

# Energy Storage Post-Installation Inspection and Discharge Testing Protocol

## Pre-Inspection Discharge Data

Prior to the inspection, the Program Administrator (PA) will require documentation demonstrating system performance:

1. Over the course of one week; and
2. Over the duration specified on the application for a full, uninterrupted system discharge.

## One-Week of Operational Data

The following information must be provided to the PA:

- a. A unique system identifier (e.g. battery/system serial number or MAC address)
- b. Interval data (no less than 1 minute and no greater than 15 minutes) with the following information for each interval recorded over the test period:
  - Date and time stamps
  - kW and/or kWh<sup>1</sup> charged and discharged or offset
  - State of charge
- c. The inspector will verify standby, charging and discharging modes, and if coupled with wind generation, will verify if the energy storage system is able to handle hundreds of charge-discharge cycles daily.

## Continuous Discharge Test

The PA will require either option 1 **or** option 2 below to satisfy the continuous discharge testing requirement. For either option, the data must include a unique system identifier, interval data (no less than 1 minute and no greater than 15 minutes) with date and timestamps, kW and or kWh<sup>2</sup> and state of charge for each interval recorded over the test period.<sup>3</sup>

**1) Field Test:** Continuous<sup>4</sup> discharge test of the system located at the SGIP project site, measuring actual energy storage system output over the discharge duration specified on the application. The continuous discharge field test is to be completed by the project developer, System Owner or Host Customer prior to the field verification visit.

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<sup>1</sup> For AC-based systems, kWh must be measured on the AC connection.

<sup>2</sup> If kW or kWh data is not available then voltage and current should be provided.

<sup>3</sup> Data will be used to establish the average capacity of the energy storage system.

<sup>4</sup> Continuous discharge means discharging at its rated capacity from the fully charged state without charging over the discharge duration specified on the application documentation and equipment specifications.

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**2) Factory Test<sup>5</sup>:** For battery systems, manufacturer and/or system integrator continuous discharge test report of the same make and model as the unit(s) inspected in the field must be provided. Factory reports must also include description of testing approach or methodology and location of test.

The results of the continuous Field or Factory discharge test over the specified discharge duration must be within +/- 5% of the SGIP incentivized capacity in the incentive claim documentation. Projects yielding test results outside of the +/-5% threshold are subject to capacity and incentive adjustments and may be subject to additional eligibility requirements.

### **Pre-Inspection Verification**

Applicants must ensure the following numbered items prior to the on-site field inspection visit.

1. Verification that all necessary equipment information (e.g., make, model, kW and/or kWh capacity, etc.) is easily visible either from the outside or on the interior of the system at the time of inspection. If access to the interior of the system is necessary, a qualified technician must be present to facilitate verification.
2. Verification that the energy storage system is configured to operate in parallel with the grid, load shave, and serve on-site load by supplying one or more of the following:
  - a. Reviewing the Interconnection Agreement or Permission to Operate (PTO) letter (if applicable)
  - b. Charge and discharge data for the unit installed and comparison to interval data from the utility
  - c. Securing a copy of the electrical single line diagram for the project and using it to verify against the field connection during the inspection
  - d. Requesting that there be a field technician at the site inspection with a user interface such as a laptop to demonstrate parallel operation during the inspection.

### **Field Post-Installation Inspection**

Field (or on-site) Post-Installation Inspections will be conducted by parties responsible to the PAs, either PA employees or inspectors contracted to the PAs. For both on-site and virtual inspections, the inspector will visually inspect the system to verify the device(s) can service onsite load, can operate in parallel with the grid, and meet(s) SGIP technical eligibility requirements. The inspector will also confirm the energy storage system equipment is permanently installed and is of the same make, model, capacity, and configuration that is

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<sup>5</sup> A factory test is a test coordinated and performed by the manufacturer at the manufacturer's testing facility under controlled conditions.

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specified in the application documentation.<sup>6</sup> While on site during the inspection, the inspector may be required to witness a discharge demonstration of the system, performed on-site or remotely by the project Developer, System Owner or Host Customer.<sup>7</sup>

### Virtual Post-Installation Inspection

If a project qualifies<sup>8</sup> for a virtual Post-Installation Inspection, virtual inspections may be conducted by the Host Customer, System Owner, Applicant, or Developer of the project. In lieu of an on-site inspection requiring a site visit, the PA or its 3<sup>rd</sup> party consultant will require a video along with geotagged<sup>9</sup> photos from the Host Customer site. The video and associated photos may be completed on any day after the PTO has been issued by the utility's interconnection department. The Applicant will have a 20-day period to submit the required material once the notification of virtual Post-Installation Inspection has been issued by the PA.

Virtual Post-Installation Inspections must provide the following:

1. A continuous video of the project site, battery, and other electrical equipment; and
2. Individual geotagged<sup>10</sup> photos of the project site, battery, and other electrical equipment associated with the energy storage system (see below for more detailed information regarding requirements for video and photograph capture).

The following information must be included in all virtual Post-Installation Inspections:

- a. Continuous video to include street view of the house or building with the address number clearly visible.
- b. Continuous video to include overall layout of the system. If the entire system is not in one place, the video and photographs must capture the overall layout of each subsystem, followed by the close-up shots of each piece of equipment in that subsystem.
- c. Continuous Video along with Geotagged still photo of Nameplate confirming make and model of the battery.

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<sup>6</sup> If there is additional generation on-site behind the same meter as the energy storage system, the inspector may confirm relevant equipment information of the generator(s) (e.g., type, fuel, capacity, make, etc.).

<sup>7</sup> Applicants will be informed prior to the inspection should the inspector be required to witness a discharge demonstration. Physically disconnecting the system from the grid in order to demonstrate a discharge does not satisfy this requirement.

<sup>8</sup> Virtual Post-Installation Inspections are eligible after completion of six total successful on-site inspections based on the *SGIP Field Inspection Sampling Protocol*, however, eligibility is still subject to PA discretion.

<sup>9</sup> An electronic tag that assigns a geographical location to a photograph or video.

<sup>10</sup> While taking photos the location settings of the camera should be in ON position such that each photo will have a location tag attached to it which will be verified by the inspector.

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- d. Continuous Video along with Geotagged still photo of Nameplate confirming make and model of the inverter (if applicable). Continuous video along with Geotagged still photo of serial number for battery.
- e. Continuous video along with Geotagged still photo of serial number for inverter (if applicable).
- f. Continuous video along with Geotagged still photo of equipment display panels showing power, energy, or battery/inverter charge status readings for battery.
- g. Continuous video along with Geotagged still photo of equipment display panels showing power and/or energy for solar PV (if applicable).
- h. Continuous video along with Geotagged still photo to include exterior view of all the electrical panels (e.g., the subpanel, backup loads panel, protected loads panel, and main service panel) and a view of the inside of each panel.
- i. Continuous video along with Geotagged still photo of Utility Smart Meter with the meter ID number clearly visible.