ATTACHMENT O  
CONTROL SYSTEM ACCEPTANCE TEST CRITERIA

**[THIS ATTACHMENT WILL NEED TO BE MODIFIED**

**BASED ON THE RESULTS OF THE IRS]**

a. The Acceptance Test for the Facility will be conducted, following installation of the Facility. The Acceptance Test procedures will be in accordance with criteria set forth herein. The Acceptance Test shall be performed in accordance with Good Engineering and Operating Practices and demonstrate to Company’s satisfaction that the Facility and the interconnection portion of the Facility, including Company-Owned Interconnection Facilities, have met the provisions of Article 8 (Company Dispatch) and Section 3 (Performance Standards) of Attachment B (Facility Owned by Seller).

b. Acceptance Test procedures will be developed by Seller for the Company’s review at least sixty (60) Days in advance of performing the tests based on the date provided by Seller.

c. The procedures will include, but not be limited to, demonstration of the functional requirements of the Facility defined in Article 8 (Company Dispatch) and Section 3 (Performance Standards) of Attachment B (Facility Owned by Seller) such as, but not limited to:

i. Interconnection equipment and communications to support remote monitoring of the Facility and control of Facility breakers

ii. Droop characteristic and change of frequency control / response modes (if applicable)

iii. Real power delivery under remote Company Dispatch, Active Power Dispatch. For facilities with directly controlled storage, the storage will be operated to perform at least two full charging/discharging cycles.

iv. Accurate provision of limits for Minimum and Maximum Dispatch (Power Possible, Minimum load capability)

v. Ramp rates for controlled actions

vi. Control of Facility breakers

vii. Voltage regulation

vii. Grid forming and Black start (if applicable)

d. Testing of primary and redundant communications between Company System Operator and Facility Operator

e. The actual dynamic response of the Facility equipment will be confirmed to allow Company transient stability model to reflect the as-left conditions of the unit. During the commissioning the following will be required:

i. A final review by Company engineers of the equipment installed to control the operation and protect the plant will be needed upon installation and prior to the start of commercial operation.

ii. The review will include off-line tuning and testing results of the excitation and governor control and/or control system and the IEEE block diagram utilized for the PSS/E dynamics program.

iii. During the commissioning of the actual Facility, equipment system testing will be conducted to ensure that similar, well damped, expected responses will be produced by the facility. The as-left parameters obtained from real and reactive local response tuning will be determined for use in the Company planning model. The Seller will provide an estimate of the earliest date for the Acceptance Test at least ninety (90) Days before the date.

f. The Acceptance Test procedures for the Facility will be mutually agreed upon between Seller and Company prior to conducting the test.

g. When the Facility is ready for the Acceptance Test, Seller shall notify Company at least seven (7) Days prior to the test and shall coordinate with Company. Seller shall perform and Company shall monitor such test no earlier than seven (7) Days from Company’s receipt of such notice.

h. The Control Acceptance Test is to be successfully completed prior to the Commercial Operation Date.

Examples of the type of tests conducted to meet the aforementioned objectives may include, but are not limited to the following:

On-site Tests:

1. SCADA Test to verify the status and analog telemetry, and if the remote controls between the Company's EMS and the Facility are working properly end-to-end.

2. Dispatch Test to verify if the Facility's active power limit controls and the Active Power Control Interface with the Company's EMS are working properly. The Test is generally conducted by setting different active power setpoints and limits and observing the proper dispatch at the appropriate ramp rate limiting of the Facility's real power output.

3. Control Test for Voltage Regulation to verify the Facility can properly perform automatic voltage regulation as defined in this Agreement. Test is generally conducted by making small adjustments of the voltage setpoint and verifying by observation that the Facility regulates the voltage at the point of regulation to the setpoint by delivering/receiving reactive power to/from the Company System to maintain the applicable setpoint according to the reactive power control and the reactive amount requirements of Sections 3(a) (Reactive Power Control) and Section 3(b) (Reactive Power Characteristics) of Attachment B (Facility Owned by Seller) to this Agreement.

4. Frequency Response Test to verify the Facility provides a frequency droop response as defined in this Agreement. Test is generally conducted by making adjustments of the frequency reference setting and verifying by observation that the Facility responds per droop and deadband settings, and appropriately modifies the Company issued Dispatch Setpoint. If different modes of frequency response are provided, each mode is tested (i.e.; isochronous, fast frequency response, active power droop response).

5. Loss-of-Communication Test to verify the Facility will properly shutdown upon the failure of the direct-transfer-trip communication system. Test is generally conducted by simulating a communications failure and observing the proper shutdown of the Facility.

Monitoring Test:

a) The monitoring test requires the Facility to operate as it would in normal operations.

b) To ensure useful and valid test data is collected for variable facilities, the monitoring test shall end when one of the following criteria is met:

A. For variable energy resources, Facility's gross power production is greater than 85% of its Allowed Capacity, for at least four (4) hours in any continuous 24-hour CSAT period.

B. For solar facilities, the recorded renewable energy resource at the Facility is above 600 W/m2for at least eight (8) hours in any continuous 48-hour CSAT period.

C. For wind facilities, the recorded wind speed is sufficient for turbines to operate for at least 8 hours in any continuous 48-hour CSAT period.

D. 14 continuous Days from the start of the CSAT.

c) At the end of the test, an evaluation period is selected based on the criteria that triggered the end of the test.

d) The performance of the Facility during the period of the successfully completed monitoring test is evaluated for, e.g. voltage regulation, frequency response, dispatch control, operating limits and ramp rate performance, to verify the performance meets the requirements of this Agreement according to the criteria set forth in the testing procedures. Certain requirements, such as disturbance ride-through requirements, cannot be adequately tested without actual grid disturbances. These requirements will be confirmed following a grid event based on operational data, which may be after the completion of the Acceptance Test. The Parties understand and agree that a successful completion of the test does not constitute a waiver of any of the performance standards of Seller, all of which are hereby reserved, and shall not alleviate Seller from any of its obligations under the Agreement, in particular, as required in Article 8 (Company Dispatch) and the Performance Standards in Section 3 (Performance Standards) of Attachment B (Facility Owned by Seller).