

The Nordic Electricity Market

Workshop on Transmission Access, Investment
and Pricing
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Ea Energy Analyses

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Nordel

Organization for Nordic TSO's

- Five countries
- Four are interconnected
- Three $\frac{1}{2}$ are synchronous
- 400 TWh/year



Nordel

Organization for Nordic TSO's

- System operation
- Grid development
- Market development
- Codes for operation, connection and planning
 - Wind connection code launched this year



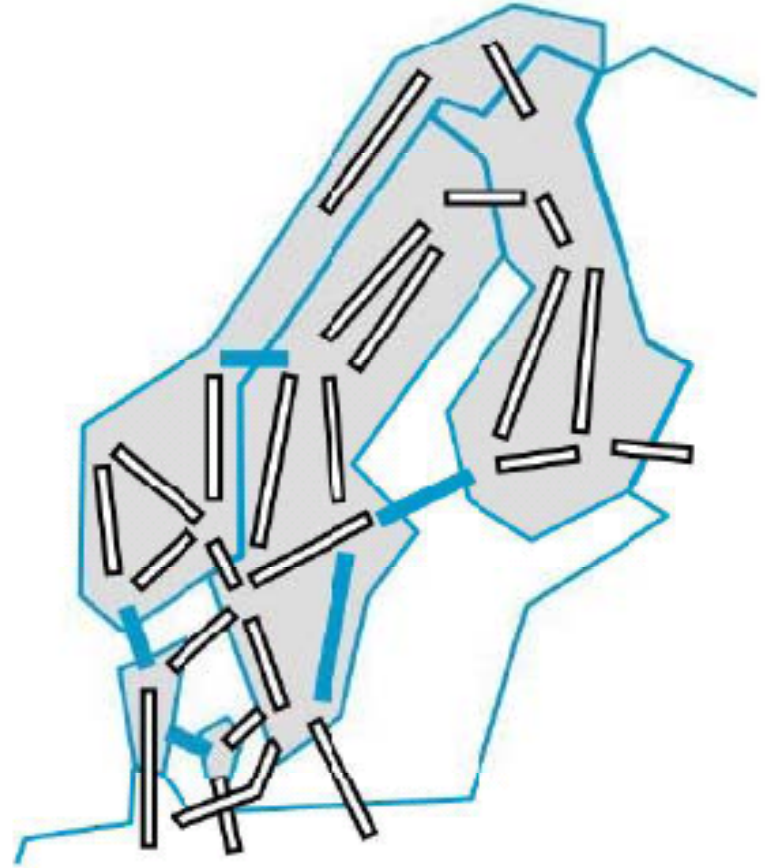
Grid access

- TSO's must give access to applicants who comply with the connection code.
- TSO's undertake necessary grid investments
- Actors pay tariff for use of grid. Tariff can be a combination of capacity and energy.
- Tariffs depend on location
 - In Sweden the difference between far North and far South is about 2£/kW/year
- Consumers pay the larger part of grid costs

Grid development

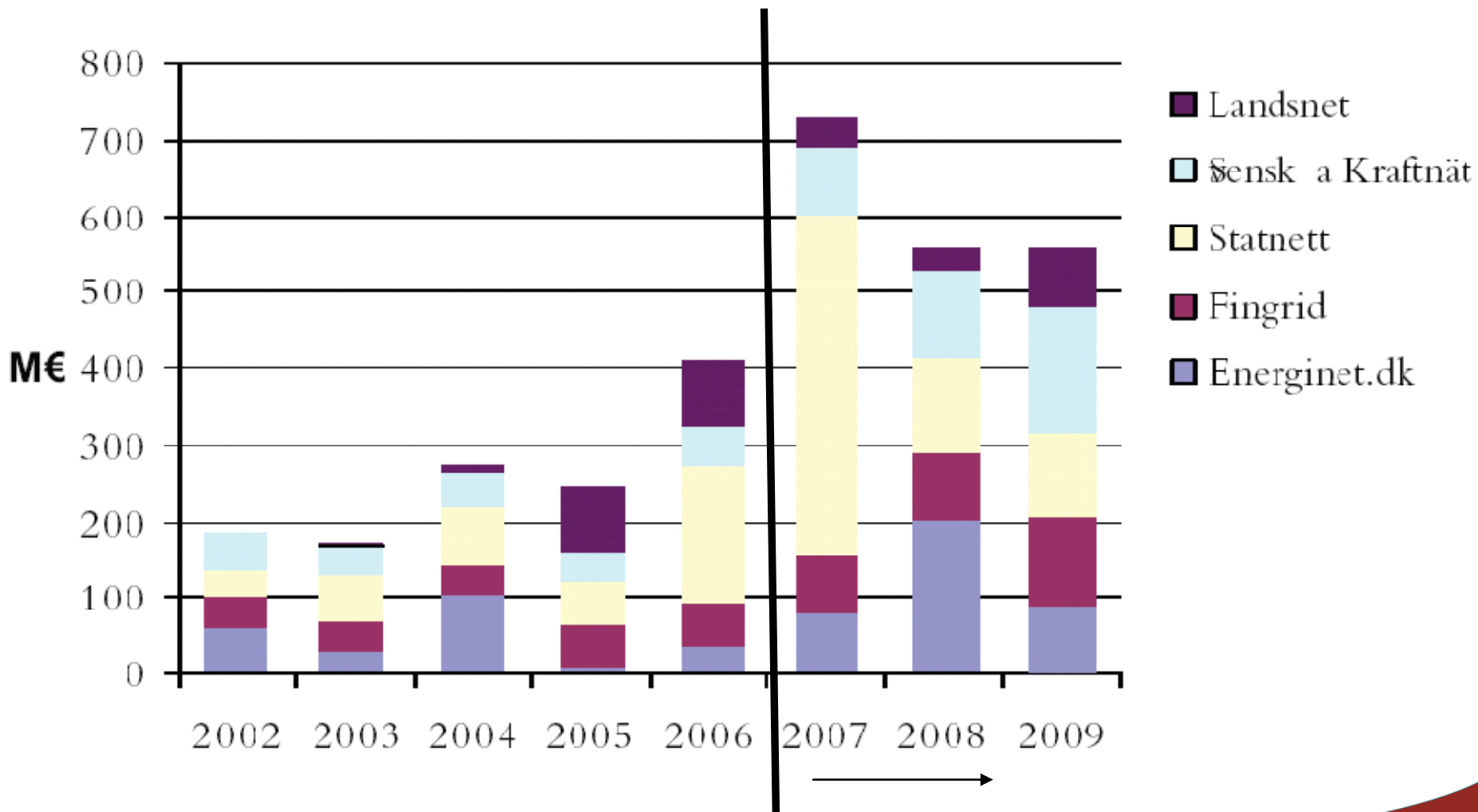
5 Prioritised cross sections

- Plan developed and recommended by Nordel
- Nordic socio economy
- 1 bn €
- Plan for common financing (congestion rent).
- National approval and bilateral financing



Grid investments 2002-09

Source: Nordel 2006



Nordel strategic projects

Presented to Nordic Ministers

- More efficient functioning of the market
 - Push for implementation of 5 prioritised cross sections
 - Publish new grid plan in january 2008 with next package of grid investments
 - **Propose common principles for congestion magement by end 2008**
- Better integration with other markets
- Better planning processes
- Better co-operation with neighbouring TSO's

Nordpool exchange

Owned by the TSO's

- Day ahead market (Spot)
- Intraday (Elbas)
- Regulating in real-time is handled by TSO's
- TSO's deliver trade capacities to Nordpool daily

- The main market philosophy is:
 - Market splitting to handle structural congestion
 - Counter trade to handle random congestion

- But practice is somewhat different

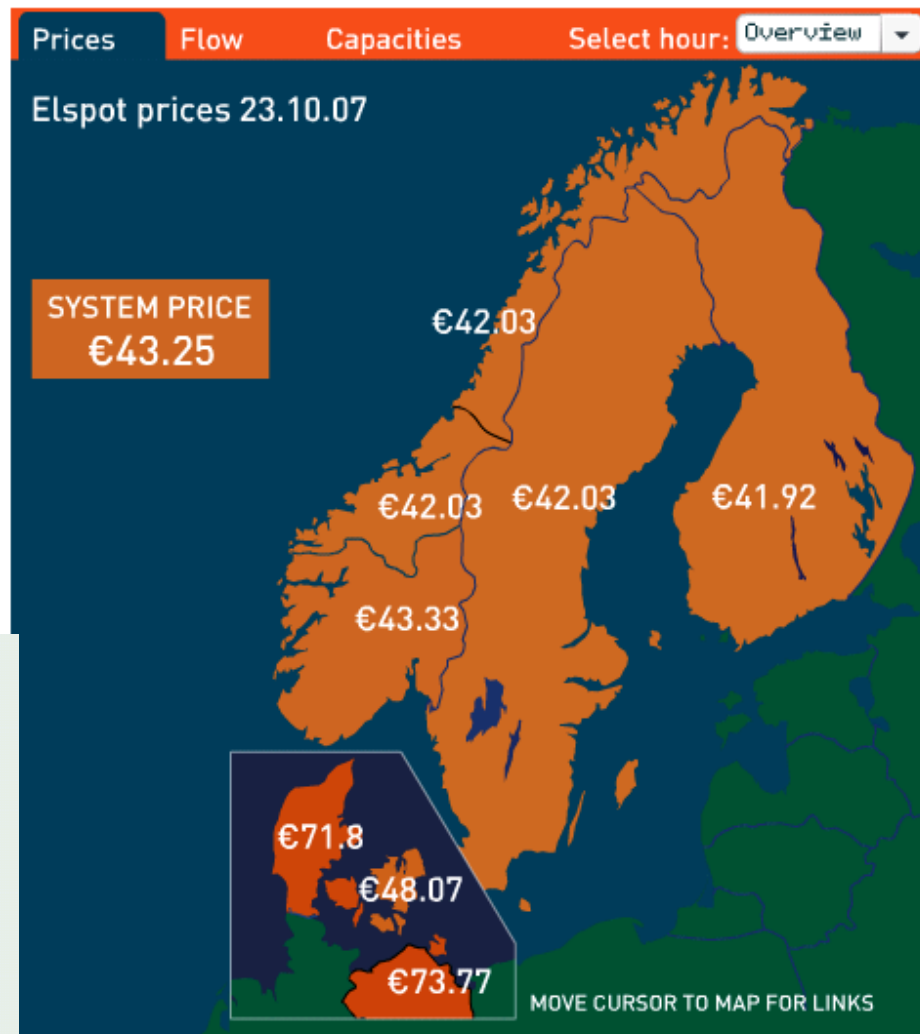
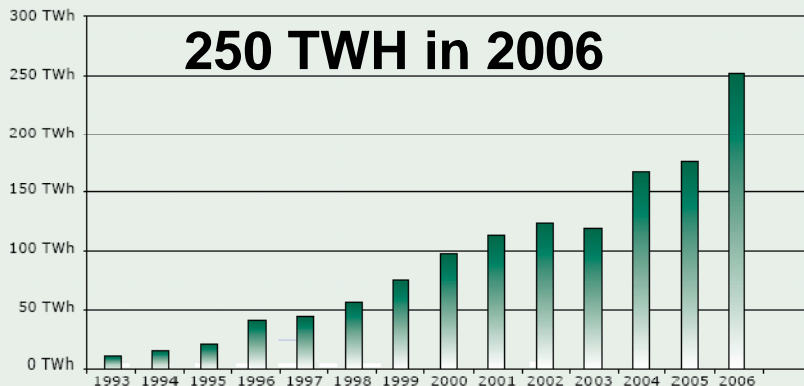
Norpool

Nordic Power exchange

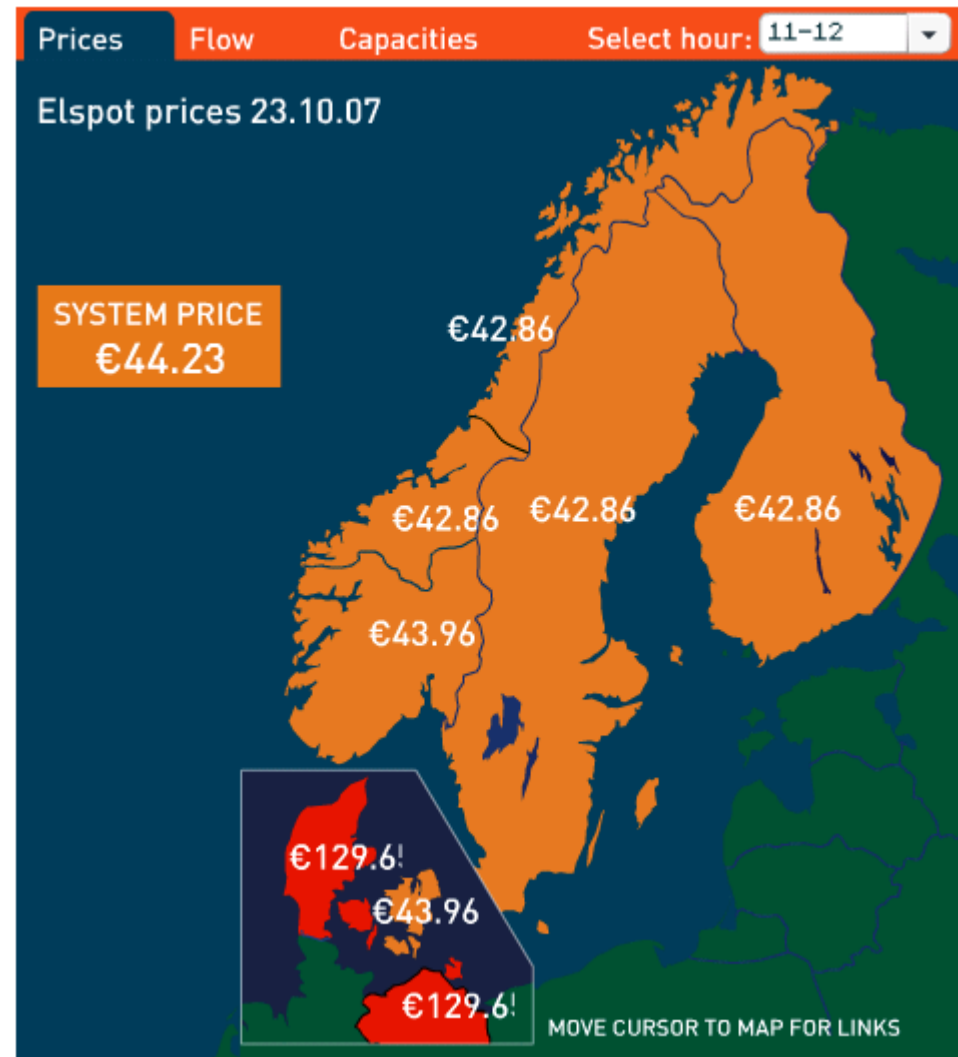
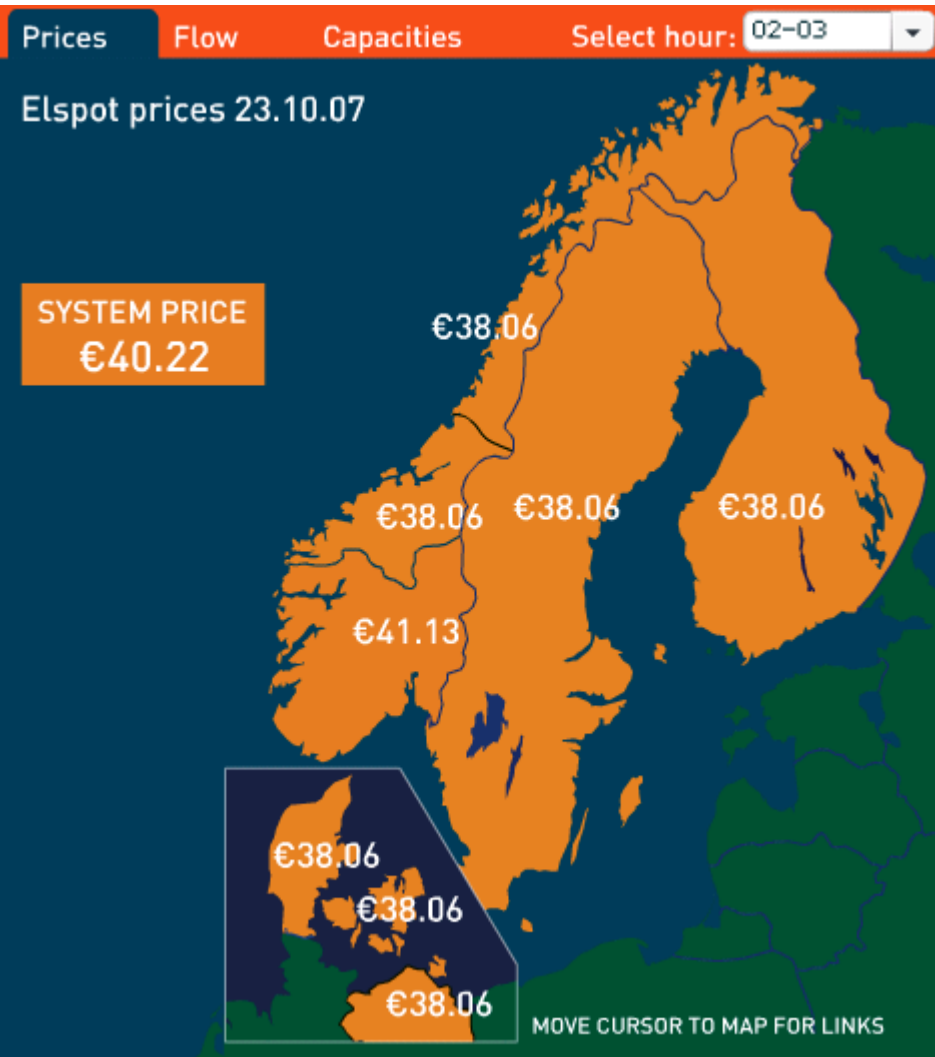
- Seven or more bidding areas
- All trade between bidding areas must be handled by Nordpool

Nord Pool Spot traded volumes 1993 - 2006

250 TWh in 2006



Spot prices 23.10.07



Observations and conclusions(1)

- Congestions in the Nordel area are transparent in the market
 - Except for internal congestion within bidding areas
- The grid is used efficiently with market splitting.
- Market splitting gives more volatile prices, and shows the real marginal costs to consumers. This is an incentive for DR as peak load

Observations and conclusions (2)

- Congestions are quite frequent, and congestion rents are in the order of 50 -100 €/year. This is probably a reasonably efficient congestion level.
- Producers have a tendency to wish for a "Copper plate". This is not good economics.
- Congestion rents gives a "perverse" incentive for grid investments. Investment decisions must be based on socio economic analyses