

**DECISION BY THE IRELAND-NORTHERN IRELAND
REGULATORY AUTHORITIES**

**ON THE AMENDED
SYNCHRONOUS AREA OPERATIONAL AGREEMENT
OF IRELAND AND NORTHERN IRELAND
AND
LOAD FREQUENCY CONTROL BLOCK
OPERATIONAL AGREEMENT OF IRELAND AND
NORTHERN IRELAND**

15 November 2019

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1 Introduction

In accordance with Article 118 of the EU Regulation 2017/1485 of 2nd August 2017 establishing a guideline on electricity transmission system operation (System Operation Guideline or **SOGL**) all TSOs of a synchronous area are required to jointly develop common proposals for synchronous area operations that have to be contained within a Synchronous Area operational agreement (**SAOA**). In accordance with Article 119 of SOGL all TSOs of each load-frequency control block (**LFC block**) have to jointly develop common proposals for LFC block operations that have to be contained within an LFC Block operational agreement (**LFCBOA**). In accordance with Article 120 of SOGL all TSOs of each LFC Area have to establish an LFC Area operational agreement detailing the specific allocation of responsibilities between the respective TSOs and the appointment of the TSO responsible for the implementation and operation of the Frequency restoration process.

This document provides detail on the agreement of the Commission for Utility Regulation (CRU) and the Utility Regulator of Northern Ireland (UR) to approve the Synchronous Area Operational Agreement of Ireland and Northern Ireland, and the Load Frequency Control Block Operational Agreement (also incorporating the Load Frequency Control Area Operational Agreement), conditional on the TSOs enacting two changes (outlined in Section 4 of this paper) within one month of the publication of this Decision paper.

In addition to the approval, several areas have been identified that we consider need further attention by the TSOs. These areas are cross-cutting in terms of their interactions with Grid Codes and Distribution Codes, market operations, control centre operations, operational constraint lists, procurement of reserves and system services and innovation programmes. The Regulatory Authorities therefore consider that these areas need a greater level of development and detail provided to ensure there is consistency between the policies and actions of the TSOs. To address this the Regulatory Authorities have outlined in Section 5 of this paper a range of “Wider Issues” that require to be addressed by the TSOs. We have laid out a timetable for resolution of these issues in Section 6 of this paper.

The following table illustrates the current structure of responsibilities for the Synchronous Area of Ireland and Northern Ireland as approved by the both Regulatory Authorities in 2018.

Country	TSO (full company name)	TSO (short name)	Monitoring Area	LFC Area	LFC Block
Ireland	EirGrid	EIRGRID	EIRGRID	EIRGRID + SONI	EIRGRID + SONI
Northern Ireland	System Operator for Northern Ireland	SONI	SONI	EIRGRID + SONI	EIRGRID + SONI

The Transmission System Operators (**TSOs**) of Ireland and Northern Ireland, EirGrid and SONI respectively, submitted their joint proposals for the [SAOA](#) and the [LFCBOA](#) on the 21st December 2018,

to the Regulatory Authorities (CRU and UR) in line with Article 6 (3) of SOGL. The Regulatory Authorities (CRU and UR) engaged intensively with the TSOs since the submission of the two proposals in December 2018 and issued a Request for Amendment to the two documents on the 24th June 2019. The TSOs subsequently developed amendments and consulted on these proposals for 4 weeks during July and August 2019. The TSOs subsequently submitted their amended proposals to the CRU and the UR on the 23rd August 2019.

As required under Article 6(3) (d) and (e), only a subset of the common proposals contained within an SAOA and an LFCBOA are subject to regulatory approval. The SAOA document contains two main sections, Title 2 which contains the proposals subject to regulatory approval, and Title 3 which contains the proposal required within the SAOA but not subject to regulatory approval. The submitted LFCBOA follows the same structure, where Title 2 contains the proposals subject to regulatory approval and Title 3 contains the proposals not subject to regulatory approval, with an additional Title 4 that covers the LFC Area Operational Agreement

The SAOA and LFCBOA offer important insight into the processes and practices of the TSOs in scheduling and dispatching plant, providing greater transparency to market participants while maintaining a high level of operational security. In addition, these documents lay the groundwork for the wider integration of SEM into pan-EU markets and, in particular the new balancing platforms, provided for under the Guideline on Electricity Balancing **EBGL** ([EU Regulation 2017/2195](#)).

1.1 Relevant Acronyms

The following acronyms have been used in this document:

SAOA	Synchronous Area Operational Agreement	IE	Ireland
LFCBOA	Load Frequency Control Block Operational Agreement	NI	Northern Ireland
SOGL	System Operation Guideline	GB	Great Britain
FCR	Frequency Containment Reserve	EBGL	Electricity Balancing Guideline
FRR	Frequency Restoration Reserve	FRP	Frequency Restoration Process
RR	Replacement Reserve	FRCE	Frequency Restoration Control Error
TSO	Transmission System Operator	DSO	Distribution System Operator
DBC	Dispatch Balancing Costs	EIDAC	EirGrid Interconnector Designated Activity Company
LFC Block	Load-frequency control block	LFC area	Load-frequency control area
EBGL	Electricity Balancing Guideline		

2 Legal context

2.1 System Operation Guideline (SOGL)

The [System Operation guideline](#) (SOGL) is a European regulation that provides detailed guidelines to safeguard operational security, frequency quality and efficient use of the interconnected system and resources. In particular, the guidelines focus on;

- (a) requirements and principles concerning operational security;*
- (b) rules and responsibilities for the coordination and data exchange between TSOs, between TSOs and DSOs, and between TSOs or DSOs and SGUs, in operational planning and in close to real-time operation;*
- (c) rules for training and certification of system operator employees;*
- (d) requirements on outage coordination;*
- (e) requirements for scheduling between the TSOs' control areas; and*
- (f) rules aiming at the establishment of a Union framework for load-frequency control and reserves.*

The SOGL interacts with numerous other EU Network Codes/Guidelines;

- Capacity Allocation and congestion management (**CACM**) EU Regulation 2015/1222
- Requirements for Generators (**RfG**) Code - EU Regulation 2016/631
- Demand Connection Code (**DCC**) - EU Regulation 2016/1388
- HVDC Connection Code (**HVDC**) - EU Regulation 2016/1447
- Electricity Balancing Guideline (**EBGL**) - EU Regulation 2017/2195
- Emergency Restoration Code (**ER**) - EU Regulation 2017/2196

The SOGL applies (as per Article 2) to all transmission system and distribution system operators, interconnectors and regional security coordinators, and the following grid users;

- (a) Existing and new power generating modules that are, or would be, classified as type B, C and D in accordance with the criteria set out in Article 5 of Commission Regulation (EU) 2016/631 (Requirements for Generators (RfG))¹ 1 (For clarity in Ireland and Northern Ireland these are classified as below:*
 - Type B units include units from 0.1MW (100kW) to < 5 MW
 - Type C units range from 5MW to < 10 MW
 - Type D units are ≥ 10MW.

All generation connected at 110 kV or higher is automatically considered as Type D)

- (b) existing and new transmission-connected closed distribution systems;*
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- (c) existing and new demand facilities, closed distribution systems and third parties if they provide demand response directly to the TSO in accordance with the criteria in Article 27 of Commission Regulation (EU) 2016/1388 (Demand Connections (DCC))*
- (d) providers of re-dispatching of power generating modules or demand facilities by means of aggregation and providers of active power reserve in accordance with Title 8 of Part IV of SOGL Regulation; and*
- (e) existing and new high voltage direct current ('HVDC') systems in accordance with the criteria in Article 3(1) of Commission Regulation (EU) 2016/1447 (HVDC) (5).*

2.2 SAOA requirements

As per article 118 of the SOGL the following common proposals shall be developed jointly by all TSOs of each synchronous area for:

- (a) the dimensioning rules for FCR in accordance with Article 153;*
- (b) additional properties of FCR in accordance with Article 154(2);*
- (c) the frequency quality defining parameters and the frequency quality target parameters in accordance with Article 127;*
- (d) for the Continental Europe ('CE') and Nordic synchronous areas, the frequency restoration control error target parameters for each LFC block in accordance with Article 128;*
- e) the methodology to assess the risk and the evolution of the risk of exhaustion of FCR of the synchronous area in accordance with Article 131(2);*
- (f) the synchronous area monitor in accordance with Article 133;*
- (g) the calculation of the control program from the netted area AC position with a common ramping period for ACE calculation for a synchronous area with more than one LFC area in accordance with Article 136;*
- (h) if applicable, restrictions for the active power output of HVDC interconnectors between synchronous areas in accordance with Article 137;*
- (i) the LFC structure in accordance with Article 139;*
- (j) if applicable, the methodology to reduce the electrical time deviation in accordance with Article 181;*
- (k) whenever the synchronous area is operated by more than one TSO, the specific allocation of responsibilities between TSOs in accordance with Article 141;*
- (l) operational procedures in case of exhausted FCR in accordance with Article 152(7);*
- (m) for the GB and IE/Nl synchronous areas, measures to ensure the recovery of energy reservoirs in accordance with to Article 156(6)(b);*

- (n) operational procedures to reduce the system frequency deviation to restore the system state to normal state and to limit the risk of entering into the emergency state in accordance with Article 152(10);*
- (o) the roles and responsibilities of the TSOs implementing an imbalance netting process, a cross-border FRR activation process or a cross-border RR activation process in accordance with Article 149(2);*
- (p) requirements concerning the availability, reliability and redundancy of the technical infrastructure in accordance with Article 151(2);*
- (q) common rules for the operation in normal state and alert state in accordance with Article 152(6) and the actions referred to in Article 152(15);*
- (r) for the CE and Nordic synchronous areas, the minimum activation period to be ensured by FCR providers in accordance with Article 156(10);*
- (s) for the CE and Nordic synchronous areas, the assumptions and methodology for a cost-benefit analysis in accordance with Article 156(11);*
- (t) if applicable, for synchronous areas other than CE, limits for the exchange of FCR between the TSOs in accordance with Article 163(2);*
- (u) the roles and responsibilities of the reserve connecting TSO, the reserve receiving TSO and the affected TSO as regards the exchange of FRR and RR defined in accordance with Article 165(1);*
- (v) the roles and responsibilities of the control capability providing TSO, the control capability receiving TSO and the affected TSO for the sharing of FRR and RR defined in accordance with Article 166(1);*
- (w) the roles and responsibilities of the reserve connecting TSO, the reserve receiving TSO and the affected TSO for the exchange of reserves between synchronous areas, and of the control capability providing TSO, the control capability receiving TSO and the affected TSO for the sharing of reserves between synchronous areas defined in accordance with Article 171(2);*
- (x) the methodology to determine limits on the amount of sharing of FCR between synchronous areas defined in accordance with Article 174(2);*
- (y) for the GB and IE/Nl synchronous areas, the methodology to determine the minimum provision of reserve capacity on FCR in accordance with Article 174(2)(b);*
- (z) 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); and*
- (aa) 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).*

2. All TSOs of each synchronous area shall submit the methodologies and conditions listed in Article 6(3)(d) for approval by all the regulatory authorities of the concerned synchronous area. Within 1 month after the approval of these methodologies and conditions, all TSOs of each synchronous area shall conclude a synchronous area operational agreement which shall enter into force within 3 months after the approval of the methodologies and conditions.

Article 6 (3) (d) outlines the sections in the SAOA that require regulatory approval:

- (i) the frequency quality defining parameters and the frequency quality target parameter in accordance with Article 127;
- (ii) the dimensioning rules for FCR in accordance with Article 153;
- (iii) the additional properties of the FCR in accordance with Article 154(2);
- (iv) for the GB and IE/NI synchronous areas, the measures to ensure the recovery of energy reservoirs in accordance with Article 156(6)(b);
- (v) for the CE and Nordic synchronous areas, the minimum activation period to be ensured by FCR providers in accordance with Article 156(10);
- (vi) for the CE and Nordic synchronous areas, the assumptions and methodology for a cost-benefit analysis in accordance with Article 156(11);
- (vii) for synchronous areas other than CE and if applicable, the limits for the exchange of FCR between TSOs in accordance with Article 163(2);
- (viii) for the GB and IE/NI synchronous areas, the methodology to determine the minimum provision of reserve capacity on FCR between synchronous areas, defined in accordance with Article 174(2)(b);
- (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);

2.3 LFCBOA requirements

Article 119 of SOGL outlines the requirements placed on TSOs of an LFC block in relation to the proposals required within the LFCBOA;

1. By 12 months after entry into force of this Regulation, all TSOs of each LFC block shall jointly develop common proposals for:
- (a) where the LFC block consists of more than one LFC area, FRCE target parameters for each LFC area defined in accordance with Article 128(4);
 - (b) LFC block monitor in accordance with Article 134(1);
 - (c) ramping restrictions for active power output in accordance with Article 137(3) and (4);
 - (d) where the LFC block is operated by more than one TSO, the specific allocation of responsibilities between TSOs within the LFC block in accordance with Article 141(9);

- (e) if applicable, appointment of the TSO responsible for the tasks in Article 145(6);*
 - (f) additional requirements for the availability, reliability and redundancy of technical infrastructure defined in accordance with Article 151(3);*
 - (g) operational procedures in case of exhausted FRR or RR in accordance with Article 152(8);*
 - (h) the FRR dimensioning rules defined in accordance with Article 157(1);*
 - (i) the RR dimensioning rules defined in accordance with Article 160(2);*
 - (j) where the LFC block is operated by more than one TSO, the specific allocation of responsibilities defined in accordance with Article 157(3), and, if applicable, the specific allocation of responsibilities defined in accordance Article 160(6);*
 - (k) the escalation procedure defined in accordance with Article 157(4) and, if applicable, the escalation procedure defined in accordance with Article 160(7);*
 - (l) the FRR availability requirements, the requirements on the control quality defined in accordance with Article 158(2), and if applicable, the RR availability requirements and the requirements on the control quality defined in accordance with Article 161(2);*
 - (m) if applicable, any limits on the exchange of FCR between the LFC areas of the different LFC blocks within the CE synchronous area and the exchange of FRR or RR between the LFC areas of an LFC block of a synchronous area consisting of more than one LFC block defined in accordance with Article 163(2), Article 167 and Article 169(2);*
 - (n) the roles and the responsibilities of the reserve connecting TSO, the reserve receiving TSO and of the affected TSO for the exchange of FRR and/or RR with TSOs of other LFC blocks defined in accordance with Article 165(6);*
 - (o) the roles and the responsibilities of the control capability providing TSO, the control capability receiving TSO and of the affected TSO for the sharing of FRR and RR defined in accordance with Article 166(7);*
 - (p) roles and the responsibilities of the control capability providing TSO, the control capability receiving TSO and of the affected TSO for the sharing of FRR and RR between synchronous areas in accordance with Article 175(2);*
 - (q) coordination actions aiming to reduce the FRCE as defined in Article 152(14); and*
- (r) measures to reduce the FRCE by requiring changes in the active power production or consumption of power generating modules and demand units in accordance with Article 152(16).*

2. All TSOs of each LFC block shall submit the methodologies and conditions listed in Article 6(3)(e) for approval by all the regulatory authorities of the concerned LFC block. Within 1 month after the approval of these methodologies and conditions, all TSOs of each LFC block shall conclude an LFC block operational agreement which shall enter into force within 3 months after the approval of the methodologies and conditions.

Article 6 (3) (e) of the SOGL outlines the articles that are subject to regulatory approval;

- (i) ramping restrictions for active power output in accordance with Article 137(3) and (4);*
- (ii) coordination actions aiming to reduce FRCE as defined in Article 152(14);*

- (iii) measures to reduce FRCE by requiring changes in the active power production or consumption of power generating modules and demand units in accordance with Article 152(16);*
- (iv) the FRR dimensioning rules in accordance with Article 157(1);*

2.4 LFC Area operational agreement requirements

Article 120 outlines the requirements on TSOs of an LFC Area in establishing an LFC Area operational agreement. The TSOs have included, at the request of the Regulatory Authorities, an LFC Area Operational agreement as Title 4 of the LFC Block Operational Agreement. The requirements to be included in this agreement are outlined below;

By 12 months after entry into force of this Regulation, all TSOs of each LFC area shall establish an LFC area operational agreement that shall include at least:

(a) the specific allocation of responsibilities between TSOs within the LFC area in accordance with Article 141(8);

(b) the appointment of the TSO responsible for the implementation and operation of the frequency restoration process in accordance with Article 143(4).

While Article 121 requires the development of a Monitoring Area Operational Agreement this is only required where several TSOs have a role in a single Monitoring Area, which is not the case in Ireland or Northern Ireland. Under their respective licences EirGrid and SONI are responsible for the monitoring in their respective licensed network areas. Therefore, there is no Monitoring Area Operational Agreement proposed for Ireland-Northern Ireland.

2.5 Role of the Regulatory Authorities

As outlined in Article 6 of the SOGL, the CRU and UR have an explicit role in the approval of terms and conditions or methodologies developed by TSOs as required by the SOGL. Where the approval of the terms and conditions or methodologies requires a decision by more than one regulatory authority the relevant authorities shall consult and closely cooperate and coordinate with each other to reach agreement. Regulatory Authorities are required to take decisions within 6 months of receipt of the relevant submission.

Under Article 7(1) of SOGL there is a facility to request required amendments to submitted methodologies. Where such a request for amendment is made the TSO(s) have to submit the amended proposal within 2 months of the request from the Regulatory Authorities. The Regulatory Authorities have then a further 2 months to review the amended proposals and make a decision. If the Regulatory Authorities cannot reach an agreement within the 2 months, or upon joint request to **ACER** (Agency for the Cooperation of Energy Regulators), ACER will make a decision within a subsequent 6 months.

As outlined previously, the TSOs were requested by the CRU and UR to make amendments to the proposed SAOA and LFCBOA on June 24th 2019. The TSOs submitted the amended SAOA and LFCBOA on 23rd August 2019.

The CRU and UR are (as are the system operators) bound by Article 4(2) and the following principles when applying the requirements of the SOGL:

- (a) apply the principles of proportionality and non-discrimination;*
- (b) ensure transparency;*
- (c) apply the principle of optimisation between the highest overall efficiency and lowest total costs for all parties involved;*
- (d) ensure TSOs make use of market-based mechanisms as far as possible, to ensure network security and stability;*
- (e) respect the responsibility assigned to the relevant TSO in order to ensure system security, including as required by national legislation;*
- (f) consult with relevant DSOs and take account of potential impacts on their system; and*
- (g) take into consideration agreed European standards and technical specifications*

As required by the Articles outlined above the CRU and UR have closely collaborated and coordinated during their review of the submitted amended proposals, and are now issuing this Decision on the submitted amended documents.

2.6 Relevant Documents

The following are documents that are related to the SAOA and LFCBOA proposals and provide background to this document. Interested stakeholders are advised that it may be helpful to be aware of the content of these documents to fully understand the amendments requested by the Regulatory Authorities in relation to the proposed SAOA and LFC BOA. While not all of these documents set out requirements on the TSOs, such as the Balancing Market Principles Statement, these have fed into the Regulatory Authorities considerations of the submitted documents.

- The amended SAOA [proposals](#) submitted by EirGrid/SONI
- The original SAOA [proposals](#) submitted by EirGrid/SONI
- The amended LFCBOA [proposals](#) submitted by EirGrid/SONI
- The original LFCBOA [proposals](#) submitted by EirGrid/SONI
- CRU [Decision](#) and UR [Decision](#) on the Determination of the Load Frequency Control Block
- The EU Regulation 2016/1485 on System Operation SOGL [Guideline](#)
- Balancing Market Principles [Statement](#)
- SEMO [Note](#) on inter- area flow constraint
- Operational Constraints document – monthly update (most recent [version](#) at time of writing)
- Operational Constraints document -weekly update (monthly and [weekly](#) updates located [here](#))
- System Operator [Agreement](#) between SONI and EirGrid
- The EirGrid TSO [licence](#)
- The SONI TSO [licence](#)

3 Overview of Decision by CRU and UR

The development of the SAOA and LFCBOA has involved a detailed process of engagement between the TSOs and the Regulatory Authorities over 18 months. There have been two TSO led industry consultations on the draft documents, and updates on the context and detail of the SAOA and LFCBOA provided during the regular EU Stakeholder Fora. Following the submission of the amended proposals by the TSOs the CRU and UR have thoroughly reviewed the amended proposals and have also engaged with the TSOs.

In general, the TSOs have provided increased detail and transparency on the operational processes and methodologies used to ensure system security and Load Frequency Control within the All-Island synchronous system. At the request of the Regulatory Authorities the TSOs have added a section (Title4) to the LFCBOA that details the LFC area Operational Agreement as required under Article 120 of SOGL.

The CRU and UR welcome and acknowledge the improvements made by the TSOs in the Title 2 and Title 3 sections of both documents. Our decision is to provide approval of the Title 2 sections of the submitted SAOA, LFCBOA, subject to the TSOs addressing two issues within 1 month this Decision paper and in advance of the conclusion of these agreements between the TSOs (in line with Article 118(2) and 119(2)of SOGL. These issues are outlined in Section 4 of this paper. In addition, we have highlighted several areas where we have remaining concerns, and consider that further work is required by the TSO to address, which we outline in further detail in Section 5 of this paper.

As part of the Regulatory Authorities' assessment of the TSOs' proposals we have aimed to ensure that the documents meet the requirements of Article 4(2) of SOGL;

- a) apply the principles of proportionality and non-discrimination;*
- b) ensure transparency;*
- c) apply the principle of optimisation between the highest overall efficiency and lowest total costs for all parties involved;*
- d) ensure TSOs make use of market-based mechanisms as far as possible, to ensure network security and stability;*
- e) respect the responsibility assigned to the relevant TSO in order to ensure system security, including as required by national legislation;*
- f) consult with relevant DSOs and take account of potential impacts on their system; and*
- g) take into consideration agreed European standards and technical specifications.*

The SAOA and LFCBOA provide important transparency and insight into control centre operations and market interactions. The topics we have outlined in Section 4 and Section 5 of this paper aim to ensure that full transparency and efficiencies are achieved in the implementation of these agreements.

4 Areas to be addressed by the TSOs prior to conclusion of the SAOA and LFCBOA

The Regulatory Authorities are approving the SAOA and LFCBOA conditional on the TSOs addressing the following two issues.

4.1 Interaction with existing System Operator Agreements

There has been a System Operator [Agreement](#) (SOA) in force between EirGrid and SONI since 2007 that covers a range of cross-jurisdictional processes and responsibilities. The Interconnector Operating Protocols are existing agreements that govern the operation of the Moyle and EIDAC interconnectors, and are held between SONI and National Grid ESO (UK) (for Moyle) and between EirGrid and National Grid ESO (UK) (for EIDAC).

The Request for amendment issued by the CRU and UR outlined our request that the TSOs map out their view of where the SAOA and LFCBOA will sit in relation to existing legal agreements between the TSOs and detail what sections of the System Operator Agreement (and other relevant existing legal agreements) will need updating or will be replaced by the SAOA and LFCBOA in their amended SAOA and LFCBOA submissions. However, the TSOs did not provide any further clarity in the amended versions. As in the previous version the TSOs have stated in the legal preamble (Recital 5) that “This agreement works in harmony with those aspects addressing all-island transmission system operation within the existing System Operator Agreement as required under condition number 4 of the EirGrid TSO licence and condition number 24 of the SONI TSO licence.”

Article 2 of the SAOA and the LFCBOA both refer to the following;

The methodologies, conditions and values in this SAOA will augment and where necessary replace those developed from the requirements of the existing System Operator Agreement, in particular but not limited to:

- *Schedule 11 Inter Jurisdictional Procedures covering the operational and commercial arrangements for the North-South Tie-Lines related to operational reserve, operating plant shortfall and inter control centre communications.*
- *Schedule 12 which requires the TSOs to liaise with each other in Scheduling and dispatching generation output to match demand on the island of Ireland taking into account amongst other issues the requirement to provide operational reserves to maintain system security, energy limits for energy limited plant and electricity delivered to the All-Island Networks from generation sets not subject to central dispatch.*

Given the TSOs have not provided the requested clarifications the CRU and UR therefore require, in advance of the conclusion of these two agreements between EirGrid and SONI (the SAOA and LFCBOA) i.e. within 1 month of publication of this approval document, that the TSOs outline explicitly the legal precedence of the various SAOA, LFCBOA and LFC Area Operational Agreement documents and methodologies in relation to other existing agreements. The TSOs are requested to ensure that all affected existing agreements are revised and published (as required) to recognise the primacy of

the SOGL Regulation (EU Regulation 2017/1485 of 2nd August 2017) requirements and provide transparency to industry.

The TSOs must, in advance of the conclusion of the SAOA and LFCBOA (within 1 month of publication of this approval document), outline explicitly the legal precedence of the various SAOA, LFCBOA and LFC Area Operational Agreement documents and methodologies in relation to other existing agreements. The TSOs are requested to ensure that all affected existing agreements are revised and published (as required) in a timely manner to recognise the primacy of the SOGL Regulation (EU Regulation 2017/1485 of 2nd August 2017) requirements and provide transparency to industry.

4.2 Assessing the risk and the evolution of exhaustion of FCR in IE/Nl (Article 11 of SAOA)

The Regulatory Authorities welcome the additional detail provided by the TSOs in their proposed deterministic look back at FCR exhaustion. The Regulatory Authorities are still of the view however that Article 131 (2) requires the TSOs to not only evaluate the risk but also the evolution of the risk of FCR exhaustion. Within the recent Tomorrow's Energy Scenarios [publications](#) the TSOs have outlined significant future changes to the energy generation and demand mix. Therefore, future work should provide a holistic assessment approach taking account of future expected changes to levels of non-synchronous generation, the ability of demand side response to provide FCR response and the integration of fast acting providers (and potentially energy reservoir limited providers) of reserve services. The annual assessment should not only focus on plants subject to grid code requirements, but also FCR provision from plant that is subject to distribution code requirements.

The TSOs are requested to ensure they include in the SAOA (in advance of conclusion of the SAOA and LFCBOA) reference to an assessment of the evolution of the risk of FCR exhaustion. This annual assessment should provide a holistic assessment that takes account of future expected changes to levels of non-synchronous generation, the ability of demand side response to provide FCR response and the integration of fast acting providers (and potentially energy

5 Wider Issues to be addressed by the TSOs subsequent to this approval

This section contains a range of topics that the Regulatory Authorities wish to see addressed by the TSOs. Some of these areas contain issues that are wider than the direct requirements of the submitted documents but interact with the operational policies outlined in the documents, with wholesale markets, with system services procures and provision and ultimately with consumers.

5.1 Grid Code versus SOGL primacy

The TSOs refer to the Grid Code in many instances as the primary document for compliance with the requirements of the SOGL. The Regulatory Authorities highlight that EU Network Codes are primary legislation, and therefore the Grid Codes and Distribution Codes have to align with (and refer to as necessary) the requirements of the SOGL. The SOGL (unlike other EU Network Codes) specifically does not facilitate derogations from the requirements- therefore it must be implemented in full. The TSOs must ensure that the SOGL requirements are given primacy and that the Grid Code and other relevant documents ensure compliance with the SOGL requirements at all times.

The TSOs are therefore required to report, within 3 months of the publication of this Decision, to the Regulatory Authorities on identified and potential changes that will need to be implemented in the Grid Code, Distribution Code or any other operational documents to reflect the contents of the SAOA and LFCBOA, and a roadmap for completing the required changes.

The TSOs are required to report (within 3 months of this publication of this Decision) to the Regulatory Authorities on identified and potential changes that will need to be implemented in the Grid Code, Distribution Code or any other operational documents to reflect the contents of the SAOA and LFCBOA, and a roadmap for completing the required changes.

5.2 FCR, FRR and RR Dimensioning Methodologies and interactions with actual reserve provision

The Regulatory Authorities requested the TSOs to describe their 'dimensioning rules' in detail and explain the inputs and processes involved for dimensioning of volumes of Frequency Containment Reserve (FCR), Frequency Restoration Reserves (FRR) and Replacement Reserves (RR) (Article 3 of the SAOA, Articles 4 and 11 of the LFCBOA). In the SAOA the TSO mapped these products to the existing DS3 System Services and existing scheduling and dispatch products as per the following table;

DS3 balancing Service	Existing Scheduled and Dispatched products	SOGL	EBGL specific product	EBGL standard product balancing capacity	EBGL standard product balancing energy
SIR	Inertia	N/A	N/A	N/A	N/A
FFR (2-10 sec)	MMS Reports On	N/A	N/A	N/A	N/A
POR (5-15sec)	POR (5-15sec)	FCR	N/A	N/A	FCR
SOR (15-90sec)	SOR (15-90sec)	FCR	N/A	N/A	FCR
TOR1 (90sec-5min)	TOR (90sec-5min)	FRR	N/A	N/A	mFRR (12.5 min FAT)
TOR2 (5-20min)	TOR (5-20min)	FRR	N/A	N/A	mFRR (12.5 min FAT) RR (30min FAT)
RRS (20min-1hr)	RR (20min-4hrs)	RR	N/A	N/A	mFRR (12.5 min FAT) RR (30min FAT)
RRD (20min-1hr)	RR (20min-4hrs)	RR	N/A	N/A	mFRR (12.5 min FAT) RR (30min FAT)
RM1	MMS Reports On	N/A	N/A	N/A	N/A
RM3	MMS Reports On	N/A	N/A	N/A	N/A
RM8	MMS Reports On	N/A	N/A	N/A	N/A

Distinct dimensioning rules for positive and negative FCR, FRR and RR provision were required by the Regulatory Authorities. The TSOs were also requested to include detail as to how distribution connected plant non-market participants; microgeneration (solar PV, wind etc) and industrial generation units are accounted for in the TSOs' dimensioning processes. This should be examined from the perspective of the potential provision of balancing energy services from such providers, but also look at potential challenges to the dimensioning of reserves. The Regulatory Authorities had requested that a separate explanatory document be submitted that details any changes that need to be incorporated into current processes as a result of the SAOA requirements.

Dimensioning and provision of FCR

The TSO have stipulated that the values contained within Article 8 of the SAOA constitute the minimum values of FCR reserve capacity availability required in each monitoring area at all time. However, upon clarification with the TSOs it has become apparent that these values are not in line with the minimum required volumes outlined in the operational constraints document. The TSOs are therefore requested to update either the SAOA or the Operational constraints document to accurately reflect the minimum values of FCR reserve capacity availability required on the island and in each monitoring area.

Dimensioning and provision of FRR and RR

In the FRR dimensioning methodology, and the RR dimensioning methodology, the TSOs have acknowledged the fact that while the methodologies stipulate that dimensioning of reserves shall be conducted for both upwards and downwards FCR, FRR and RR reserves currently negative reserve provision (or TSO scheduling of plant) is not disaggregated into FCR, FRR and RR, and notes that this will be required in future (the current operational negative reserve requirements are outlined in the [Operational constraints documents](#)). The Regulatory Authorities consider that this disaggregation will be required to ensure compliance with the required prequalification processes for FCR, FRR and RR products (see section 5.3 of this document) that the TSOs have yet to undertake, and the wider implementation of the Balancing Guideline requirements.

In addition, the TSOs have mapped TOR1 and TOR2 to the mFRR (manual frequency restoration reserve) product under EBGL and SOGL. The Regulatory Authorities consider that this may need further consideration given the interactions with the EBGL requirements for balancing product procurement and platform integration. The Regulatory Authorities request that this is assessed in further detail during the EBGL implementation.

The TSOs did not provide a separate explanatory document, as requested, which should have served to outline future changes required to existing processes to achieve SAOA and LFCBOA compliance.

The Regulatory Authorities consider that the methodologies contained within the SAOA, LFCBOA, and indeed the Operational Constraints documents do not offer sufficient transparency on how the methodologies utilised to determine the volumes of reserves required link to current practices on provision of the required volumes of negative reserve by the TSOs, nor sufficient clarification on why microgeneration or distribution connected non-market participants do not need to be accounted for in the dimensioning of reserve requirements.

The Regulatory Authorities now request that the TSOs provide (within 3 months of the publication of this Decision) additional information on addressing the following issues and a roadmap for completion of the work required to;

- **Ensure that the SAOA and LFCBOA (methodologies for dimensioning of reserve volumes, and minimum IE/NI volumes) do not conflict with the Operational Constraints documents (methodology outputs and volumes required) and that all documents provide full transparency on reserve requirements and reserve scheduling.**
- **Disaggregate current negative reserve volume provision for FCR, FRR and RR.**
- **Explain how microgeneration or distribution connected non-market participants are accounted for in the dimensioning of reserve requirements.**
- **Ensure that the criteria used to determine eligibility to provide positive and negative reserves are non-discriminatory and transparent.**

5.3 Definition of FCR, FRR and RR providers

The TSOs were requested to provide further information on the definition of FCR, FRR, RR providing units as utilised by the control centre when scheduling FCR, FRR or RR to meet the dimensioned requirements. The TSOs provided further information in that they have stated that this includes anyone that has met the technical requirements of the applicable Network Code. In the Table provided in Section 5.3 above (from the SAOA) they have listed “DS3 Balancing service products” and then “Existing Scheduled and Dispatched products” against their equivalents in SOGL and EBGL.

The Regulatory Authorities acknowledge the additional detail provided. However, it has become apparent through our work on SOGL and EBGL that while System Service providers go through a rigorous qualification process these contracted volumes are not explicitly linked to the current scheduling and dispatch of plant to meet reserve requirements. The actual provision of balancing services is mandated in the Grid Codes. System Services are somewhat akin to balancing capacity – i.e. incentivising the availability to provide balancing energy, but it is the TSOs’ RCUC and RTD scheduling processes that ensure the reserve capacity to deliver balancing energy is available. Again, there is no specific or explicit link between contracted providers (and the volumes they have contracted for System Service provision) and the units scheduled for reserve provision.

Under SOGL Articles 155, 159 and 162 the TSOs are required to develop and make publicly available FCR, FRR and RR prequalification processes (due by August 2018). At the moment the TSOs have not made available distinct documentation that highlights the prequalification processes for FCR, FRR and RR provision. While these qualification processes are not part of the requirements under the SAOA or LFCBOA, they are critical to providing transparency on what technical and operational criteria the TSO will use to define potential FCR, FRR and RR providers and are therefore inherently linked to the definition of such providers. The Regulatory Authorities consider that further clarity from the TSOs is required in relation to the FCR, FRR and RR prequalification processes required under Articles 155, 159 and 162 respectively of SOGL.

The TSO’s are requested to submit detail within 3 months of the publication of this document on the following;

- **Initial proposals for prequalification processes to be utilised to qualify FCR, FRR and RR providing units**
- **A roadmap to having these processes published and operational.**

5.4 Scheduling, dispatch and automatic utilisation of potential providers

During the evolution of the SAOA and the LFCBOA it has become apparent that faster acting (and generally lower carbon) units (whether they hold System Services tariff based contracts or not) cannot be dispatched for provision of reserve services by the automated scheduling and dispatch processes; real time unit commitment (RTC) and real time dispatch (RTD), as they are not included in the initial scheduling runs.

This is counter-intuitive to the work that has been delivered to incentivise faster acting plant under the System Services programme, the current focus of the Flex Tech initiative and the commitments made to deliver a low carbon energy future by the TSOs. The Regulatory Authorities consider this is a significant area that needs rectification to maximise the benefits of such fast-acting plant.

In summary the dimensioning of the FCR, FRR and RR and the utilisation of connected units warrants further detailing by the TSOs to ensure compliance with the SOGL requirements.

The TSO is therefore requested to submit detail within 3 months of the publication of this document on

- **Initial proposals to ensure there is appropriate inclusion of fast acting and lower carbon units into generation schedules (i.e. the RTC and RTD schedules utilised by the control centre).**

5.5 Changes to operational constraints and values

The TSOs have traditionally made changes to operational constraints as issues arise, mainly for system security reasons. The process for this has been entirely internal within the TSOs, with industry and the Regulatory Authorities only receiving notification when a constraints change has become operational through the publication of an update to the Operational Constraints [Document](#). Some of these changes can have a significant impact on the re-dispatching of plant to manage frequency and voltage issues, or network flows with resultant dispatch balancing costs (DBC), which ultimately fall to consumers to pay. There is no evidence of any impact assessment on consumer costs conducted by the TSOs when determining or changing operational constraint values. Neither is there evidence of any evaluation of possible alternatives to operational constraints or longer-term solutions.

While the Regulatory Authorities respect the responsibility of the TSO in ensuring system security, and do not wish to hinder the TSOs in taking urgent actions if system security is at risk, we consider that further work is required in this area. The extent and depth of operational constraints currently in place across the island and the increasing costs to consumers of dispatch balancing costs points to the need to more closely examine potential alternatives, and evaluation of the impact to consumers when operational constraints are updated.

The Regulatory Authorities welcome the fact that some of the Operational constraints have now been included in the SAOA and LFCBOA (e.g. SAOA art. 8, 9, LFCBOA art. 3, 4), which means that any change to these will require a consultation by the TSOs and approval by the Regulatory Authorities.

In Articles 3, 8, 9, 10 and 25 of the SAOA (and Article 3 of the LFCBOA) the TSOs state that they may change the dimensioning of FCR requirements, the minimum provision of reserve capacity of FCR, or the limits on exchange/sharing of FRR and RR between synchronous areas, and ramping restrictions by conducting operational trials before finalising changes to operational constraints.

The proposals on operational trials and the ability of the TSO to instigate quick changes to operational constraints could lead to significant intervention in market outcomes and potentially increase consumer costs.

Therefore, the Regulatory Authorities request that the TSOs develop procedures that deliver more thorough examination of alternative potential solutions and consumer cost impact assessments related to operational constraint updates .

5.5.1 Proposed process for urgent changes to Operational constraints

As the TSO has ultimate responsibility to ensure system security, and where urgent changes to the operational constraints are required to maintain system security the Regulatory Authorities consider that the following process is appropriate;

- The TSOs shall provide a report to the Regulatory Authorities within 2 weeks of instigating a change to constraints providing detail on the following;
 - a. the change and reason for the change,
 - b. the duration of the change
 - c. the report should contain some preliminary assessments of alternative solutions to the issue causing the change
 - d. the likely impact on dispatch balancing costs/costs to consumers
 - e. the likely impact on market participants
 - f. a date by which the TSOs will submit a report to the Regulatory Authorities on assessed impacts to consumer costs following the enacted change

If the change is predicted to be longer than 3 months the TSO must report to the RA after 3 months of instigating a change to constraints on the following;

- g. Outline potential operational or technical alternatives to the operational constraint changes
- h. Costs and benefits accrued to consumers of the change over the first 3 months of operation
- i. Recommendation from TSOs on whether they seek to incorporate the new constraint values in enduring operational policy
- j. Estimates of costs/benefits to consumers of the enduring change if proposed

5.5.2 Proposed process for trials prior to intended long term changes to operational constraints

Where the TSO proposes to initiate a trial-based approach to potential changes to operational constraints the Regulatory Authorities consider that the following process is appropriate;

Initial proposal provided by the TSO to the Regulatory Authorities outlining the following

- a. Constraint value to be trialled at new level or new constraint to be trialled
- b. Reason for trial and studies conducted in advance of the trial, including study outputs
- c. Details of the “provisional operating policy” associated with the trial

- d. Outline of potential operational or technical alternatives to the operational constraint changes
- e. Trial duration and timelines for engagement with Regulatory Authorities during the trial, as appropriate
- f. Expected benefits to consumers associated with the trial
- g. Expected consumer costs associated with the trial
- h. Evaluation criteria to be used by TSOs to assess value of trial

The Regulatory Authorities may, following assessment of the proposal, initiate a request for further information which must be provided by the TSOs in advance of the trial beginning.

The TSOs, upon completion of the trial, shall report within 3 months, to the Regulatory Authorities on the trial outcomes, including the following;

- i. The length of duration of the trial
- j. System security issues observed during the trial
- k. Estimated costs and benefits to consumers of the trial
- l. Recommendation from TSOs on whether they seek to incorporate the new constraint values in enduring operational policy
- m. Estimates of costs/benefits to consumers of the enduring change if proposed

The TSO's are requested to establish procedures as outlined in Section 5.5 above to ensure that full consideration of the potential impact of operational constraint changes is undertaken and that alternatives are considered.

5.6 Frequency Target parameters

The TSOs have not proposed to change any of the frequency target parameters as facilitated under Art 127(7). Currently there is a requirement as per Article 16 of SOGL on all TSOs to report to ENTSO-E on Load Frequency Control frequency evaluation criteria to enable the production of the Annual Load Frequency Control [report](#).

From this report it would appear that an evaluation of the criteria used by EirGrid and SONI in their monitoring and reporting may warrant further evaluation. The Regulatory Authorities consider this is not an urgent area for review, but request the TSOs to ensure that they evaluate the potential benefits of changing the parameters to make them more appropriate for the All-island synchronous area in advance of submission of data for the next ENTSO-E report.

The TSO's are requested to evaluate the appropriateness of the frequency target parameters for the All-Island synchronous area in advance of the submission of data to ENTSO-E on Load Frequency Control. Any changes should be proposed following the guidance outlined in Article 127(7) and 127(8) of SOGL.

5.7 Limited energy reservoir replenishment

For providers of reserves who have energy limited reservoirs (e.g. batteries, pumped hydro) the TSOs are obliged to include detail on the methods that such units should follow to ensure the energy recovery of their energy reservoirs in the SAOA as per Article 156(13) of SOGL. The TSOs have proposed in Article 6 of the SAOA the following;

- For energy providers with System Services contracts where there are stipulations regarding energy reservoir replenishment the unit shall follow the existing System Services contractual conditions
- For centrally dispatched providers who do not hold a system services contract that stipulates conditions regarding reservoir replenishment the TSO has outlined that such units can indicate their requirements for replenishment by submitting new physical notifications and or new commercial offer data.
- The TSOs will take into account in the scheduling and dispatch processes the depletion of energy limited reservoirs with the objective of minimising the risk to system security in real time where applicable and will manage this where system security is adversely affected.

The Regulatory Authorities do not consider these proposals are fully transparent nor comprehensive. If the TSO considers that some providers are critical to system security, and that both the depletion of energy reservoirs and the manner of replenishment of energy reservoirs could pose a risk to system security if not managed appropriately then the TSOs should specify exact requirements for reservoir replenishment in this section.

Additionally, the Regulatory Authorities request that the TSOs consider more widely the integration of a range of limited energy reservoir units; centrally dispatched and non-centrally dispatched as part of their work on the integration of more flexible technologies and ensure that this is reflected in updates to the SAOA and LFCBOA, operational policies, defence service provision etc.

The TSO's are requested to consider whether more specific requirements for energy limited reservoir replenishment are required to ensure cost-efficient and effective system operation, and where such requirements are identified, to update the SAOA Article 6 accordingly. Additionally, the TSOs are requested to consider more widely the integration of a range of limited energy limited reservoir units in their longer term and where appropriate update the SAOA, LFCBOA and other related operational policies and requirements for defence service provision.

6 Next steps

In summary, the Regulatory Authorities acknowledge the level of information provided and engagement undertaken by the TSOs since the original submissions on the SAOA and LFCBOA in December 2018. The documents provide a good insight into operational procedures and afford the TSOs the scope to update their requirements related to system operation and load frequency control as the electricity system evolves.

6.1 Regulatory Approval of the SAOA and LFCBOA

The Regulatory Authorities approve the SAOA and the LFCBOA, subject to the following two conditions (as per Section 4 above), which we require the TSOs to address;

- i. **The TSOs must outline explicitly the legal precedence of the various SAOA, LFCBOA and LFC Area Operational Agreement documents and methodologies in relation to other existing agreements. The TSOs are requested to ensure that all affected existing agreements are revised and published (as required) to recognise the primacy of the SOGL Regulation (EU Regulation 2017/1485 of 2nd August 2017) requirements and provide transparency to industry.**
- ii. **The TSO's are requested to ensure they include in Article 11 of the SAOA a commitment to conduct annually an assessment of the evolution of the risk of FCR exhaustion. This should provide a holistic assessment that takes account of future expected changes to levels of non-synchronous generation, the ability of demand side response to provide FCR response and the integration of fast acting providers (and potentially energy reservoir limited providers) of reserve services.**

The Regulatory Authorities consider the above two changes can be made by the TSOs within the 1 month permitted by the SOGL between Regulatory Approval and conclusion of the Agreements between the relevant TSOs (Articles 118(2) and 119(2) of SOGL). The TSOs shall be obliged to publish the finalised versions of the SAOA and LFCBOA, in line with Article 8 of SOGL.

6.2 Wider issues that need addressing

As outlined in Section 5 through the development of the SAOA and LFCBOA and the associated regulatory assessments, several areas have been identified that we consider need further attention by the TSOs. These areas are cross-cutting in terms of their interactions with Grid Codes and Distribution Codes, market operations, control centre operations, operational constraint lists, procurement of reserves and system services and innovation programmes. The Regulatory Authorities therefore consider that these areas need a greater level of development and detail provided to ensure there is consistency between the policies and actions of the TSOs.

We therefore consider that the following timelines are appropriate for the work outlined in Section 5 above;

- TSOs to provide a roadmap to the Regulatory Authorities for delivery of the work required within 3 months of approval of the SAOA and LFCBOA (by 15th February 2020)

- TSO Updates provided monthly on progress
- Interim report on progress achieved within 6 months submitted to the Regulatory Authorities (by 15th May 2020)
- Completion of all work required within 12 months (by 15th November 2020), with report provided on completion by 15th December 2020
- Updated SAOA and LFCBOA submitted within 15 months to reflect changes achieved

The areas requiring attention are summarised again below;

- i. **The TSOs are required to report within 3 months of this publication of this Decision to the Regulatory Authorities on identified and potential changes that will need to be implemented in the Grid Codes, Distribution Codes or any other operational documents to reflect the contents of the SAOA and LFCBOA, and a roadmap for completing the required changes.**
- ii. **The Regulatory Authorities request that the TSOs provide (within 3 months of this publication of this Decision) additional information on addressing the following issues and a roadmap for completion of the work required to;**
 - i. **Ensure that the SAOA and LFCBOA (methodologies for dimensioning of reserve volumes, and minimum IE/NI volumes) do not conflict with the Operational Constraints documents (methodology outputs and volumes required) and that all documents provide full transparency on reserve requirements and reserve scheduling,**
 - ii. **Disaggregate current negative reserve volume provision for FCR, FRR and RR,**
 - iii. **Explain how microgeneration or distribution connected non-market participants are accounted for in the dimensioning of reserve requirements,**
 - iv. **Ensure that the criteria used to determine eligibility to provide positive and negative reserves are non-discriminatory and transparent.**
- iii. **The TSO's are requested to submit detail within 3 months of the publication of this Decision on the following;**
 - i. **Initial proposals for prequalification processes to be utilised to qualify FCR, FRR and RR providing units**
 - ii. **A roadmap to having these processes published and operational.**
- iv. **The TSO is requested to submit detail within 3 months of the publication of this Decision on initial proposals to ensure there is appropriate inclusion of fast acting and lower carbon units into generation schedules/ integrate faster acting units into automated schedules (i.e. integration into the RTC and RTD schedules utilised by the control centre).**
- v. **The TSO's are requested to establish operational constraint change procedures as outlined in Section 5.5 above to ensure that full consideration of the potential impact of operational constraint changes is undertaken and that alternatives are considered.**

- vi. **The TSO's are requested to evaluate the appropriateness of the frequency target parameters for the All-Island synchronous area in advance of the submission of data to ENTSO-E on Load Frequency Control. Any changes should be proposed following the guidance outlined in Article 127 (7) and 127(8) of SOGL.**
- vii. **The TSO's are requested to consider;**
 - i. **whether more specific requirements for energy limited reservoir replenishment are required to ensure cost-efficient and effective system operation, and where such requirements are identified, to update the SAOA Article 6 accordingly.**
 - ii. **more widely the integration of a range of limited energy limited reservoir units in their longer term and where appropriate update the SAOA, LFCBOA and other related operational policies and requirements for defence service provision.**

The TSOs are requested to engage with the Regulatory Authorities on our requests for further detail and to outline where additional timelines may be required. The Regulatory Authorities will endeavour to review and issue decisions on any TSO proposed changes to the SAOA or LFCBOA in a timely manner. We encourage industry to communicate any view or concerns they may have with the proposals outlined in this document.

Please contact Mo Cloonan at the CRU on mcloonan@cru.ie or Kenny McPartland at UR Kenny.McPartland@uregni.gov.uk if you wish to discuss any issues.

For clarity any future changes to the SAOA or LFCBOA will require approval by the CRU and UR.

