Nordic synchronous area proposal for the frequency quality defining parameters and the frequency quality target parameter in accordance with Article 127 of the Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation

10 September 2018

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

Whereas

(1) This document is the common proposal developed by all Transmission System Operators within the Nordic synchronous area (hereafter referred to as "**TSOs**") for the frequency quality defining parameters and the frequency quality target parameter in accordance with Article 127 of Commission Regulation (EU) 2017/1485 establishing a guideline on electricity transmission system operation (hereafter referred to as "**SO Regulation**"). This proposal is hereafter referred to as "**Proposal**".

(2) The Proposal takes into account the general principles and goals set in SO Regulation as well as Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross border exchanges in electricity (hereafter referred to as **"Regulation (EC) No 714/2009"**). The goal of the SO Regulation/Regulation (EC) No 714/2009 is the safeguarding of operational security, frequency quality and the efficient use of the interconnected system and resources. Article 118(1)(c) of the SO Regulation sets for this purpose requirements for the TSOs to *"jointly develop common proposals for: […] the frequency quality defining parameters and the frequency quality target parameters in accordance with Article 127;"*

(3) Article 127(1) and (4) of the SO Regulation describe the scope of this Proposal, by listing the relevant frequency quality defining parameters and the frequency quality target parameter for the Nordic synchronous area:
"1. The frequency quality defining parameters shall be:
a. *the nominal frequency;*
b. *the standard frequency range;*
c. *the maximum instantaneous frequency deviation;*
d. *the maximum steady-state frequency deviation;*
e. *the time to restore frequency;*
f. *[..]*
g. *the frequency restoration range;*
h. *[..]*
i. *the alert state trigger time for all synchronous areas.*
[..]
4. The frequency quality target parameter shall be the maximum number of minutes outside the standard frequency range per year per synchronous area and its default value per synchronous area are set out in Table 2 of Annex III."

(4) Article 127(2) of the SO Regulation states that the nominal frequency shall be 50 Hz for all *synchronous areas.* Article 127 (3) and (4) and Table 1 and 2 of Annex III of the SO Regulation provide *default values for all synchronous areas:*

"3. The default values of the frequency quality defining parameters listed in paragraph 1 are set out in Table 1 of Annex III.

Frequency quality defining parameters referred to in Article 127:

Table 1

Frequency quality defining parameters of the synchronous areas

	CE	GB	IE/NI	Nordic
standard frequency range	± 50 mHz	± 200 mHz	± 200 mHz	± 100 mHz
maximum instantaneous frequency deviation	800 mHz	800 mHz	1 000 mHz	1 000 mHz
maximum steady-state frequency deviation	200 mHz	500 mHz	500 mHz	500 mHz
time to recover frequency	not used	1 minute	1 minute	not used
frequency recovery range	not used	± 500 mHz	± 500 mHz	not used
time to restore frequency	15 minutes	15 minutes	15 minutes	15 minutes
frequency restoration range	not used	± 200 mHz	± 200 mHz	± 100 mHz
alert state trigger time	5 minutes	10 minutes	10 minutes	5 minutes

4. The frequency quality target parameter shall be the maximum number of minutes outside the standard frequency range per year per synchronous area and its default value per synchronous area are set out in Table 2 of Annex III.

Frequency quality target parameters referred to in Article 127:

Table 2

Frequency quality target parameters of the synchronous areas

	CE	GB	IE/NI	Nordic
maximum number of minutes outside the standard frequency range	15 000	15 000	15 000	15 000

”

(5) In 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:
(i) the frequency quality defining parameters and the frequency quality target parameter in accordance with Article 127; [...]

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

(7) The Proposal 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 Proposal serves the

objectives to (1)(c) determining common load-frequency control processes and control structures, (1)(d) ensuring the conditions for maintaining operational security throughout the Union, (1)(e) ensuring the conditions for maintaining a frequency quality level of all synchronous areas 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 Proposal contributes to these objectives by specifying the values for the frequency quality defining parameters and for the value of the frequency quality target parameter that the TSOs shall endeavour to comply with. The proposed values for the frequency quality defining parameters and for the value of the frequency quality target parameter intend to set efficient limits to the system frequency in different circumstances with the main objective to balance the operational security (risk for supply interruptions) and efficient operation of the electricity system (cost of load-frequency control measures to comply with the values).

(8) The TSOs together operate the Nordic synchronous system. Consequently, the TSOs and all the power consumers, generators and networks directly or indirectly connected to the TSOs' networks, influence the frequency quality level and experience the same frequency level. The values proposed in this Proposal have been analysed, discussed and agreed by the Nordic TSOs and are based on many years of experience with the same or at least similar parameters.

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

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

Article 1 - Subject matter and scope

1. The frequency quality defining parameters and the frequency quality target parameter described in this Proposal are the common proposal of TSOs in accordance with article 127 of the SO Regulation. The Proposal applies solely to the Nordic synchronous area.

   The Nordic synchronous area covers transmission systems of East-Denmark (DK2), Finland, Sweden and Norway.

   This Proposal has been developed by Energinet, Fingrid Oyj, Kraftnät Åland AB, Svenska kraftnät and Statnett SF.

2. This Proposal 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 Proposal, the terms used shall have the meaning of the definitions included in Article 3 of the SO Regulation.

2. In this Proposal, 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 Proposal; 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 – Frequency quality defining parameters

1. The following values from Table 1 of Annex III of the SO Regulation apply for the Nordic synchronous area:

Table 1: Frequency quality defining parameters for the Nordic synchronous area.

Frequency quality defining parameters	
nominal frequency	50 Hz
standard frequency range	±100 mHz
maximum instantaneous frequency deviation	1000 mHz
maximum steady-state frequency deviation	500 mHz
time to restore frequency	15 minutes
frequency restoration range	±100 mHz
alert state trigger time	5 minutes

Article 4 – Frequency quality target parameter

1. The following value from Table 2 of Annex III of the SO Regulation applies for Nordic synchronous area: The *maximum number of minutes outside the standard frequency range* for the Nordic synchronous area is 15,000 minutes per year.
2. The aim for frequency deviations outside the *standard frequency range* is not more than 10,000 minutes per year.
3. The minutes outside the standard frequency range shall be determined by observing all frequency samples which should have a measurement period equal to or shorter than one second. If the value is outside the standard frequency range, $\frac{\text{measurement period in s}}{60s}$ shall be added to the number of minutes outside the standard frequency range.

Article 5 – Publication and implementation

1. The relevant TSOs shall publish (in accordance with Article 8 of the SO Regulation) the Proposal without undue delay after the competent NRAs have approved the Proposal or a decision has been taken by the Agency for the Cooperation of Energy Regulators in accordance with Article 6 of the SO Regulation.

2. The TSOs shall implement the Proposal not later than when Nordic synchronous area operational agreement enters into force in accordance with Article 118 of the SO Regulation.

Article 6 - Language

The reference language for this Proposal shall be English. For the avoidance of doubt, where TSOs needs to translate this Proposal 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 Proposal.