

EXHIBIT F-2
PERFORMANCE TESTING PROCEDURES (BESS)

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1.0 EXHIBIT INFORMATION

1.1 Project Description

1.1.1 See Project Information of Attachment E (*Economic and Technical Data Input Form*).

1.2 References

1.2.1 This Exhibit shall also be used in conjunction with other Exhibits, as applicable. The Specifications provided herein are intended to supplement other Exhibits but not necessarily duplicate; any Work exhibited in one and not in the other shall be executed as if it had been set forth in all.

1.3 Definitions

1.3.1 Unless defined in Exhibit F-1 (*Scope of Work (BESS)*), terms that begin with an upper case shall have the meaning defined in the Agreement.

1.3.2 See Exhibit F-1 (*Scope of Work (BESS)*) for respective meanings of terms used in this Exhibit.

2.0 PERFORMANCE TESTING

Contractor shall perform site Performance Testing to verify the supply of Equipment by the Contractor meets Performance Guarantees as defined in the Agreement. The nominal charge and discharge rate and power factor for this Project at the POI shall be as specified in Storage Section of Attachment E (*Economic and Technical Data Input Form*). This exhibit supplements the testing set forth in Attachment F – Technical Specifications – Exhibit 6 (*PV Capacity Test*) for all PV coupled BESS installations.

2.1 Site Performance Tests

2.1.1 Nominal Capacity Test: In order to determine the average power and energy that can be discharged by the BESS (the “Project Capacity”), Contractor shall conduct a test in which the BESS is discharged at the nominal discharge rate setting for the BESS (the “Capacity Test”). The discharge duration shall exceed the minimum duration requirement at the nominal discharge rate specified. All values mentioned in Section 2.2.4 shall be recorded by the EMS during the entirety of the Capacity Test for use in the Charge Time Test. The MWh of energy discharged as measured by the BESS meter at the POI (net of auxiliary loads) (and the corresponding amount of power determined by dividing the foregoing by BESS duration in hours) shall be the “Capacity” of the BESS. The Capacity Test shall be performed to complete a total number of charge-discharge cycles as required by the Owner or as defined in the Agreement, with rest periods as recommended by the manufacturer or site design parameters and as agreed upon with Owner. The lowest Capacity of the BESS from any multiple test results shall be the final BESS Capacity result. The BESS Capacity shall be compared to the Capacity requirement as shown as the Power/Capacity Guarantee Performance Threshold in Section 3.1 of this Exhibit to determine whether Liquidated Damages as specified in Section 3.2 of this Exhibit are owed for failing to achieve the required Performance Threshold. If the measured Capacity is greater than the Performance Threshold, the BESS Capacity shall be set equal to the Performance Threshold requirement. This test shall be performed yearly.

- 2.1.2 Charge Time Test and Charge Rate: In order to confirm the amount of time it takes the BESS to charge (the “Charge Time”), Supplier shall conduct a test to determine the actual amount of time in hours that the BESS requires to achieve the maximum State of Charge starting from minimum State of Charge (the “Charge Time Test”). The amount of time required during the Charge Time Test to achieve a maximum State of Charge shall be the BESS’s Charge Time. The Charge Time requirement shall be satisfied if the Charge Time does not exceed the Charge Time Guarantee Performance Threshold as specified in Section 3.1 of this Exhibit. The Charge Time requirement shall be increased by 0.2 hours if the interconnection process determines that the load at the POI may not exceed the BESS Capacity by an amount of power equal to the Auxiliary Load’s consumption. To confirm the charge rate for the BESS (the “Charge Rate”), Contractor shall calculate the average Charge Rate based on the amount of energy charged and the amount of time required to charge such energy from a minimum State of Charge to the maximum State of Charge as measured during the Charge Time Test. The Charge Rate shall be compared against the Charge Rate requirement as shown as the Charge Rate Guarantee Performance Threshold in Section 3.1 of this Exhibit to determine if the BESS satisfies the Charge Rate requirement. If the Charge Time requirement increased by 0.2 hours as described above, the Charge Rate requirement shall be decreased proportionally. For PV coupled BESS, charging shall be limited to PV generation sources with charge times corresponding to PV generation capacity.
- 2.1.3 Availability Test: In order to ensure that the BESS is fit for commercial operation, Contractor shall conduct a 120-hour continuous run test of the BESS to measure the availability of the BESS Capacity to operate in accordance with the technical capabilities of the BESS (the “Availability Test”). During the Availability Test, Owner shall have control over the BESS and shall select the set points for the BESS’s operation in a manner consistent with the technical specifications for the BESS, the Charge Rate, and BESS Capacity determined under the Charge Time Test and Capacity Test. Contractor shall record the performance of the BESS during the Availability Test, including the MWh requested to be charged and discharged, the actual MWh discharged at the POI during the time period requested, and any outages or other failures that occur. The MW/MWh of the BESS affected by an outage or other failure during a Settlement Interval (as defined below) shall be deemed unavailable during the period that the outage or other failure exists. In addition, if the BESS fails to deliver the required energy or charge the required energy pursuant to any set point selected by Owner, the BESS shall be deemed to be partially unavailable during the period when the percentage difference in MW between the required output/input and actual output/input exceeds plus or minus 2%. Set points shall only be adjusted at the beginning/end of a Settlement Interval. The availability of the Project (“Project Availability”) shall be determined in accordance with the following formula:

$$\text{Project Availability} = \left(\sum_{i=1}^n CA_i \right) / n$$

Where:

n = the total number of Settlement Intervals during the Availability Test

i = each Settlement Interval during the Availability Test

Settlement Interval = a 5-minute settlement interval

CA_i = with respect to Settlement Interval “i”, 1 – (Unavailable Capacity/ Project Capacity)

Unavailable Capacity = with respect to Settlement Interval “i”, the number of MW/MWh of the Project Capacity, minus the BESS Capacity (subject to the same being reduced to take into account the portion of the BESS Capacity that is unavailable to charge or

discharge as a result of an outage or other failure), when the BESS Capacity is less than the Project Capacity.

BESS Project Availability shall be compared against the Availability Test requirement as shown as the Availability Guarantee Performance Threshold in Section 3.1 of this Exhibit to determine whether Liquidated Damages as specified in Section 3.2 of this Exhibit are owed for failing to achieve the required Performance Threshold.

- 2.1.4 Nominal Round Trip Efficiency (RTE) Test: In order to determine the efficiency of the BESS to charge energy and return such energy through a discharge, the Contractor shall conduct a test starting at the minimum State of Charge and begin charging the BESS at the nominal charge rate until it achieves maximum State of Charge, and the BESS shall then discharge energy from the same State of Charge at the nominal discharge rate until it returns to minimum State of Charge (the “Nominal RTE Test”). The amount of energy charged and discharged during the Nominal RTE Test shall be measured by the BESS meter at the POI, unless otherwise stated. The Auxiliary Load consumed during the test, as measured by the Auxiliary Load meter, shall be included in the charging energy. The BESS’s efficiency shall be determined by dividing the amount of energy discharged during the Nominal RTE Test by the amount of energy charged during the Nominal RTE Test (the “RTE”). The RTE Test may be performed in conjunction with the Capacity Test. The Nominal RTE Test shall be performed to complete a total number of charge-discharge cycles as required by the Owner or as defined in the Agreement, with rest periods as recommended by the manufacturer or site design parameters. The lowest RTE of the BESS from any multiple test results shall be the final BESS RTE result. The RTE shall be compared to the RTE requirement as shown as the RTE Guarantee Performance Threshold in Section 3.1 of this Exhibit to determine whether Liquidated Damages as specified in Section 3.2 of this Exhibit are owed for failing to achieve the required Performance Threshold. This test shall be performed yearly.
- 2.1.5 Auxiliary Load Test: In order to determine the load consumed by the BESS, Contractor shall conduct a test to determine the amount of energy consumed by the BESS’s auxiliary systems (the “Auxiliary Load Test”). The amount of energy consumed by the BESS’s auxiliary systems (the “Auxiliary Load”) shall be determined based on the power (kW) consumed during the entire duration of the testing at full charge rate and at full discharge rate. The measured Auxiliary Load shall be adjusted for ambient conditions based on correction curves provided by Contractor and shall be approved by Owner. The Auxiliary Load shall be measured and metered through a separate meter for the Auxiliary Loads provided by the Contractor. The Auxiliary Load shall be compared against the Auxiliary Load requirement as shown as the Auxiliary Load Guarantee Performance Threshold in Section 3.1 of this Exhibit to determine if the minimum Performance Threshold has been achieved and for determining whether Liquidated Damages as specified in Section 3.2 of this Exhibit are owed for failing to achieve the required Performance Threshold.

- 2.1.6 Ramp Rate Test: In order to determine the ability of the BESS to ramp the BESS’s power output between different set points, Contractor shall conduct a test to determine the response time of the BESS to changes between power output levels (the “Ramp Rate Test”). Owner shall select up to six (6) starting set points and an equal number of ending set points for the BESS that shall be used for purposes of the Ramp Rate Test. Test points shall be selected and communicated to Contractor during development of the Test Plan. Contractor shall measure the time required to ramp power output between each starting and ending set point. The change in power output shall be divided by the period required to make such change in power output to determine the ramp rate for each change in set point and the average ramp rate per minute determined by averaging the results across all starting and ending set points shall be the BESS’s ramp rate (the “Ramp Rate”). The Ramp Rate shall be compared against the Ramp Rate requirement as shown as the Ramp Rate Guarantee Performance Threshold in Section 3.1 of this Exhibit to determine if the BESS satisfies the Ramp Rate requirement. Ramp Rate shall be based on the time from when the command is written to the EMS, according to Contractor-provided logging, until the system reaches set point according to metering at the POI. The system shall be considered to have reached the setpoint value as soon as the meter registers a steady value within 2% of the setpoint value.
- 2.1.7 Response Time Test: In order to determine the ability of the BESS to respond to commands from an off-line state, Contractor shall conduct a test to determine the response time of the BESS to go from an off-line state to the maximum discharge rate for the BESS and from an off-line state to the maximum charge rate for the BESS (the “Response Time Test”). The off-line state is defined by the AC breakers of the inverters being open and auxiliary power continues to be supplied to the system. The amount of time it takes the BESS to change from an off-line state to charging at the maximum charge rate and the amount of time it takes the BESS to change from an off-line state to discharging at the maximum discharge rate shall each be tested independently (each, a “Response Time”). The Response Time shall be compared against the Response Time requirement as shown as the Response Time Guarantee Performance Threshold in Section 3.1 of this Exhibit to determine if the BESS satisfies the Response Time requirement.
- 2.1.8 Standby Self-Discharge Rate Test: In order to determine the rate at which the BESS self-discharges its stored energy when synchronized to the grid, Contractor shall conduct a test to determine the lost energy from the BESS while the BESS is synchronized to the grid in standby mode, and all energy sources and parasitic loads except for auxiliary power, which shall continue to be provided from the grid (the “Standby Self-Discharge Rate Test”). The Self-Discharge Rate Test shall not be conducted until at least six hours after any charging or discharging of the BESS. The Standby Self-Discharge Test shall be conducted over a period of 48 hours starting with the BESS at a state of charge that is 5% below the maximum State of Charge. After 48 hours, the State of Charge shall be read by the EMS and the results of the Self-Discharge Rate Test shall be extrapolated to apply to a 30-day period (the “Standby Self-Discharge Rate”) for purposes of determining whether the Standby Self-Discharge Rate requirement as shown as the Standby Self-Discharge Rate Guarantee Performance Threshold in Section 3.1 of this Exhibit has been satisfied. Contractor and Owner may mutually agree to test a subset of the BESS to reduce testing time.

- 2.1.9 Noise Ordinance Compliance Test: In order to determine that the BESS can operate in compliance with the applicable noise ordinance, an independent third-party shall, at Contractor’s expense, conduct test(s) to determine the BESS’s operating noise levels (the “Noise Ordinance Compliance Test”). The Noise Ordinance Compliance Test(s) shall be conducted at the system level and at Owner-specified operating modes. The BESS’s operating noise levels shall not exceed the noise limit in the Agreement at the property line (the “Noise Ordinance Compliance Requirement”) during any Noise Ordinance Compliance Test. The results of the Noise Ordinance Compliance Test(s) shall be used to determine whether the Noise Ordinance Compliance Requirement has been satisfied.
- 2.1.10 Subsystem Tests: In order to determine proper functioning of the BESS’s subsystems, Contractor shall conduct isolated subsystem tests to determine if the BESS’s HVAC, lighting, station/backup batteries perform as intended consistent with the manufacturer’s specifications. Subsystem Tests shall be performed at the Project Site prior to tests tied to Performance Guarantees.
- 2.1.11 Other Owner Required Tests: The following tests shall be performed as outlined in Owner’s offtake agreement:
- AGC Discharge Test
 - AGC Charge Test
 - Reactive Power Production Test
 - Reactive Power Consumption Test

2.2 General Test Requirements

- 2.2.1 Test Plan: Contractor shall prepare and submit to Owner a proposed plan, including Performance Test Procedures, and schedule ninety (90) Calendar Days prior to performing the Performance Tests specified in Section 2.1 of this Exhibit (“Contractor’s Proposed Test Plan”). The Contractor’s Proposed Test Plan shall describe, with supporting detail, the actions, processes, protocols, and schedules for the performance and completion of the Performance Tests in accordance with this Exhibit and the requirements of the Agreement. Within ten (10) Business Days after Owner’s receipt of Contractor’s Proposed Test Plan, Owner shall notify Contractor that (i) the Proposed Test Plan is accepted, and is now considered final, or (ii) the Proposed Test Plan is not accepted. If Owner does not accept Contractor’s Proposed Test Plan, then Owner and Contractor shall immediately commence work in good faith to develop a test plan that shall be acceptable to both parties. Failure by Owner to provide a response to Contractor’s Proposed Test Plan shall not constitute acceptance of such Contractor’s Proposed Test Plan. The final approved version of the Contractor’s Proposed Test Plan shall be the “Final Test Plan.” If any parameters set forth in the Final Test Plan vary from those set forth in this Exhibit, the time periods set forth in the Final Test Plan shall govern.
- 2.2.2 Test Date: Contractor shall be given at least ten (10) Business Days of advance notice to commence any Performance Test. Owner shall have the right to be present (and have any Owner’s representative present) during the performance of each Performance Test. Contractor shall give Owner and Owner’s representative full and unrestricted access to observe the conductance of any Performance Test and unrestricted access to inspect the instrumentation necessary for Performance Test data acquisition prior to commencement of any Performance Test; provided that Owner and Owner’s representative comply with the health and safety procedures applicable to such Performance Test.

2.2.3 Test Conditions:

- At all times during the conductance of a Performance Test, the Project shall not be operated with abnormal operating conditions such as (i) unstable load conditions; (ii) operation outside of manufacturers' recommendations; (iii) operation outside of regulatory restrictions; or (iv) curtailment. If abnormal operating conditions occur during a Performance Test, Owner or Contractor may elect to postpone or reschedule all or a portion of such Performance Test in its reasonable discretion.
- Prior to testing, the EMS shall be successfully configured to receive data from the BMS, exchange DNP3 data with the SCADA device, transfer data to the database server for calculation, and record and archive data points. Communications protocols and communications connection requirements shall be modified, if necessary, to comply with NERC CIP standards.
- RTU testing shall be successfully completed prior to any Performance Testing. The interface between the RTU and SCADA system shall be fully tested and functional prior to starting any testing, including verification of the data transmission pathway between the RTU and EMS interface and the ability to record SCADA data. Communications protocols and communications connection requirements shall be modified, if necessary, to comply with NERC CIP standards.
- Prior to testing, commissioning shall be successfully completed per manufacturer guidance on all applicable installed Equipment, including verification that all controls, set points, and instruments of the EMS are configured.
- Owner has the right to request preliminary runs as part of any Performance Test prior to commencement of any test.

2.2.4 Data Recording: Contractor shall record all parameters at two (2) second intervals. Data includes, but is not limited to:

- Time.
- Total electrical energy discharged, measured at the POI (kWh).
- Total reactive energy discharged, measured at the POI (VARh).
- Total electrical energy used to charge the BESS, measured at the POI (kWh).
- Total reactive energy used to charge the BESS, measured at the POI (VARh).
- Station auxiliary power and energy, measured at BESS auxiliary meters (kW and kWh).
- Total electrical energy stored in the BESS (kWh).
- Total usable electrical energy stored in the BESS accounting for system losses (kWh).
- Ratio of usable electrical energy to total electrical energy stored in the BESS (%).
- BESS State of Charge (SOC).

- Battery temperatures (maximum, minimum, average, and standard deviation).
 - Battery enclosure temperatures (maximum, minimum, average, and standard deviation).
- 2.2.5 Site Conditions Data Recording: Contractor shall record all conditions at the Project Site at thirty (30) second intervals. Data includes, but is not limited to:
- Relative humidity (%).
 - Barometric pressure (inches Hg) near the horizontal centerline of the Project Site.
 - Ambient air temperature (°F).
- 2.2.6 Test Records: Contractor shall record the results of each Performance Test and provide all raw data, records and results associated with each Performance Test to Owner within four (4) Business Days following completion of such Performance Test. During the performance of each Performance Test, the Project shall be functioning in a manner to permit Owner to remotely monitor, observe, and independently verify the performance of the BESS through the Project’s remote monitoring and control systems.
- 2.2.7 Incomplete Test: If any Performance Test is not completed in accordance with the Final Test Plan and this Exhibit, Owner may in its sole discretion: (i) accept the Performance Test results up to the time the Performance Test stopped; (ii) require that the portion of the Performance Test not completed, be completed within a reasonable specified time period; or (iii) require that the Performance Test be entirely repeated.
- 2.2.8 Final Report: Within ten (10) Business Days after the completion of a Performance Test (including a retest), Contractor shall prepare and submit to Owner a written report of the Performance Test. At a minimum, the report shall include:
- Description of the Final Test Plan applicable to such Performance Test.
 - Record of the personnel present during all or any part of the Performance Test, whether serving in an operating, testing, monitoring or other such participatory role.
 - Documentation confirming that the Performance Test was successfully run.
 - Record of any unusual or abnormal conditions or events that occurred during the Performance Test and any actions taken in response thereto.
 - Measured Performance Test data.
 - Whether the Performance Test demonstrated that the Project achieved the applicable Performance Threshold for a Performance Guarantee, including supporting calculations, and if the Project did not achieve the Performance Threshold to such Performance Guarantee, the schedule for any rework and subsequent testing in order for Contractor to achieve the applicable Performance Guarantee.

- Contractor’s statement of either Contractor’s acceptance of the Performance Test or Contractor’s rejection of the Performance Test results and reason(s) therefore. Within ten (10) Business Days after receipt of such report, Owner shall notify Contractor in writing of either Owner’s acceptance of the Performance Test results or Owner’s rejection of the Performance Test results and reason(s) therefore. Contractor shall re-perform any Performance Test if the Performance Test results were rejected by either party.
- 2.2.9 Instrumentation and Metering: The Project’s installed metering equipment at the POI shall be used to record all energy discharged and charged by the Project, unless specifically stated to the contrary in this Exhibit. Contractor shall integrate all instrumentation and data collection equipment, by others, into their EMS as required to perform the Performance Tests. Instrumentation shall include all instruments permanently installed at the Project and the temporary instruments suggested by Contractor or deemed necessary by Owner in its sole judgement. Within thirty (30) Calendar Days of Owner’s receipt of Contractor’s Proposed Test Plan, Owner shall provide Contractor with written notice of the temporary calibrated instrumentation that shall be used during the Performance Tests. Wherever possible, the instrumentation, metering and data collection equipment that shall be used after the Project achieves Substantial Completion for monitoring and controlling the operation of the Project shall be used for the Performance Tests. Contractor shall calibrate or cause to be calibrated all such instrumentation, metering, and data collection equipment no more than three months prior to the date of the applicable Performance Test. Copies of all calibration sheets shall be provided to Owner at least five (5) Business Days prior to the commencement of the first Performance Test.
- 2.2.10 Costs and Energy Scheduling: Contractor shall be responsible for all costs incurred by it in conducting the Performance Tests. Owner shall be responsible for coordinating with the interconnecting utility the supply of all energy required for any Performance Test and shall receive the proceeds from the sale of any energy output during a Performance Test. Contractor shall provide all information necessary and requested by Owner to permit Owner to schedule the supply and delivery of energy from and onto the grid.
- 2.2.11 Retests: If Contractor fails to achieve the minimum Performance Threshold for any Performance Guarantee, Contractor shall make such necessary corrections and/or repairs to remedy the failure and shall re-perform the relevant Performance Test until the minimum Performance Threshold is achieved. If the Project does not achieve the Performance Threshold applicable to such Performance Test, Contractor shall pay the Liquidated Damages set forth in Section 3.2 of this Exhibit.
- 2.2.12 Excusable Event/Force Majeure Event: If an Excusable Event, Force Majeure Event, action or inaction of Owner or grid caused event that would adversely impact a Performance Test occurs during the performance of the Performance Test, the Performance Test shall be suspended for the duration of the Excusable Event, Force Majeure Event, action or inaction of Owner and shall be resumed after the Excusable Event, Force Majeure Event, or action or inaction of Owner is no longer adversely impacting the Performance Test.

3.0 PERFORMANCE GUARANTEES AND LIQUIDATED DAMAGES

3.1 Performance Guarantees

- 3.1.1 Contractor guarantees that the Project shall meet the Performance Guarantees and associated Performance Thresholds as listed in Storage Section of Attachment E (*Economic and Technical Data Input Form*).

3.2 Liquidated Damages

- 3.2.1 If Contractor fails to achieve the Performance Threshold applicable to such Performance Guarantee, then Contractor shall pay Liquidated Damages for the applicable Performance Guarantee(s) as set forth in Storage Section of Attachment E (*Economic and Technical Data Input Form*) until Contractor has re-tested and met the Performance Threshold for such Performance Guarantee.