



# aFRR Cooperation Austria - Germany

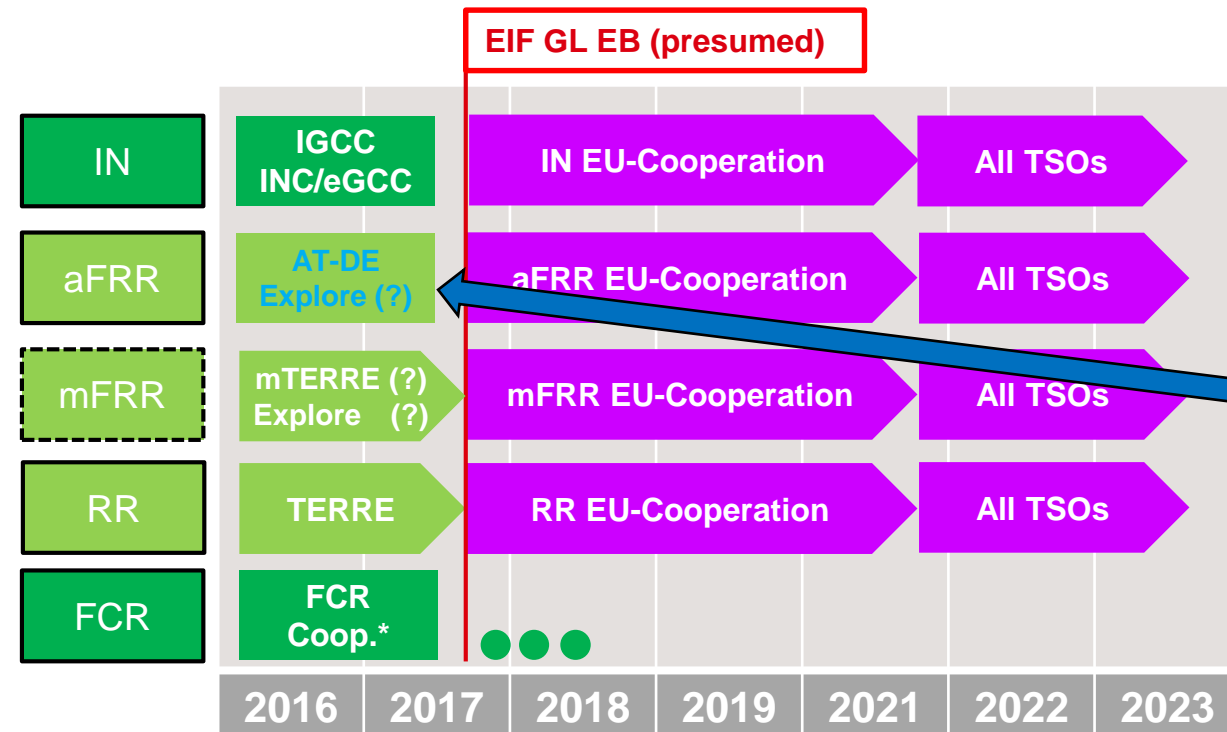
07.12.2016 BSG

# AT-DE aFRR Cooperation Introduction: Main Drivers

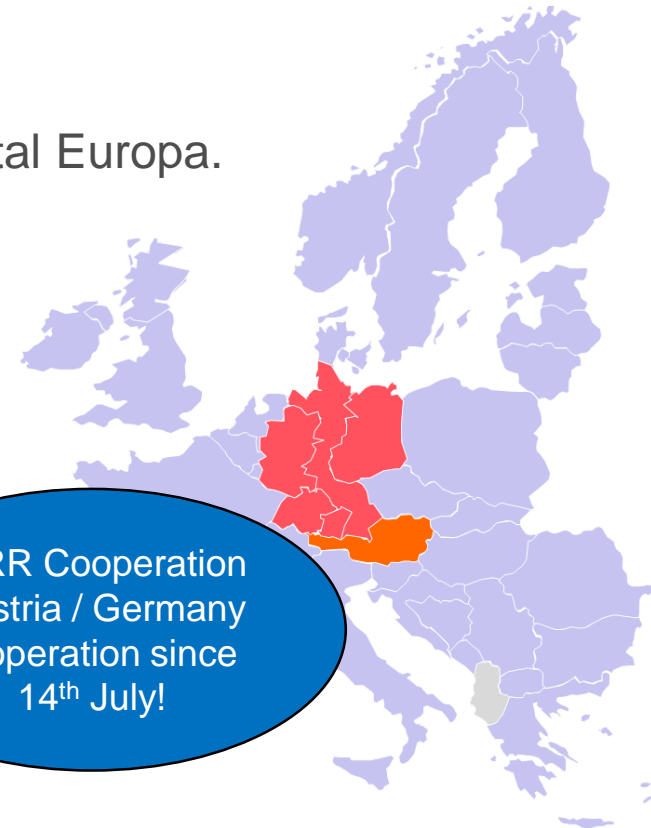


## Guideline and third Package

- Full in line with EU-targets for (balancing) market opening.
- Full conformity with GL EB and pioneer project in continental Europa.



aFRR Cooperation  
Austria / Germany  
in operation since  
14<sup>th</sup> July!



# AT-DE aFRR Cooperation Introduction:

## Key Points



### TSO-TSO Modell

- TSOs keep its national core responsibilities (publication, cost bearing, regulatory issue).
- TSOs remain the interface with the local BSPs for prequalification, monitoring, procurement, activation and settlement.

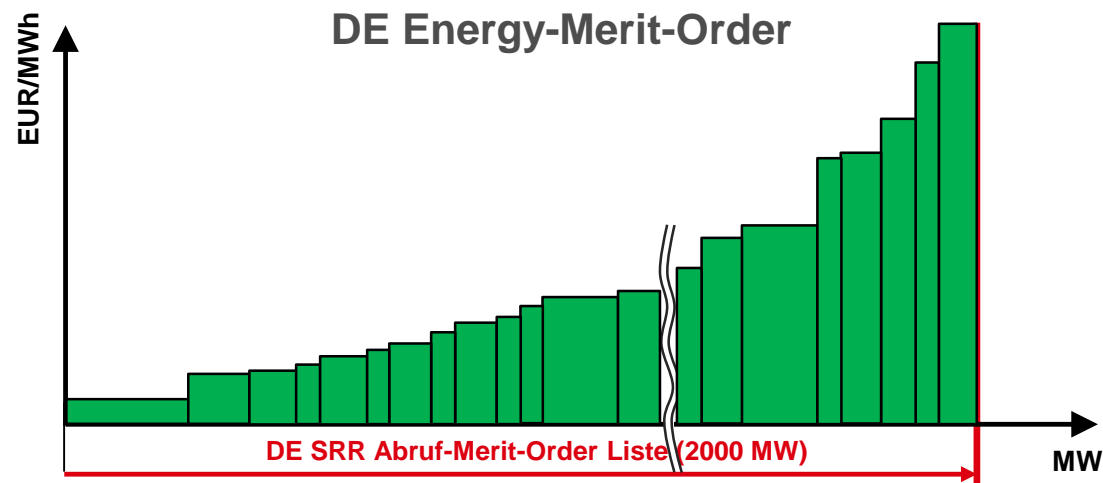
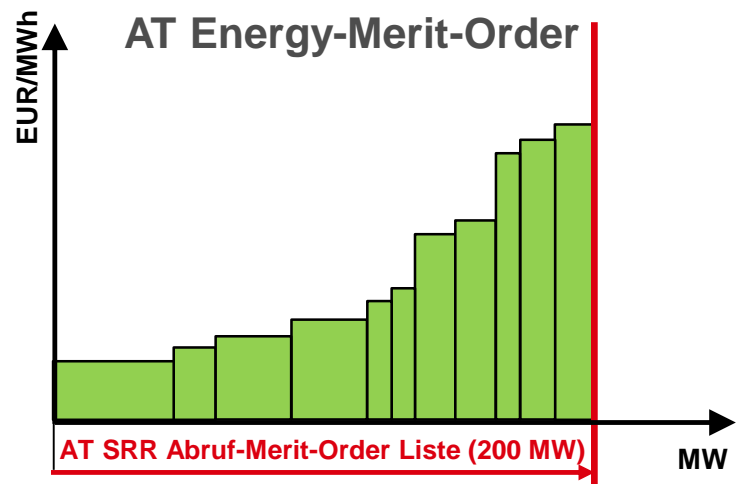
### Key point of current set-up aFRR Cooperation

- Coordinated optimisation for activation of aFRR based on CMOL for Energy.
- No common procurement of aFRR yet (foreseen as next step).
- No common dimensioning of aFRR.

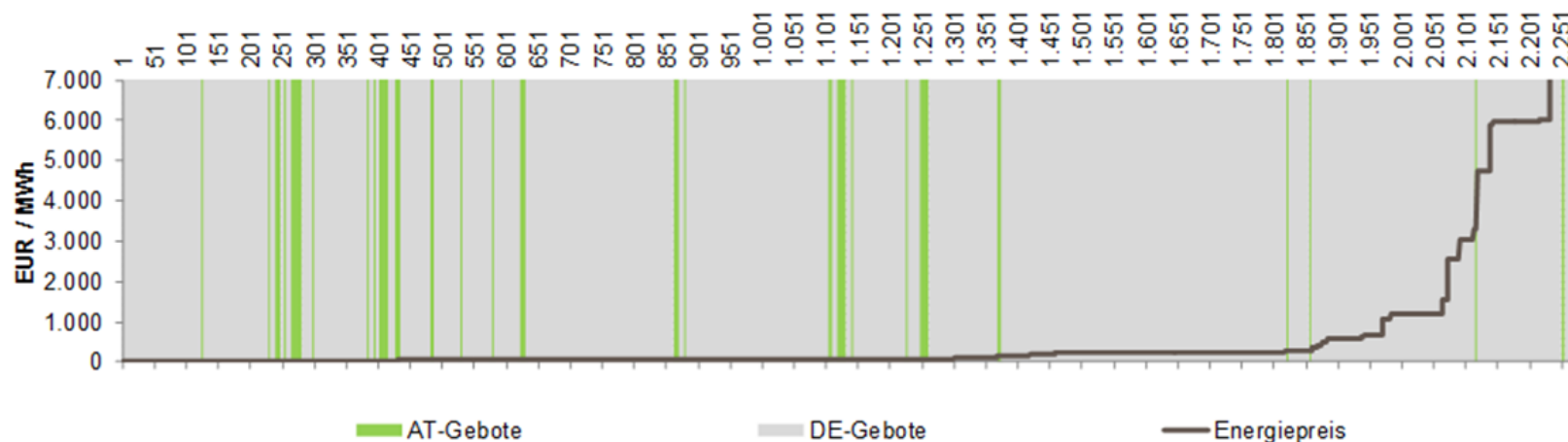
### Pre Requisites

- Required harmonisation of the prequalification process.
- Required harmonisation of the business processes & market design (aFRR product; Tender; publication; BSP-Settlement; TSO-TSO Settlement; etc.).

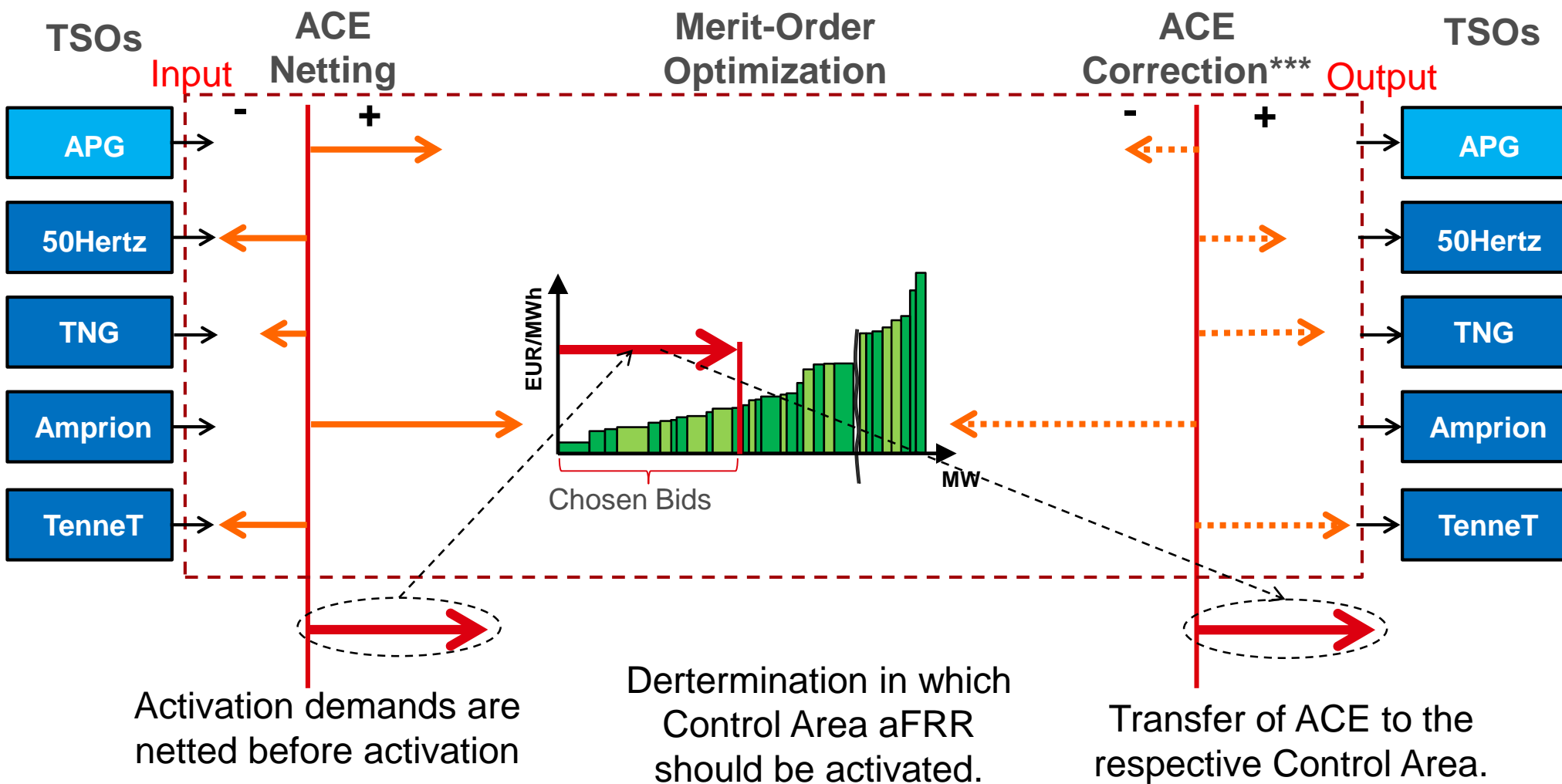
# AT-DE aFRR Cooperation: aFRR market „Common Merit Order List“ for Bal. Energy



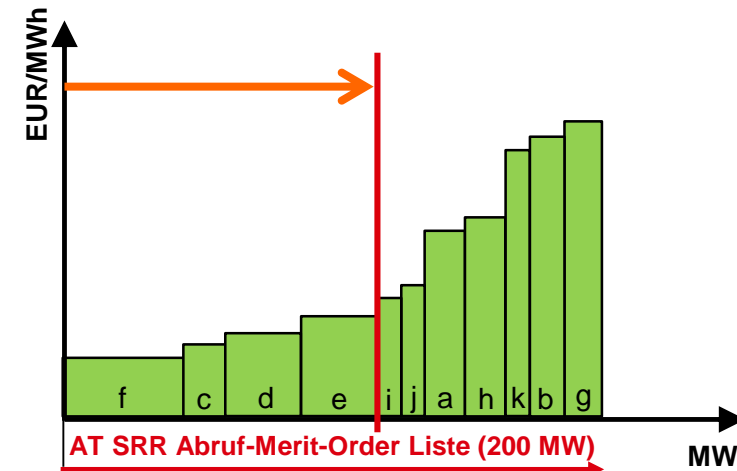
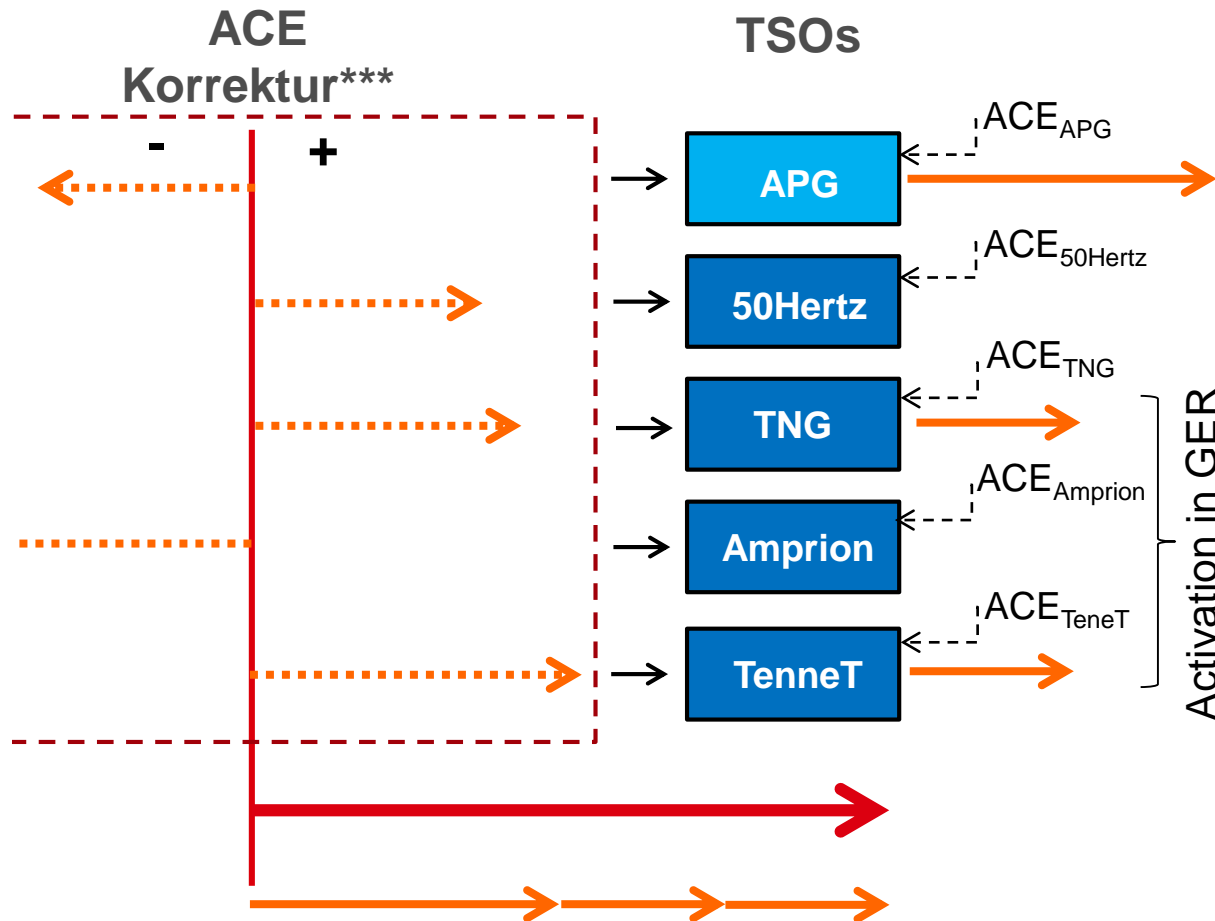
**DE/AT Common-Merit-Order (CMOL)**  
(Abruf-Merit-Order Liste, KW34, OffPeak+)



# automatic Frequency Restoration Reserves (aFRR)



# automatic Frequency Restoration Reserves (aFRR)



- The correction signal „corrects“ the controller input of the CA.
- Activation of „corrected“ ACE is done locally.
- Process runs every 4s!!

# AT-DE aFRR Cooperation: the CMOL

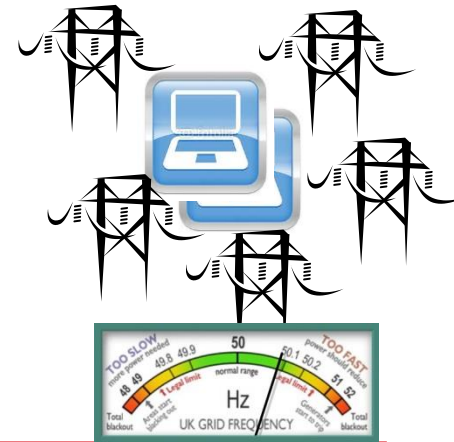
## Common aFRR market & security of supply



**Security of supply as background of all aFRR extension activity!**

*(Conditio sine qua non)*

- **High requirements for system operation**
  - local responsibility, coordination, fallback process
- **High requirements for IT communication / security /algorithm**
  - **4 seconds aFRR optimisation cycle!**
  - Local LFC Controllers must be available all the time!
  - 5 TSO-Partners, about 60 connected BSPs in AT-DE!



**→ Pioneer work in CE – first common market for automatic FRR!**

# Getting fit for Europe



## On the way to compliancy with future European legislation

- Full in line with EU-targets for (balancing) market opening
- Full conformity with GL EB and pioneer project in continental Europa

→ Guideline Electricity Balancing puts strong requirements on TSOs

## AT/DE cooperation already delivers

- Full market based procurement of balancing capacity (local) and balancing energy.
- Common Merit Order List (CMOL) across CBs for balancing energy.
- Common Activation Optimization Function (AOF).
- Implementation of a TSO-TSO model.
- Harmonization / Standardisation of governance / aFRR products / processes.
- Concept ready for managing TSOs from different bidding zones.

→ Common aFRR market enabling market potential for BSPs.

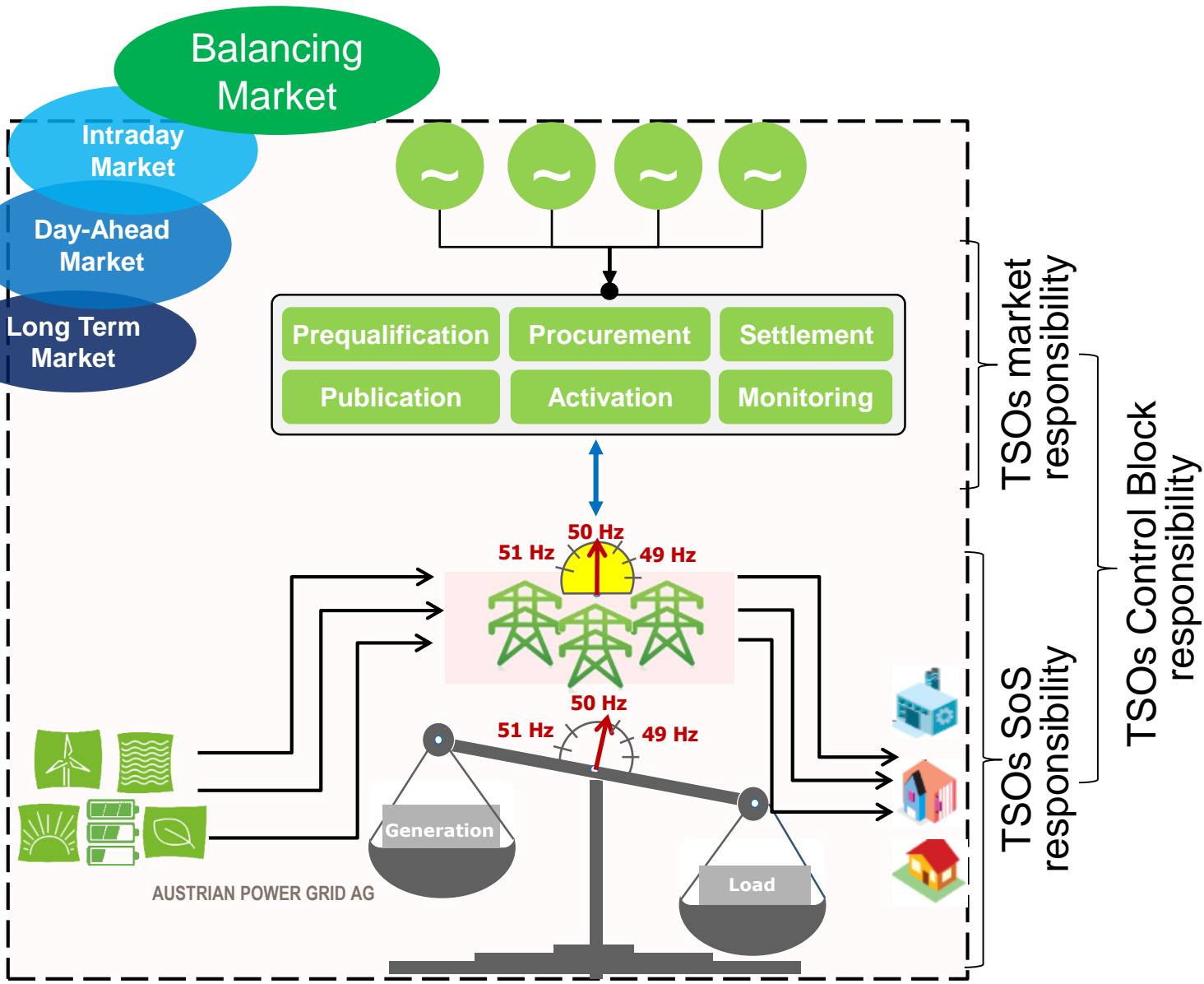
→ While keeping local systems intact to ensure fall-back procedures.



## Deemed Positive effects for TSO-community

- Successful project shows a road to compliancy with European legislation.
- Pilot to gain experience for all TSO about international aFRR cooperation.
- Ready to share experiences and learnings with other TSOs.
- Open for extension with further partners.
- Demonstrates efficiency of combined local solutions with only optimization being centralized → Ensuring local fall-back level for emergencies!
  
- Demonstration of feasible solutions on a large scale:
  - AT/DE aFRR CMOL = ca. 2.200 MW
  - EU aFRR reserves = ca. 8.000 MW

# Automatic Frequency Restoration – Organisation of power balancing / Governance



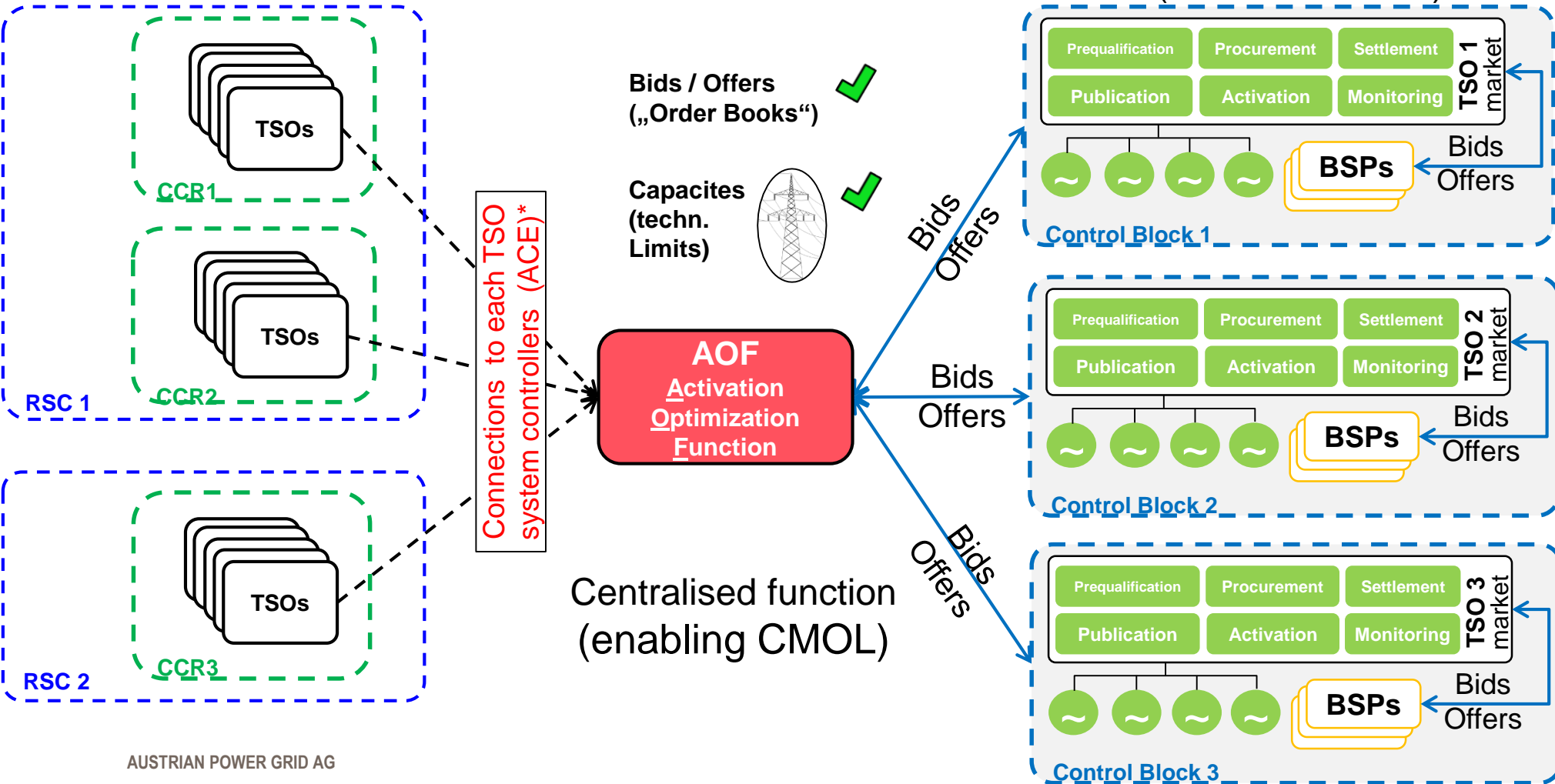
- TSO(s) responsible for SoS of its Control Block need full access to its local BSPs.
- Models enabling common markets needs to consider that basic principle!
- Hence TSO-TSO cooperation model was developed (and agreed during EB GL development)!

# Balancing Market governance principle – TSO – TSO cooperation model / Governance

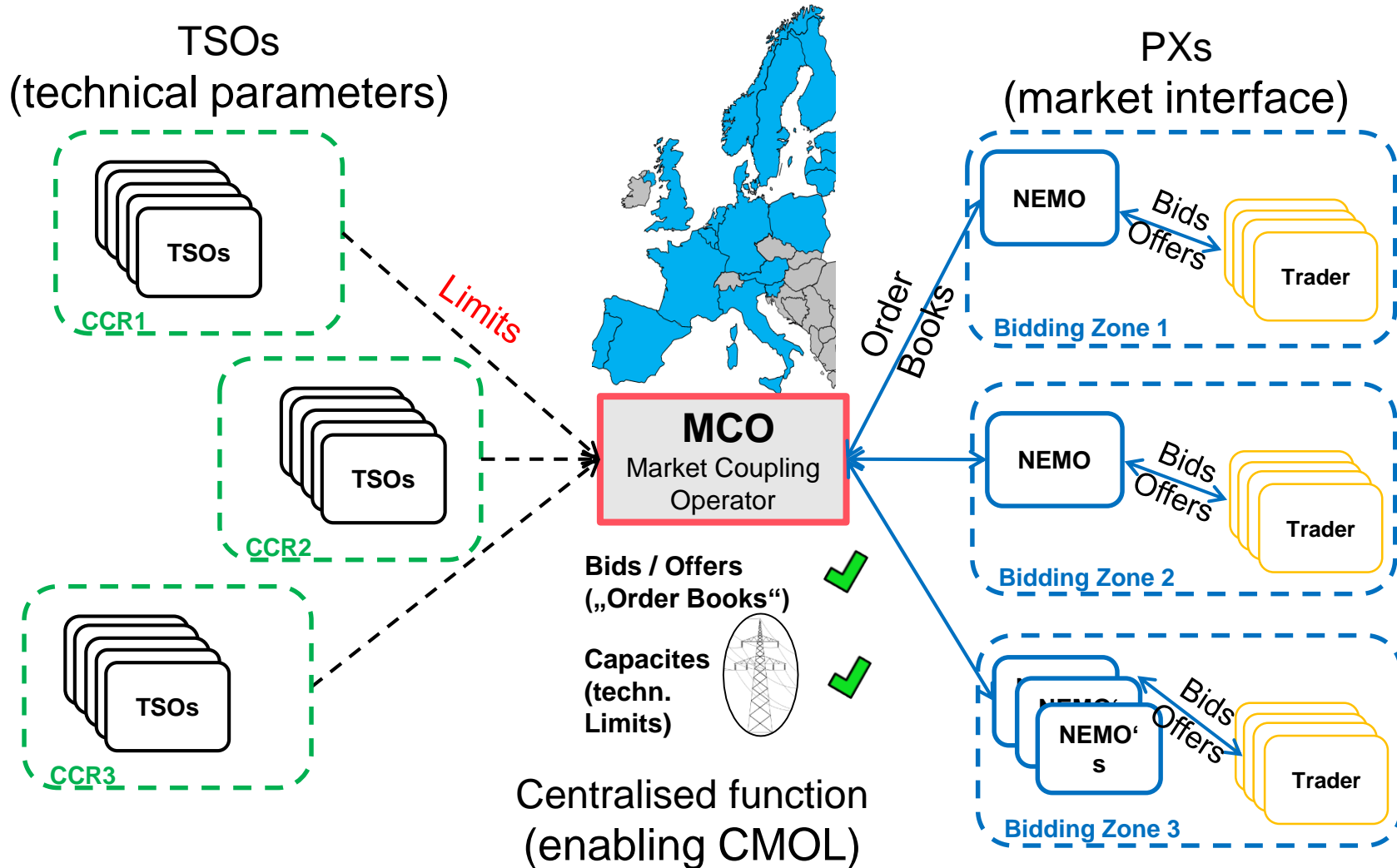


TSOs  
(technical parameters; online connection)

TSOs  
(market interface)



# Market Coupling governance principle – Successful Role Model / Governance



AUSTRIAN POWER GRID AG

MCO... Market Coupling Operator

Bidding Zone... Single price area

NEMO... National Electricity Market Operator

CCR... Capacity Calculation Region