

**Methodology on the common and harmonised
rules and processes for the exchange and
procurement of aFRR balancing capacity for
the Nordic LFC Block**

in accordance with Article 33(1) of Commission Regulation (EU)
2017/2195 of 23 November 2017 establishing a guideline on electricity
balancing

5 August 2020

Contents

Whereas.....3

TITLE 1 General provisions.....5

 Article 1 Subject matter and scope5

 Article 2 Definitions and interpretation.....5

TITLE 2 Nordic aFRR capacity market6

 Article 3 High-level design of the aFRR capacity market.....6

 Article 4 Characteristics of aFRR capacity bids.....7

 Article 5 aFRR capacity bid submission7

 Article 6 The procured volume of aFRR capacity7

 Article 7 Algorithm principles for the Capacity procurement optimisation function.....8

 Article 8 TSO-BSP Settlement of procured balancing capacity.....8

 Article 9 TSO-TSO settlement in the aFRR capacity market.....9

 Article 10 Publication of information for the exchange of aFRR capacity9

TITLE 3 Final provisions10

 Article 11 Publication and implementation of the Nordic aFRR Capacity Market Rules.....10

 Article 12 Language10

Whereas

- (1) This document provides a methodology for the establishment of common and harmonised rules and processes for the exchange and procurement of aFRR capacity in accordance with Article 33(1) of Commission Regulation (EU) 2017/2195 of 23 November establishing a guideline on electricity balancing (hereafter referred to as the “EB Regulation”) for the geographic area covering the load frequency control block of the Nordic synchronous area (hereafter referred to as the “Nordic LFC Block”), as specified in accordance with Article 141(2) of Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation (hereafter referred to as the “SO Regulation”). This methodology is hereinafter referred to as the “Nordic aFRR Capacity Market Rules”.
- (2) The Transmission System Operators of the Nordic LFC Block (hereafter referred to as the “TSOs”) are considered the TSOs exchanging or mutually willing to exchange balancing capacity pursuant to Article 33(1) of the EB Regulation. Where the Nordic LFC Block encompasses both Union and third country TSOs, all Union TSOs in that synchronous area shall endeavour to conclude with the third country TSOs an agreement setting the basis for their cooperation.
- (3) These Nordic aFRR Capacity Market Rules take into account the general principles and goals set out in the EB Regulation as well as the SO Regulation, Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management (hereafter referred to as the “CACM Regulation”), and Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity (hereafter referred to as the “Electricity Regulation”).
- (4) The exchange of aFRR capacity is based on a TSO-TSO model taking into account the available cross-zonal capacity and the FRR dimensioning rules in accordance with Article 157 of the SO Regulation (hereinafter referred to as the “Nordic aFRR Capacity Market”).
- (5) The Nordic aFRR Capacity Market Rules define the capacity procurement process where aFRR capacity bids will be submitted to the capacity procurement optimisation function. Consistent with Article 58(3) of the EB Regulation and the EB Regulation's aims as stated in its Article 3, this optimisation function minimises the overall procurement costs for the balancing market of all jointly procured balancing capacity and enhances the efficiency of balancing and of European and national balancing markets. The procurement of upward and downward aFRR capacity is carried out separately. To secure the exchange of aFRR capacity, the TSOs will allocate cross-zonal capacity using a market-based allocation process.
- (6) The TSOs will ensure both that the availability of cross-zonal capacity and that the operational security requirements set out in the SO Regulation are met. In accordance with Article 33(4) of the EB Regulation, cross-zonal capacity will be provided by the market-based allocation method of cross-zonal capacity for the exchange of aFRR capacity pursuant to Article 41(1) of the EB Regulation.
- (7) These Nordic aFRR Capacity Market Rules contribute to the achievement of the objectives of Article 3 of the EB Regulation. In particular, the Nordic aFRR Capacity Market Rules serve the following objectives:
 - (a) These Nordic aFRR Capacity Market Rules foster effective competition, non-discrimination and transparency in balancing markets (Article 3(1)(a) of the EB Regulation) by creating a regional Nordic market with common rules and processes for the procurement and exchange of aFRR capacity. These Nordic aFRR Capacity Market Rules, together with the methodology developed in accordance with Article 41 of the EB Regulation, create a common Nordic market for the procurement and exchange of aFRR capacity. The market is based on common, transparent and

non-discriminatory rules for submitting bids and selecting bids to cover aFRR capacity demand in each bidding zone efficiently. The aFRR capacity is settled to a clearing price for each bidding zone that signals the competitive bid price level in each market time unit and incentivises market players to bid according to their actual cost for providing balancing capacity.

- (b) These Nordic aFRR Capacity Market Rules enhance the efficiency of balancing as well as the efficiency of European and national balancing markets (Article 3(1)(b) of the EB Regulation) and contributes to the objective of integrating balancing markets and promoting the possibilities for exchanges of balancing services while contributing to operational security (Article 3(1)(c) of the EB Regulation). The bid selection of the Nordic market is based on an optimisation that seeks to cover demand in each bidding zone for aFRR balancing capacity by minimising total social costs. This contributes to efficient balancing by making possible an efficient utilisation of aFRR resources across bidding zone borders in order to secure the volume of balancing capacity needed to maintain operational security.
- (c) These Nordic aFRR Capacity Market Rules contribute to the efficient long-term operation and development of the electricity transmission system and electricity sector in the Union while facilitating the efficient and consistent functioning of the day-ahead, intraday and balancing markets (Article 3(1)(d) of the EB Regulation) since it establishes a Nordic market for aFRR capacity and implements a market-based cross-zonal capacity allocation process. The Nordic aFRR capacity market provides price signals that reflect the scarcity of aFRR capacity in different bidding zones and of cross-zonal capacity for the exchange of aFRR capacity between these bidding zones. It thereby contributes to efficient market entry of new reserve providing units or groups which can provide aFRR capacity. By using cross-zonal capacity from a market-based cross-zonal capacity allocation process as an input to the balancing procurement process described in the Nordic aFRR Capacity Market Rules, the value of cross-zonal capacity for the exchange of energy in the day-ahead energy market is properly considered in the determination of the efficient exchange of aFRR capacity. Hence, these Nordic aFRR Capacity Market Rules allow for the consistent functioning of the day-ahead and intraday markets alongside the balancing markets.
- (d) These Nordic aFRR Capacity Market Rules ensure fair, objective and transparent rules for a market-based procurement of balancing capacity for the entire Nordic region. By applying a market-based allocation process for the cross-zonal capacity in this procurement process, the Nordic aFRR Capacity Market Rules avoid undue distortions within the internal market in electricity. Therefore, the Nordic aFRR Capacity Market Rules are following the objective of Article 3(1)(e) of the EB Regulation.
- (e) These Nordic aFRR Capacity Market Rules facilitate the participation of demand response including aggregation facilities and energy storage while ensuring that they compete with other balancing services on a level-playing field and, where necessary, act independently when serving a single demand facility (Article 3(1)(f) of the EB Regulation) by establishing a common Nordic market place for aFRR capacity in which the requirements for aFRR capacity products are designed such that they can also be fulfilled by demand response, aggregation facilities and energy storage.
- (f) These Nordic aFRR Capacity Market Rules facilitate and do not hamper the participation of renewable energy sources in the Nordic aFRR capacity market and thus support the achievement of the European Union target for the penetration of renewable generation (Article 3(1)(g) of the EB Regulation).

TITLE 1

General provisions

Article 1

Subject matter and scope

1. This document establishes the common and harmonised rules and processes for the exchange and procurement of aFRR balancing capacity in accordance with Article 33(1) of the EB Regulation while respecting the requirements of Article 32 of the EB Regulation.
2. The Nordic aFRR Capacity Market Rules include the algorithm principles for the capacity procurement optimisation function for the procurement of balancing capacity bids in accordance with Article 58(3) of the EB Regulation.
3. These Nordic aFRR Capacity Market Rules apply to the TSOs of the Nordic LFC block which are the TSOs exchanging or mutually willing to exchange balancing capacity pursuant to Article 33(1) of the EB Regulation. The Nordic aFRR Capacity Market Rules cover the bidding zones of the Nordic LFC block as defined in accordance with Article 141(2) of the SO Regulation.
4. For the exchange of balancing capacity, these Nordic aFRR Capacity Market Rules cover the bidding zone borders as defined in the methodology pursuant to Article 38(1) of the EB Regulation.

Article 2

Definitions and interpretation

1. For the purposes of the Nordic aFRR Capacity Market Rules, terms used in this document shall have the meaning of the definitions included in Article 2 of the EB Regulation, Article 3 of the SO Regulation, Article 2 of the CACM Regulation, the Electricity Regulation, Commission Regulation (EU) No 543/2013 of 14 June 2013 on submission and publication of data in electricity markets and amending Annex I to Regulation (EC) No 714/2009 of the European Parliament and of the Council (hereafter referred to as the "Transparency Regulation") and Directive (EU) 2019/944.
2. The following definitions shall also apply:
 - (a) 'TSO demand' means a balancing capacity volume to be procured determined per scheduling area and bidding zone in accordance with Article 32(1) of the EB Regulation;
 - (b) 'uncongested area' means the widest area, constituted by one or multiple bidding zones, where the exchange of balancing capacity is not restricted by the available cross-zonal capacities allocated to the exchange of balancing capacity, during a specific market time unit;
 - (c) 'cross zonal marginal price' means the single marginal price representing the equilibrium between balancing capacity bids and TSO demand as revealed by applying the uniform price auction principle.
3. In the Nordic aFRR Capacity Market Rules, unless the context requires otherwise:
 - (a) the singular indicates the plural and vice versa;
 - (b) the table of contents and headings are inserted for convenience only and do not affect the interpretation of this methodology;

- (c) any reference to cross-zonal capacities shall include also the reference to allocation constraints as applied in the respective capacity calculation methodology pursuant to Article 20 of the CACM Regulation or Article 10 of the FCA Regulation;
- (d) 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; and
- (e) any reference to an Article without an indication of the document shall mean a reference to this methodology.

TITLE 2

Nordic aFRR capacity market

Article 3

High-level design of the aFRR capacity market

1. The volume of aFRR capacity procured by TSOs consists of separate volumes for upward aFRR capacity and downward aFRR capacity.
2. The procurement of aFRR capacity shall be performed daily in D-1 for each day-ahead market time unit of the trading day.
3. The Nordic aFRR capacity market is organised based on a TSO-TSO model with a single balancing capacity gate closure time for balancing service providers (hereafter referred to as “BSPs”) and which equals the balancing capacity bid submission gate closure time for TSOs to submit the balancing capacity bids per bidding zone to the capacity procurement optimisation function of the Nordic aFRR capacity market.
4. The balancing capacity gate closure time shall be within the balancing capacity market timeframe defined in accordance with the methodology pursuant to Article 38 of the EB Regulation. The exact timing of the gate closure time shall be set following the process described in paragraph 9 and 10.
5. The capacity procurement optimisation function selects aFRR capacity bids taking into account the constraints and objectives pursuant to Article 7.
6. Accepted aFRR capacity bids shall be notified to the relevant BSPs no later than 30 minutes after completion of the procurement. The publication of the procurement results shall be in accordance with Article 10.
7. Accepted aFRR capacity bids shall be fully available for aFRR energy activation during the delivery period.
8. Without prejudice to an exemption given pursuant to Article 34(1) of the EB Regulation, BSPs shall, when transferring their obligation to provide aFRR balancing capacity, also transfer their obligation to be fully available for aFRR energy activation during the delivery period.
9. The TSOs shall announce the gate closure time for BSPs to submit aFRR capacity bids, or any changes to this gate closure time. Before setting the exact time of the balancing capacity gate closure time, TSOs shall publicly consult stakeholders. Such a consultation will be performed at least 3 months before the implementation and last for at least 2 weeks.

10. The announcement of the balancing capacity gate closure time shall be made at least four weeks before taking effect. This announcement shall also include exceptions for instances when the gate closure time is delayed or when the bidding window is reopened. In these instances, the TSOs shall announce these changes as soon as possible and with a reasonable lead time before the actual application.

Article 4

Characteristics of aFRR capacity bids

1. The TSOs shall use the aFRR standard product for balancing capacity corresponding to the day ahead market time unit as defined in Annex 1 to the methodology pursuant to Article 25(2) of the EB Regulation.
2. BSPs may link their bids for standard aFRR balancing capacity product per day-ahead market time unit, which are submitted to the capacity procurement optimisation function, in one of the following ways:
 - (a) a bid with the same volume, direction and price, which is applicable for consecutive day-ahead market time units, meaning that all these bids must either be rejected or accepted for all involved day ahead market time units; and
 - (b) an upward bid can be linked with a downward bid for the same day-ahead market time unit, meaning that both bids must either be rejected or accepted.
3. The use of the linking pursuant to paragraph 2(b) is subject to exemptions to the requirement to procure upward and downward balancing capacity separately pursuant to Article 32(3) of the EB Regulation granted by each regulatory authority to the relevant TSO for all TSOs of the Nordic LFC Block. In the exemptions the exact linking characteristics shall be defined.
4. BSPs may provide a bid as a bid curve, where only one bid of the group of bids constituting the bid curve can be selected.

Article 5

aFRR capacity bid submission

1. BSPs shall submit their aFRR capacity bids to the capacity procurement optimisation function by the gate closure time as defined in Article 3(4).
2. The bid format and communication protocol for submission of the aFRR capacity bids shall be made available on the TSOs' websites.
3. All aFRR capacity bids submitted for the Nordic aFRR capacity market shall be visible to the TSOs after the submission of the bids.

Article 6

Procured volume of aFRR capacity

1. Each TSO is responsible for procuring the TSO demand for aFRR capacity for its bidding zone(s) necessary to fulfil the requirements set in the Nordic System Operation Agreement including the synchronous area operational agreement in accordance with Article 118 of the SO Regulation and the LFC block operational agreement in accordance with Article 119 of the SO Regulation for Nordic synchronous area.

2. Each TSO shall inform the BSPs and other TSOs about the TSO demand to be procured for each day-ahead market time unit of the trading day and for each bidding zone of their control area, at the latest two hours before the gate closure time of the aFRR capacity market.

Article 7

Algorithm principles for the capacity procurement optimisation function

1. The inputs of the algorithm for the capacity procurement optimisation function are:
 - (a) TSO demand per direction for each day-ahead market time unit and for each bidding zone;
 - (b) the list of aFRR capacity bids pursuant to Article 4 per direction from BSPs for each bidding zone sorted in order of their bid prices;
2. The constraint of the algorithm for the capacity procurement optimisation function is:
 - (a) the available cross zonal capacity allocated to the exchange of balancing capacity in accordance with the methodology applied pursuant to Article 38(1) of the EB Regulation.
3. The objective of the algorithm for the capacity procurement optimisation function is to minimise the provision costs of BSPs given the constraint defined in paragraph 2 and defined as follows, summing across directions d , day ahead market time units of the trading day t and aFRR capacity bids i ,

$$\sum_d \sum_t \sum_i (bidcost_i \times bidvolume_i \times selected_i)_{td} \quad (Equation 1)$$

Where:

$bidcost_i$ is the aFRR capacity bid cost of aFRR capacity bid i ;

$bidvolume_i$ is a valid increment of aFRR capacity bid i ;

$selected_i$ is boolean denoting whether or not the aFRR capacity bid increment is accepted.

4. The outputs from the algorithm for the capacity procurement optimisation function for each day-ahead market time unit are:
 - (a) accepted aFRR capacity bids per direction for each bidding zone ($selected_i$ in Equation 1); and
 - (b) volume of exchange of aFRR capacity for each bidding zone border.
5. The procured upward balancing capacity bids or downward balancing capacity bids shall be firm after the capacity procurement optimisation function, pursuant to paragraph 1 to 4, is performed.
6. If the capacity procurement optimisation function fails to provide the outputs set in Article 7(4) due to not meeting the TSO demand for one or several bidding zone(s) for one or several day-ahead market time unit(s), a fall-back procedure with a second round of capacity procurement optimisation is executed for relevant bidding zone borders, where the TSO demand of the relevant bidding zone(s) will be reduced until the outputs set in Article 7(4) can be provided.

Article 8

TSO-BSP Settlement of procured balancing capacity

1. Each connecting TSO shall settle with each BSP each accepted aFRR capacity bid volume for each day-ahead market time unit and for each direction.
2. The settlement shall be equal to the accepted balancing capacity bid volume multiplied with the respective balancing capacity price(s) as defined in paragraph 3.

3. The balancing capacity price shall be a cross zonal marginal price calculated by the capacity procurement optimisation function for each standard balancing capacity product, for each direction and for each day-ahead market time unit in each uncongested area in accordance with the following principles:
 - (a) the cross zonal marginal price of an uncongested area shall be the marginal price of the marginal accepted bid in this uncongested area and the imported cross zonal marginal price; or
 - (b) linked bids of the types described in Article 4, paragraph 2 shall by default not set the cross-zonal marginal price in the uncongested area. However, such a linked bid can lead to setting a higher cross-zonal marginal price in one or more day ahead market time units to allow the linked bid to exactly recover its overall bid costs.

Article 9

TSO-TSO settlement in the aFRR capacity market

1. TSOs shall settle between them the difference between the TSO demand for their bidding zones in accordance with Article 6 and the volume equal to the sum of the volume of the accepted aFRR capacity bids in their bidding zones.
2. The TSO(s) importing aFRR capacity shall pay an amount equal to the product of the volume of aFRR capacity exchanged and the balancing capacity price pursuant to Article 8 for the relevant day-ahead market time unit, bidding zone and aFRR capacity product.
3. The TSO(s) exporting aFRR capacity shall receive an amount equal to the product of the volume of aFRR capacity exchanged and the balancing capacity price pursuant to Article 8 for the relevant day-ahead market time unit, bidding zone and aFRR capacity product.
4. The difference between the settlements pursuant to paragraphs 2 and 3 shall be the balancing capacity congestion income and shared in accordance with the methodology pursuant to Article 41(1) of the EB Regulation.

Article 10

Publication of information for the exchange of aFRR capacity

1. The TSOs shall publish the following information for aFRR capacity in accordance with Article 12(3) of the EB Regulation:
 - (a) offered volumes as well as offered prices of procured balancing capacity, anonymised where necessary, no later than one hour after the results of the procurement have been notified to the BSPs. This information shall be published on a publicly accessible website once the outputs of the capacity procurement optimisation function are available and no later than one hour after the accepted aFRR capacity bids have been notified to the relevant BSPs;
 - (b) the description of the algorithm for capacity procurement optimisation function, aFRR capacity bid selection and pricing of procured aFRR capacity in accordance with Article 7. This document shall be published and kept updated with every new version of the capacity procurement optimisation function and aFRR capacity bid selection and pricing at least one month before the application of this algorithm. The document shall be publicly available on the TSOs webpage. Subject to approval pursuant to Article 18 of the EB Regulation, a TSO may withhold the publication of information on offered prices and volumes of balancing capacity pursuant to paragraph 1(a) bids if justified for reasons of market abuse concerns and if not detrimental to the effective functioning of the electricity markets. A TSO shall report such withholdings at least

once a year to the relevant regulatory authority in accordance with Article 59 of Directive (EU) 2019/944 and pursuant to Article 12(4) of the EB Regulation.

TITLE 3

Final provisions

Article 11

Publication and implementation of the Nordic aFRR Capacity Market Rules

1. The TSOs shall publish the Nordic aFRR Capacity Market Rules without undue delay after a decision has been made by the European Union Agency for the Cooperation of Energy Regulators in accordance with Article 6(2) of the EB Regulation.
2. The TSOs shall implement the Nordic aFRR Capacity Market Rules no later than 12 months after a decision has been made by the European Union Agency for the Cooperation of Energy Regulators in accordance with Article 6(2) of the EB Regulation or as soon as the cross zonal capacity on all bidding zone borders of the Nordic CCR is calculated in accordance with the capacity calculation methodologies developed pursuant to the CACM Regulation.
3. The TSOs shall jointly implement the Nordic aFRR Capacity Market Rules in enabling a common procurement and exchange of aFRR capacity in the Nordic LFC block.

Article 12

Language

The reference language for these Nordic aFRR Capacity Market Rules shall be English. For the avoidance of doubt, where TSOs need to translate these Nordic aFRR Capacity Market Rules into their national language(s), in the event of inconsistencies between the English version published by TSOs in accordance with Article 7 of the EB Regulation and any version in another language, the relevant TSOs shall, in accordance with national legislation, provide the relevant national regulatory authorities with an updated translation of these Nordic aFRR Capacity Market Rules.