



DR – Market Design Aspects

Peter Fritz EME Analys Sweden

Elforsk Marketdesign research program

Marketedesign /IEA project

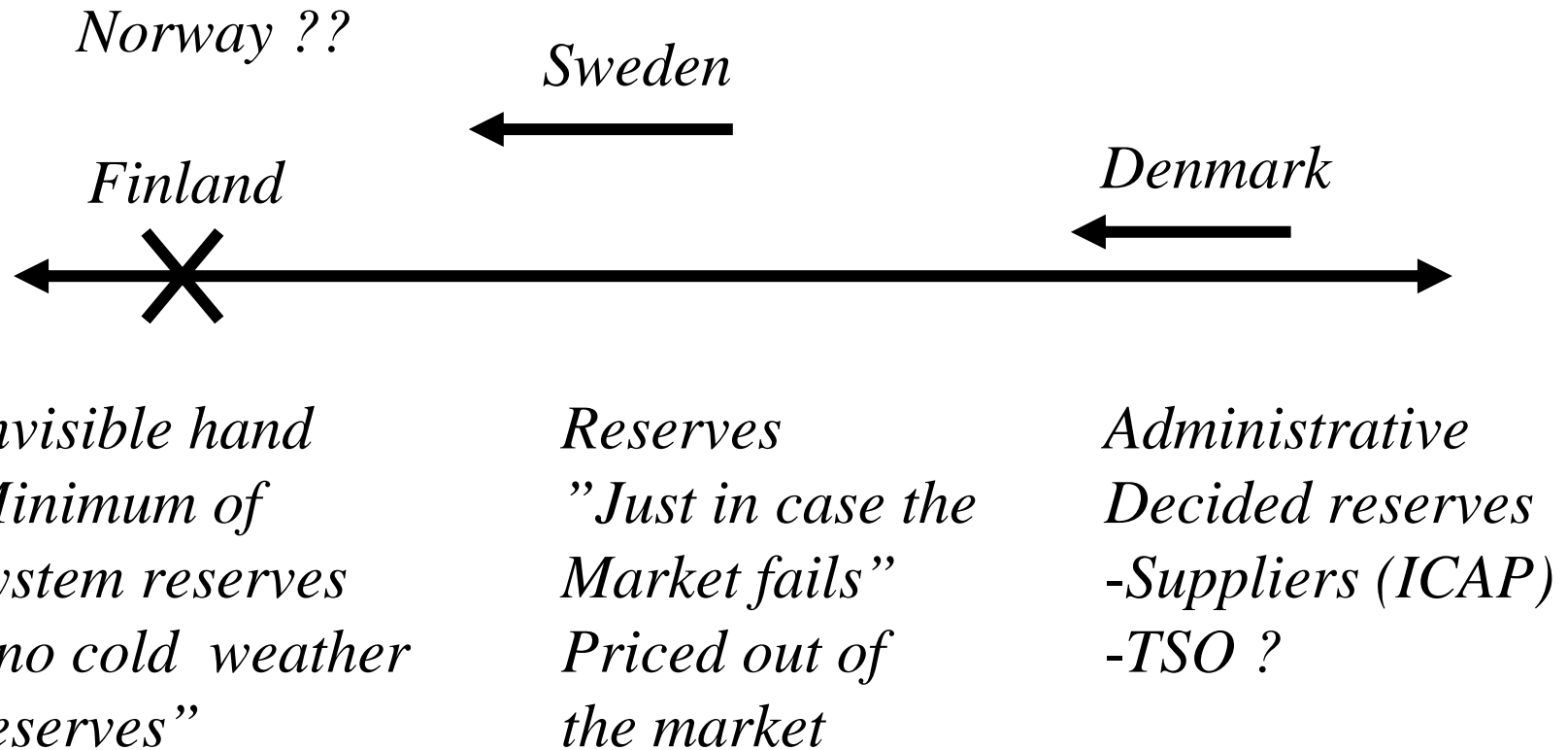
Background

Temporary solution until 2008, SvK purchase 2000 MW of reserves. After that the market shall create enough capacity.

6 Subtasks

- Expectations of future price spikes
- Insights from other studies and pilot projects
- Participant analysis – what incentives do participants have with the set of rules employed today?
- Business models
- Analysis of rules
- Nordic / international co-operation

Market Models, peak load capacity



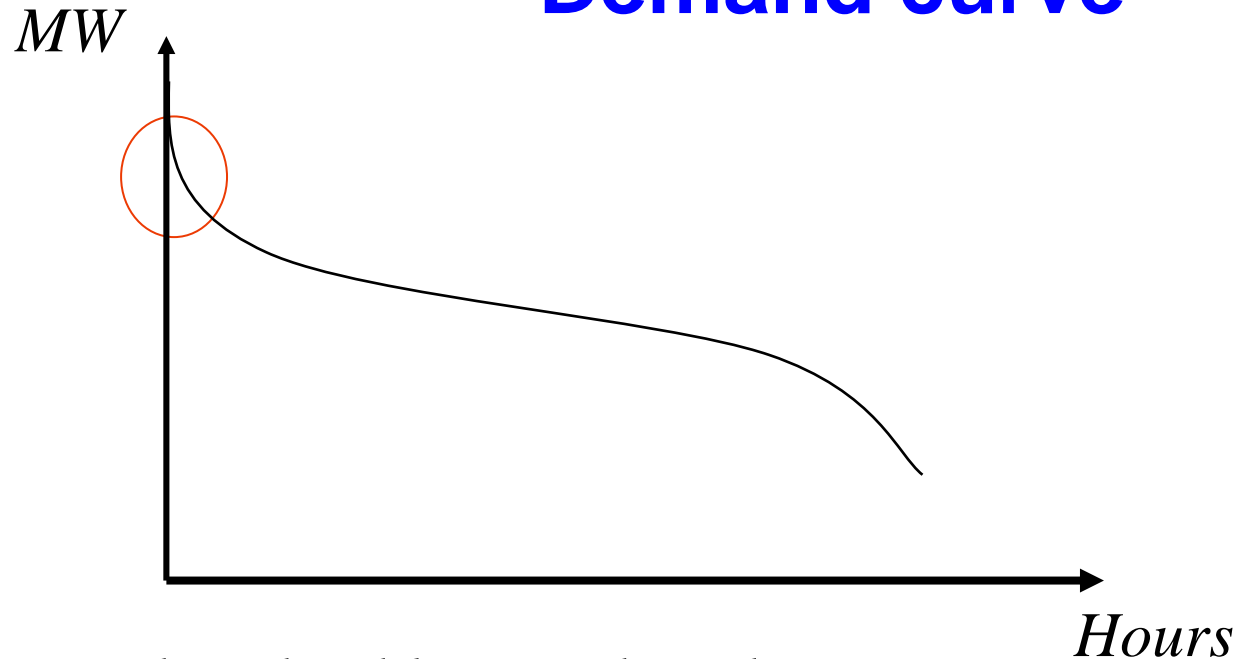
Sweden

peak load 28 000 MW

- Operating reserves 1 000 MW
- Temporary peak load capacity (until 2008)
 - Contracted for a 1-3 year period
 - Maximum 2 000 MW
 - generation
 - Interruptible load

Prices on the "Balancing market" when utilized
5000 SEK / MWh + variable cost (1000 \$ / MWh)

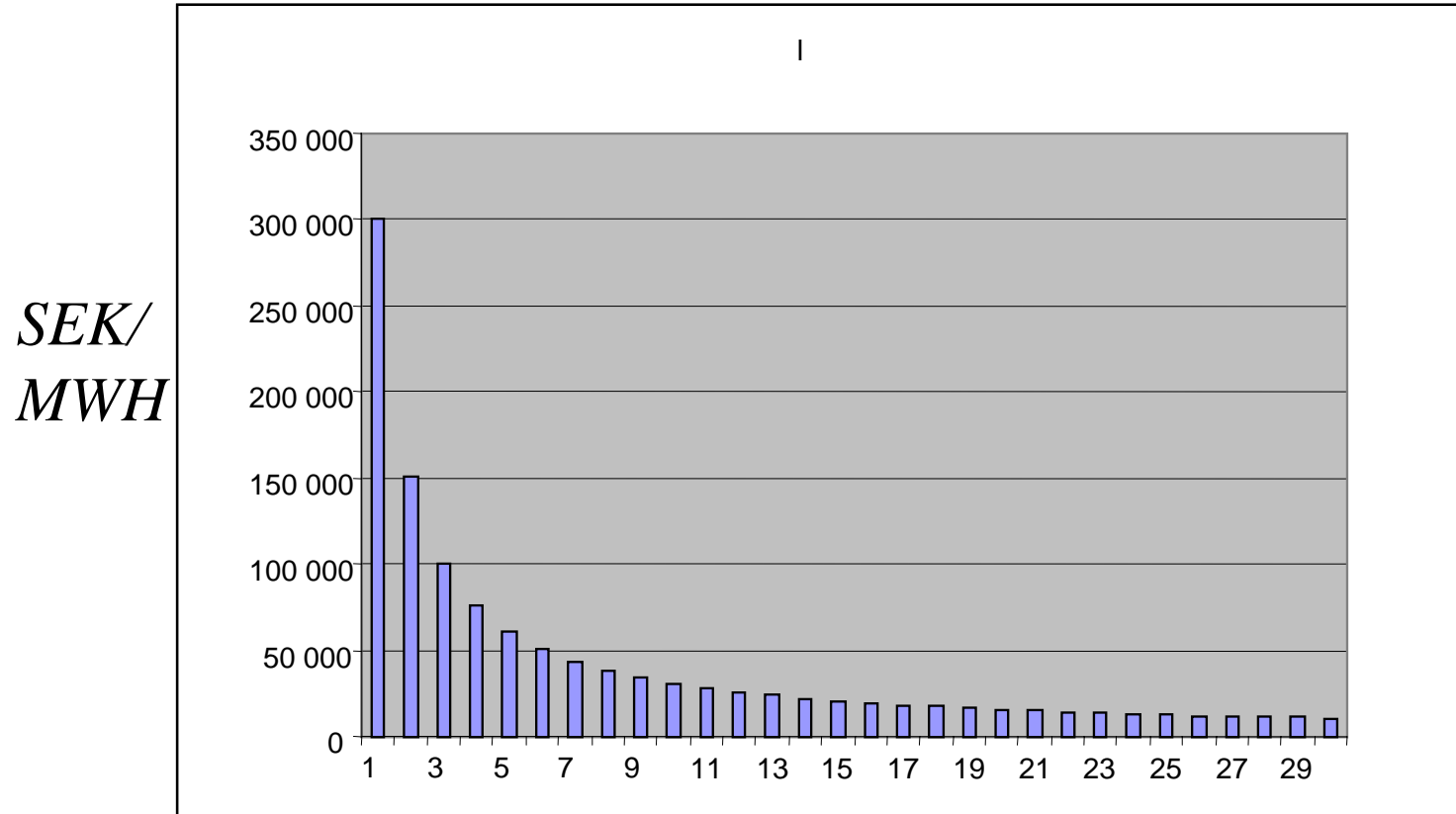
Demand curve



What should cover these hours?

- *Gas Turbines*
- *Hydro*
- *Old oil fired units*
- *Demand response*

Gas turbines > fixed costs 300 000 SEK/MW



Prices over 10 000 SEK/MWh for 30 hours/year ?

Unrealistic !

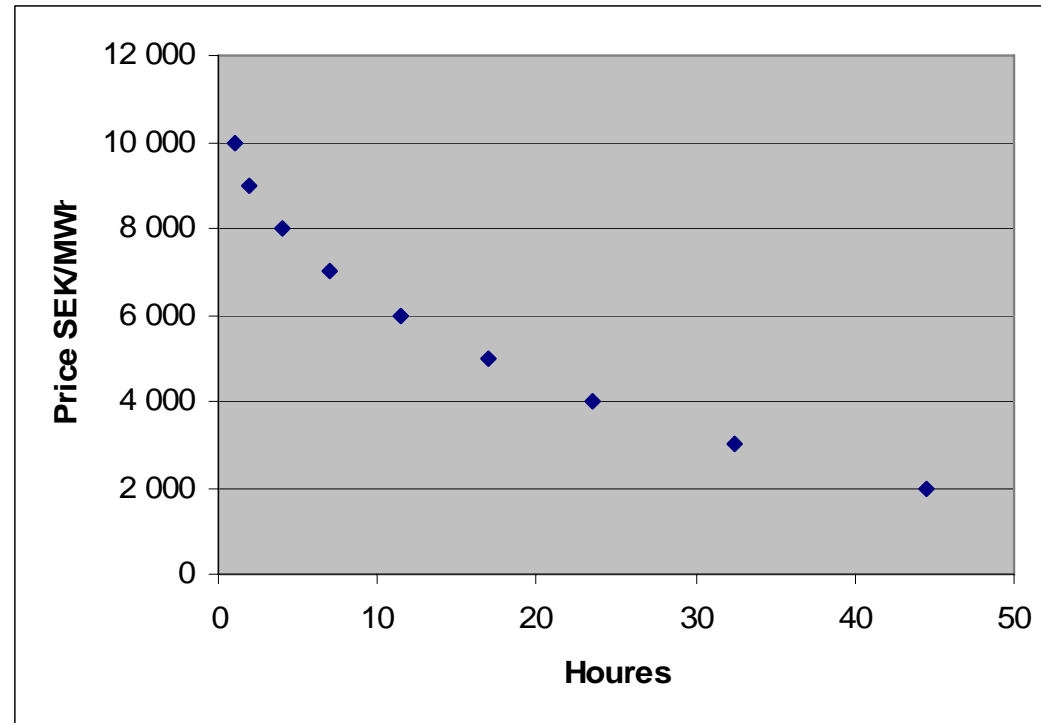
- Income 27 billion during these hours = 100 % of average costs for the annual generation in Sweden
- Consumers will not buy at those price levels.

It is not possible to depend on generation for peak demand in an “energy only market” !

What prices do we need for DR and will we get it ?

- Emergency power
prices 2 000 SEK/MWh (potential 300 MW)
- Electric heating domestic customers
profit 1000 SEK / year (potential >1 000 MW)
- Large electricity intensive industries
prices up to 10 000 SEK/MWh (potential > 500 MW)

Estimated average annual Peak load prices



5 billion/year from these 45 h > 15-20 % of average costs for the annual generation in Sweden

Conclusion

The Nordic market is designed to be an
"energy only market"

Such market doesn't even work in theory
without substantial demand response
(price elasticity)

Enough Demand Response is possible
but we need price spikes.



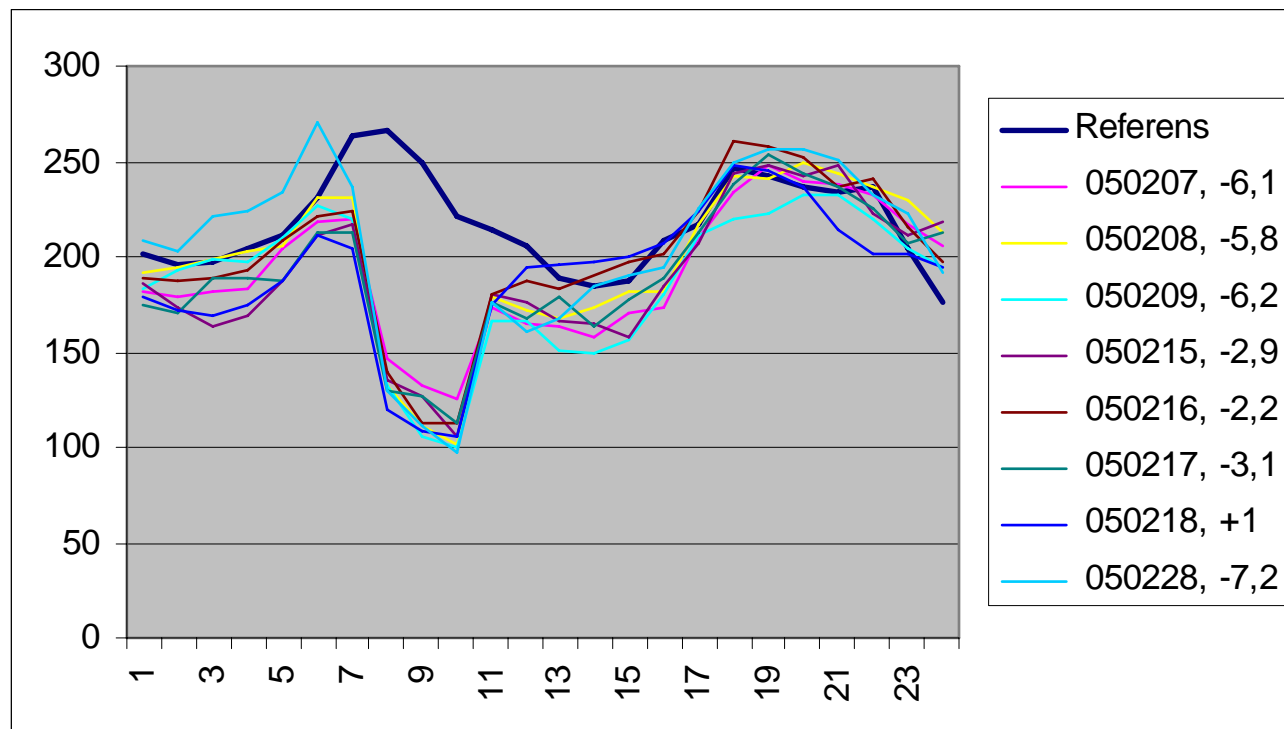
Demonstration project

Critical Peak Pricing, electric heating

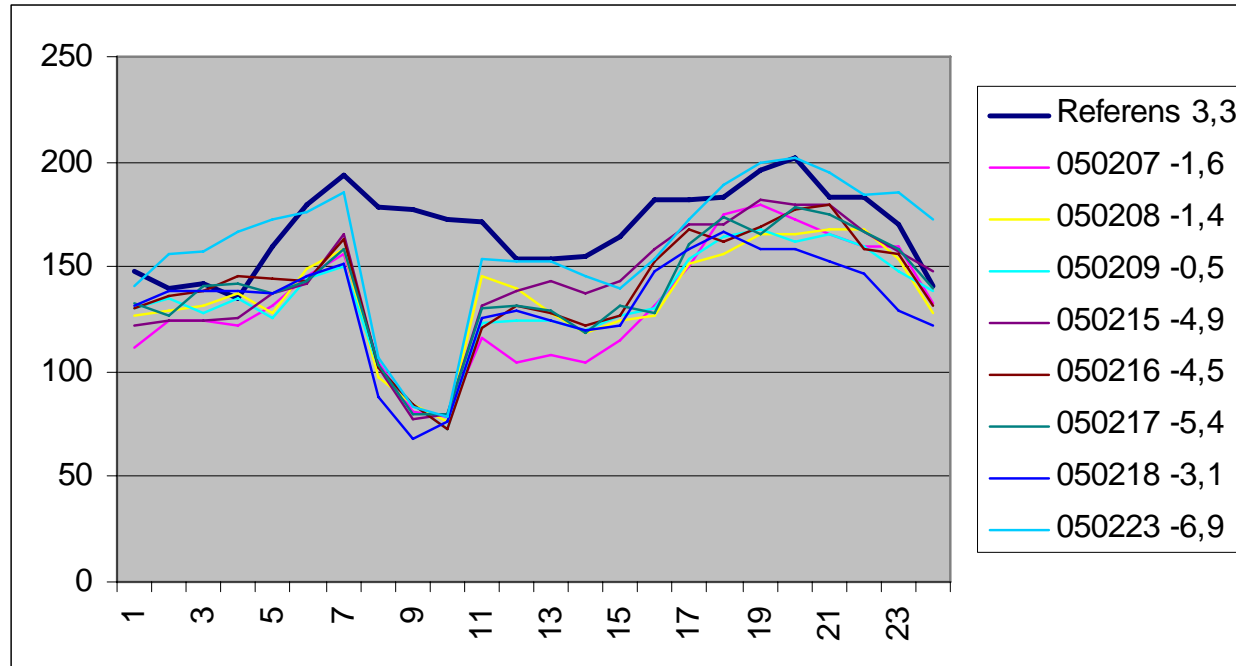
- Prices 3 000 – 5 000 SEK /MWh, maximum 40 hours a year.
- Estimated profit 1000 – 1400 SEK/year
- High price notification through sms the day before
- 100 customers in two different parts of Sweden (hourly metering already installed)
- No technology added

Skånsk energi

53 electric heated houses incentive 1 400 SEK/year



Vallentuna elverk, 40 electric heated houses Incentive 1 000 SEK /year



Conference on
Security of Supply in
Competitive Electricity Markets
Market Design 2005



7 – 8 June, 2005
Grand Hotel Saltsjöbaden
Saltsjöbaden – Stockholm, Sweden

Programme

www.marketdesign.se

Bild 14 DRR –Electricity market impacts 25 april -05

EME Analys
energi miljö ekonomi

FRITZ & SPRINGFELDT