

Appendix A-10. Plant Performance Guarantee

Energy Performance Guarantee

Contractor guarantees that, during each Measurement Period (MP) in the Performance Guarantee Period, the Actual Plant Output in kWh (E_{ACT}) shall be no less than the stated amount of the Weather-Adjusted Expected Plant Output in kWh (E_{EXP}) for that Measurement Period, in accordance with the following equation:

$$E_{ACT}^{MP} \geq E_{EXP}^{MP}$$

where the following terms have the following meanings:

“Actual Plant Output” (E_{ACT}^{MP}) means, in respect of a Measurement Period, the alternating current or (AC) electricity production (in kWh) of the Plant at the Point of Interconnection, as recorded by the onsite SCADA readings from the revenue meter, during that Measurement Period. The process for calculating Actual Plant Output for each Measurement Period (E_{ACT}^{MP}) of the Performance Guarantee Period shall be as follows:

- a. During each Measurement Period, Owner will collect kWh output data at the Delivery Point using its SCADA. For each Measurement Period, Owner will sum the daily kWh output provided by the SCADA to calculate the Actual Plant Output for such Measurement Period.
- b. The metering equipment at the Delivery Point shall be periodically calibrated or replaced according to standard industry practice. Owner shall provide Contractor written proof of any calibrations or replacements upon the written request of Contractor.
- c. In the event of hardware, communication, or other failure with the SCADA system, Owner will make commercially reasonable efforts to resolve the issue in a timely manner. In the event that electrical data is lost, Owner will read the cumulative electrical data directly from the electrical meter and calculate the electricity generated during any missing interval. In the event that it is not possible to read the electrical meter due to a meter failure or other issue, Owner will reasonably estimate the electricity production during the missing interval by reference to (i) actual meteorological data provided by the SCADA (or, in the event meteorological data is lost due to hardware, communication, or other failure with the SCADA system, meteorological data from a nearby meteorological station that Owner, in its discretion, selects for such purpose) and (ii) the electricity production of the Plant during previous similar time intervals during which there was similar irradiance. Any dispute between the Parties with respect to the foregoing shall be referred to the Independent Engineer that is mutually agreed upon by both parties for binding determination.

“Weather-Adjusted Expected Plant Output” (E_{EXP}^{MP}) means the expected energy output of the Plant (in kWh) in a Measurement Period based on actual irradiance during that period, calculated according to the following equation:

$$E_{EXP}^{MP} = \frac{P_{FINAL}}{P_{CONTRACT}} \times E_M^{MP} \times \frac{I_{ACT}^{MP}}{I_M^{MP}}$$

where:

- $P_{CONTRACT}$ = The Guaranteed Capacity of the Plant as set out in the Agreement, in MW_{AC}.
- P_{FINAL} = The Net Capacity Output of the Plant as set out in the Agreement, in MW_{AC}.
- E_M^{MP} = The Modeled Energy Output of the Plant (in kWh) in the applicable Measurement Period of the applicable Performance Guarantee Period as set out in Tables 1 and 2 below, which, for the avoidance of doubt, takes all de-rates and other losses associated with the Plant into consideration.

Owner proposes that PVSYST Version 5 or greater will be utilized by the contractor as a tool to model performance. Performance will be weather-adjusted (actual site data will be used as the basis for the PVSYST simulation). Contractor to provide a PVSYST file (to be used as the basis for the guarantee) showing assumptions, derates, and losses for the proposed project. If there are additional derate factors (down-time, inverter derate, clipping, weather station uncertainty) outside of PVSYST, then the additional derate factors should be listed in Table 1. Note that module temperature calculations will be modeled in PVSYST from ambient temperature readings from meteorological station at site.

Owner provided PVsyst files for each site are located in Appendix A-11 – Owner Provided PVsyst Files. The files include project files (.prj), variant files (.vc0), shading files (.shd), and meteorological files (.tm2) electronic files.

Contractor shall provide PVsyst files and output reports. The PVsyst files and report shall be placed in Appendix A-8.

Table 1. Modeled Energy Output for Each Measurement Period

Item	Description	Derate (%)	Contractor guarantee (kWh/yr 1)
PVSYST model	Contractor PVSYST model	N/A	<i>By Contractor</i>
(example)	Downtime	<i>By Contractor%</i>	<i>By Contractor</i>
(example)	Inverter temperature derate	<i>By Contractor%</i>	<i>By Contractor</i>
(example)	Measurement uncertainty	<i>By Contractor%</i>	<i>By Contractor</i>
(example)	Annual degradation (Year 1)	<i>By Contractor%</i>	<i>By Contractor</i>
Modeled Energy Output			<i>By Contractor</i>

If the Plant is not fully operational during any period in a Measurement Period due to a Force Majeure Event, provided Contractor has complied with the conditions and requirements of the Agreement in respect of that Force Majeure Event, the modeled energy output of the Plant for that Measurement Period will be reduced in accordance with the following approach:

where:

n = The percentage of the Plant (on a DC nameplate basis) affected by the applicable Force Majeure Event, as agreed between the Parties or, if the Parties are unable to reach agreement, as determined by the Independent Engineer.

$I_{ACT,lost}^{MP}$ = The actual irradiance, in W/m², measured in the Plane of the Array using the meteorological station and communicated via the onsite SCADA system during the period in the relevant Measurement Period in which the Plant, or agreed percentage of the Plant, is not fully operational due to the applicable Force Majeure Event, as agreed between the Parties or, if the Parties are unable to reach agreement, as determined by the Independent Engineer.

If the Parties are unable to agree on an appropriate reduction to the modeled energy output of the Plant for that Measurement Period, an appropriate reduction to the modeled energy output of the Plant for that Measurement Period will be determined by the Independent Engineer, and such determination shall be binding on the Parties.

I_{ACT}^{MP} = The actual irradiance, in W/m², measured in the horizontal plane using the meteorological station and communicated via the onsite SCADA system during the relevant Measurement Period.

In the event of hardware, communication, or other failure with the meteorological system, Contractor will make commercially reasonable efforts to resolve the issue in a timely manner. In the event meteorological data is lost due to hardware, communication, or other failure with the SCADA system, Owner will substitute meteorological data from a nearby meteorological station that Owner, in its discretion, selects for such purpose. In the event Owner reasonably believes that data produced by the meteorological system is inaccurate, Owner shall be permitted to substitute meteorological data from a nearby meteorological station that Owner, in its discretion, selects for such purpose and/or, by notice to Contractor, take over operation and maintenance of the meteorological system on a temporary or permanent basis. If suitable alternate weather data cannot be obtained, Owner will reduce the hours/days of missing/bad data from the Weather-Adjusted Expected Plant Output and Modeled Energy Output (E_{EXP}^{MP} and E_M^{MP}).

I_M^{MP} = The modeled irradiance, in W/m², measured in the horizontal plane, upon which the modeled energy output for each Measurement Period is based as set out in Table 2 below.

“Measurement Period” means the measurement period during each Performance Guarantee Period.

“Performance Guarantee Period” means each of the five consecutive 365-day periods (366 days during leap years), the first of which commences on the Final Acceptance Date and the last of which expires on the final day of the fifth Performance Guarantee Period.

“Delivery Point” means the point at which the electrical energy output of the Plant is measured. Note that metering may be calibrated to determine the amount of electrical energy delivered at a Delivery Point that is different than the meter physical location.

Table 2. Modeled Energy Output for Each Measurement Period

Performance Guarantee Period	Measurement Period	I_M^{MP}	E_M^{MP} *
1	Annual	[x,xxx.x]	[x,xxx.x]
2	Annual	[x,xxx.x]	[x,xxx.x]
3	Annual	[x,xxx.x]	[x,xxx.x]
4	Annual	[x,xxx.x]	[x,xxx.x]
5	Annual	[x,xxx.x]	[x,xxx.x]

* In the event that P_{FINAL} is less than $P_{CONTRACT}$ and Contractor has paid Energy Performance Liquidated Damages as a result, then going forward these values shall be adjusted downwards in proportion to the amount of the capacity de-rate.

Energy Performance Liquidated Damages

Energy Performance Liquidated Damages (LDs) shall be payable by Contractor in respect of each kWh by which the Actual Plant Output (E_{ACT}^{MP}) is less than the Weather-Adjusted Expected Plant Output (E_{EXP}^{MP}) during each Measurement Period during each Performance Guarantee Period, calculated in accordance with the following equation:

$$LDs = (E_{ACT}^{MP} - E_{EXP}^{MP}) \times (\text{Value from Section 16.2.1 of Agreement})$$

For the avoidance of doubt, no payment shall be required to be made by Owner to Contractor in the event Actual Plant Output (E_{ACT}^{MP}) is greater than the Weather-Adjusted Expected Plant Output (E_{EXP}^{MP}) during any Measurement Period.

Defined terms used herein and not otherwise defined have the meaning given to them in the Agreement.