

Test Plan of ELIA

Summary	This document contains a proposal for the Test Plan designed by ELIA in compliance with the criteria specified in Regulation (EU) 2017/2196 and with the provisions in the Federal Grid Code. After public consultation, this document will be submitted for approval to the Minister of Energy.	
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1.0	14-10-2019	Filip Carton	Head of NCC	
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Previous versions

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Related documents

System Defence Plan (under approval by Minister of Energy)
Restoration Plan (under approval by Minister of Energy)
Terms and Conditions to act as a Restoration Service Provider (under approval by Creg)

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1 Introduction

This document describes the tests (including their frequency and conditions) applied to defence and restoration service providers and identifies the equipment and capabilities relevant for the System Defence Plan and the Restoration Plan that have to be tested.

The Test Plan is elaborated by ELIA, taking into account the prescriptions of Commission Regulation (EU) 2017/2196 of 24 November 2017 establishing a network code on electricity emergency and restoration (NC ER) and taking into account other relevant legislation (e.g. the Federal Grid Code) and other Network Codes:

- Regulation (EU) 2016/631 establishing a network code on requirements for grid connection of generators (NC RFG)
- Regulation (EU) 2016/1388 establishing a Network Code on Demand Connection (NC DCC)
- Regulation (EU) 2016/1447 establishing a network code on requirements for grid connection of high voltage direct current systems and direct current-connected power park modules (NC HVDC)

ELIA established this Test Plan making sure that:

- The test does not endanger the operational security of the transmission system and of the interconnected transmission system;
- The tests have minimal impact on system users.

In accordance with article 7 of the NC ER, a public consultation of this document is organized by ELIA during a period of one month between October 14th 2019 and November 14th 2019.

ELIA will duly take into account the views of the stakeholders resulting from the consultations prior to the submission of the draft proposal. A sound justification for including or not including the views of the stakeholders shall be provided and published in a timely manner before, or simultaneously with the publication of the proposal.

In accordance with articles 4(3) and 43(2) of the NC ER and article 259 of the Federal Grid Code, ELIA will submit the Test Plan (in Dutch and French) for approval to the minister of Energy, by December 18th 2019.

The Test Plan refers to the System Defence Plan and Restoration Plan designed by ELIA in accordance with the NC ER and the Federal Grid Code. Both Plans are still waiting for approval by the Minister of Energy. This Test Plan is therefore subject to the approval of the System Defence Plan and Restoration Plan.

2 Legal framework

Article 43(2) of the NC ER charges ELIA to design a Test Plan, in consultation with the Distribution System Operators (DSOs), Significant Grid Users (SGUs) identified in the System Defence Plan and in the Restoration Plan, the Defence Service Providers and the Restoration Service Providers.

The Test Plan is designed considering the minimum requirements laid down in:

- Articles 44 to 47 of the NC ER
- Articles 15(5)(a) 15(5)(c), 45(5), 45(6) of the NC RfG
- Articles 37(2), 37(3) and 71(11) of the NC HVDC
- Articles 19(1), 19(2), 37(4), 37(6), 39(5) and 41(1) of the NC DCC

The test plan shall follow the methodology laid down in the NC RfG, in the NC HVDC and in the NC DCC for the corresponding tested capability. However, for SGUs existing before the entry into force of these codes, the NC ER foresees that the test plan shall follow the provisions of national law. Regarding that Belgian law does not foresee any methodology, ELIA follows the methodology laid down in the three sub-mentioned NCs for both existing and new installations.

It is nevertheless important to mention that Article 263 of the Federal Grid Code authorizes Elia to organize tests in order to assess the performances of the measures identified in the System Defence Plan and in the Restoration Plan. This provision also stipulates that the tests have to be organized in concertation with the stakeholders and at Elia's costs.

On the basis of a proposal made by ELIA and after an advise of the CREG, the minister of Energy approves or not the Test Plan, in accordance with article 259 of the Federal Grid Code.

In case of incompatibility between the Test Plan on the one hand and the NC ER and other legislation on the other hand, the latter will prevail.

3 Equipment and capabilities that have to be tested

In accordance with article 43(2) of the NC ER, the following table specifies the identified equipment and capabilities relevant for the System Defence Plan and the Restoration Plan that have to be tested.

Equipment and capabilities relevant for the System Defence Plan and/or Restoration Plan that have to be tested	Relevant for System Defence Plan or Restoration Plan or general obligation	Periodicity of the tests	Remarks
LFDD relays implemented on TSO and DSO installations	System Defence Plan	10 years	Conditions of the tests are included in paragraph 7
RSP which is a PGM delivering a black start service	Restoration Plan	3 years	Conditions of the tests are included in paragraph 4.1
Communication systems defined in art 41 of the NC ER of ELIA, RSPs, DSOs and SGUs identified in the Restoration Plan	General obligation according to NCER art 48(1)	1 year	(*)
Backup power supply of communication systems of ELIA, RSPs, DSOs and SGUs identified in the Restoration Plan	General obligation according to NCER art 48(2)	5 years	(*)
Inter-TSO communication systems	General obligation according to NCER art 48(3)	Periodicity to be defined by 18 December 2024	Conditions of the test to be defined by 18 December 2024
Communication systems between ELIA and Coreso	General obligation according to NCER art 49(2)	3 years	(*)
Main and backup power sources to supply ELIA's main and backup control rooms, provided for in art 42 of the NC ER	General obligation according to NCER art 49(2)	1 year	(*)
Functionality of ELIA's main and backup Energy Management System including SCADA, state estimator and security analysis	General obligation according to NCER art 49(2)	3 years	(*)
Functionality of ELIA's Entsoe awareness system	General obligation according to NCER art 49(2)	3 years	(*)
ELIA's main and backup datawarehouse and LAN connection	General obligation according to NCER art 49(2)	3 years	(*)
Functionality of ELIA's controller for the frequency restoration of the LFC zone	General obligation according to NCER art 49(2)	3 years	(*)
Functionality of ELIA's main and backup control system for manual FRR	General obligation according to NCER art 49(2)	3 years	(*)
Functionality of substation SCADA for the substations identified as essential for the Restoration Plan	General obligation according to NCER art 49(2)	3 years	(*) (**)

ELIA's main and backup data communication to substations identified as essential for the Restoration Plan procedures	General obligation according to NCER art 49(2)	3 years	(*) (**)
ELIA's backup power sources to supply essential services of the substations identified as essential for the Restoration Plan procedures	General obligation according to NCER art 49(3)	5 years	(*) (**)
Functionality of tools used by ELIA for managing nominations	General obligation according to NCER art 49(2)	3 years	(*)
Functionality of tools used by ELIA for activation of balancing energy bids	General obligation according to NCER art 49(2)	3 years	(*)
ELIA's transfer procedure for moving from the main control room to the backup control room	General obligation according to NCER art 49(4)	1 year	(*)

(*) Conditions of the tests are not included in the Test Plan, because it is not imposed by article 43(3) of the NC ER

(**) Where these tools and facilities involve DSOs or SGUs, these parties shall participate in this test.

4 Compliance testing of Power Generating Modules capabilities

Each Restoration Service Provider RSP should test his Power Generating Modules (PGM) to ensure they can provide the specified restoration service(s). Article 44 of NC ER requires specifying a Test Plan for the following services provided by an RSP:

- Black Start service
- Quick resynchronisation service.

Other requirements related to the production in Normal/Alert State are not in the scope of this Test Plan.

4.1 Black Start service

4.1.1 Introduction

Each RSP, which is a PGM delivering Black Start service, shall execute a Black Start capability test considering the minimum requirements laid down in Article 44(1) of the NC ER and of Article 45(5) of NC RfG.

As specified in Article 45(5) of NC RfG, the Black Start capability test aims to demonstrate the technical capability to start from shut down without any external electrical energy supply.

However, as the ultimate goal of the Black Start service is to energize a dead busbar, accept active and reactive power loading and resynchronize the islanded grid with the other part of the transmission system to support the grid restoration, ELIA requires the Restoration Facility to demonstrate all these aspects.

4.1.2 Test periodicity

In agreement with Article 44 of NC ER, a Black Start capability test should occur at least every three years.

Without prejudice to the previous paragraph, and in order to check that the Restoration Facility is capable of delivering the Black Start Service, the test should occur at least once during the term of the RSP Contract agreed between the RSP and ELIA.

4.1.3 Test description

The Black Start capability test may take the form of one of the following tests:

- **Test 0:** Black Start inspection which consists of:
 - An inspection of the Service Provider's installations and submission to ELIA's representatives of the 'Black-out' and 'Black Start' procedures to be executed by the PGM's operators.
 - An explanation to Elia of these procedures by the operators of the RSP
 - A demonstration of the operation of ancillary 'Black Start' facilities (auxiliary diesel generators, compressors, auxiliary boilers, etc.).
- **Test 1:** Start-up and reconnection:

- The PGM is shut down, followed by a start-up according to the time defined in paragraph "Provisions of the Black Start service" of the RSP Contract.
- The auxiliary systems of the PGM are powered by an independent power source such as a diesel generator according to the 'Black Start' procedure of the PGM.
- The PGM is then connected to the transmission system that is already energized.
- **Test 2:**
 - The PGM's auxiliary systems are powered by an independent energy source
 - The PGM will demonstrate the ability to re-energize a bus bar of the transmission system that was at zero voltage. The PGM should be able to control the bus bar voltage to reference values equal to 0.9 p.u., 1 p.u. (voltage p.u. base = nominal voltage of the transmission system busbar).
- **Test 3:**
 - In addition to the performances required in test 2, the PGM will demonstrate the exchange of reactive power with the transmission system, when the TSO switches in inductive or capacitive elements to the islanded system. The TSO may request to demonstrate reactive power exchanges up to the limits specified in paragraph "Conditions for participation to the black-start service" in the RSP contract.
- **Test 4:**
 - In addition to the performances required in test 3, the PGM will demonstrate the ability to inject active power into the islanded system, when the TSO switches in active load blocks (MW). The TSO may request to demonstrate active power exchanges up to the limits specified in paragraph "Conditions for participation to the black-start service" in the RSP contract.

By default, ELIA will require performing a Black Start capability test 4. However, if due to particular circumstances (e.g. unavailable test load, potential negative impact on the transmission system), a test 4 cannot be executed, ELIA may, in concertation with the RSP decide to execute another test among those described above in this article.

Apart from the periodic test every three years, ELIA preserves the right to request the RSP to perform intermediate tests among those described above in this article, if deemed necessary by ELIA.

ELIA will motivate and communicate the reason for an intermediate test to the RSP.

4.1.4 Success criteria

The Black Start capability test is deemed successful when it fulfils the conditions established by ELIA in accordance with article 43(5) of the NC ER.

4.1.5 Test organization and preparation

The test is prepared by ELIA and the RSP considering the minimum requirements laid down in Article 44(1) of NC ER, with the exception of the unplanned tests described in paragraph 4.1.6 of this Test Plan.

The RSP and ELIA shall take all steps to limit, as far as possible, the commercial impact for both parties arising from performing a planned Black Start capability tests.

The date on which the Black Start capability tests takes place (Test Date) will be decided by mutual agreement between ELIA and the RSP. The Test Date must be chosen in a period starting three months before the Reference Date and ending three months after the Reference Date. The Reference Date is determined by the furthest date forward between:

- the date of entry into force of the RSP Contract plus six months
- the date of the previous Black Start capability tests on the same Restoration Facility plus three years.

If ELIA and the RSP fail to reach an agreement regarding the Test Date within 30 calendar days of the start of consultations, ELIA shall impose a Test Date unilaterally unless the RSP can prove that this would seriously damage its assets and that other, equally effective testing periods are feasible.

In accordance with art 4(8) of the NC ER, the RSP can complain against a TSO in relation to ELIA's decision and may refer the complaint to the CREG which, acting as dispute settlement authority, shall issue a decision within two months after receipt of the complaint. That period may be extended by a further two months where additional information is sought by the CREG. That extended period may be further extended with the agreement of the complainant. The CREG's decision shall be binding unless and until overruled on appeal.

The Black Start capability test is executed according to the Black-out and Black Start procedures of the RSP and ELIA's relevant procedures.

The RSP shall provide ELIA with the following documents prior to performance of each Black Start capability test or upon ELIA's request:

- 'Black-out' procedure as defined in Article II.1 of the RSP Contract.
- 'Black Start' procedure as defined in Article II.1 of the RSP Contract.
- Full single-line diagram of the installations

ELIA shall be entitled to attend the Black Start capability test. To this end, the RSP shall ensure that ELIA has access to the buildings of the Restoration Facility.

In case of failed Black Start capability test, ELIA undertakes, where applicable, to assist in arranging a new Black Start capability test within two months of receiving the request from the RSP.

4.1.6 Unplanned test

Without prejudice to previous paragraphs, and in order to check that the Restoration Facility is actually capable of providing the Black Start Service, ELIA shall be entitled to conduct a Black Start capability test as described in paragraph 4.1.3 of this Test Plan without a prior warning or consultation with the RSP.

This type of unplanned test may only be conducted by ELIA if the Restoration Facility is available (based on the definition of outage set out in Article II.4.4 of the RSP Contract), its generation program is at zero (based on the CIPU nominations sent by the Service Provider) and it is not participating in the supply of other reserves at the time. ELIA shall be entitled to conduct this type of test at least once for each Restoration Facility over the term of the RSP Contract.

4.1.7 Test reports

ELIA shall, with the assistance of the RSP, compile a report on each completed test.

The RSP shall make available to ELIA all the test reports and important information relating to earlier and current internal tests conducted at the Restoration Facility.

4.1.8 Initial test for a new Restoration Facility

For any Restoration Facility not covered by a Black Start service contract in the year preceding the year in which the RSP Contract was concluded or that have not passed a test during the previous three years, a Black Start capability test will have to be passed as quickly as possible by the end of the first year of the RSP Contract.

4.2 Quick resynchronisation service

4.2.1 Introduction

Each RSP which is a PGM delivering a quick resynchronisation service shall execute tripping to houseload test considering the minimum requirements laid down in Article 44(2) of the NC ER and of Article 45(6) of the NC RfG.

As specified in Article 45(6) of the NC RfG, the test aims to demonstrate the technical capability of the PGM to trip to and stably operate on house load.

The quick resynchronisation capability is defined in Article 15(5)(c) of the NC RfG.

4.2.2 Test description

In the version of the Restoration Plan, which was submitted for approval on September 30th 2019, ELIA does not contract quick resynchronisation services. Hence, no test is described for such services in this version of the Test Plan. However, according to Article 15(5)(c) of NC RfG, PGM of type C & D shall be capable of quick resynchronisation in line with the protection strategy agreed between the relevant system operator, ELIA and the power generating facility.

If, in the future, ELIA contracts a Restoration Service which is a PGM providing a quick resynchronization service, a test procedure will be developed in consultation with the stakeholders and taking into account the minimal requirements laid down in Article 44(2) of the NC ER, Article 45(6) and Article 15(5)(c) of the NC RfG. In that case, a new version of the Test Plan will be submitted for approval.

5 Compliance testing of demand facilities providing demand side response

5.1 Defence Service Providers delivering demand response

5.1.1 Introduction

Each Defence Service Provider (DSP) delivering demand response shall execute a **demand modification test** considering the minimum requirements laid down in Article 45(1) of the NC ER and following the methodology laid down in Article 41(1) of the NC DCC.

As specified in Article 41(1) of the NC DCC, the demand modification test aims to demonstrate the technical capability of the demand unit used by a demand facility or a closed distribution system to provide demand response active power control, demand response reactive power control or demand response transmission constraint management to modify its power consumption, after receiving an instruction from ELIA.

5.1.2 Test description

In the version of the System Defence Plan, which was submitted for approval on September 30th 2019, ELIA did not include measures to be executed by DSPs delivering demand side response. Hence, no test is described for such services in this version of the Test Plan.

In case actions of the System Defence Plan should rely on actions from DSPs delivering demand side response, a dedicated test will be developed in concertation with the stakeholders and taking into account the minimum requirements laid down in Article 45(1) of the NC ER and Article 41(1) of the NC DCC. In that case, a new version of the Test Plan will be submitted for approval.

5.2 Defence Service Providers delivering demand response low frequency demand disconnection

5.2.1 Introduction

Each DSP delivering demand response LFDD shall execute a LFDD test considering the minimum requirements laid down in Article 45(2) of NC ER and following the methodology laid down in Article 37(4) of NC DCC for transmission connected demand facilities. For other facilities, the relevant system operator may define a similar methodology.

As specified in Article 37(4) of the NC DCC, the LFDD test aims to demonstrate the technical capability of transmission-connected distribution facilities for remote disconnection at the connection point(s) from the transmission system when required by ELIA.

5.2.2 Test description

In the version of the System Defence Plan, which was submitted for approval on September 30th 2019, ELIA did not include measures to be executed by demand facilities, delivering LFDD services. Hence, no test is described for such services in this version of the Test Plan.

In case future versions of the System Defence Plan rely on measures from DSPs delivering demand response LFDD, a dedicated test will be developed in concertation with the stakeholders and taking into account the minimum requirements laid down in Article 45(2)

of the NC ER and Article 37(4) of the NC DCC. In that case, a new version of the Test Plan will be submitted for approval.

6 Compliance testing of HVDC capabilities

6.1.1 Introduction

Each RSP which is an HVDC system delivering a Black Start service shall execute a Black Start capability test considering the minimum requirements laid down in Article 46 of NC ER and following the methodology laid down in Article 71(11) of NC HVDC.

As specified in Article 71(11) of the NC HVDC, the Black Start capability test aims to demonstrate the technical capability of the HVDC system to energise the busbar of the remote AC substations to which it is connected.

6.1.2 Test description

In the version of the Restoration Plan, which was submitted for approval on September 30th 2019, ELIA does not include measures to be executed by HVDC systems delivering Black Start capabilities. Hence, no test is described for such services in this version of the Test Plan.

If, in the future, ELIA contracts a Restoration Service which is an HVDC system providing Black Start capabilities, a test procedure will be developed in consultation with the stakeholders and taking into account the minimal requirements laid down in Article 46 of the NC ER, Article 71(11), Article 37(2) and Article 37(3) of the NC HVDC. In that case, a new version of the Test Plan will be submitted for approval.

7 Compliance testing of low frequency demand disconnection (LFDD) relays

7.1 Introduction

Each DSO & TSO shall execute testing on LFDD relays implemented on its installation considering the minimum requirements laid down in Article 47 of the NC ER and following the methodologies laid down in Article 37(6) and 39(5) of the NC DCC.

As specified in Article 37(6) and Article 39(5) of the NC DCC, the LFDD relays test aims to demonstrate the technical capability of the transmission-connected distribution facilities/demand facilities to operate from a nominal AC supply specified by ELIA.

Three tests are foreseen to assess the compliance of LFDD relays, implemented on installations of TSO, DSO or CDSO.

1. A **qualification test**, taking place before the installation of the LFDD relay.
2. A **commissioning test**, taking place at least when a new LFDD relay is installed;
3. A **periodical test**, taking place at least every 10 years if the relay has not been tested during this period.

7.2 Qualification test

Before a new type of LFDD relay is installed, it will be subject to a qualification test. This qualification test will assess the compliance of the LFDD relays to the minimum requirements, taking place before installing the LFDD relays.

The following properties are tested:

- Measurement of the threshold accuracy
- Measurement of the action time of the relay and cubicle in case of sudden frequency drop
- Measurement of the action time of the relay and cubicle in case of frequency drop with different rates of change (slopes)
- Blocking of the frequency function by minimum voltage
- Check of the behavior of the relay and cubicle in the presence of harmonics and Ripple control signal
- Check of the behavior of the relay and cubicle in case of sudden vector jump
- Check the behavior of the relays and cubicle in case of unbalanced voltage
- Check of the anti-aliasing filtering of the relays
- Check the behavior in case of injections of records in "Comtrade" format
- Check the operation of the LEDs
- Check the initialization time
- Check the bouncing reaction of the tripping contacts of the relay

- Check the action time response in case one or two phase-ground voltage(s) are disappearing

7.3 Commissioning test

The commissioning test aims to verify the compliance of newly installed LFDD relays through the execution of a frequency drop test.

The commissioning test is performed when a new LFDD cubicle is installed.

External frequency signals are injected into the LFDD relay to check if the tripping command is correctly send and received by the relevant circuit breakers or interface cubicles within the acceptable operating time.

The commissioning test is considered successful if:

- The measured operating time is lower than 150 ms as specified in Article 19(1)(c) of the NC DCC. The operating time is referring to the action time of the LFDD cubicle including measurement and relay calculation time. The opening time of the circuit breaker is not included is the operating time.
- No bounce phenomenon has been observed (the contact behaviour of making and breaking several times in a short period of seconds before coming finally to rest in a determined position closed or open)

7.4 Periodical test

The periodical test aims to verify the compliance of existing LFDD relays through the execution of a frequency drop test.

The periodical test is considered successful if:

- The measured operating time is lower than 150ms as specified in Article 19(1)(c) of the NC DCC. The operating time is referring to the action time of the LFDD cubicle including measurement and relay calculation time. The opening time of the circuit breaker is not included is the operating time.
- No bounce phenomenon has been observed (the contact behaviour of making and breaking several times in a short period of seconds before coming finally to rest in a determined position closed or open).

A periodical test should occur at least every 10 years by the owner of the equipment. The TSO and relevant DSO should coordinate to organize such test.

If a frequency drop test has been executed on the considered relay in a maintenance context, the period of 10 years shall begin at the date the frequency drop test was executed.

8 Definitions and acronyms

Black Start capability: "black start capability" as defined in Article 2, 2nd al., 45, of the NC RfG, i.e. "The capability of recovery of a power-generating module from a total shutdown through a dedicated auxiliary power source without any electrical energy supply external to the power-generating facility".

CDSO = Closed Distribution System Operator

CE 11 AHDR: Synergrid working group: "Comité Electrique 11 Afschakelen, Heropbouwen, Délestage, Reconstruction"

CIPU = Coordination of the Injection of Production Units Contract

CREG = Commission for Regulation of Electricity and Gas

DSO = Distribution System Operator. Where DSO is used in this document, it is to be understood as the operator of a public distribution system. For the avoidance of doubt, a CDSO is not to be interpreted as a sub category of a DSO in this document.

DSP = Defence Service Provider: "defence service provider" as defined in Article 3, 2nd al., 1, of the NC ER, i.e. "a legal entity with a legal or contractual obligation to provide a service contributing to one or several measures of the System Defence Plan";

FGR = Federal Grid Code: royal decree of April 22th 2019 containing technical rules for the management of the electricity transmission system and the access thereto.

FRR = Frequency Restoration Reserves: operational reserves to restore f to its normal value and to restore the system imbalance to its normal value. Centralized control. Automatic or manual activation within 15 minutes

Houseload operation: "houseload operation" as defined in Article 2, 2nd al., 44, of the NC RfG, i.e. "The operation which ensures that power-generating facilities are able to continue to supply their in-house loads in the event of network failures resulting in power-generating modules being disconnected from the network and tripped onto their auxiliary supplies".

Island operation: "island operation" as defined in Article 2, 2nd al., 43, of the NC RfG, i.e. "The independent operation of a whole network or part of a network that is isolated after being disconnected from the interconnected system, having at least one power-generating module or HVDC system supplying power to this network and controlling the frequency and voltage."

LAN = Local area network

LFC area: Load frequency control area. For Belgium, this corresponds to the ELIA Control Area.

LFDD = Low Frequency Demand Disconnection

Minister for Energy: Minister or State Secretary responsible for energy matters.

NCC = National Control Centre

NC DCC = Network Code Demand Connection. COMMISSION REGULATION (EU) 2016/1388 of 17 August 2016 establishing a Network Code on Demand Connection

NC ER = Network Code Emergency and Restoration. COMMISSION REGULATION (EU) 2017/2196 of 24 November 2017 establishing a network code on electricity emergency and restoration

NC HVDC = Network Code HVDC: COMMISSION REGULATION (EU) 2016/1447 of 26 August 2016 establishing a network code on requirements for grid connection of high voltage direct current systems and direct current-connected power park modules

NC RFG = Network Code Requirements for Generators: COMMISSION REGULATION (EU) 2016/631 of 14 April 2016 establishing a network code on requirements for grid connection of generators

PGM = Power Generating Module

RCC = Regional Control Centre

Restoration Facility: Electricity generating facility, comprising one or more PGM connected to the same connection point on the transmission system and capable of providing a certain Restoration Service;

Restoration Plan: "restoration plan" as defined in Article 3, 2nd al., 5, of the NC ER, i.e. "All technical and organizational measures necessary for the restoration of the system back to normal state."

RSP = Restoration service provider: "restoration service provider" as defined in Article 3, 2nd al., 2, of the NC ER, i.e. "a legal entity with a legal or contractual obligation to provide a service contributing to one or several measures of the Restoration Plan."

RSP Contract: Contract established between ELIA and a Restoration Service Provider providing restoration service according to the Terms and Conditions to act as a Restoration Service Provider.

SCADA = Supervisory Control and Data Acquisition

SGU = Significant Grid User. An entity mentioned in article 2.2 of COMMISSION REGULATION (EU) 2017/2169 of 24 November 2017 establishing a network code on electricity emergency and restoration:

- a) existing and new power generating modules classified as type C and D in accordance with the criteria set out in Article 5 of Commission Regulation (EU) 2016/631
- b) existing and new power generating modules classified as type B in accordance with the criteria set out in Article 5 of Regulation (EU) 2016/631, where they are identified as SGUs in accordance with Article 11(4) and Article 23(4) of Commission Regulation (EU) 2017/2196;
- c) existing and new transmission-connected demand facilities;
- d) existing and new transmission connected closed distribution systems;
- e) providers of redispatching of power generating modules or demand facilities by means of aggregation and providers of active power reserve in accordance with Title 8 of Regulation (EU) 2017/1485; and

- f) existing and new high voltage direct current ('HVDC') systems and direct current-connected power park modules in accordance with the criteria set out in Article 4(1) of Commission Regulation (EU) 2016/1447.

Synergrid: Sector federation of electricity system operators (transmission and distribution).

TSO = Transmission System Operator: The Transmission System Operator operates the high-voltage grid and is responsible for the transmission of electricity. Electricity is transmitted via the high-voltage grid from the producers to the distribution system operators and major industrial users. In order to perform these tasks, the Transmission System Operator is also responsible for operating the system, whereby it is the entity responsible for providing access to the grid, monitoring the flows and ensuring round-the-clock management of the balance between production and consumption.

T&C RSP = Terms and Conditions to act as a Restoration Service Provider