EU and Energy Community TSOs

Regional Cooperation under ENTSO-E - Bridging the Gap

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The Challenge – Energy Transition

50% Of the generating capacity from variable RES by 2030

350 Additional GW of wind and PV to be connected by 2030

20% Higher installed variable RES capacity compared to peak demand

14 Countries with wind and solar outputs likely higher than 80% demand already in 2025

20% Reduction of dispatchable capacity margin over peak load
ENTSO-E represents

43 TSOs
operating electricity systems &
facilitating power markets in
36 countries incl. 8 Non EU
EU network codes: Rulebook for the smart system of the future

- Capacity calculation
- Capacity Allocation and Congestion Management (CACM)
- Electricity Balancing

- Emergency and Restoration
- System Operation

- HDVC
- Demand connection
- Requirements for generators

All approved by Member States 2017

6 years

FULL implementation 2023
Leadership future power system and facilitate market design solutions

Coordinate and facilitate regional development

Infrastructure and Resource Adequacy

Full focus on Implementation

Develop a solid governance for ENTSO-E including long term financial planning

Develop Transparency & trust

ENTSO-E Key Strategic 2019-2023

ENTSO-E Bridge to 2023
How to facilitate the Energy Transition?

Implement the EU codes - EU and EnC Countries

3 CONNECTION CODES
Requirements for:
- Generators
- Demand side
- HVDC connections

3 MARKET CODES
Rules for:
- Day ahead / Intraday
- Forwards
- Balancing

2 OPERATIONAL CODES
Rules for:
- System Operation
- Emergency situations

- ...paving the way for offshore wind...
- ...market coupling...
- ...regional cooperation to increase security...

Enhancing more RES & demand response connections

flow based bidding zones review

Regional security coordinators

Strengthen the grid

Including links inside countries

Enhance existing cooperation at all levels

EU
Stakeholders
REGIONAL COOPERATION
National
Distribution
Regulators & ACER
TSOs & ENTSO-E
MARKET
Inernal Energy Market started regional: DA, ID, FCA, CCRs, Balancing. Voluntary projects now CACM implementation
CCRIs are important for implementation of all three market
Codes and SO GL

OPERATIONS
Regional Security Coordinators already existing with established or
about to be established functions

PLANNING
Regional investment plans in the 10 year network development plan
Balancing platforms per product/process

- No common platform for FCR foreseen in EB GL
- Each process has different specifications
- Each process has different geographical scope
- Each process has different timing

Balancing energy

FCR
- Automatic activation
- Max 30s

aFRR
- Automatic activation
- 39 s to 15 min

mFRR
- Semi-automatic or manual activation
- Max 15 min

RR
- Semi-automatic or manual activation
- Min. 15 min

Unbalanced TSO

Sync area

Imbalance netting:
IGCC

aFRR: PICASSO

mFRR: MARI

RR: TERRE

Member

Observer
Regional Security Coordination

- CORESO (2008)
- TSC (2008)
- SCC (2016)
- Nordic RSC (2016)
- Baltic RSC (2016)

- TSO in TSC and Nordic RSC
- TSO in TSC and CORESO
- TSO are shareholders and procuring services from TSC

Started voluntarily in 2008

Extended voluntarily in all Europe as of 2015

Mandatory through EU Network Codes Sep 2017

- ESO and IPTO currently procure services SCC
RSCs Supports TSOs in Operational Planning Time-Frames

Long term planning: > 1 year

Operational planning

Dispatch/Real time

Capacity Calculation

Security Analysis

Outage Coordination

Common Grid Model

Adequacy Forecast

RSC Services to TSOs

Decisions taken in one timeframe influence decisions taken in other time-frames

Note CEP provides for additional Services for Regional Coordinators
Synchronous Area Framework Agreement (SAFA) for TSOs of Continental Europe

Synchronous Area Framework Legal Agreement
entered into force on 14 April 2019

- Policy on Load-Frequency-Control and Reserves
- Policy on Scheduling
- Policy on Accounting and Settlement
- Policy on Coordinated Operational Planning
- Policy on Emergency and Restoration
- Policy on Data Exchange

New Legal Agreement | New Annex
Future Cooperation and Regional Energy Forums

1. Decision-making triangle
2. Regional TSO cooperation
3. Policy regions

1. Member states
2. System Operators
3. Regional Coordination Centres
4. Regulators
5. Other parties
Back up
CEP Risk Preparedness Regulation – Methodology for Identification of regional electricity crises scenarios

1. Article 7: Identify national electricity crisis scenarios
2. Article 8: Identify regional electricity crisis scenarios
3. Article 9: Evaluate regional scenarios at a national level
4. Article 10: Rank regional scenarios by impact

Article 11: Presentation of scenarios

- Article 13: Handling of sensitive information
- Article 14: Publication and implementation
- Article 15: Language

Key
- ENTSO-E
- TSOs
- All

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‘REGIONALISM’ IN THE POWER MARKET: A SUCCESS STORY

1990s Nord Pool

11/2006: TLC

11/2011: CWE

02/2014: NWE

05/2014: MRC

02/2015: MRC + CSE

05/2015: MRC CWE Flow-Based Capacity Calculation

Nord Pool

1990s

TLC

CWE

NWE

MRC

11/2015

11/2011

02/2014

05/2014

02/2015

05/2015

ENTSOE
Regional Cooperation – System Operations
FROM VOLUNTARY TO MANDATORY COORDINATION

- **MANDATORY ROLE FOR RSCS**: The System Operation Guideline makes operational coordination mandatory through RSCs but TSOs remain responsible for security in their area.

- **COORDINATED SYSTEM OPERATIONS**: RSCs do regional security assessment & propose a list of coordinated actions (SOGL Art 78).

- **MONITORING AND REPORTING**: ENTSO-E publishes an Annual Report on Regional Coordination (SOGL Art 17).

- **COORDINATED EMERGENCY PREPAREDNESS**: RSCs assess the consistency of measures taken by TSOs in emergency situations (E&R Art 6).
Develop a Synchronous Area Operation Agreement pursuant to the SO GL Article 118.

Provide the necessary agreements with the TSOs not bound by EU law.

Replace and supersede the 2005 Multilateral Agreement Operation Handbook (MLA OH).

Scope SO GL and NC ER in their entirety.

Settlement rules for the intended and unintended exchange of energy pursuant article 50(3) and article 51(1) of the Electricity Balancing Guideline.

Additional contractual arrangements, applicable to all Parties, developed in order to safeguard the operational security of the interconnected electricity system.