DR – Market Design Aspects

Peter Fritz EME Analys Sweden

Elforsk Marketdesign research program
Marketdesign /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

Norway ??  Sweden

Finland

Denmark

Invisible hand
Minimum of
system reserves
“no cold weather
reserves”

Reserves
”Just in case the
Market fails”
Priced out of
the market

Administrative
Decided reserves
-Suppliers (ICAP)
-TSO ?
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)
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