

Proposal for the establishment of common and harmonised rules and processes for the exchange and procurement of Frequency Containment Reserve (FCR) in accordance with Art. 33 of COMMISSION REGULATION (EU) 2017/2195 establishing a guideline on electricity balancing

15 January 2018

DISCLAIMER

This document is released on behalf of TSOs from Austria, Belgium, Denmark, France, Germany, the Netherlands and Switzerland only for the purpose of the public consultation on the Draft Proposal for market design "Frequency Containment Reserve (FCR) Cooperation" to integrate balancing markets in order to foster, but not limited to, effective competition, non-discrimination, transparency, new entrants and liquidity while preventing undue distortions in accordance with the COMMISSION REGULATION (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing and does not in any case represent a firm, binding or definitive individual TSOs' position on the content.

FCR Procurement TSOs, taking into account the following,

Whereas

- 1) This document is the proposal for the future market design for the Frequency Containment Reserve ("FCR") of the concerned TSOs as developed by the Transmission System Operators of the involved countries Austria, Belgium, France, Germany, the Netherlands and Switzerland in accordance with the COMMISSION REGULATION (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing ("GLEB"). This is also compliant with the applicable law in Switzerland (Stromversorgungsgesetz). The presented Draft Proposal is hereinafter referred to as the "Draft Proposal" and is to result in a final proposal hereinafter referred to as the 'Proposal'.
- 2) In accordance with the objectives of Article 3 GLEB, the FCR Cooperation aims, with the Proposal, at the integration of balancing markets in order to foster, but not limited to, effective competition, non-discrimination, transparency, new entrants and liquidity while preventing undue distortions. These objectives must be met in consideration of secure grid operation and security of supply. With the current market design above mentioned objectives have already been met and the proposed market design changes will even improve them. Further development of the market design will facilitate the access for smaller market players, improve the investment signals and increase socio-economic benefits.
- 3) Article 1 of the GLEB states, that the common principles regarding procurement and settlement in GLEB, also applies for Frequency Containment Reserves.
- 4) In article 5(3) of the GLEB under (b) it is required that *"for the geographical area concerning two or more TSOs exchanging or mutually willing to exchange balancing capacity, the establishment of common and harmonised rules and process for the exchange and procurement of balancing capacity pursuant to Article 33(1)"* as proposed by TSOs need approval from all regulatory authorities in the concerned region.
- 5) In article 5(3) of the GLEB under (o), approval from all regulatory authorities in the concerned region is required *"for the geographical area comprising two or more TSOs exchanging balancing capacity, the principles for balancing algorithms pursuant to Article 58(3)"*.
- 6) In article 5(4) of the GLEB under (f) it is written that *"the proposals for the following terms and conditions or methodologies shall be subject to approval by each regulatory authority of each concerned Member State on a case-by-case basis: the exemption to separate procurement of upward and downward balancing capacity pursuant to Article 32(3)".* According to Article 32 (3) GLEB *separate procurement of upward and downward balancing capacity is only required for frequency restoration reserve and the replacement reserve.*
- 7) Article 5(5) of the GLEB requires that *"the proposal for terms and conditions or methodologies shall include a proposed timescale for their implementation and a description of their expected impact on the objectives of this Regulation. The implementation timescale shall not be longer than twelve months after the approval by the relevant regulatory authorities, except where all relevant regulatory authorities agree to extend the implementation timescale or where different timescales are stipulated in this Regulation. Proposals on terms and conditions or methodologies subject to the approval by several or all regulatory authorities shall be submitted to the Agency at the same time that they are submitted to regulatory authorities. Upon request by the relevant regulatory authorities, the Agency shall issue an opinion within three months on the proposals for terms and conditions or methodologies."*

- 8) Article 10 of the GLEB stipulates under (1) that *"TSOs responsible for submitting proposals for terms and conditions or methodologies or their amendments in accordance with this Regulation shall consult stakeholders, including the relevant authorities of each Member State, on the draft proposals for terms and conditions or methodologies and other implementing measures for a period of not less than one month"*.
- 9) In article 10(6) of the GLEB it is provided that *"TSOs responsible for the proposal for terms and conditions or methodologies shall duly consider the views of stakeholders resulting from the consultations undertaken in accordance with paragraphs 2 to 5, prior to its submission for regulatory approval. In all cases, a sound justification for including or not including the views resulting from the consultation shall be provided together with the submission and published in a timely manner before or simultaneously with the publication of the proposal for terms and conditions or methodologies"*.
- 10) Article 12(3) of the GLEB requires that *"each TSO shall publish the following information as soon as it becomes available,... description of the requirements of any algorithm developed and amendments to it referred to in Article 58, at least one month before the application"*.
- 11) In Article 33 in (1) of the GLEB it is provided that *"two or more TSOs exchanging or mutually willing to exchange balancing capacity shall develop a proposal for the establishment of common and harmonised rules and processes for the exchange and procurement of balancing capacity while respecting the requirements set out in article 32"* and in (2) it is provided that *"... the exchange of balancing capacity shall always be performed based on a TSO-TSO model..."*.
- 12) Article 33 under (2) of the GLEB also provides that the Proposal of the TSOs should take into account the available cross zonal capacity. The current Draft Proposal does not mention such provisions which is justified based on Article 38(4) of GLEB providing that FCR does not use cross zonal capacity allocation: *"Cross-zonal capacity allocated for the exchange of balancing capacity or sharing of reserves shall be used exclusively for frequency restoration reserves with manual activation, for frequency restoration reserves with automatic activation and for replacement reserves. The reliability margin calculated pursuant to Commission Regulation (EU) 2015/1222 shall be used for operating and exchanging frequency containment reserves, except on Direct Current ('DC') interconnectors for which cross-zonal capacity for operating and exchanging frequency containment reserves may also be allocated in accordance with paragraph 1."*
- 13) Article 57(1) of the GLEB provides that *"All TSOs exchanging balancing capacity shall establish rules for the settlement of procured balancing capacity pursuant to Article 33 ..."* and under (2) that *"all TSOs exchanging balancing capacity shall jointly settle procured balancing capacity using the TSO-TSO settlement function pursuant to Article 33"*.
- 14) Article 58(3) of the GLEB stipulates that *"In the proposal pursuant to Article 33, two or more TSOs exchanging balancing capacity shall develop algorithms to be operated by the capacity procurement optimisation functions for the procurement of balancing capacity bids. Those algorithms shall: (a) minimise the overall procurement costs of all jointly procured balancing capacity..."*.
- 15) In article 163(2) of the guideline on transmission system operation (SOGL) it is required that *"all TSOs involved in the exchange of FCR within a synchronous area shall respect the limits and requirements for the exchange of FCR within the synchronous area specified in Table 1 of Annex VI"*.

SUBMIT THE FOLLOWING DRAFT PROPOSAL FOR THE MARKET DESIGN OF THE FCR COOPERATION TO THE STAKEHOLDERS AND RELEVANT REGULATORY AUTHORITIES.

Article 1

Subject matter and scope

The Austrian, Belgian, Dutch, French, German and Swiss TSOs currently procure their Frequency Containment Reserve ("FCR") jointly in a FCR Procurement¹.

Article 33 (1) of the COMMISSION REGULATION (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing² provides that TSOs exchanging [...] balancing capacity shall develop a proposal for the establishment of common and harmonised rules and processes for the exchange and procurement of balancing capacity.

Since the TSOs of the FCR Procurement are exchanging FCR, they developed this Proposal³. COMMISSION REGULATION (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation ("SOGL") is taken into account.

Article 2

Definitions and interpretations

1. Definitions

For the purposes of the market design Draft Proposal, terms used in this document shall have the meaning of the definitions included in GLEB and SOGL. In addition, the following definitions shall apply:

- Gate Closure Time (GCT) means the point in time when submission or update of a bid for a standard product on a common merit order list is no longer permitted;
- Gate Opening Time (GOT) means the point in time when submission or update of a bid for a standard product on a common merit order list is permitted for the first time;
- Marginal Pricing (pay-as-cleared) means that the last awarded bid (with the highest price) sets the price for all awarded bids;
- Overprocurement means that more than the total FCR demand is procured;
- Pay-as-bid means that every selected bid receives its demanded price;
- Symmetric product means that upward and downward balancing capacity are procured together.
- FCR Cooperation means all parties who have signed the FCR agreement
- FCR Procurement means all parties participating in the procurement of FCR capacity
- Paradoxically rejected bids means the bids that are rejected although the bid price was lower than the clearing price.

2. Interpretation

In this document, unless the context requires otherwise:

- the table of contents and headings are inserted for convenience only and do not affect the interpretation of this market design Draft Proposal; and
- any reference to legislation, regulations, directive, order, instrument, code or any other enactment shall include any modification, extension or re-enactment of it then in force.

¹ In Belgium and the Netherlands, a part of FCR balancing capacity is currently procured through a national tender.

² See COMMISSION REGULATION (EU) 2017/2195: <http://eur-lex.europa.eu/homepage.html>

³ More information regarding the drivers and future planning based on this proposal can be found in the explanatory notes

Article 3

TSO-TSO-Model

According to the Article 33 (2) of GLEB the exchange of balancing capacity shall always be performed based on a TSO-TSO model.

1. Current market design

The FCR Procurement is organised with a TSO-TSO-model, as defined in Article 2 (21) GLEB, in which FCR is procured through a common auction based on a common merit order list where all TSOs of the FCR Procurement pool the offers they have received from the Balancing Service Providers (BSPs) connected to their respective grids. The interaction of the TSOs with BSPs and the contracts between the TSOs and BSPs are handled on a TSO basis.

2. Market design change

The FCR Cooperation will be based on a TSO-TSO-Model as it is currently already organised.

3. Justification

A TSO-TSO model shall apply pursuant to Article 33 (2) of GLEB and combines the advantages of having a common market, a harmonised market design and the benefits of national regulations where necessary.

Article 4

Auction frequency and auction timing

The procurement process shall be performed on a short-term basis to the extent possible and where economically efficient; (GLEB article 32.2.b)

4. Current market design

The FCR Procurement works currently with weekly auctions. The auction takes place on Tuesday afternoon with Gate Closure Time (GCT) at 15:00 CET and applies for the next delivery week. The Gate Opening Time (GOT) is Friday before the auction at 12:00 noon CET. In case of bank holidays in one of the cooperation countries the GCT and GOT are modified. The auction calendar is notified by TSOs to BSPs in November of the previous year at the latest.

5. Market design change

The auction frequency will be daily (all days) auctions.

Regarding the exact timing of the sourcing of FCR in the envisaged daily auctions, the ambition is to have the GCT as close as possible to the delivery day while respecting the technical constraints for a secure operation. However, due to conflicting timings in Germany with the aFRR market GCT (from the second half of July 2018 it will move to 08:00) and in order to move to the target solution in a stepwise approach the GOT, GCT and publication time for the FCR Procurement will be implemented in three steps.

The target will be as followed:

- GOT in D-5
- GCT at 08:00 CET in D-1
- Publication time at 08:30 CET in D-1

The first intermediate step will be as followed:

- GOT in D-5
- GCT at 15:00 CET in D-2 and workingdays only (no GCT on weekends or bank holidays)
- Publication time at 16:00 CET at the date of GCT

The second intermediate step will be as followed:

- GOT in D-5
- GCT at 15:00 CET in D-2 all days
- Publication time at 16:00 CET in D-2

The implementation timings of all steps are proposed in Article 11.

6. Justification

With daily auctions and GCT close to real time the estimation of the available flexibility can be done much easier. This is also in line with Article 24 (2) of GLEB stating that balancing energy GCT shall be as close as possible to real time.

Besides the above mentioned conflicting timings with the aFRR market in national processes, selected timings fall within working hours and still leave enough time for activating a fallback solution, if required. The first intermediate step also preserves the BSPs from the need to organise staff available at weekends and bank holidays to perform the auctions at an early stage of the market design change. The considered change of market design will also add liquidity to the market, as it will be easier for BSPs to bid alternative flexibility resources such as RES and demand side response with a GCT closer to real time. In addition, with a GOT D-5, smaller BSPs that are short in staff have the possibility to place their bids well in advance in case of holidays and weekends.

Article 5

Product

1. Current market design

Product duration is one week (same bid for the period between Monday 0h and Sunday 24h). The product is symmetric.

2. Market design change

The product duration will be 4h, with 6 independent products in a day (0-4h, 4-8h, 8-12h, 12-16h, 16-20h, 20-24h). The product will be symmetric.

The target will be as followed:

The product duration will be 4h, with 6 independent products in a day (0-4h, 4-8h, 8-12h, 12-16h, 16-20h, 20-24h). The product will be symmetric.

The intermediate step will be as followed:

Product duration is one day (24h). The product is symmetric.

The implementation timings of both steps are proposed in Article 11.

3. Justification

The considered market change is a good compromise between long and short term products. It will increase the flexibility in the market and help integrate RES and decentralised sources. Moreover, it will allow for better alignment with scheduled operation of the participating units.

Since there have to be made quite a lot of significant changes in IT processes and in operational procedures (for TSOs as well as for BSPs) there will be an intermediate step with a daily auction (on working days only) and a daily product before reaching the target with the daily auction (all days) and 4-hour-products.

This implementation roadmap is proposed in accordance with Article 5(5) GLEB.

Article 6

Bid design possibilities

1. Current market design

The FCR Procurement works currently with divisible bids (the optimisation algorithm can select only a part of the volume offered by one bid) in AT, BE, DE, FR and NL. Only in CH indivisible bids can be used with a maximum bid size of 25 MW. Except for CH, submitting of exclusive bids (a bid is accepted on the condition that another bid has been accepted as well) is not allowed. The minimum bid size is 1 MW and bid resolution is 1 MW (the result of dividing a bid should be a whole number) in all participating countries.

2. Market design change

TSOs will allow divisible bids together with indivisible bids. Indivisible bids will have a maximum bid size of 25 MW in all the participating countries. Furthermore, exclusive bids won't be allowed in the common FCR Procurement. The minimum bid size will be 1 MW and bid resolution will be 1 MW (the result of dividing a bid should be a whole number) in all participating countries.

3. Justification

The considered market design change may facilitate the participation of smaller BSPs, while larger BSPs will be able to benefit from portfolio pooling.

Article 7

Auction Allocation Algorithm

In the proposal pursuant to Article 33, two or more TSOs exchanging balancing capacity shall develop algorithms to be operated by the capacity procurement optimisation functions for the procurement of balancing capacity bids. Those algorithms shall minimise the overall procurement costs of all jointly procured balancing capacity; (GLEB article 58.3)

1. Current market design

The FCR Procurement works currently with cost optimisation, respecting the limits and requirements for the exchange of FCR.

Overprocurement (which means that more than the total FCR demand is procured) is possible if it minimises the total procurement costs pursuant to Article 58 (3) and (4) GLEB. Indivisible bids are accepted if the acceptance reduces the overall procurement cost and does not lead to paradoxically rejected divisible bids

In case a divisible bid would be paradoxically rejected, because of an indivisible bid in Switzerland, Switzerland is decoupled from the FCR Procurement and simple price ranking, respecting the import / export limits, is applied in the remaining FCR Procurement.

2. Market design change

Cost optimisation (with possible overprocurement) with the restriction that no divisible bid can be paradoxically rejected will be applied. The import / export limitations will still be respected, in compliance with Article 33 (2) GLEB providing that TSOs take into account in their proposal the “*operational limits defined in Chapters 1 and 2 Part IV Title VIII of Commission Regulation (EU) 2017/000 [SO]*”.

3. Justification

The considered market design change will guarantee that divisible bids below the marginal price will always be fully awarded. In this way, the relevance of the marginal price signal will be strong and will facilitate long term optimisation.

Article 8

TSO-BSP settlement

TSOs exchanging balancing capacity shall establish rules for the settlement of procured balancing capacity according to Article 57 (1) and (2) GLEB.

1. Current market design

The TSO-BSP settlement of the FCR Procurement is currently based on a pay-as-bid model.

2. Market design change

The TSO-BSP Settlement will be based on marginal pricing.

There are two limitations in the FCR market:

- Core shares, also called import limits (which are mandatory according to ANNEX VI SOGL);
- Maximum transfer of capacities, also called export limits (which are mandatory according to ANNEX VI SOGL)

The major features of a marginal pricing scheme will be outlined as follows:

- Determination of a marginal price for each country:
For all the countries where the import and export limits are not hit, the marginal prices of all these countries are equal. The marginal price of all these countries is the maximum price of the accepted offers over all these countries where no limitation applies (Cross Border Marginal Price – CBMP). If the import limit of a country is hit, then the marginal price of this country is the maximum price of the accepted offers of this country (Local Marginal

Price for an importing country i - $LMPI$). This $LMPI$ is always greater than or equal to the CBMP.

If the export limit of a country is hit, then the marginal price of this country is the maximum price of the accepted offers of this country (Local Marginal Price for an exporting country e - $LMPE$). This $LMPE$ is always less than or equal to the CBMP.

- **BSP remuneration:**
Each awarded offer of a BSP is remunerated by its connecting TSO at the corresponding marginal price of its country.

3. Justification

Marginal pricing is considered the best solution for gaining economic efficiency and optimal resource allocation. The considered market design change should provide better price signals, expose scarcity and give better investment signals to the market. Especially small and new BSPs may benefit from bidding their marginal cost and not having to conduct costly analyses on past price developments.

Article 9

TSO-TSO settlement

TSOs exchanging balancing capacity shall establish rules for the settlement of procured balancing capacity according to Article 57 (1) and (2) GLEB.

1. Current market design

Exporting TSOs bear the costs that they would incur if they would procure on a national level, hence they pay for the cheapest local bids to cover their demand. The costs of the more expensive bids that were procured additionally are then passed on to the importing TSOs using an "exported bid average price".

2. Market design change

TSO-TSO settlement will be compliant with the TSO-BSP settlement described in Article 8.

- **Case I: NO LIMITS HIT**
If no import or export limits are hit, each country's target costs are calculated by multiplying its demand in the common auction with the cross border marginal price (CBMP). Each importing TSO has to pay to the exporting TSOs the CBMP for the imported volume according to article 163 (2) of SOGL. Similarly, the exporting TSOs will receive the CBMP for the amount of the volumes they export.
- **Case II: IMPORT AND / OR EXPORT LIMITS HIT**
An importing country i , whose import limit was hit, has to pay for all its procured volume (locally and cross border) its $LMPI$, which is in this case higher than the CBMP. An exporting country, whose export limit was not hit, gets paid for all his exports the CBMP. Similarly, all the BSPs of a country e where the export limit was hit, will receive their own country's $LMPE$ (lower than the CBMP for the rest of the cooperation), and importing countries pay the common CBMP for their imports (in this case higher than the $LMPE$).

Balance, resulting from volumes paid with LMP from one party and compensated with CBMP for other party (or vice versa), is transferred to a virtual temporary account.

Given that virtual temporary account is not zero, it is distributed among the importing/exporting countries proportionally to the absolute value of their net positions (awarded volumes – country demand).

3. Justification

The proposed method ensures that both importing and exporting countries benefit from a situation where an import or export limit is hit.

Article 10

Accession of new parties

The number of countries procuring FCR in the joint FCR Procurement might be extended.

1. Current market design

The Austrian, Belgian, Dutch, French, German, Swiss and Danish TSOs are part of the FCR Cooperation. Currently, it is only the Austrian, Belgian, Dutch, French, German and Swiss TSOs that are procuring FCR jointly in the FCR Procurement

2. Market design change

All parties that have signed the FCR Cooperation contract are considered as a party of the FCR Cooperation on equal terms with the other TSOs. When joining the FCR Procurement parties might be asked to implement a phase of limited operation for a limited period of time. This phase may be defined in a coordinated manner with the relevant national regulatory authorities. Stakeholders will be informed about changes in the FCR Procurement.

3. Justification

New parties joining FCR Procurement are expected to increase market liquidity and the social welfare. This is in accordance with the target of harmonised European balancing markets.

The parties can join FCR Procurement at any time with prior information to stakeholders.

Article 11

Implementation roadmap

TSOs propose the following timescale for implementation of the market design changes in accordance with Article 5 (5) GLEB. Proposed changes of the current market design will be implemented in two independent consistent ways mentioned below:

- Intermediate introduction of daily auctions on working days only with D-2 GCT and daily products on 26 November 2018
- Introducing indivisible bids in all countries of the FCR Procurement, removing exclusive bids in Switzerland and changing the TSO-BSP settlement to marginal pricing. This will be implemented on 1 July 2019, assuming approval of FCR Proposal latest by end of 2018. In case of a later approval, it will be implemented nine months after the approval on the next possible auction.

- Implementing daily auction all days with D-2 GCT and 4h products. This will be implemented on 1 April 2020, assuming approval of FCR Proposal latest by end of 2018. In case of a later approval, it will be implemented 18 months after the approval on the next possible auction.
- Moving GCT to D-1 will take place on 27 November 2020.

The implementation periods include the time needed to adapt the national contracts and rules, in cooperation with NRAs, where applicable. All NRAs will be asked to explicitly agree on extended implementation timeline pursuant to Article 5 (5) GLEB.

Article 12

Language

The reference language for this market design Draft Proposal shall be English. For the avoidance of doubt, where TSOs need to translate this market design Draft Proposal into their national language(s), in the event of inconsistencies between the English version published by TSOs in accordance with Article 7 GLEB and any version in another language, the relevant TSOs shall, in accordance with national legislation, provide the relevant NRA(s) with an updated translation of the market design Draft Proposal.

Explanatory notes

Drivers and future planning

The purpose of this document is to consult stakeholders on the current and proposed future market design pursuant to Article 10 (4) GLEB. Proposed future market design takes views resulting from a previous consultation⁴ into account. The current public consultation is determined for the duration of one month (Article 10 (2) GLEB) and scheduled from 15 January 2018 to 15 February 2018.

After this public consultation TSOs will finalise their Proposal taking into due account the input on the proposal received in the consultation according to Article 10 (6) GLEB. TSOs intend to submit the proposal as finalised to NRAs for their approval according to Article 5 (3) (b) GLEB shortly after public consultation. NRAs should then issue their decision within 6 months, starting with receiving TSOs' proposal pursuant to Article 5 (6) GLEB.

The following planning represents the whole process taking into account the entry into force of GLEB on 18 December 2017.



Figure 1: Public consultations and approval process

Accession of Western Denmark

Extension of the joint FCR Procurement towards Western Denmark ("DK1") is currently foreseen and welcomed by all involved Transmission System Operators ("TSOs") and National Regulatory Authorities ("NRAs"). All TSOs and NRAs support joining of DK1 as soon as possible, but starting implementation process latest by mid of 2018 and joining of DK1 latest at the end of 2018. Despite DK1 not being part of this joint FCR Procurement today, they are considered a party in this public consultation and resulting market design proposal to NRAs, on equal terms with the other TSOs. Thus, the market design will already be approved and applicable when DK1 joins the FCR procurement.

⁴ As described in [Consultation Report "FCR Cooperation"](#)