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Plenary session 2

Electricity Market Design

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INTRO

Regulatory target on electricity market design:

- to provide reliable electricity at least cost to consumers

Open question is how to meet both:

- short-run efficiency: use existing infrastructure at best
- long-run efficiency: promote investments

AKA: how to get the price right



SHORT TERM: USE EXISTING INFRASTRUCTURE AT BEST

Theory: centrally optimized unit commitment and real-time dispatch to achieve an efficient welfare-maximizing outcome

US, AU, NZ, OTHERS

- Security-constrained economic dispatch (=LMP)

Europe

- No real time market
- Extremely poor locational signal for balancing, intraday and day ahead prices (many bidding zones as huge as MSs)
- Portfolio bidding
- Plus many other imperfections (algorithms, governance, ...)

EU: very far from identifying “right” prices



SHORT TERM: USE EXISTING INFRASTRUCTURE AT BEST

Theory: market players truthfully bid their short-term marginal costs

US

- Ex-ante mitigation measures on bidding

AUS

- Cumulative price threshold

Europe

- Free bidding
- REMIT, but.. market power is hard to identify and mitigate

EU: very far from identifying “right” prices



SHORT TERM: USE EXISTING INFRASTRUCTURE AT BEST

Theory: co-optimize energy and ancillary services in real time to efficiently ensure system reliability

US, AUS

- Co-optimization

Europe

- Reserves are not co-optimized with energy
- Many MS still count on long term procurement of reserves
- Strategic reserve and congestion management kept out of the market

EU: very far from identifying “right” prices



LONG TERM: PROMOTE INVESTMENTS

Theory: long-run investment are pushed by right spot prices

AUS

- Energy only (+ mitigation measures)

OTHER

- CRMs or ORDC (+ mitigation measures)

Europe

- We can hardly say spot prices are able to drive investments
- Generators allowed to raise prices in scarcity situations up to VOLL;
- Some MS consider CRMs as a structural solution to ensure adequacy, ORDC under study in a few cases



LONG TERM: ITALIAN CRM

- Italy experienced a black out in 2003
- Since then a transitory capacity payment was introduced
- In the meantime Italy experienced boom and bust of generation, most of the demand acts as inelastic
- NRA developed a reliability option scheme open to generation, demand and cross border participation
- EC approved the scheme in 2018
- Implementation pending (Government to decide)



CONCLUSIONS

- Getting the price right is the *condicio sine qua non* to efficient short term dispatch and investment decisions
- Worldwide different market designs or level of development
- Market design in Europe shows significant flaws and corrections would be advisable in the first place
- Allowing exercise of market power to promote investments seems a weak solution from the regulatory perspective
- VoLL pricing (e.g. 3 hours per year) + mitigation measures find equilibrium in the long term, still risks on private investors exist
- Some sort of administrative intervention seems needed
 - ORDC and CRMs can complement each other
 - Pros and cons to be considered case by case



Thanks for your attention!

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