



Reliable Sustainable Connected

**SUPPORTING DOCUMENT FOR THE
NETWORK CODE ON
ELECTRICITY BALANCING**

03 JUNE 2013

V1.1

**A CONSULTATION DOCUMENT TO SUPPORT THE ASSESSMENT OF THE
DRAFT NETWORK CODE ON ELECTRICITY BALANCING.**

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1 PURPOSE AND OBJECTIVES OF THIS DOCUMENT

1.1 PURPOSE AND SCOPE OF THE DOCUMENT

This document has been developed by the European Network of Transmission System Operators for Electricity (ENTSO-E) to accompany the consultation of the Electricity Balancing Network Code (NC EB) and should be read in conjunction with that document.

The document has been developed in recognition of the fact that the NC EB, which will become a legally binding document after comitology, inevitably cannot provide the level of explanation which some parties may desire. Therefore, this document aims to provide interested parties with the background information and explanation for the requirements specified in the NC EB, and outlines the steps that follow.

1.2 STRUCTURE OF THE DOCUMENT

The supporting document is structured within the framework for all market related Network Codes supporting documents as follows:

- Section 1** Purpose and Objectives.
- Section 2** Procedural Aspects – introduces the legal framework within which the market-related Network Codes have been developed, as well as the next steps in the process.
- Section 3** Added value of the NC EB – describes how the NC EB adds value to the harmonised, coordinated Balancing Market across Europe.
- Section 4** Scope, Structure and Approach to Drafting of the Network Codes – explains the approach, which ENTSO-E has taken to develop the Network Codes, outlines some of the challenges and opportunities ahead of System Operation as well as concepts used in the NC EB.
- Section 5** Relationship between NC EB and Framework Guidelines – explains the relationship between the NC EB and the Framework Guidelines on Electricity Balancing (FG EB).
- Section 6** NC EB: Objectives, Requirements – focuses on the objectives of the NC EB by topic, and on an Article by Article basis, split into the three main parts of the Network Code, procurement, settlement and capacity reservation, identifying the roles, responsibilities, functions and characteristics of the respective sections. Choices that have been made within the NC EB are justified in this section.
- Section 7** Responses and next steps – describes how stakeholders can participate in the Network Code process and timescales going forward.
- Section 8** Links to relevant documents.

1.3 LEGAL STATUS OF THE DOCUMENT

This document accompanies the NC EB, but is provided for information only and therefore it has no binding legal status.

1.4 RESPONDING TO THE CONSULTATION

Responses to the public consultation on the NC EB are requested by the dates agreed once the consultation is launched. All responses should be submitted electronically via the ENTSO-E consultation tool, explained at <https://www.entsoe.eu/resources/consultations/>.

2 PROCEDURAL ASPECTS

2.1 INTRODUCTION

This section provides an overview of the procedural aspects of the Network Codes' development. It explains the legal framework within which Network Codes are developed and focuses on ENTSO-E's legally defined roles and responsibilities. It also explains the next steps in the process of developing the NC EB.

2.2 THE FRAMEWORK FOR DEVELOPING NETWORK CODES

The NC EB has been developed in accordance with the process established within the Third Energy Package, in particular in Regulation (EC) 714/2009. The Third Package legislation establishes ENTSO-E and the Agency for the Cooperation of Energy Regulators (ACER) and gives them clear obligations in developing Network Codes. This is shown in Figure 1.

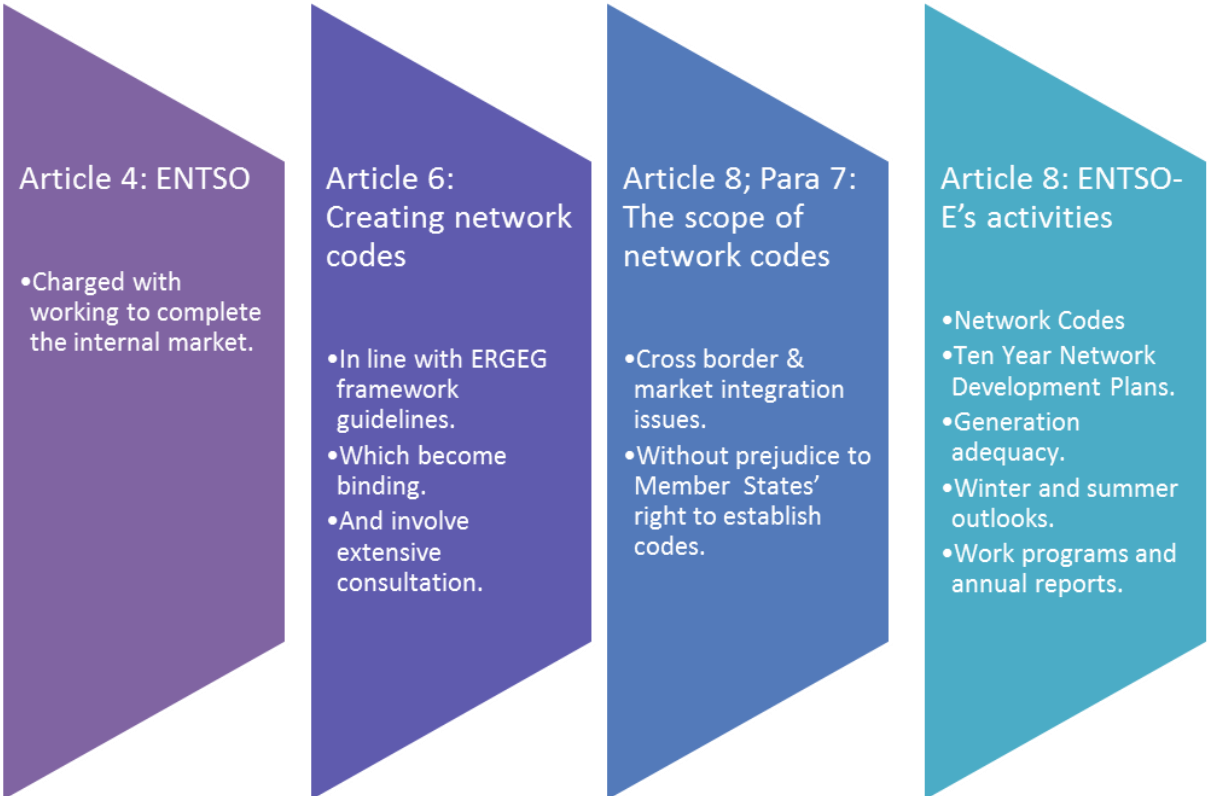


Figure 1: ENTSO-E's legal role in Network Code development according to Regulation (EC) 714/2009.

Moreover, Regulation (EC) 714/2009 creates a process for developing Network Codes involving ACER, ENTSO-E and the European Commission, as shown in Figure 2 below.

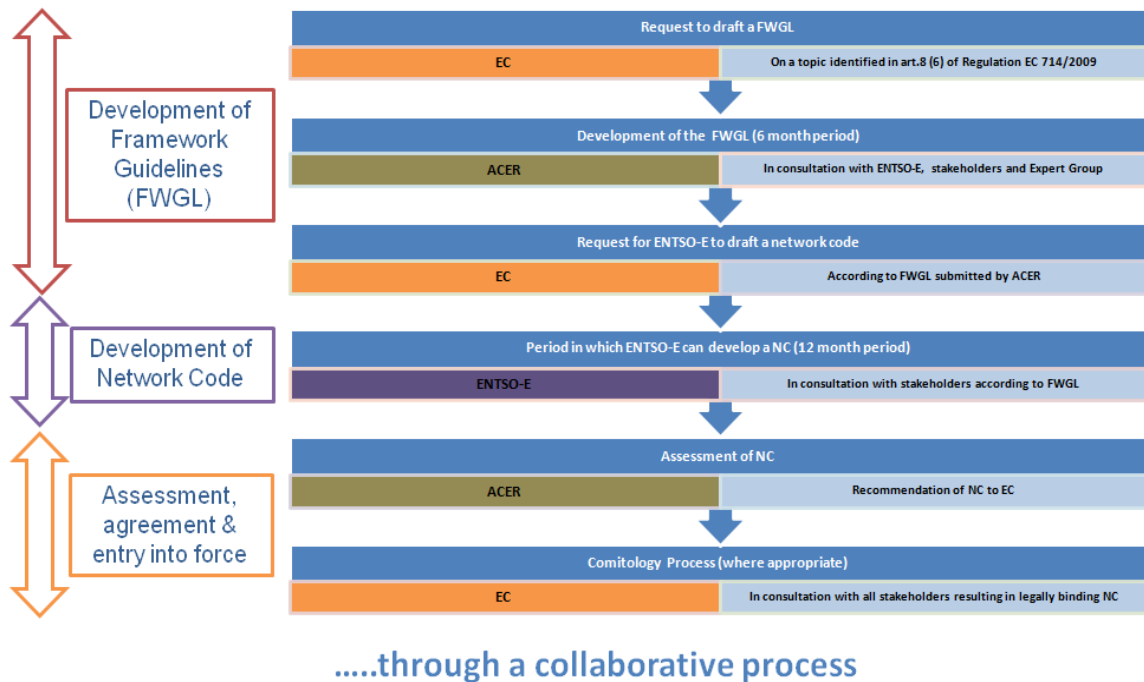


Figure 2: Network Codes' Development Process

The NC EB has been developed by ENTSO-E to meet the requirements of the Framework Guidelines on Electricity Balancing published by ACER on 18 September 2012. ACER also conducted an Initial Impact Assessment associated with its consultation on its draft FG EB in September 2012.

ENTSO-E was formally requested by the European Commission to begin the development of the NC EB on 1 January 2013. The deadline for the delivery of the code to ACER is 1 January 2014.

2.3 NEXT STEPS IN THE PROCESS

During the public consultation period the NC EB Drafting Team encourages stakeholders and involved parties to submit comments and to provide proposals for addressing any concerns they have with the current draft to the public consultation tool, available on the ENTSO-E webpage <https://www.entsoe.eu/resources/consultations/>. To supplement the public consultation and enable direct questions and discussion which shall promote understanding of the Network Code and ensure targeted comments in the public consultation, ENTSO-E is holding a public stakeholder workshop. ENTSO-E will carefully consider all comments which are provided and will update the Network Code in light of them. The way in which the NC EB Drafting Team intends to finally amend the Network Code will be outlined in another public stakeholder workshop on the NC EB planned for the middle of October 2013. Following agreement and approval within ENTSO-E, the Network Code will be submitted to ACER in line with the defined deadline of 1 January 2014.

ACER is then expected to assess the NC EB to ensure it complies with the FG EB and will make a recommendation to the European Commission. When the European Commission agrees with the ACER recommendation, the European Commission can conduct the Comitology process which will eventually transform the NC EB into a legally binding integral component of the Regulation (EC) 714/2009.

3 ADDED VALUE OF THE NC EB

The targets and methods to foster Balancing Market integration as set forth in the FG EB aim to reduce total costs and to increase Social Welfare while safeguarding operational security.

In a recent Impact Assessment, commissioned by the European Commission, it has been assessed that reasonable benefits by integrating Balancing Markets can be gained. Nevertheless, it also needs to be pointed out that compared to the other electricity market timeframes the Balancing Markets represent only 2-3% of the total turnover volume of wholesale markets. Hence, the assumed cost saving potential of integrating Balancing Markets can be seen as rather small. As the Balancing Services are the last resort measurement for TSOs to safeguard operational security, the most important objective in developing integrated Balancing Markets is to keep the lights on while facilitating market integration.

While the integration of the European energy markets apart from Balancing is following rather clear target models, as is the case for example in capacity allocation reflected in the Network Codes on Capacity Allocation and Congestion Management and Forwards Capacity Allocation, clear target models for the different kinds of Balancing Services have not been detailed. Hence, rather than detailing such target models, the NC EB lays out the processes to develop and implement the steps towards realising these efficiency gains while maintaining operational security. TSOs have to develop models for market based cooperation, at least on regional level, within a maximum of six years.

In addition to the measures foreseen in the FG EB, the NC EB also handles and describes coordinated procurement activities for Frequency Containment Reserve as well as coordinated activities related to the reservation and the procurement of Balancing Reserves. This comprehensive and ambitious approach allows even more potential benefits related to all aspects of Balancing to be realised.

The NC EB provides for a phased approach to foster cooperation amongst TSOs in various areas of Balancing. The key concept of Coordinated Balancing Areas is introduced in the Network Code which establishes a flexible obligation for cooperation to ensure a swift transition towards the relevant target. The NC EB provides a foundation for a coordinated set of Balancing rules, incorporating the benefit of learning from experience, en route towards a regional and/or pan-European Balancing Market.

The NC EB creates a level playing field for all potential providers of Balancing Services, including demand side response and intermittent sources. The harmonised processes and the use of Standard Products form a framework for providers to offer Balancing Services to regional or pan-European Balancing Markets based on TSO-TSO cooperation. As a result of the implementation of the NC EB, there will be more providers as the arrangements will be more inclusive which will create a larger and more liquid Balancing Market; as a result the end consumers will benefit from any cost savings which will be achieved.

4 SCOPE, STRUCTURE AND APPROACH TO DRAFTING THE NC EB

4.1 BACKGROUND AND SCOPE

The NC EB specifically covers the areas of the Electricity Regulation 714/2009 referred to in Article 8(6)(h) and (j), principally the rules for commercial and operational provision of system Balancing and the Balancing rules including network-related power reserve rules, with the objective of contributing to non-discrimination, effective competition, completion and efficient functioning of the internal market in electricity and cross border trade, security of supply, providing benefits for customers, participation of demand side response, supporting the achievement of the EU's targets for penetration of renewable generation, as well as ensuring the optimal management and coordinated operation of the European electricity transmission network.

4.2 GUIDING PRINCIPLES OF NC EB

The guiding principles of the NC EB are for integration, coordination and harmonisation of the Balancing regimes in order to facilitate electricity trade within the EU in compliance with the Electricity Regulation (EC) 714/2009 and Directive 2009/72/EC. These principles are essential for the Transmission System Operators (TSOs) both within and across Synchronous Areas to efficiently manage their responsibilities and provide Balancing tools in the most efficient and coordinated way.

System Balancing is a highly complex task, which requires TSOs to take actions to ensure that electricity demand and supply are equal in real-time in order to preserve the operational security of the system. In an integrated cross border Balancing Market, TSOs balance the system in a coordinated way in order to use the most efficient Balancing resources, taking into account operational security limits both within and across Synchronous Areas. As such, the main goal of the NC EB is to achieve a harmonised and coordinated set of procurement, capacity reservation and settlement rules.

Taking into account the very different Balancing Market designs that exist today and the lack of consensus on the common Balancing Market, regional integration provides an opportunity to gain experience on the route towards pan-European integration. The progressive steps of developing regional Balancing Markets should be achieved quicker than a leap to developing a single solution.

ENTSO-E considers that the NC EB should set out an incremental, regional based, approach in the development of a European Balancing Market, taking into account the timeline defined in the FG EB.

Consistent with the FG EB, the NC EB defines the high level principles of the models that are subject to TSOs proposals after entry into force of the Network Code (i.e. pricing method, Balancing Energy products, target model for Automatic FRR). For the purpose of the development of the European Balancing Market, the NC EB foresees the coordination of Balancing activities initially on a regional level moving towards a European level. The NC EB foresees a process for progressive development of the European Balancing Market where market efficiency and system security issues are considered and in compliance with relevant Network Codes and the intentions in the FG EB. ENTSO-E has considered that the harmonisation of Balancing Markets is not a target in itself, but rather that progressive harmonisation should be pursued in areas where it continues to provide benefits to customers and power system security. This is illustrated in the NC EB's approach to cross border issues, through the use of the Coordinated Balancing Area within which the Common Merit Order concept will apply, to foster the ambitious targets of market integration as set forth by FG EB.

4.3 BACKGROUND TO NC EB

The structure of the NC EB is based on the three major sections of the FG EB namely:

- (1) Procurement of Balancing Services,
- (2) Reservation and use of Cross Zonal Capacity for Balancing and
- (3) Imbalance Settlement.

In Balancing, the TSOs need to ensure that they will always be able to activate a sufficient amount of energy to balance the deviations between supply and demand in real-time. This defines the concept of “Balancing Energy”, which is provided by the Balancing Service Providers (BSPs) that are able to meet the necessary technical requirements to deliver this service. Balancing can be provided by a wide range of technologies including small-scale generation, demand side response, renewables resources and intermittent resources. In general the NC EB does not refer to any technology type and therefore provides opportunities for all potential sources of Balancing which fosters competition and thus maximises the Social Welfare gain. The NC EB is guided by the notion that actions, like participation or initiative for cooperation, which are not explicitly forbidden by the Network Code are allowed.

As TSOs are faced with the risk that they will not have enough offers for Balancing Energy from BSPs in real-time, they hedge this uncertainty by securing in advance a sufficient amount of power capacity available in their LFC Area.

An option which gives the TSOs the possibility to activate the certain amount of Balancing Energy within a certain timeframe is referred to as “Balancing Reserve”. It is typically defined as the available generation or demand capacity which can be activated either automatically or manually to balance the system in real-time. The TSOs usually check and/or conclude contracts to guarantee they have access to these Balancing Reserves ahead of real-time.

The Balancing Energy in real-time can thus be provided by the Balancing resources, which were secured in advance as Balancing Reserves, or by other Balancing resources that can offer Balancing Energy based on their availability in real-time.

4.3.1 Procurement and Types of Reserve (Chapter 3 NC EB)

In order to deal with disturbances, system operation involves three types of Balancing Reserves which are part of a sequential process based on successive layers of control. These are shown schematically in Figure 3:

1. Frequency Containment Reserve (FCR);
2. Frequency Restoration Reserve (FRR); and
3. Replacement Reserve (RR).

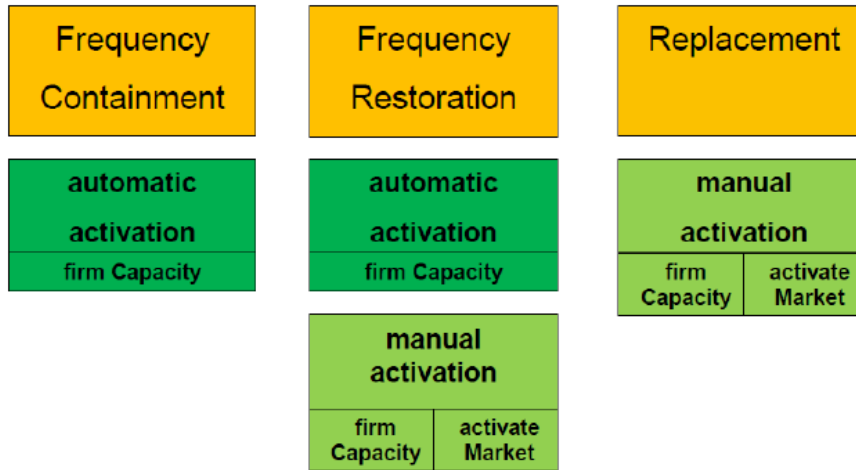


Figure 3: Three Types of Reserve and Sourcing

The FG EB requires a standardisation of Balancing products. To this end, the NC EB lists the standard characteristics as a minimum set of features which define Balancing Energy and Balancing Reserve products.

All TSOs will prepare a common proposal for standard Balancing Energy and Balancing Reserve products which includes specifications of their characteristics that may be more precise than the minimum laid out in NC EB.

The NC EB also outlines a process to define, review and update the list of Standard Products, which includes a public consultation with stakeholders. The process foresees that this proposal from all TSOs is submitted to all National Regulatory Authorities (NRAs) and to ACER no later than one year after entry into force of the NC EB.

The standard characteristics are the minimum set of product attributes that would allow for its exchange through a Common Merit Order List. Besides this, standard characteristics should seek to minimise the number of Common Merit Order Lists so as to maximise the liquidity of Balancing Markets. In other words, it could be somehow possible to exchange, through a Common Merit Order List, products that are not fully harmonised provided these products are able to meet the minimum standard characteristics. Further details on the characteristics of Standard Products are shown in Section 5.

4.3.2 Reservation and Use of Cross Zonal Capacity (Chapter 4 NC EB)

To ensure the availability of Balancing Services procured outside the domestic LFC Area, TSOs require the ability to reserve capacity on Interconnectors. Cross Zonal Capacities are limited and capacity will be allocated through the guidance set-out in NC CACM. It is considered that there is room for improving competition by means of cross border Balancing exchanges. TSOs are permitted under the FG EB to use Cross Zonal Capacity if the socioeconomic benefits are proven. This section of the NC EB deals with the methodologies by which provisions of Cross Zonal Capacity may be implemented, and the principles associated with this.

4.3.3 Settlement Rules and Imbalance Responsibility (Chapter 5 NC EB)

In a liberalised market, the market players have an implicit responsibility to balance the system through the balance responsibility of market participants, the so called “Balance Responsible Parties”

or BRPs. In this respect, the BRPs are financially responsible for keeping their own Position (sum of their injections, withdrawals and trades) balanced over a given timeframe – the Imbalance Settlement Period. The remaining short and long energy Positions in real-time are described as the BRPs' negative and positive Imbalances respectively.

Depending on the state of the system, an Imbalance charge is imposed per Imbalance Settlement Period on the BRPs that are not in balance. This defines the Imbalance Settlement which is a core element of Balancing Markets. It typically aims at recovering the costs of Balancing the system and may include incentives for the market to reduce Imbalances – e.g. with references to the wholesale market design – while transferring the financial risk of Imbalances to BRPs.

The NC EB describes the general objectives of Imbalance Settlement, and defines Imbalance Settlement rules that support competition among market participants by creating a level-playing field without discrimination. In respect of the Imbalance Settlement Period, a cost benefit analysis shall demonstrate whether harmonisation is beneficial and how best to achieve it. Regarding Imbalance pricing, the NC EB describes marginal pricing as the preferred methodology, unless a different pricing method is proven to be more efficient in the long run. In the marginal pricing scheme it is only possible to apply a single marginal or double marginal pricing mechanism.

With regard to Cross Zonal Capacity management, it is to be expected that, within uncongested areas using a pay-as-cleared pricing mechanism, the Imbalance Prices will equalise. As consequence BRPs might tend to balance themselves out over the uncongested area and not per LFC Area. A pay-as-cleared price will reflect the highest activation price for the uncongested area and not for the LFC Area; as a consequence the Imbalance Prices of LFC Area does not necessary reflect the Imbalance situation of the LFC Area.

For Specific Products for Balancing for which there is no requirement to be offered within the Common Merit Order List no harmonisation is required. The NC EB stipulates that all activated Balancing Energy on the Common Merit Order List will be delivered in a firm way to the borders. Each TSO should decide on their own in conjunction with the provisions within the NC EB whether additional incentives are required to make sure that the requested Balancing Energy situated in its LFC Area is correctly delivered by the BSP. There will be various Coordinated Balancing Areas, the procurement processes might differ between them and may be applied in several ways. The NC EB does not stipulate a harmonisation of the settlement rules/process across Coordinated Balancing Areas.

4.4 LEVEL OF DETAIL

The NC EB describes the principles and rules by which a harmonised and coordinated European Balancing Market can be developed. The timescales within which the NC EB has to be drafted do not permit the necessary analysis and cooperation required for the NC EB to specify exact details on, for example, Standard Products, or the implementation strategy for Automatic FRR. These details, consistent with the FG EB, are referred to TSO groupings that will be organised by ENTSO-E after entry into force of the NC EB.

The NC EB provides minimum standards, principles and requirements related to Electricity Balancing. The level of detail matches the purpose of the NC EB: harmonising Balancing arrangements, methodologies for coordination, roles and responsibilities of TSOs, BSPs and BRPs as well as to enable and ensure adequate exchange of necessary information in order to future proof the system for integrating innovative technologies and sustainable energy sources, operate the system in a safe, secure, effective and efficient manner and applying the same principles and procedures for different systems to establish a wider level playing field for market participants.

In order to achieve the necessary level of European harmonisation, allowing at the same time more detailed provisions at the regional / national level where necessary, and with the view of drafting market based Network Codes that are open for future developments and new applications, an approach focusing on pan-European view and most widely applicable requirements has been pursued throughout all development phases.

Thus, the requirements have been drafted considering a period from entry into force in 2014/2015 to the outlying requirement of the FG EB of six years after entry into force as the timescales for implementation. Consequently building up a coherent legal mechanism, devising and building the IT systems necessary and appointing the necessary agents for change, with the appropriate balance between level of detail and flexibility, which focuses on what-to-do, not so much how-to-do.

4.5 FIELD OF APPLICABILITY OF THE NC EB

The NC EB is applicable to all European TSOs that fall under the requirements of the Third Energy Package and all BRPs and BSPs.

Specifically the Framework Guidelines states *“The Network Code on Electricity Balancing shall take precedence over relevant national frameworks (legislation, regulation, codes, standards, etc.) for cross border and market integration issues and national frameworks shall be adapted to the extent necessary, to ensure proper implementation at the national level”*.

4.6 INTERACTION WITH OTHER NETWORK CODES

4.6.1 Network Code on Load Frequency Control and Reserves

The Network Code on Load Frequency Control and Reserves (NC LFCR) prescribes cooperation between TSOs in respect of frequency criteria of the Synchronous Area. It determines volumes and distribution of reserves to ensure operational security as well as technical requirements for the safe Exchange and Sharing of reserves and their cross border activation. Generally, parameters of frequency quality criteria refer to Synchronous Areas and are further broken down into requirements for LFC Areas. Figure 4 illustrates.

The NC LFCR further introduces an area hierarchy and defines among others: FRR, RR, cross border FRR, cross border RR and Imbalance Netting. NC LFCR foresees exchanging and sharing FRR and RR within defined limits if there is available transmission capacity but does not say explicitly to what transmission capacities it refers. If cross border products (exchanged or shared) are not available, the operational security of the LFC Area must still be ensured. The pan-European Balancing mechanism as defined in NC EB must stick to the technical limits defined in the NC LFCR.

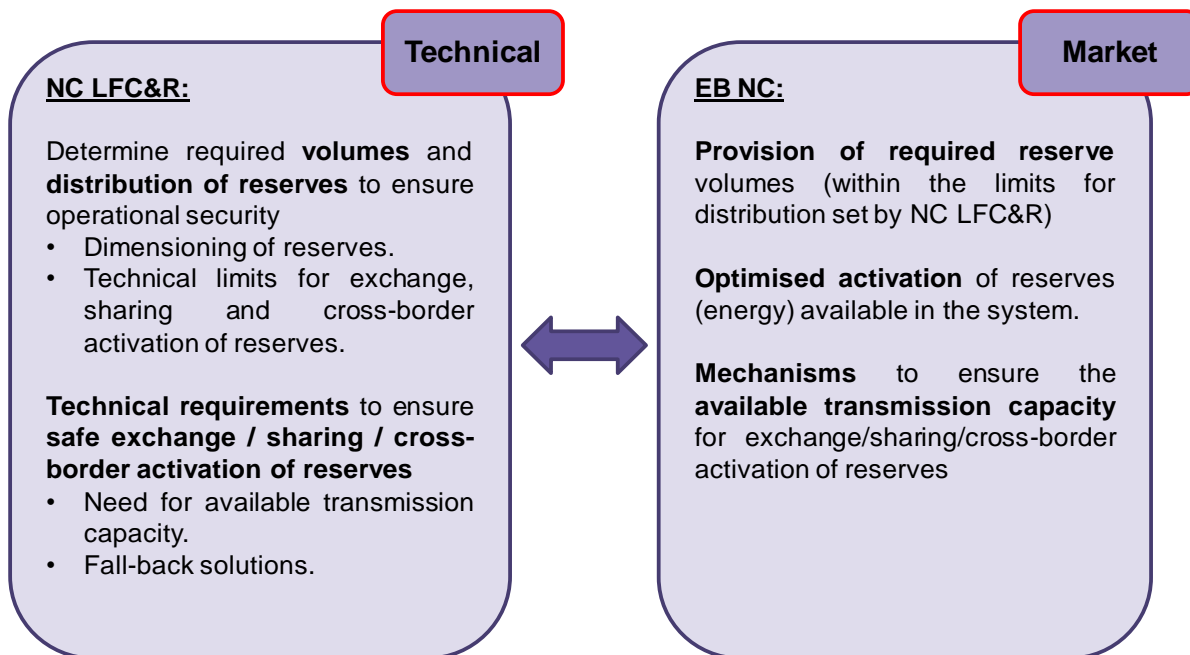


Figure 4: NC LFCR and NC EB Interaction

4.6.2 Network Code on Capacity Allocation and Congestion Management

The Network Code on Capacity Allocation and Congestion Management (NC CACM) defines Bidding Zones as a measure to manage congestions and to efficiently allocate scarce transmission capacities between Bidding Zones. It covers Day-Ahead (DA) and Intraday (ID) timeframes and defines rules for trading energy implicitly including transmission capacities. The NC CACM defines two methodologies for transmission capacity calculations: the flow-based approach and the coordinated Net Transfer Capacity (NTC) approach, and indicates flow based as the preferred solution. The NC CACM foresees that already allocated Cross Zonal Capacity shall be taken into account in calculating Cross Zonal Capacities for Day Ahead and Intraday timeframes.

Reservation of transmission capacities for Balancing Services has been handled with a similar approach. The FG EB states that TSOs are obliged to justify and receive approval of NRAs to reserve any transmission capacities. This therefore means that reservation of transmission capacities between Bidding Zones in the same LFC Area also requires NRA approval. Based on both NC EB and on the NC CACM, the Reliability Margin should not be used to reserve transmission capacities for exchanging reserves or for Balancing Energy between Bidding Zones and/or LFC Areas, except for FCR.

The NC CACM foresees the introduction of common maximum and minimum prices; addresses transmission capacity firmness issues; and also states that the Intraday Gate Closure Time shall be at a maximum of one hour prior to the start of the relevant Market Time Period.

4.6.3 Links to Network Code on Operational Security

The Network Code on Operational Security (NC OS) defines the TSO's responsibility for system security. The Responsibility Area is in most cases equal to the LFC Area. An essential input for ensuring system security is detailed analysis based on accurate data, contained in the Common Grid Model, to properly reflect situations in the system.

At the interface between NC OS and NC EB, analysis is required to provide that exchanging of reserves is compatible with operational security limits. Balancing actions are taken close to real-time, therefore in the NC EB mention has been made of the need to ensure that any transactions in this timeframe are always technically feasible (i.e. shall be compatible with operational security limits).

Remedial actions used/considered after the Day Ahead and Intraday time frame may use the same resources as are available for Balancing, and this risk has been noted.

4.6.4 Links to the Network Code on Operational Planning & Scheduling

The Network Code on Operational Planning and Scheduling (NC OPS) refers to NC EB and NC LFCR in the area of exchanging of reserves. It requires that Significant Grid Users and Distribution System Operators (DSOs) provide information on available Balancing Services, but details of the requirements should be defined in the NC on Requirements for Grid Connection. The NC OPS foresees the establishment of a TSO-platform for the exchange of relevant data between TSOs.

4.7 CLARIFICATION ON CONCEPTS USED WITHIN THE NC EB

4.7.1 Definitions

The definitions used in this NC EB supporting document are the same as those used in the NC EB itself.

4.7.2 Coordinated Balancing Area

The NC EB introduces the concept of the Coordinated Balancing Area (CoBA) as a vehicle to reaching the target model in the timeframe defined by the FG EB. Every TSO is obliged to cooperate with one or more TSOs in a Coordinated Balancing Area by exchanging one (or more) Standard Product(s).

The Coordinated Balancing Area concept is central to the phased approach of reaching the FG EB targets. It provides for early cooperation between TSOs while allowing prudent flexibility. TSOs as well as all Balancing Market parties shall gain experience of how cooperation in Balancing can achieve the highest benefit. This experience then supports the further evolvement of a pan-European Balancing Market. As time passes the level of cooperation within a Coordinated Balancing Area and between neighbouring Coordinated Balancing Areas will increase; neighbouring Coordinated Balancing Areas will merge; and finally all Coordinated Balancing Areas will merge to reach the FG EB target of a single pan-European Common Merit Order list.

While the exchange of one (or more) Standard Products is compulsory within a Coordinated Balancing Area from the beginning, Exchange and Sharing of Balancing Reserves is not mandatory but an option. Coordinated Balancing Areas for Balancing Reserves can be smaller than those for Balancing Energy (if established).

More detailed information on Coordinated Balancing Area is contained in Article 10 – Coordinated Balancing Area.

4.7.3 Incentives for the Integration of Balancing Markets

In addition to the more obvious requirements and targets of the NC EB to incentivise the integration of Balancing Markets, the NC EB contains various provisions creating incentives for TSOs to cooperate and hence promote the integration of Balancing Markets including the harmonisation of market mechanisms.

As a starting point for the integration, the NC EB foresees that TSOs have to cooperate with at least one other TSO two years after the entry into force of the Network Code. As the mid-term and long-term targets have been established and the requirement to establish Coordinated Balancing Areas which include many more than the initial minimum two TSO areas, this requirement leads TSOs to evaluate a potential efficiency to be gained from cooperation in a longer run, and hence create an incentive that TSOs strive for the establishment of larger Coordinated Balancing Areas to those established already at the outset of the Network Code, as this reduces costs and efforts for necessary further steps.

In addition to the obligation to develop a framework for the terms and conditions related to Balancing, which requires the TSOs of a Coordinated Balancing Area to harmonise the applicable conditions for market participation (which is crucial to ensuring fair competition and reducing transaction costs), the requirements for cooperation within a Coordinated Balancing Area also create further incentives.

An important element is the flexibility of cooperation between Coordinated Balancing Areas. The NC EB does not contain requirements for these, other than those applicable for the underlying Coordinated Balancing Areas. This set-up lowers the burden for TSOs to evaluate and implement inter- Coordinated Balancing Area initiatives, while at the same time requires all TSO of both cooperating Coordinated Balancing Areas to establish rules compatible with the conditions for the internal Balancing Markets of the respective Coordinated Balancing Areas. Consequently, the TSOs are incentivised to create rules for inter- Coordinated Balancing Area cooperation facilitating the merging of Coordinated Balancing Areas, but also to harmonise the internal rules of the Coordinated Balancing Areas.

In the event that TSOs are active in different Coordinated Balancing Areas (for different products), they will have to ensure compatibility between the frameworks for the terms and conditions related to Balancing, as these TSOs have to create a single set of terms and conditions in line with these frameworks. This drives the requirement for TSOs to ensure compatibility between the various frameworks which leads to harmonisation of these, which in turn facilitates further integration, e.g. through the merging of the respective Coordinated Balancing Areas.

The requirement that functions have to be established within a Coordinated Balancing Area to operate central algorithms also fosters integration. As both, the establishment of a function, with all its rules and responsibilities, and the development of the necessary algorithms are costly and time-consuming, TSOs have incentives to develop rules and tools which are flexible enough to be applied in more than one Coordinated Balancing Area.

In parallel with the implementation of the NC EB is the work which is underway among various TSOs in establishing and managing pilot projects associated with Balancing. This is seen as complementary work to the implementation of the NC EB and is expected to act as further incentive for the continuous and ambitious integration of Balancing Markets. The experience gained in the pilot projects is expected to confirm that integration leads to significant reductions in Balancing costs and hence creates Social Welfare gains. This conclusion will then hold true for future initiatives established as part of the implementation of the NC EB, highlighting to regulators, market participants and TSOs the benefits of integration such as the opening of markets allowing for more market activity; the avoidance of counteracting Activation of Balancing Energy; and ultimately the reduction in costs including the cost of Balancing.

4.7.4 Procurement of Balancing Energy and Common Merit Order List

The regulatory requirement for Balancing Energy is that the Exchange of Balancing Energy must eventually be based on a TSO-TSO Model with an associated Common Merit Order List. These regulatory requirements are more specific than those for the Exchange of Balancing Reserves.

The criteria for the procurement of Balancing Energy within a Coordinated Balancing Area are:

- (a) Definitions for each Balancing Energy Standard Product are consistent;
- (b) Procurement is based on Balancing Reserve Bids which have already been accepted and allocated for activation uniquely by the TSO who accepted them, and on additional Balancing Energy Bids made available by non-Balancing Reserve Balancing Energy providers;
- (c) Pricing methods for the Common Merit Order List are harmonised;
- (d) Cross border balancing gate closure times are compatible;
- (e) Balancing Energy Bids must have a cross border capacity allocation which is either available after Intraday or reserved previously in accordance with Chapter 4 of NC EB; and
- (f) The size of the Balancing Reserves dimensioning should be not affected by cross border exchange (respect NC LFCR).

There is a phased approach on how to achieve a European wide Exchange of Balancing Energy. This approach is to allow coordination on a regional basis first (thus the development of the Coordinated Balancing Area concept), followed by a merging of these regional initiatives. Each region should thus be mindful of the developments in other regions and should follow a similar structure so that wider coordination can easily be achieved later.

The section on procurement of Balancing Energy describes the actions which occur ahead of real-time and which are needed to build the Common Merit Order List. The procurement of Balancing Energy is then followed by the Activation of Balancing Energy which is the real-time action to deliver actual contracted Balancing Energy (in one direction or the other).

There are a number of steps involved in the procurement of Balancing Energy. Balancing Energy Bids can be placed either on a local or regional TSO procurement platform by both providers of contracted Balancing Reserves or BSPs who have no contracted reserves (e.g. demand, renewable generation units, variable and smaller generation units). These Balancing Energy Bids can be updated until gate closure time. After cross border Intraday Gate Closure Time and before cross border balancing gate closure time the BSPs can continue to change their Balancing Energy Bids which were previously submitted or submit new bids. After the cross border balancing gate closure time their Balancing Energy Bids are firm. The TSO procurement platform sends the Balancing Energy Bids with the corresponding energy price to the common bid collection function (in case of multiple Balancing Energy procurement platforms) which then builds the Common Merit Order List. This Common Merit Order List is part of the input for the central Activation Optimisation Function. A confirmation is sent back to the local tendering system. This process establishes the need for a harmonised pricing method which may be either marginal pricing or pay-as-bid.

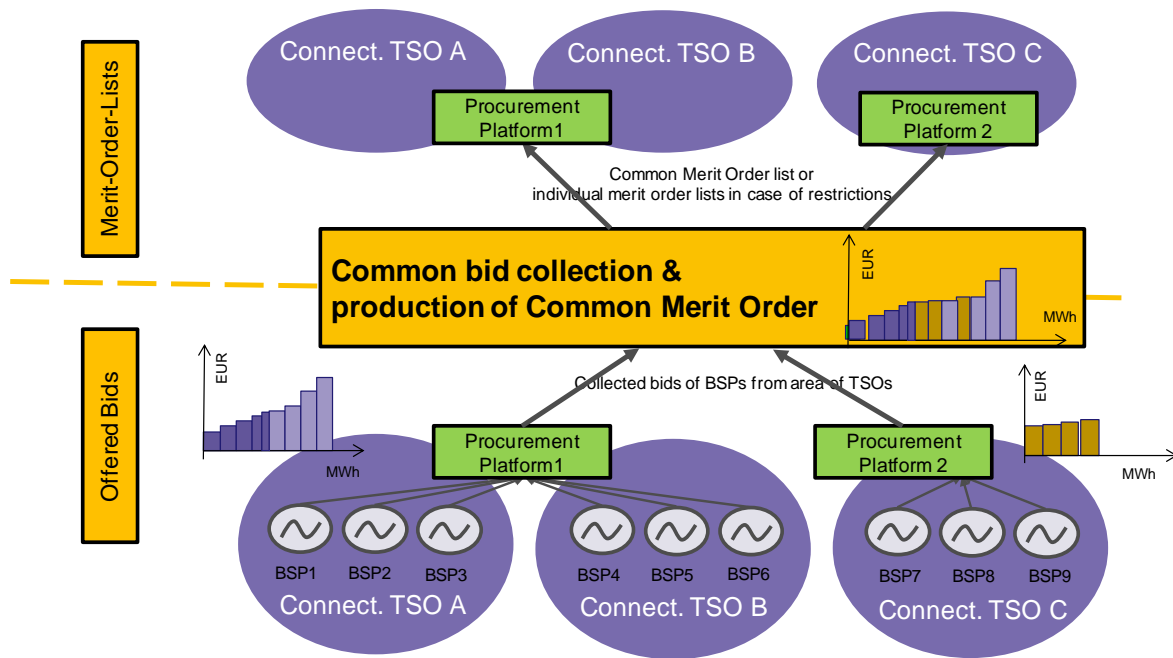


Figure 5: Procurement of Balancing Energy with Common Merit Order List – Example of Coordinated Balancing Area with three TSOs

In Figure 5 TSO C has a local TSO procurement platform which sends Balancing Energy Bids to the common bid collection function. TSO A and TSO B operate a regional TSO procurement platform which combines Balancing Energy Bids from the TSOs and sends the combined Balancing Energy Bids to the common bid collection function. The Common Merit Order List is then produced which shows TSO C's Balancing Energy Bids slotted in with the combined Balancing Energy Bids from the other two TSOs in merit order. The results of the process are then returned to the local and regional TSO procurement platforms.

4.7.5 Activation Optimisation Function

The Activation Optimisation Function is central to the process of the Activation of Balancing Energy.

In order to enable the cross border Exchange of Balancing Energy, the Activation of Balancing Energy has to be coordinated by a common function. This function, known as the Activation Optimisation Function, determines the minimum cost of activation of the incoming balancing request while respecting some capacity and operational restrictions. The Activation Optimisation Function is responsible for using the Activation Optimisation Algorithm which itself is developed by the TSOs. The activation itself is done by the controlling units of the respective TSOs. This activation is automatically done for FRR automatic or manually done for both FRR manual and RR. In order to implement this activation process robust communication procedures are required between the common function and the controlling units/operators.

The steps involved in the Activation of Balancing Energy are as follows:

1. TSOs send their requirements to the Activation Optimisation Function.
2. After the cross border balancing gate closure time, the Activation Optimisation Function calculates the most efficient activation taking the following into account:

- (a) Common Merit Order List containing all energy bids
 - (b) Available cross border capacity either available after Intraday or reserved previously
 - (c) Network stability constraints
 - (d) Balancing requirements of the TSOs
 - (e) Imbalance Netting potential
3. Activation Optimisation Function sends the individual activation amounts (as a correction signal) to each responsible TSO (Connection TSO).
 4. The connecting TSO activates the successful Balancing Energy Bids (via a phone call or automatically by activation system such as a MOL-Server or local controller).
 5. Balancing Energy is exchanged through commercial schedules or virtual tie-lines.
 6. Balancing Energy is settled between the providers and the TSOs involved.

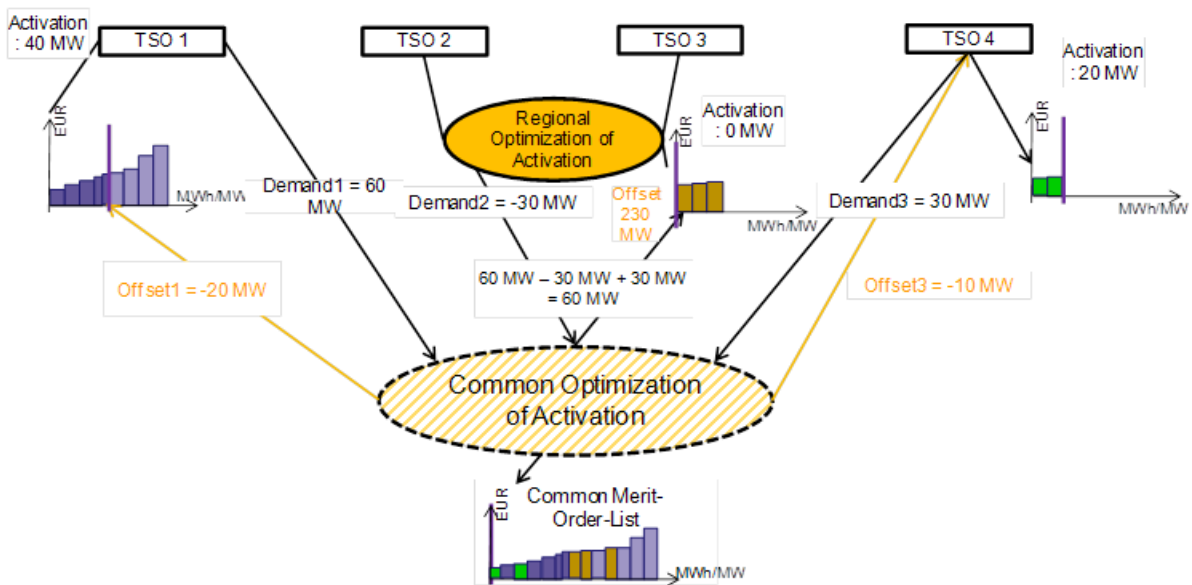


Figure 6: Example of the Activation Model

In the above Figure 6, there are four TSOs involved. Each TSO sends their Balancing Energy requirements to the common Activation Optimisation Function. TSO 1 has a requirement for 60 MW. TSO 2 and TSO 3 operate on a regional basis and have a combined surplus of 30 MW. TSO 4 has a requirement for 30 MW. Each TSO also sends their Balancing Energy Bids to the common bid collection function which produces a Common Merit Order List (TSO 1 and TSO 3 have combined their Balancing Energy Bids on a regional basis before submitting them to the common bid collection function). The common Activation Optimisation Function calculates the cross border balancing activation volumes and TSO 1 and TSO 4 receive 20 MW and 10 MW of Balancing Energy respectively, all of which comes from the TSO 2/3 Balancing Energy Bids. The remainder of TSO 1 and TSO 4 Balancing Energy demand is sourced from their own BSPs. Each TSO then instructs the Activation of Balancing Energy accordingly – TSO 1 and TSO 4 activate 40 MW and 20 MW of Balancing Energy respectively.

4.7.6 Provision of Capacity based on Reservation or Allocation

Any Cross Zonal Capacity that is available after Intraday Gate Closure Time can be used for cross border Balancing. Chapter 4 of the NC EB, however, also foresees the possibility of provision of Cross Zonal Capacity for Balancing purposes in earlier timeframes through either the Probabilistic Approach, allocation through a market-base Co-optimisation Process or reservation of capacity. The TSOs do not get exclusive access to Cross Zonal Capacity for exchange or sharing of Balancing Services without providing the Cross Zonal Capacity. The NC EB establishes three approaches for the provision of Cross Zonal Capacity.

The following example illustrates the processes for the provision of Cross Zonal Capacity considering the approaches of reservation and allocation rather than the third probabilistic approach. These processes are covered within Chapter 4 of the NC EB.

Scenario description

TSO A and TSO B are connected with a 2,000 MW Interconnector. The Interconnector is often congested and therefore the ‘Probabilistic Approach’ for the provision of Cross Zonal Capacity is not an option. Both TSOs procure Balancing Reserve products in national weekly auctions. TSO A and TSO B agree on providing Cross Zonal Capacity to Balancing on a weekly basis before the day ahead market (DAM) to enable:

- a) Exchange of Balancing Reserves products and/or
- b) Sharing of Balancing Reserves products.

The Exchange of Balancing Reserves changes the geographical distribution of Balancing Reserves without changing the combined total of Balancing Reserves required in the systems as set by the reserve dimensioning process. In contrast the sharing of Balancing Reserves allows the TSO A of Area A and the TSO B of Area B to rely on the same reserves (FCR, FRR and RR) in order to ensure the provision of the required amount of Balancing Reserves.

If no weekly auction of Cross Zonal Capacity is in place, Cross Zonal Capacity is obtained using the reservation approach (covered in Article 29). If an auction of Cross Zonal Capacity is already in place, the TSOs can choose to use the allocation approach instead. This example just covers up-regulation reserve.

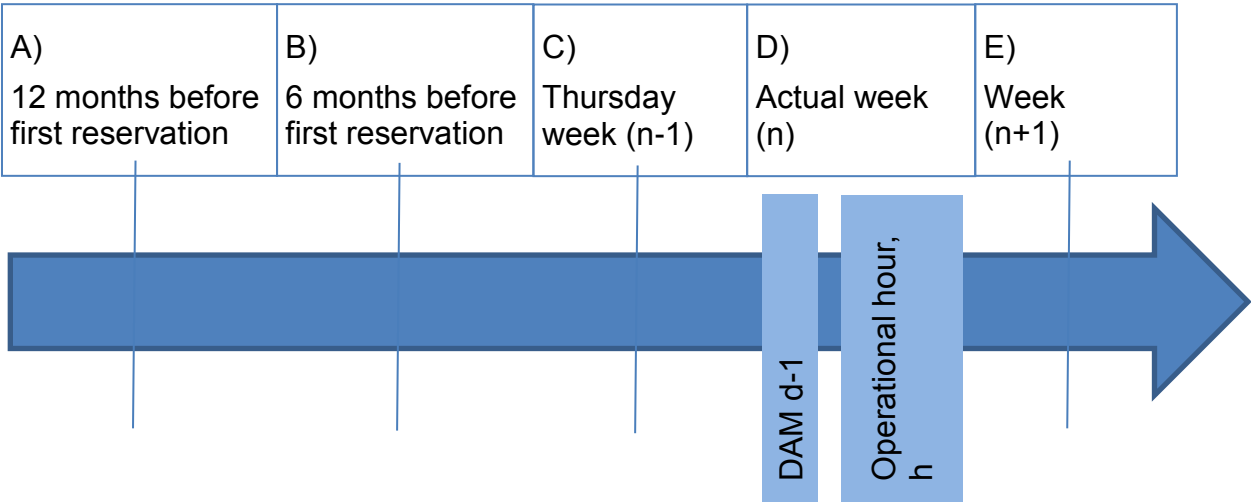


Figure 7: Example of the Activation Model

Process description

A) Establish methodology

No later than twelve months before the first period of exchange and/or sharing between TSO A and TSO B, a market consultation needs to be arranged for submission to the relevant NRAs, which includes:

- a) The maximum volume that can be exchanged within the period it is applied for (e.g. 50 MW)
- b) A description of the provision methodology. The NC EB allows for several provision methodologies. This example includes two methodologies:
 - i. Allocation of Cross Zonal Capacity
 - ii. Reservation of Cross Zonal Capacity by nomination of preliminary reserved Cross Zonal Capacity.

This methodology must include a socioeconomic (Cost-Benefit) Analysis. This example of the specific allocation and reservation will be based on a simplified socioeconomic analysis in a market based process.

B) NRA approval

No later than six months after receiving the application the relevant NRAs have to reach a decision on the application. When the Reservation of Cross Zonal Capacity is applied by nomination of preliminary reserved Cross Zonal Capacity, the NRAs shall approve both the Nomination methodology and the volume of preliminary reserved Cross Zonal Capacity.

C) Provision of transmission capacity - process

As an example, on a Thursday/Friday during week n-1, TSO A and TSO B procure reserves for the following week (n). They then

- a) Bid in the transmission capacity auction, or
- b) Nominate volume of transmission capacity that shall be reserved for the Exchange of Balancing Reserves. Figure 8 below illustrates the flow of information in this process:

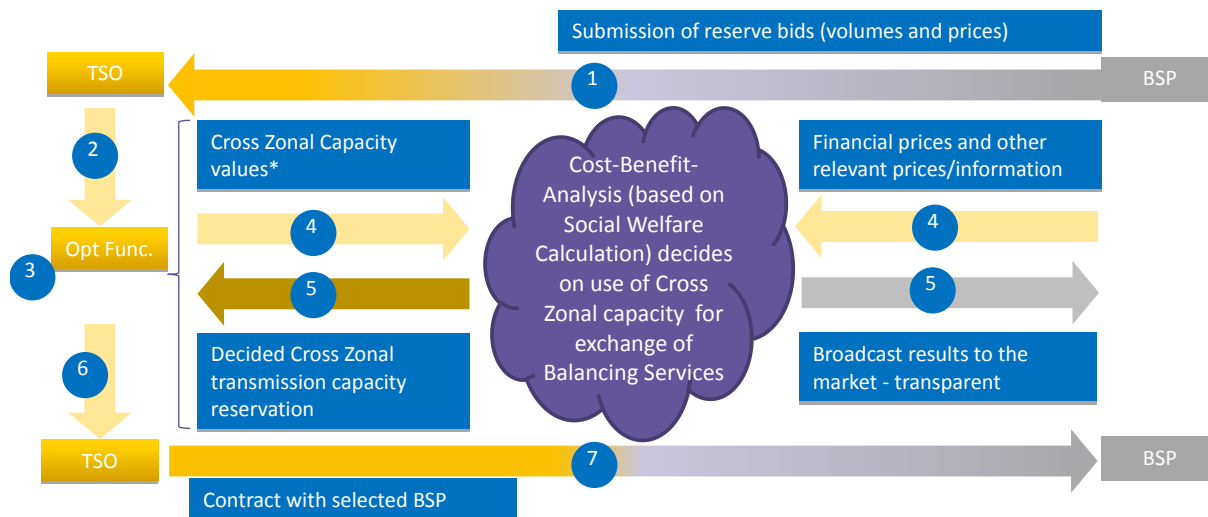


Figure 8: Detailed description of process of nomination of Cross Zonal Capacity for specific week; Example of the Activation Model

Description of the detailed steps in Figure 8 above:

1	National TSOs collect reserve bids from national BSPs	
2	TSOs submit bids and local reserve needs to common platform	
3	Reserve Procurement Optimisation Function calculate cross border capacity value (willingness to pay based on spread between reserve bids)	
4	Left arrow: submit value of use of transmission capacity for Exchange of Balancing Reserves from Optimisation function to Cost-Benefit Analysis	Right arrow: collect prices and other indicators of price differences in "ordinary" energy market (must be public prices / transparent data)
Run the algorithm		
5	Left arrow: Results of algorithm back to Activation Optimisation Function, how many MW Cross Zonal Capacity will be reserved for Exchange of Balancing Services by nominating preliminary reserved capacity	Right arrow: Broadcast Cross Zonal Capacity reservation results to market
6	Transfer of "clearing results" of Balancing Reserve Bids to national TSOs.	
7	Contract between TSO and BSP for Exchange of Balancing Reserves (where connecting TSO contracts exchanged volumes nationally in addition to national obligation. Receiving TSO contracts nationally with TSOs less than national obligation)	

Explicit co-optimisation – XB allocation request by TSO based on reserve prices knowledge

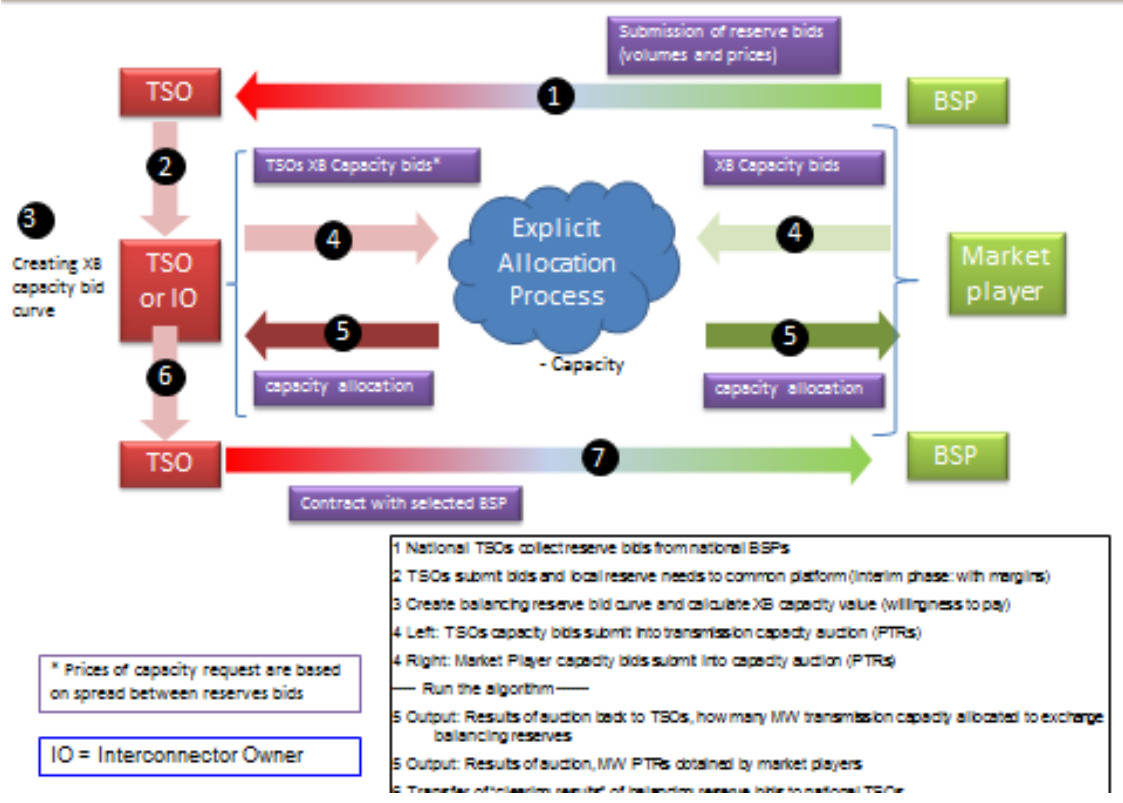


Figure 9: A detailed description of process of Allocation of Cross Zonal Capacity for specific week

4.7.7 Application of NC EB to Central Dispatch Systems

In order to operate a safe, secure, reliable power system various functions need to be performed. These functions must be performed for all power systems and can be performed by different entities. At a high level, the main functions are the generation of electricity; the consumption of electricity; the provision of reserves to allow for unplanned contingencies; the scheduling of these reserves; the adjustment of planned generation/consumption schedules to allow for various forecast errors; the management of congestion on the transmission system to obey thermal and voltage limits; the management of other physical limitations.

In order to perform these functions in an economic and efficient manner, power system operation is carried out in several different ways. They can be basically grouped into two families: self-dispatch model and central dispatch model. These models differ by placing the responsibilities for performing and coordinating functions performed to operate power systems on different entities.

Pursuant to Article 8(6) of the Electricity Regulation, the NC EB is obliged to take into account the regional specificities of different electricity market designs. In particular the ENTSO-E must take into account the parallel existence of central dispatch and self-dispatch arrangements of European electricity markets when drafting the NC EB in line with the FG EB. Central dispatch models typically occur in electrical systems where the impact of locational market imbalances is a material threat to the security of the system. In such systems, a central dispatch model can be considered a necessity. In some countries (e.g. Greece, Hungary, Ireland, Italy, Northern Ireland and Poland) there is a need for central dispatch in order to ensure system security and minimum cost of energy delivery to the end

consumer. It is not expected that the number of TSOs operating Central Dispatch Systems will increase or decrease in the near future.

In compliance with the FG EB, the NC EB takes the regional specificities of the different electricity market designs into account, in particular, the parallel existence of self-dispatch and central dispatch arrangements in Europe.

Self-dispatch is a dispatch arrangement where resources determine a desired dispatch position for themselves based on their own economic criteria to provide commercial independence within a market. The physical dispatch can be either carried out by the resource directly, tracking their desired output nomination or by following dispatch instructions from the TSO which have been determined based on resources' nominations. Imbalance charges/penalties are levied on market parties which deviate from their notified position. Commitment decisions, which take into account generating unit constraints, are made by the generators in conjunction with the demand elements they are Balancing with. Generators alter their output to maintain the balance between generation and served demand. Before real-time, generators submit bids to TSO which correspond with self-schedules of their units. Bids are used by TSO to dispatch additional generation needed to balance and secure the system in real-time. Most of the energy markets in Europe are based on the self-dispatch principle.

Central dispatch is a dispatch arrangement where the TSO determines the dispatch values and issues instructions directly to resources. The TSO determines the dispatch instructions based on prices and technical parameters provided by the resources, as well as whole network model. The typical objective for the dispatching process (or unit commitment process) is the minimisation of energy delivery cost to meet system demand as forecasted by the TSO while complying with operational security requirements. The main distinguishing feature of Central Dispatch Systems is that Balancing, congestion management and reserve procurement are performed simultaneously in an integrated process. This can involve dispatch instructions being issued many hours ahead of real-time, to start up units, to real-time instructions for dispatching on-line units.

Each power system has a unique mixture of features. Some features affect the level of intervention a TSO has to have on the market based schedule to form the operational schedule. Where there is significant intervention, system operation tends to move from the self dispatch model to a more central dispatch model in order to optimise electricity market operation and transmission system operation and thus ensure economic efficiency. The particular power system features which may dictate the optimum dispatch model include the following:

- System: the size, the level of operational security restrictions (wind percentage, inertia, ramping duty etc), the reserve requirement relative to generation/demand
- Generation: the number of generators, the size of individual generators relative to the total system size, the flexibility of generation portfolio (start times, ramping times etc.)
- Transmission: the nature and extent of network constraints (thermal, voltage, stability, short circuit etc.).
- Uncertainty: the predictability of demand, the level of penetration of intermittent generation, the level of variation of through flows on Interconnectors

The FG EB and hence the NC is predominantly designed from a self-dispatch model point of view. The central dispatch model requirements are met through special provisions. These provisions allow for the efficient integration of central and self-dispatch systems within pan-European Balancing Market and the efficient functioning of Central Dispatch Systems. As Balancing timeframe is very close to the

real-time, there is no possibility to correct results internally, and therefore mechanisms have to be designed, to produce results, which are feasible for all systems. The special provisions for Central Dispatch Systems included in NC are as follows:

- Allowance for TSO to convert/refine BSP's bids before submission to Activation/Procurement Optimisation Function
- Allowance for TSO to set special rules for submitting, activation and updating bids by BSPs
- All rules have to be fair, transparent, non-discriminating and NRA approved.

Figure 10 illustrates Balancing in a Central Dispatch System. The BSPs submit commercial and technical bids to the TSO. The TSO takes these bids into account along with demand forecast and system conditions to produce an operational schedule which incorporates Balancing, reserve and congestion management restrictions. The TSO issues preliminary dispatch indications including synchronisation instructions and reserve allocation. Closer to real-time the TSO issues dispatch instruction which may be adjusted from earlier indications to allow for changes to forecast data and system state. The TSO then considers cross border products which may result in economic exchange of Balancing products which in turn require a further adjustment to the BSPs' positions as dispatched by the TSO.

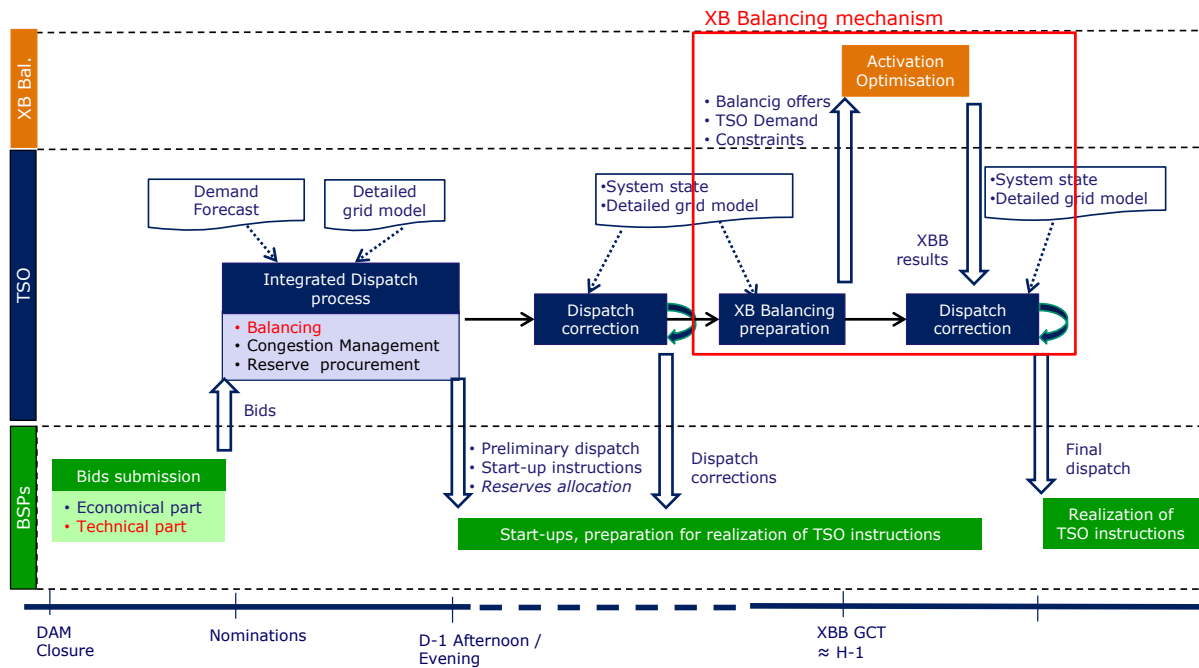


Figure 10: Balancing in a Central Dispatch System

Due to the nature of the dispatch arrangements, the NC EB gives TSOs of Central Dispatch Systems the option to propose amendments to the rules for updating Balancing Energy Bids such as requiring bids before start of local integrated dispatch process and limiting the possibilities to change submitted bids due to on-going dispatch process whereby only the availability of a generating unit can be updated. The NC EB also entitles TSOs of Central Dispatch Systems to convert bids submitted by BSPs before submitting them into common procurement or activation. This allows TSOs to reflect in cross border Balancing bids submitted by the TSOs their previous actions; current system state; technical availability of bids; and real cost of their activation. There are no special arrangements for Central Dispatch Systems in Imbalance Settlement.

4.8 WORKING WITH STAKEHOLDERS & INVOLVED PARTIES

Through the Comitology process, the NC EB as all Network Codes becomes legally binding, and brings concrete implications for all participants in Electricity Balancing across Europe. As such, ENTSO-E has recognised the importance of engaging with stakeholders at an early stage, involving all interested parties at the earliest possible phases in the development of the NC EB in an open and transparent manner.

ENTSO-E's stakeholder involvement comprises several public stakeholder workshops before, during and after public consultation, as well as a series of meetings with the Electricity Balancing Stakeholder Advisory Group (EBSAG). This is shown in Figure 11 to the right. Ad-hoc meetings and exchange of views with all interested parties are set up as necessary. Information on both public stakeholder workshops and EBSAG meetings can be found on the ENTSO-E website (<https://www.entsoe.eu/major-projects/network-code-development/electricity-balancing/>).

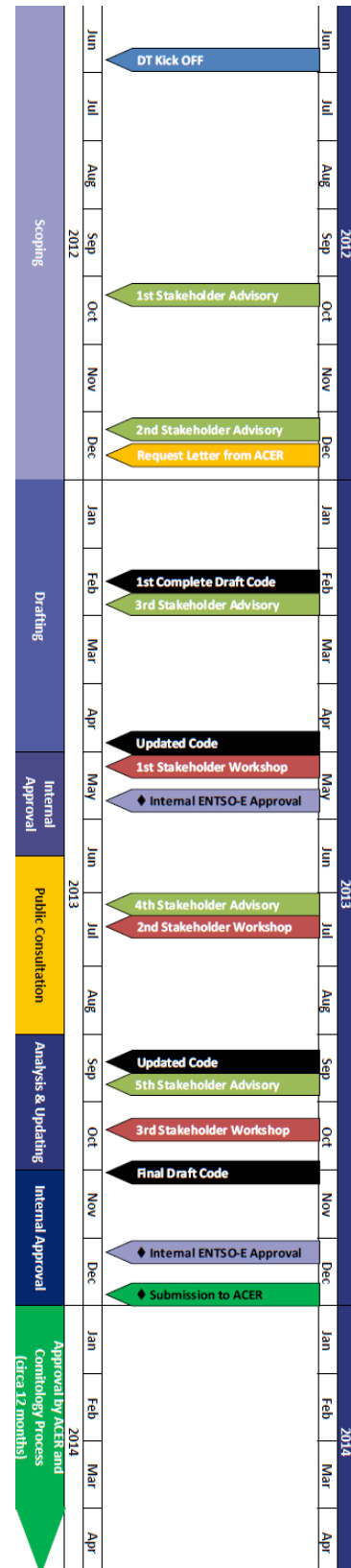


Figure 11: Stakeholder involvement during drafting of NC EB

5 FRAMEWORK GUIDELINES

5.1 INTRODUCTION

During 2011 and 2012 ENTSO-E and its Working Group on Ancillary Services (WGAS) had numerous interactions with ACER in their development process of the Framework Guideline on Electricity Balancing (FG EB). Concerns and proposals for amendments were put forward in ENTSO-E's response to the consultation on the FG EB.

The final version of the FG EB is was published in September 2012 and the roadmap of the integration of the European Electricity Balancing Market is prescribed in that document to follow a step-wise approach as indicated in Figure 12 below.

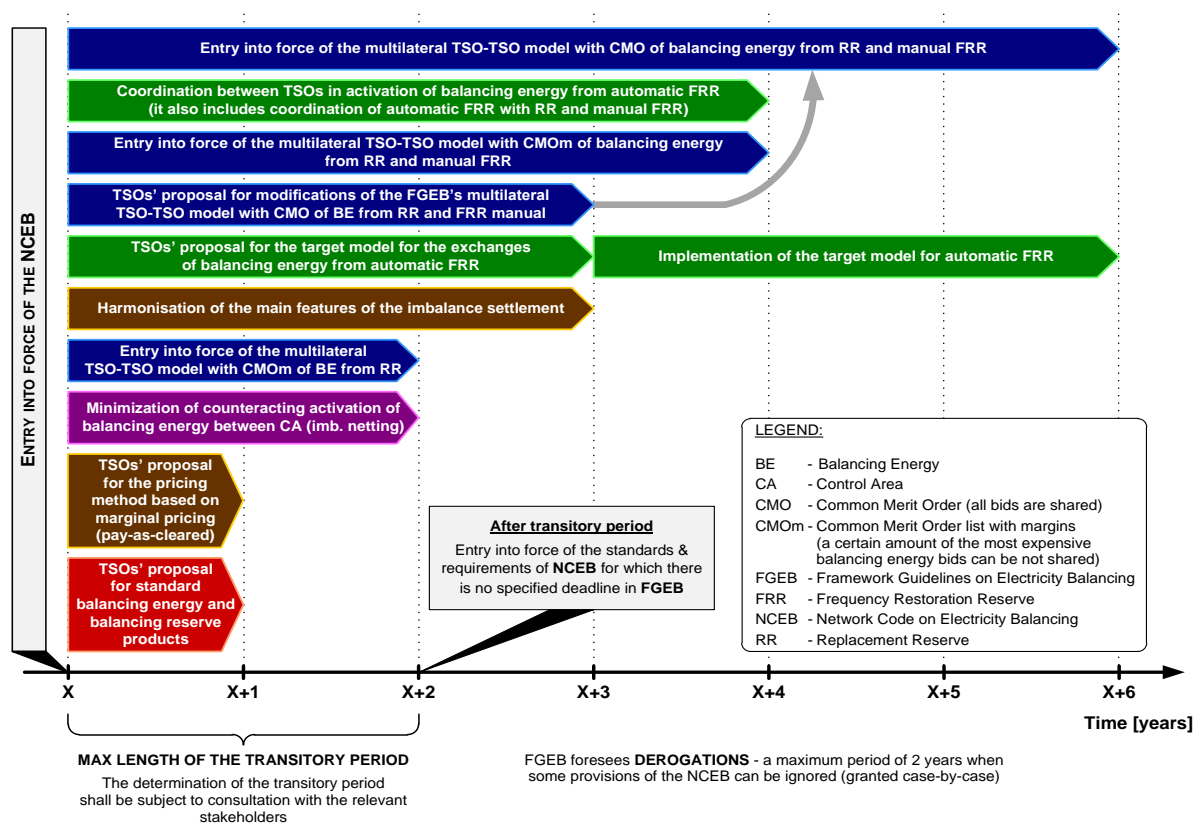


Figure 12: Entry into force of the NC EB

5.2 RELATIONSHIP BETWEEN NETWORK CODE & FRAMEWORK GUIDELINES

The NC EB sets the basis for an integrated, harmonised and coordinated Balancing Market, and identifies three major areas:

- Procurement of Balancing Services
- Balance responsibility and Imbalance Settlement
- Reservation of Capacity

The requirements described in the NC EB have been formulated in line with the Framework Guidelines, with the aim of developing on a regional and step-wise basis after the transitory period for the necessary levels of integration and harmonisation of Balancing Markets.

5.3 DEVIATIONS AND OMISSIONS

In developing the NC EB, there are a limited number of areas where an alternative approach has been chosen in the NC EB to that set out in the Framework Guidelines. These areas and an explanation of the deviation are provided below:

5.3.1 Dimensioning and Sharing of Balancing Reserves

Chapter 3.4.1 as well as 3.4.2 of the Framework Guidelines requires TSOs adjust their dimensioning of Balancing Reserves taking into account *potential gains from the sharing of reserves and balancing energy* which is to say to diminish the amount of reserves.

NC EB does not touch upon the question of dimensioning, since this lies within the scope of NC LFCR.

5.3.2 Capacity Provision Methodology

Chapter 4.3 of the Framework Guidelines requires *any decision on cross-border transmission capacity reservation for balancing [to be] taken on a case-by-case basis, by relevant NRAs supported by a full cost-benefit analysis and market consultation*. NC EB reflects this requirement in Chapter 4 on the use, allocation and reservation of Cross Zonal Capacity for Balancing Reserves, which states that TSOs must deliver the relevant methodologies at least one year before their implementation, allowing the necessary time for stakeholder consultation and regulatory approvals.

The Network Code deviates from FG EB in Article 32(2). To enable the possibility of a reservation of Cross Zonal Capacity in a timeframe of less than one month ahead, the NC EB foresees that TSOs may develop an accelerated methodology for capacity provision. In such a situation, case-by-case decisions are not feasible due to time constraints. The implementation of such an accelerated methodology is, however, subject to both public consultation and regulatory approval.

5.3.3 Maximum limit of Imbalance Settlement Period

Chapter 5.3 of the Framework Guidelines states that *ENTSO-E shall carry out a cost-benefit analysis on whether the imbalance settlement period shall be harmonised across Europe and report its results to the Agency. The imbalance settlement period shall not exceed 30 minutes. However, in case a TSO provides a detailed cost-benefit analysis to its NRA, the NRA may decide to have a longer imbalance settlement period*.

The NC EB establishes a step-by-step process for the harmonization of the Imbalance Settlement Period and describes some criteria on which to base the Cost-Benefit Analysis (for example, Imbalance Settlement Period will have to be consistent with the Market Time Period and will have to take the resolution of the metering devices into account). As a departure from the Framework Guidelines, the NC EB leaves the Imbalance Settlement Period open and does not restrict it to 30 minutes or less.

In order to perform a comprehensive Cost-Benefit Analysis, the approach followed by the NC EB has been not to limit for the value of the Imbalance Settlement Period (30 minutes). This allows for a broader review of all the possible advantages and shortcomings as well taking into account all the current values of the Imbalance Settlement Period across Europe (e.g. 15 minutes, 30 minutes,

60 minutes). The intention of this approach is to be able to assess all aspects of the Imbalance Settlement Period to optimise the solution across Europe.

5.3.4 Tools for Real-Time Monitoring of Balancing

Chapter 2.5 of the Framework Guidelines states that the NC EB *shall require that TSOs develop tools ensuring real-time monitoring of performance and quality of balancing in order to maintain their area control error inside a defined range corresponding to each control area, in accordance with the provisions of Network Code on Load Frequency Control and Reserves.*

This obligation is not covered in NC EB, since it is deemed to be sufficiently covered by NC LFCR.

In Chapter 1.2 of FG EB, ACER recognises that in the interest of covering all requirements, *issues, which are relevant to more than one framework guideline, are mentioned in each appropriate set of guidelines and some redundancy might emerge from this approach.* A repetition in NC EB does not seem to be required.

6 NC EB: OBJECTIVES, REQUIREMENTS

This section describes in more detail the structure and the content of the NC EB, and the principles on which the individual chapters have been built. The NC EB is built up as follows:

- **Purpose and objectives (outside chapter numbering)**
- **Chapter 1: General provisions (Article 1-8)**
- **Chapter 2: The Electricity Balancing System (Article 9 – 16)**
- **Chapter 3: Procurement of Balancing Services (Article 17 - 28)**
- **Chapter 4: Use, Allocation and Reservation of Cross Zonal Capacity for Balancing Reserves (Article 29 - 33)**
- **Chapter 5: Settlement (Article 34- 54)**
- **Chapter 6: Algorithm Development (Article 55- 56)**
- **Chapter 7: Reporting (Article 57)**
- **Chapter 8: Transitional Arrangements (Article 58-61)**
- **Chapter 9: Final Provisions (Article 62)**

This section aims at providing the reader the basis for understanding the requirements set in the chapters marked above of NC EB.

CHAPTER 1 – GENERAL PROVISIONS

Article 1 - Subject Matter and Scope

Article 1 defines the scope of this Network Code as well as the parties who are affected by its rules.

Article 2 – Definitions

In analogy to all European legislation, Article 2 contains the definitions required for this Network Code. ENTSO-E is ensuring consistency with definitions used in other Network Codes as well as other related documents and is striving to grant easy access to the full body of definitions. Terms that are already defined in other Network Codes are thus not included here.

Article 3 – Regulatory Aspects

The following principles guide the NC EB and its application:

- Non-discrimination;
- Transparency;
- Optimisation between overall efficiency and total cost for all involved parties; and
- Assignment of cost to the real originator thereof.

Article 4 – Recovery of Costs

According to Article 4, costs arising from the NC EB to regulated Network Operators (both TSOs and DSOs) and costs arising to Designated Entities, where this may be relevant, are considered as part of regulated costs. Each party must demonstrate with sufficient proof to its NRA that these costs are efficient, reasonable and proportionate.

Article 5 – Confidentiality Obligations

While transparency and access to relevant information is crucial to the success of a regional or pan-European Balancing Market, commercially sensitive information is protected by Article 5.

Article 6 – Consultation

Article 6 specifies all items which have to be publically consulted on and contains all references to these items. References are consequently not contained in the Articles wherein these items are required to be developed.

Stakeholder involvement after entry into force, however, extends beyond participation in a public consultation, as shown in a generic way Figure 13. During the drafting phase, be it by individual TSOs, groups of TSOs or other parties, stakeholder involvement may be organised as suitable to the subject and thus not regulated in the NC EB. While some topics might be drafted internally, the development of others will be accompanied by user group meetings, bilateral discussions or questionnaires. It lies in the interest of the party responsible for the drafting to include diverse views early on in the process to achieve a concept that enjoys wide acceptance for later adoption and implementation.

Once a stable draft is available, the party responsible for all items listed in Article 6 is obliged to carry out a public consultation, which is the core element of stakeholder involvement. Such a public consultation may be accompanied by workshops or meetings, depending on the subject at hand. The obligation for a public consultation is tied to the content developed and binds the party responsible, which may for example be a TSO or NRA or third party. Any public consultation listed here must span a time period of at least four weeks, as laid out in the FG EB. This is a minimum requirement and the consultation time period may be extended depending on the subject matter.

Comments received during the consultation must be duly considered and this consideration be made transparent. Based on these inputs, the party responsible will amend the concept and finalize the proposal, usually for submission to the relevant NRA for approval. Again depending on the subject in question, the party responsible may choose different methods of guaranteeing transparency, be it through publication of all comments received, a workshop with all stakeholders involved in the public consultation or other methods.



Figure 13: Stakeholder involvement

Article 7 – Regulatory Approval

Article 7 specifies the items which are to be approved by different sets of NRAs and contains all references to these items. References are consequently not contained in the Articles wherein these items are required to be developed. It further details different approval periods in accordance with the FG EB, three months in the case of an individual NRA approval and six months in cases where more than one NRA have to assess an item for approval in a cooperative manner. It contains timeframes for the resubmission of amended proposals, if requested by the respective NRA(s). The Article contains three different requirements on how approvals have to be performed. It differentiates between items which

- are of relevance for all member countries, and have to be approved by all NRAs;
- only or predominantly affect Coordinated Balancing Areas, and are to be approved by NRAs who have jurisdiction in the area in which a Coordinated Balancing Area is established; and
- only affect the jurisdiction of one NRA, and are consequently to be approved only by that NRA.

The requirements of this Article do highlight the need for cooperation between NRAs as stipulated by Regulation 713/2009.

Article 8 – Publication of Information

Transparency and readily available information will be essential to a well-functioning Balancing Market. Requirements for the publication of fundamental information relevant for Balancing are included in Article 17 of Regulation (EC) No.../.. of XXXX¹ [expected to be finalised in June 2013] on the submission and publication of data in electricity markets:

- 1) *For their control areas, TSOs or where applicable operators of balancing markets, where such markets exist shall provide the following information to the ENTSO for Electricity:*
 - (a) *rules on balancing including:*
 - *processes for the procurement of different types of balancing reserves and of balancing energy,*
 - *the methodology of remuneration for both the provision of reserves and activated energy for balancing,*
 - *the methodology for calculating imbalance charges,*
 - *if applicable, a description on how cross-border balancing between two or more control areas is carried out and the conditions for generators and load to participate.*
 - (b) *the amount of balancing reserves under contract (MW) by the TSO, specifying:*
 - *the source of reserve (generation or load),*
 - *the type of reserve (e.g. Frequency Containment Reserve, Frequency Restoration Reserve, Replacement Reserve),*
 - *the time period for which the reserves are contracted (e.g. hour, day, week, month, year, etc.).*
 - (c) *prices paid by the TSO per type of procured balancing reserve and per procurement period (Currency/MW/period);*
 - (d) *accepted aggregated offers per balancing time unit, separately for each type of balancing reserve;*
 - (e) *the amount of activated balancing energy (MW) per balancing time unit and per type of reserve;*
 - (f) *prices paid by the TSO for activated balancing energy per balancing time unit and per type of reserve; price information shall be provided separately for up and down regulation;*
 - (g) *imbalance prices per balancing time unit;*
 - (h) *total imbalance volume per balancing time unit;*
 - (i) *monthly financial balance of the control area, specifying:*
 - *the expenses incurred to the TSO for procuring reserves and activating balancing energy,*

¹<http://register.consilium.europa.eu/pdf/en/13/st06/st06003.en13.pdf>

- *the net income to the TSO after settling the imbalance accounts with balance responsible parties.*
- (j) *if applicable, information regarding Cross Control Area Balancing per balancing time unit, specifying:*
 - *the volumes of exchanged bids and offers per procurement time unit,*
 - *maximum and minimum prices of exchanged bids and offers per procurement time unit,*
 - *volume of balancing energy activated in the control areas concerned.*

Operators of balancing markets shall be considered as primary owners of the information they provide.

Article 8 of the NC EB only covers additional items for publication.

Information must be published in a non-discriminatory manner, ensuring equal access for all parties. This will be ensured by using the central information transparency platform, established pursuant to Article 3 of Regulation (EC) No.../.. of XXXX [expected to be finalised in June 2013] on the submission and publication of data in electricity markets.

CHAPTER 2 - THE ELECTRICITY BALANCING SYSTEM

SECTION 1 PRINCIPLES OF THE BALANCING MARKET

Article 9 – General Objectives of the Balancing Market

As part of Article 9, the objective of the first paragraph is designed to ensure that all entities that form part of, or who are stakeholders in an integrated, coordinated Balancing Market cooperate fully in the development of the systems and processes described in the Network Code. The objectives outlined in the second paragraph correlate directly to the FG EB and are consistent with those objectives outlined in the third paragraph which oblige all parties to apply ‘reasonable endeavours’ in implementing the NC EB.

Article 10 – Coordinated Balancing Area

The concept of Coordinated Balancing Areas (CoBA) was devised to make implementation of the NC EB possible under the timescales envisaged in the FG EB, and to ensure that the process of creating an integrated and harmonised Balancing Market is carried out in a step-by-step approach, learning from previous steps and experience rather than simply implementing a pan-European Common Merit Order List with no previous experience.

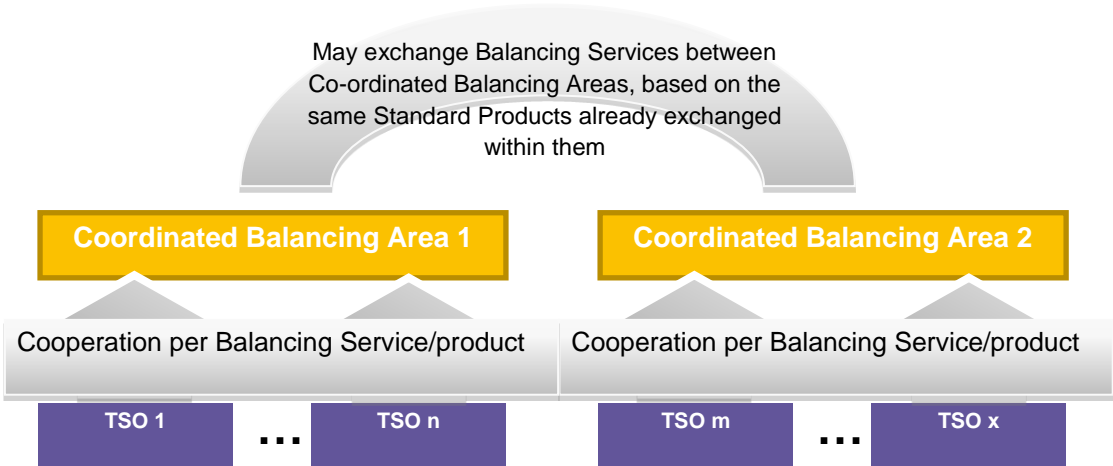


Figure 14: Model of Coordinated Balancing Areas in NC EB

The concept of a Coordinated Balancing Areas is implicitly linked to the definitions within the NC LFCR for Synchronous Area, LFC Block, LFC Area and Monitoring Area. The requirements are based on the obligation to cooperate with one or more adjacent TSOs to provide an instrument for the integration of Balancing Markets, while each Coordinated Balancing Area would be based on Imbalance Netting or on the exchange of one or more Standard Products, as defined in the procurement and optimisation section of this document.

An overview of the concept is shown in

Figure 14. The FG EB specifies that Imbalance Netting should be obligatory and the Coordinated Balancing Area in its initial form has applied this principle. Flexibility is ensured by not specifying exactly which cooperation is to be carried out with which TSO, or that the exchange of reserves within a particular Coordinated Balancing Area is mandatory, and this is consistent with the FG EB.

Figure 15 shows the contrast between the mandatory concept of the Coordinated Balancing Area for Balancing Energy products and the permitted but not obligatory concept for corresponding Balancing Reserve products.

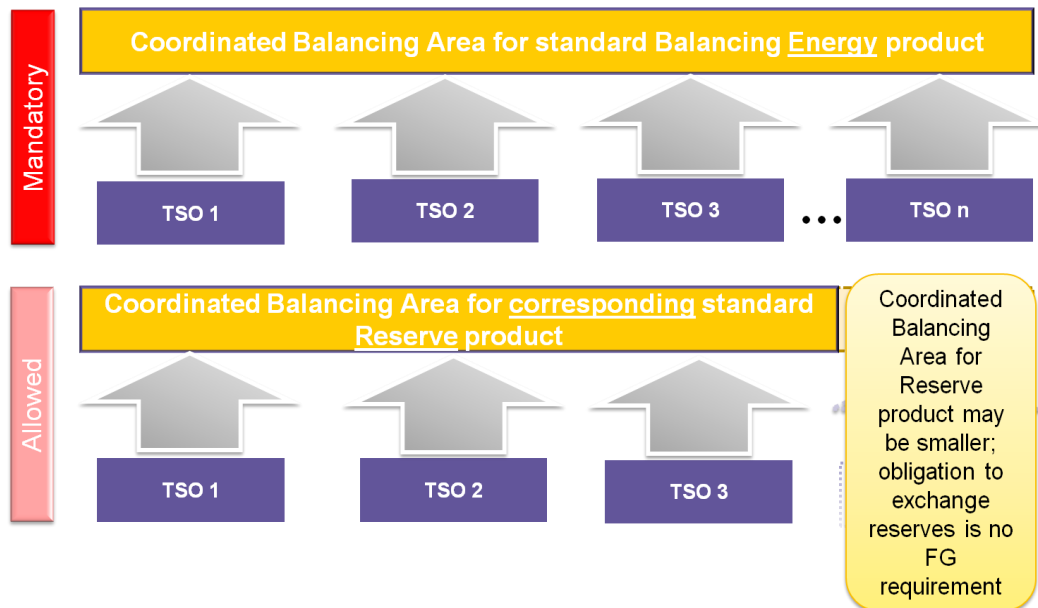


Figure 15: Area Definition in Balancing: Coordinated Balancing Area

From entry into force of the NC EB, and the formation of the first Coordinated Balancing Areas, the concept will evolve from the initial formation of Coordinated Balancing Area corresponding to adjacent borders to a single Common Merit Order and single pan-European Coordinated Balancing Area. This would bring the proposed Balancing solutions in line with the FG EB target model and create a fully integrated and coordinated Balancing market. This concept and its evolution are shown in Figure 16.

The implementation of the Coordinated Balancing Area concept balances the very ambitious targets and deadlines prescribed in the Framework Guidelines with the flexibility needed to reach these targets. The flexibility is required to make the best use of experiences being gained from current Balancing cooperation projects and also from projects which will be implemented just after the entry into force of the NC EB. This approach of learning from experience while implementing the target model is important as there is little other experience available which is of relevance. The level of cooperation between TSOs is a crucial element to successful implementation of the Coordinated Balancing Area concept in a timely manner and thus to achieve the targets behind both the Framework Guidelines and the NC EB.

The NC EB requires all TSOs to cooperate loyally in promoting the enlargement, merging, and creation of Coordinated Balancing Areas for each Balancing product with a view to progressing to full Balancing Market integration. The process by which Coordinated Balancing Areas expand can be a mixture of the following approaches:

- **Creation:** The Coordinated Balancing Area concept allows for the creation of new Coordinated Balancing Areas where no cooperation previously existed.
- **Cooperation:** Cooperation is a form of stepwise integration without prescribing the rules of cooperation between Coordinated Balancing Areas. The subsequent step after such inter-Coordinated Balancing Area cooperation would then be the merging of these Coordinated Balancing Areas.

- **Merging:** The Coordinated Balancing Area concept allows for the merging of two or more existing Coordinated Balancing Areas into a new one for a given product.
- **Enlargement:** One method to fast track the integration of Balancing Markets is to expand the arrangement of established cooperation projects beyond the borders of the TSOs involved. A TSO which is outside a Coordinated Balancing Area may join the cooperation by simply adopting the mechanisms and principles applied therein.

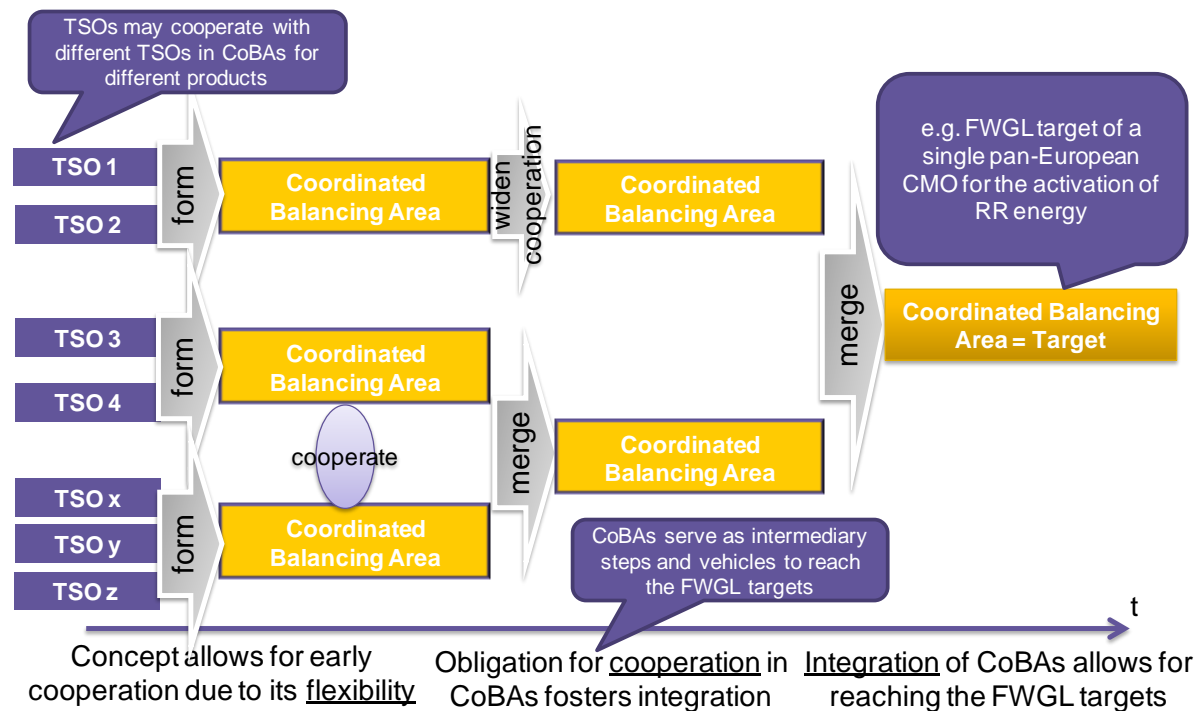


Figure 16: Evolution of the Coordinated Balancing Area concept towards FG EB target

SECTION 2 FUNCTIONS AND RESPONSIBILITIES

Article 11 – Role of the Transmission System Operators

Article 11 assigns the responsibility for procurement of Balancing Services from BSPs to the national TSOs themselves (rather than any other agency or organisation). To ensure a fair, transparent and non-discriminatory approach, it prohibits TSOs from offering Balancing Services themselves, except if their purpose is uniquely for system security. TSOs will use reasonable endeavours to ensure the Exchange of Balancing Energy within a Coordinated Balancing Area. Unanimous decision making rights are assigned to all TSOs within a Coordinated Balancing Area to ensure fairness and equal treatment among participants.

In order to ensure proper coordination for the coordinated Activation of Balancing Energy, to ensure the Activation of Balancing Energy at the lower costs, and to help TSOs forecast fast Imbalances and manage deterministic frequency deviations, the TSOs shall exchange close to real-time (e.g. about 15 minutes before real-time) short-term predictive forecasts of system conditions in an harmonised way. This will have to be supported by relevant IT tools.

Article 12 – Cooperation with Distribution System Operators

Article 12 underlines the necessity of cooperation of DSOs with TSOs for Balancing, especially referring to restraints in the distribution grid where many Balancing Service providing units are located. During pre-qualification DSOs evaluate whether a specific unit in principle may provide Balancing Services, as also defined in the NC LFCR. Furthermore, this Article contains provisions for short-term curtailment during scheduling or even real-time, should the DSO deem this necessary due to congestion or other technical restrictions. . With respect to the cost that may arise from such curtailment, if no agreement regarding this issue is achieved between the corresponding TSO and the DSOs, or if there is no exiting National law covering this matter, these costs.

Article 13 – Role of Balancing Service Providers

All BSPs can submit bids for Balancing Reserves. Successful bids result in a contract for Balancing Reserves.

All BSPs can submit bids for Balancing Energy. Balancing Service Providers with a contract for Balancing Reserves, however, do not have the option and therefore must submit the contracted volume at a minimum.

Article 14 – Role of Balance Responsible Parties

Each BRP shall be entitled to change its Position in the Intraday timeframe until the Balancing Gate Closure Time. Any modification of the Position declared by the BRP shall be submitted to the Connection TSO. TSOs shall not be obliged to accept a change of Position by a BRP after the Balancing Gate Closure.

Some market designs rely on BRPs Positions being frozen prior to delivery; others allow for notifying Intra-Zonal trades after delivery which may help intermittent generation and demand side response to participate in short time (bilateral) markets. TSOs that do not allow for ex post notification are not obliged to do so and can continue current practice and those TSOs that do allow for ex post notification are also allowed to continue current practice, even if it is not an obligation.

Article 15 – Functions in Coordinated Balancing Areas

This Article outlines the functions and responsibilities in Coordinated Balancing Areas, and refers the details of each of the functions listed in the first paragraph to relevant parts of the NC EB. Each TSO, being part of a market design area in its own right, is permitted to delegate any of the functions in this Article to a competent third party, for example, settlement functions or Activation Optimisation Function. The purpose of this is to ensure that the right tasks are performed in the most efficient way, and those with the capability, systems and skills to do so. For example, it would not be sensible to assign responsibility for the Activation Optimisation Function to a single TSO when the activities undertaken correspond to a whole Coordinated Balancing Area or wider, and where the creation of a functional body for this purpose would better achieve the targets of the Network Code. Existing national organisations that undertake such tasks where appropriate should adapt their processes accordingly to comply with the NC EB. Clearly there is a need to maintain confidentiality where required, and where consistent with the transparency directive.

Article 16 – Terms and Conditions Related to Balancing

This Article is required to detail how the terms and conditions related to all Balancing activities under the EB NC are to be established. These terms and conditions summarise all contractual relations between the TSOs and the BSPs or BRPs, respectively. Their purpose is to set the principles and

roles by which such Balancing activities will take place, and to ensure adequate competition based on a level-playing field between market participants. This Article established the requirement for all parties to comply with the respective terms and conditions. The timescales for implementation of the various parts of the EB NC require a step-wise approach to implementation. In order to ensure a proper coordination between TSOs and the consistency of the terms and conditions in each area, this approach takes as a starting point the development of a common framework [for the establishment of the terms and conditions] between the TSOs of a Coordinated Balancing Area. Each TSO is responsible for ensuring consistency between the frameworks for the development of terms and conditions, where this TSO is part of more than one Coordinated Balancing Areas for different Standard Products. Once the frameworks are developed, each TSO defines the terms and conditions to be applicable in its area.

The process is illustrated in Figure 17:

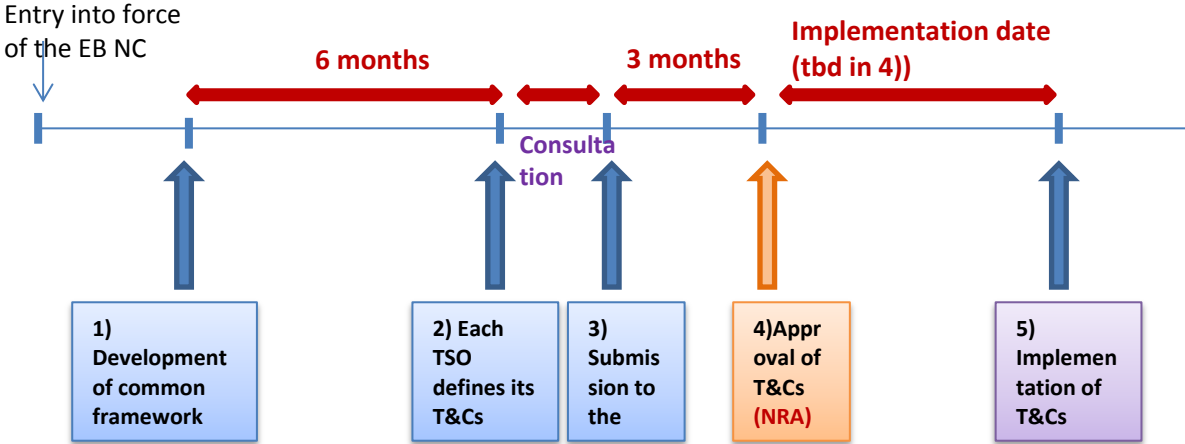


Figure 17: Terms and conditions related to Balancing activities

Consequently, paragraph 4 provides the necessary timescales, along with the framework of content for such terms and conditions. These include the technical and contractual requirements for BSPs, BRPs and the rules related to procurement and settlement, and that all terms and conditions for such activities are required to be approved by regulators.

Paragraphs 6 and 7 define in more detail roles and responsibilities for BSPs and BRPs subject to the terms and conditions.

This Article also sets the Imbalance area that relates to the Relevant Area for which the terms and conditions apply, and places the onus on the national TSO to verify compliance.

CHAPTER 3: PROCUREMENT OF BALANCING SERVICES

SECTION 1 GENERAL PROVISIONS FOR PROCUREMENT

Article 17 – Requirements for Standard and Specific Products

In order to allow an Exchange of Balancing Services, creation of Common Merit Order Lists and adequate liquidity, a standardisation of Balancing products is needed. NC EB lists the minimum set of standard characteristics, which define Balancing Energy and Balancing Reserve products. The standard characteristics are a minimum set of product attributes that allow for the activation of products through a Balancing Algorithm which uses the relevant Common Merit Order List. Besides this, standard characteristics seek to minimise the number of Common Merit Order Lists so as to maximise the participation of all Balancing resources and maximise the liquidity of Balancing Markets while respecting the needs of the TSOs for Balancing the system.

Based on the minimum characteristics detailed in the NC EB and possible additional ones, TSOs have to specify the product definitions no more than one year after the entry into force of the NC EB, as specified by the FG EB. All TSOs are required to prepare a common proposal for standard Balancing Energy and Balancing Reserve products, including all needed detailed specifications of the characteristics. It should be noted that these standard Balancing Reserve and Balancing Energy product characteristics will apply to bids and will be independent of connection type. They will facilitate the participation of load, energy storage, and generation including renewables, whether aggregated or not. In this way the participation of the widest possible range of BSPs is possible.

A process will be set forth in order to allow defining, reviewing and updating the list of Standard Products, which includes a public consultation with market participants, followed by a proposal from all TSOs to all NRAs and ACER. This approach provides the possibility to learn from and to consider previously gained experiences.

The following standard characteristics are considered as a minimum set of characteristics to define the Standard Products in line with the FG EB. See Figure 18 below and explanation of the labelling below.

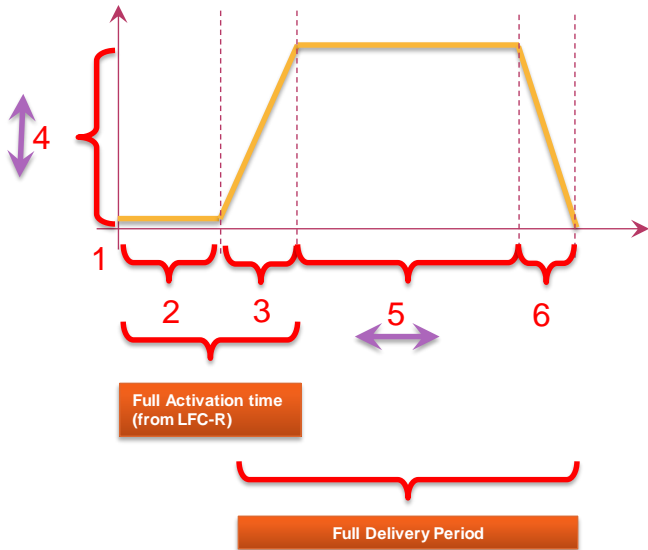


Figure 18: Balancing Reserve and Balancing Energy Products

- (a) Minimum and maximum quantity – minimum and/or maximum quantity of single bids expressed in MW. (See item ④ in the Figure 18 above.)
- (b) Full Activation Time – the sum of ② Preparation Period and ③ Ramping Period
- ② Preparation period – time required prior to start of delivery the first MW
 - ③ Ramping Period – time when the bid starts the physical activation, delivers the first MW and approaches the requested power of the TSO; expressed in seconds if the bid is not divisible and expressed in MW/s if the bid is divisible
- (c) Full Delivery Period – the sum of ③ Ramping Period; ⑤ Minimum and maximum Delivery Period; and ⑥ Deactivation Period
- ③ Ramping Period (as described above)
 - ⑤ Minimum and maximum Delivery Period – the time during which the BSP delivers the full requested power to the system
 - ⑥ Deactivation Period – the time from the start of physical deactivation of the unit until the full instruction MW has been delivered; expressed in seconds if the bid is not divisible and MW/s if the bid is divisible
- (d) Divisibility – the minimum divisible unit of Balancing Energy expressed in MW for the divisibility of volume and expressed in seconds for the divisibility of Delivery Period
- (e) Validity period – the period defined by a beginning time (hh:mm) and an ending time (hh:mm), when the bid could be activated. The Validity Period is at least the Full Delivery Period.
- (f) Price of the Bid – the price of Balancing Energy in €/MWh
- (g) Mode of Activation – manual or automatic

In application of these parameters the different categories of Balancing Reserve will have at least the following common characteristics:

Automatic Frequency Restoration Reserves:

- Full Activation Time and deactivation time shall not be more than 15 minutes (900s), but can be shorter, depending of the needs of the TSOs in the Coordinated Balancing Area.
- The minimum Delivery Period shall be 10s.
- The maximum Delivery Period shall be equal to the Validity Period duration.
- Mode of Activation shall be automatic.
- The product shall be divisible (10s time step and 1 MW power step).

Manual Frequency Restoration Reserves:

- Full Activation Time and deactivation time shall not be more than 15 minutes (900s), but can be shorter, depending of the needs of the TSOs in Coordinated Balancing Area.
- Mode of Activation shall be manual.

Replacement Reserves:

- Full Activation Time and deactivation time shall be more than 15 minutes (900s).
- Mode of Activation shall be manual.

Article 18 – The Use of Standard and Specific Products

This Article mandates TSOs to use relevant Standard Products and Specific Products to maintain system balance in the respect of NC LFCR and to ensure the safe and secure operation of the system. These products have sufficiently broad characteristics that they can be provided by service providers including renewables resources, small-scale generation, intermittent resources and demand side response.

Article 19 – Selection and Conversion of Products

In this Article, the methods and circumstances by which some Specific Products used by TSOs may be converted into Standard Products are described, for example, if they have better characteristics than Standard Products (e.g. shorter Activation Time). TSOs using such products shall be entitled to submit them into the common procurement of Balancing Services, after appropriately converting them.

TSOs operating Central Dispatch Systems may decide about the dispatch of the majority of units in each time period and act as a BSP for their LFC Area. For that reasons they require much more information to be delivered in market participants bids, such as detailed technical characteristics of each generation unit. Therefore the process of collecting bids and offers as well as requirements towards them are usually substantially different than those in self-dispatch systems.

Moreover in such systems the TSO is the only entity which is able to check if the given bid is available from a technical point of view because this process requires detailed knowledge about network conditions, particularly congestion in the network. Technical characteristics of all major generation units as well as their location within the grid are also required, which is not handled by the European Balancing Market.

TSOs operating Central Dispatch Systems may have to transform submitted bids for the whole available generation capacity of each unit into upward and downward bids reflecting current system conditions and cost of bid's activation, requiring therefore conversion of bids submitted by market participants.

Therefore TSOs operating Central Dispatch Systems shall be allowed to select and convert bids received from market participants before submitting them into common procurement or activation, even if products used by these TSOs fulfil characteristics of Standard Products. This will enable the TSO to provide bids which are technically available and may directly contribute to the common Balancing Market.

To ensure that all processes of selecting and converting bids are fair, transparent and non-discriminating they shall be approved by the relevant NRA.

Article 20 – Firmness of Balancing Energy Bids and Balancing Gate Closure Time

This Article defines when bids of Balancing products become binding between BSP and TSO. Balancing product bids submitted by a BSP shall be firm and with no possibility to adjust volumes and prices after the Gate Closure Time defined for the relevant Balancing product.

In case of activation of Balancing products by a TSO even prior to Gate Closure Time, the activated Balancing products are firm and subject to TSO-BSP settlement.

Article 21 – Fall-back Procedures

Even if the different procedures and tools for procurement and activation of Balancing Services have a high reliability and availability, there could be cases where these can fail. This Article requires TSOs to ensure that robust and timely fall-back solutions are in place to guarantee efficient, transparent and non-discriminatory functioning of the common procurement and activation of Balancing Services in the event that normal procedures fail.

In case the procurement of Balancing Services fails, TSOs may have an additional procurement process (e.g. second auction round) to achieve market based contracting to the greatest extent. To ensure transparency, Market participants should be informed before TSOs use such fall-back procedures.

In case activation by using Common Merit Order Lists fails, TSOs are allowed to directly contact BSPs for activation of locally required Balancing Energy, in order to ensure system security.

SECTION 2 PROCUREMENT OF BALANCING RESERVES

Article 22 – General Provisions

For secure and safe operation of the synchronous zone each TSO must procure a sufficient amount of Balancing Services, in this case Balancing Reserves, following the criteria defined in NC LFCR. In this Article the NC EB describes the rules governing how a TSO procures Balancing Reserves in order to fulfil the operational requirements set forth in other Network Codes.

The NC EB aims to unify the rules on how the Balancing Reserves are procured by harmonising certain areas in the terms and conditions related to Balancing. The terms and conditions then set a level playing field for each BSP and each TSO for Procurement of Balancing Reserves. The procurement is carried out for Standard Products for Balancing Reserve, the Frequency Containment Process, the Frequency Restoration Process and the Reserve Replacement Process and if necessary also the Specific Product for the Relevant Area.

These products are procured separately for upward and downward directions. For procurement of FCR upward and downward Balancing Reserve Bids can be linked together. In some cases, as noted in the NC EB, the TSO can gain approval of relevant NRA to link upward and downward Balancing Reserve Bids from FRR and RR as well.

The Balancing Reserve Bids are submitted by the BSP to its Connection TSO. The TSO cannot modify the bids of a Standard Balancing Reserve Product but can convert bids of a Specific Product into the bid of the Standard Balancing Reserve Product.

After the Gate Closure Time for submission of Balancing Reserve Bids the Connection TSO collects all the bids and processes them either:

- a. alone – TSOs procure reserves solely within its own area; or
- b. in coordination with other TSOs – it participates in the Exchange of Balancing Reserves.

Regardless of whether the TSO cooperates with other TSO(s) it has to respect the terms and conditions related to Balancing applicable in its Relevant Area.

In order to limit distortions in Balancing Markets the duration of Balancing Reserve contracts should be similar regardless of whether the TSO cooperates with other TSO(s) or not. Hence, if a TSO intends to conclude a contract for a longer period than twelve months it has to gain approval of a relevant NRA. This should be the case when its Balancing Market does not provide a sufficient liquidity in shorter time frames before real-time.

TRANSFER OF OBLIGATIONS

In some cases a BSP cannot comply with the Balancing contract that it has entered into and committed itself to, e.g. caused by an unpredicted technical malfunction on its assets. Because of the unpredictability of those cases the BSP should have the option to fulfil its obligation without any punitive consequence for not delivering the service. In this respect, the TSO has to define a set of rules which, if they are abided, guarantee that the BSP can fulfil their obligation using another service provider, and not be penalised for non-delivery. Those rules are defined in the NC EB and should also be included in the terms and conditions related to Balancing.

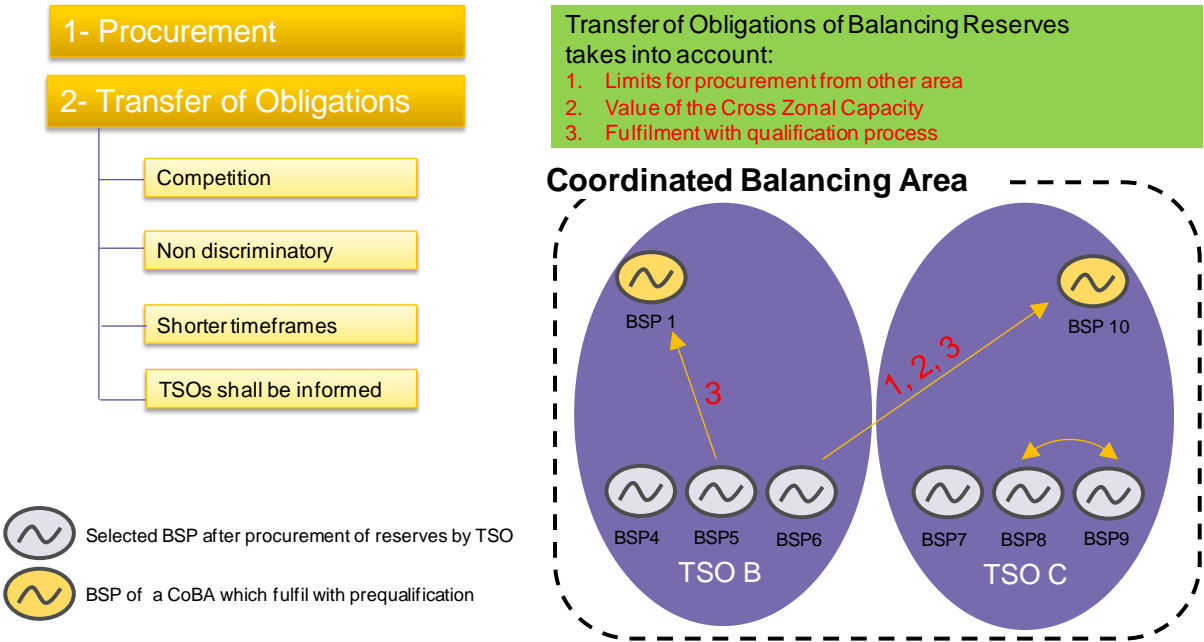


Figure 19: Transfer of Obligations of Balancing Reserves

The first stage of the procurement of Balancing Reserves is market based, non-discriminatory and fosters competition. Common procurement takes into account the limits for procurement from other areas, the value of the Cross Zonal Capacity and the possible savings from procurement of Balancing Reserves in other areas as well as technical grid constraints including those at a DSO level. Balancing Reserve bids are collected, accepted and tender information is fed back to the BSPs.

The second stage is the possibility of the Transfer of Obligations of Balancing Reserves. As the first stage, this process is non-discriminatory and fosters competition but takes place in shorter timeframes and the TSOs must be informed of the activity. The Transfer of Obligations of Balancing Reserves between BSPs within a TSOs area must fulfil the qualification process. The Transfer of Obligations of Balancing Reserves between BSPs outside a TSOs area but still within a Coordinated Balancing Area, in addition to fulfilling the qualification process, must also respect the limits for procurement from the other area and take account of the value of Cross Zonal Capacity.

SECONDARY MARKET

In comparison with the previous case, there might be cases when a BSP wants to intentionally give up its "reserve contractual obligation" and would like to sell its commitment to another BSP. Also, there are BSPs who would like to provide a reservation because of its associated payment and to buy the reservation obligation from another BSP. Such obligation transitions could be also possible; however, given Balancing timescales are so close to real-time and because Connection TSOs could face the risk to Operational Security of the grid, it is necessary that the TSOs must be involved in the market as its operators. If the TSOs agree that it is beneficial having secondary market they can create it. In such case the TSOs define rules in the terms and conditions related to Balancing taking into consideration the minimum requirements defined by the NC EB.

SECTION 3 EXCHANGE AND SHARING OF BALANCING RESERVES

Article 23 – General Provisions

Exchange and Sharing of Balancing Reserves permit a TSO to reduce procurement costs and volumes of Balancing Reserves and follows on from the approach adopted within the NC LFCR. The exchange of reserves allows but does not oblige the TSO(s) of Area A to place part of their reserves (FCR, FRR or RR) within the Area B of other TSO(s) in order to ensure the provision of the required amount of reserves resulting from the reserve dimensioning process. The exchange of reserves changes the geographical distribution of reserves without changing the total amount of reserves in the system. In contrast the sharing of reserves allows the TSO(s) of an Area A and the TSOs of an Area B to rely on the same reserves (FCR, FRR and RR) in order to ensure the provision of the required amount of reserves resulting from the reserve dimensioning process. The sharing of reserves changes the total amount of reserves in the system, thereby also impacting the geographical distribution.

The exchange or sharing of Balancing Reserves, however, is not obligatory for any TSO. The NC EB seeks to harmonise the rules for it by obliging participating TSOs to cooperate under the Coordinated Balancing Area and by defining common rules of procurement in terms and conditions related to Balancing Reserves. Technical rules governing how the Exchange and Sharing of Balancing Reserves have to be performed are set forth in the Network Code on Load Frequency Control and Reserves.

Article 24 – Transitional Procurement of Balancing Reserves in form of TSO-BSP Model

The target model for the pan-European Balancing Market includes the use of the TSO-TSO Model. However for an interim period an alternative TSO-BSP Model is acceptable under the restrictions set out in the Article.

SECTION 4 PROCUREMENT OF THE BALANCING ENERGY

Article 25 – General Provisions

The NC EB defines the process to determine the pricing mechanism for Balancing Energy. The decision about pricing shall be taken by all TSOs by considering several criteria including correct pricing incentives to market participants, the efficient use of demand side response and an effective Common Merit Order List. The initial pricing method shall be based on marginal pricing (pay-as-cleared), unless detailed analysis demonstrates that a different pricing method is more efficient for EU-wide implementation. According to the FG EB, this proposal shall be submitted to ACER and all NRAs no later than one year after entry into force of the NC EB.

The process of defining the pricing mechanism shall be coordinated with the process which defines harmonised Balancing Energy products.

TSOs operating in Central Dispatch Systems decide about the dispatch of the majority of units in each time period and act as a BSP for their whole LFC Area. The dispatch process usually starts the day before and lasts until real-time. This process is based on the bids and offers submitted by market participants, requiring therefore rules for submission and modification of bids and offers by market participants. Substantial changes of bids and offers during the dispatching process might lead to sub-optimal dispatch and could expose TSOs and energy consumers as well as other market participants to very high costs. As market participants know in advance some results of the dispatch process (e.g. decision about start-up and shut down of units) they may use this knowledge to abuse market power e.g. by substantial increase incremental/ decremental bid's prices after obtaining information that their unit will be operating in given hours of the following day.

Therefore, subject to NRA approval, market participants in Central Dispatch Systems may be obliged to provide their bids sufficiently long in advance in order for the TSO to include them in the Day-Ahead integrated dispatch process, and the opportunity for market participants in Central Dispatch Systems to subsequently modify their bids may be limited.

SECTION 5 ACTIVATION OF THE BALANCING ENERGY

Article 26 – General Provisions

For the efficient Activation of Balancing Energy, this Article of NC EB foresees that TSOs of a Coordinated Balancing Area define an Activation Optimisation Algorithm which is a common algorithm operated by an entity responsible for operation of the common optimisation function. This algorithm follows the principles described in the NC EB.

The volumes of Balancing Energy for each TSO must respect operational restrictions. Therefore the NC EB defines rules for how operational restrictions should be taken into account.

The activation of a bid is triggered by the Activation Optimisation Algorithm. As the Connection TSO is responsible for operating the grid and has real-time data for its area, the Connection TSO is responsible for the direct physical activation of BSPs. The BSPs are then obliged to deliver the requested energy based on the amount and price submitted to the Common Merit Order List valid at the time of activation. Any deviation in activation from the Activation Optimisation Algorithm will be regularly reported by TSOs to NRAs for transparency purposes.

As TSOs are responsible for submitting all necessary data (e.g. bids, energy flow measurements, operational status of power system) to the Activation Optimisation Function and for delivering the activated Balancing Energy to the border it is natural that TSOs have the direct control of the process for exchanging Balancing Energy.

The roadmap towards to the final target solution of a European-wide TSO-TSO Model with Common Merit Order List includes intermediate periods where it is allowed for TSOs not to share all bids. In the interim period the TSOs can learn how the Exchange of Balancing Services influences operation of the grid by sharing a limited amount of Balancing Energy Bids. To foster a level playing field, the NC EB describes the rules for defining the certain amount of bids that can be classed as “Unshared Bids”.

Article 27 – Activation Mechanism of Balancing Energy

This Article describes the Activation of Balancing Energy and the required steps for TSOs. The main goal is to reduce the costs for Balancing Energy activation through a transparent, non-discriminatory, fair and objective process while taking into account technical and network constraints including those at a DSO level. It will be done by the Activation Optimisation Function based on Common Merit Order Lists. These Merit Order Lists will be established by TSOs for each Standard Product as defined in the NC EB and will be also separated for upward and downward bids.

These distinctions of Merit Order Lists are necessary in order to control the processes and could be understood as the lowest level of optimisation. If there is the need to create more than one Merit Order List for a Standard Balancing Energy Product then TSOs are also allowed to establish these lists. Reasons for this could be, e.g. the amount of bids that have to be processed, local needs of TSOs that otherwise could not be tackled without complicating the whole process and risking the performance of the process.

After establishing the Common Merit Order Lists the TSOs will use them as follows:

- The TSOs will send all the bids for each Standard Product they previously collected from BSPs within their LFC Area to the Activation Optimisation Function, which includes the Common Merit Order Lists. This has to be done up to the Gate Closure Time for bid submission of TSOs, which will be defined by TSOs based on the technical characteristics of the relevant standard Balancing Energy Product, e.g. depending on the Activation Time.
- After sending all the bids, each TSO will also send its request for Balancing Energy to that Activation Optimisation Function. The relevant Common Merit Order Lists are developed based on these bids, the technical characteristics of the requested Balancing Energy and request for Balancing Energy.
- After creating the Common Merit Order Lists, the Matching of the bids and offers will be done automatically by the Activation Optimisation Function, as described in Article 23.
- After the Matching, the TSOs will receive a confirmation of telling the TSOs which of its bids and offers are accepted. In respect of the accepted bids, the TSOs have to activate the relevant BSPs. The BSPs are obliged to deliver the relevant Balancing Energy.
- In case of the accepted bids, the TSOs have to know if requested amounts of Balancing Energy will be delivered or if additional steps have to be undertaken by some TSOs to fulfill the individual security needs.

Article 28 – Optimisation Principles of Activation from Common Merit Order Lists

As there might be an opportunity for TSOs to reduce the costs of Activation of Balancing Energy by optimizing the activation of different Standard Balancing Products in different Common Merit Order Lists, such optimisation functions shall be established by the TSOs and interpreted as global optimisation functions.

These functions have to at least take into account all relevant Balancing Energy Bids and Requests that are provided to the relevant Common Merit Order Lists by the TSOs (See Article 25). Also the available Cross Zonal Capacities have to be taken into account in order to allow for a firm delivery of the activated Balancing Energy.

The major issue of this global Optimisation function is the consideration of technical constraints of each Standard Balancing Energy Product included. These might be e.g. different Activation Times (like it is e.g. for FRR and RR), different activation procedures (e.g. automatic and manual activation; directly or scheduled) and also the minimum time and/or maximum time a Balancing Energy Product can be used.

EXAMPLE OF HOW THE BALANCING ENERGY IN A COMMON MERIT ORDER OF A COORDINATED BALANCING AREA IS AFFECTED

SCENARIO DESCRIPTION

As shown in Figure 20, Coordinated Balancing Area AB and Coordinated Balancing Area CD are two synchronous areas connected by a HVDC link. Area A and Area B cooperate with Reserve procurement and Activation of Balancing Energy. Area C and Area D exchange Balancing Energy.

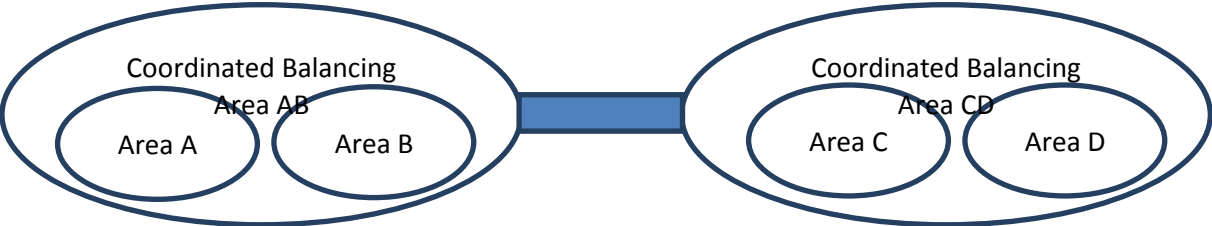


Figure 20: Coordinated Balancing Area Example

Activation of Balancing Energy in other synchronous areas is done by changing the flow on the HVDC link. One way of activating the Balancing Energy is that the activation signal from the LFC unit in the requesting area is sent simultaneously to HVDC link control and input to LFC unit (or a specific provider) in the connecting area. For the requesting area, activating Balancing Energy on HVDC link is just like activating any BSP in own area.

The table below considers how the Balancing Energy in a Common Merit Order of a Coordinated Balancing Area AB is affected.

	AREA A	AREA B	AREA C	AREA D
OBLIGATION	50 MW	50 MW	50 MW	50 MW
AVAILABLE RESERVE BIDS	200 MW	200 MW	200 MW	200 MW

For the actual period both Balancing Reserves and Balancing Energy are cheapest in Area B, and there is congestion between both Area A–Area B and Area B–Area C. Also both TSO in Area A and TSO in Area C have procured 25 MW of Balancing Reserves from Area B. The available transmission capacity for Exchange of Balancing Energy is 25 MW between both Area A–Area B and Area B–Area C.

Here are some options on how to ensure the availability of Balancing Energy Bids from Area B to Area C without distorting the Common Merit Order of Coordinated Balancing Areas. There may be better alternatives. These examples just show that different combinations are possible.

a) Common Merit Order of Coordinated Balancing Area AB is totally available for TSO C

This means that Common Merit Order for Coordinated Balancing Area AB have at least 125 MW available - 100 MW in Area B and 25 MW in Area A. Activation Optimisation Function in Coordinated Balancing Area AB is then using Common Merit Order AB in the normal way, including the constraint that just 25 MW Balancing Energy can be exchanged from Area B to Area A. Hence, there will still be at least 75 MW Balancing Energy left in Area B, where 25 MW of which is available for Area C. This structure would make it possible for TSO C to activate a bid in Area A as well. If the cooperation is on the same level within Coordinated Balancing Area CD, the bids will be available for the whole Coordinated Balancing Area CD.

b) The HVDC exchange is just a cooperation between TSO B and TSO C.

Only Balancing Energy Bids from Area B are available for TSO C. Bids in Area B are available both in Coordinated Balancing Area AB and for TSO C. The constraint in the Activation Optimisation Function is that 25 MW in Area B must always be left for activation from TSO C. The solution in this example would be the same. (However in other situations there could be different solutions with alternative model a and b, as b does not allow TSO C to activate Balancing Energy in Area A at all). If cooperation is on the same level in Coordinated Balancing Area CD, Area C contributes 25 MW to the Common Merit Order of Coordinated Balancing Area CD. TSO C also needs to have an optimisation function which always picks the cheapest bids. This can be complicated for TSO C, but if in a practical situation bids from Area B are the cheapest for 90 % of the time, simplified solutions could be feasible as well.

c) The reserve procured in Area B by TSO C is dedicated to certain providers

The bids from the BSPs that are dedicated to deliver Balancing Energy to Area C after the reserve procurement process will not be available on the Common Merit Order of Coordinated Balancing Area AB. In Coordinated Balancing Area CD TSO C may put these bids on the Common Merit Order of Coordinated Balancing Area CD as any other bid from BSPs in Area C.

CHAPTER 4 - USE, ALLOCATION AND RESERVATION OF CROSS ZONAL CAPACITY FOR BALANCING RESERVES

This Chapter describes the relevant issues for enabling Exchange and Sharing of Balancing Services between TSOs. Each TSO is responsible for its LFC Area and is connected to other LFC Areas by tie lines/Interconnectors. These may be organised together with other TSOs into a Coordinated Balancing Area. The Interconnectors between the Bidding Zones are usually used for energy market purposes and the transfer of energy that was traded by market participants. The implementation of the European Integrated Energy Market will foster the greater and more efficient use of these Interconnectors.

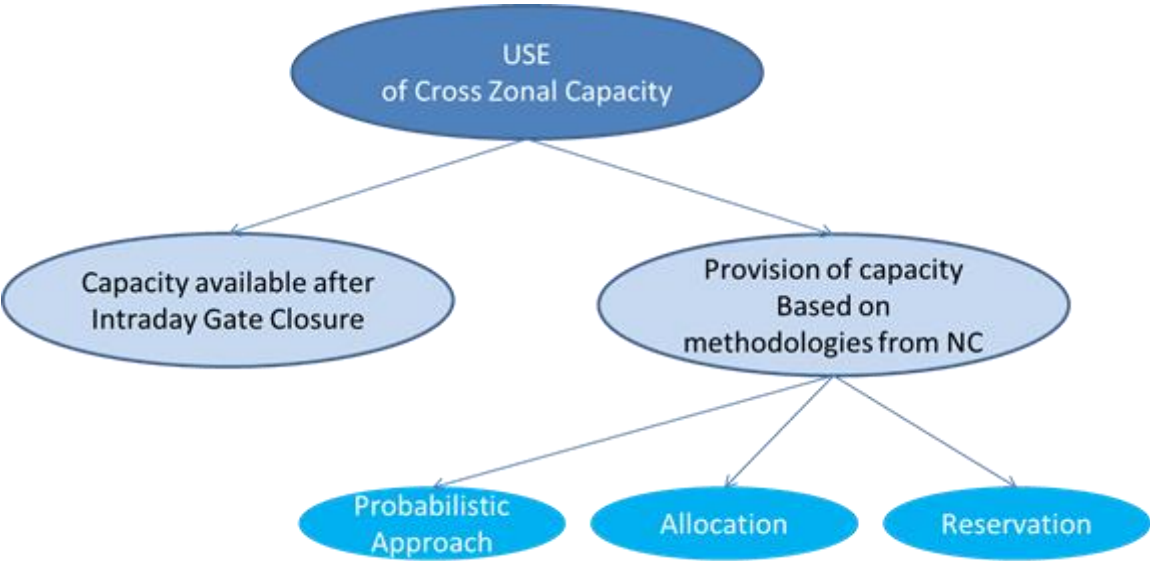


Figure 21: Illustration of alternative ways on how TSOs can use Cross Zonal Capacity for Exchange of Balancing Services.

Article 29 – Use of Cross Zonal Capacity for Balancing Services

In order to enable TSOs to procure and use Balancing Services in an efficient, economic and market based manner, there is the need to foster market integration, as described in the NC EB. This includes procuring Balancing Services also outside the TSOs area.

To guarantee the availability of Balancing Services procured outside the domestic LFC Area, there is the need for TSOs to obtain access to interconnection capacities. As Cross Zonal Capacities are limited, they should be used for the purpose where they yield the largest benefit, which is achieved through market based allocation up to Day Ahead and Intraday timeframes. Then the capacity becomes available for use as Cross Zonal Capacity for Balancing purposes. NC EB defines the rules that allow TSOs to get access to these capacities by demonstrating a gain in Social Welfare while not endangering secure operation. This results in a sharing of the available Cross Zonal Capacities between market participants and TSOs. In order to avoid discrimination in allocation of Cross Zonal Capacities the rules for the use of capacity must be equal for market participants and TSOs. The same rules for firmness are applicable for both market participants and TSOs under normal operating conditions as specified in the NC OS. The TSO are not permitted to use Transmission Reliability

Margin (TRM) for Balancing except for FCR or an Emergency Situation. The approach is outlined in Figure 21.

The basic requirements for assessing and pricing Cross Zonal Capacities are set out in the NC CACM. These requirements are also applied to Balancing Services. For simplicity and consistency reasons these are not repeated here.

Article 30 – Pricing of Cross Zonal Capacity for the Exchange of Balancing Services or Sharing of Balancing Reserves

The pricing method used for Cross Zonal Capacities should be consistent with pricing methods used for other purposes which have similar timescales. This means that if there is a parallel market timeframe running (e.g. Cross Zonal Capacity auctions, Day-Ahead or Intraday markets), the same pricing principles need also to be applied to Cross Zonal Capacities required for Balancing Services. If there is no other timeframe running the pricing methods of the last available timeframe will also be used for Balancing Services. This also includes the use of available capacities after Intraday gate closure. For pricing of capacities before any market timeframe has started, a Social Welfare calculation should be performed by TSOs based on the best available information at that time.

Whatever pricing method is used, TSOs are required to develop it and NRAs need to approve it at least twelve months before the entry into force of this pricing method. This time period should allow all participants to implement it into their systems and also to take it into account for their market actions in order to avoid market distortions. As the NC EB will allow for a step by step development of the European Balancing Market, the pricing mechanisms only have to be developed for the relevant Coordinated Balancing Areas, or where Coordinated Balancing Areas cooperate on the Exchange of a Balancing Service. As the level of cooperation increases, the harmonisation of the pricing of Cross Zonal Capacity will follow on the way to meeting the targets.

TSOs are only allowed to charge for grid losses if approved to do so by the NRAs of the concerned LFC Areas or Coordinated Balancing Area(s). TSOs and exempted Interconnectors are forbidden to apply other charges unless the exempted Interconnectors do not have a special permission within their exemption. This is necessary to avoid windfall profits for owners of Interconnectors as Balancing is a requirement of operational security and therefore in most cases the TSO have no alternative. Otherwise this could lead to extreme prices for capacities used for Balancing Services which should be avoided to safeguard operational security and also maximise Social Welfare.

Article 31 – Approaches for the Provision of Cross Zonal Capacity for Balancing Reserves

The alternative approaches for the provision of the Cross Zonal Capacities are described in this Article. Depending on the available capacities between zones and the relevant timeframes, different approaches are possible and are allowed by the NC EB. The TSOs do not get exclusive access to Cross Zonal Capacity for exchange or sharing of Balancing Services without providing the Cross Zonal Capacity. For Cross Zonal Capacity that has a market value, the TSOs do not get access to this capacity for free.

For borders between zones where congestion is unlikely to occur, a Probabilistic Approach is allowed. The outcome of this approach is a capacity volume that is almost always available in real-time and therefore could also be used for Balancing Services without the need for any allocation or reservation of capacities.

For borders between zones where congestion is likely, an allocation process which competes with the normal market procedures will be allowed (co-optimisation of Balancing and normal markets). In this case the value for the capacities that should be allocated to Balancing Reserves will be calculated/priced the same way as in the normal energy market and the market participants with the highest prices will get the capacities.

A third approach is the reservation of capacities. This would only be allowed outside any other market timeframe - before any timeframe has started or between different timeframes. Reservation can be performed either by a direct reservation where the relevant NRAs approve the specific reserved volumes for the specific Delivery Period or by a process where the relevant NRAs approve a pre-reserved volume and a nomination methodology that shall be followed before the Cross Zonal Capacity is reserved.

Preliminary reserved Cross Zonal Capacity that is not nominated after the Nomination Process shall be released for later timeframes.

In case of direct reservation, the TSO has to perform a Cost-Benefit Analysis, using the best available data at this time, e.g. historical or future market prices across an Interconnector. In case of reservation after a nomination process use of a simplified methodology of Cost-Benefit Analysis is allowed as long as the methodology is approved by the relevant National Regulators. Such simplified methodology of Cost-Benefit Analysis should be a market based methodology which use real or forecasted prices of Balancing Services and in the Day Ahead Market.

For shorter timeframes and closer to the time period for the reservation, a modified capacity provision method is allowed which would require a reduced application of the Cost-Benefit Analysis (See Article 30). The established capacity provision methodology is supposed to ensure a fair and market based approach and ensuring the most efficient provision of capacities. The methodology should be approved by relevant NRAs ex-ante.

Article 32 – Capacity Provision Methodologies for Balancing Services

It is necessary to define a clear, structured and transparent methodology for provision of Cross Zonal Capacity to Balancing Services, as stated in Article 29. In Article 30 this task is given to the TSOs and the minimum requirements for such methodologies are defined.

- a) Each methodology shall at least describe the relevant timeframe it is designed for. This timeframe is meant as the time when the capacity provision shall take place, e.g. year ahead or day ahead or Intraday,
- b) Detailed process description is necessary where all steps are explained, so it becomes obvious for third parties what is calculated, what is the basis for the data and when it will be calculated.
- c) As a third requirement the criteria for social welfare improvement shall be described.

As already described for Article 29 there are three approaches for the provision of Cross Zonal Capacity to Balancing Services. With the exception of the Probabilistic Approach which simply estimates available Cross Zonal Capacities at real-time, a Capacity Provision Methodology for Balancing Services has to be developed. For the market based approach, what also could be understood as a co-optimisation within or parallel to normal market timeframes (like Day-Ahead or Intraday), the methodology seeks to calculate “the willingness to pay” for the Cross Zonal Capacity, what is usually a value limited by the price difference of the relevant products. That value will be used as an input parameter for Cross Zonal Capacities to the normal market procedures. In case of reservation of Cross Zonal Capacity in addition to the “willingness to pay” from the aforementioned

approach also the “willingness to pay” of the other market participants needs to be estimated. This additional part of the calculation also needs to be described in detail in the relevant methodology.

A special situation occurs for the reservation case, if it is used for timeframes shorter than a month. As described above, regulatory approval is required for the reservation of Cross Zonal Capacity. That might be difficult for short timeframes. Therefore a modified methodology shall be developed that can be used in such cases. As more market data are available the “willingness to pay” of the other market participants could be based on that. A methodology shall be developed that can be approved by regulators and can be used in case of short term reservation without additional approval processes.

Article 33 – Calculation of Cross Zonal Capacity for Balancing Services

This describes special requirements of the NC EB to those of the later timeframes.

In most capacity allocations all available capacities are only traded for use on the energy market and all calculations of available Cross Zonal Capacities at each timeframe are taking these into account. The provisions of the NC EB are unique as available Cross Zonal Capacity is not only traded for use on the energy market but Cross Zonal Capacity can also be reserved or allocated to Balancing Services which could be seen as two different things. The Cross Zonal Capacity traded for energy markets will be used for transportation of energy, while the Cross Zonal Capacity reserved or allocated for Balancing Services is in the first place a kind of an “insurance”, to guarantee the TSOs the availability of the Balancing Reserves in operation. By this follows that Cross Zonal Capacity pre-allocated for exchange or sharing of Balancing Reserves is used for “insurance” until operation and cannot be made available for other timeframes.

The decision as to whether the capacity is used for the transportation of Balancing Energy can only be done in real-time or close to real-time, when the physical Balancing needs of each LFC Area/Coordinated Balancing Area are known. Nevertheless, as stated above, the Cross Zonal Capacities are allocated/reserved based on market procedures and therefore have proven a Social Welfare gain.

In the calculations of the availability of Cross Zonal Capacities for the relevant timeframes, this needs to be taken into account. This means that the allocated/reserved Cross Zonal Capacity for Balancing Services needs to be taken into account along with any other allocated Cross Zonal Capacity.

For the Balancing timeframe, i.e. the timeframe after the gate closure of the Intraday market, a grid model is needed that takes into account the already allocated Cross Zonal Capacities and is able to calculate the available capacities. As the Balancing timeframe is rather short there is no time to transfer and check the data from the Intraday model. Therefore it is suggested that the grid model for the Balancing timeframe is based on the model used in the Intraday timeframe, so the same data used for Intraday could be used in the Balancing timeframe. This would simplify the process and minimise the risk of a system failure due to missing data or wrong data. Special requirements of the Balancing timeframe, such as calculation speed, requirements due to the used Common Merit Order Lists, timeframes (sufficiently often reassessed calculations) and different Gate Closure Times for different products need to be included in that model. The model must be able to handle all these issues.

CHAPTER 5: SETTLEMENT

SECTION 1 SETTLEMENT PRINCIPLES (GENERALITIES)

Article 34 – General Settlement Principles

The NC EB shall take account of the objectives of the FG EB and of the requirements of the Electricity Regulation and the Electricity Directive, such as the need for establishing objective fair, transparent and non-discriminating rules for Balancing, in a cost-reflective way, and for creating appropriate incentives for network users and TSO's for efficient Balancing.

Amongst them is the requirement that a harmonised pricing method for Balancing Energy products shall give correct price signals and incentives to market participants.

Additional requirements are concerned with safeguarding operational security and that the specifications of the NC EB shall be consistent and take into account interactions with other market timeframes (e.g. Intraday, Day-Ahead), that common principles are defined for the Procurement of Balancing Reserves and Balancing Energy to ensure that distortions within the internal market and in particular between adjacent markets that use different procurement mechanisms are avoided and with respect to Imbalance Settlement that there are limited distortions between adjacent markets induced by different settlement mechanisms.

Therefore the NC EB does not contain any articles inducing perverse incentives to any party involved (BRP, BSP, TSO, NRA), that may result in jeopardizing operational security or economic efficiency, or in exploitation by TSO's of differences in market designs.

When settlement mechanism involves more than one TSO (TSO-TSO Settlement), the rules must be commonly defined, and harmonised principles would be required. In this case, all the NRAs must approve the rules.

The NRA shall ensure the financial neutrality of the TSO with regard to the Balancing Energy settlements described in the NC EB. This means that TSO should not be allowed to gain profit from any Balancing Energy settlement process.

The following settlement processes are required in a European Balancing Market:

1. TSO to BSP: Implicitly mentioned in the FG EB: pricing method for Balancing Energy products)
 - a. Settlement of the local activated Balancing Energy
 - b. Settlement of the contracted reserves
2. Settlement between TSOs (Common Merit Order/Balancing function): Explicitly mentioned in the FG EB
 - a. Settlement of intended exchange of LFC Area Imbalance due to activation on Common Merit Order List
 - b. Settlement of intentionally exchanged energy due to Imbalance Netting
 - c. Settlement of the Unintentional Deviations
3. TSO to BRP: Explicitly mentioned in FG EB
 - a. Imbalance Settlement

Additional components of TSO-TSO exchange of energy due to e.g. intentionally exchanged energy due to ramping restrictions on cross border schedules, or due to emergency measures in not-normal operating conditions.

All energy settlements involve:

- energy volumes (kWh, MWh)
- per specific time units (this would be the period of time used for calculating the volume of Balancing Energy to be settled. For example, in case of TSO-BSP energy settlements and in the case of Imbalance Settlement, this period of time is the Imbalance Settlement Period)
- in a specific direction (positive for [relative] Injections, negative for [relative] Withdrawals) due to a specific process subject to settlement described in this NC (e.g. Imbalance Netting, FRR process...),
- against a specific price, (local currency per MWh, e.g. €/MWh),
- to be settled between a TSO and a specific counterpart. (Central Counterparty, BRP, BSP, another TSO...)

Each settlement Article has clear references to the relevant definitions for each of these items described above.

The NC EB foresees that the rules for the settlement, as being part of the terms and conditions related to Balancing of each TSO, must be transparent, consulted, publically available and approved by the (relevant) NRA(s).

The NC EB engages TSOs for a fair distribution of costs and benefits derived from the settlement mechanisms. This could mean that, for example:

- In the case where financial asymmetry between TSOs due to the Exchange of Balancing Reserves and especially Balancing Energy is inevitable, compensation should be agreed between involved TSOs. If costs and benefits are unequally distributed a fair distribution should be carried out through a TSO-TSO settlement.
- The impact of pricing on national settlement mechanisms must be also taken into account (for example the consequences of having marginal or pay-as-bid in the Common Merit Order platform and/or internal settlement scheme).

SECTION 2 SETTLEMENT OF BALANCING ENERGY TSO-BSP

Article 35 – General Principles

This Article deals with the settlement of each of the processes described in the NC LFCR: FCR, FRR, RR, thus making it optional but not necessary to use the same prices for all three processes.

The settlement between TSO and BSP of energy from FCR is left optional in the NC EB due to potentially small volumes of capacity and activated energy and the possible difficulties for measurement associated to the FCR process.

Because transactions are firm,

- a) settlement is always performed separately per direction, so there will be no netted volumes to be settled with BSPs, and
- b) the volumes of energy to be settled will be based on requested volumes.

Article 36 – Balancing Energy from Frequency Containment Process

This Article describes the settlement of Balancing Energy from Frequency Containment Process as an option.

Article 37 – Balancing Energy from Frequency Restoration Process

This Article describes the settlement of Balancing Energy from Frequency Restoration Process. The general principles described in Article 33 will apply.

Article 38 – Balancing Energy from Reserve Replacement Process

This Article describes the settlement of Balancing Energy from Reserve Replacement Process. General principles described in Article 33 will apply.

Article 39 – Imbalance Adjustment to Balance Responsible Party

In the case of Activation of Balancing Energy Bids from a BSP, the net volumes of Balancing Energy from these activations will be reflected, as per Article dealing with Imbalance calculation, as an adjustment in the calculation of the Imbalance of the BRP's that are declared to be associated with the BSP as required under Article dealing with terms and conditions related to Balancing, at least at a Balancing Energy Bid level.

Adjustment is a prerequisite for the functioning of the Balancing Market. The rationale for considering the Imbalance Adjustment is to ensure that the Imbalance is calculated correctly. For example, assuming that the BRP is balanced initially, the non-delivery of the requested volume (by the BSP) would result in an Imbalance for the BRP, whereas the exact delivery of the requested volume from the connections for which the BRP is responsible, would result in no Imbalance to be settled between the TSO and BRP.

SECTION 3 SETTLEMENT OF EXCHANGED ENERGY BETWEEN TSOs

Article 40 – General Principles

In order to ensure proper functioning of cross border Balancing Market, all Balancing Energy exchanged within Coordinated Balancing Area shall be settled among relevant TSOs cooperating within this area. This covers the settlements resulting from:

- (a) Imbalance Netting Process;
- (b) Frequency Restoration Activation Process; and
- (c) Reserve Replacement Activation Process;

These processes shall be harmonised within Coordinated Balancing Area and conducted by one party, the TSO-TSO Settlement Function. This party shall be also responsible for performing invoicing. The rules of above mentioned settlement processes shall be developed by all TSOs from a given Coordinated Balancing Area within six months after regulatory approval of the Coordinated Balancing Area, but may of course be agreed upon earlier by the TSOs while setting up the proposal for their

cooperation. The Exchange of Balancing Energy resulting from any other process that is not directly related to a Coordinated Balancing Area shall be settled according to the rules agreed between TSOs involved.

TSO-TSO settlement is the first mechanism that is implemented on a pan-European scale, extending beyond Coordinated Balancing Areas. It will be defined within two years after entry into force of the NC EB, covering settlements resulting from:

- (a) Unintentional Deviations.
- (b) Ramping Period or agreed Ramp Rate Process

All TSO-TSO settlements mechanisms used shall ensure:

- (a) fair and equal distribution of costs and benefits;
- (b) incentives for TSOs to actively participate in cross border Exchange of Balancing Energy; and
- (c) lack of incentives for TSOs to free riding behaviour.

Article 41 – Intended Exchange of Energy through the Imbalance Netting Process

This Article describes the process for the settlement of energy exchanged intentionally through Imbalance Netting Process. This Article also describes the principles for the pricing method.

This pricing method will appropriately reflect overall benefits arising from avoidance of counter Activation of Balancing Energy through the Imbalance Netting Process and to encourage TSOs to participate.

Article 42 – Intended Exchange of Energy through Frequency Restoration Activation Process

This Article stipulates that all TSOs in a Coordinated Balancing Area participating in a Frequency Restoration Activation Process have to settle among themselves the intentionally exchanged energy due to these processes

Article 43 – Intended Exchange of Energy through Reserve Replacement Activation Process

This Article stipulates that all TSOs in a Coordinated Balancing Area participating in a Reserve Replacement Process have to settle among themselves the intentionally exchanged energy due to these processes.

Article 44 – Intended exchange of energy through agreed Ramping Period or agreed Ramp Rate Process

This Article describes in a general manner the settlement of energy exchanged intentionally through agreed Ramping Period or agreed Ramp Rate Process to be performed between TSOs that are connected by HVDC Interconnectors.

Because the use of Ramping Processes is one of the methods to manage system frequency on either side of the link by limiting frequency deviations on both sides of Interconnector, the energy exchange resulting from this process shall be appropriately priced and settled between the involved TSOs.

TSOs involved in the Ramping Process may develop a common methodology to calculate the volume and the price of the intentionally exchanged energy due to this process. The common methodology could prevent arbitrage between separate links (e.g. in case we have HVDC A-B and HVDC A-C, the same rules might apply to both links).

Article 45 – Unintended Exchange of Energy through Unintentional Deviations

All Unintentional Deviations shall be settled financially. However, the settlement rules and processes for settlement of Unintentional Deviations may vary depending on whether the process is performed within one Synchronous Area or between Synchronous Areas because the causes of the deviations can be different.

Within a Synchronous Area, the Unintentional Deviations settlement mechanism shall give adequate price signals to TSOs to be balanced. Therefore energy from Unintentional Deviations shall be the most expensive Balancing Energy which could be obtained by TSOs, in order to prevent free riding behaviour of one TSO at the expense of others.

Unintentional Deviations between Synchronous Areas often result from technical parameters, control inaccuracies or tripping on HVDC links, and should be settled according to other rules.

TSO-TSO settlement is the first mechanism that is implemented on a pan-European scale, extending beyond Coordinated Balancing Areas. This essential step towards a European Balancing mechanism will be defined within two years after entry into force of the NC EB.

Article 46 – Settlement and Invoicing

All the settlements between TSOs, that are described in this Article, will be performed by the TSO-TSO Settlement Function.

SECTION 4 IMBALANCE SETTLEMENT TSO-BRP

Article 47 – General principles

This Article describes how the Imbalance for each BRP is calculated according to the definition of Imbalance from the Framework Guidelines. The Framework Guidelines themselves define Imbalances as *deviations between generation, consumption and commercial transactions (in all timeframes – commercial transactions include sales and purchases on organised markets or between BRPs) of a BRP within a given imbalance settlement period.*

All withdrawals and injections shall be covered by BRP. Withdrawals and injections from Interconnectors however cannot be covered by BRP. The Imbalance Settlement is calculated at a Relevant Area level. Each BRP is financially responsible for the Imbalance of all withdrawals and injections covered by this BRP. Each BRP shall provide all necessary data and information needed by TSO/DSO to evaluate Balancing Service needs. BRPs shall be entitled to challenge its Imbalance calculation.

Any curtailments of commercial transactions on all timescales on organised markets or between BRP's, as performed by a TSO under not normal operating conditions will also be an adjustment in the Imbalance calculation. An Imbalance Price shall be calculated for each direction, these prices may however be the same, thus allowing for single pricing.

In order to disincentivise aggravation of the system Imbalance, the Imbalance Price for Imbalances aggravating system Imbalances should at least be related to the average price of Balancing Energy activated within the area. The rationale for average price here is that in marginal pricing the average price *is* the marginal price, and the present wording allows for the marginal price being used in case of not marginal pricing. The pricing of the other direction is left to the TSO (may be the same, thus enabling single price system). This fulfils the intention of the Framework Guidelines to give correct price signals and incentives to market participants while also take into account the regional specificities of different electricity market designs.

A separate provision has to be made in case no Balancing Energy has been activated. This is not uncommon for systems that practice Imbalance Netting Process.

Article 48 – Imbalance Settlement Period

In this Article, the NC EB establishes a step-by-step process for the harmonisation of the Imbalance Settlement Period.

This process starts with a Cost-Benefit Analysis for the harmonisation of the Imbalance Settlement Period, carried out by ENTSO-E, as required by the FG EB. The results of this analysis are then submitted to all the NRAs and to ACER.

According to the results of the Cost-Benefit Analysis, the NRAs will propose a target date for the implementation of the Imbalance Settlement Period in each system. As the settlement features (including Imbalance Settlement) are part of the terms and conditions related to Balancing, this date has to be consistent with the date of applicability of the terms and conditions in each system.

In line with the provisions established by the FG EB in Chapter 5.3, the NC EB also allows for a TSO to apply for a longer Imbalance Settlement Period than decided by all the NRAs. In this case, the TSO must provide its NRA with a detailed Cost-Benefit Analysis and the NRA will decide on the approval.

The following graphs show the process for harmonisation of the Imbalance Settlement Period depending on the decision taken by all the NRAs after the Cost-Benefit Analysis, taking as a reference the approval of the methodology for establishment of the terms and conditions within a Cost-Benefit Analysis.

If the decision is “yes” (i.e. the Imbalance Settlement Period should be harmonised) the process would be as shown in Figure 22:

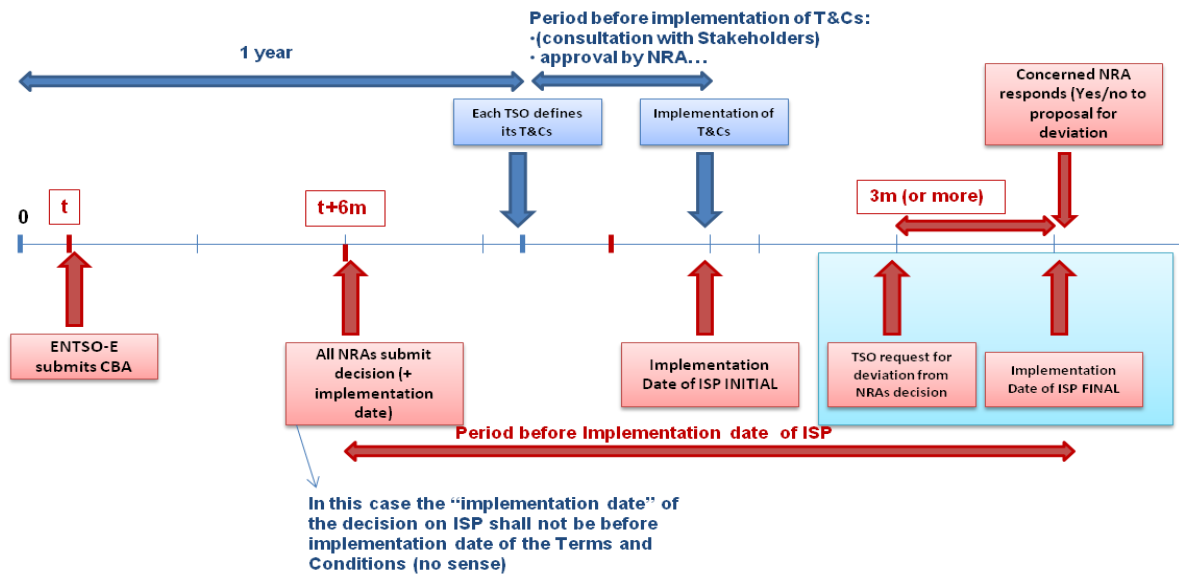


Figure 22: Process if Imbalance Settlement Period is harmonised

If the decision is "no" (i.e. it is not necessary to harmonize at this point the Imbalance Settlement Period) the process would be as shown in Figure 23:

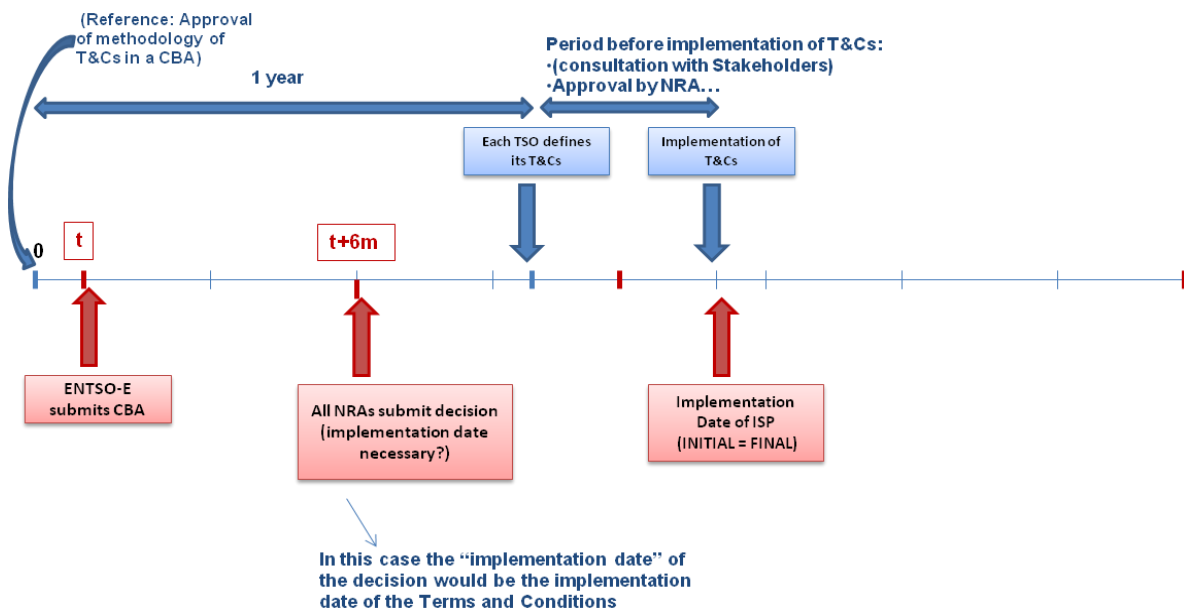


Figure 23: Process if Imbalance Settlement Period is not harmonised

Article 49 – Imbalance Calculation

This Article describes how the Imbalance for each BRP is calculated from three volumes (notified position, allocated value, adjusted volume).

The sum of the trades of a BRP (buy and sell) to others should match the net energy infeed/withdrawal over the connections for which the BRP carries responsibility. In order to assess this, the following volumes are therefore defined:

- A notified position (scheduled position) reflecting the final net volume of commercial transactions on all timescales on organised markets or between BRP's.
- An allocated value (usually based on metered values or profiled values), reflecting the net volume of physical generation and consumption over the connections for which the BRP is responsible for the Imbalances.
- An adjusted volume reflecting the Activation of Balancing Energy Bids from the associated with this BRP, at least at Balancing Energy Bid level.

The Article prescribes to all TSO's to establish a procedure to determine each of these three volumes.

The Article asserts the right of the BRP to appeal to the result of the calculation.

The Article defines the directions of the Imbalance.

Article 50 – Imbalance Pricing

This Article describes the principles of the pricing of the Imbalances to be settled by the TSO with the BRPs.

Imbalances will be settled in each direction that is shortage or surplus.

The Imbalance Price will be related to what the TSO or TSOs have *done or avoided* to restore system balance or frequency, or when relevant what TSO has done to replace reserves.

The following situations have to be covered:

	Balance Responsible Party Imbalance		
	short (-)	neutral (0)	long (+)
TSO Activating	short (-)	neutral (0)	long (+)
none	n.a.	n.a.	n.a.
upward	aggravating	n.a.	supporting
downward	supporting	n.a.	aggravating
upward + downward	n.a.	n.a.	n.a.

In order to give adequate incentives for BRPs, the Article asserts that BRP aggravating Imbalances shall not be priced less (for shortage) respectively more (for surplus) than the weighted average price for FRR and RR in the Relevant Area, in order to reflect the local Imbalance situation.

For marginal pricing of Balancing Energy the average price will equal the marginal price thus giving the appropriate incentives to the BSP to provide the requested volumes.

By including the value of the avoided activation in these formulae, this value will appear as the Imbalance Price in TSO has avoided all activation.

In case of both upward and downward activation within the same Imbalance Settlement Period, at least one of the Imbalances will be priced according to the aggravating principle.

These are high level principles; the price in the other, unmentioned directions (not aggravating Imbalances) is not prescribed.

Also in case of aggravating Imbalance it is not prohibited to exceed the price condition.

SECTION 5 SETTLEMENT OF PROCURED BALANCING RESERVES

Article 51 – General Principles

Settlement of Balancing Reserves involves the following processes:

- Settlement between TSOs (or conducted through a TSO-TSO Settlement Function) in case of Exchange of Balancing Reserves within a Coordinated Balancing Area
- Settlement between each Connection TSO and the BSPs that have provided reserve products

Article 52 – Settlements with Balancing Service Providers for provided Balancing Reserve products

Each TSO must perform the settlement for all the BSPs (associated to a BRP inside its LFC Area) that have provided Balancing Reserve Products to the TSO (either for internal use, or for exchange and or sharing within a Coordinated Balancing Area).

The rules for this settlement will be defined by the TSO (being part of the terms and conditions related to Balancing) and will be transparent and published.

Article 53 – Settlements between Transmission System Operators due to the Exchange and Sharing of Reserves

This settlement must allow for all the possible mechanisms of Exchange of Balancing Reserves which are allowed in the FG (but not obliged) inside a Coordinated Balancing Area.

If applicable, the TSOs will settle among themselves the Reserve products exchanged in the Coordinated Balancing Area (or through the TSO-TSO Settlement Function), and then each TSO will perform the internal settlement accordingly with its BSPs.

The rules for the settlement of Reserve between TSOs will be common and will be defined in a coordinated manner between all the involved TSOs and shall be transparent and published.

Also, the settlement between TSOs must be consistent with the results from the Common Merit Order List for the corresponding Reserve Product.

SECTION 6 SETTLEMENT AMENDMENTS

Article 54 – General principles

The purpose of introducing principles for amendments in the NC EB is to allow for a possibility of the parties involved in the settlement to amend measurements and reports in circumstances where, for some reason, these were incorrectly measured or were incorrectly reported. In order to be able to close the settlement at some point in time there shall be a maximum time period in which amendments are allowed.

CHAPTER 6: ALGORITHM DEVELOPMENT

This Chapter details the general requirements for the development of algorithms. These Algorithms are operated by the respective functions (established in Article 15) performing the optimisation of Balancing Reserve procurement, Optimised Activation, Counteracting Activation, Minimisation or Transfer of Obligations Optimisation where these are performed commonly in a Coordinated Balancing Area.

Article 55 –Algorithm Development

Article 53 requires all TSOs to establish the principles which have to be followed in the development of the relevant algorithms which are developed and applied in a Coordinated Balancing Area. The TSOs of each Coordinated Balancing Area are obliged to respect these principles and to develop the algorithms relevant for the Balancing cooperation in their Coordinated Balancing Area. The principles have to be submitted to all NRAs and ACER within one year after entry into force. This timeline shall guarantee that algorithm development is being progressed in a timely manner to ensure that the targets set for a European Balancing Market are achieved. The proposals for the relevant algorithms developed in accordance to these principles have to be approved by the relevant NRAs.

Article 56 –Algorithm Amendment

This Article details the conditions for amendments of all Balancing Algorithms. As it does not contain restrictions on who is entitled to make proposals for amendments, everyone or every entity can make such proposals to TSOs of a Coordinated Balancing Area, which are granted the right to amend the algorithms. Nevertheless, these proposals have to be supported by detailed information explaining and documenting the rationale for them.

CHAPTER 7: REPORTING

Article 57 – Annual Report

The TSOs will publish an annual report on cross border Balancing which will, as specified in the FG EB, include detailed analyses every two years and updates thereof in the intervening years. This process will be coordinated by ENTSO-E, Structure and content which will include performance indicators as well as the frequency of publication will be agreed between ENTSO-E and ACER and may be amended later on if deemed necessary and agreed again. For example, In order to avoid undue reservation of capacity and to promote the exchange of reserves, the TSO shall analyse ex ante the possibility to exchange reserves without capacity reservation.

Initially, the annual report will focus on the implementation of the NC EB. Once the target model is fulfilled, this focus will shift towards monitoring the regional and/or pan-European Balancing Markets. Article 55 lists the foreseen contents of the report in detail.

CHAPTER 8: TARGETS AND TRANSITIONAL ARRANGEMENTS

Article 58 - Targets

As foreseen in the FG EB, the NC EB describes a process that leads to a regional/European-wide TSO-TSO Model for Balancing (see also Chapter 4). The timings follow the provisions in the FG EB. From entry into force of the NC EB, TSOs shall not take any steps that are counterproductive to this goal. Thus agreements that are concluded between TSO and BRP, BSP or other relevant grid users during the transitory period must also follow the requirements of the NC EB.

As shown in Step 1 in Figure 24, TSOs first set up a multilateral TSO-TSO Model for manual Balancing Reserves with a Common Merit Order List for Replacement Reserves at the latest two years after entry into force of the NC EB. At this point, TSOs may declare certain bids unshared (Article 23(9)). If modifications in the target model are deemed necessary, TSOs will together prepare a proposal for modification of the multilateral TSO-TSO Model for manual Balancing Reserves no later than three years into force. This amended model must be supported by a Cost-Benefit Analysis (compare Article 58) and is subject to regulatory approval (Article 72(h)).

Four years after entry into force, the multilateral TSO-TSO Model with a Common Merit Order is extended to Manual FRR, again allowing for Unshared Bids if justified (see Step 3 in Figure 24). With a next two year step, taking this process to a total of six years after entry into force, the TSO-TSO Model is expanded to a European-wide scale including new products, with both RR and manual FRR. At this stage, Unshared Bids are not permissible any longer see Step 5 in Figure 24).

With regard to Automatic FRR, as visualised on the lower axis in Figure 24, TSOs have to coordinate in order to minimise counteracting activations within two years after entry into force of the NC EB (see Step 2 in Figure 24), by means of Imbalance Netting. By the end of the third year after entry into force, TSOs have to submit the target model for Automatic FRR to all NRAs (see Article 7 2(g)). Implementation for the model of Automatic FRR within Coordinated Balancing Area s is foreseen one year after submission of the target model to NRAs (Step 4 in Figure 24).

Reaching the final target six years after entry into force, a European-wide TSO-TSO Model with Common Merit Order List will be implemented for RR and manual FRR. TSOs may also develop a proposal for modification of the target model on Automatic FRR, if technically needed.

Harmonisation of the Imbalance Settlement Period on a European level will be analysed by all TSOs. Three years after entry into force, all TSOs have to submit a Cost-Benefit Analysis (Article 58) to their NRAs (Article 7).

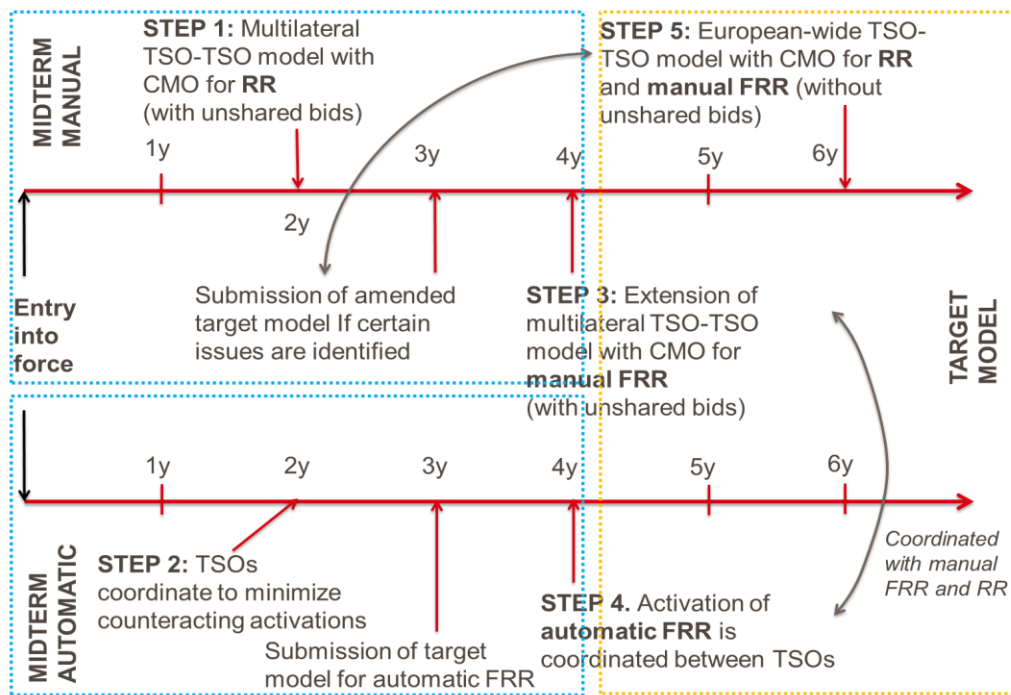


Figure 24: Integration Targets for Balancing

Article 59 - Cost-Benefit Analysis

During the development and implementation of regional and European wide solutions, TSOs are obliged to evaluate costs and benefits for certain issues, choosing those options that provide the highest Social Welfare.

Article 58 lists the items that must be subjected to a Cost-Benefit Analysis on a regional and European-wide level. This includes:

- Proposals for European-wide TSO-TSO Models
- Harmonisation of Imbalance Settlement Period
- Provision and use of Cross Zonal Capacity
- Sharing of reserves

The criteria and methodology of the Cost-Benefit Analysis are subject to public consultation and must be submitted to the (relevant) NRA for approval (Article 7) within six months after having received the proposal as per the approval process for considerations that concern more than one NRA.

The minimum objectives of this Cost-Benefit Analysis include the objectives of the NC EB as listed in Article 9 as well as the following:

- A Social Welfare quantification in accordance with the NC CACM
- The implementation costs of a new Balancing mechanism or platform
- The impact on European, regional and national Balancing costs
- The potential impact on regional energy market prices as well as
- The impact on market parties in terms of additional technical or IT requirements.

The results of a Cost-Benefit Analysis will be provided to the Regulatory Authorities as part of a comprehensive proposal for specific steps forward in Balancing integration. After public consultation, the decision on the way forward then lies with the Regulatory Authorities.

Article 60 – Transition Period

As foreseen in the FG EB, the NC EB foresees a transition period of two years for provisions listed in Article 60. The requirement of putting this time period for consultation is deemed fulfilled by publically consulting on the either NC EB which includes this time period. A separate public consultation after entry into force would defeat the purpose of a transitional period.

Article 61 – Derogations

If a TSO cannot follow the process outlined in the NC EB, the Network Code foresees the possibility of derogations, limited in scope as well as time and linked to a clear roadmap on how this TSO plans to remove the existing obstacles. Derogations can only be granted on a reasoned request by the TSO, submitted at least six months before the provision under question is applied. The process to grant and monitor derogation must be transparent, non-discriminatory, non-biased and well documented. In their decision, the Relevant Regulatory Authority must take effects for adjacent markets into account and must evaluate the impact on overall Balancing integration across Europe. Following the FG EB, the decision must be available within six months, meaning before the provision in question enters into force.

The reasoned request must show at least one of two situations:

1. The TSO applying for derogation is in a significantly different situation from other TSOs across Europe regarding the Balancing arrangements.
2. Implementing the provision for which derogation is requested would lead to significant problems in the Balancing of the TSO under question.

If derogation is granted, this TSO shall be considered compliant with the NC EB. The maximum time span for derogation, however, is two years, after which period the initial reason for derogation must have been resolved and the TSO must fulfil the original provision in the NC EB.

CHAPTER 9: FINAL PROVISIONS

Article 62 – Entry into Force

The Network Code will enter into force 20 days after its publication. However, due to the various consultations and approvals, the application of different parts of the Network Code will be triggered by the timing of regulatory decisions. Because of uncertainties about the ACER opinion, the timings of the Comitology process, the time needed to deliver parts of the Network Code (the timings are “no later than”) and the time needed to approve parts of the Network Code (which could include a referral to ACER) it is not possible to say exactly when each part will apply. A close working relationship between ENTSO-E, ACER, national regulators and the Commission is, in our view, necessary to ensuring the NC EB can be implemented as quickly as possible.

7 RESPONSES AND NEXT STEPS

7.1 OVERVIEW

This Chapter provides information on how to respond to the consultation on the NC EB and provides an overview of the processes which ENTSO-E intends to follow in developing a final version of the NC EB for submission to ACER.

7.2 SUBMISSION OF RESPONSES

The public consultation is launched on the 17 June 2013. Responses to the public consultation can be submitted for a period of two months. All responses should be submitted electronically via the ENTSO-E consultation tool, explained at <https://www.entsoe.eu/resources/consultations/>.

ENTSO-E appreciates that many stakeholders and involved parties may wish to discuss issues raised in this document. For this reason ENTSO-E is planning a public workshop for 17 July 2013 in Brussels. The workshop will be structured in a way which enables parties with an opportunity to provide their view. Should you wish to attend, please contact Jana.Moravcova@entsoe.eu.

7.3 RESPONDING TO COMMENTS

ENTSO-E will endeavour to respond to comments raised by stakeholders, indicating how a comment has been taken into account or indicating the reasons for not doing so. This supporting document answers many of the questions which have been repeatedly asked during the process of developing the NC EB to date.

7.4 FURTHER DEVELOPMENT OF THE NETWORK CODE

As a consequence of the twelve months timescale, this is the only formal consultation by ENTSO-E on the NC EB. ENTSO-E thus urges parties to provide their comments and views. Following the closure of the consultation, ENTSO-E will begin the process of considering comments and reflecting them in the text of the NC EB. It will be the responsibility of the NC EB Drafting Team, which contributed to the development of this Network Code, to process comments, provide feedback and make changes as necessary. As updated the Network Code will be subject to internal approval and will be sent to ACER by the deadline of 1 January 2014.

7.5 SUBMISSION TO ACER

Regulation (EC) No 714/2009, and in particular its Article 6, defines a clear Network Code Development Process. The process begins with the set up by the Commission of an annual list of priorities amongst the twelve areas where Article 8(2) of Regulation (EC) No 714/2009 foresees the need for a NC. The annual priority list must be adopted after consultation with the relevant stakeholders.

Once a priority list is established, the Commission shall request ACER to develop and submit to it a non-binding framework guideline. The Framework Guidelines are intended to set clear and objective principles with which the Network Code should be in line. The development of a Framework Guideline is followed by a request from the Commission for ENTSO-E to develop a Network Code within a twelve month period. The Network Code to be developed by ENTSO-E within that period shall be subject to an extensive consultation, taking place at an early stage in an open and transparent

manner. At the end of these twelve months ENTSO-E delivers a Network Code and set of explanatory documents to ACER for its assessment.

7.6 THE ACER OPINION

ACER has three months to assess the draft prepared by ENTSO-E and deliver a reasoned opinion. In doing so, ACER may decide to seek the views of the relevant stakeholders.

ACER can decide to recommend to the Commission that it adopts the Network Code if it is satisfied that it meets the requirements of the Framework Guidelines or can provide a negative opinion; effectively meaning the Network Code is returned to ENTSO-E.

7.7 THE COMITOLGY PROCEDURE

The Network Code prepared by ENTSO-E shall only become binding if, after being recommended to the Commission by ACER, it is adopted via the Comitology procedure.

The Comitology process will be led by the Commission who will present the draft text to representatives of Member States organised in so-called “committee”. The Comitology procedure used for the Network Codes (called regulatory procedure with scrutiny) grants the European Parliament and the Council important powers of control and oversight over the measure adopted by the committee.

For that reason, it is unclear how much time the process can take in practice. The working assumption is that it will take about twelve months from the issuing of the ACER opinion (if positive) to the conclusion of the Comitology process.

7.8 ENTSO-E STEPS DURING THIS PERIOD

Meeting the requirements of the NC EB is a significant challenge for ENTSO-E. During the period in which the Network Code is being considered by ACER and the Commission, ENTSO-E will continue working to prepare for the delivery of the requirements of the Network Code. Some of these requirements are particularly challenging and therefore beginning work in the near term is necessary to delivering them on time.

7.9 ENTRY INTO FORCE

The NC EB will enter into force 20 days after its publication. All provisions of this Network Code shall apply as from the day of expiration of a two years period following its publication.

8 LITERATURE & LINKS

[1] “Framework Guidelines on Electricity Balancing” (FG-2012-E-009), Agency for the Cooperation of Energy Regulators (ACER), 18 September 2012

[2] Initial Impact Assessment for the Framework Guidelines on Electricity Balancing, Agency for the Cooperation of Energy Regulators (ACER), 18 September 2012

[3] Impact Assessment on European Electricity Balancing Market, Contract EC DG ENER/B2/524/2011, March 2013

9 APPENDIX

9.2 FRAMEWORK GUIDELINE CROSSCHECK

FG Article		NC Article Title	Para.	Remark
1 General Provisions				
1.1 Scope				
The Network Code on Electricity Balancing shall set the minimum standards and requirements needed for a competitive, harmonised and effective EU-wide balancing market, concerning cross-border and market integration issues. In particular, it shall define the necessary level of harmonisation of the varying national balancing regime design elements, in order to foster European balancing market integration.		Article 9 General objectives of the balancing market	2	
1.2 Links and dependencies				
With respect to the Network Code on Operational Security: the Network Code on Electricity Balancing shall deal with market-based selection of balancing services for load frequency control and, where relevant, real-time congestion management and take into consideration rules and processes to be defined in the network code on operational security;		Article 18 Fall-back procedures	3	SPOC NC EB - NC OPS established; explicitly mentioned in Art. 18
With respect to the Network Code on Operational Planning and Scheduling: with regard to maintaining the security of supply and selection and cross-border exchange of balancing services, the Network Code on Electricity Balancing shall deal with the procurement and product specifications of these services and take into consideration operational planning and scheduling procedures to be defined in the Network Code on Operational Planning and Scheduling;		CHAPTER 3 PROCUREMENT OF BALANCING SERVICES		SPOC NC EB - NC OPS established; no specific reference
With respect to the Network Code on Load-Frequency Control and Reserves: with regard to the technical requirements for balancing services and their utilisation, the Network Code on Electricity Balancing shall ensure an efficient and market-based selection of balancing services and take into consideration technical processes, requirements and sizing principles to be defined in the Network Code on Load-Frequency Control and Reserves, as well as the technical and operational limitations for cross-border exchanges of balancing services to be defined in the Network Code on Load-Frequency Control and possibly on the Network Code on Operational Security.		CHAPTER 3 PROCUREMENT OF BALANCING RESERVES		various articles (12, 14, 20, 21, 24) with explicit references to provisions in NC LFCR; SPOC NC EB - NC LFCR established

FG Article		NC Article Title	Par a.	Remark
With respect to the Network Code on Capacity Allocation and Congestion Management for electricity: the Network Code on Electricity Balancing shall take into account interactions with intraday and day-ahead time-frames, in particular gate closure times, and shall be consistent with them in terms of calculation of and access to cross-border capacities, when using them for cross-border balancing and balancing market integration.		Article 20 Firmness of balancing energy bids and balancing gate closure time		also Chapter 4 Use, allocation and reservation of cross zonal capacity
With respect to the Network Codes for Requirements for Grid Connection applicable to all Generators and the Demand Connection Code, the Network Code on Electricity Balancing shall take into account these technical requirements, where relevant, to define the product specifications for generators and loads needed for the provision of balancing services.		Article 17 Requirements for standard and specific products	3	Standard Balancing Product characteristics apply to bids (par 4), not to connections. Standard Products allow for participation of load, storage, and generation, including renewables, aggregated or not (par 5b).
[The] impact [that issues addressed in the FWGL may have on electricity system operation, capacity allocation and congestion management and electricity grid connection] shall be taken into account while drafting or revising the corresponding network codes to ensure that the provisions foreseen in these Framework Guidelines and in the Network Code on Electricity Balancing are applicable in practice to maximise the efficiency of balancing while safeguarding operational security.				impact assessment is a task for the EC; SD contains some indications but will not be expanded beyond of what is already there
The Network Code on Electricity Balancing shall ensure an adequate level of transparency for market participants, in consistency with ERGEG final advice on Comitology Guidelines on Fundamental Electricity Data Transparency and the Comitology Guidelines on Fundamental Electricity Data Transparency once adopted.		Article 8 Publication for information		also Art 57 annual report
1.3 Definitions				
1.4 Application				
The Network Code on Electricity Balancing shall take precedence over relevant national frameworks (legislation, regulation, codes, standards, etc.) for cross-border and market integration issues and national frameworks shall be adapted to the extent necessary, to ensure proper implementation at the national level.		CHAPTER 0 WHEREAS/LE GAL	6	status of NC is clear from EU regulation

FG Article		NC Article Title	Para.	Remark
The Network Code on Electricity Balancing shall be without prejudice to the Member States' rights to maintain or introduce more detailed measures, provided such measures are compatible with the provisions of the Network Code on Electricity Balancing.		CHAPTER 0 WHEREAS/LE GAL		
The Network Code on Electricity Balancing shall also be without prejudice to the Member States' rights to establish national network codes which do not affect cross-border trade, in accordance with Article 8(7) of the Electricity Regulation, provided such national codes do not prevent the application and implementation of the Network Code on Electricity Balancing.		CHAPTER 0 WHEREAS/LE GAL		
The Network Code on Electricity Balancing shall concur with the competences of NRAs, deriving from Article 37(6)(b) of the Electricity Directive, to fix or approve, sufficiently in advance of their entry into force, at least the methodologies used to calculate or establish the terms and conditions for the provision of balancing services.		Article 7 Regulatory approval		also Art 16 terms and conditions related to balancing
The Network Code on Electricity Balancing shall provide criteria for the elaboration and adoption of common methodologies, terms and/or conditions, as well as the deadline for submission to NRAs and the Agency, where relevant.		CHAPTER 1 GENERAL PROVISIONS		anchored in various articles throughout the code
The Network Code on Electricity Balancing shall be without prejudice to the competences and powers of NRAs pursuant to the Electricity Directive, particularly pursuant to its Articles 35 et seq., which notably include, further to the competences regarding the terms and conditions, or at least the methodologies for their calculation or establishment, for the provision of balancing services in accordance with the above, competences and powers for monitoring, disputes settlements and information requests.		CHAPTER 0 WHEREAS/LE GAL		NRAs competences from the Electricity Directive are not infringed
Where relevant, the Network Code on Electricity Balancing shall require that NRAs approve, reject or request to amend the proposed terms and conditions, methodologies or any other procedures related to balancing: - within three months after having received a proposal if the approval process concerns only one NRA; - within six months after having received a proposal if the approval process concerns more than one NRA.		Article 7 Regulatory approval		
The Network Code on Electricity Balancing shall be applied taking into account possible public service obligations in application of Article 3 of the Electricity Directive and without prejudice to the regulatory regime for cross-border issues pursuant to Article 38 of the Electricity Directive.		CHAPTER 0 WHEREAS/LE GAL		

FG Article		NC Article Title	Par a.	Remark
The standards and requirements of the Network Code on Electricity Balancing shall apply after the expiration of a transitory period to be determined in the Network Code on Electricity Balancing, unless specified otherwise in these Framework Guidelines. The determination of the transitory period shall be subject to consultation with the relevant stakeholders. This period shall not exceed two years, starting on the day of entry into force of the Network Code on Electricity Balancing.		Article 60 Transition Period		consultation with draft NC EB
The standards and requirements of the Network Code on Electricity Balancing shall also apply to existing agreements related to electricity balancing that were concluded between TSO and relevant grid users (such as Balance Responsible Party (BRP) and Balance Service Provider (BSP)) before the expiration of the transitory period.		Article 58 Targets	2	
1.5 Derogations				
The Network Code on Electricity Balancing shall describe the process and criteria to apply for derogation.		Article 61 Derogations		
Where granted, derogations shall allow TSOs to benefit from transitional arrangements for the implementation of provisions.		Article 61 Derogations		
The Network Code on Electricity Balancing may allow for derogation for a maximum period of 2 years and shall specify the provisions for which the derogation can be granted. When identifying these provisions ENTSO-E shall provide detailed justifications with regard to the conditions mentioned in the first paragraph of this section.		Article 61 Derogations	5	provisions for which derogation may be granted still have to be defined
The Network Code on Electricity Balancing shall require that the application process for derogations is completed prior to the day of application of the relevant provisions.		Article 61 Derogations	4	
The Network Code on Electricity Balancing shall provide that the derogation process is transparent, non-discriminatory, non-biased, well-documented and based on a reasoned request demonstrating the fulfilment of the conditions.		Article 61 Derogations	2	
The format and content of the reasoned request shall be prescribed in the Network Code on Electricity Balancing. [The Network Code on Electricity Balancing shall prescribe that the reasoned request shall also include a detailed plan and timeline as to how the TSO requesting derogations shall address the reasons underlying its request for derogation and thus ensure the implementation of the concerned provision of the Network Code on Electricity Balancing after expiration of the derogation period. The reasoned request shall additionally take into account the consequences on adjacent markets and the fact that the derogation shall not jeopardise the integration of balancing markets across Europe.]		Article 61 Derogations	6	

FG Article		NC Article Title	Par a.	Remark
During the derogation application process, the concerned TSO shall be deemed as compliant.		Article 61 Derogations	4	
The Network Code on Electricity Balancing shall require that the relevant NRA decides within 6 months on whether to grant the derogation, based on the TSO's reasoned request.		Article 61 Derogations	7	
The Network Code on Electricity Balancing shall require the communication of the TSO's reasoned request to the Agency.		Article 61 Derogations	8	
1.6 Agency involvement				
The Network Code on Electricity Balancing shall provide that ENTSO-E or NRA(s) or TSO(s) directly, as relevant, submit to the Agency, without delay, all the relevant information and documents related to the opening of any approval or fixing procedure by NRAs, as provided for in Sections 1.5, 2.2, 3.2, 3.3.1, 3.3.2, 3.4.1, 4.2 and 4.3 of these Framework Guidelines. The Network Code on Electricity Balancing shall also require relevant NRAs to inform the Agency of the outcome of any approval or fixing procedures.				notifications from FG are included in NC EB: Art 11 role of TSOs, Art 17 requirements for standard and specific products, Art 22 general provisions, Art 30 pricing of cross zonal capacities, Art 32 capacity provision methodologies, Art 61 derogations
2 General principles				
2.1 General principles pursued in the Network Code on Electricity Balancing				
The specifications for national balancing reserve and balancing energy procurement and cross-border balancing exchanges shall pursue the following objectives: - safeguarding operational security; - fostering competition, non-discrimination and transparency in balancing markets; - facilitating wider participation of demand response and renewable sources of energy; - increasing overall social welfare and efficiency; - promoting cross-border balancing exchanges.		Article 9 General objectives of the balancing market	2	
In addition, it shall be ensured that these specifications are consistent and take into account interactions with other market timeframes (e.g. intraday, day-ahead).		Article 25 General provisions		as well in other articles
2.2 Role of TSOs in balancing				
The Network Code on Electricity Balancing shall clearly specify the roles and responsibilities of TSOs regarding electricity balancing.		Article 11 Role of the		

FG Article		NC Article Title	Par a.	Remark
		transmission system operators		
The Network Code on Electricity Balancing shall require that each TSO is responsible for procuring the required balancing services from BSPs and is not allowed to offer the balancing services itself except, subject to NRA's approval, if system security is threatened due to insufficient bids from BSPs.		Article 11 Role of the transmission system operators	2 & 3	
The Network Code on Electricity Balancing shall define common principles for the procurement of reserves and balancing energy in order to ensure that: - it is non-discriminatory, fair, objective, transparent and market based; - it is set to foster liquid balancing markets and avoid undue entry barrier for new entrants; - undue distortions within the internal market and in particular between adjacent markets that use different procurement mechanisms are avoided.		Article 9 General objectives of the balancing market	2	
2.3 Terms and conditions related to balancing				
The Network Code on Electricity Balancing shall require that TSOs, or other responsible entity where relevant, define terms and conditions related to balancing in accordance with the Network Code on Electricity Balancing and European and national legislation.		Article 16 Terms and conditions related to balancing	4	
The Network Code on Electricity Balancing shall require that these terms and conditions include reasonable and justified requirements for BSPs and BRPs. The Network Code on Electricity Balancing shall provide that TSOs are responsible for defining the modalities to be applied to BSPs, in the case of non-compliance with technical and contractual requirements, within the terms and conditions.		Article 16 Terms and conditions related to balancing	4, 6, 7	
The Network Code on Electricity Balancing shall allow for the aggregation of – at least – small units (demand and/or generation) within a control area to offer balancing services. The conditions for aggregation shall be described in the terms and conditions to be approved by NRAs after public consultation.		Article 16 Terms and conditions related to balancing	2a	

FG Article		NC Article Title	Par a.	Remark
The Network Code on Electricity Balancing shall require that the terms and conditions related to balancing allow for load entities (whether through aggregators or not) as well as generation units from renewable and intermittent energy sources to become BSPs. These terms and conditions, including the underlying requirements, shall, in particular, be set in order to facilitate the participation of demand response, renewable and intermittent energy sources in the balancing markets, while respecting the other objectives mentioned in Section 2.1 of these Framework Guidelines.		Article 16 Terms and conditions related to balancing	2	
The Network Code on Electricity Balancing shall require TSOs to establish a framework for discussion with and disseminating information to the relevant stakeholders, as well as a formal process for public consultation and the possibility for BSPs and BRPs to propose amendments to the terms and conditions related to balancing.		Article 6 Consultation	1a	also Art 8 publication of information
The Network Code on Electricity Balancing shall require that the terms and conditions related to balancing, including the rules and tariffs, shall be established pursuant to a methodology compatible with the competences of NRAs pursuant to Article 37(6)(b) of the Electricity Directive. The Network Code on Electricity Balancing shall specify that the provisions and process described in Section 1.4 of these Framework Guidelines apply in this case.		Article 16 Terms and conditions related to balancing		
The Network Code on Electricity Balancing shall require that TSOs, when consulting stakeholders on terms and conditions, methodologies or any other procedures related to balancing, give at least four weeks to stakeholders to provide their consultation responses.		Article 6 Consultation	1	
The Network Code on Electricity Balancing shall require TSOs to ensure that all parties subject to those terms and conditions related in the control area, including BSPs and BRPs, meet the requirements set in the terms and conditions for balancing markets to ensure operational security of the system.		Article 9 General objectives of the balancing market		no explicit reference to operational security in art 16 on terms and conditions; there is, however, a reference in art 9 general objectives of the balancing market
In case the Network Code on Electricity Balancing shall refer to cost recovery, it shall be without prejudice to the competences and powers of NRAs pursuant to the Electricity Directive, in particular its Article 37(1)(a), while the recovery of costs shall be limited to efficiently incurred costs.		Article 4 Recovery of costs		according to EC, cost recovery is covered by regulation
2.4 Transparency				

FG Article		NC Article Title	Par a.	Remark
The Network Code on Electricity Balancing shall require TSOs to make sure that, at least, the following information is published on a public website: - the terms and conditions related to balancing, both reserves and balancing energy, including rules and tariffs; - the information related to the requirement for becoming a BSP or a BRP; - the necessary data to ensure an economically-efficient functioning of balancing markets and to provide symmetrical information to all interested market parties: this includes volumes and prices of procured reserves, volumes and prices of all balancing energy bids – possibly in an aggregated and anonymous format – as well as volumes and prices of activated balancing energy bids of the previous imbalance settlement period; timing for publication shall be shortened in order to ensure that interested market parties are able to take this information into account in an efficient manner and shall not be longer than one hour.		Article 8 Publication for information	3 & 4	
The Network Code on Electricity Balancing shall ensure an adequate level of transparency for market participants, taking into account ERGEG final advice on Comitology Guidelines on Fundamental Electricity Data Transparency and in consistency with the Comitology Guidelines on Fundamental Electricity Data Transparency once adopted.		Article 8 Publication for information		also Art 57 annual report
2.5 Reporting and monitoring				
The Network Code on Electricity Balancing shall require that TSOs develop tools ensuring real-time monitoring of performance and quality of balancing in order to maintain their area control error inside a defined range corresponding to each control area, in accordance with the provisions of Network Code on Load Frequency Control and Reserves.				this obligation is sufficiently covered by NC LFCR and thus not included in NC EB
The Network Code on Electricity Balancing shall require ENTSO-E to publish an annual report monitoring, describing and analysing the implementation of the Network Code on Electricity Balancing, as well as the progress made in terms of harmonisation and integration of balancing markets. The annual report shall also include some indicators measuring the efficiency of electricity balancing.		Article 57 Annual report	1, 5	
The Network Code on Electricity Balancing may foresee that a more detailed version of the annual report is published every two years and that, for the years in between, a simpler version is published to review the progress made and update indicators, without performing detailed analyses.		Article 57 Annual report	2	
The Network Code on Electricity shall include a process to review the modalities of		Article 57	8	

FG Article		NC Article Title	Par a.	Remark
publication of the annual report after the target models are implemented.		Annual report		
2.6 Cost-benefit analysis				
The Network Code on Electricity Balancing shall describe the process for carrying out cost-benefit analysis.		Article 59 Cost-Benefit Analysis	4, 5, 6	
This process shall require that, when TSOs are planning to carry out such an analysis, they shall first submit the criteria and the methodology to the relevant NRAs for approval. TSOs shall then provide the results of the cost-benefit analysis to the relevant NRAs, together with justified proposals on how to tackle possible issues identified by the cost-benefit analysis.		Article 59 Cost-Benefit Analysis	4 & 6	
3 Procurement of balancing services				
3.1 Role of BSPs in balancing				
BSPs shall provide all necessary data and information needed by the TSO and/or distribution system operator to evaluate the balancing service provided, at both the pre-qualification stage and real-time operation of the system.		Article 16 Terms and conditions related to balancing	6	
3.2 Standardization of products				
The Network Code on Electricity Balancing shall require a standardisation of balancing energy and balancing reserve products used to balance the system in line with the objectives mentioned in Section 2.1 of these Framework Guidelines. The Network Code on Electricity Balancing shall list the standard characteristics, which define balancing energy and balancing reserve products.		Article 17 Requirements for standard and specific products	1 & 4	
The Network Code on Electricity Balancing shall require that all TSOs prepare a common proposal for standard balancing energy and balancing reserve products, including detailed specifications of their characteristics.		Article 17 Requirements for standard and specific products	1	
The Network Code on Electricity Balancing shall set forth a process to define, review and update the list of standard products, which includes a public consultation with market participants. The process shall foresee a proposal from all TSOs to all NRAs and the Agency.		Article 17 Requirements for standard and specific products	2, 3	

FG Article		NC Article Title	Para.	Remark
The Network Code on Electricity Balancing shall specify that the provisions and process described in Section 1.4 of these Framework Guidelines apply to the approval of the list of standard balancing energy and balancing reserve products and of its subsequent updates.		Article 7 Regulatory approval	2a	
The first proposal shall be submitted to the Agency and to all NRAs, no later than one year after entry into force of the Network Code on Electricity Balancing.		Article 17 Requirements for standard and specific products	1	
The characteristics of standard products shall satisfy the needs of TSOs, in order to balance the system and take into account the technical characteristics of available balancing resources across Europe, in particular from demand and renewable generation units, as well as smaller generation units.		Article 17 Requirements for standard and specific products	5	availability is ensured by stakeholder consultation (Art 6)
When defining these products, TSOs shall foster cross-border competition and avoid undue market fragmentation.		Article 9 General objectives of the balancing market	2	covered in Art 9 General Objectives
The Network Code on Electricity Balancing shall also allow for specific balancing energy and balancing reserve products, if the resources from standard products would not be sufficient to balance the system, and if this does not create significant inefficiencies and distortions in national or cross-border adjacent markets.		Article 17 Requirements for standard and specific products	6	
In such cases, TSOs using these specific products shall justify the existence of these products and seek the approval or fixing of the relevant NRAs.		Article 7 Regulatory approval	4f	
In addition, they shall publish the information on the volumes of specific products available and actually activated, and analyse in the annual report the costs and benefits, and the possible inefficiencies and distortions of having these specific products in terms of competition and market fragmentation, facilitation of demand response and participation of renewable energy sources, integration of balancing markets and side-effects on other electricity markets.		Article 8 Publication for information		also art 57 annual report

FG Article		NC Article Title	Par a.	Remark
TSOs shall make specific balancing energy products available for cross-border exchanges. In case these products cannot be activated by other TSOs, they shall still be made visible to them.		Article 17 Requirements for standard and specific products	6c	also art 19 selection and conversion of products
3.3 Activation and cross-border exchanges of balancing energy				
3.3.1 Activation of balancing energy				
The Network Code on Electricity Balancing shall provide that the bids from the merit order list are activated through a non-discriminatory, fair, objective and transparent mechanism which optimises the use of balancing resources and of the transmission infrastructure and minimises the costs of balancing whilst taking into account technical and network constraints.		Article 27 Activation mechanism of balancing energy	1	
This mechanism shall be described in the terms and conditions mentioned in Section 2.3.		Article 16 Terms and conditions related to balancing		
Deviation from the merit order shall be reported transparently.		Article 26 General provisions	2	also covered by Transparency Regulation
The Network Code on Electricity Balancing shall foresee that the activation of frequency restoration reserves (in particular when manually activated) and replacement reserves is coordinated in order to allow efficient utilisation and arbitrage between these balancing resources across markets.		Article 28 Optimisation principles of activation from common merit order lists	1	
The Network Code on Electricity Balancing shall require the harmonisation of the pricing method for balancing energy products, which shall ensure an economically efficient use of demand response and other balancing resources subject to operational security limits and shall give correct price signals and incentives to market participants.		Article 25 General provisions		

FG Article		NC Article Title	Par a.	Remark
The Network Code on Electricity Balancing shall set forth a process to define, review and change the common pricing method. This process shall include public consultation with market participants.		Article 25 General provisions	2, 3, 4	also covered by Art 6 consultation
[The Network Code on Electricity Balancing] shall foresee a proposal from all TSOs to all NRAs and the Agency.		Article 25 General provisions	2	also Art 7 regulatory approval
The Network Code on Electricity Balancing shall specify that the provisions and process described in Section 1.4 of these Framework Guidelines apply to the approval of the common pricing method and of any subsequent revisions.		Article 7 Regulatory approval	2b	
The Network Code on Electricity Balancing shall provide that the initial proposal for the pricing method shall be submitted to the Agency and all NRAs no later than one year after the entry into force of the Network Code on Electricity Balancing and shall be based on marginal pricing (pay-as-cleared), unless TSOs provide all NRAs with a detailed analysis demonstrating that a different pricing method is more efficient for EU-wide implementation in pursuing the general objectives defined in Section 2.1.		Article 25 General provisions	2	
The Network Code on Electricity Balancing shall allow BSPs to place and/or update their bids as close to real time as possible and at least up to one hour before real time.		Article 13 Role of Balancing Service Providers	2	
The Network Code on Electricity Balancing shall give the possibility for TSOs to require information on unused generation capacity and other balancing resources after day-ahead and intraday markets, and/or require BSPs to offer this capacity in the balancing markets, subject to approval or fixing of the respective NRAs.		Article 25 General provisions	5	
The Network Code on Electricity Balancing shall require TSOs to perform and share, amongst themselves, close-to-real-time short-term predictive forecasts of system conditions (generation, load, reserve requirements, transmission network, etc.) in a harmonised way, in order to coordinate and optimise the balancing actions taken.		Article 10 Coordinated balancing area	6	
The Network Code on Electricity Balancing shall oblige TSOs to allow the participation of balancing resources to provide balancing energy, without having a contract for reserves, at least for resources that are used as replacement reserves and manually activated frequency restoration reserves.		Article 13 Role of Balancing Service Providers	4	

FG Article		NC Article Title	Par a.	Remark
The Network Code on Electricity Balancing shall require ENTSO-E to assess, in the annual report, the progress in harmonisation of balancing products and rules for activation of balancing energy and integration of balancing markets, as well as the progress in terms of social welfare and economic efficiency. The annual report shall also analyse the effects of remaining non-harmonisation.		Article 57 Annual report	4	
3.3.2 Cross-border exchanges of balancing energy				
The Network Code on Electricity Balancing shall set all necessary features to facilitate the development of cross-border exchanges of balancing energy and stipulate that these are made possible on every border.		Article 10 Coordinated balancing area		also Art 58 targets
The Network Code on Electricity Balancing shall oblige TSOs to coordinate in order to minimise, when economically efficient, counteracting activation of balancing energy between control areas, taking into account cross-border capacities (i.e. netting of system imbalances).		Article 58 Targets	1	also Art 55 algorithm development
The Network Code on Electricity Balancing shall oblige TSOs to coordinate and optimise the activation of balancing energy from resources that are used as replacement reserves and manually activated frequency restoration reserves.		Article 58 Targets	1c	
The Network Code on Electricity Balancing shall oblige TSOs to coordinate and optimise the activation of balancing energy from resources that are used as automatically activated frequency restoration reserves.		Article 58 Targets	1b	
The Network Code on Electricity Balancing shall define that exchanges of balancing energy are to be based on a TSO-TSO model with common merit order list.		Article 26 General provisions	4	
The Network Code on Electricity Balancing may allow for a different common merit order list at least for automatically, where relevant, and manually activated reserves.		Article 27 Activation mechanism of balancing energy	4	
An optimisation process may be used to allow for a concrete and efficient implementation, and the use of common merit order lists with different products and technical constraints.		Article 28 Optimisation principles of	1	

FG Article		NC Article Title	Par a.	Remark
		activation from common merit order lists		
<p>The Network Code on Electricity Balancing shall provide a full description of the models for exchanging balancing energy, including the prerequisites (e.g. contractual or operational) and the technical requirements to implement them. In particular, the Network Code on Electricity Balancing shall describe:</p> <ul style="list-style-type: none"> - the principles according to which TSOs share and activate balancing bids and offers. These principles shall ensure non-discrimination and avoid distortions between markets. The declination of these principles at the national level shall be non-discriminatory, objective, fair and transparent, and submitted to NRAs for approval or fixing; - the adaptation of processes needed to allow for exchanging balancing energy; - the settlement rules between TSOs; - the responsibilities of the different parties involved. 				anchored in various articles throughout the code
<p>The Network Code on Electricity Balancing shall foresee that the settlement rules between TSOs include financial compensation for balancing energy exchanged implicitly, in particular due to the netting of system imbalances and due to unintentional deviations (difference between the control area schedules and tie-line flows), based on the prices of balancing energy.</p>		Article 45 Unintended exchange of energy through unintentional deviations		also Art 39 settlement of intended exchange of energy through imbalance netting process
<p>The Network Code on Electricity Balancing shall define standard features for the exchange of balancing energy, both from replacement reserves and from frequency restoration reserves – including the products needed and the characteristics of a common optimisation process – so as to ensure compatibility between different implementation projects towards the solutions required in these Framework Guidelines.</p>		Article 17 Requirements for standard and specific products		also Art 28 optimisation principles of activation
<p>The Network Code on Electricity Balancing shall oblige the TSOs involved in different cross-border balancing projects to work in close coordination so that these projects remain compatible in terms of systems, governance etc. in order to ensure efficient convergence of these projects.</p>		Article 58 Targets	2	also Art 57 annual report

FG Article		NC Article Title	Par a.	Remark
The Network Code on Electricity Balancing shall oblige ENTSO-E to report to the Agency as soon as incompatibilities are identified.		Article 10 Coordinated balancing area	7	
The Network Code on Electricity Balancing shall require that for each project the implementation model for cross-border balancing exchanges is submitted to the relevant NRAs for approval or fixing, after public consultation.		Article 7 Regulatory approval	3a	
<u>Cross-border exchanges of balancing energy from replacement reserves and manually activated frequency restoration reserves</u>				
The Network Code on Electricity Balancing shall require that, no later than two years after its entry into force, the multilateral TSO-TSO model with common merit order list is implemented for the exchange of balancing energy from resources that are used as replacement reserves.		Article 58 Targets	1a	
The Network Code on Electricity Balancing shall require that, no later than four years after its entry into force, the multilateral TSO-TSO model with common merit order list is extended to balancing energy from resources that are used as manually activated frequency restoration reserves.		Article 58 Targets	1c	
The Network Code on Electricity Balancing shall foresee that, at these stages, TSOs may decide not to share a certain amount of the most expensive balancing energy bids gathered in their control area in the common merit order list.		Article 26 General provisions	7	
The Network Code on Electricity Balancing shall specify the criteria and general methodology for defining the volume of unshared bids, which shall take into account the availability (e.g. using a statistical or probabilistic approach) of the bids from the common merit order list.		Article 26 General provisions	7	also Art 6 consultation and Art 7 regulatory approval
The total volume of unshared bids (i.e. most expensive and specific) shall not exceed the volumes of reserves defined by the dimensioning rules foreseen in the Network Code on Load Frequency Control and Reserves.		Article 26 General provisions	7	
The methodology shall avoid any free-riding behaviour from participating TSOs and allow for a reciprocal and efficient sharing and activation of balancing resources.		Article 26 General provisions	10	

FG Article		NC Article Title	Par a.	Remark
The Network Code on Electricity Balancing shall impose that the definition and application of the methodology at the national level is submitted to public consultation and that each TSO justifies the volume of unshared bids and seeks the approval or fixing of NRAs. The methodology and its application may be reviewed and updated every year to improve its efficiency, after public consultation and NRA's approval or fixing.		Article 7 Regulatory approval	4	also Art 26 general provisions
The Network Code on Electricity Balancing shall require, no later than six years after its entry into force, TSOs to be obliged to share, in a European-wide TSO-TSO model with common merit order list, all balancing energy bids from resources that are used as replacement reserves and manually activated frequency restoration reserves.		Article 58 Targets	1d	
The Network Code on Electricity Balancing shall require that, if TSOs identify certain features of this target which are not feasible or do not ensure positive net benefit, they shall prepare a proposal for modification of these features no later than three years after the entry into force of the Network Code on Electricity Balancing. This proposal shall be consulted with market participants and supported by a thorough cost-benefit analysis and justification of each proposed modification. The proposal shall be submitted to all NRAs and the Agency.		Article 58 Targets	1b	
The Network Code on Electricity Balancing shall specify that the provisions and process described in Section 1.4 of these Framework Guidelines apply to the approval of the modification of the above-referred features.		CHAPTER 0 WHEREAS/LEGAL		
<u>Cross-border optimised activation of balancing energy from automatically activated frequency restoration reserves</u>				
The Network Code on Electricity Balancing shall require that, no later than two years after its entry into force, TSOs coordinate in order to minimise, when economically efficient, counteracting activation of balancing energy between control areas, taking into account cross-border capacities (i.e. netting of system imbalances).		Article 58 Targets	1a	

FG Article		NC Article Title	Par a.	Remark
<p>The Network Code on Electricity Balancing shall require that, no later than four years after its entry into force, the activation of balancing energy from automatically activated frequency restoration reserves is coordinated between TSOs in order to optimise their use and reduce balancing costs. It shall also be coordinated with the activation of balancing energy from manually activated frequency restoration reserves and replacement reserves to ensure the efficient use of all balancing resources.</p>		Article 58 Targets	1c	
<p>The Network Code on Electricity Balancing shall require that all TSOs elaborate a proposal on the target model for the exchanges of balancing energy from automatically activated frequency restoration reserves. This proposal shall be consulted with market participants and submitted to all NRAs and the Agency no later than three years after the entry into force of the Network Code on Electricity Balancing.</p>		Article 58 Targets	1b	
<p>The Network Code on Electricity Balancing shall specify that the provisions and process described in Section 1.4 of these Framework Guidelines apply to the approval of the target model for the exchanges of balancing energy from automatically activated frequency restoration reserves.</p>		CHAPTER 0 WHEREAS/LE GAL		
<p>The proposal shall ensure the activation of the most efficient resources across large areas and positive net benefits of implementation. It shall be based on the common merit order list or another approach, for which TSOs are able to demonstrate a higher efficiency based on the comparison between economic net benefits and implementation as well as related operational costs. When elaborating this proposal, TSOs shall ensure a proper level of stakeholder involvement.</p>		Article 27 Activation mechanism of balancing energy		
<p>Unless otherwise decided by all NRAs, the proposed model shall be implemented no later than six years after the entry into force of the Network Code on Electricity Balancing.</p>		Article 58 Targets	1d	
<p>The Network Code on Electricity Balancing shall specify that ENTSO-E shall include, in the annual report, an assessment of the progress of coordinating the activation of balancing energy from frequency restoration reserves and from replacement reserves and clearly address in the annual report the status of the projects in which each TSO is involved.</p>		Article 57 Annual report	4	

FG Article		NC Article Title	Par a.	Remark
3.4 Procurement and exchanges of contracted reserves				
3.4.1 Procurement of contracted reserves				
The Network Code on Electricity Balancing shall require TSOs to coordinate in determining the amount of reserves which is necessary in their control area, taking into account requirements from the Network Code on Load Frequency Control and Reserves and potential gains from the sharing of reserves and balancing energy as foreseen in Sections 3.2.2 and 3.3.2 of these Framework Guidelines.				dimensioning is covered by LFCR NC
TSOs shall publish an annual report in which they shall justify the amount of procured reserves with respect to these considerations.		Article 57 Annual report	4	
The Network Code on Electricity Balancing shall define common principles for the procurement of reserves in order to ensure that it is non-discriminatory, fair, objective, transparent, market-based and economically efficient, and that there are limited distortions between adjacent markets that use different procurement mechanisms.		Article 22 General provisions		
Procurement shall be made for upward and downward reserves separately. However, if it can be demonstrated that social welfare is improved and that it does not hinder the participation of demand response, renewable and intermittent energy sources, then a TSO may be allowed to combine procurement and to accept additional bids linking upward and downward bids, subject to approval by its NRA.		Article 22 General provisions	5	
The Network Code on Electricity Balancing shall provide that the timeframes and duration of reserve procurement are defined so that it facilitates participation of new entrants, demand response and renewable generators as well as small generators.		Article 22 General provisions		and Art 9 general objectives of the balancing market
The Network Code on Electricity Balancing shall oblige TSOs to procure as many reserves as possible in the short term. Any long term procurement shall be thoroughly justified to their NRAs and related information shall be published.		Article 22 General provisions	4	

FG Article		NC Article Title	Par a.	Remark
The Network Code on Electricity Balancing shall oblige TSOs to allow the collateralisation of reserves: a BSP who contracted with a TSO to provide reserves shall be allowed to purchase reserves from another BSP in shorter timeframes, as long as the TSO is informed and the other BSP is physically able to provide the required reserve product.		Article 22 General provisions	7	
TSOs shall define the modalities of collateralisation of reserves, which shall be included in the rules and/or modalities of reserve procurement. These modalities shall include responsibility/liability arrangements.		Article 22 General provisions	9	
The Network Code on Electricity Balancing shall require that rules and/or modalities of reserve procurement are made public and submitted to NRAs for approval or fixing after public consultation.		Article 7 Regulatory approval	4	also Art 8 publication of information as well as Art 6 consultation
The Network Code on Electricity Balancing shall require ENTSO-E to assess the progress of harmonisation of products and rules for procurement of contracted reserves, in the annual report. This report shall analyse the effects of non-harmonisation.		Article 57 Annual report	4	
3.4.2 Cross-border exchanges of contracted reserves				
The Network Code on Electricity Balancing shall support cross-border exchange of reserves. [Cross-border exchange of reserves shall respect the requirements defined in the Network Codes on Load Frequency Control and Reserves and on operational planning and scheduling.]		Article 23 General provisions		
The Network Code on Electricity Balancing shall specify that cross-border exchanges of reserves are possible only in situations where reservation of cross-border capacity is not necessary, or under condition of capacity reservation.		Article 29 Use of cross zonal capacity for balancing reserves	3	
The Network Code on Electricity Balancing shall allow cross-border exchanges of reserves without reservation of cross-border capacity, subject to conditions for system security as set out by the Network Code on Load Frequency Control and Reserves.		Article 29 Use of cross zonal capacity for balancing reserves	1	

FG Article		NC Article Title	Par a.	Remark
The Network Code on Electricity Balancing shall oblige neighbouring TSOs to regularly assess the opportunity to exchange reserves cross-border without reservation of cross-border capacity and report back to their NRAs.		Article 57 Annual report	e	to be detailed in NC EB (open issue)
The Network Code on Electricity Balancing shall define and allow the following models for exchanging reserves, as well as their prerequisites in terms of coordination, arrangements and guaranteeing operational security: - to exchange surpluses of reserves through a bilateral reserve trading model: this model refers to bilateral exchanges of reserves between two adjacent areas in which reserve procurement processes have not been integrated, nor harmonised; - to implement a multilateral reserve trading model involving TSOs and BSPs of two or more control areas, through a common procurement process: this model refers to multilateral exchanges of reserve between two or more adjacent areas in which reserve procurement processes have been harmonised and integrated into a common procurement process.		Article 23 General provisions		and Art general provisions on exchange and sharing of balancing reserves
The Network Code on Electricity Balancing shall also define and allow the sharing of reserves.		Article 23 General provisions		
The sharing of reserves shall allow to diminish the amount of contracted reserves, ceteris paribus, while keeping the same level of security following the stipulations of the Network Code on Load Frequency Control and Reserves, by using them more efficiently and limiting risks of system imbalances.				dimensioning is covered by LFCR NC
The Network Code on Electricity Balancing shall require that the sharing of frequency restoration reserves is envisaged by adjacent TSOs.		Article 22 General provisions	13	
Where requested, TSOs shall provide their NRAs with a cost-benefit analysis on the implementation of such a model. Based on this analysis, NRAs shall decide on the extent to which sharing of reserves shall be implemented.		Article 59 Cost-Benefit Analysis	3	
The Network Code on Electricity Balancing shall oblige TSOs to define modalities for exchanges of reserves and to submit them to relevant NRAs for approval or fixing after public consultation.		Article 7 Regulatory approval	2	and Art 6 public consultation

FG Article		NC Article Title	Par a.	Remark
The Network Code on Electricity Balancing shall impose that these modalities are transparent, objective, fair, non-discriminatory, market-based, and allow for an economically efficient cross-border procurement of reserves.		Section 1 Principles of the balancing market		not explicitly mentioned in this section, but repeatedly included as overall guidelines for the code
The Network Code on Electricity Balancing shall require ENTSO-E to assess the development of cross-border exchanges of contracted reserves, in the annual report.		Article 57 Annual report	4	
4 Reservation and use of cross-border capacity for balancing				
4.1 Underlying grid model and cross-border capacity calculation for balancing				
The Network Code on Electricity Balancing shall impose that, when balancing the system and exchanging balancing energy, TSOs take into account the physical capabilities of the network and make the most efficient use of these network capabilities.				implicitly in the code
TSOs shall use a cross-border capacity calculation method at least as precise as in previous timeframes. Load flow calculations in balancing time-frame shall be considered, if applicable, and TSOs shall avoid any aggregated approach which would deteriorate the economic efficiency of balancing, unless it is thoroughly and transparently justified to NRAs and the Agency.		CHAPTER 4 USE, ALLOCATION AND RESERVATION OF CROSS ZONAL CAPACITY FOR BALANCING RESERVES		
The Network Code on Electricity Balancing shall require that locational information of balancing resources is used to further optimise the balancing of the system and perform security analysis to avoid internal and cross-border congestions. The functioning of common merit order list shall technically enable TSOs to benefit from locational information of balancing resources.		Article 27 Activation mechanism of balancing energy	1	
4.2 Use of cross-border capacity for balancing				

FG Article		NC Article Title	Par a.	Remark
<p>The Network Code on Electricity Balancing shall foresee a mechanism that allows TSOs to allocate cross-border capacities for the exchange of balancing services on an efficient, market-based, fair, objective, non-discriminatory and transparent basis and, in case of congestion or scarce cross-border capacities, price cross-border capacities in consistency with other timeframes.</p>		<p>Article 31 Approaches for the provision of cross zonal capacity for balancing reserves</p>		<p>also Art 30 pricing of cross zonal capacity</p>
<p>The Network Code on Electricity Balancing shall prohibit any additional charge (except for losses in consistency with other timeframes, if approved by relevant NRAs) for the exchange of balancing energy for TSOs, which use the available transfer capacity after the intraday cross-border gate closure time. This rule shall not prevent cost recovery for exempted interconnectors – if foreseen in their exemption – if they are used to facilitate the exchange of balancing energy, in consistency with other timeframes.</p>		<p>Article 30 Pricing of cross zonal capacity for the exchange of balancing services or sharing of balancing reserves</p>	3	
<p>4.3 Reservation of cross-border capacity for balancing</p>				
<p>The Network Code on Electricity Balancing shall forbid TSOs to reserve cross-border capacity for the purpose of balancing, except for cases where TSOs can demonstrate that such reservation would result in increased overall social welfare and provide a robust evaluation of costs and benefits.</p>		<p>Article 32 Capacity provision methodologies for balancing services</p>		
<p>The modalities for the assessment of cross-border capacity reservation shall be defined in the Network Code on Electricity Balancing, avoiding undue discrimination between TSOs and market participants using the cross-border capacity in particular with regard to firmness. These modalities shall also take into account, for highly meshed areas with interdependent interconnections, particularities linked to flow based capacity calculation and allocation and the necessary regional coordination.</p>		<p>CHAPTER 4 USE, ALLOCATION AND RESERVATION OF CROSS ZONAL CAPACITY FOR BALANCING</p>		

FG Article		NC Article Title	Par a.	Remark
		RESERVES		
<p>The Network Code on Electricity Balancing shall require that any decision on cross-border transmission capacity reservation for balancing is taken on a case-by-case basis, by relevant NRAs supported by a full cost-benefit analysis and market consultation, in a transparent, non-discriminatory, fair and objective manner.</p>		Article 59 Cost-Benefit Analysis	2	also Art 7 regulatory approval
<p>The Network Code on Electricity Balancing shall establish a general methodology for the cost-benefit analysis required to support cross-border capacity reservation. The methodology shall, amongst other things, require an assessment of the expected costs and welfare loss on other electricity markets and the expected benefits and welfare gain on balancing market, and shall also consider the distribution of both among markets and TSOs. The cost-benefit analysis shall, as far as possible, be undertaken on the basis of market data and consider the impacts on neighbouring markets.</p>		Article 59 Cost-Benefit Analysis	5	
<p>The Network Code on Electricity Balancing shall foresee that TSOs request a cross-border capacity reservation, before the period of reservation, from relevant NRAs for approval or fixing, specifying the reservation period, maximum amount of cross-border capacity to be reserved, the expected purpose of the reservation and providing cost-benefit analysis based on the methodology described in the Network Code on Electricity Balancing. Prior to the decision, the relevant NRAs shall consult with market participants.</p>		Article 32 Capacity provision methodologies for balancing services		Art 32(2) foresees a modification to the capacity provision methodology for timeframes shorter than one month ahead.
<p>In case cross-border capacity is not used for a given purpose, it shall be given to the market at the next allocation, if applicable.</p>		Article 31 Approaches for the provision of cross zonal capacity for	1	

FG Article		NC Article Title	Par a.	Remark
		balancing reserves		
The Network Code on Electricity Balancing shall allow the implementation of a method which combines and co-optimises cross-border capacity reservation for balancing purposes and cross-border capacity allocation for other electricity market purposes. In such cases, the cost-benefit analysis may be simplified and it would facilitate the relevant NRAs' approval or fixing to ensure that social welfare is maximised.		CHAPTER 4 USE, ALLOCATION AND RESERVATION OF CROSS ZONAL CAPACITY FOR BALANCING RESERVES		
The Network Code on Electricity Balancing shall oblige that the relevant TSOs publish: - before the start of the reservation period - the amount of cross-border transmission capacity reserved and the duration of this reservation, as well as the price at which the cross-border capacity was reserved, where relevant; - every day - the actual use of this reserved cross-border capacity on a program time unit basis.		Article 8 Publication for information	3	also covered by Transparency Regulation
The Network Code on Electricity Balancing shall require that the relevant TSOs provide the data and analyses to their NRAs, if requested, for the purpose of ex-post monitoring of realised costs and benefits.		Article 57 Annual report	4	NRA receive this information via the annual report; NRA may request additional information based on existing legislation
The Network Code on Electricity Balancing shall require ENTSO-E to prepare and present an ex-post analysis of the realised costs and benefits of all reserved cross-border capacities, in the annual report.		Article 57 Annual report	4	
5 Balance responsibility and imbalance settlement				
5.1 General principles				

FG Article		NC Article Title	Par a.	Remark
The Network Code on Electricity Balancing shall describe that the general objective of imbalance settlement in national balancing mechanisms is to ensure that BRPs support the system's balance in an efficient way and incentivise market participants in keeping and/or helping to restore the system balance.		Article 47 General principles	1	
The Network Code on Electricity Balancing shall define imbalance settlement and ensure that it is made on a non-discriminatory, fair, objective and transparent basis, and that there are limited distortions between adjacent markets induced by differing settlement mechanisms.		Article 34 General settlement principles		
Settlement mechanisms shall be part of the terms and conditions that are to be fixed or approved ex ante by the NRAs, and shall be transparent and published.		Article 34 General settlement principles	2	
The Network Code on Electricity Balancing shall require that imbalance settlement rules are defined in a way that supports competition among market participants by creating a level-playing field and does not unduly discriminate against participants without generation or demand inside a control area.		Article 34 General settlement principles	1f	
5.2 Role of BRPs				
The Network Code on Electricity Balancing shall specify the role of BRPs, including the requirements specified in this section.		Article 14 Role of Balance Responsible Parties		
All injections and withdrawals shall be covered by balancing responsibility.		Article 34 General settlement principles	6	
The BRPs shall meet the requirements set in the terms and conditions defined by the TSO or an entity responsible for imbalance settlement and contractually agreed upon.		Article 16 Terms and conditions related to balancing	3	

FG Article		NC Article Title	Par a.	Remark
The BRPs shall provide all necessary data and information needed by the TSO and/or Distribution System Operator to evaluate the balancing service needs both for the planning and balance settlement purposes.		Article 16 Terms and conditions related to balancing	7	
The BRPs shall ensure the procedures for proper imbalance handling. The BRPs shall be incentivised to be balanced in real time.		Article 47 General principles	1a	
The BRPs shall be incentivised to help the system to restore its balance.		Article 47 General principles	1	also add to Art 14 role of BRP
TSOs and NRAs may also decide to oblige BRPs to provide balanced programs in the day-ahead timeframe which may be subject to changes in intraday and to incentivise BRPs to help to restore system balance.		Article 16 Terms and conditions related to balancing	9	
The Network Code on Electricity Balancing shall impose that generation units from intermittent renewable energy sources do not receive special treatment for imbalances and have a BRP, which is financially responsible for their imbalances.				no exception for RES in the code
5.3 Imbalance settlement				
The Network Code on Electricity Balancing shall provide that [the imbalance settlement period] is consistent with program time unit and encourage BRPs to be balanced as close to the physical reality as possible, or help the system to restore its balance.		Article 48 Imbalance settlement period	1	also Art 47 general principles on imbalance settlement TSO-BRP
ENTSO-E shall carry out a cost-benefit analysis on whether the imbalance settlement period shall be harmonised across Europe and report its results to the Agency.		Article 59 Cost-Benefit Analysis	1	
The imbalance settlement period shall not exceed 30 minutes. However, in case a TSO provides a detailed cost-benefit analysis to its NRA, the NRA may decide to have a longer imbalance settlement period.		Article 48 Imbalance settlement period	1	NC EB does not restrict the CBA to imbalance settlement periods of less than 30 minutes

FG Article		NC Article Title	Par a.	Remark
The Network Code on Electricity Balancing shall define harmonised principles for calculating imbalances. All imbalances shall be subject to compensation via the imbalance pricing.		Article 58 Targets	1b	
The Network Code on Electricity Balancing shall define the principles for imbalance settlement pricing. BRPs shall have the right incentives to manage their own balance close to real time. Therefore, imbalances shall be settled in a non-discriminatory, transparent, fair and objective way, at a price that provides incentives to BRPs to support the system's balance in an efficient way and/or to balance their portfolio before real time actions are necessary from the TSOs and reflects the costs of balancing the system in real time.		Article 47 General principles		and Art 50 imbalance pricing
Imbalance pricing shall at least include the costs of activated balancing energy (from frequency restoration reserves and replacement reserves) in the imbalance settlement period. Imbalance pricing shall also take into account the cross-border netting of system imbalances and unintentional deviations in order to avoid distortions of incentives or counterproductive incentives. However, imbalance pricing shall not include additional costs linked to possible deviations from the merit order list to alleviate congestions internal to a control area.		Article 50 Imbalance pricing		
The Network Code on Electricity Balancing shall describe the necessary information to be published by the TSOs that is needed for BRPs to be able to help to balance the system and/or to restore its balance.		Article 8 Publication for information	3	mostly covered by Transparency Guideline, only additional requirements in NC EB. TSOs have an incentive to publish information that allows for a balanced system.
The Network Code on Electricity Balancing shall impose that the main features of the imbalance settlement are harmonised no later than three years after the entry into force of the Network Code on Electricity Balancing.		Article 58 Targets	1b	
The Network Code on Electricity Balancing shall require ENTSO-E to assess the progress of harmonisation of imbalance settlement arrangements as well as the consequences and possible distortions due to non-harmonised features in the annual report.		Article 57 Annual report	4	