The Nordic regulating power market

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Agenda

- Expanding the Danish wind power towards 2020
- The Nordic regulating power market
A scenario for the expansion of the wind power capacity in Denmark

Source: Energinet.dk
Wind power drives spot-prices down

Price-peaks are non-existing in hours with high wind power forecasts, but at lower forecast levels price peaks is more frequent

Wind power will be one of the main future price drivers

But wind power comes with an extra costs: Forecast errors

Roughly 25% of the actual wind production in Western Denmark in the last half of 2009 was handled by the balancing market
Wind Power is the largest cause for imbalances in the Danish power system.

Balancing Wind Power requires cross-border balancing and therefore balancing market integration.
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The Nordic regulating power market

- All of the Nordic power system must represent one common Nordic market for regulating power:
  - Necessary regulations must be made in the subsystem having the lowest regulation costs
  - The regulating power and the balance prices offered to the market players is the same in all areas for much of the year
  - The individual TSOs must no longer regulate according to their own subsystem
  - Svenska Kraftnät and Statnett is overall responsible for the balance in the Nordic synchronous area
  - Eastern Denmark has been a part of the market since 2002
  - Western Denmark was fully integrated into the market in 2008
The Nordic regulating power market

• The market is divided when congestion occurs:
  ▪ When congestion occurs between the subsystems, the common market is divided
  ▪ The division is made in advance when congestion occurs in the day-ahead market or in the hour of operation
  ▪ If congestion in the day-ahead market does not result in congestion in the hour of operation, the regulating power price in the two subsystems will remain equal
  ▪ When congestion occurs between two subsystems, each of the systems get an individual regulating power price

• Further developments of the Nordic regulation power market
  ▪ Integration of consumption resources
  ▪ Ancillary services from wind turbines
  ▪ Further cooperation with neighbouring countries (Germany)