

Attachment DCC

DC-Coupled Storage

December 22, 2022 Version

**To be added as an Attachment to the
Project Specific Addendum for PV+BESS
Facilities that are DC-Coupled**

**ATTACHMENT DCC
DC-COUPLED STORAGE**

This Attachment DCC (DC COUPLED STORAGE) sets forth the modifications to the Power Purchase Agreement for Renewable Dispatchable Generation (PV+BESS) for projects designed with a single Inverter System (as defined below) such that the PV System and BESS are “DC Coupled.”

1. Deletion of Defined Term. Definition of "PV System EAF Assessment Period" and "PV System Equivalent Availability Factor Performance Metric" will be deleted from the Schedule of Defined Terms.

2. Addition of New Defined Terms. The following will be added to the Schedule of Defined of Terms:

"Inverter System": The electric DC to AC and AC to DC power conversion equipment as more particularly described in Section 5 of Attachment A (Description of Generation, Conversion and Storage Facility).

"Inverter System EAF Assessment Period": Shall mean, for purposes of calculating an Inverter System Equivalent Availability Factor, a rolling period of twelve (12) consecutive calendar months. At the end of each calendar month, the Inverter System EAF Assessment Period will roll forward to include the next calendar month and thus create a new PV System EAF Assessment Period. The initial "Inverter System EAF Assessment Period" shall consist of the 12 full calendar months of the initial Contract Year.

"Inverter System Equivalent Availability Factor": Shall have the meaning set forth in Section 2.5(a) (Calculation of the Inverter System Equivalent Availability Factor) of the Agreement.

"Inverter System Equivalent Availability Factor Performance Metric": Shall have the meaning set forth in Section 2.5(b) (Inverter System Equivalent Availability Factor Performance Metric and Liquidated Damages) of this Agreement.

3. Revisions to Defined Term. The definition in the Scheduled of Defined Terms for the following is revised to read as follows:

"Facility": Seller's renewable electric energy facility that is the subject of this Agreement, including the PV System, Inverter System, the BESS, all Seller-Owned Interconnection Facilities and all other equipment, devices, associated appurtenances owned, controlled, operated and managed by Seller in connection with, or to facilitate, the production, generation, storage, transmission, delivery or furnishing by Seller of, electric energy to Company and required to interconnect with the Company System.

4. Global Changes.

- **All references in the Agreement to "PV System EAF Assessment Period" will be changed to "Inverter System EAF Assessment Period."**
- **All references in the Agreement to "PV System Equivalent Availability Factor" will be changed to "Inverter System Equivalent Availability Factor".**

- All references in the Agreement to the "PV System Equivalent Availability Factor Performance Metric" will be changed to "Inverter System Equivalent Availability Factor Performance Metric".

5. **Agreement Section 2.4** is revised to read as follows:

2.4 Assurance of Capability of Facility to Deliver Net Energy Potential and Availability of BESS. In order to provide Company with reasonable assurance that, subject to the Renewable Resource Variability, the Facility's Net Energy Potential will be available for Company Dispatch: (i) the Inverter System Equivalent Availability Factor Performance Metric shall be used to evaluate the availability of the Inverter System for dispatch by Company; (ii) the GPR Performance Metric shall be used to evaluate the efficiency of the PV System; (iii) the BESS Capacity Performance Metric shall be used to confirm the capability of the BESS to discharge continuously for four (4) hours at BESS Contract Capacity (MW) or to discharge continuously for a total energy (MWh) equal to the BESS Contract Capacity (MWh) if the test is conducted at less than BESS Contract Capacity (MW); (iv) the BESS EAF Performance Metric shall be used to determine whether the BESS is meeting its expected availability; (v) the BESS EFOF Performance Metric shall be used to evaluate whether the BESS is experiencing excessive unplanned outages; and (vi) the RTE Performance Metric shall be used to evaluate the storage efficiency of the BESS. Whenever the PV System potential output is in excess of the Company Dispatch, the excess energy from the PV System shall be used to maximize the BESS State of Charge so long as this does not conflict with the operating parameters of the BESS set forth in Section 9(d) (Battery Energy Storage System) of Attachment B (Facility Owned by Subscriber Organization) to this Agreement. Seller shall design, operate and maintain the Facility in a manner consistent with the standard of care reasonably expected of an experienced owner/operator with the desire and financial resources necessary to design, operate and maintain the Facility to achieve the Performance Metrics. The foregoing is without limitation to Seller's other obligations under this Agreement, including the obligation to operate the Facility in accordance with Good Engineering and Operating Practices. The Performance Metrics are set forth in Section 2.5 (Inverter System Equivalent Availability Factor; Liquidated Damages; Termination Rights) through Section 2.11 (BESS Round Trip Efficiency Test; Liquidated Damages) of this Agreement and shall be interpreted consistent with the North American Electric Reliability Corporation Generating Availability Data System ("NERC GADS") Data Reporting Instructions.

6. **Agreement Section 2.5** is revised to read as follows:

2.5 Inverter System Equivalent Availability Factor; Liquidated Damages; Termination Rights.

(a) Calculation of the Inverter System Equivalent Availability Factor. Following the end of each Inverter System EAF Assessment Period, the Inverter System Equivalent Availability Factor shall be calculated for such Inverter System EAF Assessment Period as follows:

$$\text{Inverter System Equivalent Availability Factor} = 100\% \times \frac{AH-ED}{PH}$$

where:

Period Hours (PH) is the total number of hours in the Inverter System EAF Assessment Period counting twenty-four (24) hours per day. In a normal year, PH = 8,760 and in a leap year PH = 8,784 .

Available Hours (AH) is the number of hours that the Inverter System is not on Outage. It is the sum of all Service Hours (SH) + Reserve Shutdown Hours (RSH).

An "Inverter System Outage" exists whenever the entire Inverter System is not online producing electric energy and is not in a Reserve Shutdown state.

Inverter System Service Hours (SH) is the number of hours during the Inverter System EAF Assessment Period the Inverter System is online and producing or consuming electric energy to meet Company Dispatch and is not in RSH.

Inverter System Reserve Shutdown Hours (RSH) is the number of hours the Inverter System was available to the Company System but not converting electric energy or is offline at the Company's request for reasons other than Seller-Attributable Non-Generation or the measured plane of array irradiance is below the inverter manufacturer's minimum irradiance level for production. All hours between 7:00 pm and 6:00 am will be considered RSH. The Inverter System will be considered RSH in these hours, even if the system would otherwise be in an outage or derated state. For purposes of calculating the Inverter System Equivalent Availability Factor, any hours during which the Inverter System or any portion thereof is unavailable due to Force Majeure shall be deemed to be RSH for the calendar month in question. A BESS Outage or Derating can exist due to an Inverter System Outage or Derating during Inverter System Reserve Shutdown Hours and the effect of such Inverter System Outage or Derating on the BESS Availability shall be included when calculating the BESS Annual Equivalent Availability Factor in accordance with Attachment X (BESS Annual Equivalent Availability Factor).

An "Inverter System Derating" exists if the Inverter System is available for Company Dispatch, but at less than full potential output of the PV System for the given irradiance and BESS conditions, including deratings due to Seller-Attributable Non-Generation. For avoidance of doubt, if there is an Inverter System Outage there cannot also be an Inverter System Derating.

Equivalent Derated Hours (EDH) is the sum of ESADH, EPDH, and EUDH. For deratings due to inverter unavailability, the equivalent full outage hour(s) are calculated by multiplying the actual duration of the derating (hours) by the number of inverters in the Inverter System unavailable and dividing by the total number of inverters in the Inverter System. For deratings, that do not impact the availability of an entire inverter or set of entire inverters, the equivalent full outage hour(s) are calculated by multiplying the actual duration of the derating (hours) by the size of the derating (in MW) divided by the Contract Capacity.

Equivalent Seller-Attributable Derated Hours (ESADH): A Seller-Attributable Derating occurs when there is an Inverter System Derating, due to Seller-Attributable Non-Generation or deratings by Company pursuant to Section 8.3 (Company Rights of Dispatch). Each individual derating is transformed into equivalent full outage hour(s). These equivalent hour(s) are then summed.

Equivalent Planned Derated Hours (EPDH) includes Planned Deratings (PD) and Maintenance Deratings (D4). A Planned Derating is when the Inverter System experiences a derating scheduled well in advance and for a predetermined duration. A Maintenance Derating is a derating that can be deferred beyond the end of the next weekend (Sunday at midnight or before Sunday turns into Monday) but requires a reduction in capacity before the next Planned Derating (PD). Each individual derating is transformed into equivalent full outage hour(s). These equivalent hour(s) are then summed.

Equivalent Unplanned Derated Hours (EUDH): An Unplanned Derating (Forced Derating) occurs when the Inverter System experiences a derating that requires a reduction in availability before the end

of the nearest following weekend. Each individual Unplanned Deration is transformed into equivalent full outage hour(s). These equivalent hour(s) are then summed.

EXAMPLE: The following is an example of an Inverter System Equivalent Availability Factor calculation and is included for illustrative purposes only. Assume the following:

- Inverter System has 10 inverters and the Facility has a Contract Capacity of 30 MWs.
- Inverter System EAF Assessment Period = first 12 full calendar months following the Commercial Operations Date (non-leap year).
- Inverter System was online and producing electric energy for 4,000 hours and was available but not producing electric energy due to lack of sufficient irradiance and BESS SOC for production for 500 hours.
- 3 Inverters were offline for 100 hours due to a Planned Derating.
- 2 Inverters were offline for 50 hours due to an Unplanned Derating.
- The Inverter System had a 3 MW derating for 100 hours due to Subscriber Organization-Attributable Non-Generation.

The Inverter System Equivalent Availability Factor would be calculated as follows:

$$PH = 8,760 \text{ hours in 12 calendar months}$$

$$SH = 4,000 \text{ hours}$$

$$RSH = 500 \text{ hours} + (11 \text{ hours/day} \times 365 \text{ days}) = 4,515 \text{ hours}$$

$$AH = SH + RSH = 4,000 \text{ hours} + 4,515 \text{ hours} = 8,515 \text{ hours}$$

$$ESADH = 100 \text{ hours} \times \left(\frac{3 \text{ MW}}{30 \text{ MW}} \right) = 10 \text{ hours}$$

$$EPDH = 100 \text{ hours} \times \left(\frac{3 \text{ inverters}}{10 \text{ inverters}} \right) = 30 \text{ hours}$$

$$EUDH = 50 \text{ hours} \times \left(\frac{2 \text{ inverters}}{10 \text{ inverters}} \right) = 10 \text{ hours}$$

$$EDH = ESADH + EPDH + EUDH = 10 \text{ hours} + 30 \text{ hours} + 10 \text{ hours} = 50 \text{ hours}$$

$$EAF = 100\% \times \frac{8,515 - 50}{8,760} = 96.6\%$$

(b) Inverter System Equivalent Availability Factor Performance Metric and Liquidated Damages. For each Inverter System EAF Assessment Period, a Inverter System Equivalent Availability Factor shall be calculated as provided in accordance with Section 2.5(a) (Calculation of Inverter System Equivalent Availability Factor) to this Agreement. In the event the Inverter System Equivalent Availability Factor is less than 98% (the "Inverter System Equivalent Availability Factor Performance Metric") for any Inverter System EAF Assessment Period, Seller shall be subject to liquidated damages as set forth in this Section 2.5(b) (Inverter System Equivalent Availability Factor Performance Metric and Liquidated Damages). For avoidance of doubt, because the Inverter System Equivalent Availability Factor is calculated over a Inverter System EAF Assessment Period of 12 calendar months, the first month for which liquidated damages would be calculated under this Section 2.5(b) (Inverter System Equivalent Availability Factor Performance Metric and Liquidated Damages) would be the last calendar month of the initial Contract Year. If the Inverter System Equivalent Availability Factor for a Inverter System EAF Assessment Period is less than the Inverter System Equivalent Availability Factor Performance Metric, Seller shall pay, in accordance with Section 2.12. (Payment of Liquidated Damages for Failure to Achieve Performance Metrics; Limitation on Liquidated Damages), and Company shall accept, as liquidated damages for Seller's failure to achieve the Inverter System Equivalent Availability Factor Performance Metric for such Inverter System EAF Assessment Period, an amount calculated in accordance with the following formula:

<u>Inverter System Equivalent Availability Factor</u>	<u>Amount of Liquidated Damages Per Calendar Month</u>
97.9% and below	For each one-tenth of one percent (0.001) by which the Inverter System Equivalent Availability Factor for such Inverter System EAF Assessment Period falls below the Inverter System Equivalent Availability Factor Performance Metric, an amount equal to 0.001917 of the Applicable Period Lump Sum Payment for the last calendar month of such Inverter System EAF Assessment Period.

For purposes of determining liquidated damages under the preceding formula, the amount by which the Inverter System Equivalent Availability Factor for the Inverter System EAF Assessment Period in question falls below the applicable threshold shall be rounded to the nearest one-tenth of one percent (0.001). Each Party agrees and acknowledges that (i) the damages that Company would incur if the Seller fails to achieve the Inverter System Equivalent Availability Factor Performance Metric for a Inverter System EAF Assessment Period would be difficult or impossible to calculate with certainty and (ii) the aforesaid liquidated damages are an appropriate approximation of such damages.

EXAMPLE: The following is an example calculation of liquidated damages for the Inverter System Equivalent Availability Factor Performance Metric and is included for illustrative purposes only. Assume the monthly Lump Sum Payment is \$1,000,000 and the Inverter System Equivalent Availability Factor is 96.6% as calculated in the example in Section 2.5(a) (Calculation of the Inverter System Equivalent Availability Factor) above.

The liquidated damages would be calculated as follows:

Applicable Period Lump Sum Payment = \$1,000,000

$\$1,000,000 \times .001917 = \$1,917$

$98.0\% - 96.6\% = 1.4\%$

$1.4\%/0.1\% = 14$

$\$1,917 \times 14 = \$26,838$

(c) Inverter System Equivalent Availability Factor Termination Rights. The Parties acknowledge that, although the intent of the liquidated damages payable under Section 2.5(b) (Inverter System Equivalent Availability Factor Performance Metric and Liquidated Damages) is to compensate Company for the damages that Company would incur if the Subscriber Organization fails to achieve the Inverter System Equivalent Availability Factor Performance Metric for a Inverter System EAF Assessment Period, such liquidated damages are not intended to compensate Company for the damages that Company would incur if a pattern of underperformance establishes a reasonable expectation that the Inverter System is likely to continue to substantially underperform the Inverter System Equivalent Availability Factor Performance Metric. Accordingly, and without limitation to Company's rights under said Section 2.6(b) (Inverter System Equivalent Availability Factor Performance Metric and Liquidated Damages) for those Inverter System EAF Assessment Periods during which the Seller failed to achieve the Inverter System Equivalent Availability Factor Performance Metric, the failure of the Facility to achieve a Inverter System Equivalent Availability Factor of not less than **84%** for each of three consecutive Contract Years shall constitute an Event of Default under the Agreement for which Company shall have the rights (including but not limited to the termination rights) set forth in Section 15. (Events of Default) and Section 16. (Damages in the Event of Termination by Company) of the Agreement.

7. Cross references elsewhere in the Agreement to Section 2.5 and its Subsections. All Cross-References elsewhere in the Agreement to any of Section 2.5, Section 2.5(a), Section 2.5(b) and Section 2.5(c) are corrected to reflect the revised captions for those Sections as set forth above.

8. Agreement Section 2.6 is revised to read as follows:

2.6 Measured Performance Ratio; Liquidated Damages; Termination Rights

(a) Calculation of Measured Performance Ratio.

(i) The Measured Performance Ratio ("MPR") represents the PV System's measured power output compared to its theoretical DC power output as adjusted for the plane of array irradiance and weather conditions measured at the Site. The net PV System output in MW will be measured at such points mutually agreed to by the Parties on the Facility's single-line diagram attached hereto as Attachment E (Single-Line Drawing and Interface Block Diagram).

(i) Following the end of each MPR Assessment Period, the MPR shall be calculated for such MPR Assessment Period (using the previous 12 months of data) as follows:

The Inverter System experienced a 4 MW Unplanned Derating for 35 hours not during RSH (i.e., an Inverter System Derating, as set forth in Section 2.5(a) (Calculation of Inverter System Equivalent Factor) of this Agreement. The BESS Contract Capacity (MW) is 10 MW.

$$\text{Inverter System Derating} = (35 \text{ hours} \times 4\text{MW}/10\text{MW}) = 14 \text{ hours}$$

$$\text{PH} = 8,760 \text{ hours in 12 calendar months}$$

$$\text{SH} = 8,400 \text{ hours}$$

$$\text{RSH} = 226 \text{ hours} + 14 \text{ hours}$$

$$\text{AH} = \text{SH} + \text{RSH} = 8,400 \text{ hours} + 226 \text{ hours} = 8,640 \text{ hours}$$

$$\text{EPDH} = 100 \text{ hours} \times 7.2\text{MW}/10\text{MW} = 72 \text{ hours}$$

$$\text{EUDH} = 100 \text{ hours} \times 6.2\text{MW}/10\text{MW} = 62 \text{ hours (Unplanned Derating (Forced Derating))}$$

$$\text{BESS EAF} = 100\% \times \frac{8,640 - 72 - 62}{8,760} = 97.1\%$$