

Network Code on Electricity Balancing

Introduction

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Impact of Balancing on All-island arrangements

- Balancing Market is new.
- Collectively requires industry to learn and design new arrangements.
- Balancing Market has a major effect on real time operation and system security.
- No legacy complications.



Presentation Overview

NC EB public consultation: 17th June to 16th August 2013

All-island NC EB workshop: To be scheduled during consultation.

Introduction to Network Code on Electricity Balancing:

1. Balancing overview
2. Key chapters in the code

Considerations:

1. Key Concepts
2. All-island commercial & other aspects
3. Balancing in Central Dispatch Systems
4. Priority Dispatch
5. DS3 System Services

These slides reflect SONI/EirGrid **emerging analysis** of Balancing to be provided to the RAs & their consultants.

Balancing Overview

Balancing Definition per NC Electricity Balancing:

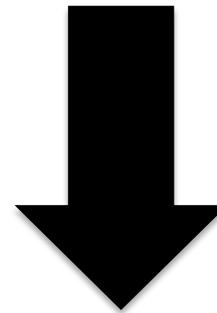
Balancing means all actions and processes, on all timescales, through which Transmission System Operators ensure, in a continuous way, to maintain the system frequency within a predefined stability range as set forth in the Network Code on Load- Frequency Control and Reserves, and to comply with the amount of reserves needed per Frequency Containment Process, Frequency Restoration Process and Reserve Replacement Process with respect to the required quality, as set forth in the Network Code on Load- Frequency Control and Reserves.



Balancing Procurement Schemes



Legend	
-	Grey
N/A	Yellow
Mandatory Offers	Red
Mandatory Provision	Green
Mandatory Provision without Reservation	Blue
Bilateral Market	Purple
Organised Market	Orange
Hybrid	Cyan



Common rules contained in the
Network Code
on Electricity Balancing



Network Code on Electricity Balancing

Chapter 1: General Provisions

Chapter 2: The Electricity Balancing System

Chapter 3: Procurement of Balancing Services

Chapter 4: Use, Allocation and Reservation of Cross Zonal Capacity for Balancing Services

Chapter 5: Settlement

Chapter 6: Algorithm Development

Chapter 7: Reporting

Chapter 8: Targets and Transitional Arrangements

Chapter 9: Final Provisions

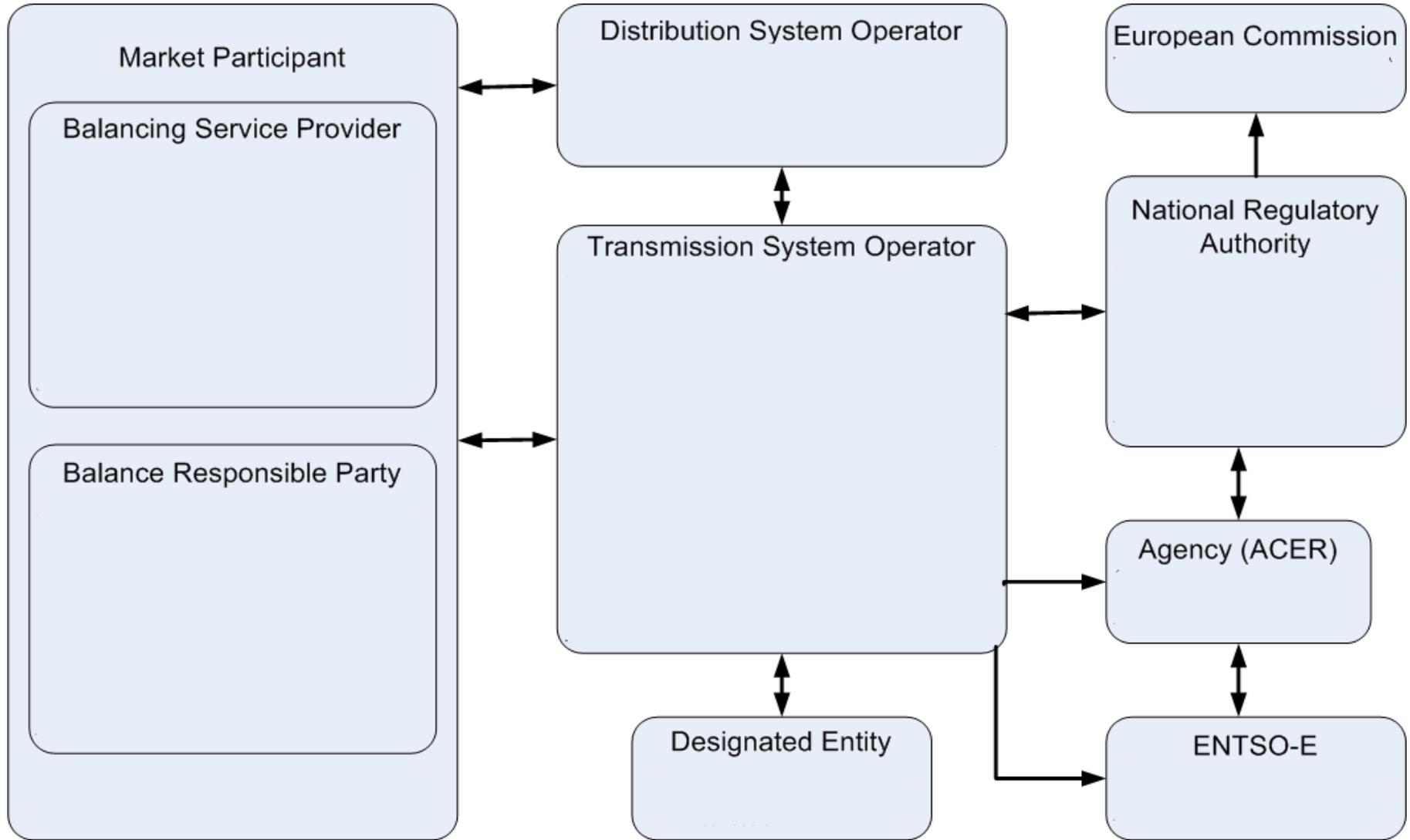
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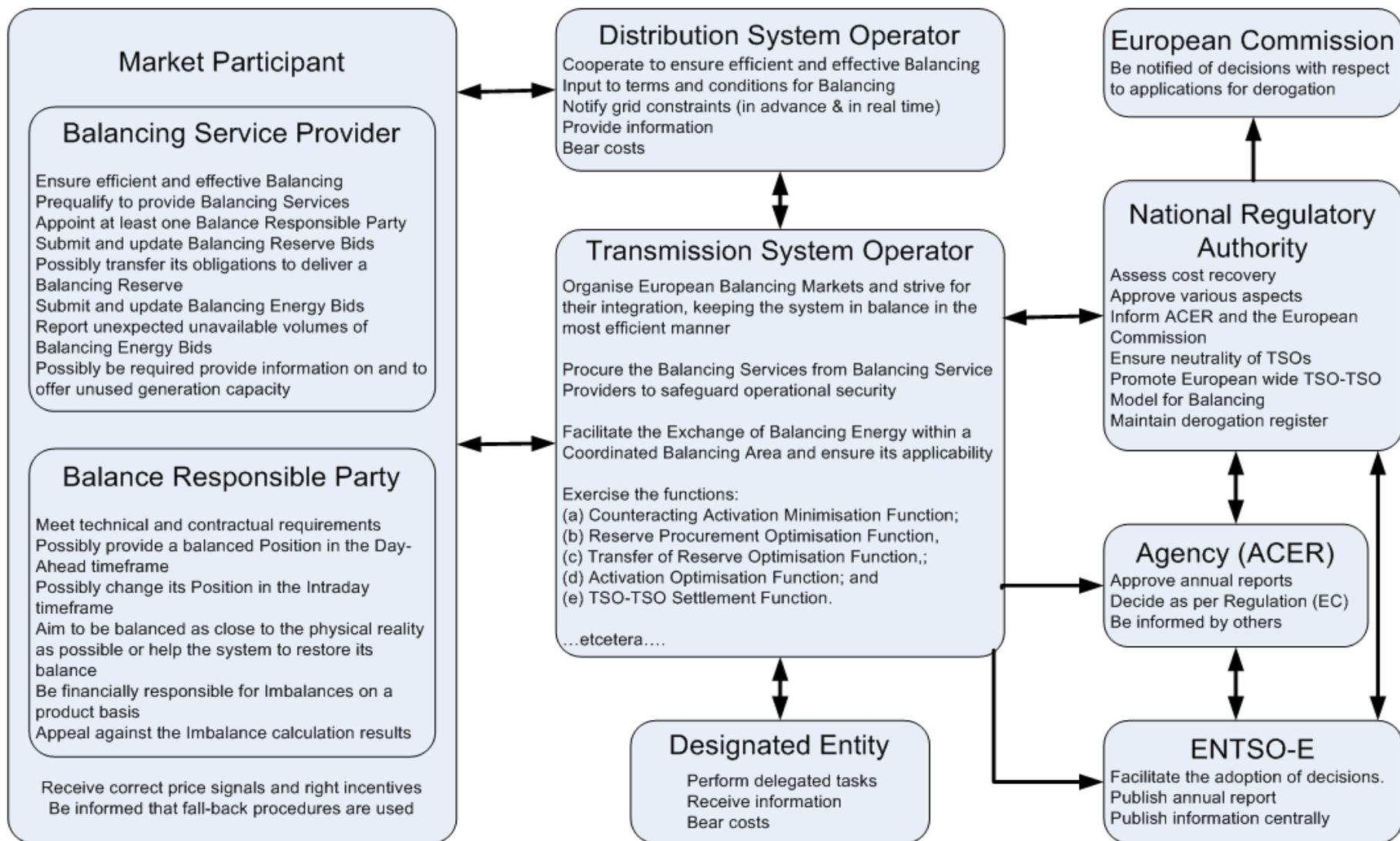
Chapter 2: The Electricity Balancing System



Roles in Electricity Balancing System

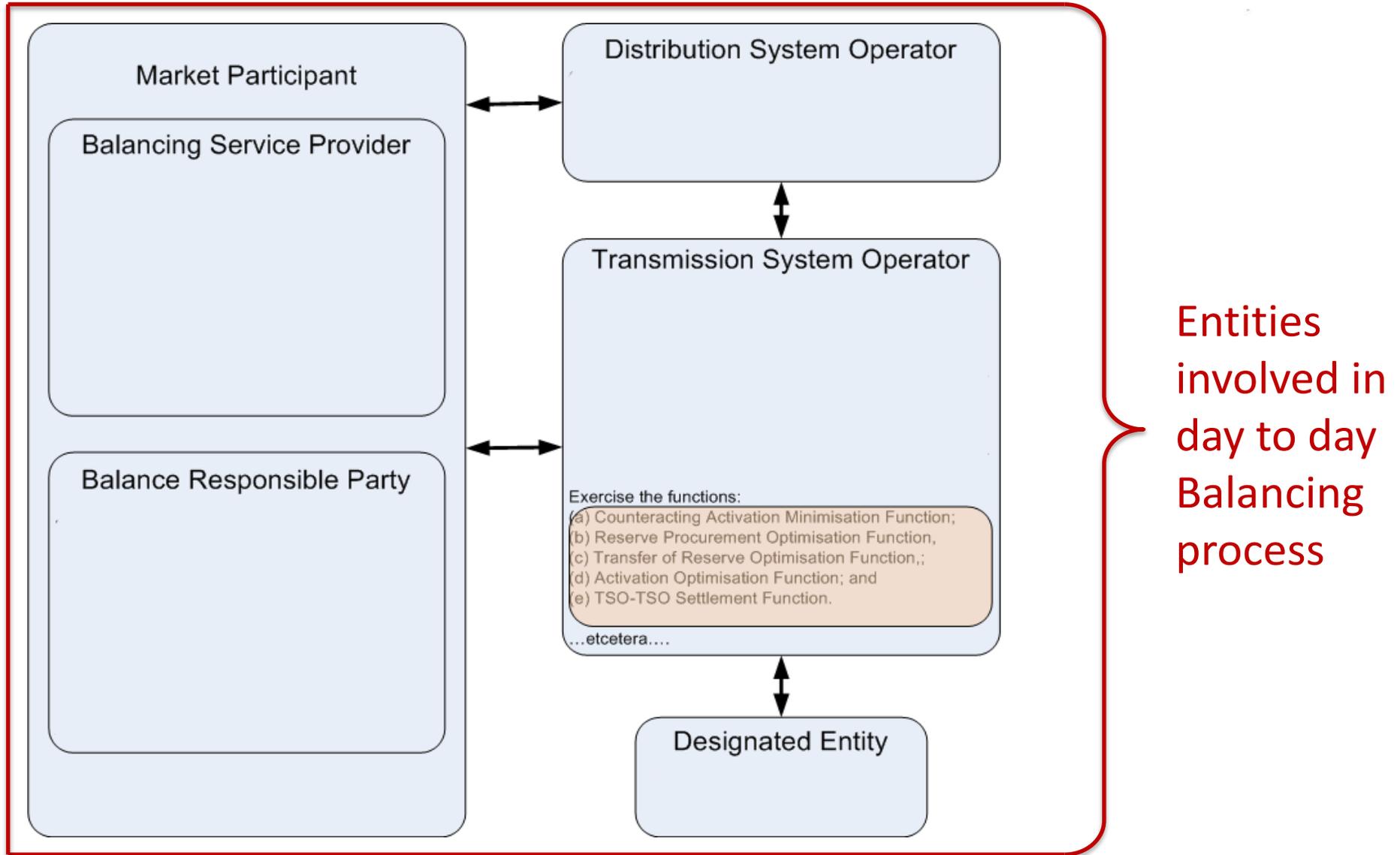


Roles in Electricity Balancing System

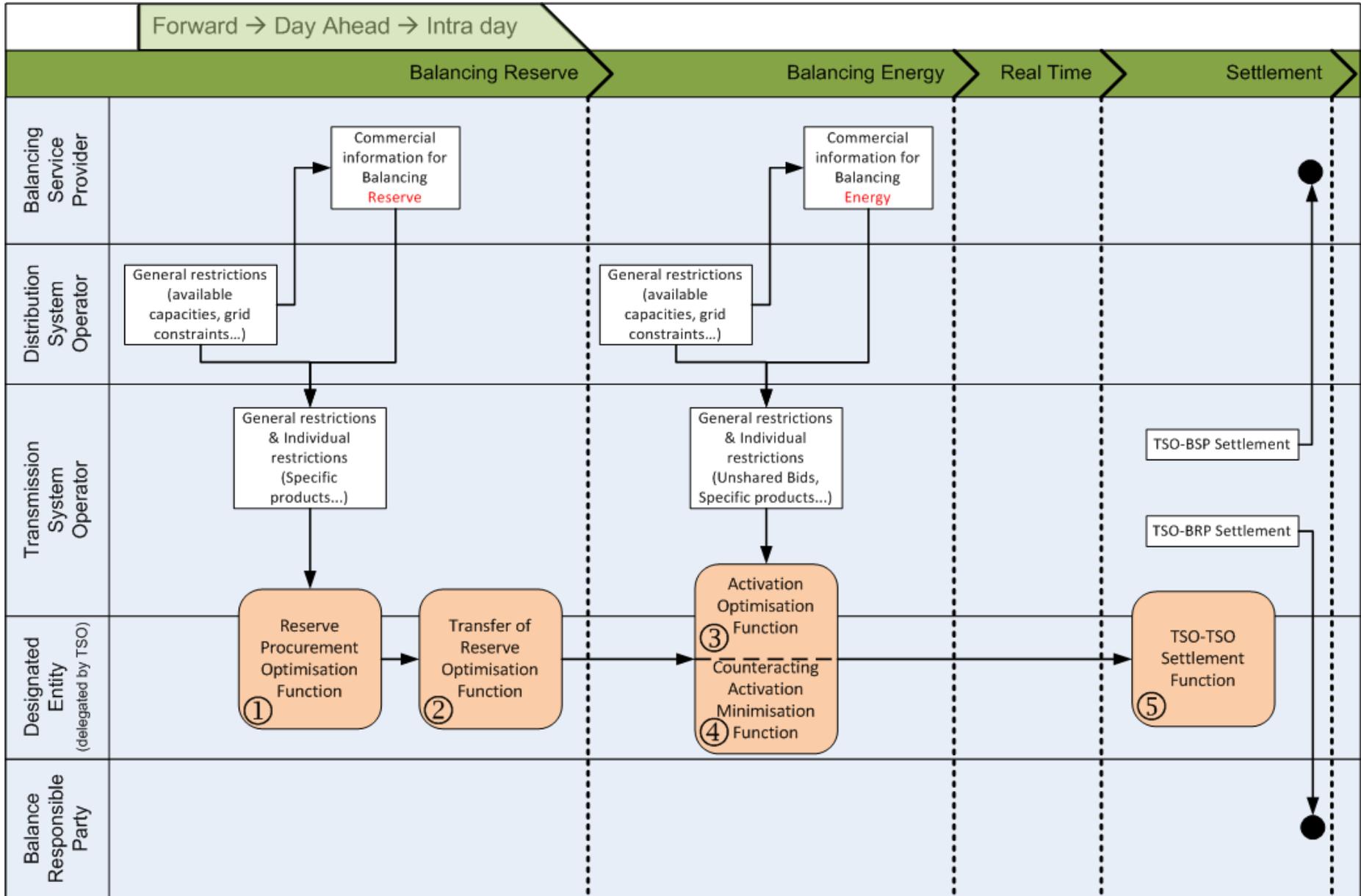


(Slides will be available on line.)

Roles in Electricity Balancing System



Electricity Balancing System Process

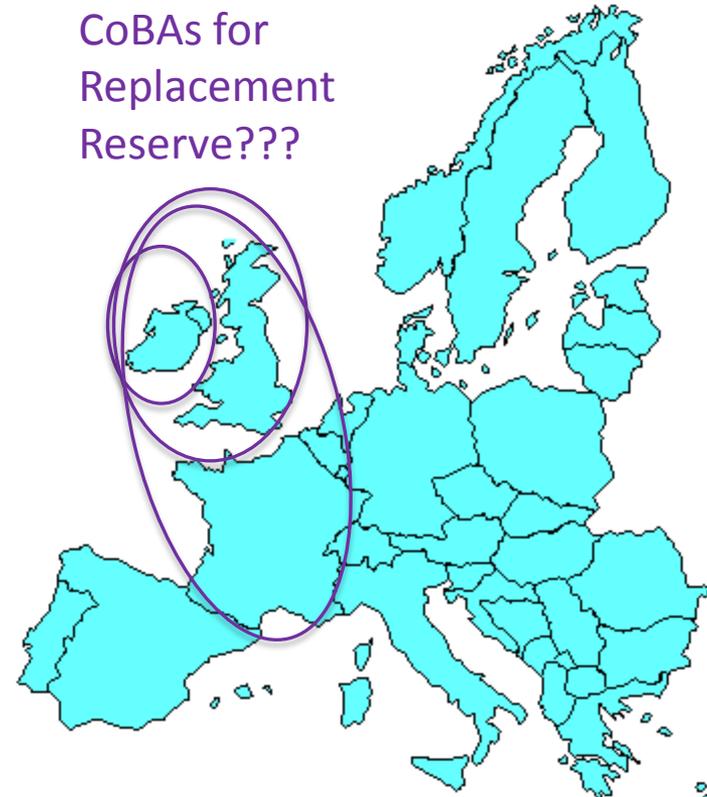


(Illustrative overview)

Concept: Coordinated Balancing Area

- Due to complexity involved European wide TSO-TSO Model for Balancing is being established on a phased basis.
- The establishment of Coordinated Balancing Areas (CoBAs) is key to this phased approach.
- CoBAs are established on a Balancing product basis.
- CoBAs include at least two TSOs.
- First product to be implemented is the CoBA for Exchange of Balancing Energy for Replacement Reserve - no later than two years after the code comes into force. (2016?)
- CoBAs are created, cooperate between each other, merged and/or enlarged en route to the European Model.

Possible
CoBAs for
Replacement
Reserve???



Balancing System Questions



- A. How do the timeframes and Gate Closure Times interact?
- B. How do we form CoBAs with National Grid, RTE, Central Europe? And will be delegated the various functions?
- C. Will BSP, generation units and BRPs be mapped on 1:1 basis or portfolio based?
- D. How does DS3 reserve design comply with the code?
- E. To what extent will reserve be secured using Balancing Reserves ahead of Balancing timeframe?
- F. How sophisticated should the initial Balancing Market be? For example, are Transfer of Reserves Optimisation Function required day one?
- G. Is there sufficient time to implement these arrangements?



Chapter 3:

Procurement of Balancing Services



Procurement of Balancing Services

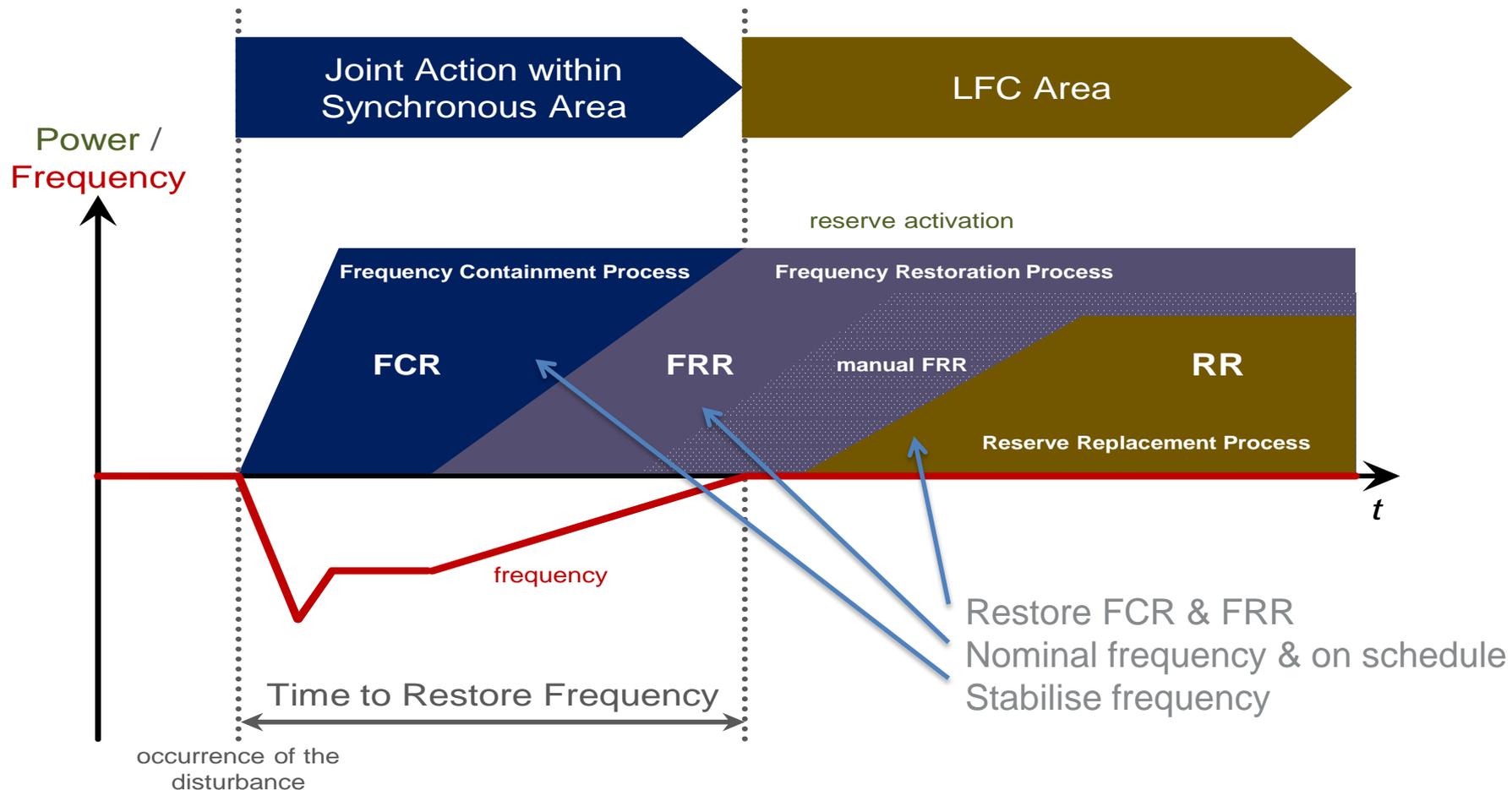
- Balancing Services is a collective term for Balancing Reserve and Balancing Energy.
- Products for Balancing Reserve and Balancing Energy will have minimum set of standard characteristics.
- Preference to split products into upward and downward bids.
- Required volumes reflect cross zonal Exchange and/or Sharing process.
- Market based procurement for Balancing Reserve – tender, price caps, obligations with secondary market.
- Marginal pricing (pay-as-cleared) for Balancing Energy initially unless more efficient method demonstrated.



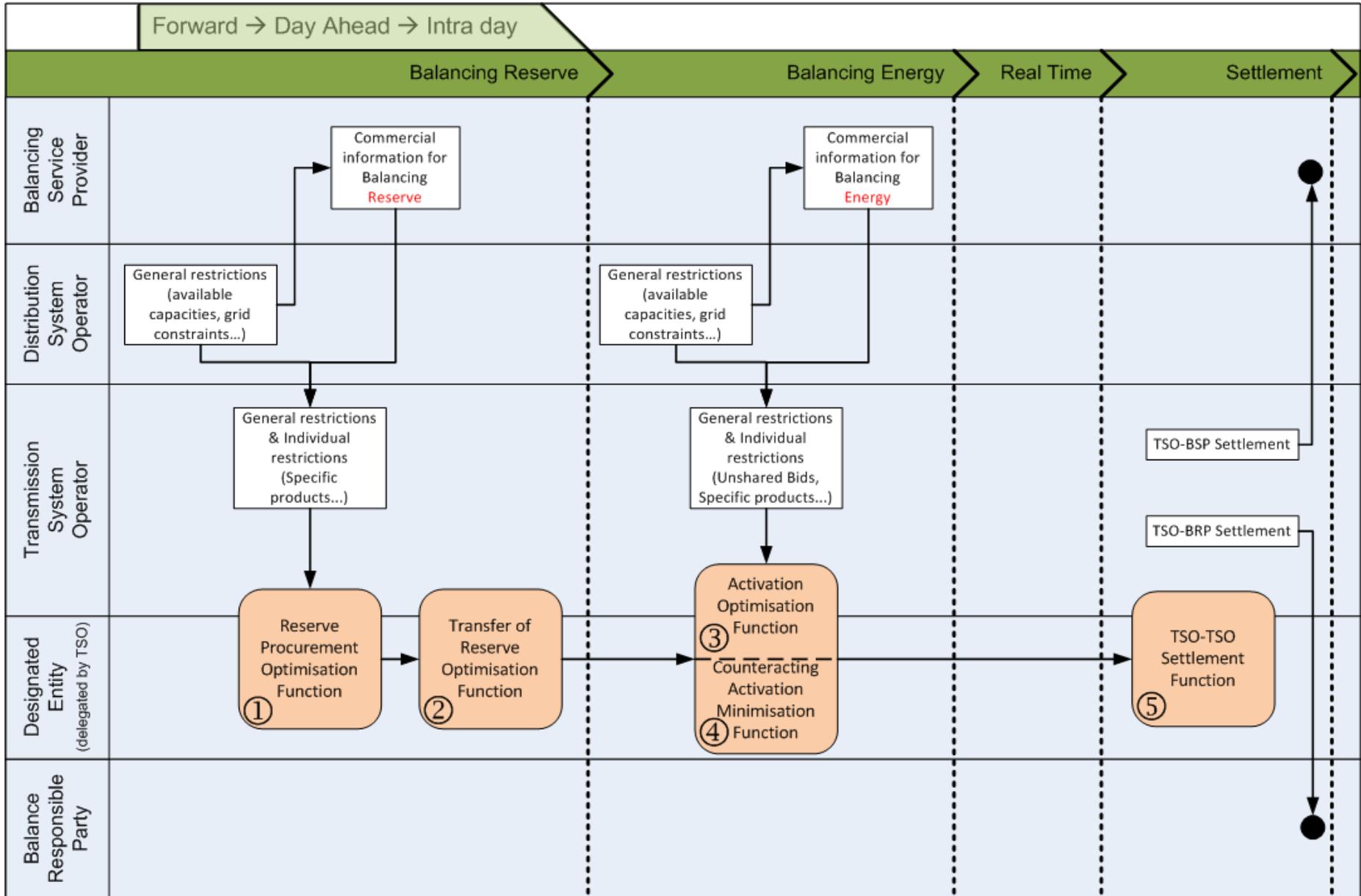
Reserve & Energy Products

NC Load-Frequency Control & Reserves: Processes

NC Electricity Balancing: Products to be used in the processes.

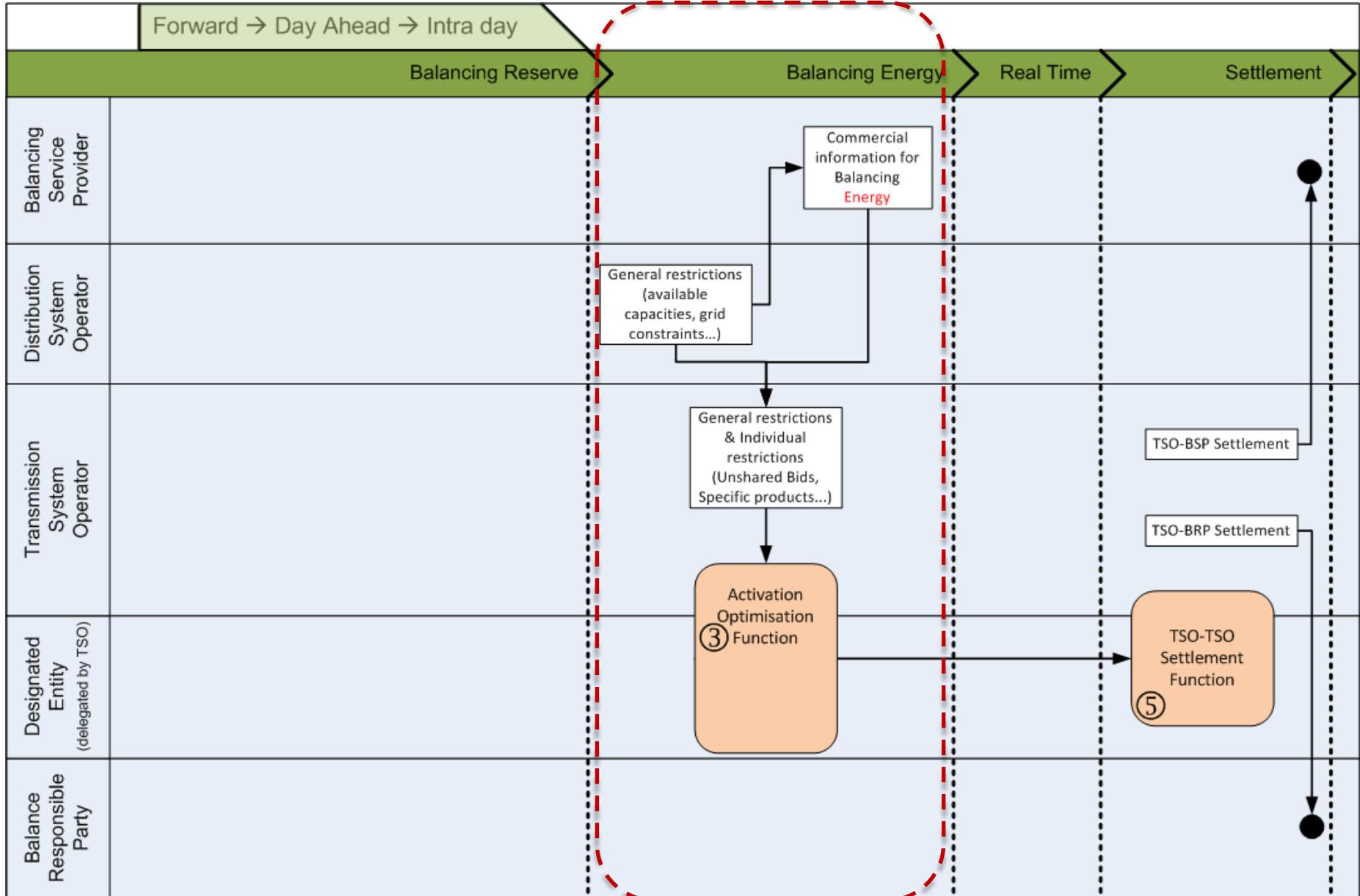


Electricity Balancing System Process

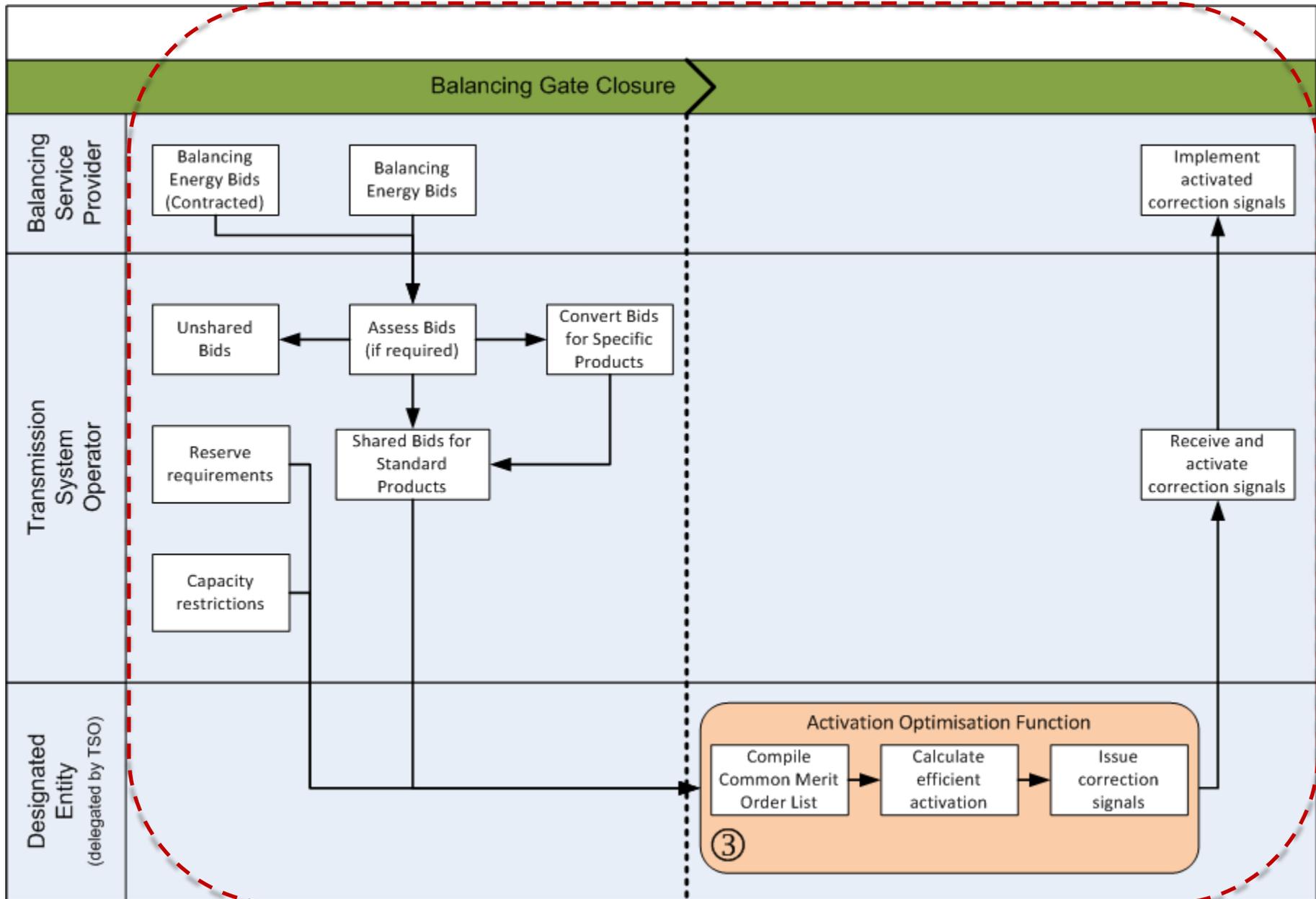


(Illustrative overview)

Balancing System Minimal Process



Balancing Energy Core Process



Procurement Questions



- A. What will Working Group Ancillary Services produce as the list of Standard Products? Are they technology neutral? How do they work across HVDC links and is there any commercial impact?
- B. What limitations, if any, does the NC Load-Frequency Control & Reserves bring to implementation of the Balancing Market in Synchronous Areas IE and GB?
- C. To what extent does Central Dispatch Systems affect terms and conditions relating to Balancing?
- D. Is there any benefit to adopting the TSO-BSP Model for procurement of Balancing Reserves when it is a transitional model and will be discontinued after six years?



Chapter 4:

Use, Allocation and Reservation of Cross Zonal Capacity for Balancing Services



Use, Allocation & Reservation of Capacity

Cross Zonal Capacity is linked to Exchange and Sharing of Balancing Services.

NC Load-Frequency Control & Reserves specifies:

Reserve requirement each LFC area which is fixed.

Exchange = reserve sourced from one LFC area and used exclusively to fulfil reserve requirements in for other LFC area.

Sharing = same reserve taken into account to fulfil reserve requirements

Limits on volumes exchanged and/or shared.

Cross Zonal Capacity has value. Capacity should be provided where it has the highest value.

Pricing of Cross Zonal Capacity for Balancing must be consistent with other timeframes.



Different ways which TSOs can use capacity for Balancing Services

Cross Zonal Capacity



Capacity Provision Methodologies

1. Capacity available after Intraday Gate Closure
2. Methodologies in NC Electricity Balancing
 - 2.1 Probabilistic Approach
 - 2.2 Allocation
 - 2.3 Reservation

Cross Zonal Capacity Questions



- A. Will the current approach on Moyle and EWIC remain appropriate?
- B. Is there an economic benefit to maintain reserve capacity on Moyle and/or EWIC?



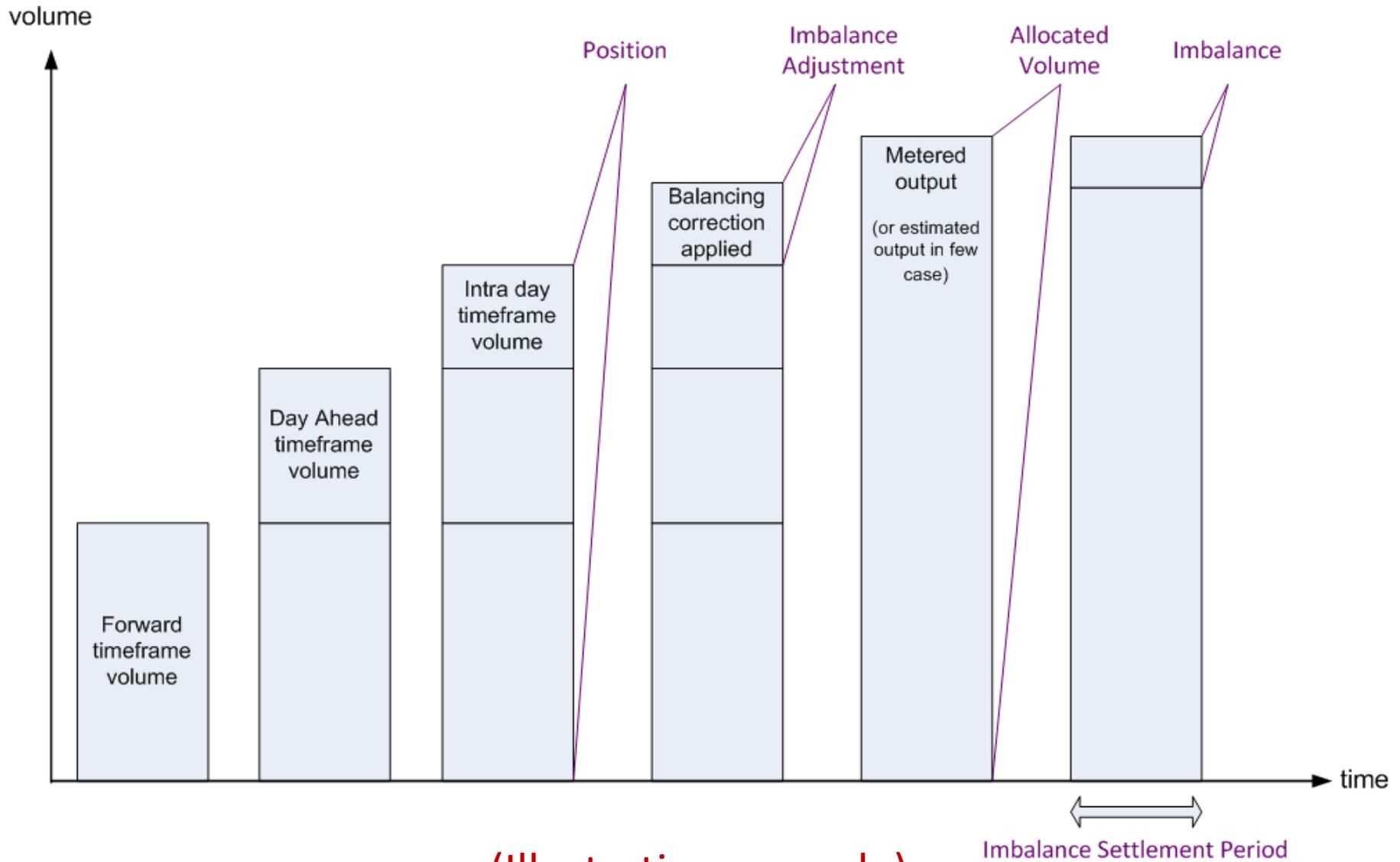
Chapter 5: Settlement



Settlement Overview

Settlement Types	Reserve	Energy	Imbalance	Notes
TSO-BSP	Balancing Reserve	Balancing Energy		FCR (optional) FRR RR Per direction, relevant area, time unit, marginal pricing
TSO-TSO	Exchange of Balancing Reserve within a CoBA	Balancing Energy exchanged between Relevant Areas		Requires accounting/settlement <i>intended</i> deviations: Imbalance Netting Process <i>Ramping Period or agreed Ramp Rate Process</i>
TSO-BRP			Imbalance	Per direction, relevant area, time unit Encourage BRPs to be balanced as close to the physical reality as possible, or help the system to restore its balance;

Imbalance for each Balance Responsible Party



(Illustrative example)

Settlement Questions



- A. Would it be an issue if the settlement period – the “Imbalance Settlement Period” moved from 30min to 1hour ?
- B. Does the definition of “Position” work with other definitions and intended settlement processes?
- C. How do we deal with HVDC ramp rate? In settlement processes or earlier in product design/product conversion?



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today



To note while reviewing the NC EB

- NC EB public consultation: 17th June to 16th August 2013
- The code is still being developed by the drafting team in parallel with the public consultation. There are known open issues which are being addressed.
- The code is drafted such that actions which are not explicitly forbidden by the code are allowed.
- Required regulatory approvals are listed in one article rather than interspersed throughout the code.
- References to “Ramp Rate Process” (related to HVDC) and to “Central Dispatch Systems” are of particular relevance to the island of Ireland.
- All-island NC EB workshop: To be scheduled during consultation.



Thank you

