44 21:10	07:11 19:22	08:38 17:40	22	14:05 (1)
25	09:24 15:52	07:48 17:30	06:12 18:53	05:25 21:24	03:50 22:56	03:08 23:48	04:14 22:48	05:47 21:07	07:14 19:19	07:41 16:37	23	14:06 (1)
26	09:21 15:56	07:45 17:33	06:09 18:56	05:22 21:27	03:48 22:59	03:08 23:47	04:17 22:45	05:50 21:03	07:17 19:15	07:44 16:34	24	14:06 (1)
27	09:18 15:59	07:41 17:36	06:05 18:59	05:18 21:30	03:45 23:02	03:09 23:47	04:20 22:42	05:53 21:00	07:20 19:12	07:47 16:31	24	14:06 (1)
28	09:16 16:02	07:38 17:39	06:02 19:01	05:15 21:33	03:42 23:05	03:10 23:46	04:23 22:39	05:55 20:56	07:23 19:09	07:50 16:27	24	14:05 (1)
29	09:13 16:05		06:58 20:04	05:12 21:36	03:40 23:08	03:11 23:45	04:26 22:36	05:58 20:53	07:25 19:05	07:53 16:24	23	14:05 (1)
30	09:10 16:08		06:55 20:07	05:08 21:39	03:37 23:10	03:13 23:44	04:29 22:33	06:01 20:49	07:28 19:02	07:56 16:21	22	14:03 (1)
31	09:07 16:11		06:51 20:10	03:35 23:13			04:32 22:30	06:04 20:46		07:59 16:18	21	14:04 (1)
Potential sun hours	178	241	363	449	564	613	600	505	392	306	268	203
Total, worst case		316									54	145

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

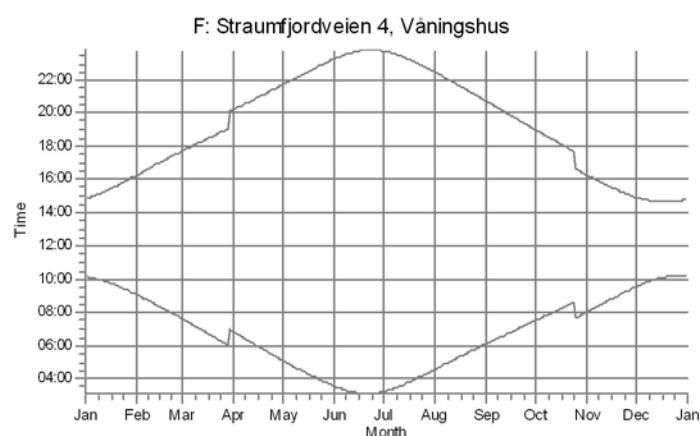
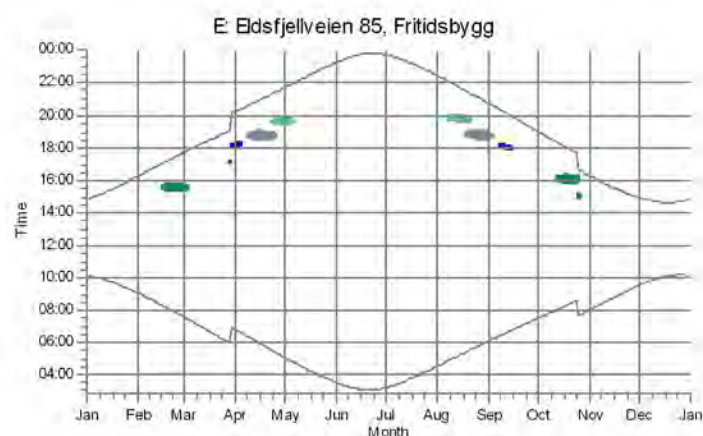
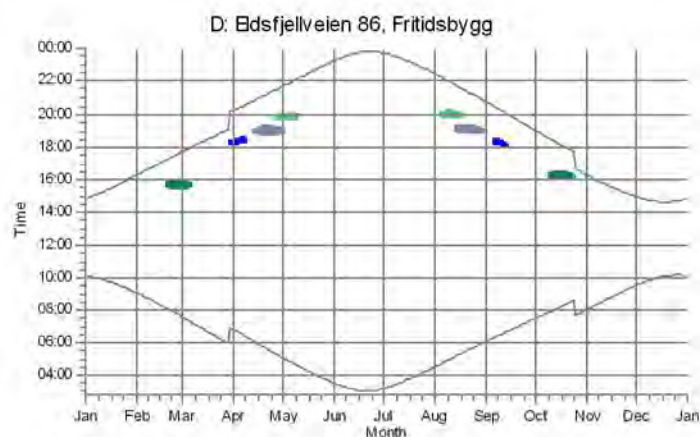
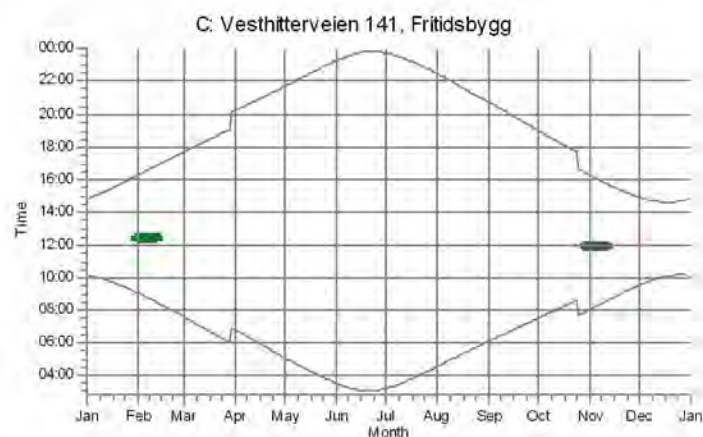
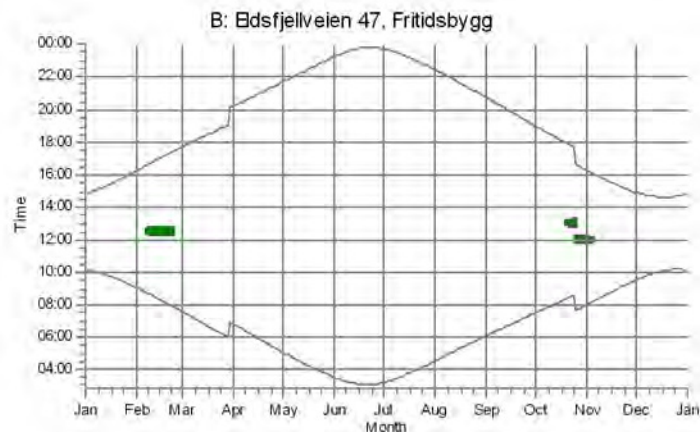
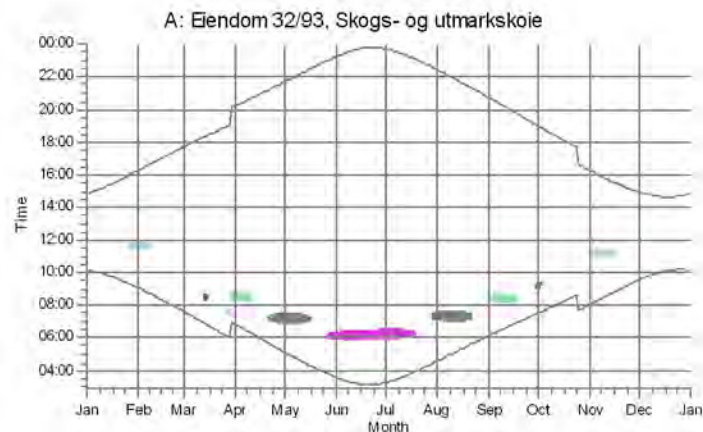
Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker
			(WTG causing flicker last time)



Vedlegg 3.2

SHADOW - Calendar, graphical

Calculation: Nye Hitra 1 - worst case - med Hitra 2 vkv



WTGs

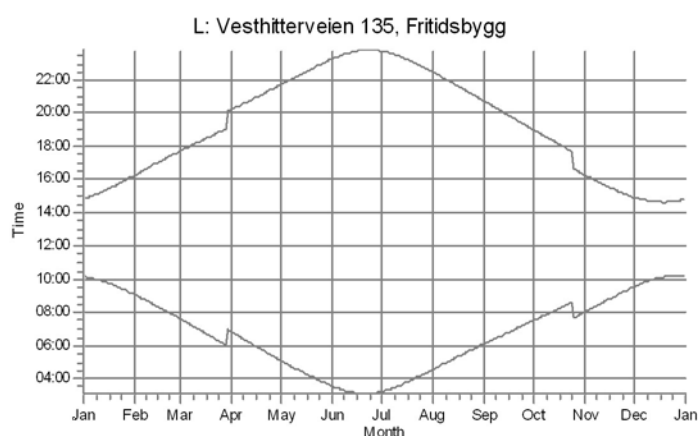
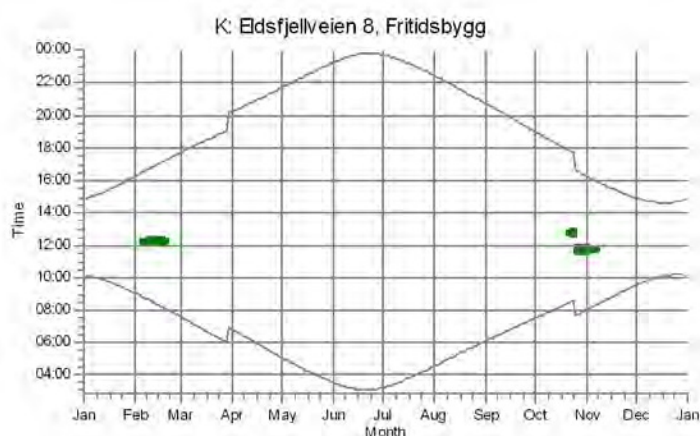
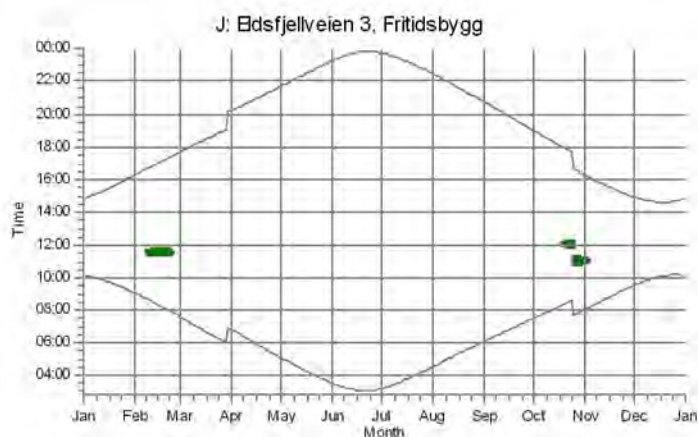
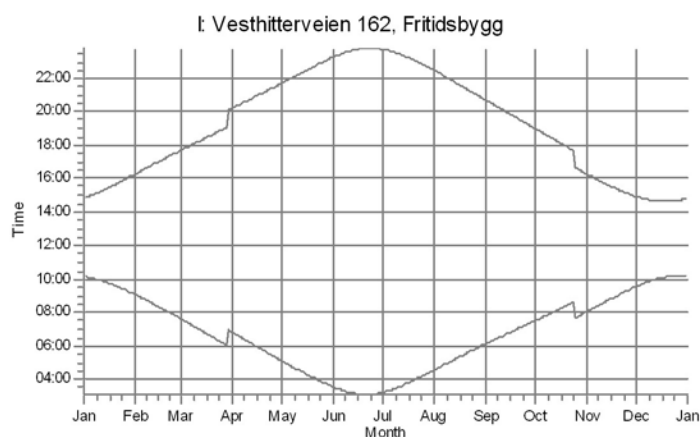
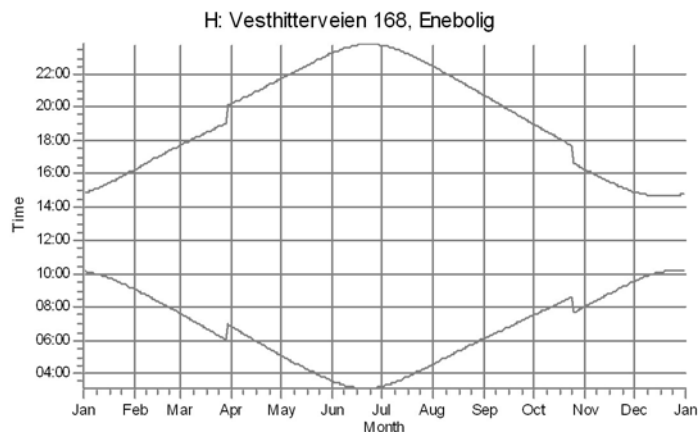
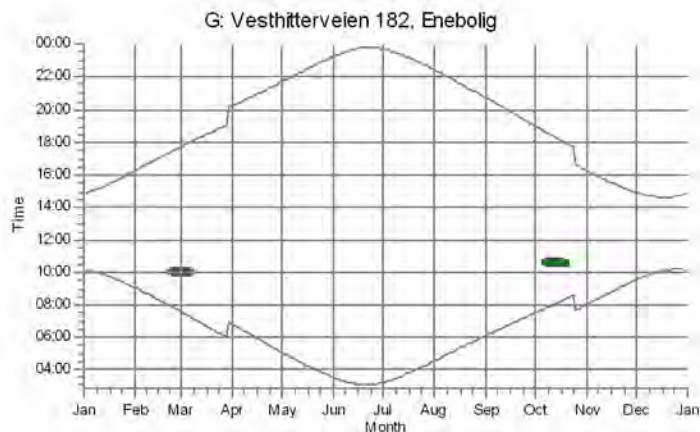
1: NORDEX N175/6.X 6800 175.0 I-I hub: 132,5 m (TOT: 220,0 m) (1)
3: NORDEX N175/6.X 6800 175.0 I-I hub: 132,5 m (TOT: 220,0 m) (3)
4: NORDEX N175/6.X 6800 175.0 I-I hub: 132,5 m (TOT: 220,0 m) (4)
6: NORDEX N175/6.X 6800 175.0 I-I hub: 132,5 m (TOT: 220,0 m) (6)

26: VESTAS V117-3.6 3600 117.0 IOI hub: 87,0 m (TOT: 145,5 m) (11)
28: VESTAS V117-3.6 3600 117.0 IOI hub: 87,0 m (TOT: 145,5 m) (13)
33: VESTAS V117-3.6 3600 117.0 IOI hub: 87,0 m (TOT: 145,5 m) (18)
35: VESTAS V117-3.6 3600 117.0 IOI hub: 87,0 m (TOT: 145,5 m) (20)

38: VESTAS V117-3.6 3600 117.0 IOI hub: 87,0 m (TOT: 145,5 m) (23)
40: VESTAS V117-3.6 3600 117.0 IOI hub: 87,0 m (TOT: 145,5 m) (25)

SHADOW - Calendar, graphical

Calculation: Nye Hitra 1 - worst case - med Hitra 2 vkw

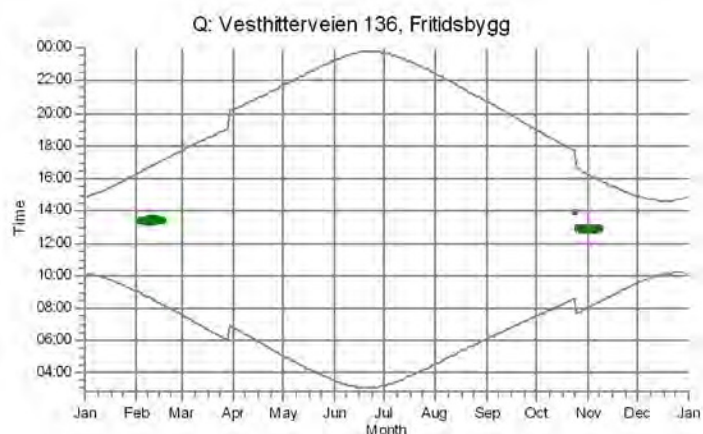
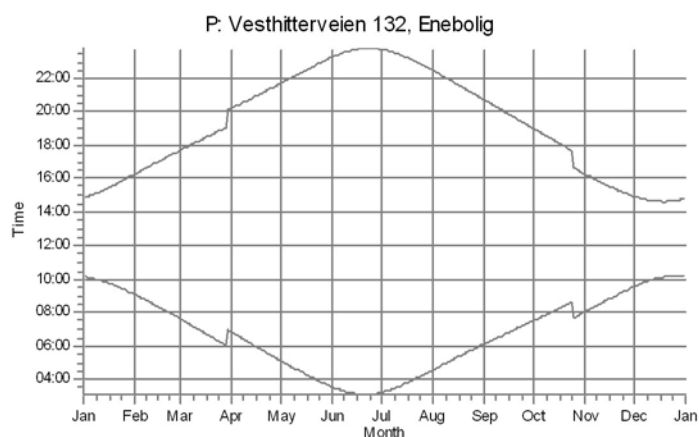
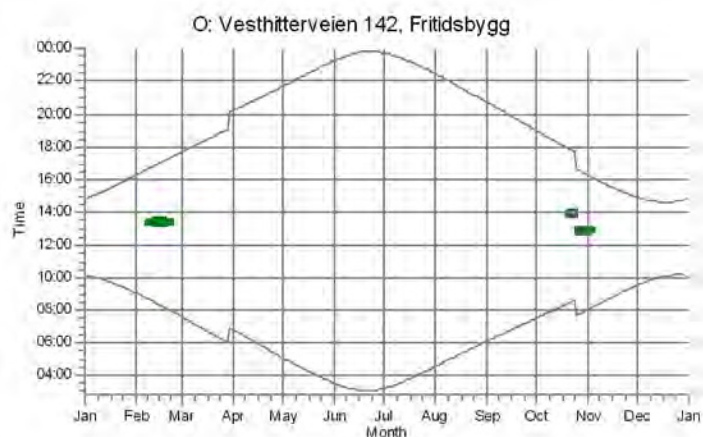
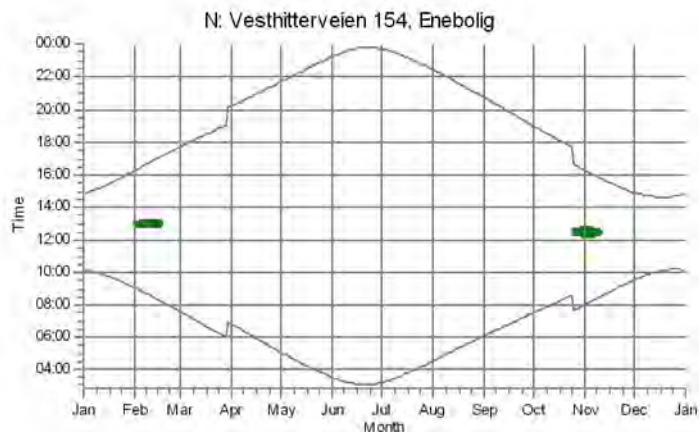
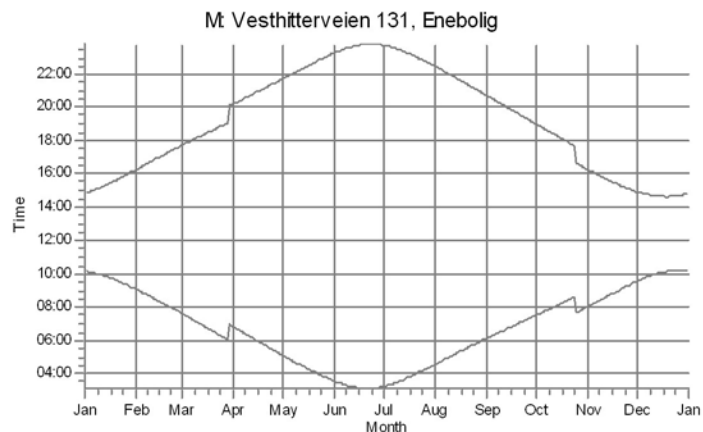


WTGs

1: NORDEX N175/6.X 6800 175.0 I-I hub: 132,5 m (TOT: 220,0 m) (1)

SHADOW - Calendar, graphical

Calculation: Nye Hitra 1 - worst case - med Hitra 2 vkv



WTGs

1: NORDEX N175/6.X 6800 175.0 I-I hub: 132,5 m (TOT: 220,0 m) (1)



Vedlegg 4.1

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - med Hitra 2 kvk **Shadow receptor:** A - Eiendom 32/93, Skogs- og utmarkskoie
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
259 364 581 497 609 497 357 770 1 435 798 476 357 7 000

	January	February	March	April	May	June
1	10:09 14:49	09:04 16:15	11:31 (33) 17:43	06:48 20:13	08:20 (26) 21:42	05:05 23:15
2	10:08 14:51	09:01 16:18	11:31 (33) 17:46	06:45 20:16	08:20 (26) 21:46	05:02 23:18
3	10:07 14:53	08:58 16:22	11:32 (33) 17:49	06:41 20:19	08:20 (26) 21:49	05:02 23:20
4	10:06 14:55	08:55 16:25	11:32 (33) 17:52	06:38 20:22	08:19 (26) 21:52	05:02 23:23
5	10:05 14:57	08:52 16:28	11:33 (33) 17:55	06:34 20:25	08:20 (26) 21:55	05:02 23:25
6	10:04 14:59	08:49 16:31	11:33 (33) 17:58	06:31 20:28	08:19 (26) 21:58	05:02 23:27
7	10:02 15:02	08:46 16:34	11:34 (33) 18:01	06:27 20:31	08:20 (26) 22:01	05:02 23:30
8	10:01 15:04	08:43 16:38	11:37 (33) 18:04	06:24 20:33	08:22 (26) 22:04	05:02 23:32
9	09:59 15:06	08:40 16:41	11:46 (33) 18:07	06:20 20:36	08:23 (26) 22:07	05:02 23:34
10	09:57 15:09	08:37 16:44	11:46 (33) 18:09	06:17 20:39	08:33 (26) 22:10	05:02 23:36
11	09:56 15:12	08:34 16:47	11:47 (33) 18:12	06:13 20:42	08:38 (26) 22:13	05:02 23:37
12	09:54 15:14	08:31 16:50	11:48 (33) 18:15	06:10 20:45	08:41 (26) 22:17	05:02 23:39
13	09:52 15:17	08:27 16:53	11:49 (33) 18:18	06:07 20:48	08:42 (26) 22:20	05:02 23:40
14	09:50 15:20	08:24 16:57	11:50 (33) 18:21	06:03 20:51	08:43 (26) 22:23	05:02 23:42
15	09:48 15:23	08:21 17:00	11:51 (33) 18:24	06:00 20:54	08:44 (26) 22:26	05:02 23:43
16	09:46 15:25	08:18 17:03	11:52 (33) 18:27	05:56 20:57	08:45 (26) 22:29	05:02 23:44
17	09:43 15:28	08:15 17:06	11:53 (33) 18:30	05:53 21:00	08:46 (26) 22:32	05:02 23:45
18	09:41 15:31	08:11 17:09	11:54 (33) 18:33	05:49 21:03	08:47 (26) 22:35	05:02 23:46
19	09:39 15:34	08:08 17:12	11:55 (33) 18:36	05:46 21:06	08:48 (26) 22:38	05:02 23:47
20	09:36 15:37	08:05 17:15	11:56 (33) 18:39	05:42 21:09	08:49 (26) 22:41	05:02 23:47
21	09:34 15:40	08:02 17:18	11:57 (33) 18:41	05:39 21:12	08:50 (26) 22:44	05:02 23:47
22	09:31 15:43	07:58 17:21	11:58 (33) 18:44	05:36 21:15	08:51 (26) 22:47	05:02 23:48
23	09:29 15:47	07:55 17:25	11:59 (33) 18:47	05:32 21:18	08:52 (26) 22:50	05:02 23:48
24	09:26 15:50	07:52 17:28	12:00 (33) 18:50	05:29 21:21	08:53 (26) 22:53	05:02 23:47
25	09:24 15:53	07:48 17:31	12:01 (33) 18:53	05:25 21:24	08:54 (26) 22:56	05:02 23:47
26	09:21 15:56	07:45 17:34	12:02 (33) 18:56	05:22 21:27	08:55 (26) 22:59	05:02 23:47
27	09:18 15:59	11:42 (33) 17:37	12:03 (33) 18:59	05:19 21:30	08:56 (26) 23:02	05:02 23:46
28	09:15 16:02	11:45 (33) 17:40	12:04 (33) 19:02	05:15 21:33	08:57 (26) 23:05	05:02 23:45
29	09:13 16:05	11:47 (33) 17:43	12:05 (33) 19:05	05:12 21:36	08:58 (26) 23:07	05:02 23:45
30	09:10 16:09	11:48 (33) 17:46	12:06 (33) 19:08	05:09 21:39	08:59 (26) 23:10	05:02 23:44
31	09:07 16:12	11:49 (33) 17:49	12:07 (33) 19:11	05:06 21:42	09:00 (26) 23:13	05:02 23:44
Potential sun hours	178	241	363	449	563	612
Total, worst case	67	124	78	346	398	715
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.	0,56	0,56	0,62	0,67	0,71	0,73
Total reduction	0,22	0,22	0,25	0,27	0,28	0,29
Total, real	15	28	19	92	113	210

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)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - med Hitra 2 kvk Shadow receptor: C - Vesthitterveien 141, Fritidsbygg

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
259 364 581 497 609 497 357 770 1 435 798 476 357 7 000

	January	February	March	April	May	June	July	August	September	October	November	December
1	10:09 14:48	09:04 16:15 18	12:16 (1) 12:34 (1) 17:43	07:35 20:13	05:05 21:43	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:42	07:31 18:58	08:02 16:15 21	11:45 (1) 12:06 (1) 14:54
2	10:08 14:50	09:01 16:18 19	12:16 (1) 12:35 (1) 17:46	07:31 20:16	05:02 21:46	03:30 23:18	03:16 23:42	04:38 22:23	06:10 20:39	07:34 18:55	08:06 16:11 22	11:44 (1) 12:06 (1) 14:52
3	10:07 14:52	08:58 16:21 21	12:15 (1) 12:36 (1) 17:49	06:41 20:19	04:58 21:49	03:28 23:21	03:17 23:40	04:41 22:20	06:13 20:36	07:37 18:51	08:09 16:08 23	11:44 (1) 12:07 (1) 14:50
4	10:06 14:54	08:55 16:24 22	12:14 (1) 12:36 (1) 17:52	06:37 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:16 20:32	07:40 18:48	08:12 16:05 23	11:44 (1) 12:07 (1) 14:49
5	10:05 14:56	08:52 16:28 22	12:15 (1) 12:37 (1) 17:55	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44	08:15 16:02 22	11:44 (1) 12:06 (1) 14:47
6	10:04 14:59	08:49 16:31 23	12:14 (1) 12:37 (1) 17:57	06:31 20:28	04:49 21:58	03:22 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41	08:18 15:59 22	11:44 (1) 12:06 (1) 14:46
7	10:02 15:01	08:46 16:34 22	12:14 (1) 12:36 (1) 18:00	06:27 20:30	04:45 22:01	03:20 23:30	03:25 23:33	04:53 22:07	06:24 20:22	07:48 18:38	08:21 15:56 21	11:45 (1) 12:06 (1) 14:44
8	10:01 15:03	08:43 16:37 22	12:15 (1) 12:37 (1) 18:03	06:24 20:33	04:42 22:04	03:18 23:32	03:28 23:31	04:56 22:04	06:27 20:18	07:51 18:34	08:24 15:53 21	11:45 (1) 12:06 (1) 14:43
9	09:59 15:06	08:40 16:40 21	12:15 (1) 12:36 (1) 18:06	06:20 20:36	04:39 22:07	03:16 23:34	03:30 23:29	04:59 22:01	06:30 20:15	07:54 18:31	08:27 15:50 20	11:46 (1) 12:06 (1) 14:42
10	09:58 15:08	08:37 16:44 21	12:16 (1) 12:37 (1) 18:09	06:17 20:39	04:36 22:11	03:15 23:36	03:32 23:27	05:02 21:57	06:32 20:11	07:57 18:27	08:31 15:47 18	11:46 (1) 12:04 (1) 14:40
11	09:56 15:11	08:34 16:47 20	12:16 (1) 12:34 (1) 18:12	06:13 20:42	04:32 22:14	03:13 23:38	03:35 23:25	05:05 21:54	06:35 20:08	08:00 18:24	08:34 15:44 15	11:48 (1) 12:03 (1) 14:39
12	09:54 15:14	08:31 16:50 17	12:17 (1) 12:34 (1) 18:15	06:10 20:45	04:29 22:17	03:12 23:39	03:37 23:23	05:08 21:51	06:38 20:04	08:02 18:20	08:37 15:41 13	11:49 (1) 12:02 (1) 14:39
13	09:52 15:16	08:27 16:53 14	12:19 (1) 12:33 (1) 18:18	06:06 20:48	04:26 22:20	03:11 23:41	03:40 23:20	05:11 21:47	06:41 20:01	08:05 18:17	08:40 15:38 8	11:52 (1) 12:00 (1) 14:38
14	09:50 15:19	08:24 16:56 10	12:21 (1) 12:31 (1) 18:21	06:03 20:51	04:23 22:23	03:10 23:42	03:42 23:18	05:14 21:44	06:44 19:57	08:08 18:14	08:43 15:35	11:52 (1) 12:00 (1) 14:37
15	09:48 15:22	08:21 16:59	06:47 18:24	05:59 20:54	04:20 22:26	03:09 23:44	03:45 23:16	05:17 21:41	06:46 19:54	08:11 18:10	08:46 15:33	11:52 (1) 12:00 (1) 14:37
16	09:46 15:25	08:18 17:03	06:43 18:27	05:56 20:57	04:17 22:29	03:08 23:45	03:48 23:13	05:20 21:37	06:49 19:50	08:14 18:07	08:49 15:30	11:52 (1) 12:00 (1) 14:36
17	09:44 15:28	08:15 17:06	06:40 18:30	05:52 21:00	04:14 22:32	03:07 23:46	03:50 23:10	05:23 21:34	06:52 19:47	08:17 18:04	08:53 15:27	11:52 (1) 12:00 (1) 14:36
18	09:41 15:31	08:11 17:09	06:37 18:33	05:49 21:03	04:11 22:35	03:07 23:46	03:53 23:08	05:26 21:31	06:55 19:43	08:20 18:00	08:56 15:24	11:52 (1) 12:00 (1) 14:36
19	09:39 15:34	08:08 17:12	06:33 18:36	05:46 21:06	04:08 22:38	03:06 23:47	03:56 23:05	05:29 21:27	06:58 19:40	08:23 17:57	08:59 15:22	11:52 (1) 12:00 (1) 14:36
20	09:37 15:37	08:05 17:15	06:30 18:38	05:42 21:09	04:05 22:41	03:06 23:48	03:59 23:02	05:32 21:24	07:00 19:36	08:26 17:54	09:02 15:19	11:52 (1) 12:00 (1) 14:36
21	09:34 15:40	08:01 17:18	06:26 18:41	05:39 21:12	04:02 22:44	03:06 23:48	04:02 22:59	05:35 21:20	07:03 19:33	08:29 17:50	09:05 15:17	11:52 (1) 12:00 (1) 14:36
22	09:32 15:43	07:58 17:21	06:23 18:44	05:35 21:15	03:59 22:47	03:06 23:48	04:05 22:57	05:38 21:17	07:06 19:29	08:32 17:47	09:08 15:14	11:52 (1) 12:00 (1) 14:37
23	09:29 15:46	07:55 17:24	06:19 18:47	05:32 21:18	03:56 22:50	03:07 23:48	04:08 22:54	05:41 21:13	07:09 19:26	08:35 17:44	09:11 15:12	11:52 (1) 12:00 (1) 14:37
24	09:26 15:49	07:52 17:27	06:16 18:50	05:29 21:21	03:53 22:53	03:07 23:48	04:11 22:51	05:44 21:10	07:11 19:22	08:38 17:40	09:14 15:09	11:52 (1) 12:00 (1) 14:38
25	09:24 15:52	07:48 17:30	06:12 18:53	05:25 21:24	03:50 22:56	03:08 23:48	04:14 22:48	05:47 21:07	07:14 19:19	07:41 16:37	09:17 15:07	11:52 (1) 12:00 (1) 14:39
26	09:21 15:56	07:45 17:33	06:09 18:56	05:22 21:27	03:48 22:59	03:08 23:47	04:17 22:45	05:50 21:03	07:17 19:15	07:44 16:34	09:20 15:05	11:52 (1) 12:00 (1) 14:40
27	09:18 15:59	07:42 17:37	06:05 18:59	05:18 21:30	03:45 22:02	03:09 23:47	04:20 22:42	05:53 21:00	07:20 19:12	07:47 16:31	09:23 15:02	11:52 (1) 12:00 (1) 14:41
28	09:16 16:02	07:38 17:40	06:02 19:01	05:15 21:33	03:42 23:05	03:10 23:46	04:23 22:39	05:55 21:00	07:23 19:09	07:50 16:27	09:26 15:00	11:52 (1) 12:00 (1) 14:42
29	09:13 16:05	12:20 (1) 12:28 (1)	09:01 20:04	05:12 21:36	03:40 23:08	03:11 23:45	04:26 22:36	05:58 21:05	07:25 19:05	07:53 16:24	09:23 15:00	11:52 (1) 12:00 (1) 14:43
30	09:10 16:08	12:18 (1) 12:30 (1)	08:55 20:07	05:08 21:39	03:37 23:10	03:13 23:44	04:29 22:33	06:01 21:04	07:28 19:02	07:56 16:21	09:31 15:00	11:52 (1) 12:00 (1) 14:44
31	09:07 16:12	12:17 (1) 12:33 (1)	08:51 20:10	05:01 21:33	03:35 23:13	03:05 23:46	04:32 22:30	06:04 21:04	07:28 19:02	07:59 16:18	09:31 15:00	11:52 (1) 12:00 (1) 14:45
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
Total, worst case	36	272								66	249	
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	0,61								0,61	0,61	
Total reduction	0,24	0,24								0,24	0,24	
Total, real	9	66								16	61	

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - med Hitra 2 kvk
Assumptions for shadow calculations

Shadow receptor: D - Eldsfjellveien 86, Fritidsbygg

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
259	364	581	497	609	497	357	770	1 435	798	476	357	7 000

	January	February	March	April	May	June
1	10:09 09:04		07:35	15:31 (6) 06:48	18:14 (3) 05:05	19:40 (28) 03:33
	14:49 16:15		17:42	15:51 (6) 20:13	18:20 (3) 21:42	19:57 (28) 23:15
2	10:08 09:01		07:31	15:32 (6) 06:44	18:14 (3) 05:02	19:40 (28) 03:30
	14:50 16:18		17:45	15:50 (6) 20:16	18:23 (3) 21:45	19:59 (28) 23:18
3	10:07 08:58		07:28	15:33 (6) 06:41	18:14 (3) 04:58	19:40 (28) 03:28
	14:52 16:21		17:48	15:49 (6) 20:19	18:24 (3) 21:48	19:59 (28) 23:20
4	10:06 08:55		07:24	15:34 (6) 06:37	18:15 (3) 04:55	19:41 (28) 03:26
	14:54 16:24		17:51	15:46 (6) 20:21	18:26 (3) 21:51	19:58 (28) 23:23
5	10:05 08:52		07:21	15:39 (6) 06:34	18:16 (3) 04:52	19:41 (28) 03:24
	14:57 16:28		17:54	15:42 (6) 20:24	18:29 (3) 21:55	19:57 (28) 23:25
6	10:03 08:49		07:18	06:30	18:17 (3) 04:48	19:43 (28) 03:22
	14:59 16:31		17:57	20:27	18:30 (3) 21:58	19:57 (28) 23:27
7	10:02 08:46		07:14	06:27	18:20 (3) 04:45	19:43 (28) 03:20
	15:01 16:34		18:00	20:30	18:28 (3) 22:01	19:56 (28) 23:29
8	10:00 08:43		07:11	06:23	04:42	19:45 (28) 03:18
	15:03 16:37		18:03	20:33	22:04	19:54 (28) 23:31
9	09:59 08:40		07:07	06:20	04:39	03:17
	15:06 16:40		18:06	20:36	22:07	23:33
10	09:57 08:37		07:04	06:17	04:36	03:15
	15:08 16:44		18:09	20:39	22:10	23:35
11	09:55 08:33		07:00	06:13	04:32	03:14
	15:11 16:47		18:12	20:42	22:13	23:37
12	09:53 08:30		06:57	06:10	04:29	03:12
	15:14 16:50		18:15	20:45	22:16	23:39
13	09:52 08:27		06:54	06:06	04:26	03:11
	15:16 16:53		18:18	20:48	22:19	23:40
14	09:50 08:24		06:50	06:03	18:55 (38) 04:23	03:10
	15:19 16:56		18:21	20:51	18:57 (38) 22:23	23:42
15	09:47 08:21		06:47	05:59	18:52 (38) 04:20	03:09
	15:22 16:59		18:24	20:54	19:01 (38) 22:26	23:43
16	09:45 08:18		06:43	05:56	18:50 (38) 04:17	03:08
	15:25 17:03		18:27	20:57	19:04 (38) 22:29	23:44
17	09:43 08:14		06:40	05:52	18:49 (38) 04:14	03:08
	15:28 17:06		18:30	21:00	19:09 (38) 22:32	23:45
18	09:41 08:11		06:36	05:49	18:48 (38) 04:11	03:07
	15:31 17:09		18:32	21:03	19:10 (38) 22:35	23:46
19	09:38 08:08		15:38 (6) 06:33	05:46	18:47 (38) 04:08	03:07
	15:34 17:12	9	15:47 (6) 18:35	21:06	19:11 (38) 22:38	23:46
20	09:36 08:04		15:35 (6) 06:29	05:42	18:47 (38) 04:05	03:07
	15:37 17:15	14	15:49 (6) 18:38	21:09	19:11 (38) 22:41	23:47
21	09:34 08:01		15:34 (6) 06:26	05:39	18:47 (38) 04:02	03:07
	15:40 17:18	17	15:51 (6) 18:41	21:12	19:11 (38) 22:44	23:47
22	09:31 07:58		15:32 (6) 06:23	05:35	18:47 (38) 03:59	03:07
	15:43 17:21	19	15:51 (6) 18:44	21:15	19:11 (38) 22:47	23:47
23	09:29 07:55		15:32 (6) 06:19	05:32	18:47 (38) 03:56	03:07
	15:46 17:24	21	15:53 (6) 18:47	21:18	19:11 (38) 22:50	23:47
24	09:26 07:51		15:31 (6) 06:16	05:28	18:46 (38) 03:53	03:07
	15:49 17:27	21	15:52 (6) 18:50	21:21	19:09 (38) 22:53	23:47
25	09:23 07:48		15:30 (6) 06:12	05:25	18:47 (38) 03:51	03:08
	15:52 17:30	22	15:52 (6) 18:53	21:24	19:09 (38) 22:56	23:47
26	09:21 07:45		15:30 (6) 06:09	05:22	18:47 (38) 03:48	03:09
	15:56 17:33	23	15:53 (6) 18:55	21:27	19:45 (28) 22:59	23:47
27	09:18 07:41		15:30 (6) 06:05	05:18	18:48 (38) 03:45	03:10
	15:59 17:36	22	15:52 (6) 18:58	21:30	19:47 (28) 23:02	23:46
28	09:15 07:38		15:31 (6) 06:02	05:15	18:50 (38) 03:43	03:11
	16:02 17:39	21	15:52 (6) 19:01	21:33	19:50 (28) 23:04	23:45
29	09:12		06:58	05:12	18:52 (38) 03:40	03:12
	16:05		20:04	21:36	19:52 (28) 23:07	23:44
30	09:10		06:55	18:14 (3) 05:08	18:55 (38) 03:38	03:13
	16:08		20:07	1	18:15 (3) 21:39	19:55 (28) 23:10
31	09:07		06:51	18:14 (3)	03:35	23:13
	16:11		20:10	4	18:18 (3)	23:13
Potential sun hours	178	241	363	449	563	612
Total, worst case		189	74	413	124	
Sun reduction		0,50	0,50	0,50	0,50	
Oper. time red.		0,80	0,80	0,80	0,80	
Wind dir. red.		0,71	0,71	0,68	0,62	
Total reduction		0,29	0,29	0,27	0,25	
Total, real		54	21	112	31	

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)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - med Hitra 2 kvk Shadow receptor: D - Eldsfjellveien 86, Fritidsbygg

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
259	364	581	497	609	497	357	770	1 435	798	476	357	7 000

	July	August	September	October	November	December
1	03:14	04:35	06:07	07:31	08:02	09:33
	23:42	22:26	20:42	18:58	16:15	14:54
2	03:16	04:38	06:10	07:34	08:05	09:36
	23:41	22:23	20:39	18:55	16:11	14:52
3	03:18	04:41	06:13	07:37	08:08	09:39
	23:39	22:20	20:35	18:51	16:08	14:50
4	03:20	04:44	19:56 (28)	06:15	07:39	08:11
	23:38	22:16	20:02 (28)	20:32	18:48	16:05
5	03:21	04:47	19:54 (28)	06:18	18:16 (3)	07:42
	23:36	22:13	20:05 (28)	20:28	18:24 (3)	18:44
6	03:23	04:50	19:52 (28)	06:21	18:13 (3)	07:45
	23:35	22:10	20:05 (28)	20:25	18:26 (3)	18:41
7	03:26	04:53	19:51 (28)	06:24	18:11 (3)	07:48
	23:33	22:07	20:06 (28)	20:21	18:24 (3)	18:37
8	03:28	04:56	19:51 (28)	06:27	18:09 (3)	07:51
	23:31	22:04	20:07 (28)	20:18	18:21 (3)	18:34
9	03:30	04:59	19:50 (28)	06:29	18:08 (3)	07:54
	23:29	22:00	20:07 (28)	20:14	18:18 (3)	18:31
10	03:32	05:02	19:49 (28)	06:32	18:07 (3)	07:56
	23:27	21:57	20:08 (28)	20:11	18:16 (3)	18:27
11	03:35	05:05	19:49 (28)	06:35	18:06 (3)	07:59
	23:24	21:54	20:08 (28)	20:07	18:12 (3)	18:24
12	03:37	05:08	19:49 (28)	06:38	18:06 (3)	08:02
	23:22	21:50	20:05 (28)	20:04	18:09 (3)	18:20
13	03:40	05:11	19:02 (38)	06:41	18:06 (3)	08:05
	23:20	21:47	20:03 (28)	20:00	18:07 (3)	18:17
14	03:42	05:14	18:59 (38)	06:43	08:08	16:03 (6)
	23:17	21:44	20:00 (28)	19:57	18:14	22 16:25 (6)
15	03:45	05:17	18:57 (38)	06:46	08:11	16:02 (6)
	23:15	21:40	19:56 (28)	19:54	18:10	23 16:25 (6)
16	03:48	05:20	18:56 (38)	06:49	08:14	16:02 (6)
	23:12	21:37	19:54 (28)	19:50	18:07	22 16:24 (6)
17	03:51	05:23	18:55 (38)	06:52	08:17	16:02 (6)
	23:10	21:34	19:52 (28)	19:47	18:03	22 16:24 (6)
18	03:53	05:26	18:53 (38)	06:55	08:20	16:03 (6)
	23:07	21:30	19:15 (38)	19:43	18:00	21 16:24 (6)
19	03:56	05:29	18:53 (38)	06:57	08:23	16:03 (6)
	23:05	21:27	19:16 (38)	19:40	17:57	20 16:23 (6)
20	03:59	05:32	18:52 (38)	07:00	08:26	16:03 (6)
	23:02	21:23	19:16 (38)	19:36	17:53	19 16:22 (6)
21	04:02	05:35	18:51 (38)	07:03	08:29	16:04 (6)
	22:59	21:20	19:16 (38)	19:33	17:50	16 16:20 (6)
22	04:05	05:38	18:51 (38)	07:06	08:32	16:06 (6)
	22:56	21:17	19:16 (38)	19:29	17:47	13 16:19 (6)
23	04:08	05:41	18:51 (38)	07:08	08:35	16:09 (6)
	22:53	21:13	19:15 (38)	19:26	17:44	6 16:15 (6)
24	04:11	05:44	18:51 (38)	07:11	08:38	09:13
	22:50	21:10	19:14 (38)	19:22	17:40	15:09
25	04:14	05:47	18:51 (38)	07:14	07:41	09:16
	22:47	21:06	19:14 (38)	19:19	16:37	15:07
26	04:17	05:50	18:51 (38)	07:17	07:44	09:19
	22:44	21:03	19:10 (38)	19:15	16:34	15:05
27	04:20	05:53	18:52 (38)	07:20	07:47	09:22
	22:41	20:59	19:06 (38)	19:12	16:31	15:02
28	04:23	05:55	18:54 (38)	07:22	07:50	09:25
	22:38	20:56	19:03 (38)	19:08	16:27	15:00
29	04:26	05:58	18:56 (38)	07:25	07:53	09:28
	22:35	20:53	18:58 (38)	19:05	16:24	14:58
30	04:29	06:01	07:28	19:01	07:56	09:31
	22:32	20:49	19:01	16:21	16:21	14:56
31	04:32	06:04	16:18	07:59	16:21	14:45
	22:29	20:46	16:18	16:18	16:18	14:46
Potential sun hours	600	505	392	306	203	145
Total, worst case		478	75	263		
Sun reduction		0,50	0,50	0,50		
Oper. time red.		0,80	0,80	0,80		
Wind dir. red.		0,66	0,71	0,71		
Total reduction		0,26	0,28	0,29		
Total, real		126	21	75		

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)

Project: Nye Hitra 1
Description: Fornylse av Hitra 1 vindkraftverk

Licensed user:
Multiconsult Norge AS
Nedre Skøyen vei 2 .
NO-0276 Oslo
+47 21 58 60 15
Martine / martine.bjugg@multiconsult.no
Calculated:
27.10.2025 20:23/4.0.552

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - med Hitra 2 kvk
Assumptions for shadow calculations

Shadow receptor: E - Eldsfjellveien 85, Fritidsbygg

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
259	364	581	497	609	497	357	770	1 435	798	476	357	7 000

	January	February	March	April	May	June				
1	10:09	09:04	07:35	15:26 (6)	06:48	18:06 (3)	05:05	19:31 (28)	03:33	
	14:49	16:15	17:42	15:38 (6)	20:13	18:14 (3)	21:42	19:48 (28)	23:15	
2	10:08	09:01	07:31	15:29 (6)	06:44	18:07 (3)	05:02	19:31 (28)	03:30	
	14:50	16:18	17:45	15:36 (6)	20:16	18:17 (3)	21:45	19:47 (28)	23:18	
3	10:07	08:58	07:28		06:41	18:08 (3)	04:58	19:32 (28)	03:28	
	14:52	16:21	17:48		20:19	18:19 (3)	21:48	19:46 (28)	23:20	
4	10:06	08:55	07:24		06:37	18:12 (3)	04:55	19:33 (28)	03:26	
	14:54	16:24	17:51		20:21	18:17 (3)	21:51	19:44 (28)	23:23	
5	10:05	08:52	07:21		06:34		04:52	19:36 (28)	03:24	
	14:57	16:28	17:54		20:24		21:55	19:41 (28)	23:25	
6	10:03	08:49	07:18		06:30		04:48		03:22	
	14:59	16:31	17:57		20:27		21:58		23:27	
7	10:02	08:46	07:14		06:27		04:45		03:20	
	15:01	16:34	18:00		20:30		22:01		23:29	
8	10:00	08:43	07:11		06:23		04:42		03:18	
	15:03	16:37	18:03		20:33		22:04		23:31	
9	09:59	08:40	07:07		06:20	18:41 (38)	04:39		03:17	
	15:06	16:40	18:06		20:36	18:46 (38)	22:07		23:33	
10	09:57	08:37	07:04		06:17	18:39 (38)	04:36		03:15	
	15:08	16:44	18:09		20:39	18:51 (38)	22:10		23:35	
11	09:55	08:33	07:00		06:13	18:36 (38)	04:32		03:14	
	15:11	16:47	18:12		20:42	18:52 (38)	22:13		23:37	
12	09:53	08:30	06:57		06:10	18:35 (38)	04:29		03:12	
	15:14	16:50	18:15		20:45	18:55 (38)	22:16		23:39	
13	09:52	08:27	06:54		06:06	18:34 (38)	04:26		03:11	
	15:16	16:53	18:18		20:48	18:57 (38)	22:19		23:40	
14	09:50	08:24	06:50		06:03	18:33 (38)	04:23		03:10	
	15:19	16:56	18:21		20:51	18:57 (38)	22:23		23:42	
15	09:47	08:21	06:47		05:59	18:33 (38)	04:20		03:09	
	15:22	16:59	18:24		20:54	18:57 (38)	22:26		23:43	
16	09:45	08:18	15:30 (6)	06:43	05:56	18:32 (38)	04:17		03:08	
	15:25	17:03	7	15:37 (6)	18:27	20:57	25	18:57 (38)	22:29	23:44
17	09:43	08:14	15:27 (6)	06:40	05:52	18:33 (38)	04:14		03:08	
	15:28	17:06	13	15:40 (6)	18:30	21:00	24	18:57 (38)	22:32	23:45
18	09:41	08:11	15:25 (6)	06:36	05:49	18:32 (38)	04:11		03:07	
	15:31	17:09	16	15:41 (6)	18:32	21:03	24	18:56 (38)	22:35	23:46
19	09:38	08:08	15:24 (6)	06:33	05:46	18:32 (38)	04:08		03:07	
	15:34	17:12	18	15:42 (6)	18:35	21:06	24	18:56 (38)	22:38	23:46
20	09:36	08:05	15:23 (6)	06:29	05:42	18:33 (38)	04:05		03:07	
	15:37	17:15	20	15:43 (6)	18:38	21:09	22	18:55 (38)	22:41	23:47
21	09:34	08:01	15:23 (6)	06:26	05:39	18:33 (38)	04:02		03:07	
	15:40	17:18	21	15:44 (6)	18:41	21:12	21	18:54 (38)	22:44	23:47
22	09:31	07:58	15:22 (6)	06:23	05:35	18:35 (38)	03:59		03:07	
	15:43	17:21	22	15:44 (6)	18:44	21:15	18	18:53 (38)	22:47	23:47
23	09:29	07:55	15:22 (6)	06:19	05:32	18:36 (38)	03:56		03:07	
	15:46	17:24	22	15:44 (6)	18:47	21:18	18	19:36 (28)	22:50	23:47
24	09:26	07:51	15:22 (6)	06:16	05:28	18:37 (38)	03:53		03:07	
	15:49	17:27	22	15:44 (6)	18:50	21:21	17	19:37 (28)	22:53	23:47
25	09:23	07:48	15:21 (6)	06:12	05:25	18:41 (38)	03:51		03:08	
	15:52	17:30	22	15:43 (6)	18:53	21:24	12	19:39 (28)	22:56	23:47
26	09:21	07:45	15:22 (6)	06:09	05:22	19:30 (28)	03:48		03:09	
	15:56	17:33	21	15:43 (6)	18:55	21:27	11	19:41 (28)	22:59	23:47
27	09:18	07:41	15:23 (6)	06:05	05:18	19:30 (28)	03:45		03:10	
	15:59	17:36	18	15:41 (6)	18:58	21:30	13	19:43 (28)	23:02	23:46
28	09:15	07:38	15:24 (6)	06:02	05:15	19:30 (28)	03:43		03:11	
	16:02	17:39	17	15:41 (6)	19:01	17:06 (3)	16	19:46 (28)	23:04	23:45
29	09:12		06:58	18:04 (3)	05:12	19:30 (28)	03:40		03:12	
	16:05		20:04	2	18:06 (3)	21:36	19	19:49 (28)	23:07	23:44
30	09:10		06:55	18:05 (3)	05:08	19:30 (28)	03:38		03:13	
	16:08		20:07	4	18:09 (3)	21:39	18	19:48 (28)	23:10	23:43
31	09:07		06:51	18:06 (3)			03:35			
	16:11		20:10	6	18:12 (3)		23:13			
Potential sun hours	178	241	363	449	563				612	
Total, worst case		239	32	440	63					
Sun reduction		0,50	0,50	0,50	0,50					
Oper. time red.		0,80	0,80	0,80	0,80					
Wind dir. red.		0,71	0,71	0,68	0,64					
Total reduction		0,28	0,28	0,27	0,25					
Total, real		68	9	120	16					

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)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - med Hitra 2 kvk
Assumptions for shadow calculations

Shadow receptor: E - Eldsfjellveien 85, Fritidsbygg

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
259	364	581	497	609	497	357	770	1 435	798	476	357	7 000

	July	August	September	October	November	December						
1	03:14	04:35	06:07	18:36 (38)	07:31	08:02	09:33					
	23:42	22:26	20:42	16	18:52 (38)	18:58	16:15	14:54				
2	03:16	04:38	06:10	18:37 (38)	07:34	08:05	09:36					
	23:41	22:23	20:39	12	18:49 (38)	18:55	16:11	14:52				
3	03:18	04:41	06:13	18:39 (38)	07:37	08:08	09:39					
	23:40	22:20	20:35	5	18:44 (38)	18:51	16:08	14:50				
4	03:20	04:44	06:15		07:39	08:11	09:41					
	23:38	22:16	20:32		18:48	16:05	14:49					
5	03:21	04:47	06:18		07:42	08:15	09:44					
	23:36	22:13	20:28		18:44	16:02	14:47					
6	03:23	04:50	06:21		07:45	08:18	09:46					
	23:35	22:10	20:25		18:41	15:59	14:46					
7	03:26	04:53	06:24		07:48	08:21	09:48					
	23:33	22:07	20:21		18:37	15:56	14:44					
8	03:28	04:56	19:45 (28)	06:27	18:07 (3)	07:51	08:24	09:50				
	23:31	22:04	7	19:52 (28)	20:18	4	18:11 (3)	18:34	15:53	14:43		
9	03:30	04:59	19:42 (28)	06:29	18:03 (3)	07:54	08:27	09:53				
	23:29	22:00	12	19:54 (28)	20:14	11	18:14 (3)	18:31	15:50	14:42		
10	03:32	05:02	19:41 (28)	06:32	18:01 (3)	07:56	08:30	09:55				
	23:27	21:57	14	19:55 (28)	20:11	10	18:11 (3)	18:27	15:47	14:41		
11	03:35	05:05	19:40 (28)	06:35	17:58 (3)	07:59	08:33	09:56				
	23:25	21:54	16	19:56 (28)	20:07	8	18:06 (3)	18:24	15:44	14:40		
12	03:37	05:08	19:39 (28)	06:38	17:57 (3)	08:02		16:01 (6)	08:37	09:58		
	23:22	21:50	17	19:56 (28)	20:04	7	18:04 (3)	18:20	10	16:11 (6)	15:41	14:39
13	03:40	05:11	19:38 (28)	06:41	17:56 (3)	08:05		15:58 (6)	08:40	10:00		
	23:20	21:47	19	19:57 (28)	20:00	5	18:01 (3)	18:17	15	16:13 (6)	15:38	14:38
14	03:42	05:14	19:38 (28)	06:43	17:55 (3)	08:08		15:56 (6)	08:43	10:02		
	23:17	21:44	19	19:57 (28)	19:57	2	17:57 (3)	18:14	18	16:14 (6)	15:35	14:37
15	03:45	05:17	19:37 (28)	06:46	08:11		15:55 (6)	08:46	10:03			
	23:15	21:40	16	19:53 (28)	19:54		18:10	19	16:14 (6)	15:33	14:37	
16	03:48	05:20	19:37 (28)	06:49	08:14		15:54 (6)	08:49	10:05			
	23:12	21:37	13	19:50 (28)	19:50		18:07	21	16:15 (6)	15:30	14:36	
17	03:51	05:23	19:38 (28)	06:52	08:17		15:53 (6)	08:52	10:06			
	23:10	21:34	10	19:48 (28)	19:47		18:03	22	16:15 (6)	15:27	14:36	
18	03:53	05:26	18:46 (38)	06:55	08:20		15:53 (6)	08:55	10:07			
	23:07	21:30	15	19:45 (28)	19:43		18:00	23	16:16 (6)	15:24	14:36	
19	03:56	05:29	18:43 (38)	06:57	08:23		15:53 (6)	08:58	10:08			
	23:05	21:27	18	19:43 (28)	19:40		17:57	22	16:15 (6)	15:22	14:36	
20	03:59	05:32	18:41 (38)	07:00	08:26		15:53 (6)	09:01	10:09			
	23:02	21:23	19	19:41 (28)	19:36		17:53	21	16:14 (6)	15:19	14:36	
21	04:02	05:35	18:39 (38)	07:03	08:29		15:53 (6)	09:04	10:10			
	22:59	21:20	19	18:58 (38)	19:33		17:50	21	16:14 (6)	15:17	14:36	
22	04:05	05:38	18:38 (38)	07:06	08:32		15:54 (6)	09:08	10:10			
	22:56	21:17	21	18:59 (38)	19:29		17:47	20	16:14 (6)	15:14	14:37	
23	04:08	05:41	18:36 (38)	07:08	08:35		15:54 (6)	09:11	10:11			
	22:53	21:13	23	18:59 (38)	19:26		17:44	18	16:12 (6)	15:12	14:37	
24	04:11	05:44	18:36 (38)	07:11	08:38		15:55 (6)	09:13	10:11			
	22:50	21:10	23	18:59 (38)	19:22		17:40	15	16:10 (6)	15:09	14:38	
25	04:14	05:47	18:35 (38)	07:14	07:41		14:57 (6)	09:16	10:11			
	22:47	21:06	25	19:00 (38)	19:19		16:37	12	15:09 (6)	15:07	14:39	
26	04:17	05:50	18:34 (38)	07:17	07:44		15:00 (6)	09:19	10:11			
	22:44	21:03	25	18:59 (38)	19:15		16:34	5	15:05 (6)	15:05	14:40	
27	04:20	05:53	18:34 (38)	07:20	07:47				09:22	10:11		
	22:41	20:59	25	18:59 (38)	19:12		16:31		15:02	14:41		
28	04:23	05:55	18:34 (38)	07:22	07:50				09:25	10:11		
	22:38	20:56	25	18:59 (38)	19:08		16:27		15:00	14:42		
29	04:26	05:58	18:34 (38)	07:25	07:53				09:28	10:11		
	22:35	20:53	23	18:57 (38)	19:05		16:24		14:58	14:43		
30	04:29	06:01	18:34 (38)	07:28	07:56				09:31	10:10		
	22:32	20:49	23	18:57 (38)	19:01		16:21		14:56	14:45		
31	04:32	06:04	18:35 (38)		07:59					10:10		
	22:29	20:46	20	18:55 (38)	16:18					14:46		
Potential sun hours	600	505		392	306		203		145			
Total, worst case		447		80	262							
Sun reduction		0,50		0,50	0,50							
Oper. time red.		0,80		0,80	0,80							
Wind dir. red.		0,67		0,70	0,71							
Total reduction		0,27		0,28	0,28							
Total, real		120		23	74							

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - med Hitra 2 vkv
Assumptions for shadow calculations

Shadow receptor: G - Vesthitterveien 182, Enebolig
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
259 364 581 497 609 497 357 770 1 435 798 476 357 7 000

	January	February	March	April	May	June	July	August	September	October	November	December
1	10:09 14:49	09:04 16:15	07:35 17:43	09:51 (1) 10:14 (1)	06:48 20:13	05:05 21:43	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:43	07:31 18:58	08:03 16:15
2	10:08 14:50	09:01 16:18	07:31 17:46	09:52 (1) 10:14 (1)	06:45 20:16	05:02 21:46	03:30 23:18	03:16 23:42	04:38 22:23	06:10 20:39	07:34 18:55	08:06 16:12
3	10:07 14:52	08:58 16:21	07:28 17:49	09:52 (1) 10:13 (1)	06:41 20:19	04:58 21:49	03:28 23:21	03:18 23:40	04:41 22:20	06:13 20:36	07:37 18:51	08:09 16:08
4	10:06 14:54	08:55 16:24	07:25 17:52	09:53 (1) 10:13 (1)	06:38 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:16 20:32	07:40 18:48	08:12 16:05
5	10:05 14:57	08:52 16:28	07:21 17:55	09:53 (1) 10:11 (1)	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44	08:15 16:02
6	10:04 14:59	08:49 16:31	07:18 17:58	09:55 (1) 10:10 (1)	06:31 20:28	04:49 21:58	03:22 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41	08:18 15:59
7	10:02 15:01	08:46 16:34	07:14 18:01	09:57 (1) 10:06 (1)	06:27 20:31	04:45 22:01	03:20 23:30	03:25 23:33	04:53 22:07	06:24 20:22	07:48 18:38	08:21 15:56
8	10:01 15:04	08:43 16:37	07:11 18:03	09:57 (1) 10:06 (1)	06:24 20:33	04:42 22:04	03:18 23:32	03:28 23:31	04:56 22:04	06:27 20:18	07:51 18:34	08:24 15:53
9	09:59 15:06	08:40 16:41	07:08 18:06	09:59 (1) 10:06 (1)	06:20 20:36	04:39 22:07	03:17 23:34	03:30 23:29	04:59 22:01	06:30 20:15	07:54 18:31	08:28 15:50
10	09:58 15:09	08:37 16:44	07:04 18:09	09:58 (1) 10:06 (1)	06:17 20:39	04:36 22:11	03:15 23:36	03:32 23:27	05:02 21:57	06:33 20:11	07:57 18:27	08:31 15:47
11	09:56 15:11	08:34 16:47	07:01 18:12	09:56 (1) 10:06 (1)	06:13 20:42	04:32 22:14	03:14 23:38	03:35 23:25	05:05 21:54	06:35 20:08	08:00 18:24	08:34 15:44
12	09:54 15:14	08:31 16:50	06:57 18:15	09:54 (1) 10:06 (1)	06:10 20:45	04:29 22:17	03:12 23:39	03:37 23:23	05:08 21:51	06:38 20:04	08:03 18:21	08:37 15:41
13	09:52 15:17	08:28 16:53	06:54 18:18	09:52 (1) 10:06 (1)	06:06 20:48	04:26 22:20	03:11 23:41	03:40 23:20	05:11 21:47	06:41 20:01	08:05 18:17	08:40 15:38
14	09:50 15:19	08:24 16:56	06:50 18:21	09:50 (1) 10:06 (1)	06:03 20:51	04:23 22:23	03:10 23:42	03:42 23:18	05:14 21:44	06:44 19:57	08:08 18:14	08:43 15:36
15	09:48 15:22	08:21 17:00	06:47 18:24	09:48 (1) 10:06 (1)	05:59 20:54	04:20 22:26	03:09 23:44	03:45 23:16	05:17 21:41	06:46 19:54	08:11 18:10	08:46 15:33
16	09:46 15:25	08:18 17:03	06:44 18:27	09:46 (1) 10:06 (1)	05:56 20:57	04:17 22:29	03:08 23:45	03:48 23:13	05:20 21:37	06:49 19:50	08:14 18:07	08:49 15:30
17	09:44 15:28	08:15 17:06	06:40 18:30	09:44 (1) 10:06 (1)	05:53 21:00	04:14 22:32	03:08 23:46	03:51 23:10	05:23 21:34	06:52 19:47	08:17 18:04	08:53 15:27
18	09:41 15:31	08:11 17:09	06:37 18:33	09:41 (1) 10:06 (1)	05:49 21:03	04:11 22:35	03:07 23:46	03:53 23:08	05:26 21:31	06:55 19:43	08:20 18:00	08:56 15:25
19	09:39 15:34	08:08 17:12	06:33 18:36	09:39 (1) 10:06 (1)	05:46 21:06	04:08 22:38	03:07 23:47	03:56 23:05	05:29 21:27	06:58 19:40	08:23 17:57	08:59 15:22
20	09:37 15:37	08:05 17:15	06:30 18:38	09:37 (1) 10:06 (1)	05:42 21:09	04:05 22:41	03:06 23:48	03:59 23:02	05:32 21:24	07:00 19:36	08:26 17:54	09:02 15:19
21	09:34 15:40	08:02 17:18	06:26 18:41	09:34 (1) 10:06 (1)	05:39 21:12	04:02 22:44	03:06 23:48	04:02 22:59	05:35 21:20	07:03 19:33	08:29 17:50	09:05 15:17
22	09:32 15:43	07:58 17:21	06:23 18:44	09:32 (1) 10:06 (1)	05:35 21:15	03:59 22:47	03:07 23:48	04:05 22:57	05:38 21:17	07:06 19:29	08:32 17:47	09:08 15:14
23	09:29 15:46	07:55 17:24	06:19 18:47	09:29 (1) 10:06 (1)	05:32 21:18	03:56 22:50	03:07 23:48	04:08 22:54	05:41 21:14	07:09 19:26	08:35 17:44	09:11 15:12
24	09:26 15:49	07:52 17:27	06:16 18:50	09:26 (1) 10:06 (1)	05:29 21:21	03:53 22:53	03:07 23:48	04:11 22:51	05:44 21:10	07:12 19:22	08:38 17:40	09:14 15:09
25	09:24 15:52	07:48 17:31	06:12 18:53	09:24 (1) 10:06 (1)	05:25 21:24	03:51 22:56	03:08 23:48	04:14 22:48	05:47 21:07	07:14 19:19	07:41 16:37	09:17 15:07
26	09:21 15:56	07:45 17:34	06:09 18:56	09:21 (1) 10:06 (1)	05:22 21:27	03:48 22:59	03:09 23:47	04:17 22:45	05:50 21:03	07:17 19:16	07:44 16:34	09:20 15:05
27	09:18 15:59	07:42 17:37	06:05 18:59	09:18 (1) 10:06 (1)	05:19 21:30	03:45 23:02	03:09 23:47	04:20 22:42	05:53 21:00	07:20 19:12	07:47 16:31	09:23 15:02
28	09:16 16:02	07:38 17:40	06:02 19:02	09:16 (1) 10:06 (1)	05:15 21:33	03:43 23:05	03:10 23:46	04:23 22:39	05:56 20:56	07:23 19:09	07:50 16:27	09:26 15:00
29	09:13 16:05	07:35 17:37	05:58 19:04	09:13 (1) 10:06 (1)	05:12 21:36	03:40 23:08	03:12 23:45	04:26 22:36	05:58 20:53	07:26 19:05	07:53 16:24	09:28 14:58
30	09:10 16:08	07:32 17:32	05:55 19:01	09:10 (1) 10:06 (1)	05:08 21:39	03:38 23:10	03:13 23:44	04:29 22:33	06:01 20:49	07:28 19:02	07:56 16:21	09:31 14:56
31	09:07 16:12	07:29 17:29	05:51 19:01	09:07 (1) 10:06 (1)	05:05 21:33	03:35 23:13	03:11 23:40	04:32 22:30	06:04 20:46	07:59 16:18	07:59 16:18	10:10 14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
Total, worst case		128	128							263		
Sun reduction		0,50	0,50							0,50		
Oper. time red.		0,80	0,80							0,80		
Wind dir. red.		0,53	0,53							0,53		
Total reduction		0,21	0,21							0,21		
Total, real		27	27							55		

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - med Hitra 2 kvk Assumptions for shadow calculations

Shadow receptor: H - Vesthitterveien 168, Enebolig

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
259 364 581 497 609 497 357 770 1 435 798 476 357 7 000

	January	February	March	April	May	June	July	August	September	October	November	December
1	10:09	09:04	07:35	06:48	05:05	03:33	03:14	04:35	06:07	07:31	08:03	09:34
	14:49	16:15	17:43	20:13	21:43	23:16	23:43	22:26	20:43	18:58	16:15	14:54
2	10:08	09:01	07:31	06:45	05:02	03:30	03:16	04:38	06:10	07:34	08:06	09:37
	14:50	16:18	17:46	20:16	21:46	23:18	23:42	22:23	20:39	18:55	16:12	14:52
3	10:07	08:58	07:28	06:41	04:58	03:28	03:18	04:41	06:13	07:37	08:09	09:39
	14:52	16:21	17:49	20:19	21:49	23:21	23:40	22:20	20:36	18:51	16:08	14:50
4	10:06	08:55	07:25	06:38	04:55	03:26	03:19	04:44	06:16	07:40	08:12	09:42
	14:54	16:24	17:52	20:22	21:52	23:23	23:39	22:17	20:32	18:48	16:05	14:49
5	10:05	08:52	07:21	06:34	04:52	03:24	03:21	04:47	06:18	07:42	08:15	09:44
	14:57	16:28	17:55	20:25	21:55	23:26	23:37	22:14	20:29	18:44	16:02	14:47
6	10:04	08:49	07:18	06:31	04:49	03:22	03:23	04:50	06:21	07:45	08:18	09:46
	14:59	16:31	17:58	20:28	21:58	23:28	23:35	22:10	20:25	18:41	15:59	14:46
7	10:02	08:46	07:14	06:27	04:45	03:20	03:25	04:53	06:24	07:48	08:21	09:49
	15:01	16:34	18:01	20:31	22:01	23:30	23:33	22:07	20:22	18:38	15:56	14:44
8	10:01	08:43	07:11	06:24	04:42	03:18	03:28	04:56	06:27	07:51	08:24	09:51
	15:03	16:37	18:03	20:33	22:04	23:32	23:31	22:04	20:18	18:34	15:53	14:43
9	09:59	08:40	07:08	06:20	04:39	03:16	03:30	04:59	06:30	07:54	08:28	09:53
	15:06	16:40	18:06	20:36	22:07	23:34	23:29	22:01	20:15	18:31	15:50	14:42
10	09:58	08:37	07:04	06:17	04:36	03:15	03:32	05:02	06:32	07:57	08:31	09:55
	15:08	16:44	18:09	20:39	22:11	23:36	23:27	21:57	20:11	18:27	15:47	14:40
11	09:56	08:34	07:01	06:13	04:32	03:13	03:35	05:05	06:35	08:00	08:34	09:57
	15:11	16:47	18:12	20:42	22:14	23:38	23:25	21:54	20:08	18:24	15:44	14:39
12	09:54	08:31	06:57	06:10	04:29	03:12	03:37	05:08	06:38	08:03	08:37	09:59
	15:14	16:50	18:15	20:45	22:17	23:39	23:23	21:51	20:04	18:21	15:41	14:39
13	09:52	08:28	06:54	06:06	04:26	03:11	03:40	05:11	06:41	08:05	08:40	10:01
	15:16	16:53	18:18	20:48	22:20	23:41	23:20	21:47	20:01	18:17	15:38	14:38
14	09:50	08:24	06:50	06:03	04:23	03:10	03:42	05:14	06:44	08:08	08:43	10:02
	15:19	16:56	18:21	20:51	22:23	23:42	23:18	21:44	19:57	18:14	15:36	14:37
15	09:48	08:21	06:47	05:59	04:20	03:09	03:45	05:17	06:46	08:11	08:46	10:04
	15:22	17:00	18:24	20:54	22:26	23:44	23:16	21:41	19:54	18:10	15:33	14:37
16	09:46	08:18	06:44	05:56	04:17	03:08	03:48	05:20	06:49	08:14	08:49	10:05
	15:25	17:03	18:27	20:57	22:29	23:45	23:13	21:37	19:50	18:07	15:30	14:36
17	09:44	08:15	06:40	05:53	04:14	03:07	03:51	05:23	06:52	08:17	08:53	10:06
	15:28	17:06	18:30	21:00	22:32	23:46	23:10	21:34	19:47	18:04	15:27	14:36
18	09:41	08:11	06:37	05:49	04:11	03:07	03:53	05:26	06:55	08:20	08:56	10:08
	15:31	17:09	18:33	21:03	22:35	23:46	23:08	21:31	19:43	18:00	15:25	14:36
19	09:39	08:08	06:33	05:46	04:08	03:07	03:56	05:29	06:58	08:23	08:59	10:09
	15:34	17:12	18:36	21:06	22:38	23:47	23:05	21:27	19:40	17:57	15:22	14:36
20	09:37	08:05	06:30	05:42	04:05	03:06	03:59	05:32	07:00	08:26	09:02	10:09
	15:37	17:15	18:38	21:09	22:41	23:48	23:02	21:24	19:36	17:54	15:19	14:36
21	09:34	08:02	06:26	05:39	04:02	03:06	04:02	05:35	07:03	08:29	09:05	10:10
	15:40	17:18	18:41	21:12	22:44	23:48	23:00	21:20	19:33	17:50	15:17	14:36
22	09:32	07:58	06:23	05:35	03:59	03:06	04:05	05:38	07:06	08:32	09:08	10:11
	15:43	17:21	18:44	21:15	22:47	23:48	22:57	21:17	19:29	17:47	15:14	14:37
23	09:29	07:55	06:19	05:32	03:56	03:07	04:08	05:41	07:09	08:35	09:11	10:11
	15:46	17:24	18:47	21:18	22:50	23:48	22:54	21:14	19:26	17:44	15:12	14:37
24	09:26	07:52	06:16	05:29	03:53	03:07	04:11	05:44	07:12	08:38	09:14	10:12
	15:49	17:27	18:50	21:21	22:53	23:48	22:51	21:10	19:22	17:40	15:09	14:38
25	09:24	07:48	06:12	05:25	03:51	03:08	04:14	05:47	07:14	07:41	09:17	10:12
	15:52	17:30	18:53	21:24	22:56	23:48	22:48	21:07	19:19	16:37	15:07	14:39
26	09:21	07:45	06:09	05:22	03:48	03:08	04:17	05:50	07:17	07:44	09:20	10:12
	15:56	17:34	18:56	21:27	22:59	23:47	22:45	21:03	19:16	16:34	15:05	14:40
27	09:18	07:42	06:05	05:18	03:45	03:09	04:20	05:53	07:20	07:47	09:23	10:12
	15:59	17:37	18:59	21:30	23:02	23:47	22:42	21:00	19:12	16:31	15:02	14:41
28	09:16	07:38	06:02	05:15	03:43	03:10	04:23	05:56	07:23	07:50	09:26	10:12
	16:02	17:40	19:02	21:33	23:05	23:46	22:39	20:56	19:09	16:27	15:00	14:42
29	09:13		06:58	05:12	03:40	03:12	04:26	05:58	07:26	07:53	09:28	10:11
	16:05		20:04	21:36	23:08	23:45	22:36	20:53	19:05	16:24	14:58	14:43
30	09:10		06:55	05:08	03:37	03:13	04:29	06:01	07:28	07:56	09:31	10:11
	16:08		20:07	21:39	23:10	23:44	22:33	20:49	19:02	16:21	14:56	14:45
31	09:07		06:51		03:35		04:32	06:04		07:59		10:10
	16:12		20:10		23:13		22:30	20:46		16:18		14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - med Hitra 2 kvk Shadow receptor: I - Vesthitterveien 162, Fritidsbygg

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
259 364 581 497 609 497 357 770 1 435 798 476 357 7 000

	January	February	March	April	May	June	July	August	September	October	November	December
1	10:09	09:04	07:35	06:48	05:05	03:33	03:14	04:35	06:07	07:31	08:03	09:34
	14:49	16:15	17:43	20:13	21:43	23:16	23:43	22:26	20:43	18:58	16:15	14:54
2	10:08	09:01	07:31	06:44	05:02	03:30	03:16	04:38	06:10	07:34	08:06	09:36
	14:50	16:18	17:46	20:16	21:46	23:18	23:42	22:23	20:39	18:55	16:12	14:52
3	10:07	08:58	07:28	06:41	04:58	03:28	03:18	04:41	06:13	07:37	08:09	09:39
	14:52	16:21	17:49	20:19	21:49	23:21	23:40	22:20	20:36	18:51	16:08	14:50
4	10:06	08:55	07:25	06:38	04:55	03:26	03:19	04:44	06:16	07:40	08:12	09:42
	14:54	16:24	17:52	20:22	21:52	23:23	23:39	22:17	20:32	18:48	16:05	14:49
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7	10:02	08:46	07:14	06:27	04:45	03:20	03:25	04:53	06:24	07:48	08:21	09:49
	15:01	16:34	18:00	20:31	22:01	23:30	23:33	22:07	20:22	18:38	15:56	14:44
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	15:03	16:37	18:03	20:33	22:04	23:32	23:31	22:04	20:18	18:34	15:53	14:43
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	15:06	16:40	18:06	20:36	22:07	23:34	23:29	22:01	20:15	18:31	15:50	14:42
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	15:08	16:44	18:09	20:39	22:11	23:36	23:27	21:57	20:11	18:27	15:47	14:40
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16	09:46	08:18	06:44	05:56	04:17	03:08	03:48	05:20	06:49	08:14	08:49	10:05
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17	09:44	08:15	06:40	05:53	04:14	03:07	03:50	05:23	06:52	08:17	08:53	10:06
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18	09:41	08:11	06:37	05:49	04:11	03:07	03:53	05:26	06:55	08:20	08:56	10:07
	15:31	17:09	18:33	21:03	22:35	23:46	23:08	21:31	19:43	18:00	15:25	14:36
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	15:37	17:15	18:38	21:09	22:41	23:48	23:02	21:24	19:36	17:54	15:19	14:36
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	15:40	17:18	18:41	21:12	22:44	23:48	22:59	21:20	19:33	17:50	15:17	14:36
22	09:32	07:58	06:23	05:35	03:59	03:06	04:05	05:38	07:06	08:32	09:08	10:11
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	15:46	17:24	18:47	21:18	22:50	23:48	22:54	21:14	19:26	17:44	15:12	14:37
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26	09:21	07:45	06:09	05:22	03:48	03:08	04:17	05:50	07:17	07:44	09:20	10:12
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	16:05		20:04	21:36	23:08	23:45	22:36	20:53	19:05	16:24	14:58	14:43
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	16:08		20:07	21:39	23:10	23:44	22:33	20:49	19:02	16:21	14:56	14:45
31	09:07		06:51		03:35		04:32	06:04		07:59		10:10
	16:12		20:10		23:13		22:30	20:46		16:18		14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - med Hitra 2 vkv
Assumptions for shadow calculations

Shadow receptor: J - Eldsfjellveien 3, Fritidsbygg

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
259 364 581 497 609 497 357 770 1 435 798 476 357 7 000

	January	February		March	April	May	June	July	August	September	October		November		December
1	10:09 14:49	09:04 16:15		07:35 17:43	06:48 20:13	05:05 21:43	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:42	07:31 18:58		08:03 16:15	10:55 (1) 11:10 (1)	09:34 14:54
2	10:08 14:50	09:01 16:18		07:31 17:46	06:44 20:16	05:02 21:46	03:30 23:18	03:16 23:42	04:38 22:23	06:10 20:39	07:34 18:55		08:06 16:12	10:57 (1) 11:08 (1)	09:36 14:52
3	10:07 14:52	08:58 16:21		07:28 17:49	06:41 20:19	04:58 21:49	03:28 23:21	03:18 23:40	04:41 22:20	06:13 20:36	07:37 18:51		08:09 16:08	11:02 (1) 11:03 (1)	09:39 14:50
4	10:06 14:54	08:55 16:24		07:25 17:52	06:38 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:16 20:32	07:40 18:48		08:12 16:05		09:42 14:49
5	10:05 14:56	08:52 16:28		07:21 17:55	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44		08:15 16:02		09:44 14:47
6	10:04 14:59	08:49 16:31		07:18 17:58	06:31 20:28	04:49 21:58	03:22 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41		08:18 15:59		09:46 14:46
7	10:02 15:01	08:46 16:34		07:14 18:00	06:27 20:31	04:45 22:01	03:20 23:30	03:25 23:33	04:53 22:07	06:24 20:22	07:48 18:38		08:21 15:56		09:49 14:44
8	10:01 15:03	08:43 16:37	4	11:31 (1) 11:35 (1)	07:11 18:03	06:24 20:33	04:42 22:04	03:18 23:31	04:56 22:04	06:27 20:18	07:51 18:34		08:24 15:53		09:51 14:43
9	09:59 15:06	08:40 16:40	12	11:27 (1) 11:39 (1)	07:08 18:06	06:20 20:36	04:39 22:07	03:16 23:34	04:59 23:29	06:30 20:15	07:54 18:31		08:28 15:50		09:53 14:42
10	09:58 15:08	08:37 16:44	15	11:26 (1) 11:41 (1)	07:04 18:09	06:17 20:39	04:36 22:11	03:15 23:36	05:02 23:27	06:32 20:11	07:57 18:27		08:31 15:47		09:55 14:40
11	09:56 15:11	08:34 16:47	18	11:24 (1) 11:42 (1)	07:01 18:12	06:13 20:42	04:32 22:14	03:13 23:38	05:05 23:25	06:35 20:08	08:00 18:24		08:34 15:44		09:57 14:39
12	09:54 15:14	08:31 16:50	20	11:23 (1) 11:43 (1)	06:57 18:15	06:10 20:45	04:29 22:17	03:12 23:39	05:08 23:23	06:38 21:51	08:03 18:20		08:37 15:41		09:59 14:39
13	09:52 15:16	08:27 16:53	21	11:23 (1) 11:44 (1)	06:54 18:18	06:06 20:48	04:26 22:20	03:11 23:41	05:11 23:20	06:41 20:01	08:05 18:17		08:40 15:38		10:01 14:38
14	09:50 15:19	08:24 16:56	22	11:22 (1) 11:44 (1)	06:50 18:21	06:03 20:51	04:23 22:23	03:10 23:42	05:14 21:44	06:44 19:57	08:08 18:14		08:43 15:36		10:02 14:37
15	09:48 15:22	08:21 17:00	23	11:22 (1) 11:45 (1)	06:47 18:24	05:59 20:54	04:20 22:26	03:09 23:44	05:17 21:41	06:46 19:54	08:11 18:10		08:46 15:33		10:04 14:37
16	09:46 15:25	08:18 17:03	24	11:21 (1) 11:45 (1)	06:44 18:27	05:56 20:57	04:17 22:29	03:08 23:45	05:20 21:37	06:49 19:50	08:14 18:07		08:49 15:30		10:05 14:36
17	09:44 15:28	08:15 17:06	23	11:21 (1) 11:44 (1)	06:40 18:30	05:53 21:00	04:14 22:32	03:07 23:46	05:23 23:10	06:52 19:47	08:17 18:04		08:53 15:27		10:06 14:36
18	09:41 15:31	08:11 17:09	23	11:22 (1) 11:45 (1)	06:37 18:33	05:49 21:03	04:11 22:35	03:07 23:06	05:26 21:31	06:55 19:43	08:20 18:00	8	12:00 (1) 12:08 (1)	08:56 15:25	10:07 14:36
19	09:39 15:34	08:08 17:12	22	11:22 (1) 11:44 (1)	06:33 18:36	05:46 21:06	04:08 22:38	03:07 23:47	05:29 23:05	06:58 19:40	08:23 17:57	13	11:57 (1) 12:10 (1)	08:59 15:22	10:08 14:36
20	09:37 15:37	08:05 17:15	21	11:23 (1) 11:44 (1)	06:30 18:38	05:42 21:09	04:05 22:41	03:06 23:48	05:32 21:24	07:00 19:36	08:26 17:54	18	11:54 (1) 12:12 (1)	09:02 15:19	10:09 14:36
21	09:34 15:40	08:02 17:18	19	11:23 (1) 11:42 (1)	06:26 18:41	05:39 21:12	04:02 22:44	03:06 23:48	05:35 22:59	07:03 19:33	08:29 17:50	19	11:54 (1) 12:13 (1)	09:05 15:17	10:10 14:36
22	09:32 15:43	07:58 17:21	16	11:24 (1) 11:40 (1)	06:23 18:44	05:35 21:15	04:05 22:47	03:06 23:48	05:38 22:57	07:06 19:29	08:32 17:47	21	11:53 (1) 12:14 (1)	09:08 15:14	10:11 14:37
23	09:29 15:46	07:55 17:24	12	11:27 (1) 11:39 (1)	06:19 18:47	05:32 21:18	03:56 22:50	04:08 23:48	05:41 22:54	07:09 19:26	08:35 17:44	22	11:52 (1) 12:14 (1)	09:11 15:12	10:11 14:37
24	09:26 15:49	07:52 17:27	2	11:31 (1) 11:33 (1)	06:16 18:50	05:29 21:21	03:53 22:53	04:11 23:48	05:44 22:51	07:11 21:10	08:38 17:40	23	11:52 (1) 12:15 (1)	09:14 15:09	10:12 14:38
25	09:24 15:52	07:48 17:30		06:12 18:53	05:25 21:24	03:51 22:56	04:14 23:48	04:08 22:48	05:47 21:07	07:14 19:19	07:41 16:37	24	10:51 (1) 11:15 (1)	09:17 15:07	10:12 14:39
26	09:21 15:56	07:45 17:34		06:09 18:56	05:22 21:27	03:48 22:59	04:08 23:47	04:17 22:45	05:50 21:03	07:17 19:16	07:44 16:34	24	10:51 (1) 11:15 (1)	09:20 15:05	10:12 14:40
27	09:18 15:59	07:42 17:37		06:05 18:59	05:18 21:30	03:45 23:02	04:09 23:47	04:20 22:42	05:53 21:00	07:20 19:12	07:47 16:31	23	10:51 (1) 11:14 (1)	09:23 15:02	10:12 14:41
28	09:16 16:02	07:38 17:40		06:02 19:02	05:15 21:33	03:43 23:05	04:23 23:46	04:23 22:39	05:56 20:56	07:23 19:09	07:50 16:27	22	10:52 (1) 11:14 (1)	09:26 15:00	10:12 14:42
29	09:13 16:05			06:58 20:04	05:12 21:36	03:40 23:08	04:12 23:45	04:26 22:36	05:58 20:53	07:25 19:05	07:53 16:24	21	10:52 (1) 11:13 (1)	09:28 14:58	10:11 14:43
30	09:10 16:08			06:55 20:07	05:08 21:39	03:37 23:10	04:29 23:44	04:29 22:33	06:01 20:49	07:28 19:02	07:56 16:21	20	10:53 (1) 11:13 (1)	09:31 14:56	10:11 14:45
31	09:07 16:12			06:51 20:10	03:35 23:13		04:32 22:30	06:04 20:46		07:59 16:18	10:54 (1) 11:11 (1)	17			10:10 14:46
Potential sun hours	178	241		363	449	564	613	600	505	392	306		203		145
Total, worst case			297												
Sun reduction			0,50								0,50			0,50	
Oper. time red.			0,80								0,80			0,80	
Wind dir. red.			0,56								0,56			0,56	
Total reduction			0,22								0,22			0,22	
Total, real			66								61			6	

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - med Hitra 2 kvk
Assumptions for shadow calculations

Shadow receptor: K - Eldsfjellveien 8, Fritidsbygg

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
259 364 581 497 609 497 357 770 1 435 798 476 357 7 000

	January	February	March	April	May	June	July	August	September	October	November	December	
1	10:09 14:49	09:04 16:15	07:35 17:43	06:48 20:13	05:05 21:43	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:42	07:31 18:58	08:02 16:15	11:34 (1) 11:57 (1)	09:34 14:54
2	10:08 14:50	09:01 16:18	07:31 17:46	06:44 20:16	05:02 21:46	03:30 23:18	03:16 23:42	04:38 22:23	06:10 20:39	07:34 18:55	08:06 16:11	11:34 (1) 11:56 (1)	09:36 14:52
3	10:07 14:52	08:58 16:21	07:28 17:49	06:41 20:19	04:58 21:49	03:28 23:21	03:18 23:40	04:41 22:20	06:13 20:36	07:37 18:51	08:09 16:08	11:35 (1) 11:55 (1)	09:39 14:50
4	10:06 14:54	08:55 16:24	12:12 (1) 17:52	07:25 20:22	06:38 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:16 20:32	07:40 18:48	08:12 16:05	11:36 (1) 11:54 (1)	09:42 14:49
5	10:05 14:56	08:52 16:28	12:09 (1) 17:55	07:21 20:25	06:34 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44	08:15 16:02	11:37 (1) 11:52 (1)	09:44 14:47
6	10:04 14:59	08:49 16:31	12:07 (1) 17:57	07:18 20:28	06:31 21:58	03:22 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41	08:18 15:59	11:39 (1) 11:51 (1)	09:46 14:46
7	10:02 15:01	08:46 16:34	12:06 (1) 17:14	07:14 20:30	06:27 22:01	03:20 23:30	03:25 23:33	04:53 22:07	06:24 20:22	07:48 18:38	08:21 15:56	11:43 (1) 11:47 (1)	09:49 14:44
8	10:01 15:03	08:43 16:37	12:05 (1) 18:03	07:11 20:33	06:24 22:04	03:18 23:32	03:28 23:31	04:56 22:04	06:27 20:18	07:51 18:34	08:24 15:53	11:47 (1)	09:51 14:43
9	09:59 15:06	08:40 16:40	12:04 (1) 18:06	07:08 20:36	06:20 22:07	03:16 23:34	03:30 23:29	04:59 22:01	06:30 20:15	07:54 18:31	08:27 15:50	11:47 (1)	09:53 14:42
10	09:58 15:08	08:37 16:44	12:04 (1) 18:09	07:04 20:39	06:17 22:10	03:15 23:36	03:32 23:27	05:02 21:57	06:32 20:11	07:57 18:27	08:31 15:47	11:47 (1)	09:55 14:40
11	09:56 15:11	08:34 16:47	12:04 (1) 18:12	07:01 20:42	06:13 22:14	03:13 23:38	03:35 23:25	05:05 21:54	06:35 20:08	08:00 18:24	08:34 15:44	11:47 (1)	09:57 14:39
12	09:54 15:14	08:31 16:50	12:03 (1) 18:15	06:57 20:45	06:10 22:17	03:12 23:39	03:37 23:23	05:08 21:51	06:38 20:04	08:02 18:20	08:37 15:41	11:47 (1)	09:59 14:39
13	09:52 15:16	08:27 16:53	12:04 (1) 18:18	06:54 20:48	06:06 22:20	03:11 23:41	03:40 23:20	05:11 21:47	06:41 20:01	08:05 18:17	08:40 15:38	11:47 (1)	10:01 14:38
14	09:50 15:19	08:24 16:56	12:03 (1) 18:21	06:50 20:51	06:03 22:23	03:10 23:42	03:42 23:18	05:14 21:44	06:44 19:57	08:08 18:14	08:43 15:36	11:47 (1)	10:02 14:37
15	09:48 15:22	08:21 16:59	12:04 (1) 18:24	06:47 20:54	05:59 22:26	03:09 23:43	03:45 23:16	05:17 21:41	06:46 19:54	08:11 18:10	08:46 15:33	11:47 (1)	10:04 14:37
16	09:46 15:25	08:18 17:03	12:04 (1) 18:27	06:43 20:57	05:56 22:29	03:08 23:45	03:48 23:13	05:20 21:37	06:49 19:50	08:14 18:07	08:49 15:30	11:47 (1)	10:05 14:36
17	09:44 15:28	08:15 17:06	12:05 (1) 18:30	06:40 21:00	05:53 22:32	03:07 23:46	03:50 23:10	05:23 21:34	06:52 19:47	08:17 18:04	08:53 15:27	11:47 (1)	10:06 14:36
18	09:41 15:31	08:11 17:09	12:06 (1) 18:33	06:37 21:03	05:49 22:35	03:07 23:46	03:53 23:08	05:26 21:31	06:55 19:43	08:20 18:00	08:56 15:24	11:47 (1)	10:07 14:36
19	09:39 15:34	08:08 17:12	12:07 (1) 18:36	06:33 21:06	05:46 22:38	03:07 23:47	03:56 23:05	05:29 21:27	06:58 19:40	08:23 17:57	08:59 15:22	11:47 (1)	10:08 14:36
20	09:37 15:37	08:05 17:15	12:10 (1) 18:38	06:30 21:09	05:42 22:41	03:06 23:48	03:59 23:02	05:32 21:24	07:00 19:36	08:26 17:54	08:57 15:19	11:47 (1)	10:09 14:36
21	09:34 15:40	08:01 17:18	12:22 (1) 18:41	06:26 21:12	05:39 22:44	03:06 23:48	04:02 22:59	05:35 21:20	07:03 19:33	08:29 17:50	12:43 (1) 12:50 (1)	11:47 (1)	10:10 14:36
22	09:32 15:43	07:58 17:21	12:23 (1) 18:44	06:23 21:15	05:35 22:47	03:06 23:48	04:05 22:57	05:38 21:17	07:06 19:29	08:32 17:47	12:39 (1) 12:52 (1)	11:47 (1)	10:11 14:37
23	09:29 15:46	07:55 17:24	12:24 (1) 18:47	06:19 21:18	05:32 22:50	03:07 23:48	04:08 22:54	05:41 21:13	07:09 19:26	08:35 17:44	12:37 (1) 12:54 (1)	11:47 (1)	10:11 14:37
24	09:26 15:49	07:52 17:27	12:25 (1) 18:50	06:16 21:21	05:29 22:53	03:07 23:48	04:11 22:51	05:44 21:10	07:11 19:22	08:38 17:40	12:36 (1) 12:56 (1)	11:47 (1)	10:11 14:38
25	09:24 15:52	07:48 17:30	12:26 (1) 18:53	06:12 21:24	05:25 22:56	03:08 23:48	04:14 22:48	05:47 21:07	07:14 19:19	07:41 16:37	11:35 (1) 11:56 (1)	11:47 (1)	10:12 14:39
26	09:21 15:56	07:45 17:33	12:27 (1) 18:56	06:09 21:27	05:22 22:59	03:08 23:47	04:17 22:45	05:50 21:03	07:17 19:15	07:44 16:34	11:34 (1) 11:57 (1)	11:47 (1)	10:12 14:40
27	09:18 15:59	07:42 17:37	12:28 (1) 18:59	06:05 21:30	05:18 23:02	03:09 23:47	04:20 22:42	05:53 21:00	07:20 19:12	07:47 16:31	11:33 (1) 11:57 (1)	11:47 (1)	10:12 14:41
28	09:16 16:02	07:38 17:40	12:29 (1) 19:01	06:02 21:33	05:15 23:05	03:10 23:46	04:23 22:39	05:56 20:56	07:23 19:09	07:50 16:27	11:33 (1) 11:57 (1)	11:47 (1)	10:11 14:42
29	09:13 16:05	07:35 17:40	12:30 (1) 19:04	06:00 21:36	05:12 23:08	03:12 23:45	04:26 22:36	05:58 20:53	07:25 19:05	07:53 16:24	11:33 (1) 11:57 (1)	11:47 (1)	10:11 14:43
30	09:10 16:08	07:32 17:40	12:31 (1) 19:07	06:00 21:39	05:08 23:10	03:13 23:44	04:29 22:33	06:01 20:49	07:28 19:02	07:56 16:21	11:33 (1) 11:58 (1)	11:47 (1)	10:11 14:45
31	09:07 16:12	07:29 17:40	12:32 (1) 19:10	06:00 21:40	05:07 23:11	03:14 23:45	04:30 22:34	06:04 20:46	07:59 16:18	07:59 16:18	11:33 (1) 11:57 (1)	11:47 (1)	10:10 14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145	
Total, worst case		330								222	114		
Sun reduction		0,50								0,50	0,50		
Oper. time red.		0,80								0,80	0,80		
Wind dir. red.		0,60								0,60	0,60		
Total reduction		0,24								0,24	0,24		
Total, real		79								53	27		

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - med Hitra 2 kvk Shadow receptor: L - Vesthitterveien 135, Fritidsbygg

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
259 364 581 497 609 497 357 770 1 435 798 476 357 7 000

	January	February	March	April	May	June	July	August	September	October	November	December
1	10:09	09:04	07:35	06:48	05:05	03:33	03:14	04:35	06:07	07:31	08:02	09:34
	14:48	16:15	17:43	20:13	21:42	23:16	23:43	22:26	20:42	18:58	16:15	14:54
2	10:08	09:01	07:31	06:44	05:02	03:30	03:16	04:38	06:10	07:34	08:06	09:36
	14:50	16:18	17:46	20:16	21:46	23:18	23:42	22:23	20:39	18:55	16:11	14:52
3	10:07	08:58	07:28	06:41	04:58	03:28	03:17	04:41	06:13	07:37	08:09	09:39
	14:52	16:21	17:49	20:19	21:49	23:21	23:40	22:20	20:36	18:51	16:08	14:50
4	10:06	08:55	07:25	06:37	04:55	03:26	03:19	04:44	06:15	07:40	08:12	09:42
	14:54	16:24	17:52	20:22	21:52	23:23	23:39	22:17	20:32	18:48	16:05	14:49
5	10:05	08:52	07:21	06:34	04:52	03:24	03:21	04:47	06:18	07:42	08:15	09:44
	14:56	16:28	17:54	20:25	21:55	23:26	23:37	22:14	20:29	18:44	16:02	14:47
6	10:04	08:49	07:18	06:31	04:48	03:22	03:23	04:50	06:21	07:45	08:18	09:46
	14:59	16:31	17:57	20:28	21:58	23:28	23:35	22:10	20:25	18:41	15:59	14:46
7	10:02	08:46	07:14	06:27	04:45	03:20	03:25	04:53	06:24	07:48	08:21	09:49
	15:01	16:34	18:00	20:30	22:01	23:30	23:33	22:07	20:22	18:37	15:56	14:44
8	10:01	08:43	07:11	06:24	04:42	03:18	03:28	04:56	06:27	07:51	08:24	09:51
	15:03	16:37	18:03	20:33	22:04	23:32	23:31	22:04	20:18	18:34	15:53	14:43
9	09:59	08:40	07:08	06:20	04:39	03:16	03:30	04:59	06:30	07:54	08:27	09:53
	15:06	16:40	18:06	20:36	22:07	23:34	23:29	22:01	20:15	18:31	15:50	14:42
10	09:58	08:37	07:04	06:17	04:36	03:15	03:32	05:02	06:32	07:57	08:31	09:55
	15:08	16:44	18:09	20:39	22:10	23:36	23:27	21:57	20:11	18:27	15:47	14:40
11	09:56	08:34	07:01	06:13	04:32	03:13	03:35	05:05	06:35	08:00	08:34	09:57
	15:11	16:47	18:12	20:42	22:14	23:38	23:25	21:54	20:08	18:24	15:44	14:39
12	09:54	08:31	06:57	06:10	04:29	03:12	03:37	05:08	06:38	08:02	08:37	09:59
	15:14	16:50	18:15	20:45	22:17	23:39	23:23	21:51	20:04	18:20	15:41	14:38
13	09:52	08:27	06:54	06:06	04:26	03:11	03:40	05:11	06:41	08:05	08:40	10:01
	15:16	16:53	18:18	20:48	22:20	23:41	23:20	21:47	20:01	18:17	15:38	14:38
14	09:50	08:24	06:50	06:03	04:23	03:10	03:42	05:14	06:44	08:08	08:43	10:02
	15:19	16:56	18:21	20:51	22:23	23:42	23:18	21:44	19:57	18:14	15:35	14:37
15	09:48	08:21	06:47	05:59	04:20	03:09	03:45	05:17	06:46	08:11	08:46	10:04
	15:22	16:59	18:24	20:54	22:26	23:43	23:16	21:41	19:54	18:10	15:33	14:37
16	09:46	08:18	06:43	05:56	04:17	03:08	03:48	05:20	06:49	08:14	08:49	10:05
	15:25	17:03	18:27	20:57	22:29	23:45	23:13	21:37	19:50	18:07	15:30	14:36
17	09:44	08:15	06:40	05:52	04:14	03:07	03:50	05:23	06:52	08:17	08:53	10:06
	15:28	17:06	18:30	21:00	22:32	23:46	23:10	21:34	19:47	18:04	15:27	14:36
18	09:41	08:11	06:37	05:49	04:11	03:07	03:53	05:26	06:55	08:20	08:56	10:07
	15:31	17:09	18:33	21:03	22:35	23:46	23:08	21:30	19:43	18:00	15:24	14:36
19	09:39	08:08	06:33	05:46	04:08	03:06	03:56	05:29	06:58	08:23	08:59	10:08
	15:34	17:12	18:35	21:06	22:38	23:47	23:05	21:27	19:40	17:57	15:22	14:36
20	09:37	08:05	06:30	05:42	04:05	03:06	03:59	05:32	07:00	08:26	09:02	10:09
	15:37	17:15	18:38	21:09	22:41	23:48	23:02	21:24	19:36	17:54	15:19	14:36
21	09:34	08:01	06:26	05:39	04:02	03:06	04:02	05:35	07:03	08:29	09:05	10:10
	15:40	17:18	18:41	21:12	22:44	23:48	22:59	21:20	19:33	17:50	15:17	14:36
22	09:32	07:58	06:23	05:35	03:59	03:06	04:05	05:38	07:06	08:32	09:08	10:11
	15:43	17:21	18:44	21:15	22:47	23:48	22:57	21:17	19:29	17:47	15:14	14:37
23	09:29	07:55	06:19	05:32	03:56	03:07	04:08	05:41	07:09	08:35	09:11	10:11
	15:46	17:24	18:47	21:18	22:50	23:48	22:54	21:13	19:26	17:44	15:12	14:37
24	09:26	07:52	06:16	05:29	03:53	03:07	04:11	05:44	07:11	08:38	09:14	10:11
	15:49	17:27	18:50	21:21	22:53	23:48	22:51	21:10	19:22	17:40	15:09	14:38
25	09:24	07:48	06:12	05:25	03:50	03:08	04:14	05:47	07:14	07:41	09:17	10:12
	15:52	17:30	18:53	21:24	22:56	23:48	22:48	21:07	19:19	16:37	15:07	14:39
26	09:21	07:45	06:09	05:22	03:48	03:08	04:17	05:50	07:17	07:44	09:20	10:12
	15:56	17:33	18:56	21:27	22:59	23:47	22:45	21:03	19:15	16:34	15:05	14:40
27	09:18	07:42	06:05	05:18	03:45	03:09	04:20	05:53	07:20	07:47	09:23	10:12
	15:59	17:36	18:59	21:30	23:02	23:47	22:42	21:00	19:12	16:31	15:02	14:41
28	09:16	07:38	06:02	05:15	03:42	03:10	04:23	05:55	07:23	07:50	09:26	10:11
	16:02	17:40	19:01	21:33	23:05	23:46	22:39	20:56	19:09	16:27	15:00	14:42
29	09:13		06:58	05:12	03:40	03:11	04:26	05:58	07:25	07:53	09:28	10:11
	16:05		20:04	21:36	23:08	23:45	22:36	20:53	19:05	16:24	14:58	14:43
30	09:10		06:55	05:08	03:37	03:13	04:29	06:01	07:28	07:56	09:31	10:11
	16:08		20:07	21:39	23:10	23:44	22:33	20:49	19:02	16:21	14:56	14:45
31	09:07		06:51		03:35		04:32	06:04		07:59		10:10
	16:11		20:10		23:13		22:30	20:46		16:18		14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - med Hitra 2 kvk
Assumptions for shadow calculations

Shadow receptor: M - Vesthitterveien 131, Enebolig

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
259 364 581 497 609 497 357 770 1 435 798 476 357 7 000

	January	February	March	April	May	June	July	August	September	October	November	December
1	10:09	09:04	07:35	06:48	05:05	03:33	03:14	04:35	06:07	07:31	08:02	09:34
	14:48	16:15	17:43	20:13	21:42	23:16	23:43	22:26	20:42	18:58	16:15	14:54
2	10:08	09:01	07:31	06:44	05:02	03:30	03:16	04:38	06:10	07:34	08:06	09:36
	14:50	16:18	17:46	20:16	21:46	23:18	23:42	22:23	20:39	18:55	16:11	14:52
3	10:07	08:58	07:28	06:41	04:58	03:28	03:17	04:41	06:13	07:37	08:09	09:39
	14:52	16:21	17:49	20:19	21:49	23:21	23:40	22:20	20:36	18:51	16:08	14:50
4	10:06	08:55	07:25	06:37	04:55	03:26	03:19	04:44	06:15	07:40	08:12	09:42
	14:54	16:24	17:52	20:22	21:52	23:23	23:39	22:17	20:32	18:48	16:05	14:49
5	10:05	08:52	07:21	06:34	04:52	03:24	03:21	04:47	06:18	07:42	08:15	09:44
	14:56	16:28	17:54	20:25	21:55	23:26	23:37	22:14	20:29	18:44	16:02	14:47
6	10:04	08:49	07:18	06:31	04:48	03:22	03:23	04:50	06:21	07:45	08:18	09:46
	14:59	16:31	17:57	20:28	21:58	23:28	23:35	22:10	20:25	18:41	15:59	14:45
7	10:02	08:46	07:14	06:27	04:45	03:20	03:25	04:53	06:24	07:48	08:21	09:49
	15:01	16:34	18:00	20:30	22:01	23:30	23:33	22:07	20:22	18:37	15:56	14:44
8	10:01	08:43	07:11	06:24	04:42	03:18	03:28	04:56	06:27	07:51	08:24	09:51
	15:03	16:37	18:03	20:33	22:04	23:32	23:31	22:04	20:18	18:34	15:53	14:43
9	09:59	08:40	07:08	06:20	04:39	03:16	03:30	04:59	06:30	07:54	08:27	09:53
	15:06	16:40	18:06	20:36	22:07	23:34	23:29	22:01	20:15	18:31	15:50	14:42
10	09:58	08:37	07:04	06:17	04:36	03:15	03:32	05:02	06:32	07:57	08:31	09:55
	15:08	16:44	18:09	20:39	22:10	23:36	23:27	21:57	20:11	18:27	15:47	14:40
11	09:56	08:34	07:01	06:13	04:32	03:13	03:35	05:05	06:35	08:00	08:34	09:57
	15:11	16:47	18:12	20:42	22:14	23:38	23:25	21:54	20:08	18:24	15:44	14:39
12	09:54	08:31	06:57	06:10	04:29	03:12	03:37	05:08	06:38	08:02	08:37	09:59
	15:14	16:50	18:15	20:45	22:17	23:39	23:23	21:51	20:04	18:20	15:41	14:38
13	09:52	08:27	06:54	06:06	04:26	03:11	03:40	05:11	06:41	08:05	08:40	10:01
	15:16	16:53	18:18	20:48	22:20	23:41	23:20	21:47	20:01	18:17	15:38	14:38
14	09:50	08:24	06:50	06:03	04:23	03:10	03:42	05:14	06:44	08:08	08:43	10:02
	15:19	16:56	18:21	20:51	22:23	23:42	23:18	21:44	19:57	18:14	15:35	14:37
15	09:48	08:21	06:47	05:59	04:20	03:09	03:45	05:17	06:46	08:11	08:46	10:04
	15:22	16:59	18:24	20:54	22:26	23:43	23:16	21:41	19:54	18:10	15:33	14:37
16	09:46	08:18	06:43	05:56	04:17	03:08	03:48	05:20	06:49	08:14	08:49	10:05
	15:25	17:03	18:27	20:57	22:29	23:45	23:13	21:37	19:50	18:07	15:30	14:36
17	09:44	08:15	06:40	05:52	04:14	03:07	03:50	05:23	06:52	08:17	08:53	10:06
	15:28	17:06	18:30	21:00	22:32	23:46	23:10	21:34	19:47	18:04	15:27	14:36
18	09:41	08:11	06:37	05:49	04:11	03:07	03:53	05:26	06:55	08:20	08:56	10:07
	15:31	17:09	18:33	21:03	22:35	23:46	23:08	21:30	19:43	18:00	15:24	14:36
19	09:39	08:08	06:33	05:46	04:08	03:06	03:56	05:29	06:58	08:23	08:59	10:08
	15:34	17:12	18:35	21:06	22:38	23:47	23:05	21:27	19:40	17:57	15:22	14:36
20	09:36	08:05	06:30	05:42	04:05	03:06	03:59	05:32	07:00	08:26	09:02	10:09
	15:37	17:15	18:38	21:09	22:41	23:48	23:02	21:24	19:36	17:54	15:19	14:36
21	09:34	08:01	06:26	05:39	04:02	03:06	04:02	05:35	07:03	08:29	09:05	10:10
	15:40	17:18	18:41	21:12	22:44	23:48	22:59	21:20	19:33	17:50	15:17	14:36
22	09:32	07:58	06:23	05:35	03:59	03:06	04:05	05:38	07:06	08:32	09:08	10:11
	15:43	17:21	18:44	21:15	22:47	23:48	22:57	21:17	19:29	17:47	15:14	14:37
23	09:29	07:55	06:19	05:32	03:56	03:07	04:08	05:41	07:09	08:35	09:11	10:11
	15:46	17:24	18:47	21:18	22:50	23:48	22:54	21:13	19:26	17:44	15:12	14:37
24	09:26	07:52	06:16	05:29	03:53	03:07	04:11	05:44	07:11	08:38	09:14	10:11
	15:49	17:27	18:50	21:21	22:53	23:48	22:51	21:10	19:22	17:40	15:09	14:38
25	09:24	07:48	06:12	05:25	03:50	03:08	04:14	05:47	07:14	07:41	09:17	10:12
	15:52	17:30	18:53	21:24	22:56	23:48	22:48	21:07	19:19	16:37	15:07	14:39
26	09:21	07:45	06:09	05:22	03:48	03:08	04:17	05:50	07:17	07:44	09:20	10:12
	15:56	17:33	18:56	21:27	22:59	23:47	22:45	21:03	19:15	16:34	15:05	14:40
27	09:18	07:42	06:05	05:18	03:45	03:09	04:20	05:53	07:20	07:47	09:23	10:12
	15:59	17:36	18:59	21:30	23:02	23:47	22:42	21:00	19:12	16:31	15:02	14:41
28	09:16	07:38	06:02	05:15	03:42	03:10	04:23	05:55	07:23	07:50	09:26	10:11
	16:02	17:40	19:01	21:33	23:05	23:46	22:39	20:56	19:09	16:27	15:00	14:42
29	09:13		06:58	05:12	03:40	03:11	04:26	05:58	07:25	07:53	09:28	10:11
	16:05		20:04	21:36	23:08	23:45	22:36	20:53	19:05	16:24	14:58	14:43
30	09:10		06:55	05:08	03:37	03:13	04:29	06:01	07:28	07:56	09:31	10:11
	16:08		20:07	21:39	23:10	23:44	22:33	20:49	19:02	16:21	14:56	14:45
31	09:07		06:51		03:35		04:32	06:04		07:59		10:10
	16:11		20:10		23:13		22:30	20:46		16:18		14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - med Hitra 2 vkv
Assumptions for shadow calculations

Shadow receptor: N - Vesthitterveien 154, Enebolig

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
259 364 581 497 609 497 357 770 1 435 798 476 357 7 000

	January	February	March	April	May	June	July	August	September	October	November	December
1	10:09 14:48	09:04 16:15	12:53 (1) 13:01 (1)	07:35 17:43	06:48 20:13	05:05 21:42	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:42	07:31 18:58	08:02 16:15
2	10:08 14:50	09:01 16:18	12:51 (1) 13:04 (1)	07:31 17:46	06:44 20:16	05:02 21:46	03:30 23:18	03:16 23:42	04:38 22:23	06:10 20:39	07:34 18:55	08:06 16:11
3	10:07 14:52	08:58 16:21	12:49 (1) 13:05 (1)	07:28 17:49	06:41 20:19	04:58 21:49	03:28 23:21	03:17 23:40	04:41 22:20	06:13 20:36	07:37 18:51	08:09 16:08
4	10:06 14:54	08:55 16:24	12:48 (1) 13:06 (1)	07:25 17:52	06:37 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:16 20:32	07:40 18:48	08:12 16:05
5	10:05 14:56	08:52 16:28	12:48 (1) 13:08 (1)	07:21 17:54	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44	08:15 16:02
6	10:04 14:59	08:49 16:31	12:47 (1) 13:08 (1)	07:18 17:57	06:31 20:28	04:48 21:58	03:22 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41	08:18 15:59
7	10:02 15:01	08:46 16:34	12:46 (1) 13:08 (1)	07:14 18:00	06:27 20:30	04:45 22:01	03:20 23:30	03:25 23:33	04:53 22:07	06:24 20:22	07:48 18:37	08:21 15:56
8	10:01 15:03	08:43 16:37	12:47 (1) 13:09 (1)	07:11 18:03	06:24 20:33	04:42 22:04	03:18 23:32	03:28 23:31	04:56 22:04	06:27 20:18	07:51 18:34	08:24 15:53
9	10:00 15:06	08:40 16:40	12:46 (1) 13:09 (1)	07:08 18:06	06:20 20:36	04:39 22:07	03:16 23:34	03:30 23:29	04:59 22:01	06:30 20:15	07:54 18:31	08:27 15:50
10	09:58 15:08	08:37 16:44	12:47 (1) 13:10 (1)	07:04 18:09	06:17 20:39	04:36 22:10	03:15 23:36	03:32 23:27	05:02 21:57	06:32 20:11	07:57 18:27	08:31 15:47
11	09:56 15:11	08:34 16:47	12:47 (1) 13:09 (1)	07:01 18:12	06:13 20:42	04:32 22:14	03:13 23:38	03:35 23:25	05:05 21:54	06:35 20:08	08:00 18:24	08:34 15:44
12	09:54 15:14	08:31 16:50	12:47 (1) 13:09 (1)	06:57 18:15	06:10 20:45	04:29 22:17	03:12 23:39	03:37 23:23	05:08 21:51	06:38 20:04	08:02 18:20	08:37 15:41
13	09:52 15:16	08:27 16:53	12:48 (1) 13:09 (1)	06:54 18:18	06:06 20:48	04:26 22:20	03:11 23:41	03:40 23:20	05:11 21:47	06:41 20:01	08:05 18:17	08:40 15:38
14	09:50 15:19	08:24 16:56	12:48 (1) 13:07 (1)	06:50 18:21	06:03 20:51	04:23 22:23	03:10 23:42	03:42 23:18	05:14 21:44	06:44 19:57	08:08 18:14	08:43 15:35
15	09:48 15:22	08:21 16:59	12:50 (1) 13:07 (1)	06:47 18:24	05:59 20:54	04:20 22:26	03:09 23:43	03:45 23:15	05:17 21:41	06:46 19:54	08:11 18:10	08:46 15:33
16	09:46 15:25	08:18 17:03	12:51 (1) 13:05 (1)	06:43 18:27	05:56 20:57	04:17 22:29	03:08 23:45	03:48 23:13	05:20 21:37	06:49 19:50	08:14 18:07	08:49 15:30
17	09:44 15:28	08:15 17:06	12:54 (1) 13:02 (1)	06:40 18:30	05:52 21:00	04:14 22:32	03:07 23:46	03:50 23:10	05:23 21:34	06:52 19:47	08:17 18:04	08:53 15:27
18	09:41 15:31	08:11 17:09	13:02 (1)	06:37 18:33	05:49 21:03	04:11 22:35	03:07 23:46	03:53 23:08	05:26 21:30	06:55 19:43	08:20 18:00	08:56 15:24
19	09:39 15:34	08:08 17:12	13:07 (1)	06:33 18:35	05:46 21:06	04:08 22:38	03:06 23:47	03:56 23:05	05:29 21:27	06:58 19:40	08:23 17:57	08:59 15:22
20	09:36 15:37	08:05 17:15	13:07 (1)	06:30 18:38	05:42 21:09	04:05 22:41	03:06 23:47	03:59 23:02	05:32 21:24	07:00 19:36	08:26 17:54	09:02 15:19
21	09:34 15:40	08:01 17:18	13:07 (1)	06:26 18:41	05:39 21:12	04:02 22:44	03:06 23:48	04:02 22:59	05:35 21:20	07:03 19:33	08:29 17:50	09:05 15:17
22	09:32 15:43	07:58 17:21	13:07 (1)	06:23 18:44	05:35 21:15	03:59 22:47	03:06 23:48	04:05 22:57	05:38 21:17	07:06 19:29	08:32 17:47	09:08 15:14
23	09:29 15:46	07:55 17:24	13:07 (1)	06:19 18:47	05:32 21:18	03:56 22:50	03:07 23:48	04:08 22:54	05:41 21:13	07:09 19:26	08:35 17:44	09:11 15:12
24	09:26 15:49	07:52 17:27	13:07 (1)	06:16 18:50	05:29 21:21	03:53 22:53	03:07 23:48	04:11 22:51	05:44 21:10	07:11 19:22	08:38 17:40	09:14 15:09
25	09:24 15:52	07:48 17:30	13:07 (1)	06:12 18:53	05:25 21:24	03:50 22:56	03:08 23:48	04:14 22:48	05:47 21:07	07:14 19:19	07:41 16:37	09:17 12:23 (1)
26	09:21 15:56	07:45 17:33	13:07 (1)	06:09 18:56	05:22 21:27	03:48 22:59	03:08 23:47	04:17 22:45	05:50 21:03	07:17 19:15	07:44 16:34	09:14 12:35 (1)
27	09:18 15:59	07:42 17:36	13:07 (1)	06:05 18:59	05:18 21:30	03:45 23:02	03:09 23:47	04:20 22:42	05:53 21:00	07:20 19:12	07:47 16:31	09:11 12:36 (1)
28	09:16 16:02	07:38 17:40	13:07 (1)	06:02 19:01	05:15 21:33	03:42 23:05	03:10 23:46	04:23 22:39	05:55 20:56	07:23 19:09	07:50 16:27	09:08 12:37 (1)
29	09:13 16:05	07:35 17:37	13:07 (1)	05:58 19:04	05:12 21:36	03:40 23:08	03:11 23:45	04:26 22:36	05:58 20:53	07:25 19:05	07:53 16:24	09:05 12:38 (1)
30	09:10 16:08	07:32 17:34	13:07 (1)	05:55 19:07	05:08 21:39	03:37 23:10	03:13 23:44	04:29 22:33	06:01 20:49	07:28 19:02	07:56 16:21	09:02 12:39 (1)
31	09:07 16:11	07:29 17:31	13:07 (1)	05:51 19:10	05:04 21:40	03:35 23:13	03:11 23:44	04:32 22:30	06:04 20:46	07:59 16:18	07:59 12:39 (1)	09:00 12:39 (1)
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
Total, worst case												
Sun reduction		309								127	184	
Oper. time red.		0,50								0,50	0,50	
Wind dir. red.		0,80								0,80	0,80	
Total reduction		0,63								0,63	0,63	
Total, real		0,25								0,25	0,25	
		78								32	46	

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - med Hitra 2 vkv Shadow receptor: O - Vesthitterveien 142, Fritidsbygg

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
259 364 581 497 609 497 357 770 1 435 798 476 357 7 000

	January	February		March	April	May	June	July	August	September	October		November		December
1	10:09 14:48	09:04 16:15		07:35 17:43	06:48 20:13	05:05 21:42	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:42	07:31 18:58		08:02 16:15	12:44 (1) 13:03 (1)	09:34 14:54
2	10:08 14:50	09:01 16:18		07:31 17:46	06:44 20:16	05:02 21:46	03:30 23:18	03:16 23:41	04:38 22:23	06:10 20:39	07:34 18:55		08:06 16:11	12:45 (1) 13:01 (1)	09:36 14:52
3	10:07 14:52	08:58 16:21		07:28 17:49	06:41 20:19	04:58 21:49	03:28 23:21	03:17 23:40	04:41 22:20	06:13 20:35	07:37 18:51		08:09 16:08	12:47 (1) 13:00 (1)	09:39 14:50
4	10:06 14:54	08:55 16:24		07:25 17:52	06:37 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:15 20:32	07:40 18:48		08:12 16:05	12:51 (1) 12:57 (1)	09:42 14:49
5	10:05 14:56	08:52 16:28		07:21 17:54	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44		08:15 16:02		09:44 14:47
6	10:04 14:59	08:49 16:31		07:18 17:57	06:31 20:28	04:48 21:58	03:22 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41		08:18 15:59		09:46 14:46
7	10:02 15:01	08:46 16:34	7	13:20 (1) 13:27 (1)	07:14 18:00	06:27 22:01	04:45 23:30	03:20 23:33	04:53 22:07	06:24 20:22	07:48 18:37		08:21 15:56		09:49 14:44
8	10:01 15:03	08:43 16:37	14	13:17 (1) 13:31 (1)	07:11 18:03	06:24 22:04	04:42 23:32	03:18 23:31	04:56 22:04	06:27 20:18	07:51 18:34		08:24 15:53		09:51 14:43
9	09:59 15:06	08:40 16:40	17	13:15 (1) 13:32 (1)	07:08 18:06	06:20 22:07	03:16 23:34	03:30 23:29	04:59 22:01	06:30 20:15	07:54 18:31		08:27 15:50		09:53 14:42
10	09:58 15:08	08:37 16:44	19	13:15 (1) 13:34 (1)	07:04 18:09	06:17 22:10	04:36 23:36	03:15 23:27	05:02 21:57	06:32 20:11	07:57 18:27		08:31 15:47		09:55 14:40
11	09:56 15:11	08:34 16:47	20	13:14 (1) 13:34 (1)	07:01 18:12	06:13 22:14	03:13 23:38	03:35 23:25	05:05 21:54	06:35 20:08	08:00 18:24		08:34 15:44		09:57 14:39
12	09:54 15:14	08:31 16:50	22	13:13 (1) 13:35 (1)	06:57 18:15	06:10 22:17	03:12 23:39	03:37 23:23	05:08 21:51	06:38 20:04	08:02 18:20		08:37 15:41		09:59 14:39
13	09:52 15:16	08:27 16:53	23	13:13 (1) 13:36 (1)	06:54 18:18	06:06 22:20	03:11 23:41	03:40 23:20	05:11 21:47	06:41 20:01	08:05 18:17		08:40 15:38		10:01 14:38
14	09:50 15:19	08:24 16:56	24	13:12 (1) 13:36 (1)	06:50 18:21	06:03 22:23	03:10 23:42	03:42 23:18	05:14 21:44	06:44 19:57	08:08 18:14		08:43 15:35		10:02 14:37
15	09:48 15:22	08:21 16:59	24	13:13 (1) 13:37 (1)	06:47 18:24	05:59 22:26	03:09 23:43	03:45 23:15	05:17 21:41	06:46 19:54	08:11 18:10		08:46 15:33		10:04 14:37
16	09:46 15:25	08:18 17:03	24	13:12 (1) 13:36 (1)	06:43 18:27	05:56 22:29	03:08 23:45	03:48 23:13	05:20 21:37	06:49 19:50	08:14 18:07		08:49 15:30		10:05 14:36
17	09:43 15:28	08:15 17:06	23	13:12 (1) 13:35 (1)	06:40 18:30	05:52 22:32	03:07 23:45	03:50 23:10	05:23 21:34	06:52 19:47	08:17 18:04		08:53 15:27		10:06 14:36
18	09:41 15:31	08:11 17:09	23	13:13 (1) 13:36 (1)	06:37 18:33	05:49 22:35	04:11 23:46	03:05 23:08	05:26 21:30	06:55 19:43	08:20 18:00		08:56 15:24		10:07 14:36
19	09:39 15:34	08:08 17:12	21	13:13 (1) 13:34 (1)	06:33 18:35	05:46 22:38	04:08 23:47	03:06 23:05	05:29 21:27	06:57 19:40	08:23 17:57	9	13:50 (1) 13:59 (1)	08:59 15:22	10:08 14:36
20	09:36 15:37	08:05 17:15	19	13:15 (1) 13:34 (1)	06:30 18:38	05:42 22:41	04:05 23:47	03:06 23:02	05:32 21:24	07:00 19:36	08:26 17:54	14	13:47 (1) 14:01 (1)	09:02 15:19	10:09 14:36
21	09:34 15:40	08:01 17:18	17	13:15 (1) 13:32 (1)	06:26 18:41	05:39 22:44	04:02 23:48	03:06 22:59	05:35 21:20	07:03 19:33	08:29 17:50	18	13:46 (1) 14:04 (1)	09:05 15:17	10:10 14:36
22	09:32 15:43	07:58 17:21	13	13:17 (1) 13:30 (1)	06:23 18:44	05:35 22:47	03:59 23:48	04:05 22:57	05:38 21:17	07:06 19:29	08:32 17:47	20	13:44 (1) 14:04 (1)	09:08 15:14	10:11 14:37
23	09:29 15:46	07:55 17:24	6	13:21 (1) 13:27 (1)	06:19 18:47	05:32 22:50	03:56 23:48	04:08 22:54	05:41 21:13	07:09 19:26	08:35 17:44	22	13:43 (1) 14:05 (1)	09:11 15:12	10:11 14:37
24	09:26 15:49	07:52 17:27		06:16 18:50	05:29 22:21	03:53 22:53	03:07 23:48	04:11 22:51	05:44 21:10	07:11 19:22	08:38 17:40	23	13:43 (1) 14:06 (1)	09:14 15:09	10:11 14:38
25	09:24 15:52	07:48 17:30		06:12 18:53	05:25 22:24	03:50 22:56	04:14 23:48	05:47 22:48	07:14 21:07	07:41 19:19	08:35 16:37	24	12:42 (1) 13:06 (1)	09:17 15:07	10:12 14:39
26	09:21 15:56	07:45 17:33		06:09 18:56	05:22 22:27	03:48 22:59	04:17 23:47	05:50 22:45	07:17 21:03	07:44 19:15	08:32 16:34	24	12:42 (1) 13:06 (1)	09:20 15:05	10:12 14:40
27	09:18 15:59	07:41 17:36		06:05 18:59	05:18 23:02	03:45 23:47	04:20 22:42	05:53 21:00	07:20 19:12	07:47 16:31	08:31 16:31	24	12:42 (1) 13:06 (1)	09:23 15:02	10:12 14:41
28	09:16 16:02	07:38 17:39		06:02 19:01	05:15 23:33	03:42 23:05	04:23 23:46	05:55 22:39	07:23 20:56	07:50 16:27	08:24 16:27	24	12:41 (1) 13:05 (1)	09:25 15:00	10:11 14:42
29	09:13 16:05			06:58 20:04	05:12 23:36	03:40 23:08	04:26 23:45	05:58 20:53	07:25 19:05	07:53 16:24	08:24 16:24	23	12:42 (1) 13:05 (1)	09:28 14:58	10:11 14:43
30	09:10 16:08			06:55 20:07	05:08 23:39	03:37 23:10	04:29 23:44	06:01 22:33	07:28 19:02	07:56 16:21	08:24 16:21	22	12:43 (1) 13:05 (1)	09:31 14:56	10:11 14:45
31	09:07 16:11			06:51 20:10	03:35 23:13		04:32 22:30	06:04 20:46		07:59 16:18	08:24 16:18	21	12:43 (1) 13:04 (1)		10:10 14:46
Potential sun hours	178	241		363	449	564	613	600	505	392	306		203		145
Total, worst case			316								268		54		
Sun reduction			0,50								0,50		0,50		
Oper. time red.			0,80								0,80		0,80		
Wind dir. red.			0,64								0,64		0,64		
Total reduction			0,26								0,26		0,26		
Total, real			81								69		14		

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)

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - med Hitra 2 kvk
Assumptions for shadow calculations

Shadow receptor: P - Vesthitterveien 132, Enebolig

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
259 364 581 497 609 497 357 770 1 435 798 476 357 7 000

	January	February	March	April	May	June	July	August	September	October	November	December
1	10:09	09:04	07:35	06:48	05:05	03:33	03:14	04:35	06:07	07:31	08:02	09:34
	14:48	16:15	17:43	20:13	21:42	23:16	23:43	22:26	20:42	18:58	16:15	14:54
2	10:08	09:01	07:31	06:44	05:02	03:30	03:16	04:38	06:10	07:34	08:06	09:36
	14:50	16:18	17:46	20:16	21:46	23:18	23:42	22:23	20:39	18:55	16:11	14:52
3	10:07	08:58	07:28	06:41	04:58	03:28	03:17	04:41	06:13	07:37	08:09	09:39
	14:52	16:21	17:49	20:19	21:49	23:21	23:40	22:20	20:35	18:51	16:08	14:50
4	10:06	08:55	07:25	06:37	04:55	03:26	03:19	04:44	06:15	07:40	08:12	09:42
	14:54	16:24	17:52	20:22	21:52	23:23	23:39	22:17	20:32	18:48	16:05	14:49
5	10:05	08:52	07:21	06:34	04:52	03:24	03:21	04:47	06:18	07:42	08:15	09:44
	14:56	16:28	17:54	20:25	21:55	23:26	23:37	22:14	20:29	18:44	16:02	14:47
6	10:04	08:49	07:18	06:31	04:48	03:22	03:23	04:50	06:21	07:45	08:18	09:46
	14:59	16:31	17:57	20:28	21:58	23:28	23:35	22:10	20:25	18:41	15:59	14:45
7	10:02	08:46	07:14	06:27	04:45	03:20	03:25	04:53	06:24	07:48	08:21	09:49
	15:01	16:34	18:00	20:30	22:01	23:30	23:33	22:07	20:22	18:37	15:56	14:44
8	10:01	08:43	07:11	06:24	04:42	03:18	03:27	04:56	06:27	07:51	08:24	09:51
	15:03	16:37	18:03	20:33	22:04	23:32	23:31	22:04	20:18	18:34	15:53	14:43
9	09:59	08:40	07:08	06:20	04:39	03:16	03:30	04:59	06:30	07:54	08:27	09:53
	15:06	16:40	18:06	20:36	22:07	23:34	23:29	22:01	20:15	18:31	15:50	14:41
10	09:58	08:37	07:04	06:17	04:36	03:15	03:32	05:02	06:32	07:57	08:31	09:55
	15:08	16:44	18:09	20:39	22:10	23:36	23:27	21:57	20:11	18:27	15:47	14:40
11	09:56	08:34	07:01	06:13	04:32	03:13	03:35	05:05	06:35	08:00	08:34	09:57
	15:11	16:47	18:12	20:42	22:14	23:38	23:25	21:54	20:08	18:24	15:44	14:39
12	09:54	08:31	06:57	06:10	04:29	03:12	03:37	05:08	06:38	08:02	08:37	09:59
	15:14	16:50	18:15	20:45	22:17	23:39	23:23	21:51	20:04	18:20	15:41	14:38
13	09:52	08:27	06:54	06:06	04:26	03:11	03:40	05:11	06:41	08:05	08:40	10:01
	15:16	16:53	18:18	20:48	22:20	23:41	23:20	21:47	20:01	18:17	15:38	14:38
14	09:50	08:24	06:50	06:03	04:23	03:10	03:42	05:14	06:44	08:08	08:43	10:02
	15:19	16:56	18:21	20:51	22:23	23:42	23:18	21:44	19:57	18:14	15:35	14:37
15	09:48	08:21	06:47	05:59	04:20	03:09	03:45	05:17	06:46	08:11	08:46	10:04
	15:22	16:59	18:24	20:54	22:26	23:43	23:16	21:41	19:54	18:10	15:33	14:37
16	09:46	08:18	06:43	05:56	04:17	03:08	03:48	05:20	06:49	08:14	08:49	10:05
	15:25	17:03	18:27	20:57	22:29	23:45	23:13	21:37	19:50	18:07	15:30	14:36
17	09:44	08:15	06:40	05:52	04:14	03:07	03:50	05:23	06:52	08:17	08:53	10:06
	15:28	17:06	18:30	21:00	22:32	23:46	23:10	21:34	19:47	18:04	15:27	14:36
18	09:41	08:11	06:37	05:49	04:11	03:07	03:53	05:26	06:55	08:20	08:56	10:07
	15:31	17:09	18:33	21:03	22:35	23:46	23:08	21:30	19:43	18:00	15:24	14:36
19	09:39	08:08	06:33	05:46	04:08	03:06	03:56	05:29	06:57	08:23	08:59	10:08
	15:34	17:12	18:35	21:06	22:38	23:47	23:05	21:27	19:40	17:57	15:22	14:36
20	09:36	08:05	06:30	05:42	04:05	03:06	03:59	05:32	07:00	08:26	09:02	10:09
	15:37	17:15	18:38	21:09	22:41	23:48	23:02	21:24	19:36	17:54	15:19	14:36
21	09:34	08:01	06:26	05:39	04:02	03:06	04:02	05:35	07:03	08:29	09:05	10:10
	15:40	17:18	18:41	21:12	22:44	23:48	22:59	21:20	19:33	17:50	15:17	14:36
22	09:32	07:58	06:23	05:35	03:59	03:06	04:05	05:38	07:06	08:32	09:08	10:11
	15:43	17:21	18:44	21:15	22:47	23:48	22:57	21:17	19:29	17:47	15:14	14:37
23	09:29	07:55	06:19	05:32	03:56	03:07	04:08	05:41	07:09	08:35	09:11	10:11
	15:46	17:24	18:47	21:18	22:50	23:48	22:54	21:13	19:26	17:44	15:12	14:37
24	09:26	07:52	06:16	05:29	03:53	03:07	04:11	05:44	07:11	08:38	09:14	10:11
	15:49	17:27	18:50	21:21	22:53	23:48	22:51	21:10	19:22	17:40	15:09	14:38
25	09:24	07:48	06:12	05:25	03:50	03:08	04:14	05:47	07:14	07:41	09:17	10:12
	15:52	17:30	18:53	21:24	22:56	23:48	22:48	21:07	19:19	16:37	15:07	14:39
26	09:21	07:45	06:09	05:22	03:48	03:08	04:17	05:50	07:17	07:44	09:20	10:12
	15:56	17:33	18:56	21:27	22:59	23:47	22:45	21:03	19:15	16:34	15:05	14:40
27	09:18	07:41	06:05	05:18	03:45	03:09	04:20	05:53	07:20	07:47	09:23	10:12
	15:59	17:36	18:59	21:30	23:02	23:47	22:42	21:00	19:12	16:31	15:02	14:41
28	09:16	07:38	06:02	05:15	03:42	03:10	04:23	05:55	07:23	07:50	09:26	10:11
	16:02	17:39	19:01	21:33	23:05	23:46	22:39	20:56	19:09	16:27	15:00	14:42
29	09:13		06:58	05:12	03:40	03:11	04:26	05:58	07:25	07:53	09:28	10:11
	16:05		20:04	21:36	23:08	23:45	22:36	20:53	19:05	16:24	14:58	14:43
30	09:10		06:55	05:08	03:37	03:13	04:29	06:01	07:28	07:56	09:31	10:11
	16:08		20:07	21:39	23:10	23:44	22:33	20:49	19:02	16:21	14:56	14:45
31	09:07		06:51		03:35		04:32	06:04		07:59		10:10
	16:11		20:10		23:13		22:30	20:46		16:18		14:46
Potential sun hours	178	241	363	449	564	613	600	505	392	306	203	145
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

SHADOW - Calendar

Calculation: Nye Hitra 1 - real case - med Hitra 2 vkv Shadow receptor: Q - Vesthitterveien 136, Fritidsbygg

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
259 364 581 497 609 497 357 770 1 435 798 476 357 7 000

	January	February	March	April	May	June	July	August	September	October	November	December
1	10:09 14:48	09:04 16:15		07:35 17:43	06:48 20:13	05:05 21:42	03:33 23:16	03:14 23:43	04:35 22:26	06:07 20:42	07:31 18:58	
2	10:08 14:50	09:01 16:18	13:20 (1)	07:31 17:46	06:44 20:16	05:02 21:46	03:30 23:18	03:16 23:42	04:38 22:23	06:10 20:39	07:34 18:55	
3	10:07 14:52	08:58 16:21	13:17 (1)	07:28 17:49	06:41 20:19	05:04 21:49	03:28 23:21	03:17 23:40	04:41 22:20	06:13 20:35	07:37 18:51	
4	10:06 14:54	08:55 16:24	13:15 (1)	07:25 17:51	06:37 20:22	04:55 21:52	03:26 23:23	03:19 23:39	04:44 22:17	06:15 20:32	07:40 18:48	
5	10:05 14:56	08:52 16:28	13:15 (1)	07:21 17:54	06:34 20:25	04:52 21:55	03:24 23:26	03:21 23:37	04:47 22:14	06:18 20:29	07:42 18:44	
6	10:04 14:59	08:49 16:31	13:14 (1)	07:18 17:57	06:31 20:28	04:48 21:58	03:22 23:28	03:23 23:35	04:50 22:10	06:21 20:25	07:45 18:41	
7	10:02 15:01	08:46 16:34	13:13 (1)	07:14 18:00	06:27 20:30	04:45 22:01	03:20 23:30	03:25 23:33	04:53 22:07	06:24 20:22	07:48 18:37	
8	10:01 15:03	08:43 16:37	13:13 (1)	07:11 18:03	06:24 20:33	04:42 22:04	03:18 23:32	03:28 23:31	04:56 22:04	06:27 20:18	07:51 18:34	
9	10:00 15:06	08:40 16:40	13:12 (1)	07:08 18:06	06:20 20:36	04:39 22:07	03:16 23:34	03:30 23:29	04:59 22:01	06:30 20:15	07:54 18:31	
10	09:58 15:08	08:37 16:44	13:13 (1)	07:04 18:09	06:17 20:39	04:36 22:10	03:15 23:36	03:32 23:27	05:02 21:57	06:32 20:11	07:57 18:27	
11	09:56 15:11	08:34 16:47	13:13 (1)	07:01 18:12	06:13 20:42	04:32 22:14	03:13 23:38	03:35 23:25	05:05 21:54	06:35 20:08	08:00 18:24	
12	09:54 15:14	08:31 16:50	13:13 (1)	06:57 18:15	06:10 20:45	04:29 22:17	03:12 23:39	03:37 23:23	05:08 21:51	06:38 20:04	08:02 18:20	
13	09:52 15:16	08:27 16:53	13:14 (1)	06:54 18:18	06:06 20:48	04:26 22:20	03:11 23:41	03:40 23:20	05:11 21:47	06:41 20:01	08:05 18:17	
14	09:50 15:19	08:24 16:56	13:14 (1)	06:50 18:21	06:03 20:51	04:23 22:23	03:10 23:42	03:42 23:18	05:14 21:44	06:44 19:57	08:08 18:14	
15	09:48 15:22	08:21 16:59	13:15 (1)	06:47 18:24	05:59 20:54	04:20 22:26	03:09 23:43	03:45 23:15	05:17 21:41	06:46 19:54	08:11 18:10	
16	09:46 15:25	08:18 17:03	13:16 (1)	06:43 18:27	05:56 20:57	04:17 22:29	03:08 23:45	03:48 23:13	05:20 21:37	06:49 19:50	08:14 18:07	
17	09:44 15:28	08:15 17:06	13:18 (1)	06:40 18:30	05:52 21:00	04:14 22:32	03:07 23:46	03:50 23:10	05:23 21:34	06:52 19:47	08:17 18:04	
18	09:41 15:31	08:11 17:09	13:23 (1)	06:37 18:33	05:49 21:03	04:11 22:35	03:07 23:46	03:53 23:08	05:26 21:30	06:55 19:43	08:20 18:00	
19	09:39 15:34	08:08 17:12	13:26 (1)	06:33 18:35	05:46 21:06	04:08 22:38	03:06 23:47	03:56 23:05	05:29 21:27	06:57 19:40	08:23 17:57	
20	09:36 15:37	08:05 17:15		06:30 18:38	05:42 21:09	04:05 22:41	03:06 23:47	03:59 23:02	05:32 21:24	07:00 19:36	08:26 17:54	
21	09:34 15:40	08:01 17:18		06:26 18:41	05:39 21:12	04:02 22:44	03:06 23:48	04:02 22:59	05:35 21:20	07:03 19:33	08:29 17:50	
22	09:32 15:43	07:58 17:21		06:23 18:44	05:35 21:15	03:59 22:47	03:06 23:48	04:05 22:57	05:38 21:17	07:06 19:29	08:32 17:47	
23	09:29 15:46	07:55 17:24		06:19 18:47	05:32 21:18	03:56 22:50	03:07 23:48	04:08 22:54	05:41 21:13	07:09 19:26	08:35 17:44	
24	09:26 15:49	07:52 17:27		06:16 18:50	05:29 21:21	03:53 22:53	03:07 23:48	04:11 22:51	05:44 21:10	07:11 19:22	08:38 17:40	
25	09:24 15:52	07:48 17:30		06:12 18:53	05:25 21:24	03:50 22:56	03:08 23:48	04:14 22:48	05:47 21:07	07:14 19:19	07:41 16:37	
26	09:21 15:56	07:45 17:33		06:09 18:56	05:22 21:27	03:48 22:59	03:08 23:47	04:17 22:45	05:50 21:03	07:17 19:15	07:44 16:34	
27	09:18 15:59	07:41 17:36		06:05 18:59	05:18 21:30	03:45 23:02	03:09 23:47	04:20 22:42	05:53 21:00	07:20 19:12	07:47 16:31	
28	09:16 16:02	07:38 17:39		06:02 19:01	05:15 21:33	03:42 23:05	03:10 23:46	04:23 22:39	05:55 20:56	07:23 19:09	07:50 16:27	
29	09:13 16:05			06:58 20:04	05:12 21:36	03:40 23:08	03:11 23:45	04:26 22:36	05:58 20:53	07:25 19:05	07:53 16:24	
30	09:10 16:08			06:55 20:07	05:08 21:39	03:37 23:10	03:13 23:44	04:29 22:33	06:01 20:49	07:28 19:02	07:56 16:21	
31	09:07 16:11			06:51 20:10		03:35 23:13		04:32 22:30	06:04 20:46	07:59 16:18		
Potential sun hours	178	241		363	449	564	613	600	505	392	306	
Total, worst case			288								140	
Sun reduction			0,50								0,50	
Oper. time red.			0,80								0,80	
Wind dir. red.			0,64								0,64	
Total reduction			0,26								0,26	
Total, real			74								39	

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

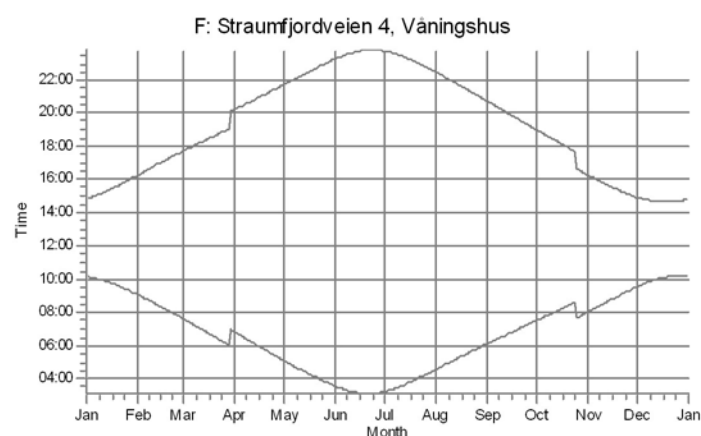
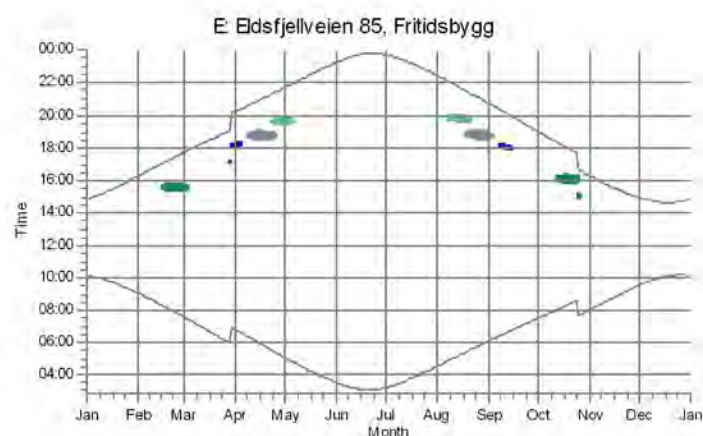
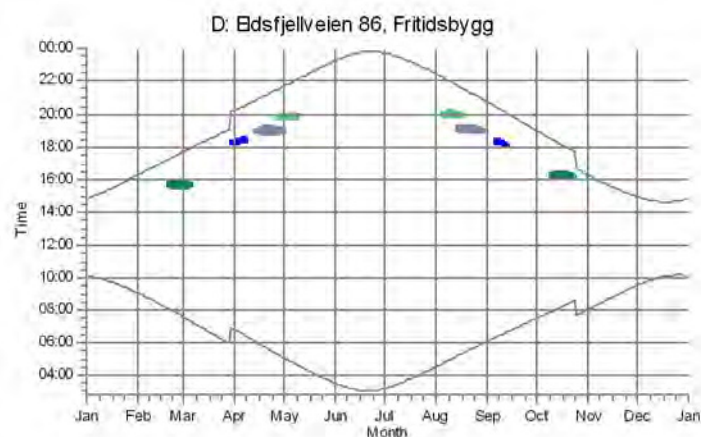
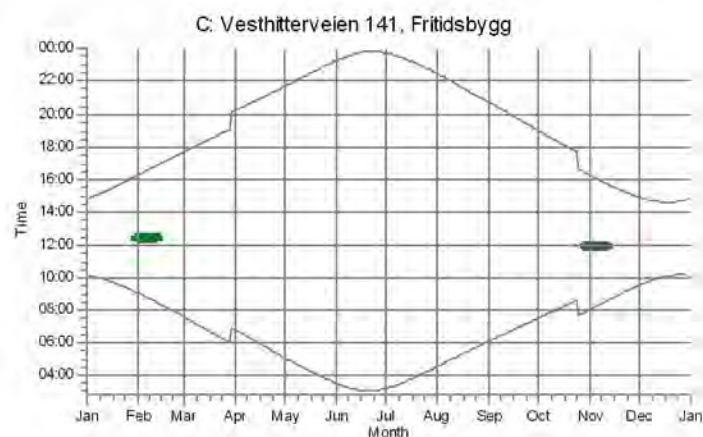
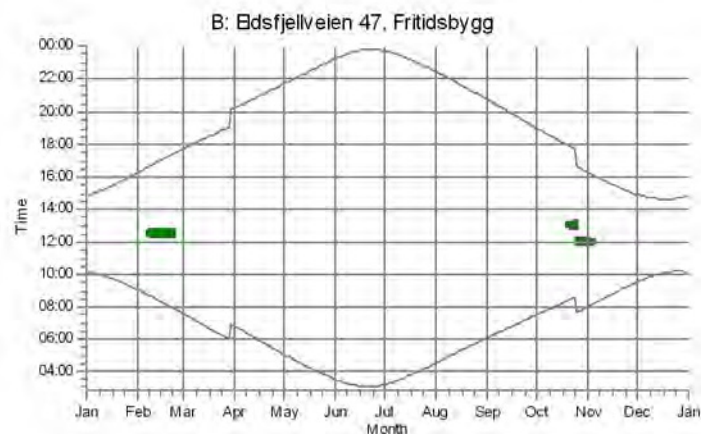
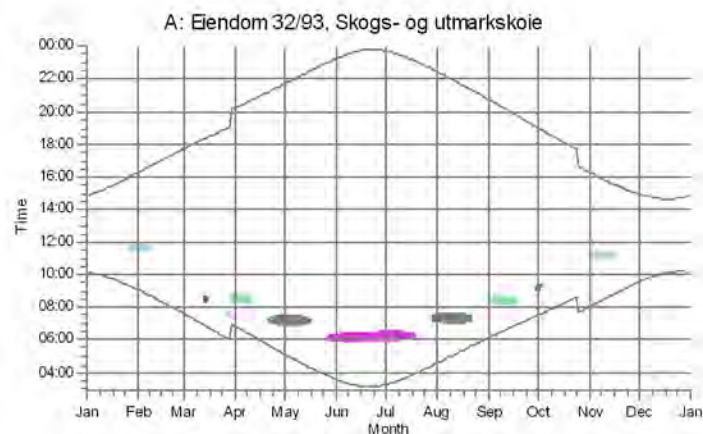
Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker
			(WTG causing flicker last time)



Vedlegg 4.2

SHADOW - Calendar, graphical

Calculation: Nye Hitra 1 - real case - med Hitra 2 kvk



WTGs

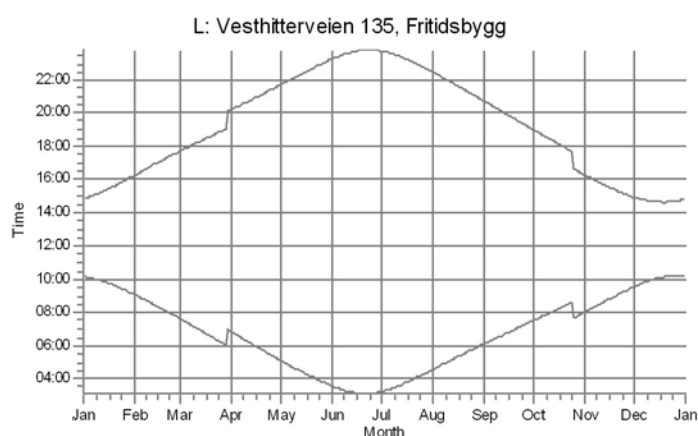
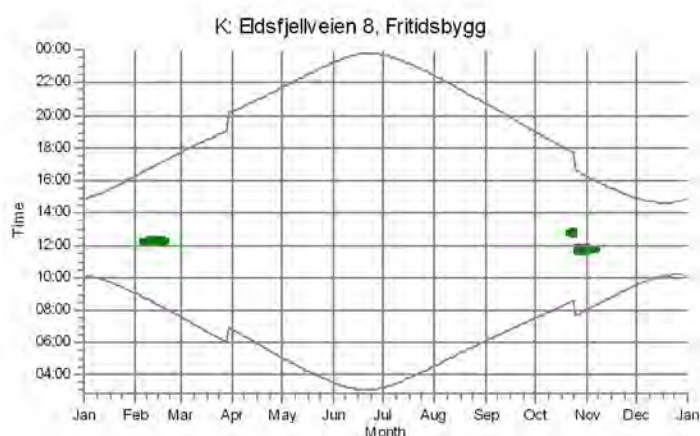
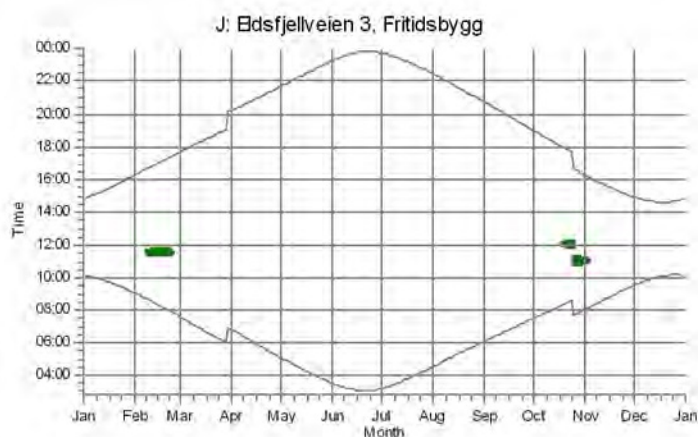
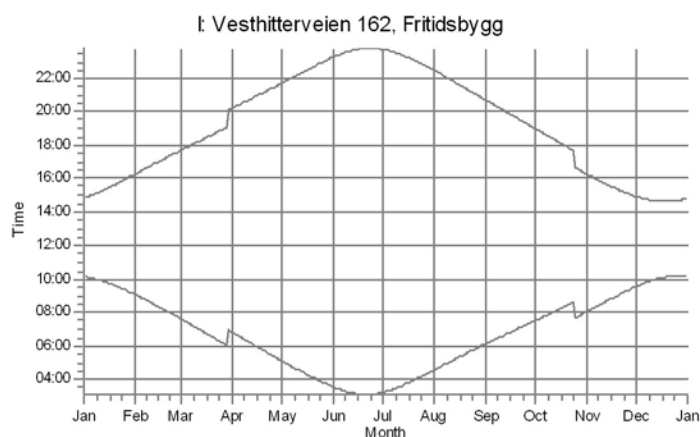
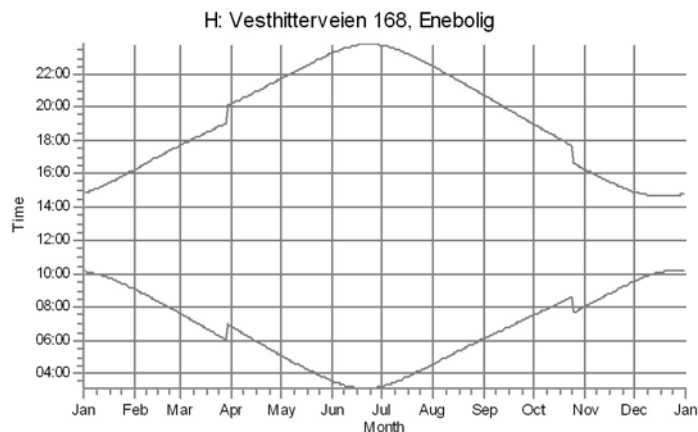
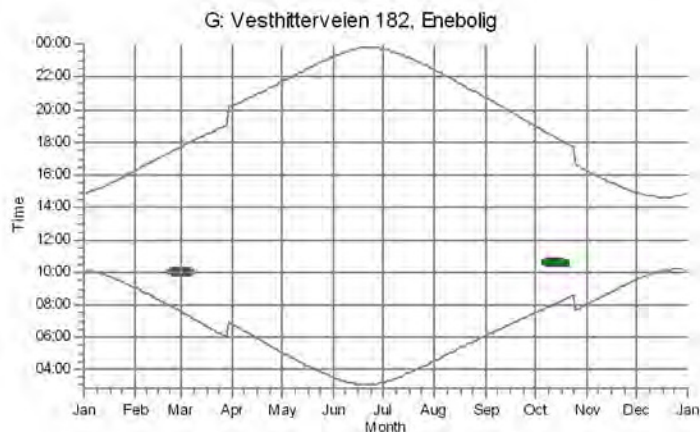
1: NORDEX N175/6.X 6800 175.0 I-I hub: 132,5 m (TOT: 220,0 m) (1)
3: NORDEX N175/6.X 6800 175.0 I-I hub: 132,5 m (TOT: 220,0 m) (3)
4: NORDEX N175/6.X 6800 175.0 I-I hub: 132,5 m (TOT: 220,0 m) (4)
6: NORDEX N175/6.X 6800 175.0 I-I hub: 132,5 m (TOT: 220,0 m) (6)

26: VESTAS V117-3.6 3600 117.0 IOI hub: 87,0 m (TOT: 145,5 m) (11)
28: VESTAS V117-3.6 3600 117.0 IOI hub: 87,0 m (TOT: 145,5 m) (13)
33: VESTAS V117-3.6 3600 117.0 IOI hub: 87,0 m (TOT: 145,5 m) (18)
35: VESTAS V117-3.6 3600 117.0 IOI hub: 87,0 m (TOT: 145,5 m) (20)

38: VESTAS V117-3.6 3600 117.0 IOI hub: 87,0 m (TOT: 145,5 m) (23)
40: VESTAS V117-3.6 3600 117.0 IOI hub: 87,0 m (TOT: 145,5 m) (25)

SHADOW - Calendar, graphical

Calculation: Nye Hitra 1 - real case - med Hitra 2 kvk

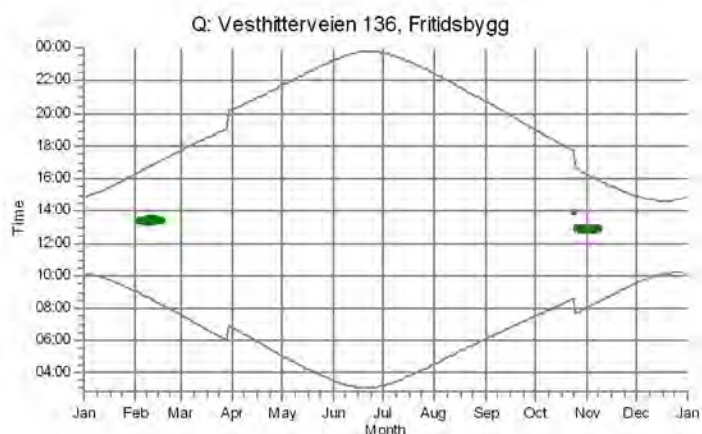
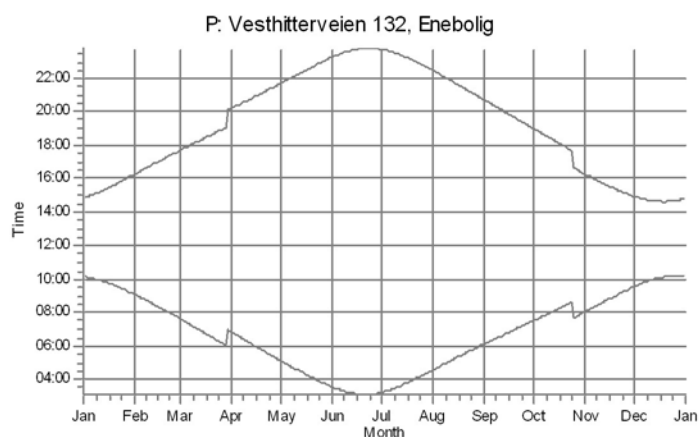
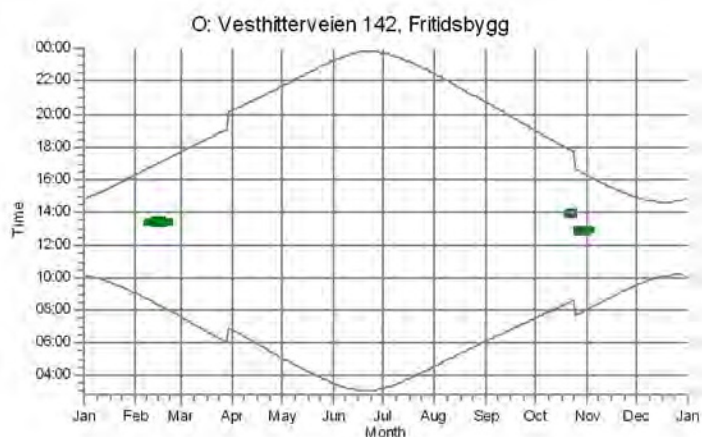
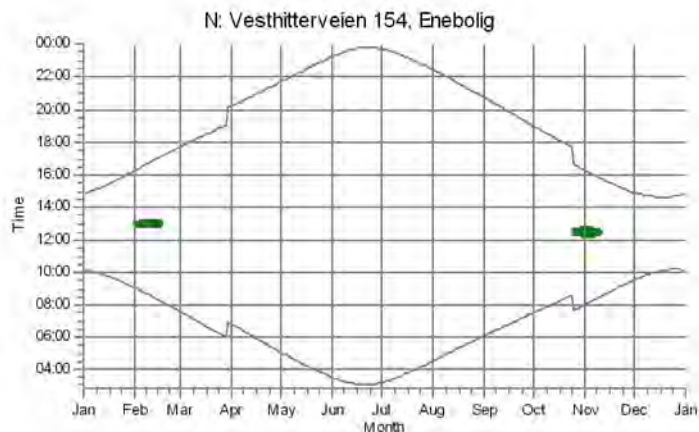
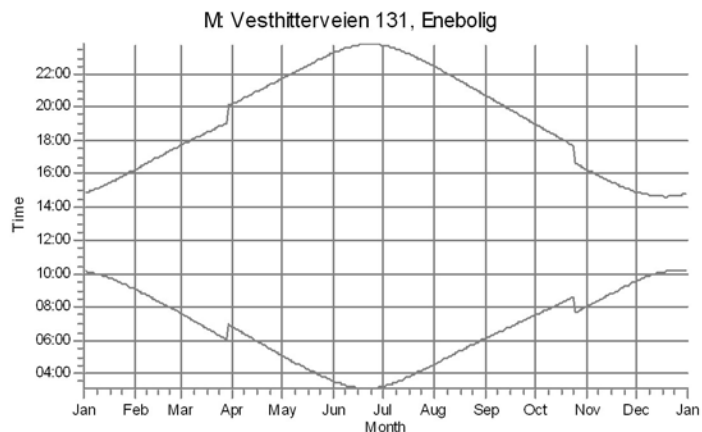


WTGs

1: NORDEX N175/6.X 6800 175.0 I-I hub: 132,5 m (TOT: 220,0 m) (1)

SHADOW - Calendar, graphical

Calculation: Nye Hitra 1 - real case - med Hitra 2 kvk



WTGs

1: NORDEX N175/6.X 6800 175.0 t-h hub: 132,5 m (TOT: 220,0 m) (1)