ANNEX II

1. Introduction

This Annex sets out general information on operating the installations under the Scheme, as well as some specific technical requirements that they must meet, which will apply in parallel with the requirements of the Transmission and Distribution Rules or other Technical Guides or Manuals issued by TSOCy/ DSO.

2. Installation categories

Under the Scheme's guidelines, installations are grouped into distinct categories determined by their maximum **injection or absorption** to the transmission or distribution networks, as specified in the Construction or Operation License issued by CERA.

For this Annex, the following categories shall be distinguished:

1. Installations over 120 kWp, excluding self-consumer installations;
2. Installations up to 120 kWp, excluding self-consumer installations;
3. Self-Consumer Installations.

3. General Information (does not apply to self-consumer installations[1])

All facilities under the Scheme will consist of a RES production unit and an energy storage system, which will have a **common (bidirectional) connection point** to the transmission or distribution network.

The operation of installations for projects above 120 kWp will be based primarily on the instructions received from the TSOCy or the DSO regarding the injection/absorption of electricity from the storage system as well as the limitation to the maximum power output to the grid. It will be intended that the operation of the storage system is limited to one charge/discharge cycle every 24 hours.

The mode of operation of installations below 120 kW is determined by the investors themselves.

According to the Scheme's terms, the eligible installations will be able to absorb energy from the grid up to 25% on an annual net-metered approach, while the charging of storage systems for at least 75% will be done exclusively with energy produced by the RES unit that is part of the same installation. This requirement must be ensured by the equipment to be installed by investors as well as battery charging profile (1 cycle per day). Different term and conditions will be applied once those systems will participate directly to the electricity market after the termination of the contract. In those cases, new terms will be signed based on electricity market rules that will be in place.

[1] Technical Manual for Self-Consumption units is attached as Appendix 1

4. Installations over 120 kW (does not concern self-consumer installations)

4.1 Operation description

Installations over 120 kWp must have a Central Control System (connected to TSOcy or DSO SCADA) through which they will receive orders in relation to the operation of the installation. The Central Control System must be capable at all times of receiving and executing orders:

a) to limit the maximum total power output of the installation to the grid (curtailment).
b) for a specific level of injection/absorption of power from the storage system.
c) to activate/deactivate provision services.

The Central Control System of the installation should have control over both the RES unit and the storage system in order to achieve the desired level of power injection at the connection point based on the requirements.

The following operating modes of the installations are distinguished (excluding operating modes in cases of frequency deviation outside normal operating limits):

Number	RES production	Curtailment Command	Command for storage system		Notes
			Command to inject	Order for absorption	
1	Yes	No	No	No	In this scenario, there are no instructions from the TSO or DSO to limit the total power output or to manage specific levels of power injection/absorption by the storage system. All the energy generated by the RES plant is required to be fully injected into the grid.
2	Yes	No	Yes	No	The TSO or DSO mandates energy injection from the storage system concurrent with production from the RES plant. The Central Control System manages the overall power output to the grid. It adjusts the storage system's injection levels downward, if necessary, to prevent the facility's total power output from surpassing the licensed capacity.

3	Yes	No	No	Yes	In this case, the TSO or DSO shall command the storage system for a specific level of power absorption with the aim of absorbing part or all of the energy produced by the RES plant.	
4	Yes	Yes	No	No	The TSOCy or DSO issues an instruction to limit the overall power injection of the facility into the grid. The Central Control System then regulates the output power in accordance with the curtailment order. Curtailed energy can be stored subject to available storage system capacity.	
5	Yes	Yes	Yes	No	Not applicable.	
6	Yes	Yes	No	Yes	In this case, the TSO or DSO shall order to limit the total power output of the installation into the grid and at the same time a command to the storage system for a specific level of absorption. If the curtailed power exceeds the set absorption level, the Central Control System will adjust to increase the power absorption, ensuring the curtailed energy is utilized as much as possible.	
7	No	No	No	No	The installation is currently in standby mode and power should not be released (injected or absorbed) from the storage system unless directed by the TSOCy or DSO.	
8	No	No	Yes	No	In this case, the TSO or DSO shall command the storage system for a specific level of absorption.	
9	No	No	No	Yes	Not applicable	
10	No	Yes	No	No	Not applicable	
11	No	Yes	Yes	No	Not applicable	
12	No	Yes	No	Yes	Not applicable	

In all cases referred above involving a command from the TSOCy or the DSO to the storage system to absorb or inject power, the Central Control System shall ensure that the order is executed to the extent that the operating limits[2] on the maximum and minimum available energy of the storage system are not breached.

[2] The limits will be defined and present by the storage supplier and shall comply with the min/max requirements of the technical specification for the qualification of a system

4.2 Frequency control Requirements

The installations should be able to operate in “Limited Frequency Sensitivity Mode – Underfrequency” and “Limited Frequency Sensitivity Mode – Over frequency”, according to the specifications provided by the by the TSOCy and the DSO.

It is clarified that the above services must be provided in both "injection" mode and "absorption" mode, with the capability of switching to "injection" mode as well as from "stand by" mode in accordance with the time profile envelope provided in the T / D rules.

4.3 Other requirements

4.3.1 Storage system power

The storage system’s maximum input/output power should match the installed capacity of the RES unit. This alignment ensures that the storage system can fully utilize the licensed power for both absorbing the total energy produced by the RES system and injecting power as needed for at least two (2) hours for RES systems up to 1MW, three (3) hours for RES Systems up to 10MW, four (4) hours for Wind Systems and one (1) hour for Biomass plants.

4.3.2 Provided Signals

Through the Central Control System, signals and indications relating to the RES plant and the storage system, separately, as well as signals for the entire installation should be provided to the SCADA of the TSO or the DSO. Such signals include the running production of the RES plant, the running injection / absorption level of the storage system, the energy flow at the connection point, the charge level of the storage system (State of Charge of the battery), indication of the activation of the “Limited Frequency Sensitive Mode”, indications of switch locations and others.

4.3.3 Ramp Rate of the Storage System

The transition from one level of injection/absorption of power to another or from standby mode to a specific level of injection/absorption of power (and vice versa) should be made according to a specific rate of change to be determined (it must be possible to modify the relevant parameter). It must also be ensured that this rate is respected in cases of constraints due to the maximum/minimum energy availability of the electricity storage facility as well as in cases of transition from absorption to injection and vice versa.

4.3.4 Ramp Rate of the Installation

The maximum rate of change of the output power of the installation shall meet the requirements of the Transmission Rules, Distribution Rules, or relevant Technical Manuals. The requirements concern both cases of a sharp increase and cases of a sharp decrease in production from the RES plant (as per grid code requirements). The equipment must have appropriate control systems to meet this requirement by utilising the storage system.

5 Installations up to 120 kW (does not concern self-consumer installations)

For installations up to 120 kW, connection to the SCADA of the TSO or the DSO is not required. Therefore, there are no requirements for the ability to receive and execute commands for these installations by the TSO or the DSO and investors determine how

they are operated and managed. The equipment must ensure that in all operating modes, no energy is absorbed from the grid, and they have to follow the pre-defined load curve from TSOCy/DSO, which is subject to change one time per year based on the scheme's requirement with one cycle per day. Also, the total power output to the grid from the installation (storage and RES system) cannot exceed the licensed (allowed) power.

6 Self-consumer installations

It should be noted that in Electricity Market Directive, Art.15(5), where active customers owning an energy storage facility should: Have the right to a timely grid connection if requirements are fulfilled; Are not subject to double charges for self-consumption or when providing flexibility services; Are not subject to disproportionate licensing requirements or fees; Are allowed to stack services if technically feasible.

6.1 Operation

The operation of a storage system in combination with a self-consumer RES unit is allowed in order to increase the self-consumption of the premises. Therefore, during the normal operation of the RES unit and the storage system, the storage system can absorb energy exclusively from the RES unit. The energy stored in the storage system can be made available exclusively to power the self-producer’s loads. Therefore, the storage system will not exchange energy with the grid.

For self-consumer systems connected under zero export conditions to the grid, the connection and operation of a storage system is allowed in order to reduce curtailments in the energy produced from RES.

6.2 Normal operating conditions

During the normal operation of the RES unit and the storage system, as defined by the Transmission Rules and the Distribution Rules, the storage system must absorb energy exclusively from the RES unit and this energy must be available exclusively to supply the self-producer’s loads. Therefore, the storage system will not exchange energy with the grid, unless it will be instructed from DSO / TSOCy.

An example of a storage system management strategy in conjunction with self-producer is shown below:

1. When energy is exported from the electrical installation to the grid, charging of the storage system (absorption mode) from a RES unit is allowed.
2. When energy is imported from the grid into the electrical installation, the discharge of the storage system is allowed if the energy produced by the RES unit is not sufficient for the loads of the self-producer.
3. The simultaneous use of energy from the RES plant and from the storage system (injection mode) will be allowed (usually in cases of high demand).
4. When the storage system is fully charged **(or up to 80% to maintain the battery life at optimum status)** and energy is exported from the electrical installation to the grid, energy injection from the RES plant to the **grid is allowed.**

6.3 Off-grid mode (Islanded mode)

The operation of the storage system in islanded mode, during network supply interruptions for supplying the loads of the self-producer is not allowed. This provision may be amended following a decision of the DSO. In that case, the owner of the storage unit will have the option (at his own cost), to upgrade the installation (i.e. enable islanding mode) in order to operate in off-grid mode. By no means in off-grid mode power shall not be injected to the grid and that the premise is isolated from the grid.

6.4 Operation of the storage system under non-normal operating conditions

The storage system under non-normal operating conditions, as defined in the Transmission Rules and the Distribution Rules, shall operate in accordance with the arrangements specified in the respective technical guide for connection of the DSO.

All the above criteria will be checked during the scheme's application procedure and approved by the evaluation committee. Systems that fail to comply with the minimum requirements, and after clarifications that will be received if those are not satisfactory, will not be allowed to participate in the bidding process and will thus be disqualified from bidding submission.

Additional Documents attached:

Appendix 1 Technical Manual for Self-Consumption Units (net-billing scheme)
Appendix 2 Technical Specification of Li-Ion Battery Systems (more systems to be added upon request)
Appendix 3 Upon Request (Transmission Substation Equipment)
Appendix 4 Upon Request (LV Switchgear Specification)