European Network of
Transmission System Operators
for Electricity

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Activation purposes of Balancing Energy bids

- Draft version 5 -

WG Ancillary Services – SG Activation purposes

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1. Introductory Remarks

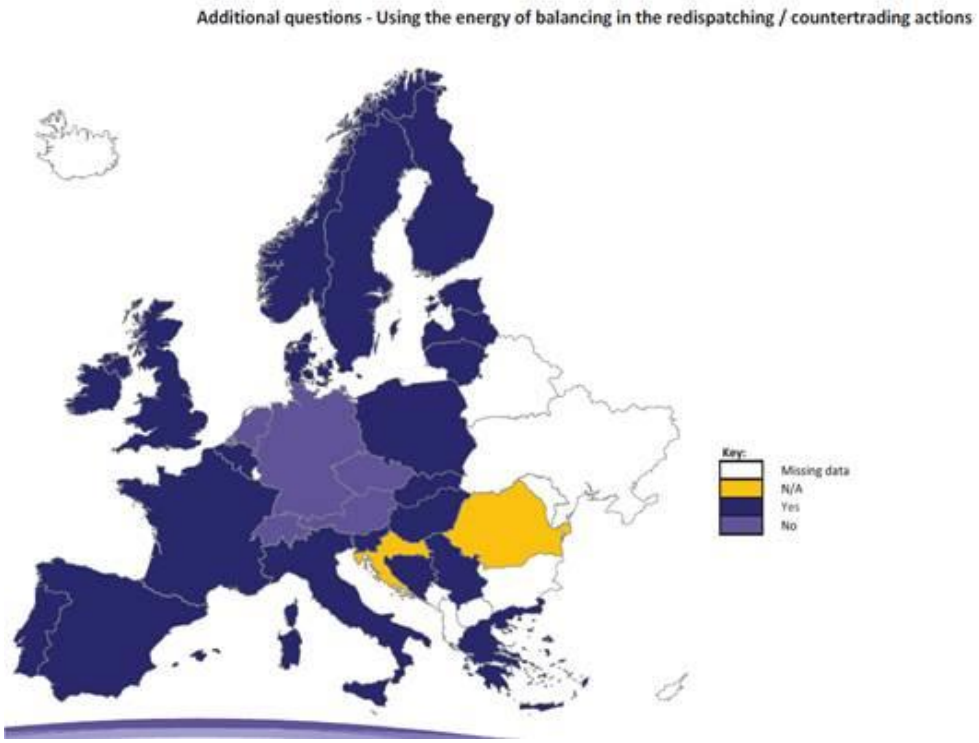
Based on Article 40 of the final draft of Network Code on Electricity Balancing (NC EB) [v 3.0 – 6 August 2014]:

"No later than twelve months after the entry into force of this Network Code, all TSOs shall jointly develop and agree on a list regarding the activation purposes of Balancing Energy bids from the Common Merit Order Lists in line with the general objectives of the Balancing Market pursuant to Article 10. This list shall include a description of each activation purpose."

Moreover, this task has been identified as a deliverable of the Balancing Stakeholder Group (BSG) with an expected deadline of delivery in Q4 2015.

Within the WG AS, a SG has been established with the goal to work on the list of activation purposes of Balancing Energy bids that will be first consulted within ENTSO-E and then presented to ACER and Stakeholders by the deadline set by the BSG.

As a first step, members of the SG and of the WG AS were asked to provide information on the current practice of different TSOs. Feedback has been received by CEPS, EirGrid, the German TSOs, MAVIR, National Grid, the Nordic Market, PSE, RTE, TenneT NL and TERNA. The responses (condensed for some TSOs) are presented in the Annex of this document. These were used as a starting point for the SG's work. Some of the responses do not include Balancing as an activation purpose but it should be obvious that this is the primal reason for activating Balancing Energy Bids. In addition, the following slide from the Ancillary Services survey provides an insight on the current practice among TSOs.



Before proceeding with the proposed list of activation purposes, some of the related links to the provisions of NC EB are highlighted in the subsequent section.

For each activation request sent to the common activation optimisation function, it is important that the requesting TSO provides the purpose for the activation, thus allowing for a different handling of the respective bids for the following reasons:

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i. Ensuring adequate amount of Balancing bids for the different purposes

That is necessary to always ensure that enough bids for the individual Balancing processes (e. g. aFRR, mFRR and RR) are available.

ii. Netting of Balancing Energy Bids

For balancing purposes (maintaining the active power balance) a netting of activation of bids might be possible, in order to avoid counter activations from different TSOs. Contrary for the management of system constraints, like congestion management (voltage, current and stability management) as well as remedial actions, it must be avoided to net the activation requests. Therefore the information on the netting possibility needs to be submitted ex-ante. For congestion management it is necessary to avoid the netting, because the location of the activated bid is important to resolve the congestion. With possible netting the effect on the congestion will be missing, which could have a negative impact on the system security.

Netting is only possible for balancing activations under condition that there are enough transfer capacities to do netting. It should be avoided that all requests are netted by default and to avoid that a too detailed separation of activation purposes is needed.

iii. Monitoring, Reporting and Transparency

In order to respect reporting obligations to NRAs and ACER, information on the activation purposes is essential. By the usage of different activation purposes, TSOs are able to fulfil the required reporting obligations for different system measures (balancing and system constraints).

Following the provisions of the Transparency Regulation (EU) No. 543/2013, at least a level of separation is needed among Balancing and Congestion Management.

iv. Settlement

Network Code on Electricity Balancing (NC EB) requires a TSO-TSO settlement as well as a TSO-BSP settlement, whereas the settlement of Balancing Energy Bids activated for balancing and for other purposes is different from TSO to TSO. Bids activated for Balancing will be settled with the common balancing prices and bids activated for other purposes can be settled according to a different scheme and will affect the cost recovery of each TSO (e. g. congestion income or grid tariffs). According to the NC EB, only bids activated for Balancing shall determine the marginal price for Balancing.

Therefore, a clear identification of activation purposes is necessary during the settlement process.

v. Reservation of Cross-Zonal Capacity

Cross-Zonal Capacity that is allocated for managing system constraints could not be used for Balancing or Imbalance Netting. Nevertheless, when activations for e. g. redispatch occur this cross-zonal capacity is taken out of the balancing market, which leads to less available capacity for maintaining the active power balance and probably to higher costs for balancing. However, bids may be also activated to solve both balancing and security problems at once, which allow for efficient usage of available bids and transmission capacity. This is why the reservation of cross-zonal capacity for any purpose (balancing and non-balancing) should be justified and agreed with the NRAs. The cross-zonal flow resulting from non-balancing cannot be netted.

vi. Procurement of Balancing Capacity

Balancing Capacity is procured by TSOs to secure the necessary amount of Balancing Energy Bids, based on technical conditions in the relevant systems through the dimensioning process. As there are systems where TSOs are allowed to use Balancing Energy Bids only for Balancing Services as well as systems where TSOs are allowed to use it also for other services, these different dimensioning rules should be taken into account. A change in the dimensioning rules (to cover balancing and the management system constraints) for TSOs that currently don't take other purposes than Balancing into account, may lead to

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higher costs for Balancing Capacity but at the same time may reduce costs of congestion management, depending on the implementation framework.

2. Proposal for activation purposes list

The proposed list includes two main activation purposes, namely "Balancing" and "System constraints".

The activation purpose can be further detailed by the individual TSO, provided that the relevant information is available. The list below details the different operational needs that could be classified under each of the two categories:

1. Balancing
    a. Automatic Frequency Restoration (aFRR)
    b. Manual Frequency Restoration (mFRR)
    c. Replacement Reserves (RR)
2. System constraints
    a. Voltage Constraints
    b. Load Flow constraints (current and thermal limits)
    c. Activation to ensure system margin (manual activation for ensuring enough reserves and avoid entering in alert state)
    d. Constraints due to stability violations

Bases on the classification of the activation purposes, different handling of the respective bid is foreseen:

Balancing	System constraints
Settlement against marginal price	Settlement against maximum between marginal and bid price (market power mitigation procedures may be applicable)
Netting allowed	Netting not allowed by default
Marginal price determined	No determination of the marginal price
Published under "Balancing" activities of Reg. 543/2013	Published under "Congestion Management" activities of Reg. 543/2013

3. Classification criteria

The classification criteria for the activation purposes proposed in the list above relate to the issues identified, the associated timeframes and the respective market rules.

For Balancing, the reason for triggering activation is the mismatch between the scheduled and the actual position on system level. The total imbalance reflects the imbalances on BRP level. When distinguishing between the three processes (RR, mFRR, aFRR), the criteria relate to the timeframe and also the mode of activation.

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i. Frequency restoration refers to the balancing reserves available to restore system frequency to the nominal value within a specific time (time to restore frequency). These reserves can be activated either by an automatic control device (aFRR) or manually (mFRR).

ii. Replacement reserves (RR) means the balancing reserves available to restore or support the required level of FRR to be prepared for additional system imbalances, including operating reserves.

For the system constraints, the criteria for the classification relate directly to the incidents occurring to the system.

i. Activation for voltage constraints refers to the manual or automatic control actions at the generation node, at the end nodes of the AC lines or HVDC systems, on transformers, or other means, designed to maintain the set voltage level or the set value of reactive power.

ii. Load-flow constraints relate to the operational security limits linked to the N-1 criterion and the current limits in terms of thermal rating on transmission lines.

iii. Ensuring system margin means the activation of balancing energy bids so as to avoid entering into alert state.

iv. Stability violation constraints means permitted boundaries for the secure operation of the transmission system in terms of respecting the limits of voltage stability, rotor angle stability and frequency stability.

In the real-time operation of the power system, there can be cases where activation for solving an imbalance is done subject to system constraints. This has several advantages as the power balance is restored and at the same time no aggravation of system constraints occurs. Nevertheless, this does not affect the primary goal of such an activation which is linked to balancing. So if the activation of balancing bid has the positive effect to solve imbalance and system constraints, then it shall determine the marginal price for balancing.

Moreover, the activation of bids for the different purposes takes place in clearly separated timeframes and with the use of different systems. An example in that respect is the activation of aFRR reserves subject to system constraints in the framework of GCC and/or IGCC. The consideration of these constraints does not change the primary activation purpose which is balancing.

4. Open points

Given the dependence of the whole activation process on the definition of the activation optimization algorithm, there are some features of this work that will have to be decided once the principles of this algorithm are defined.

Firstly, additional information may be needed to be submitted as input to the activation optimization platform. For example, information on location may be needed in order to manage local contingencies and to avoid the netting of bids when activation of bids with specific location is required.

Also the timing of submission of the activation purpose to the common platform is important. Since it may be challenging for some TSOs with Central Dispatch Systems to submit detailed information in advance, a solution can be to have the submission of information needed for settlement issues only after the activation. But it has to be assured that marginal price applied to bids activated for balancing is not increased due to activation for other purposes.

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Annex I: Individual responses

Following a survey conducted with the WG AS, the following responses were gathered by TSOs on the current practice with regard to activation purposes. Some of the responses do not include Balancing as an activation purpose but it should be obvious that this is the primal reason for activating Balancing Energy Bids.

i. CEPS

Balancing bids are used solely for balancing in the grid of CEPS. In rare occasions, they are used implicitly also to cover increased imbalance caused by serving other TSOs with emergency delivery. In case it is needed to free up some power to be used for redispatching purposes, already procured balancing reserves can be used as one of the last resort measures. Nevertheless, in that case the respective balancing bid is not activated. A separate agreement with the generators is in place for setting the price of redispatched power in advance. Therefore, the respective bid price is not matched and the imbalance settlement price is not affected in any way.

ii. EirGrid

Based on the current design phase, the following 5 categories (with sub-categories) are proposed:

a. Frequency (Frequency response and regulation, maintaining reserve headroom, intra-period balancing, positioning for ramping, wind curtailment, load response and automated governor response)

b. Dynamic stability (Maintaining SNSP limit, positioning for inertia)

c. Voltage Transmission constraints (voltage, transients)

d. Thermal (Transmission constraints, maintaining I/C transfer capacity, DSO constraints)

e. Other (Emergency instructions, priority dispatch, testing, SO-SO actions and countertrading)

iii. German TSOs

In Germany, the Energy Industry Act (EnWG) and additional regulations oblige to a clear separation between balancing (measures to maintain the active power balance) and congestion management (ensure the N-1 security with respect to current security limits of network elements and voltage stability) from a regulatory perspective leading to a defined separation between redispatch and balancing. Balancing services require special technical conditions (prequalification) and follow clear and defined marked rules with voluntary participation. They can only be used for the purpose to maintain the active power balance while redispatch is an obligation by law to ensure the system security. Therefore, a separation or extension to other possible activation purposes regarding congestion management/redispatch is currently not needed.

For the activation of secondary (aFRR) and tertiary reserve (mFRR) the German TSOs have installed common Merit-Order-Lists (GCC and MOL-Server). An equivalent concept will be needed for the common activation optimisation function, including the common activation algorithm and common merit order lists within the CoBAs. Different activation purposes (for Balancing Energy) are already in use for the documentation of deviations from the merit-order-lists. For other purposes a detailed documentation is also done, separating the activations into different purposes.

iv. MAVIR

Currently, possible activation purposes in the Hungarian market include: balancing, redispatch, grid constraints and other cases (e. g. emergency assistance). The situation is expected to change with a distinction between internal and external reasons. Internal reasons shall include balancing, grid constraints, redispatch and other; whereas external reasons will include grid constraints, redispatch, counter trading and other.

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v. National Grid

In Great Britain (GB) imbalance settlement is a function that is carried out by a company called Elexon (i. e. rather than National Grid Electricity Transmission as the TSO). Elexon take information from National Grid in relation to the TSO activities undertaken to secure and balance the system and then reflect the prices of these actions into the market imbalance settlement price calculation. Note that the volumes associated with TSO actions are always included in the market imbalance price to ensure that the "net" imbalance over a settlement period (30 minutes) is always accurate. Therefore it is only the price which is adjusted as a result of "activation purpose".

Unless a TSO action is included in the list of "system management" actions below, its price will be reflected in the market imbalance price calculation. This applies equally to market trades executed by National Grid ahead of balancing timescales (i.e. more than 1 hour ahead of real time), and ancillary service call-offs linked to longer-term set-price contracts, as well as actions taken solely within the main GB Balancing Mechanism.

The list of "system management" actions is as follows:

a. any balancing service used by National Grid that partially or wholly resolves a transmission constraint, basically referring to "redispatch" activities within the GB network.

b. any system-to-system balancing service used by National Grid in respect of electricity flows over an interconnector, to avoid adverse effects arising on the National Electricity Transmission System from significant load profile changes. This is basically any action that is required to be taken as a result of "market-driven" cross border flows over merchant interconnectors – e. g. to control interconnector ramps.

c. any system-to-system balancing service used by a Transmission System Operator (TSO) other than National Grid, for the purposes of resolving a system operation issue in a connected transmission system

d. any balancing action used to despatch the Supplemental Balancing Reserve service whether through or outside the Balancing Mechanism. This is a very GB-specific (and temporary) activation type which is effectively strategic reserve. The intention is for this service to be included in market imbalance prices from November 2015.

In relation to the list above, a "transmission constraint" is defined as any limit on the ability of the transmission system, or any part of it, to transmit the power supplied onto the transmission system to the location where the demand for that power is situated, such limit arising as a result of any one or more of:

a. the need not to exceed the thermal rating of any asset forming part of the transmission system;

b. the need to maintain voltages on the transmission system; and

c. the need to maintain the transient and dynamic stability of electrical plant, equipment and systems directly or indirectly connected to the transmission system.

The methodology which sets out these rules is reviewed annually and is always subject to change. Therefore, additional activation types may need to be added to the list of "system management" actions at a future date.

vi. Nordic Market

Following reasons for up and down regulation are defined in the Nordpool spot documentation:

a. countertrade for congestions inside a bidding area

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b. countertrade for congestions between bidding areas due to reduced grid capacity

c. support for other European systems

d. other reasons

vii. PSE

In Poland, the activation of balancing energy bids, the reserve procurement, the management of congestions and the dispatching are integrated and co-optimized within one process, so called Integrated Scheduling Process (ISP). ISP process is bid-based security constraint unit commitment and economic dispatch. Bids are provided by market participants (dispatchable generation and load) and define conditions of resources participation in the ISP. Each balancing energy bid consists of economic part (volume and price) and technical part (unit generation min/max, unit ramping possibilities, start-up characteristics, etc.). One set of bids is used for activation of balancing energy for all purposes.

This approach allows to avoid an ex-ante splitting of bids (resources capacity) between different TSO tasks, allowing therefore available resources capacity to be used in the most efficient way according to the current system needs. The aim of ISP is to find a set of bids which address all needs of the power system in the given time horizon (consist of number of time intervals) at lowest cost, i. e. balancing energy, congestion management and reserves procurement. Therefore, according to the organization of ISP there is not possible to draw a direct link between the activated bid and the purpose of this activation. This approach is prescribed in Polish energy law. According to the provisions of "Regulation of the minister of economy on the detailed conditions for the operation electric power system", the Polish TSO shall, in the process of balancing the Polish power system, take into account all following items: the equilibrium between the demand for electricity and electricity generation, network constraints and technical parameters of generation units. The same regulation defines "balancing bid" as the bid which consists of economic part and technical part.

viii. RTE

Based on the current situation of the French Balancing Market, the following elements are proposed for the list of activation purposes:

a. Grid Constraint: Balancing energy bids would be used to manage constraints which cannot be handled ex ante by bilateral contract / call for tender or other processes. A bid activated for such a reason will not make the marginal price. The location of bids needs to be precise enough (e. g. connection node)

b. Automatic reserves recovery: The dimensioning of aFRR is based on demand gradient (including consumption and cross-border exchanges); therefore it should be considered that the demand can change in real time taking into account the result from intraday PX nominations. To maintain this possibility, a process should be introduces to allow to procure as much automatic reserves as needed by the system. A bid activated for such a reason will not make the marginal price.

c. Manual reserves recovery: System parameters (load) are daily highly changing and forecasts (RES) are not as accurate as needed to reach a fixed dimensioning for reserves. According to RTE, in order to procure the required reserves at the lowest cost and take into account these parameters, the volume of manual reserves procured in advance should be as low as possible (e.g. to cover the dimensioning incident according to OPHB P1) and completed by real time or close to real time actions (continuous call for tender) when needed. Therefore, flexibilities should be allowed to be used in real time in order to reach security requirement. A bid activated for such a reason will not make the marginal

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price. Such bids can be activated far ahead from real time or for long duration (overlapping with intraday).

ix. TERNA

The way the system is managed in Italy resembles the approach followed also in Poland. The activation of balancing energy bids, the reserve procurement, the management of congestions and the dispatching are integrated and co-optimized within one process. Therefore, a real distinction between the different activation purposes is not currently in place.

x. TenneT NL

When a bid is submitted, an activation code identifies its purpose.

a. Exclusively Power Balancing (either for the current or for a following ISP. Activated Bids are settled pay-marginal, marginal price determines Imbalance price. These Bids can only be activated as indicated.

b. Other purposes, including redispatch. The minimum activation duration is set to at least 4 ISP's, to be decided by the BSP, no deactivation required. Activated Bids are settled pay-as-bid, prices do not affect Imbalance price.

GCT for all Bids presently one full clock hour prior to ISP of delivery. On request GCT can be postponed, e. g. if a Bid other Purposes has been activated, and the BSP wishes to withdraw Balancing Bids.

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