

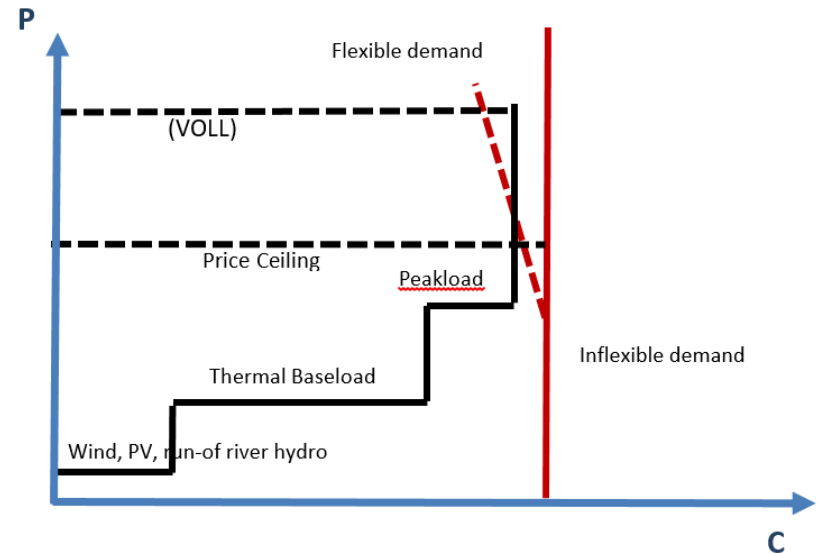
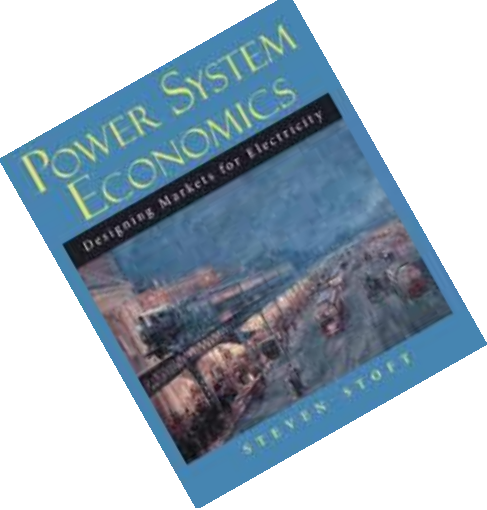
Adequacy and market design in the Nordic electricity market

*..Based on Study for Electricity Market Group
NCM*

Oslo, October 14, 2016

Objective & Scope

- To describe and analyse proposals on capacity remuneration mechanisms in selected countries including their impact on the Nordic electricity market
- To evaluate whether major incompatibility issues exist between relevant communications from the EU Commission and the current Nordic market model
- To evaluate if the Nordic market is in need for or suited for capacity mechanisms in order to secure the balance between supply and demand.



Theory:

- Energy only electricity markets will deliver optimal adequacy if there are **no serious market failures..**
- Some serious challenges/failures:
 - Lack of **Demand Response**
 - Price ceilings affect the needed **scarcity pricing.**
 - Support for **fluctuating production.**
 - **Regulative risk** if scarcity pricing becomes prevalent

Interim Report of the Sector Inquiry on Capacity Mechanisms

Adopted by Commission 13th of april

- Tenders for new capacity and strategic reserves may be appropriate to address a transitional capacity problem. A tender allows new investment, while a strategic reserve is typically used to prevent existing plants from closing.
- Central buyer mechanisms and de-centralised obligation mechanisms could be appropriate options to address a longer-term and more general adequacy problem, depending on the level of competition in the underlying market.

Mechanisms in selected countries

Features	UK	Germany	France	Italy
Core features				
Targeted or market wide	Market-wide	Targeted	Market-wide	Market-wide
Volume or price based	Volume	Volume	Volume	Volume
Central or decentral	Central	Central	Decentral	Central
Reliability standard	LoLE = 3h/y	None	LoLE = 3h/y	None
Is it technology neutral	Yes	No	Yes	No
Physical/financial obligation	Physical	Physical	Physical	Both
Rules for activation	TSO call	TSO call Activated as a last resort.	TSO call.	Not relevant
Expected price effect: Day-ahead market	Negative	A small increase	Negative	Negative

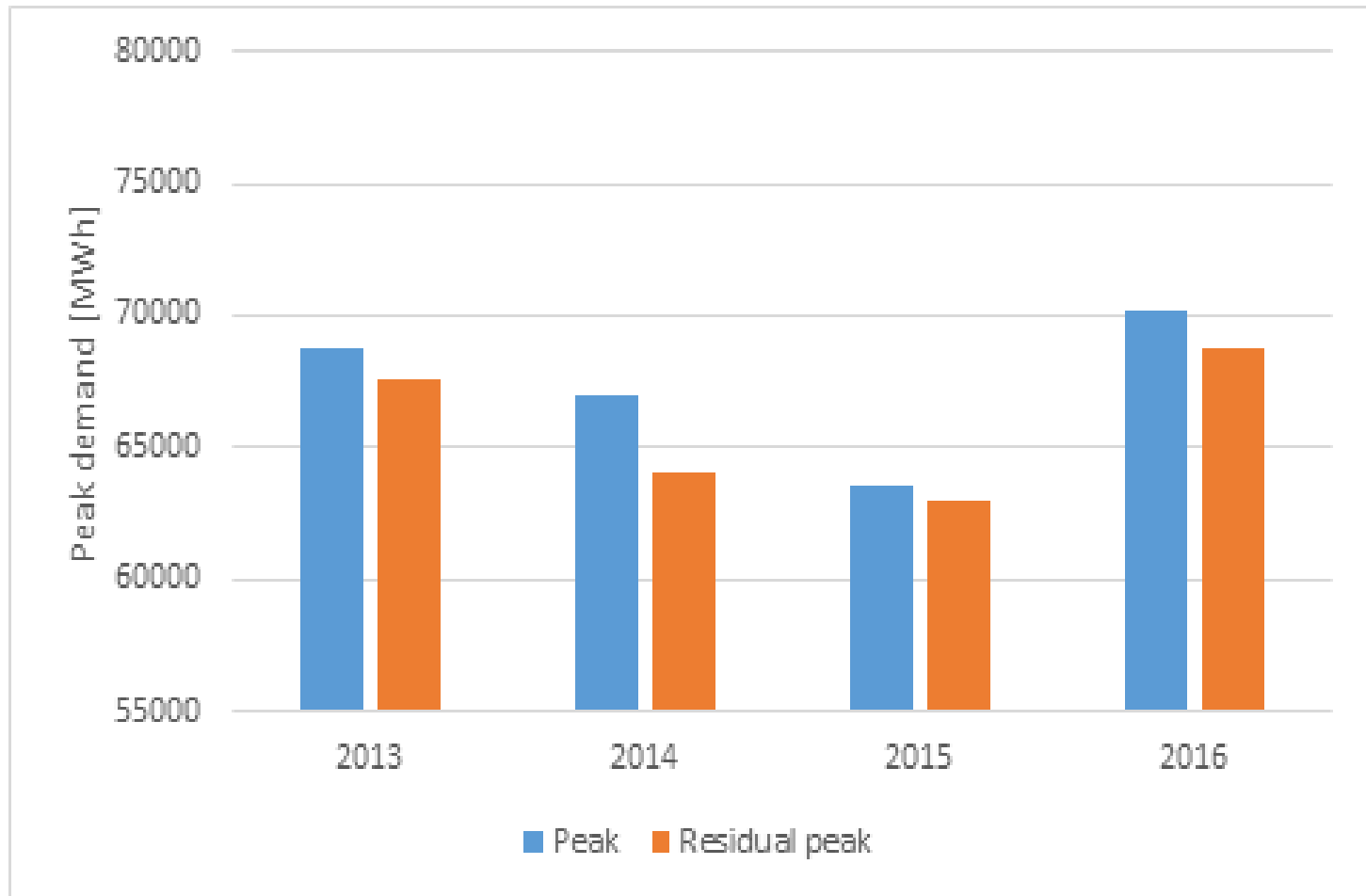
Nordic adequacy (1)

- Some black-outs in parts of the Nordic area during the last decades. Caused by faults in transmission facilities.
- Weeks 1-3 2016 were very cold in the Nordic area. New Nordic consumption record (70 159 MWh) on 21 January hour 08-09.
- Highest spot price this winter was 214 EUR/MWh and occurred in the hour with the new consumption record. Low spot prices compared to winter 2009/2010 when the highest spot prices were 1400 EUR/MWh
- The areas with the weakest power balances are Finland, South Sweden (SE3 and SE4) and Eastern Denmark (DK2).

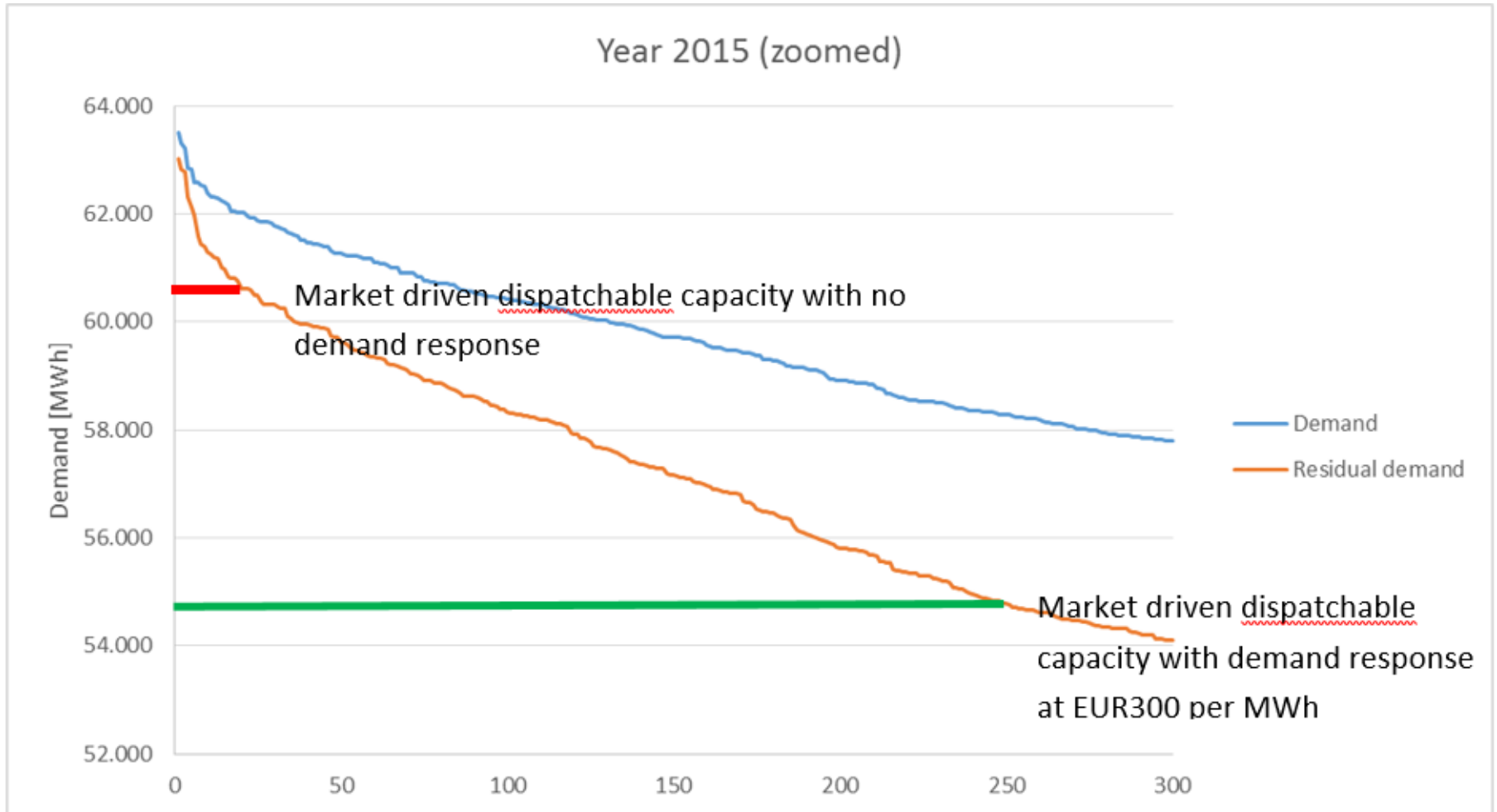
Nordic adequacy (2)

- Nordic TSOs forecast for 1-in-10 winter (2015-2016) is 71,250 MW and a balance deficit of 1000 MW. The deficit is expected to be supplied with imports.
- Conclusions based on recent modelling work (Thema 2015) shows little evidence of severe capacity adequacy challenges towards 2030.
- Communication from plant owners and studies expect significant decommissioning of existing thermal capacity. This is also seen in our BALMOREL modelling (8.000 MW).
- The question is if Adequacy studies fully include prospected plant closures including the closures of Swedish nuclear reactors when assessing import possibilities on a cold winter day.

Nordic peak and residual peak 2013-2016



Need for demand response



CM choice in Nordics

Advantages (pro)

Strategic reserve

- Solves the anticipated adequacy problem without distorting the price signal
- SR is a continuation and only a slight altering of the existing market model. This signals stability to the stakeholders.
- SR includes simple indicator of its necessity: If not used during several peak situations and if DR is present it can be terminated
- SR can be terminated without further changes in the market framework.

Market wide

- Solves the anticipated adequacy problem
- Some stakeholders could consider it an advantage that the CM smoothens the price signal

CM choice in Nordics

Disadvantages (con)

Strategic reserve

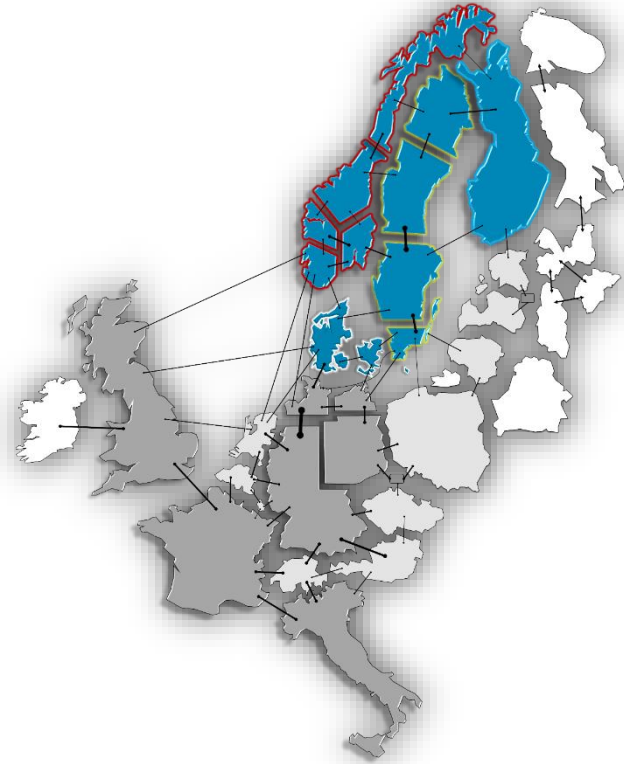
- It slightly increases the total cost of electricity if it proves not to be necessary.
- Participating plants could have been viable in the market anyway.

Market wide

- Distorts the basic EOM price signal also in adjacent markets
- Increases regulation costs and regulation risks (risk of design changes).
- Not the most efficient way to integrate renewables.
- Demand for capacity centrally defined
- No clear indicator of its necessity once it has been implemented

Recommendations

- The Nordic countries jointly communicate the benefits of a strategic reserve in comparison to other capacity mechanisms to the EU
- Analyse whether activation of the Strategic Reserves should follow the German reasoning (no activation in the day-ahead market and activation as a last resort after ID-trade).
- Continuously improve market efficiency and sharpening price signals as elaborated in Marketmodels 2.0 and several studies.
- Implement an ambitious strategy for increased realisation of flexibility in demand.
- Implement an analysis on a Nordic basis of the probability that sufficient imports are in fact available in peak load situations.
- Assess possibilities to establish common cross-border strategic reserve
- Promote that intelligent plans for load shedding is adopted among TSO's and DSO's. A vision is that the TSOs/DSO's establish load-shedding plans based on voluntary agreements.



Thank you for your attention