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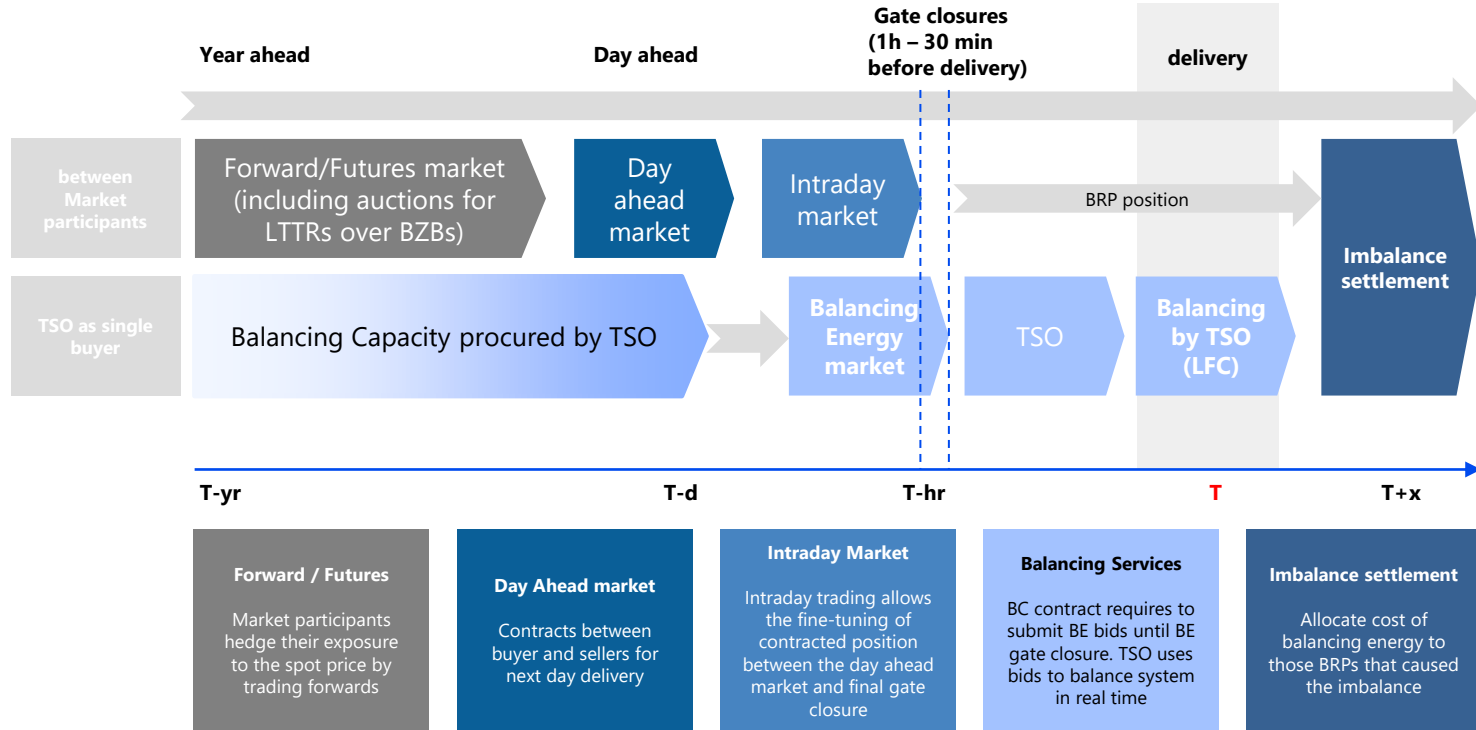


European Union Agency for the Cooperation
of Energy Regulators

Hydrolysis & Electricity Balancing markets: developments & opportunities

*“Green Hydrogen for Industry – Regulatory Workshop”
11 February 2021*

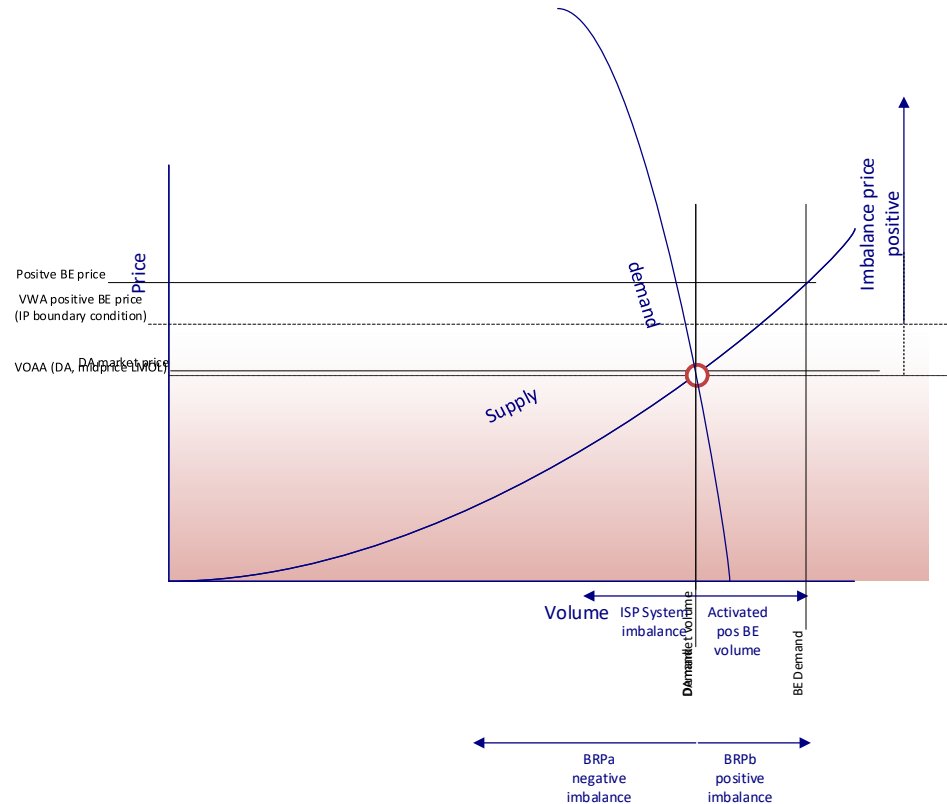
Electricity market at glance: focus on balancing



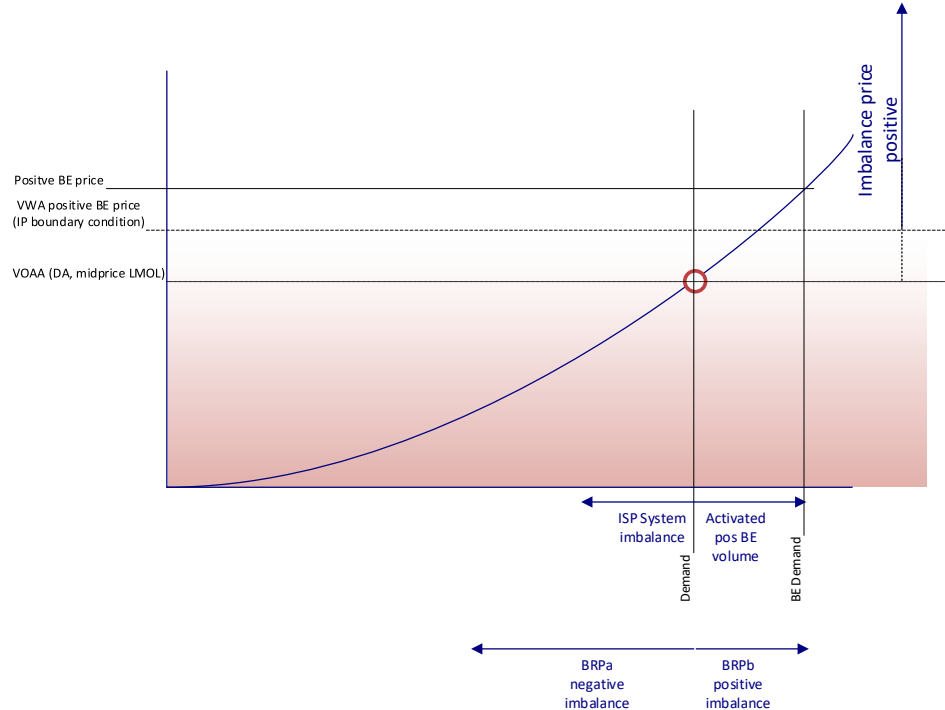
- Electricity market, timeframes, balancing services
 - Balancing capacity – TSO-BSPs => Balancing service providers for reserve available
 - Balancing Capacity(BC) (or reserves) to ensure Technical ability and to ensure physical availability
 - Balancing energy – TSO-BSPs => Balancing service providers for electricity provision
 - Balancing Energy (BE) bought (or sold) by TSO to restore power imbalance in it's LFC area.
 - Imbalance – TSO-BRPs => Balance Responsible Party
 - Incentive to deliver on electricity sold in the market timeframes (ID, DA and before)
- EU legislation (EB regulation) steer towards Integration & harmonisation
 - Integration through common platforms where TSOs exchange the Balancing Energy procured nationally together in the most efficient way to balance the EU system
 - Harmonisation through common rules on imbalance settlement, harmonised standard products and common pricing principles

- TSO procurement to ensure availability of (technical) balancing reserves
- Different ‘qualities’ of reserves (1:FCR, 2:FRR, 3:RR)
- Prequalification of technical ability to provide the service
 - FCR: within second response, full response in 30s, max delivery in minutes
 - FRR: response in minutes, full delivery in 5 to 15 minutes
- EU rules require
 - Harmonise to balancing capacity standard products
 - Harmonize Full activation time to 5 minutes
 - No determination of the BE-price in the BC contract => adjust bids or free bids until BE GCT
 - Procurement shall be market based (with exemptions possible)
 - a clear trend towards short term procurement (DA) of balancing capacity
 - Cross border cooperation in exchange of BC is voluntary but increasingly developing (FCR cooperation, DE-AT exchange ao)
 - Separation of upward and downward procurement of BC to allow renewables and demand side to participate

- BRP position = aggregate final buy or sell position of portfolio
 - BSP connection is always part of a BRP position
- System Imbalance = common over or under deliver on this commitment of all BRPs together
- TSO will activate balancing energy to restore this system imbalance in it's grid within 15 minutes and pay this volume procured @ balancing energy price
- EU rules require
 - Definition of standard products for Balancing Energy
 - Creation of Balancing Energy platforms for the exchange of balancing energy to increase XB competition



- BRP position = aggregate final buy or sell position of portfolio
 - BSP connection is always part of a BRP position
- System Imbalance = common over or under deliver on this commitment of all BRPs together
- Imbalance = individual over or under delivery
 - Imbalance price depends on balancing energy price
 - $IP > DA$ in case system shortage
 - $IP < DA$ in case of system surplus
- Imbalance pricing
 - EU Target model is single imbalance pricing on a single (portfolio) position
 - Single pricing creates an incentive to support the (common) system balance



- EU regulation direct towards
 - Harmonisation of national rules to create a common (national) framework
 - Integrate Balancing Energy markets (first) & Balancing Capacity markets (later)

- These developments are important for
 - Market participants (BRPs) as it creates clear price incentive to deliver (short term) and invest (long term)
 - Market participants (BSP) as it creates opportunities for new type of services provision in these markets traditionally serviced by incumbent generators.
 - TSOs as they will have an increasing need for BE and BC to ensure stability of the system at the lowest cost for society.