

The Terms and Conditions to act as Defence Service Provider for Northern Ireland

**In accordance with the requirements of Articles 4
and 7 of the Commission Regulation (EU)
2017/2196 Establishing a network code on
electricity emergency and restoration**

Version 2

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1. Introduction

The Protocol on Ireland and Northern Ireland, which forms part of the Withdrawal Agreement between the UK Government and the European Union, requires SONI to comply with the Network Code on Emergency Restoration (NCER)¹.

This includes an obligation to consult upon, seek Utility Regulator (UR) approval of, and publish:

- The Terms and Conditions to act as defence service providers on a contractual basis in accordance with [Article 4] paragraph 4, (if such terms and conditions are established on a contractual basis);
- The Terms and Conditions relate to the characteristics of the service being provided and the possibility of and conditions for aggregation as well as the possibility for aggregation and geographical location.

The UR approved the initial version of these Terms and Conditions on 11 February 2021, and that version is published on SONI's website². The initial version of the Terms and Conditions assumed that SONI would automatically have access to sufficient system defence services because provision of these services is mandatory for certain units under the Grid Code. Where it is not mandatory under Grid Code it will be specified in a bilateral contract.

However, it is possible that this assumption may not always hold true. Condition 29 of its TSO Licence obliges SONI to contract for the provision of such quantities and types of System Support Services as may be appropriate to enable it to discharge its obligations under the Order, the Energy Order, the SEM Order and the Licence. This obligation includes procurement of sufficient system defence services. SONI has therefore updated these Terms and Conditions to resolve this inconsistency by including a scenario where SONI would specify the need for defence providers on a contractual basis.

This document sets out the updated Terms and Conditions.

1.1 Consultation Process

This document sets out the updates that SONI would intend to make to these Terms and Conditions. It should be read in parallel with the consultation paper³ that provides the reasons behind each change to this document.

SONI will take all responses to the consultation into consideration, provide the UR with a report on the consultation exercise, update the Terms and Conditions if required and submit to UR for approval.

¹ COMMISSION REGULATION (EU) 2017/2196 of 24 November 2017 establishing a network code on electricity emergency and restoration

² https://www.soni.ltd.uk/media/documents/SONI_TermsAndConditionsDefense_NorthernIreland.pdf

³ <https://www.soni.ltd.uk/media/documents/Update-to-T+C-consultation-paper-Final.pdf>

2.SONI Obligations Regarding Terms and Conditions related to Emergency and Restoration

2.1 Background

In accordance with COMMISSION REGULATION (EU) 2017/2196 of 24 November 2017 establishing a Network Code on Electricity Emergency and Restoration (NCER), the Transmission System Operators (TSO) of a member state are required to submit the proposals to the relevant regulatory authority on the following:

- The terms and conditions to act as defence service providers on a contractual basis in accordance with [Article 4] paragraph 4, (if such terms and conditions are established on a contractual basis);
- The Terms and Conditions relate to the characteristics of the service being provided and the possibility of and conditions for aggregation as well as the possibility for aggregation and geographical location.

Despite the UK leaving the European Union, this obligation continues to apply to SONI under the terms of Article 9 the Protocol on Ireland and Northern Ireland that is included within the Withdrawal Agreement.

2.2 Relevant Network Code Articles

This paper addresses the requirements set out in six articles of the NCER. The relevant obligations are set out in turn below.

This document on terms and conditions for defence service providers, together with our procurement principles are considered compatible with the requirements of Article 4 (1) and where it is identified that defence services are provided on a contractual basis these are in line with Article 4 (4).

Reference is made to the design of the SDP which is integral to this document and is where the detail on the defence services, and when they are activated, is provided. It is the detail in the SDP which specifically meets the objectives of Article 11 (6).

Article 4 (1): When applying this Regulation, Member States, regulatory authorities, competent entities and system operators shall:

- (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 the TSOs make use of market-based mechanisms as far as possible to ensure network security and stability;
- (e) Respect technical, legal, personal safety and security constraints;
- (f) Respect the responsibility assigned to the relevant TSO in order to ensure system security, including as required by national legislation;
- (g) Consult with the relevant DSOs and take into account of potential impacts on their system; and

(h) Take into consideration agreed European standards and technical specifications.

Article 4 (2): Each TSO shall submit the following proposals to the relevant regulatory authority in accordance with Article 37 of Directive 2009/72/EC for approval:

(a) the terms and conditions to act as defence service providers on a contractual basis in accordance with paragraph 4;

(b) the terms and conditions to act as restoration service providers on a contractual basis in accordance with paragraph 4;

...(c) & (d)...not included as not referenced in Article 7(1), see below...;

(e) the rules for suspension and restoration of market activities in accordance with Article 36(1);

(f) specific rules for imbalance settlement and settlement of balancing energy in case of suspension of market activities, in accordance with Article 39(1);

(g) the test plan in accordance with Article 43(2).

Article 4 (4): The terms and conditions to act as defence service provider and as restoration service provider shall be established either in the national legal framework or on a contractual basis. If established on a contractual basis, each TSO shall develop by 18 December 2018 a proposal for the relevant terms and conditions, which shall define at least:

(a) the characteristics of the service to be provided;

(b) the possibility of and conditions for aggregation; and

(c) for restoration service providers, the target geographical distribution of power sources with black start and island operation capabilities.

Article 4 (6): Where a TSO is required or permitted under this Regulation to specify, establish or agree on requirements, terms and conditions or methodologies that are not subject to approval in accordance with paragraph 2, Member States may require prior approval by the regulatory authority, the entity designated by the Member State or other competent authorities of the Member States of these requirements, terms and conditions or methodologies.

Article 7 (1): The relevant TSOs shall consult stakeholders, including the competent authorities of each Member State, on proposals subject to approval in accordance with points (a), (b), (e), (f) and (g) of Article 4(2). The consultation shall last for a period of not less than one month.

Article 11 (6): The measures contained in the SDP shall comply with the following principles:

(a) their impact on the system users shall be minimal;

(b) they shall be economically efficient;

(c) only those measures that are necessary shall be activated; and

(d) they shall not lead the TSO's transmission system or the interconnected transmission systems into emergency state or blackout state.

2.3 Wider Obligations Placed on SONI

The Legal Framework in Northern Ireland comprises of The Electricity (Northern Ireland) Order 1992¹, which provides for the Licence to participate in the Transmission of Electricity granted to SONI Ltd. SONI is responsible for the operation of the electricity transmission system in Northern Ireland.

This TSO licence includes Condition 20 (Operation of the Transmission System and the System Security and Planning Standards) which confirms the main functions of the TSO including that the TSO “shall plan, operate, and shall co-ordinate and direct the flow of electricity onto and over, the transmission system in an efficient, economic and coordinated manner.” To meet this objective the TSO “shall make arrangements sufficient to meet the operating security standard at all times.” (Condition 21 – Operating Security Standards) including ensuring “the provision of such quantities and types of System Support Services at any time available as may be appropriate to enable it to discharge its obligations.” Furthermore, Condition 29 (Economic Purchasing of System Support Services) states the TSO “shall contract for the provision of such quantities and types of System Support Services at any time available as may be appropriate to enable it to discharge its obligations...including Conditions 20 and 21”. Also, in contracting for System Support Services the TSO “shall purchase or otherwise acquire...from the most economical source available to it or available to the Republic of Ireland System Operator”.

The System Support Services definition in the licence includes “spinning reserve, fast start, black start, reactive power, frequency control.... and such other services relating to a reduction of demand”, which may be required by SONI for the purpose of securing stability of operation on the transmission system.

Some common system services have been grouped together under the DS3 (Deliver a Secure, Sustainable electricity System) programme - please see the EirGrid Group web-site³ for further information. Note that the terms of provision of DS3 System Services have undergone extensive consultation with Regulators and Industry. A DS3 System Service agreement is the standard contract that SONI provides to System Support Service providers. It includes 14 products or services including Operating Reserve and Reactive Power.

Condition 16 of the TSO licence provides for a Grid Code (SONI Grid Code) where the TSO “shall prepare and at all times have in force and shall implement and comply with a Grid Code.” The Grid Code is the technical document which establishes the rules governing the operation, maintenance and development of the transmission system and sets out the procedures for governing the actions of all transmission system users.

SONI as TSO licence holder has been contracting for System Support Services to maintain a stable and secure transmission system and, has administered the development of the Grid Code and associated procedures since its inception and for many years prior to the NCER becoming part of EU legislation. This document, in tandem with the SDP, seeks to rationalise, in a transparent manner, how the existing services on the transmission system can be mapped onto the NCER definitions of defence services and defence service providers. To assist with achieving this outcome, mapping tables are used to reference relevant Grid Code requirements and DS3 system services.

There are many variables in a complex synchronous electrical system and the TSO operates within certain limits to ensure standards are maintained. These limits are defined in System Operator Guidelines (SOGL) and are enacted in the Operational Security Standards (OSS).

The transmission system is operated so that under normal operation and in the event of certain anticipated contingencies (loss of any single item of generation or transmission plant (N-G, or N-1)) there will be no:

- Loss of supply, subject to certain exceptions
- Frequency event outside the operational limits
- Voltage conditions outside the operational limits
- Transmission plant operating outside its limits
- System instability

System Defence services allow the TSO to operate the power system in a safe and secure manner.

We are updating these terms and conditions to include the provision of inertia services through specific locational contracts as required. This is to ensure we can continue to fulfil the obligation placed on us by Condition 29 of our licence and the requirements of 3.3.5 in the System Defence Plan:

“Instability of a power system could cover numerous scenarios including voltage and frequency issues mentioned above. However, with the changing nature of generation towards more renewable sources the system inertia (a measure of how robust the system is to disturbances) is reducing and has to be monitored closely. There has been detailed offline analysis carried out to provide certain constraints to manage inertia, e.g. there is a percentage limit on the System Non-Synchronous (generation) Penetration (SNSP) figure and there are a certain number of synchronous machine units constrained to run to ensure the system inertia remains above a minimum level. These constraints and others are published monthly in the Operational Constraints Update and are used in the online transient stability assessment tool.”

3. Defence Service Providers

The System Defence Plan (SDP) considers and categorises the defence services. The SDP also groups the Significant Grid Users (SGUs) for the Northern Ireland transmission system as defined by NCER.

The mapping table, Table 1 below, is copied from the SDP (SDP section 4.3) and lists the defence services against the relevant (SGU) groups who are able to provide the service. However, in the cell denoting the positive mapping highlighted in yellow, the “X” has been replaced with a letter, e.g. “A”, to help identify how each service is defined or procured, see Table 2 - Look up table for references (from Table 1). Please note that where the letter is repeated in Table 1 the same clause references are being used by similar SGU groups to specify that defence service.

For clarity, while FRR and RR (Frequency Restoration Reserve and Replacement reserve respectively) may operate as the transmission system transitions from Normal to Emergency state, they are categorised as both remedial action and defence service measures depending on what system state is active at the time the action is initiated. Please see SDP (SDP section 4.2) for further details on what is categorised as a system defence measure.

Note that where there is a contractual basis or a payment for this service this is highlighted in red text in Table 2.

Individual System Defence Measure / Service	SGUs							
	Type D Generator (T-Connected)	Type D Generator (D-Connected)	Type C Generator	Type B Generator	Aggregators of Gen/ Dem	T - Conn Demand Facility	Interconnector Owners	T-Conn closed Distribution Systems
Authority to disconnect SGUs	A	B	B		C		D	
Operational Reserve (FRR)	E	F	G		H			
Replacement Reserve (RR)	I	I	I		I			
Active power set points when Frequency/ Power Flow is outside Alert limits and system adequacy is lacking.	J	J	J		J			
Special Protection Schemes (Inc. Step wise linear disconnection)	K	L	L					
Over Frequency Generator Shedding Scheme		M	M					
Reactive power set-points	N							
Interconnector Emergency Assistance (MWs) & Making Mvars available							O	
Inertia	P							

Table 1 – SDP Services mapped against SGU Groupings

Table 1 Cell Reference	References to where service is defined and/ or procured	Table 1 Cell Reference	References to where service is defined and/or procured
A	GC CC6.4.3 (TSO to specify protection standards applicable); CC6.4.4 (TSO to specify protection schemes and settings necessary to protect the network); SDC2.4.2.9 (Under an emergency TSO may alter a dispatch instruction outside declared parameters including an instruction to trip).	I	GC OC3.4.3 (Provides definition of RR) but provision via a System Services Contract (DS3)
B	GC CC.S1.2.1 (All Gens >10MW to comply with Sched1, DNO to ensure all protection equipment for gens >5MW comply with ER G99/NI); CC.S2.2.1 (All Controllable PPMs to comply with Sched 2, DNO to ensure all protection equipments for PPMs >5MW comply with ER G99/NI). SDC2.4.2.9 (Under an emergency TSO may alter a dispatch instruction outside declared parameters including an instruction to trip).	J	SDC2 (General dispatch of active power); SDC2.4.2.9 (Under an emergency TSO may alter a dispatch instruction outside declared parameters including to full output); OC.2.6.4.(e) and OC.2.6.4 (g) (TSO to amend planned outage or maintenance). Provision is via the Balancing Market .
C	GC SDC2.4.2.9 (Under an emergency TSO may alter a dispatch instruction outside declared parameters including an instruction to trip)	K	GC CC6.4.3 (TSO to specify protection standards applicable); CC6.4.4 (TSO to specify protection schemes and settings necessary to protect the network); CC6.5 (Intertripping to be provided for the isolation of faults and system abnormalities)
D	GC SDC2.4.2.9 (Under an emergency TSO may alter a dispatch instruction outside declared parameters including an instruction to trip.); IOP (Emergency Instruction to OMW - Safety or System Security)	L	GC CC.S1.2.1 (All Gens >10MW to comply with Sched1, DNO to ensure all gens >5MW comply with ER G99/NI); CC.S2.2.1 (All Controllable PPMs to comply with Sched 2, DNO to ensure all protection equipments for PPMs >5MW comply with ER G99/NI).
E	GC CC.S1.1.5.2 (T-Conn.Gens >5MW to provide to Frequency Control); CC.S2.1.7.2/3 (T-Conn Controllable PPMs to provide Frequency Control) ; Provision is via a System Services Contract (DS3)	M	GC CC.S1.2.1 (All Gens >10MW to comply with particular requirements of TSO, DNO to ensure all gens >5MW comply with ER G99/NI (Section 10.3 Protection Requirements, include for Over Frequency)); CC.S2.2.1 (All Controllable PPMs to comply with particular requirements of TSO, DNO to ensure all protection equipments for PPMs >5MW comply with ER G99/NI(Section 10.3 Protection Requirements, include for Over Frequency)).
F	GC CC.S1.2.4.2 (D-Conn Gens >10MW to provide frequency control); CC.S2.2.5.1 (D-Conn Controllable PPMs to provide Frequency Control) ; Provision is via a System Services Contract (DS3)	N	GC CC.S1.1.3.2/3 (T-conn Gens >5MW to provide voltage control for defined minimum capability); CC.S2.1.3.2 (T-Conn PPM to control voltage within it's capability limits) . Provision via a System Services Contract (DS3)
G	GC CC.S2.2.5.1 (D-Conn Controllable PPMs to provide Frequency Control) ; Provision is via a System Services Contract (DS3)	O	SDC2.4.2.9 (Under an emergency TSO may alter a dispatch instruction outside declared parameters including to change I/C transfers); OC.2.6.4.(e) and OC.2.6.4 (g) (TSO to amend planned outage or maintenance) ; IOP (Emergency Assistance for Active Power - Reactive Power). Provision is via the BASA .
H	FRR characteristics are defined in the GC (TOR1 & TOR2). Provision from Demand Side Units/ Aggregators is via a System Services Contract (DS3)	P	Inertia provision via a System Services Contract (Licence Condition 29)

Table 2 - Look up table for references (from Table 1)

Discussion

As can be seen from Table 2, a significant majority of the defence services are defined by the Grid Code (GC). References are taken therein from the Connection Conditions (CCs), Operating Conditions (OCs) and the Scheduling and Dispatch Code (SDC). The Schedules in the CCs is also referenced where distribution connected generators are to abide by the relevant sections of the GC.

Next to each clause referenced in Table 2, is a short bullet point summarising the clause. For the avoidance of doubt, these summaries should be regarded as an aid to the reader and if there are any differences between the interpretations of this summary and the full GC clause, the GC clause interpretation takes precedence.

The NCER references two options for procuring a defence service provider, either in the national legal framework or on a contractual basis. However, given how the market in Ireland has developed it may be easier to discuss two variations (in turn) of the contract basis, see Table 3.

	Capability/ Service Characteristics	How Procured?	Payment/ Recompense
Contractual Basis - Full	Contract	Voluntary	Contract
Contractual Basis - Part	Grid Code	Compulsory	Contract
National Legal Framework	Grid Code	Compulsory	None

Table 3 - Types of Contracts

Contractual Basis – Full: These are services that are paid for via a contract and the defence service provider voluntarily provides that service, i.e. it is not mandated by the GC to provide. Examples include Replacement Reserve (all providers) or Frequency Restoration Reserve (FRR) (non- generator providers).

Contractual Basis – Part: The ‘middle’ category is where the provider is mandated by the GC to offer this service when operational; however, they are recompensed. Generators providing FRR or steady state reactive power fall into this category as do providers of additional active power (instructed by TSO during Emergency state) who receive payment via the Balancing Market or Interconnectors providing Emergency Assistance via their Balancing and Ancillary Services Agreement (BASA).

National Legal Framework: These are services that are solely referenced against the GC. They are thus classified as established in the national legal framework as they are mandated by the GC and no recompense is due, for example, disconnecting a generator to protect the wider system.

Using the 3 colours from Table 3 above, Table 4 below demonstrates how each service is divided into the 3 contract types described above.

Individual System Defence Measure / Service	SGUs							
	Type D Generator (T-Connected)	Type D Generator (D-Connected)	Type C Generator	Type B Generator	Aggregators of Gen/ Dem	T-Conn Demand Facility	Interconnector Owners	T-Conn closed Distribution Systems
Authority to disconnect SGUs	X	X	X		X		X	
Operational Reserve (FRR)	X	X	X		X			
Replacement Reserve (RR)	X	X	X		X			
Active power set points when Frequency/ Power Flow is outside Alert limits and system adequacy is lacking.	X	X	X		X			
Special Protection Schemes (Inc. Step wise linear disconnection)	X	X	X					
Over Frequency Generator Shedding Scheme		X	X					
Reactive power set-points	X							
Interconnector Emergency Assistance (MWs) & Making Mvars available							X	
Inertia	X							

Table 4 - Table 1 updated to map services and SGUs to contract types

By removing the 'national legal framework' category, it is clear that the following defence services are provided on a contractual basis:

1. Frequency Restoration Reserve
2. Replacement Reserve
3. Active Power set point changes
4. Reactive Power set point changes
5. Interconnector (Emergency) Assistance
6. Inertia services

Service 1, 2 and 4 are characterised or defined in the GC and recompensed via DS3 System Services Agreements⁶ (Schedule 2 & Schedule 3 in the agreement refers). Note that these agreements are looking for a defined service and are technology neutral; that is the payment is on a regulated tariff basis on delivery against the specified requirements.

Services 3 and 5 for Active power provision from Balancing units or an Interconnector respectively, are also characterised in the GC but are paid via the Balancing Market where the Trading and Settlement Code⁷ applies or via the Balancing and Ancillary Services Agreement (BASA). The BASA is an agreement between SONI and NGENSO and Moyle Interconnector Ltd for the provision and payment of energy services to each other through the Moyle Interconnector.

It should be noted that while DS3 contracted providers are paid the tariff rate for being available to provide the service, if they are utilised to provide FRR there are also transactions in the Balancing Market for the new (part-load) positions taken.

Service 6 for inertia provision is contracted via the SONI Licence Condition 29. The LCIS framework determined that inertia provisions are more effective when connected to a voltage level at 110 kV and above.

As shown in Table 4, by only considering the aggregated SGUs, the contractual basis where aggregation is possible is the first 3 services shown above. For the two reserves services these are procured in accordance with the DS3 System Services Agreement, where the Grid Code defined Demand Side Units (may be associated with a demand site or demand sites) or Aggregated Generation Units are collectively described under “Interface Agreement” and specifically referred to as a Service Provider; clause 2.3.3 of the Agreement refers. Therefore, for the relevant defence services FRR and RR, the SGUs are able to be the Service Provider either on individual or collective basis following pre-qualification in accordance with the System Operation Guideline (SOGI) and the terms and conditions of the DS3 System Services Agreement.

The third service on a contractual basis where aggregation is possible is Active Power set point changes, and again the definitions of Demand Side Unit and Aggregated Generation Units are used in the Trading and Settlement Code when registering participants (see Trading and Settlement Code, Part A, paragraph 2.34). While all participants above a de-minimis level of 10MW are registered individually on a mandatory basis; demand sites and generating units less than 10MW may volunteer to be aggregated as Demand Side Units and Aggregated Generation Units, respectively. The only other pre-requisite is that the aggregated sites must be dispatchable by the TSO.

Notes:

‘defence service provider’ means a legal entity with a legal or contractual obligation to provide a service contributing to one or several measures of the system defence plan.