ENERGY COMMUNITY WEBINAR SERIES
Electricity Transmission Rights
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In focus for this webinar

- Key features of electricity market design
- Zonal model and cross-zonal exchanges
- Requirements for capacity calculation and allocation
- Coordinated capacity calculation
- Capacity allocation process
- Transmission rights and their value
Electricity market design

Zonal market – competition within the zone

Cross-zonal capacity calculation & allocation for regional integration

Self dispatch (de-centralised operational and investment decision)

Bilateral trading combined with centralised DAM/IDM

Market based procurement of balancing services

Financial balancing responsibility
Design addressing congestion

Zonal pricing

Consideration of cross-zonal capacity with other zones

Nodal pricing

Consideration of constraints between the nodes

Hybrid (nodal zones)

Consideration of cross-zonal capacity with other zones, in addition to nodal pricing
Design addressing congestion - features

Importance of cross-zonal capacity
High system operation costs (redispatch)
Higher competition
Loop flows

Understanding the system constraints for each node
Low system operation costs
Low competition
Loop flows addressed

Understanding the system constraints for each node, and how they impact cross-zonal capacity
Low system operation costs, but still some countertrading necessary
Competition only on zonal level
European markets

• *The zonal model is a legacy of how systems (countries’ electrification) developed*
  • National systems then interconnected to other systems
  • National systems then split into more national systems 😊

• Market zones in Europe usually correspond to political borders of the countries, with some exception*
  • Nordic markets operate under several zones not related to political borders
  • Italian market is split in several zones that define system (Italian) price
  • Polish market has some sort of hybrid model (nodal with zonal pricing)
  • Ukrainian market is split in two zones (physically!)
Cross-zonal capacity

• **Reg 714/Annex 1 (third energy package)** – applicable for the CPs (for EU it’s CEP + CACM Regulation)

• **TSOs shall endeavour to accept all commercial transactions, including those involving cross-border-trade**

• **No congestion = no restriction (the default rule)**

• **In case of structural congestion = cross-border(zonal) capacity should be allocated (an exemption which applies more than the default rule)**
  
  • **Congestion should be managed**
  
  • **Non-discriminatory and market based method that gives efficient economic signals to market participants**
Allocation starts with calculation

• Allocation is market activity with the objective to ensure efficient and optimal use of resources

• To allocate capacity, TSOs need to calculate capacity

  • Coordination of TSOs in capacity calculation is required – requirement for meshed network – beyond bilateral arrangements for each interconnection

  • The available capacity should be set at the maximum levels consistent with the safety standards of secure network operation

  • Method for the calculation of the capacity for the market and the reliability margin should be subject to NRA approval and published

  • Transparency in the process – as important as the process itself!
Coordinated capacity calculation

Defining the margin required to cover uncertainties & unintended deviations

Measure applied by TSOs to relieve certain critical element, to keep security of operation or maximise available capacity (preventive and/or curative)

Defining critical elements, defining contingencies N-1, N-2, N-x, tripping of one or more elements (security analyses)

Defining the region, i.e. flows from one zones impacting other zones - CCR

Develop IGM, G & L forecast, Intermittent generation, dispatchable generation, grid topology, operational limit for each network element

Validation of IGM, solving tie-lines inconsistencies, merging into CGM, establishing balances net position via CGM alignment
Forward cross-border capacity products

Spot cross-border capacity+energy products

Cross-border Balancing (TSO-TSO)

Allocation of forward rights on long-term basis through auctions as PTRs or FTR (tradable rights with UIOSI). Single allocation office for capacity allocation.

Price coupling - auction mechanism managed by PXs with capacity module. Flow-based or NTC-based.

Countinous mechanisms with complementary auctions (PXs+capacity) Flow-based or NTC-based.

Exchange of balancing products offered by MPs

Real-time reserve activation, re-dispatch, countertrading...

Delivery of Long-term and Day ahead allocated rights

Delivery of intraday implicit

Delivery of intraday market

Delivery of balancing

Delivery of capacity time
Value of the forward transmission rights

- The value of the right is the spread between the DAMs – this is considered the index
  - implicit day-ahead allocation is based on an algorithm which brings the supply and demand together at the same time, including cross-zonal capacity as supply/demand in those markets – therefore much more efficient

- Explicit day ahead allocation is based on market participants’ prediction of the DAM prices which settle on different time schedule – could imply flow in on the opposite direction, so not so efficient

- Any price paid on forward market would be the best guess of where the DAM price is expected to be (on average).
  - Forward market prices are the reflection of this => Cal spreads = Cal rights; Month spread = monthly rights
Quality of transmission rights

- Clear and transparent procedures, coordinated process and are important user friendly platform are important

- However ... to be considered a hedge:
  - Forward rights should have the optionality and be financially firm
  - The right holder:
    - has the option to use the right (nomination) or get paid the value from the day ahead market (also option to return or transfer)
    - is entitled to the payment on the value of the DAM (with certain applicable caps to protect TSOs from risk exposure), in case of curtailment
Hedging instrument

DAM comes with volatility and uncertainty

1. Wait and sell on DAM
   - Makes profit if market price 35 EUR/MWh
   - Makes loss if market price is 25 EUR/MWh

2. Looks at forward market
   - Cal price at PZ3 is 32 EUR/MWh
   - Ready to sell at this price and pay up to 2 EUR/MWh for Cal transmission rights

Simplified real-life example:

EEX
Yesterday, 17/06
DE CAL-21 @ 38.55
FR CAL-21 @ 45.75
CAL transmission right value (if auction was today) = spread, 7.2 EUR/MWh
Phys vs fin financial transmission rights

- **PTRs**
  - Options: right to nominate or get paid (UIOSI)
  - Obligations: us is mandatory, effectively UIOLI (history)

- **FTRs**
  - Options: right get paid, but not the obligation (important if value is negative)
  - Obligation: obligation to get paid/pay any price

- **CfDs**
  - Obligation: obligation to get paid/pay any price
From allocation to use

Auction:
Obtained Call
100 MW @ 2 EUR/MWh

Nomination deadline
Opt1: Nominate – commercial flow
Opt2: do not nominate – USOSI applies

Opt1: Nominated rights – capacity blocked as per schedule
Opt2: non-nominated rights – are allocated on DA say @ 3 EUR/MWh / previous holder is paid this price

Free and un-allocated capacity is allocated on ID and Balancing
For balancing capacity may be reserved

Commercial schedules are firm
TSOs engage in redispatch & countertrading in case of physical congestion