

# Regional electricity market design

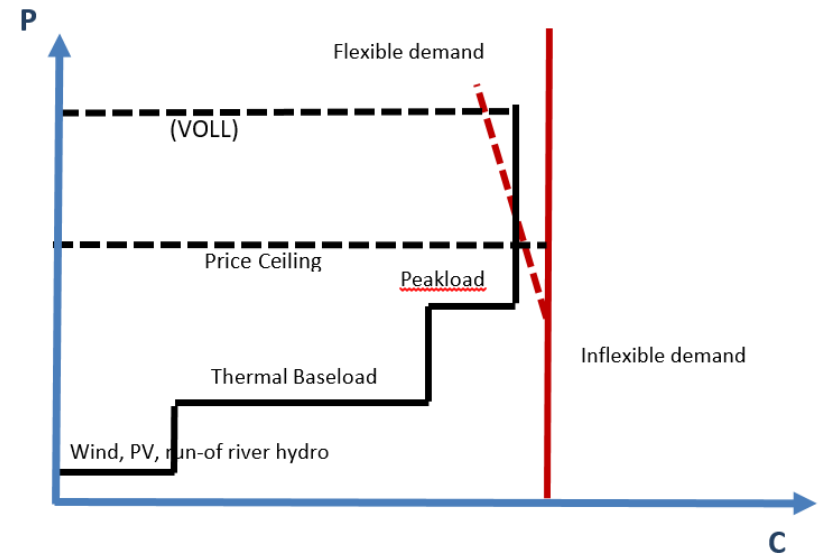
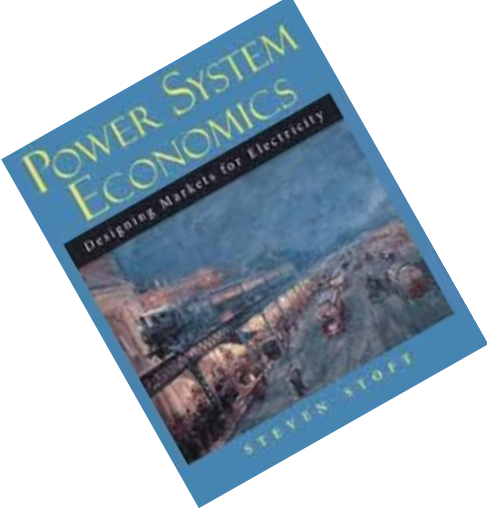
*Study for Electricity Market Group NCM*

*Stockholm, April 27, 2016*

*Hans Henrik Lindboe, [hhl@eaea.dk](mailto:hhl@eaea.dk)*

# 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:

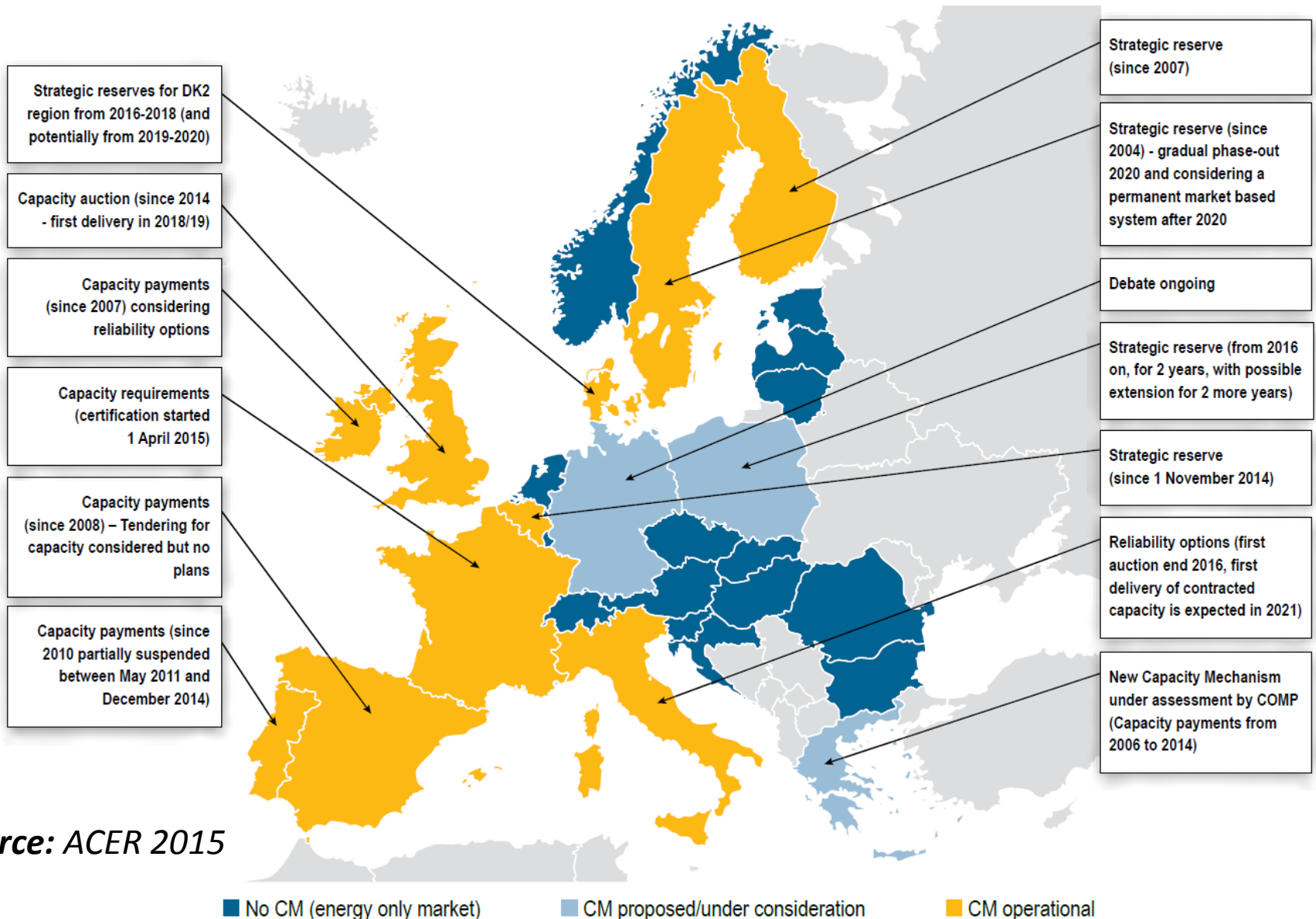
- Energy only electricity markets will deliver optimal adequacy if there are **no serious market failures..**
- Some serious challenges/failures:
  - Lack of **Demand Response**
  - Price ceilings affect the needed **scarcity pricing.**
  - Support for **fluctuating production.**
  - **Regulative risk**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

# Capacity mechanisms in Europe

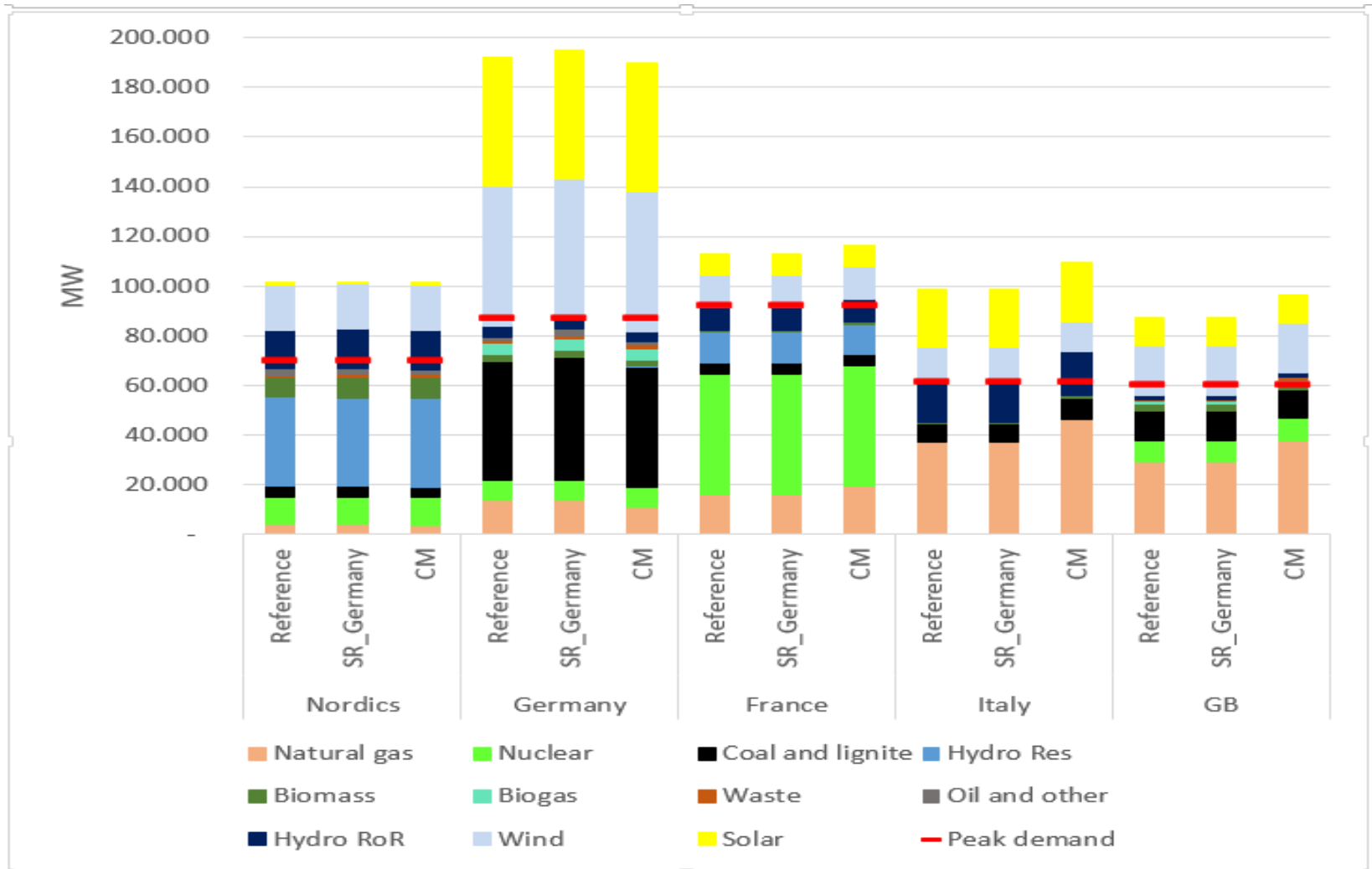


Source: ACER 2015

# Mechanisms in selected countries

Features	UK	Germany	France	Italy
<b>Core features</b>				
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

# Modelled impact on capacities



# Nordic adequacy (1)

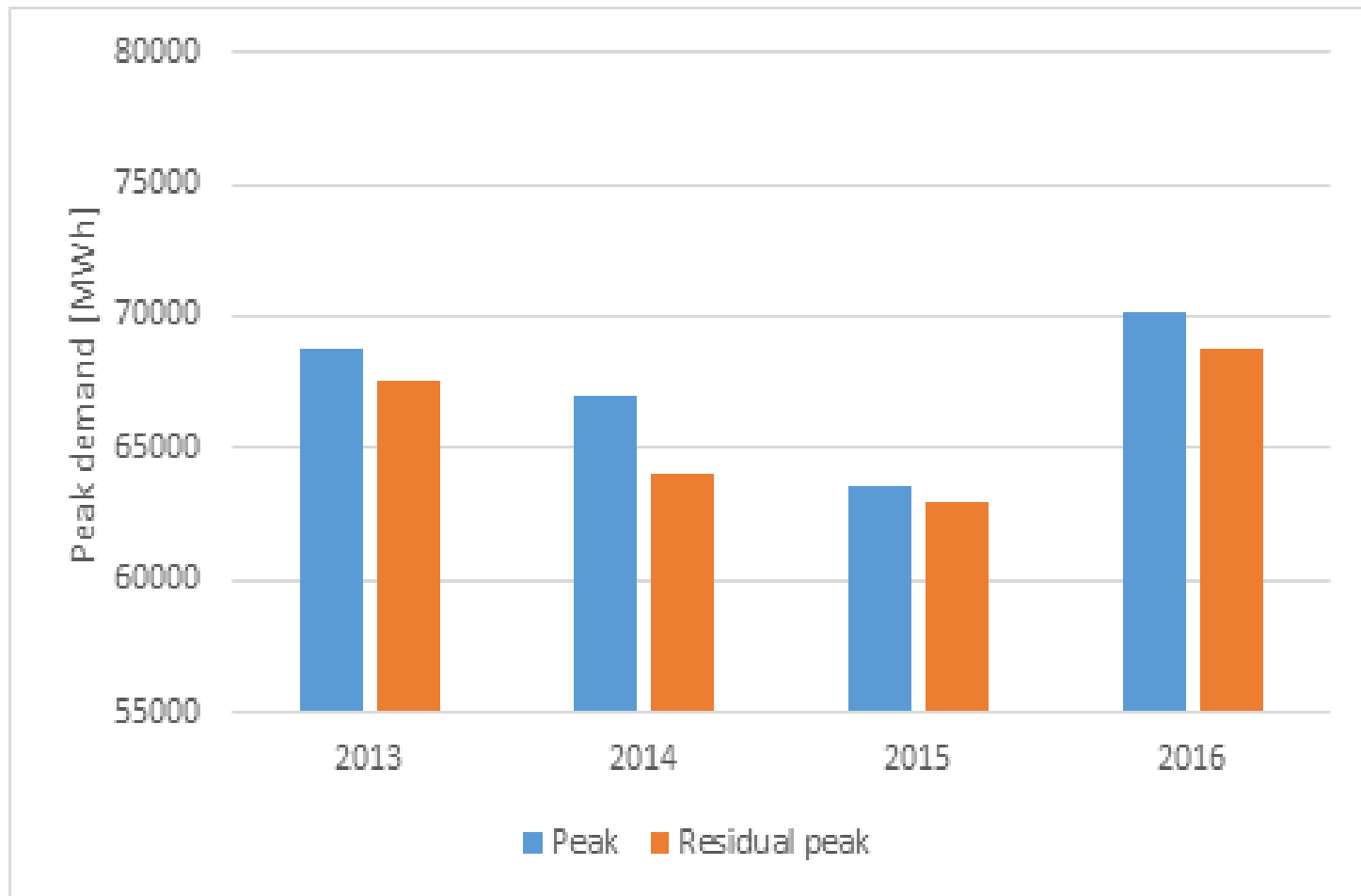
- Some black-outs in parts of the Nordic area during the last decades. Caused by faults in transmission facilities.
- Weeks 1-3 2016 were very cold in the Nordic area. New Nordic consumption record (70 159 MW) on 21 January hour 08-09.
- Highest spot price this winter was 214 EUR/MWh and occurred in 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



# 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