Congestion management: examples of recent developments

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Why improve congestion management?

Electrical interconnections are the vehicle to commercial exchanges. Congestion management needs to be improved:
- to enhance network security;
- to develop competition;
- to benefit from the complementarities of demand and of generation parks;
- to facilitate integration of wind power (and other intermittent sources) into the market.

Objective: create a single electricity market in Europe
Regional initiatives

- Regulators are organised within **Electricity Regional Initiatives (ERI)** to coordinate projects at the regional level (bottom-up approach)

- France is involved in 4 of the 7 regional initiatives:
  - **FUI** (UK and Ireland)
  - **Central West** (Germany, Belgium, Luxemburg and the Netherlands)
  - **South West** (Spain and Portugal)
  - **Central South** (Italy, Austria, Greece, Slovenia, Germany)
Explicit auctions

- Demand and offer are confronted independently on each market, with a distinct congestion management mechanism.
- **Example**: congestion management between **France** and **Germany** by explicit auctions.

Allocate cross-border capacity while confronting demand and offer
Target model for day-ahead exchanges: market coupling
Example of the Tri-Lateral Coupling

- Unlike explicit auctions, market coupling allocates cross-border capacity **implicitly** to the most efficient cross-border energy trades.
- **Example:** congestion management between France and Belgium by market coupling

As soon as French prices are lower than Belgian prices, cross-border capacity is used.
When cross-border capacity is sufficient, prices converge (86%).

Commercial flows always go from the low price area to the high price area (meaning that the most cost-effective generation is used).
Market coupling projects

Existing implicit mechanisms:

- « Market coupling » between organised markets (PXs):
  - « Price coupling » between France, Belgium and the Netherlands (TLC)
  - « Volume coupling » between Germany and Denmark (EMCC)

- « Market splitting »: a single Power Exchange deals with several price zones.
  - Nordpool in Scandinavia
  - OMEL in Spain and Portugal
  - GME in Italy
Ongoing projects:
- CWE market coupling
  • Extend TLC to Germany
  • Target date: September 2010
- NorNed (Norway - Netherlands)
  • Awaiting
- BritNed (UK - Netherlands)

Coherence and convergence must be ensured ex-ante and projects must be coordinated so as to avoid incompatibilities
Need for a top-down approach…

- A *Project Coordination Group* was launched in 2009 to *define target model* for each topic / timeframe (long-term, day-ahead, intraday, balancing and capacity calculation).

- The PCG, which conclusions were presented during the December 2009 Florence Forum, enabled to *comfort the agreement on price coupling as the target model for day-ahead exchanges.*

- The next step is for *regulators to draft Framework Guidelines*, which will guide new projects and be the basis for *TSOs to draft their network codes.*
However, concrete projects should still continue to pave the way!

- **CASC**, which operates long-term auctions in CWE, will be extended to CSE.

- **Implicit continuous intraday trading** will be implemented between France and Germany.

- A PXs initiative is investigating the extension of price coupling: Price Coupling or Regions.

*Source: UCTE 2007 power consumption data*

Markets on which PCR can be first gradually implemented under a 6 PX cooperation covering an area of approx. 2860 TWh of yearly power consumption*

Markets that could join next as part of an agreed European roadmap
Another concrete project: flow-based market coupling

- Rather than allocating only cross-border transmission capacity (aggregated value), the flow-based approach takes into account all potential « critical branches » (lines which may limit cross-border exchanges).

- This should further improve the network utilisation, by taking loop flows and network topology better into account.

- However, first simulations in the CWE region do not enable to confirm its superiority to the current ATC-based approach.

- In particular, this model does not include information on generation localisation (« portfolio bidding ») and zones may be too heterogeneous.
Appendix: Evolution of congestion management

Situation in 2004

- Non market-based mechanism; priority to long-term contracts
- Coordinated market-based mechanism (auctions)
- No congestion

Situation in 2006
Appendix: Role of the regulators in congestion management

According to EU legislation, regulatory authorities shall:

- Approve the general scheme for cross-border capacity calculation and review the structure for the allocation of capacity between different timeframes,
- Review the congestion management methods,
- Review the level of transparency and the information published by TSOs,
- Ensure compliance with the Regulation and the Guidelines,
- Ensure non-discrimination, effective competition and efficient functioning of the market.

They may also grant exemptions for new merchant interconnections.