Declaration of Electric Storage Operation Limited to and in Compliance with NEC Article 702 and Configurations 1A and 2A in Energy Storage Guidance Document

Purpose of Declaration

Historically, Distributed Energy Resources (DERs) were assembled from discrete components or functional assemblies where the logic and operational approaches could be seen and analyzed. Today, much of the functionality is handled by an on-board computer following firmware and software instructions in order to achieve the desired results. To verify these actions requires extensive detailed review of the operating manuals and often inquiries with the manufacturer.

Declarations are used to provide the information to ensure correct documentation and ratings are used for the "first use of a design" review, if needed, and to confirm subsequent applications for an approved package match the previously approved package in order to expedite approval. *An update to the firmware which modifies or adds operation modes and changes the required functionality is considered a facility modification and may be subject to a partial or full interconnection review*. This applies to all sources, whether generators or energy storage.

Under Xcel Energy's Guidance Document[1], Configuration 1A, the energy storage equipment is not capable of operating in parallel[2] with the grid. The declaration allows interconnection of the energy storage device without an interconnection review if this mode is secure from change. Under the Guidance Document, Configuration 2A, the energy storage equipment is not capable of operating in parallel with the grid. If the energy storage system is operated ONLY in a non-paralleling mode, and such operating mode is secured from changes by the customer[3], submittal of this signed declaration allows interconnection of the energy storage portion without an interconnection review by Xcel Energy. The renewable energy source portion of the facility, if added under the same application, must be reviewed and is subject to an Interconnection Agreement.

[1] "Xcel Energy Guidelines for Interconnection of Electric Energy Storage with the Electric Power Distribution System" – current version.
[2] See Definition section.
[3] Inaccessible may include locks or other physical security. Inaccessible and/or password protection must be restricted to the manufacturer/developer/installer.

Definitions

"Parallel Operation of Energy Storage" – a source operated in parallel with the grid when it is connected to the distribution grid and can supply energy to the customer simultaneously with the Company's supply of energy[4].

"Energy Storage Guidance Document" – Guidance document for the interconnection of electric storage with Xcel Energy's electric distribution system.

"**Operating Mode**" – a combination of the functionality in the physical configuration and the functionality in the software programming, some of which is not shown in the configuration diagram. Operating Mode is the combined function designed to achieve an Operating Objective that may vary with a change of settings. Operating Modes are established as a function, not by a diagram designation. Operating Modes include, but are not limited to, battery non-export, maximize self-consumption, maximize export, perform time shifting, and perform peak shaving. *A change of Operating Mode may constitute a change of Operating Objective*.

"**Operating Objective**" – the functional purpose of the DER operation achieved by the combination of the approved configuration and Operating Mode. *Any alterations to an Operating Mode may result in unacceptable changes to the Operating Objective as originally approved*. Such changes may render the facility ineligible for use without additional mitigations.

[4] A 1A or 2A energy storage system may charge from the utility as long as it cannot discharge or contribute fault current to the utility.

Declaration[5]

I, (print name and title of Installer/Developer)_____
declare that the electric storage system identified below complies with National Electric Code (NEC) Article 702 for optional standby power and complies with the applicable provisions of Xcel Energy Storage Guidance Document for systems that are not capable of Parallel Operation of Energy Storage. (Applicable sections of the Energy Storage Guidance Document are those addressing Configuration 1A or Configuration 2A.)

I further declare and/or agree that:

1. Applicable state or local safety inspections have been obtained, including specific inspection as to compliance to National Electric Code (NEC) Article 702 for optional standby power.

Installer/developer initials _____

2. System software and programming that is required to meet NEC Article 702[6] and Energy Storage Guidance provisions are inaccessible and/or password protected, with access restricted to manufacturer/developer/installer. This may include locks or other physical security or other means of securing the settings; or as mutually agreed upon on a case-by-case basis and identified in this declaration[7].

Installer/developer initials _____

3. Xcel Energy has the right to conduct an inspection to verify compliance at a later date if problems arise or indications of possible non-compliance to NEC Article 702 or the applicable Energy Storage Guidance Document provisions are present.

Installer/developer initials _____

Applications that cannot parallel and cannot be readily changed to parallel operation may interconnect without review or Interconnection Agreement as stated in Guidance.

[5] Declaration must be agreed to and this form signed for eligibility for the non-parallel storage portion waiver of Interconnection Agreement as described in the Guidance documents.
[6] If specific settings are required to achieve the 702 mode, these must be listed in Section 3 below.
[7] If the Operating Mode cannot be secured to ensure continued operation in a NEC 702 Standby compliant manner, the electric storage system is not eligible for use of the declaration in lieu of full interconnection review. A full interconnection review will examine all operating modes that are readily selectable and establish operating restrictions and mitigations to cover all selectable modes.

1. Electric Storage System (ESS) Details

This declaration covers the following electric storage system in whole or part as identified below:

Customer Information:

Name _____

Address _____

City _____ State _____ ZIP _____

Phone _____ Fax _____

Email (Optional)* _____

*A customer/developer email is needed to facilitate application related correspondence through our automated online application portal.

Energy Storage Facility Information:

Facility Name _____

Address _____

City _____ State _____ ZIP _____

Location _____ Premise _____

Customer ID _____

2. ESS Equipment Details

ESS Battery (B) Rating & ESS Inverter (I) Information

(I) Manufacturer	
(I) Model Number(s)	
(I) UL Listings	
(B) Energy Capacity (kWh)	
(I) Maximum Current at AC Terminals	
(I) Frequency at AC Terminals (Nominal)	
(B) Real Power, max continuous charge (kW)	
(B) Real Power, recovery charge rate after utility outage (kW)	
(B) Real Power, max continuous discharge (kW)	
(I) Real Power, peak output (kW)	
(I) Peak Output Duration Capability (sec)	
(I) Apparent Power, max continuous for charging (kVA)	
(I) Apparent Power, peak during discharge (kVA)	
(I) Power Factor Output Range (+/- range)	+/-
(I) Power Factor Capability at full rated real power (+/- range)	+/-
(I) Charging: using rectifier or inverter	
(B) Charge Rate kW (Maximum continuous)	
(B) Charge Rate kW (Recovery charge rate)	
(I) Firmware version	
(I) Operating Modes available	
(I) Operating Modes enabled	

3. Additional ESS Hardware: Description, Model and Part Number and General Specifications

(Examples: charge controller, external auto transfer switch, etc.)

Model Number(s)	
Model Name(s)	
UL Listing(s)	
Firmware Version	

4. Summary of Energy Storage Programming and Operation

(Include mode selection and specific settings required)

When ESS is transitioning the loads between off-grid and on-grid, the following steps will occur:

Prior to grid outage, describe system operation	
Detail steps taken to disconnect from the grid to meet NEC 702	
Detail steps taken to reconnect to the grid to meet NEC 702	
Operating Modes available	
Operating Modes enabled	

I, (print name and title of Installer/Developer)_____
certify that I have personal knowledge of the facts stated in this declaration and have the authority to make this declaration on behalf of the Customer. I further certify that all of the statements and representations made in this declaration are true and correct.

Installer/Developer Signature_____

Date_____

Residential Customers:

I, (print name of Customer)_____
authorize the above identified Installer/Developer to represent the declarations on my behalf and will operate and maintain the system within the requirements set forth in this declaration for the life of the system in this authorized configuration.

Customer Signature_____

Date_____