



European Union Agency for the Cooperation  
of Energy Regulators

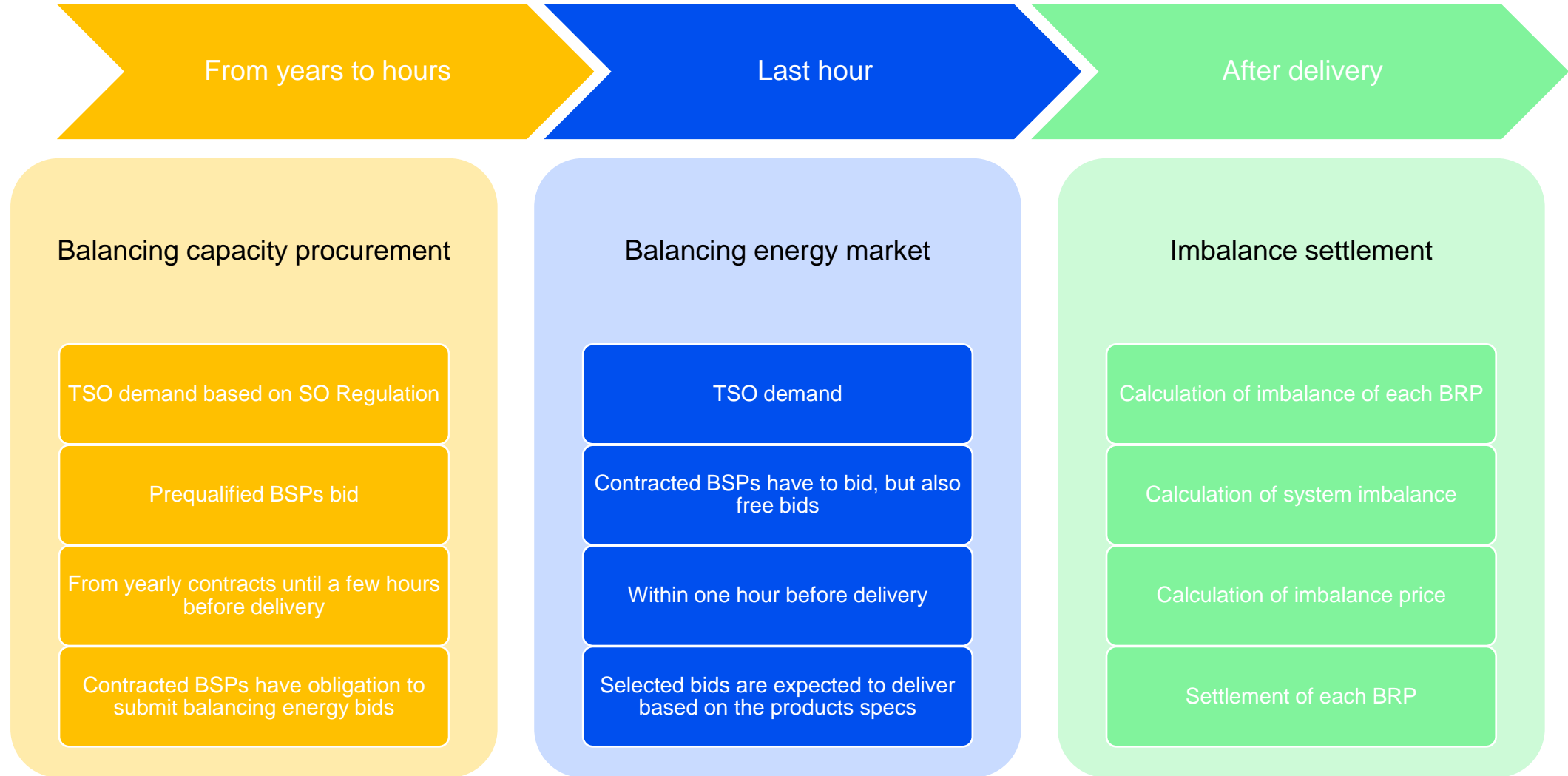
# Energy Community Workshop on electricity balancing

Session 3: General principles of Electricity Balancing II

ACER

20 September 2023

# Timeframes of balancing markets



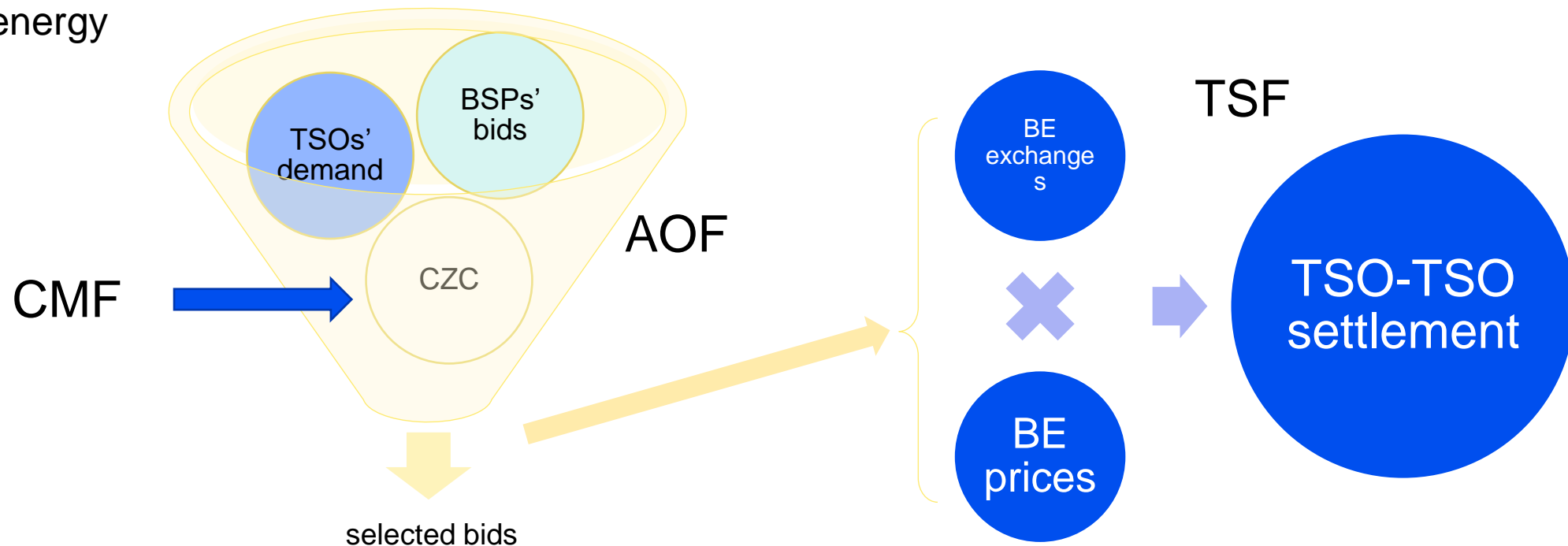
# Imbalance settlement

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Gilles Bertrand

Functions performed by the entity/ies operating the platform:

- **Capacity Management Function (CMF)**: updates the available cross-zonal capacity
- **Activation Optimisation Function (AOF)**: optimisation of activation of balancing energy bids (common merit order list, CMOL)
- **TSO-TSO Settlement Function (TSF)**: settlement between the TSOs for the exchange of balancing energy



- EB Regulation requirements for the settlement processes:
  - ensures imbalances are settled at a **price that reflects the real time value** of energy;
  - provides **incentives to BRPs** to be in balance or help the system to restore its balance;
  - provide **incentives to BSPs** to offer and deliver balancing services to TSOs.
  - avoid distorting incentives to balance responsible parties, balancing service providers and TSOs
- Imbalance settlement acts **complementary to the balancing energy market**, and, although a national process, its harmonisation is important for the proper incentives to be provided through the balancing energy platforms.
- ACER Decision 18/2020 on Imbalance Settlement Harmonisation (ISH):
  - harmonised definitions;
  - calculation of final **single position**, imbalance, imbalance adjustment for each BRP;
  - only **balancing energy prices** for the calculation of the **imbalance price**;
  - harmonised lower (with shortage) an upper floors (with surplus) to the imbalance price.

- The [amendment of the national terms and conditions for BRPs](#) is the current step to integrate at national level the requirements of the respective ACER decision on imbalance settlement harmonisation.
- However, the imbalance settlement harmonisation is an [on-going process](#), and the more integrated the balancing energy markets become (through the balancing platforms) the more intense the need for further harmonising aspects of the imbalance settlement.
- Monitoring through the European report on integration of balancing markets, which is published by ENTSO-E every two years (the detailed version), and requests in particular [the assessment of the consequences and possible distortions due to non-harmonisation](#) of imbalance settlement.
  - Two years after the go-live of the balancing platforms, all TSOs will assess the [need for further harmonisation of the imbalance settlement](#), in line with the objectives of EB Regulation, based on the requirements of the European report.
  - The TSOs should [publish this assessment and invite stakeholders to submit comments](#) on that.
  - One year after the publication of this European report, all TSOs shall submit their [final assessment together with the comments received by the stakeholders](#) to all regulatory authorities and ACER.

# Procurement of balancing capacity

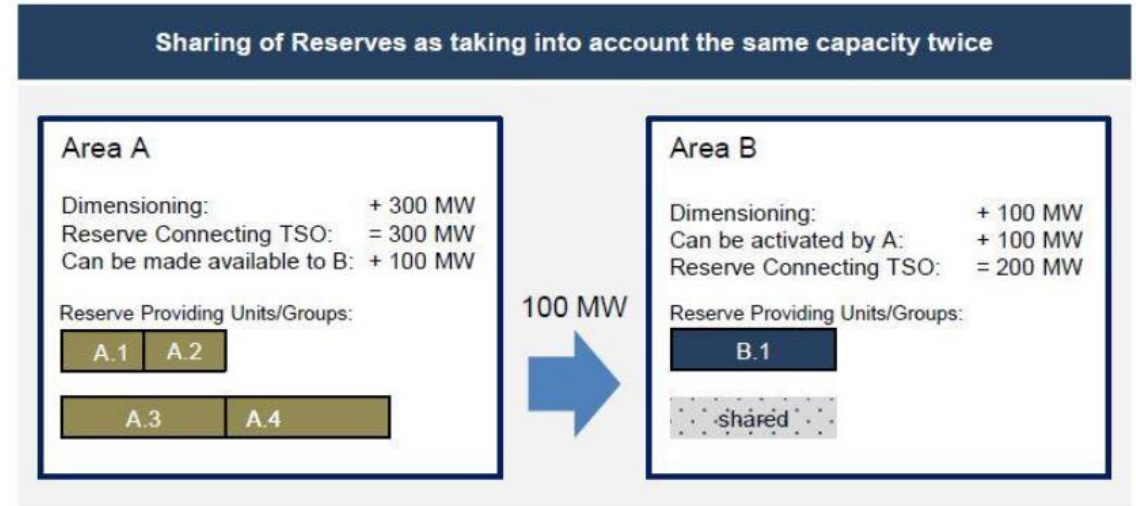
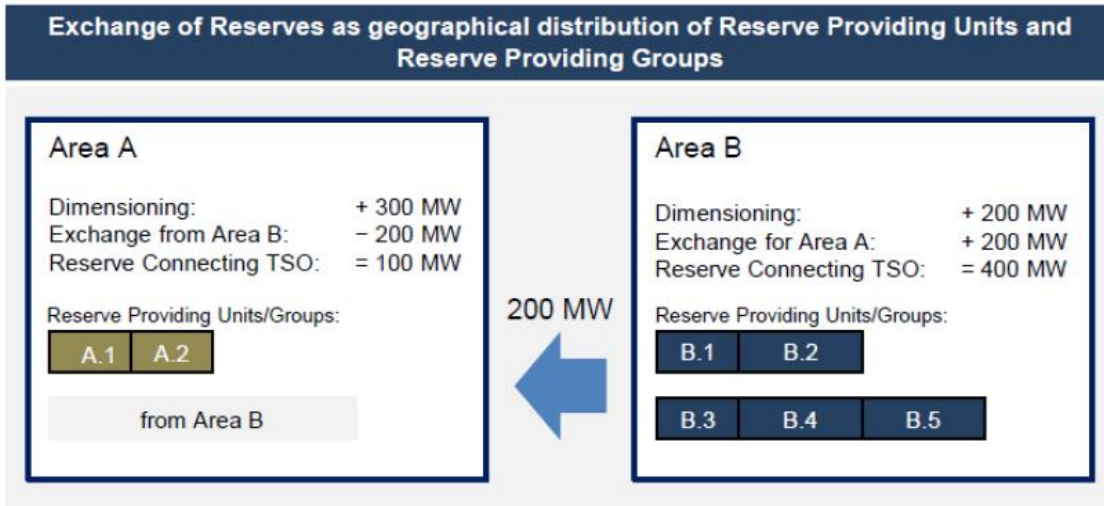
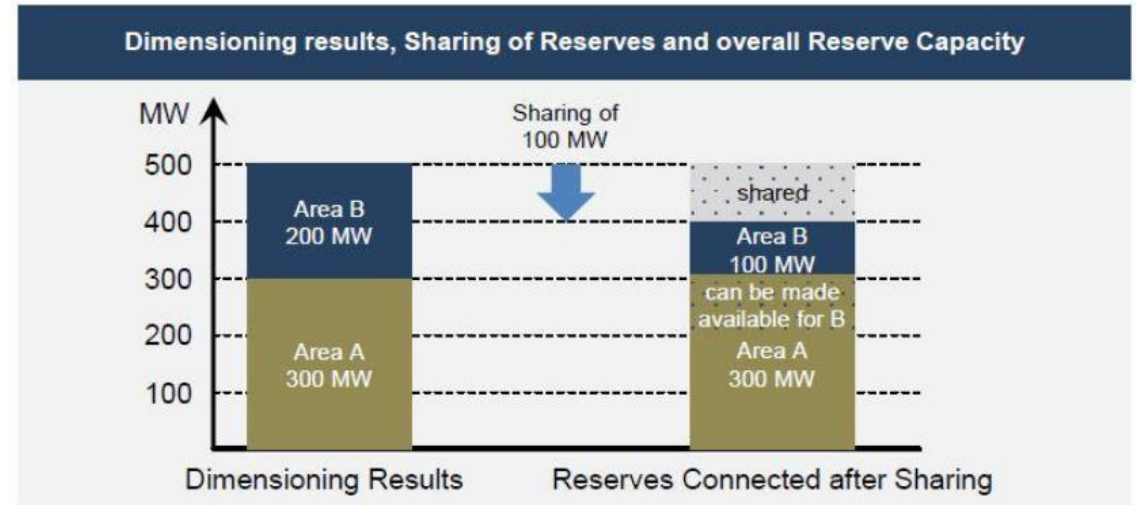
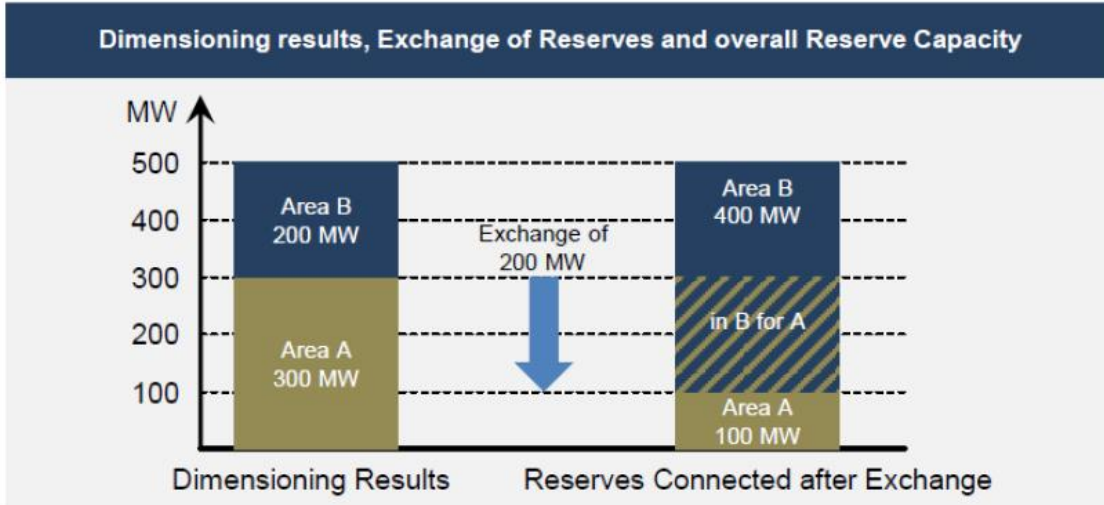
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Marco Pavesi

- TSOs procure balancing capacity to ensure sufficient availability of balancing energy bids for **maintaining operational security**
  - Three types of balancing reserves: aFRR, mFRR and RR
  - Status quo: **Mainly national procurement** (per load frequency control block) with some exceptions
  - Dimensioning of required volume of balancing reserves and technical limitations for exchanging balancing capacity and sharing of reserves are subject to requirements of the **SO Regulation**
  - Rules for establishing TSOs' cooperation for exchanging balancing capacity and sharing reserves are covered by the **EB Regulation** (including consideration of cross-zonal capacity for such exchanges)
- **Regional coordination centers (RCCs)** are tasked with supporting TSOs' procurement of balancing capacity:
  - Regional sizing of reserve capacities (i.e., potential of sharing reserves per system operation region)
  - Facilitating the regional procurement of balancing capacity (including the consideration of energy-only bids)



# Exchanging of balancing capacity vs sharing of reserves



SOURCE: LFCR SUPPORTING DOCUMENT 2013

# Cross-zonal capacity allocation

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Marco Pavesi

Article 33(4) of EB Regulation:

*‘All TSOs exchanging balancing capacity shall ensure both the availability of cross-zonal capacity and that the operational security requirements set out in Regulation (EU) 2017/1485 are met, either by:*

*(a) the methodology for calculating the probability of available cross-zonal capacity after intraday cross-zonal gate closure time pursuant to paragraph 6;*

*(b) the methodologies for allocating cross-zonal capacity to the balancing timeframe pursuant to Chapter 2 of Title IV.’*

Processes for the allocation of cross-zonal capacity to the balancing timeframe are:

- **Co-optimised allocation process**

- Based on actual bids for balancing capacity and actual bids for day-ahead energy
  - Needs to be integrated in Single Day-Ahead Coupling (SDAC) with simultaneous clearing of both markets
- Most efficient solution (i.e., no loss due to forecast), but challenging implementation

- **Market-based allocation process**

- Based on actual bids for balancing capacity and forecast of day-ahead energy (or vice versa)
  - Subsequent clearing of markets with difficulties and inefficiencies related to forecast

- Allocation process based on economic efficiency analysis

- Both processes are subject to the harmonised cross-zonal capacity allocation (HCZCA) methodology and allow to **generate welfare by integrating balancing capacity markets** through the allocation of cross-zonal capacity
- Thanks to HCZCA processes, costs for the procurement of balancing capacity will decrease by:
  - Using cheaper bids from other load frequency control areas to cover a TSO demand (i.e., exchange of balancing capacity)
  - Reducing the TSO demand through sharing of reserves

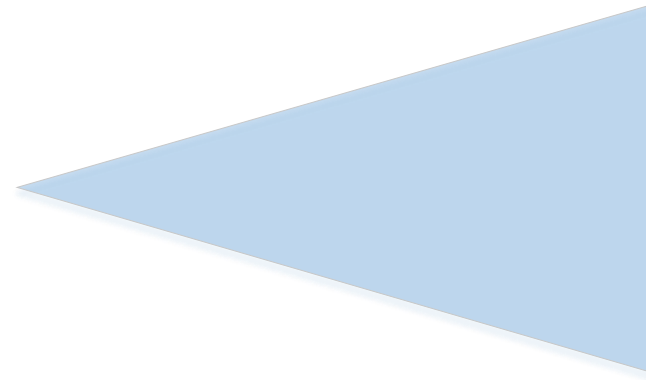
→ **To do this, cross-zonal capacity is required**
- Cross-zonal capacity allocation processes calculate the welfare generated if cross-zonal capacity is allocated for:
  - the exchange of day-ahead energy
  - the exchange of balancing capacity or sharing of reserves

→ **cross-zonal capacity is only allocated to balancing capacity markets if the allocation generates more welfare compared to the use of this cross-zonal capacity in the day-ahead energy market**

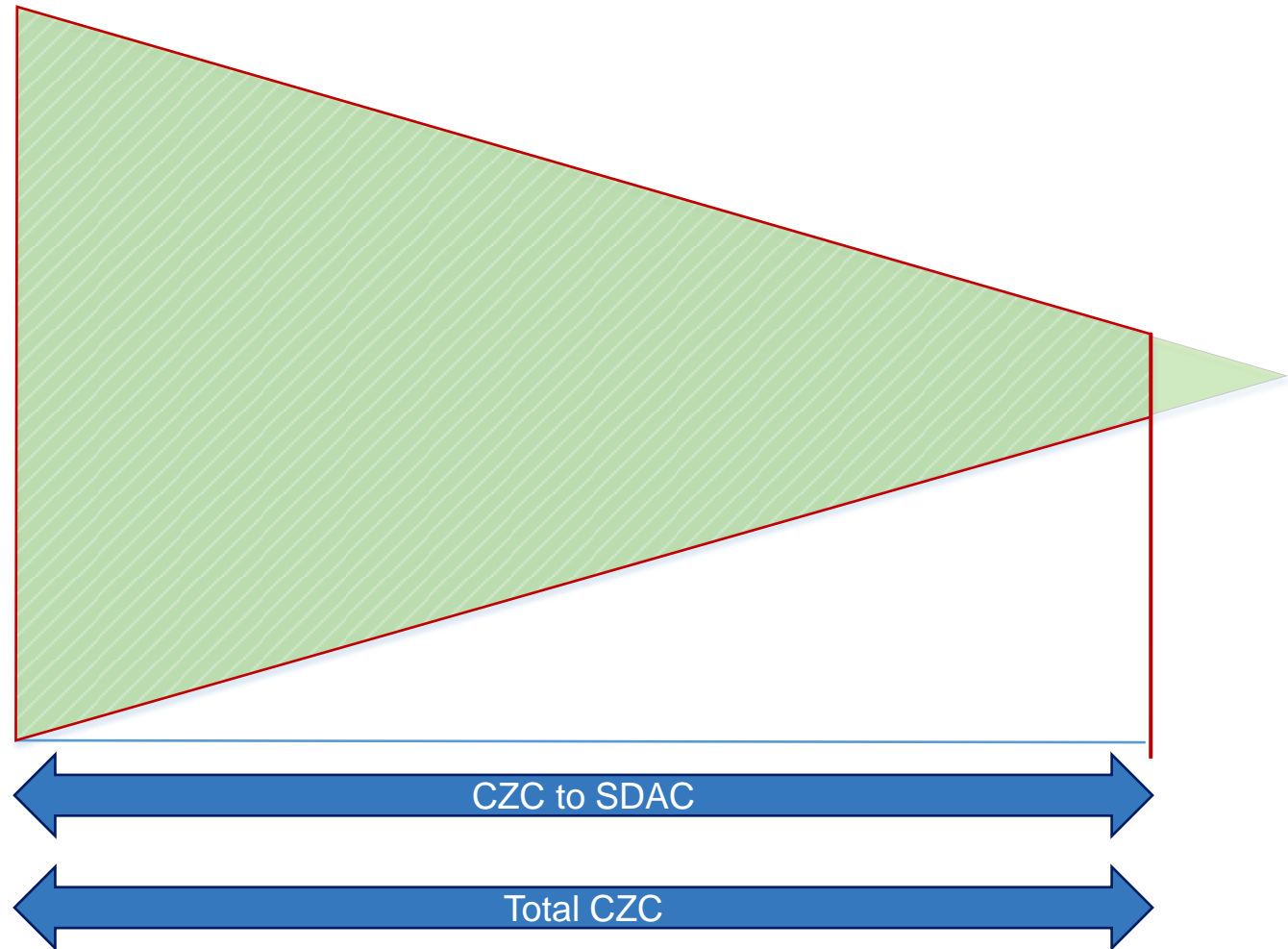
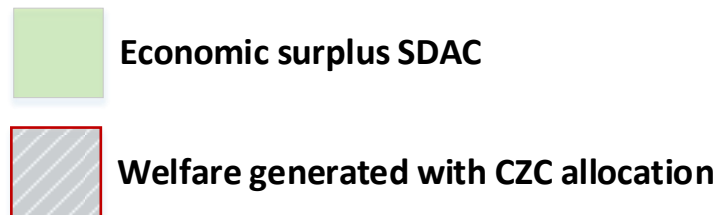
*Welfare potential from integrating  
balancing capacity markets (i.e.,  
cross-zonal capacity is allocated for  
the exchange of balancing capacity  
or sharing of reserves)*



**Economic surplus balancing capacity**






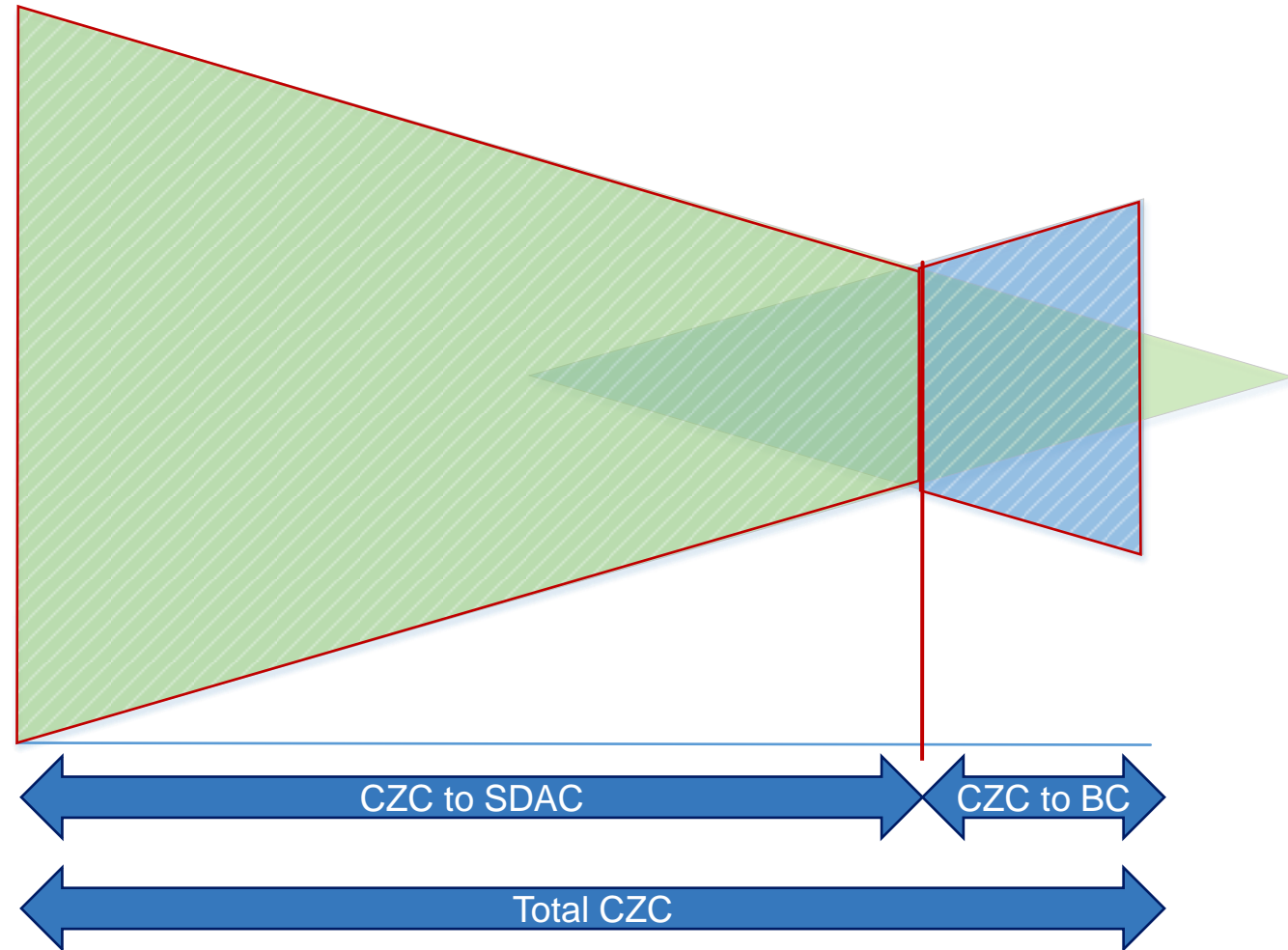
*Today's situation where all cross-zonal capacity from day-ahead capacity calculation is provided to day-ahead energy market*



CZC: Cross-Zonal Capacity

*Cross-zonal capacity allocation and related welfare generated with a cross-zonal capacity allocation process*

-  Economic surplus balancing capacity
-  Economic surplus SDAC
-  Welfare generated with CZC allocation



CZC: Cross-Zonal Capacity  
 SDAC: Single Day-Ahead Coupling  
 BC: Balancing Capacity

# Thank you. Any questions?

The contents of this document do not necessarily reflect the position or opinion of the Agency.



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