

Nordic System Operation Agreement (SOA) – Annex Operational Planning (OP)“

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1 Introduction

1.1 Interaction with other agreements

This Annex is part of the System Operation Agreement. This Annex makes references to the requirements set up in:

- Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation (hereinafter referred to as "SOGL");
- Commission Regulation (EU) (EC) 2015/1222 establishing a guideline on capacity allocation and congestion management (hereinafter referred to as "CACM");
- "Cooperation Agreement regarding Regional Security Coordination in the Nordic region, Nordic RCC" (hereinafter referred to as "Nordic RCC Agreement");
- Multilateral Agreement on Participation in Regional Security Coordination Initiatives" (hereinafter referred to as "MLA");
- All TSOs' proposal for a common grid model methodology in accordance with Articles 67(1) and 70(1) of Commission Regulation (EU) 2017/1485 of 02 August 2017 establishing a guideline on electricity transmission system operation (hereafter referred to as "CGMM-v3");
- Methodology for coordinating operational security analysis in accordance with Article 75 of Commission Regulation (EU) 51 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation (hereafter referred to as "CSAM");
- Nordic TSOs' common methodology for regional operational security coordination in Nordic capacity calculation region in accordance with Article 76 and Article 77 of the "Commission Regulation (EU) 2017/1485 of 2 August 2017" establishing a guideline on electricity transmission system operation (hereafter referred to as "Nordic ROSC Methodology");
- Methodology for assessing the relevance of assets for outage coordination in accordance with Article 84 of Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation (hereafter referred to as "RAOCM");
- Nordic Operational Procedure for Outage Planning Coordination (Appendix to this Annex);
- Nordic Operational Procedure for Adequacy Assessment (Appendix to this Annex)

1.2 Background

The main principles of SOGL, Part III Operational Planning (hereinafter referred to as "OP") are to define data requirements for operational security analysis and to determine common system operation principles for operational planning data, regional operational security coordination, regional outage planning coordination and regional adequacy assessment in order to ensure security of supply at all times. These principles are essential for the Nordic TSOs to manage their responsibilities for preparing a secure operation of the interconnected transmission systems with a high level of coordination, reliability, quality and stability.

1.3 This Annex

In this Annex the Nordic TSOs agree upon the main principles and requirements on OP for ensuring system security and to contribute to non-discrimination, effective competition and the efficient functioning of the internal electricity market. (SOGL, whereas (13))

This Annex shall be considered in addition to the principles, requirements and conditions included in the SOGL. (SOGL, part III)

This Annex includes references to the methodologies mentioned in chapter 1. Where NRAs approved an implementation date in future, this Annex describes the existing situation.

The Nordic TSOs anticipate regular updates in order to keep the agreements and methodologies in this Annex up to date. Consequently, this Annex includes mainly the agreements between the Nordic TSOs related to the existing situation. Changes shall be first approved by all Nordic TSOs, before the change will be implemented in the SOA at the latest when the change enters into force. The SOA maintenance group will follow the change agreed.

1.4 Geographic area

The geographical area to which this Annex applies is the Nordic Capacity Calculation Region (hereafter referred to as "Nordic CCR").

1.5 Structure of this Annex

This Annex has the following structure:

- Chapter 2: Operational Planning Data
- Chapter 3: Operational Security Coordination
- Chapter 4: Outage Planning Coordination
- Chapter 5: Adequacy Assessment
- Chapter 6: Ancillary Services for Reactive Power

1.6 Definitions

For the purpose of this Annex, the terms used shall have the meaning of the definitions included in article 3 of SOGL, article 2 of CACM, article 2 of CSAM, article 2 of Nordic ROSC Methodology and the other items of legislation referenced therein.

2 Operational Planning Data

2.1 Objective

Operational planning data is an important objective for performing the regional operational planning in Nordic CCR. The individual grid models (hereinafter referred to as "IGM") provided by each TSO are merged to a common grid model (hereinafter referred to as "CGM"). CGM is a network model which allow Nordic TSOs and the Nordic RCC to calculate electrical values such as voltage, active and reactive power flows on elements of the electrical network. The CGMs for the different time frames are the basis for operational processes, such as coordinated regional operational security assessment and regional outage planning coordination.

2.2 Roles & Responsibilities

All TSOs agree to prepare IGMs (SOGL 64) in accordance with the CGM methodology (CGMM-v3) referred to in Chapter 2.3.1 at least for each of the following timeframes:

- year-ahead
- month-ahead
- D-2
- day-ahead

All TSOs agree to jointly develop a common list of year-ahead scenarios (SOGL 65(1)) for the following year to assess the operation of the interconnected transmission system.

Each TSO shall determine and update the year-ahead and month-ahead IGM for each of the scenarios. (SOGL 66(1))

Nordic RCC shall check the consistency and quality of the IGMs provided by the TSOs.

2.3 Rules & Methodologies

2.3.1 CGM Methodology (CGMM-v3)

The document *"All TSOs' proposal for a CGM methodology in accordance with Articles 67(1) and 70(1) of Commission Regulation (EU) 2017/1485 of 02 August 2017 establishing a guideline on electricity transmission system operation"* is approved by NRAs according to Article 6(2)(b) of SOGL

2.4 Operational Procedures

Operational procedures for building and exchange of IGMs are described in MLA and more specifically for Nordic TSOs in the Nordic RCC Agreement.

3 Operational Security Coordination

3.1 Objective

Coordinated operational security assessments and analyses are required in relevant time frames of the regional operational security coordination to ensure that system operation is within the normal operating state of the transmission system. Coordinated operational security assessments and analyses in day-ahead and intraday time frame, are important steps for a coordinated preparation and activation of remedial actions in real-time operation.

The TSO's day-ahead and intraday regional operational security coordination is defined in Nordic ROSC Methodology.

3.2 Roles & Responsibilities

All TSOs agree to perform year-ahead Coordinated Operational Security Analysis (COSA) in their respective internal system, with appropriate models, and coordinate the results with the affected TSOs. (SOGL 72 (1a)(3)(5)) (SOGL 73)

All TSOs agree to perform day-ahead, intraday and close to real-time COSA in their respective internal system with appropriate models. Results of the security analysis and remedial actions are coordinated with the affected TSOs bilaterally or during a Daily Operational Planning Teleconference (DOPT) call. (SOGL 72 (1)(3)(5)) (SOGL 74)

All TSOs agree to send all the information and data required, to perform the Coordinated Regional Operational Security Assessment (CROSA) and will jointly develop the quality of the processes. (SOGL 78)

Statnett, Energinet and Fingrid agree to perform the day-ahead CROSA in accordance with the operational procedures described in chapter 3.4, CSAM and Nordic ROSC methodologies. (SOGL 72) (SOGL 75) (SOGL 76)

3.3 Rules & Methodologies

3.3.1 Coordinated Security Analysis Methodology (CSAM)

The document *"Methodology for coordinating operational security analysis in accordance with Article 75 of Commission Regulation (EU) 51 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation"* is approved by ACER according to Article 6(2)(c) and 7(4) of SOGL.

3.3.2 Nordic ROSC Methodology (NROSC)

NROSC is the common methodology of the Nordic TSOs which defines the principles for regional operational security coordination within Nordic CCR.

The document *"Nordic TSOs' common methodology for regional operational security coordination in Nordic capacity calculation region in accordance with Article 76 and Article 77 of the "Commission Regulation (EU) 2017/1485 of 2 August 2017" establishing a guideline on electricity transmission system operation" (NROSC)"* is approved by all Nordic NRAs according to Article 6(3)(b) of SOGL.

3.4 Operational Procedures

All TSOs agree on the operational procedure for CROSA as described in the *High Level Business Description Nordic D-1 CSA*.

All TSOs are responsible for developing and maintaining internal operational procedures for COSA.

4 Outage Planning Coordination

4.1 Objective

Outages of at least relevant assets, such as grid elements, power generating modules and demand facilities, need to be planned and coordinated amongst the Nordic TSOs timely in advance for securing grid operation. Nordic TSOs perform with the support of Nordic RCC outage planning coordination in order to monitor the availability status of at least the relevant assets and coordinate the availability plans to ensure the operational security of the Nordic transmission system.

4.2 Roles & Responsibilities

All TSOs agree, that the Nordic outage coordination region (SOGL 80(1)) shall be equal to Nordic CCR.

All TSOs shall apply regional outage planning coordination (SOGL 83(2)) in accordance with the *"Operational Procedure for Outage Planning Coordination"* referred to in chapter 4.4.1.

4.3 Rules & Methodologies

4.3.1 Relevant Asset Outage Coordination Methodology (RAOCM)

The document *"Methodology for assessing the relevance of assets for outage coordination in accordance with Article 84 of Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation"* is approved by ACER according to Article 6(3)(c) of SOGL.

4.4 Operational Procedures

4.4.1 Operational Procedure for Outage Planning Coordination

The TSOs agree that the *"Operational Procedure for Outage Planning Coordination"* (SOGL 83 (1)), which is an appendix to this Annex, is accepted by all TSOs.

5 Adequacy Assessment

5.1 Objective

Adequacy deals with the ability of a power system to supply the demand in all the steady states that the power system may face. It is a function of the topology of the grid as well as the generation and demand, both directly and indirectly connected to it. Basically, adequacy is about balancing generation and consumption and transmission through congestion.

Nordic TSOs perform with the support of the Nordic RCC, Nordic adequacy assessment and forecast in order to ensure the operational security of the Nordic transmission system.

5.2 Roles & Responsibilities

All TSOs agree that the Nordic adequacy coordination region (SOGL 81) shall be equal to Nordic CCR.

All TSOs shall apply Nordic adequacy assessment in accordance with the *"Operational Procedure for Nordic Adequacy Assessment"* referred to in chapter 5.3.1.

5.3 Operational Procedures

5.3.1 Operational Procedure for Adequacy Assessment

The TSOs agree that the *"Operational Procedure for Nordic Adequacy Assessment"* (SOGL 81), which is an appendix to this Annex, is accepted by all TSOs.

6 Ancillary services for Reactive Power

6.1 Objective

Ancillary services for reactive power enable the TSOs to operate the transmission system in a secure and reliable way. In managing the transmission systems, the TSOs must be able to deal with

unexpected changes of power generation, interconnector flows or system demand. This is accomplished by maintaining a sufficient level of active and reactive power ancillary services.

The TSOs agree that ancillary services for active power are covered by Annex LFCR.

For reactive power, the TSOs must maintain a voltage balance across the transmission systems in order to maintain a secure and stable power system and to avoid damage to connected equipment. To maintain the balance, the appropriate level of reactive power is required at appropriate locations in the transmission system. Generally, reactive power must be provided close to the location where it is required.

6.2 Roles & Responsibilities

All TSOs shall monitor and assess the availability of reactive power ancillary services in order to maintain the operational security of the transmission system. (SOGL 109 (1)(2))

Each TSO shall inform and coordinate remedial actions with neighbouring TSOs in case the level of reactive power ancillary services is not sufficient for maintaining operational security in areas affecting the concerned TSO. (SOGL 109 (3))

Within each TSO's control area, there shall be a reserve of reactive power which is constituted in such a way regarding size, regulation capability and localization that dimensioning faults will not entail a system collapse.