Amended Nordic synchronous area methodology to determine limits on the amount of exchange of FRR/RR between synchronous areas defined in accordance with Article 176(1)/178(1) and to determine limits on the amount of sharing of FRR/RR between synchronous areas defined in accordance with Article 177(1)/179(1)

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DISCLAIMER
This document is released on behalf of all TSOs of the Nordic synchronous area only for the purposes of the public consultation on the amended methodology to determine limits on the amount of exchange of FRR/RR between synchronous areas defined in accordance with Article 176(1)/178(1) and to determine limits on the amount of sharing of FRR/RR between synchronous areas defined in accordance with Article 177(1)/179(1) of the Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation. This version of the proposal does not in any case represent a firm, binding or definitive TSOs' position on the content.

All TSOs of the Nordic synchronous area, taking into account the following:

Whereas

(1) This document is the common methodology developed by all Transmission System Operators within the Nordic synchronous area (hereafter referred to as "**TSOs**") to determine limits on the amount of exchange of FRR/RR between synchronous areas defined in accordance with Article 176(1)/178(1) and the methodology to determine limits on the amount of sharing of FRR/RR between synchronous areas defined in accordance with Article 177(1)/179(1) of the Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation (hereafter referred to as "**SO Regulation**") [1]. This document is hereafter referred to as the "**Methodology**". The Methodology is an amended version of the methodology *'Amended Nordic synchronous area proposal for the methodology to determine limits on the amount of exchange of FRR/RR between synchronous areas defined in accordance with Article 176(1)/178(1) and the methodology to determine limits on the amount of sharing of FRR/RR between synchronous areas defined in accordance with Article 177(1)/179(1)' of 13 May 2019.* The methodology of 13 May 2019 has been approved by the National Regulatory Authorities (hereafter referred to as "NRAs") in July 2019.

(2) The Methodology takes into account the general principles and goals set out in the SO Regulation as well as in Regulation (EU) No 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity (hereafter referred to as **"Regulation (EU) No 2019/943"**)[2]. The goal of the SO Regulation and of Regulation (EU) No **2019/943** is the safeguarding of operational security, frequency quality and the efficient use of the interconnected system and resources. Article 118(1)(z) of the SO Regulation sets for this purpose requirements for the TSOs to "*jointly develop common proposals for: […] the methodology to determine limits on the amount of exchange of FRR between synchronous areas defined in accordance with Article 176(1) and the methodology to determine limits on the amount of sharing of FRR between synchronous areas defined in accordance with Article 177(1)"*. Article 118(1)(aa) of the SO Regulation sets for this purpose requirements for the TSOs to "*jointly develop common proposals for: […] the methodology to determine limits on the amount of exchange of RR between synchronous areas defined in accordance with Article 178(1) and the methodology to determine limits on the amount of sharing of RR between synchronous areas defined in accordance with Article 179(1)"*

(3) Paragraph 1 of each of the Articles 176, 177, 178 and 179 of the SO Regulation specify that the methodologies to determine the mentioned limits shall take into account:

(a) the operational impact between the synchronous areas;
(b) the stability of the FRP/RRP of the synchronous area;
(c)/(d) the ability of TSOs of the synchronous area to comply with the frequency quality target parameters defined in accordance with Article 127 and the FRCE target parameters defined in accordance with Article 128; and

[1] As amended by Commission Implementing Regulation (EU) 2021/280 of 22 February 2021, amending Regulations (EU) 2015/1222, (EU) 2016/1719, (EU) 2017/2195 and (EU) 2017/1485 in order to align them with Regulation (EU) 2019/943.

[2] As amended by Regulation (EU) 2022/869 of the European Parliament and of the Council of 30 May 2022 on guidelines for trans-European energy infrastructure, amending Regulations (EC) No 715/2009, (EU) 2019/942 and (EU) 2019/943 and Directives 2009/73/EC and (EU) 2019/944, and repealing Regulation (EU) No 347/2013, and Regulation (EU) 2024/1747 of the European Parliament and of the Council of 13 June 2024 amending Regulations (EU) 2019/942 and (EU) 2019/943 as regards improving the Union's electricity market design.

(d)/(e) the operational security.

Paragraph 1 of Articles 177 and 179 of the SO Regulation adds:

(c) the maximum reduction of FRR that can be taken into account in the FRR dimensioning in accordance with Article 157 as a result of the FRR sharing;

(4) The TSOs apply two types of Frequency Restoration Reserves (hereafter referred to as "FRR"): Manual FFR ("mFRR") and Automatic FRR ("aFRR"). This methodology applies to both mFRR and aFRR. The TSOs do not utilise Replacement Reserves (hereafter referred to as "RR"). For this reason, this methodology does not specify rules for the exchange of RR.

(5) With regard to regulatory approval, Article 6(3) of the SO Regulation states:

"The proposals for the following terms and conditions or methodologies shall be subject to approval by all regulatory authorities of the concerned region, on which a Member State may provide an opinion to the concerned regulatory authority: […]
(d) methodologies, conditions and values included in the synchronous area operational agreements in Article 118 concerning:
(ix) limits on the amount of exchange of FRR between synchronous areas defined in accordance with Article 176(1) and limits on the amount of sharing of FRR between synchronous areas defined in accordance with Article 177(1);
(x) limits on the amount of exchange of RR between synchronous areas defined in accordance with Article 178(1) and limits on the amount of sharing of RR between synchronous areas defined in accordance with Article 179(1)";

(6) With regard to the adjustments of cross-zonal capacities pursuant to the SO Regulation, Articles 4 (2) (d) (ii) of the Implementation Frameworks for mFRR and aFRR[3], respectively, allow such adjustments due to technical limitation of HVDC Interconnectors:

"limitations imposed due to technical inability to facilitate cross-zonal manual frequency restoration power interchange on HVDC interconnectors in accordance with Articles 171(1), 146(3)(a), 147(3)(a) and 147(3)(b) of the SO Regulation";

and

"limitations imposed due to technical inability to facilitate cross-zonal automatic frequency restoration power interchange on HVDC interconnectors, in accordance with Articles 171(1), 146(3)(a), 146(3)(b), 147(3)(a) and 147(3)(b) of the SO Regulation".

(7) Within the next years, exchange and sharing of FRR capacity between synchronous areas will be more developed. This amended version of the Methodology further details the conditions for such exchange and sharing of mFRR and aFRR capacity.

[3] Implementation framework for a European platform for the exchange of balancing energy from frequency restoration reserves with manual activation in accordance with Article 20 of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing and Implementation framework for the European platform for the exchange of balancing energy from frequency restoration reserves with automatic activation in accordance with Article 21 of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing.

(8) Within 2027, the Nordic TSOs expect to join the '*European platforms for exchange of balancing energy from frequency restoration reserves with manual activation'* in accordance with Article 20 of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing (hereafter referred to as the "**EB Regulation**")[4]. Energinet and Fingrid have already acceded to the *'European platform for the exchange of balancing energy from frequency restoration reserves with automatic activation'* in accordance with Article 21 of the EB Regulation, while Statnett and Svenska kraftnät are expected to join within the next years. This amended version of the Methodology adds the framework for this exchange of mFRR and aFRR to the earlier approved methodology.

(9) According to Article 6(6) of the SO Regulation the expected impact of the amended Methodology on the objectives of the SO Regulation has to be described and is presented below.

(10) The Methodology generally contributes to and does not in any way hamper the achievement of the objectives of Article 4 of the SO Regulation. In particular, the Methodology serves the objectives to (1)(d) ensuring the conditions for maintaining operational security throughout the Union, and (1)(h) contributing to the efficient operation and development of the electricity transmission system and electricity sector in the Union. The Methodology contributes to these objectives by specifying the limits for exchange of FRR between synchronous areas. The proposed limits for the exchange of FRR intend to set efficient limits that balance the objective of ensuring the conditions for maintaining operational security and efficient operation of the electricity system.

(11) In conclusion, the Methodology contributes to the general objectives of the SO Regulation to the benefit of all market participants and electricity end consumers.

[4] As amended by Commission Implementing Regulation (EU) 2021/280 of 22 February 2021 amending Regulations (EU) 2015/1222, (EU) 2016/1719, (EU) 2017/2195 and (EU) 2017/1485 in order to align them with Regulation (EU) 2019/943, and Commission Implementing Regulation (EU) 2022/828 of 25 May 2022 correcting the Polish language version of Regulation (EU) 2017/2195 establishing a guideline on electricity balancing.

SUBMIT THE FOLLOWING AMENDED METHODOLOGY TO ALL REGULATORY AUTHORITIES OF THE NORDIC SYNCHRONOUS AREA:

Article 1 - Subject matter and scope

1. The limits for the exchange and sharing of FRR between synchronous areas described in this Methodology are the common methodology of TSOs in accordance with Article 176(1) and 177(1) of the SO Regulation.
2. The Methodology applies solely to the Nordic synchronous area covering transmission systems of East-Denmark (DK2), Finland, Sweden and Norway (Nordic LFC Block).
3. This Methodology is subject to approval in accordance with Article 6(3) of the SO Regulation.

Article 2 - Definitions and interpretation

1. For the purposes of the Methodology, the terms used shall have the meaning of the definitions included in Article 3 of the SO Regulation and in Article 2 of the EB Regulation.
2. The term total flow change means the change in energy exchange from one MTU to the next, as determined by market results across all time frames from day-ahead until and including the balancing timeframe.
3. The term combined restriction means a restriction in total flow change that applies to the sum of the exchanges on a defined group of HVDC interconnectors, as defined in article 2(2)(c) of the Methodology under Article 137 of the SOGL.
4. The term technical profiles means a defined set of HVDC and or HVAC interconnectors on which a total transfer capacity restriction is defined.
5. In this Methodology, unless the context requires otherwise:
   a) the singular indicates the plural and vice versa;
   b) the headings are inserted for convenience only and do not affect the interpretation of the Methodology; and
   c) any reference to legislation, regulations, directives, orders, instruments, codes or any other enactment shall include any modification, extension or re-enactment of it when in force.

Article 3 – Limits for the exchange of aFRR and mFRR capacity

1. The Nordic TSO involved in exchange of FRR capacity is responsible for complying with Article 176 of the SO Regulation.
2. The TSO who intends to exercise the right to implement an exchange of FRR capacity with a TSO in another synchronous area shall make an assessment against Article 176 and the criteria below. The TSO shall:
   a) secure that dimensioning requirements in the Nordic LFC block are satisfied
      i. In case of export of FRR capacity from a TSO to another TSO outside of the LFC block, equivalent FRR capacity equal to the export contract must be secured by the Nordic TSO in addition to the Nordic LFC block dimensioning volume requirement;
      ii. In case of import of FRR capacity to a Nordic TSO from another TSO outside of the LFC block; procured volume may be counted for in the Nordic LFC block compliance monitoring for reserve availability as long as b) and c) below is fulfilled.

b) secure that the needed availability of grid capacity between source and sink has a probability of at least 99%;
c) secure that the needed availability of FRR from the reserve instructing TSO in the other synchronous area has a probability of at least 99%.

3. The assessment of FRR exchange arrangements with other synchronous areas shall be approved by all Nordic TSOs based on a proposal of the exchanging TSO. The approval process shall not be unreasonably withheld or delayed.

Article 4 – Limits for sharing of aFRR and mFRR capacity

1. The Nordic TSO involved in sharing of FRR is responsible for complying with Article 177 of the SO Regulation.
2. The TSO who intends to exercise the right to implement sharing of FRR with a TSO in another synchronous area shall make an assessment against Article 177 and the criteria below. The TSO shall:

   a) secure that dimensioning requirements in the Nordic LFC block are satisfied
      i. Disturbances leading to activations of the shared reserves, shall be reported for common Nordic evaluations of Nordic consequences;
      ii. The shared volume may be counted for in the LFC block compliance monitoring for reserve availability as long as b), c), d) and e) below are fulfilled.
   b) secure that the needed availability of grid capacity between source and sink has a probability of at least 99%;
   c) secure that the needed availability of FRR from the reserve instructing TSO in the other synchronous area has a probability of at least 99%;
   d) secure that the reduction in positive FRR capacity for disturbances within the Nordic LFC block does not exceed 50% of the size of the positive reference incident in the relevant control area;
   e) secure that the reduction in negative FRR capacity for disturbances within the Nordic LFC block does not exceed 50% of the size of the negative reference incident in the relevant control area.

3. The assessment of FRR sharing arrangements with other synchronous areas shall be approved by all Nordic TSOs based on a proposal of the sharing TSO. The approval process shall not be unreasonably withheld or delayed.

Article 5 – Limits for the exchange of aFRR and mFRR energy

1. Each TSO shall allow an exchange of FRR energy with other synchronous areas within a bandwidth as set out in this paragraph:

   a) The maximum total flow change on an HVDC interconnector from one MTU to the next MTU shall have a lower bound equal to the maximum flow change valid for the day-ahead and intraday markets, in accordance with Article 137(3) and 137(4) of the SO Regulation on ramping restrictions for active power output.
   b) The maximum total flow change on an HVDC interconnector from one MTU to the next MTU shall have an upper bound of 600 MW.

2. If a TSO applies a combined restriction on HVDC interconnectors from day-ahead and/or intraday markets, that TSO may apply a combined restriction to the same group of HVDC interconnectors for the exchange of FRR with other synchronous areas. The initial value for the maximum total

flow change for the combined restriction shall at least be equal to the maximum flow change valid for the day-ahead and intraday markets.

3. If a TSO applies a technical profile for FRR exchange on HVAC and/or HVDC interconnectors, this may limit the exchange of FRR energy with other synchronous areas..
4. Additional allocation constraints may be applied due to technical limitations of an HVDC interconnector in accordance with Articles 4(2)(d)(ii) of the aFRR and mFRR Implementation Frameworks.
5. The TSOs shall include and keep updated the specifics of each allocation constraint in the Nordic System Operation Agreement leading to limitations for exchanges of FRR, including:
    i. the LFC Areas and the HVDC and HVAC interconnectors subject to the allocation constraint;
    ii. the value for the maximum flow change within the bandwidth described in paragraph 1 of this article;
    iii. the value for minimum flow on individual HVDC links, and
    iv. limitations of amount of polarity reversals (zero-crossings) for a given period of time to ensure the integrity of HVDC-equipment.
6. TSOs applying any of the constraints mentioned in subparagraphs 1-4, each of these TSO shall communicate and justify the application of those constraints to its NRA. The justification should be done in accordance with SOGL Article 176(1) (a) – (d).

Article 6 – Timescale for implementation and validity

1. This amended Methodology will be applicable at the date of approval from the NRAs.
2. Article 5 shall be applicable until three years after all Nordic TSOs have connected to the European platform for the exchange of balancing energy from frequency restoration reserves with automatic activation (PICASSO), or, in case not all TSOs have connected to PICASSO, until the latest 1 January 2032.

Article 7 – Publication

The Nordic TSOs shall publish the Methodology without undue delay after the Nordic NRAs have approved the Methodology or a decision has been taken by the Agency for the Cooperation of Energy Regulators.

Article 8 - Language

The reference language for this Methodology shall be English. For the avoidance of doubt, where TSOs needs to translate this Methodology into national language(s), in the event of inconsistencies between the English version published by TSOs in Nordic Synchronous Area in accordance with Article 8(1) of the SO Regulation and any version in another language the relevant TSOs shall, in accordance with national legislation, provide the relevant national regulatory authority with an updated translation of the Methodology.