1. Performance Guarantees

1.1. Functional Tests

1.1.1. The equipment shall be tested for performance prior to commercial operation. This process shall verify the installed system is performing per the design based on the current weather variables.

1.1.2. Prior to the performance test, the Contractor shall perform functional tests. As part of the commissioning process of the newly constructed solar array, the Contractor shall perform a functional test on each of the circuits to verify that they are all operating as expected and designed.

1.1.3. The Contractor shall start up and commission each of the inverters and ensure they are running under their MPPT (Maximum Power Point Tracking) range for optimal performance. The Contractor shall perform an infrared scan to confirm site DC system health prior to conducting the performance tests. The Contractor shall perform repairs or replacements for each string that is not performing as designed.

1.2. Availability Test

1.2.1. This portion of the performance test shall be conducted after the Contractor completes the functional tests and is required for commercial operation. The Availability Test shall be conducted in accordance with the standard outlined in Section 2. Availability Test below.

1.3. Capacity Test

1.3.1. The Capacity Test shall be conducted prior to commercial operation per the detailed test procedures in Section 3. Capacity Test. The basis for the Capacity Test procedures is ASTM E2848 – Standard Test Method for Reporting Photovoltaic Non-Concentrator System Performance

1.3.2. The performance test boundary for the solar array shall be Contractor supplied weather station and the production power meter.

1.3.3. The weather data and MWh (megawatt hour) output data shall be recorded during the test with the Owner-approved SCADA software. The measured total MWh output during the test shall be the actual output of the solar array. The measured total MWh output shall include the accuracy of the production power meter, line loss between inverters and meter and temperature coefficient correction factor (defined by panel manufacturer).

1.3.4. The weather data recorded during the test shall be entered in the PVsyst or equal model included in the As-Built design. The PVsyst model or another numerical model shall be used to calculate the expected MWh output over the duration of the test. The solar irradiance input in the PVsyst model shall be corrected for the accuracy of the weather station pyranometers.

1.3.5. This portion of the performance guarantee shall be met if the actual measured MWh output is greater than or equal to the expected MWh output calculated by PVsyst or another numerical model. If the actual measured MWh out is less than the expected MWh output, the Contractor shall repair or replace components as required and retest the solar facility to meet this portion of the performance guarantee.

1.3.6. This portion of the performance test may be suspended and restarted due to transient weather conditions as mutually agreed to by the Owner and Contractor. The data collected during the test suspension shall be excluded from the performance calculations. The test suspension period shall not extend the overall test period.

2. Availability Test

2.1. Purpose

2.1.1. The Availability Test will verify the inverters are fully commissioned and ready for commercial operation by demonstrating all inverters are able to operate for at least 3 consecutive days. The Availability Test may run in parallel to other performance related tests, provided the other tests do not negatively impact the inverter or plant operation.

2.2. Definitions

2.2.1. Availability Test – A short term, plant wide test meeting the requirements of this Exhibit K.1 and a condition to Substantial Completion used to verify all inverters are fully commissioned and ready for commercial operation.

2.2.2. Availability Test Calculator– An Excel file provided by the Owner to be used to calculate the Measured Availability during the Availability Test Measurement Period.

2.2.3. Availability Test Measurement Period – A three (3) day period during which the Availability Test is conducted to verify inverter operation, as such period may be extended as permitted in paragraph 5 of the Procedures set forth in this Exhibit K.1.

2.2.4. Availability Test Procedures – A detailed plan for administering the Availability Test to be provide by Contractor 45 Business Days prior to Availability Test, which plan shall meet all of the requirements therefor set forth in Appendix 1 to this Exhibit K.1 and include, at a minimum, all points to be monitored and identification of key personnel and parties.

2.2.5. Availability Test Report – A summary report of the Availability Test results, conditions during the test, the Inverter Availability Test Procedures, and calibration certificates of equipment used in the test, which report shall meet all of the requirements therefor set forth in this Attachment.

2.2.6. Eligible Time Intervals – Total number of time intervals during Availability Test Measurement Period where the plane of array irradiance is greater than 400 W/m2. The selected time interval shall be 5 minutes.

2.2.7. Guaranteed Availability –99.0%

2.2.8. Inverter Operational Time Intervals – For each inverter, the total number of Eligible Time Intervals during Availability Test Measurement Period when the inverter is producing power at all possible inverter stages, taking into account the incident irradiance.

2.2.9. Measured Availability – A percentage (rounded up or down to the nearest 0.1%), calculated as the quantity of Inverter Operational Time Intervals divided by the quantity of Eligible Time Intervals, multiplied by the number of inverters.

2.2.10. Multiple Measurements – Any measurement device or sensor where multiple devices or sensors measure the same parameter.

2.3. Procedure

2.3.1. No less than 45 Business Days prior to the first day of the scheduled Availability Test Measurement Period, the Availability Test Procedures shall be submitted to the Owner by the Contractor for Owner's review and comment. Contractor shall incorporate all of Owner's reasonable comments into the final Availability Test Procedures and resubmit the same for Owner's review and approval (such approval not to be unreasonably withheld or delayed).

2.3.2. The Contractor shall give written notice to the Owner 5 Business Days prior to the start of the Availability Test (including any re-performance thereof).

2.3.3. Contractor shall perform the Availability Test in accordance with the final approved

Availability Test Procedures.

2.3.4. During the Availability Test Measurement Period the Contractor shall record all inverter power, revenue meter, and plane of array irradiance data in accordance with the Data Quality and Instrumentation Requirements set forth in this Attachment. Such date shall be made available during and after the test as requested by Owner.

2.3.5. During the Availability Test, the Contractor shall document all inverter or plant-related interruption events, including the identification of the event, the reason for the interruption, the time and duration of the event and any corrective actions undertaken. In the event that inverter or plant-related interruptions do occur, the Contractor has the option to restart the Availability Test, provided that Contractor shall notify Owner thereof and provide detailed documentation of identified issues and proposed resolution to rectify such issues prior to re-performing the Availability Test.

2.3.6. During the test, the Contractor shall document all interruption events caused by grid operations, including the identification of the event, the reason for the interruption, and the time and duration of the event, and any corrective actions undertaken. To the extent that such interruption event was not caused by the Project, such events are excusable, and the test shall be extended by the amount of excluded time on a minute-by-minute basis in order to achieve 5 complete days of data.

2.3.7. The result of the Measured Availability shall be calculated as follows:

$$\frac{The\ Sum\ of\ All\ Inverter\ Operational\ Time\ Intervals}{Eligible\ Time\ Intervals * Total\ Number\ of\ Inverters}$$

2.3.8. The Project must be capable of continued operation, without intermittency or downtime during the Availability Test Measurement Period except for excused events described in paragraph 6 above. If the Measured Availability of the Project does not meet or exceed the Guaranteed Availability, the Contractor shall identify and promptly resolve the source of the problem and promptly perform the Availability Test again in accordance with these procedures (other than Paragraph 1 hereof) until the Measured Availability of the Project achieves the Guaranteed Availability.

2.4. Availability Test Report

2.4.1. No later than five (5) Business Days following the end of the Availability Test Measurement Period in respect of a Successfully Completed Availability Test, a draft Availability Test Report will be submitted to the Owner by the Contractor. Owner shall have five (5) Business Days to accept or reject the results of the draft Availability Test Report, and provide in writing any comments of Owner on such draft Availability Test Report. In the event that Owner rejects all or any part of the draft Availability Test Report, Contractor shall, within five (5) Business Days thereafter address any comments of Owner and re-submit the draft Availability Test Report to Owner. This procedure shall continue until Owner accepts the draft Availability Test Report. Any dispute regarding the results of the Availability Test or the Availability Test Report shall constitute a Dispute as described in the Agreement, Section 23.

2.4.2. The Availability Test Calculator, along with all raw data and QC disposition for each input data record, shall be provided electronically to the Owner with the Availability Test Report.

2.5. Appendix 1: Additional Requirements

2.5.1. Test Plan

2.5.1.1. The Availability Test Procedures shall include (at a minimum) the following information:

2.5.1.1.1. The test procedure set forth herein.

2.5.1.1.2. Identification of key personnel and parties to be involved in the test

2.5.1.1.3. Identification of the Project under test (at a minimum)

- Number and make/model of PV modules
- Array orientation
- Location (latitude, longitude, street address)
- Racking type and tilt
- Tracker range of motion (if applicable)
- Number and make/model of Inverters
- Row to row spacing (ground coverage ratio)

2.5.1.1.4. Identification of all data points to be monitored during the test

2.5.1.1.5. The scheduled starting and ending dates of the Availability Test Measurement Period.

2.5.1.1.6. Table of all sensors and transducers to be used, including cut sheets, calibration records, map of sensor locations with sufficient detail to allow observers to locate the sensors and transducers. This includes sensors required for all applicable input parameters (MET station sensors, inverters, and Revenue Meter).

2.5.1.1.7. MET station and pyranometer quality assurance and/or commissioning documentation (as an appendix).

2.5.1.1.8. Identification of SCADA nomenclature for data channels, and any SCADA calibration parameters (default or custom) for those data channels

2.5.1.1.9. Identification of SCADA data channels intended for use as auxiliary measurements

2.5.1.1.10. Identification of known data quality concerns, such as time intervals when inter-row shading may be expected to occur

2.5.1.1.11. Time-stamp convention and data logger averaging technique/interval to be used in reporting data

2.5.1.2. Measured data are to be made available to the Owner upon request during the Availability Test Measurement Period, for use in evaluating the progress of the Availability Test.

2.5.2. Availability Test Report

2.5.2.1. The Availability Test Report shall contain:

2.5.2.1.1. The Availability Test Procedures, including all requirements as outlined herein.

2.5.2.1.2. The actual start and end date/times of the Availability Test Measurement Period

2.5.2.1.3. Comments on environmental conditions during the Availability Test Measurement Period that affect the results of the test

2.5.2.1.4. Summary of data quality control results for all data records

2.5.2.1.5. Summary of test results

2.5.2.1.6. All calibration certificates for pyranometers, temperature sensors, and revenue meters used in the test

2.5.2.2. Raw data used as input to the Availability Test, along with QC disposition for each input data record, shall be provided electronically (via CSV, XLS, or XLSX formats) to the Owner with the Availability Test Report.

2.5.3. Data Quality and Instrumentation Requirements

2.5.3.1. Data quality shall be identified as one item from a set of quality categories for each data record analyzed. Only data from records where all input parameters are valid and within specified limits shall be used in computing capacity estimates.

2.5.4. Sensor Requirements

2.5.4.1. Irradiance sensors shall be at a minimum "High Quality" classified pyranometer(s) as defined in ASTM2848-A1.2 (Secondary Standard per ISO 9060). Pyranometers shall include device-specific characterization data that shall, at minimum, include cosine and temperature response. Alternative pyranometers may only be used if approved by the Owner.

2.5.4.2. Pyranometers shall be used only within their valid calibration period and shall be cleaned at the start of the Availability Test Measurement Period and cleaned daily during the test if the Availability Test Measurement Period extends beyond one (1) week.

2.5.4.3. All measurement devices and sensors shall meet the minimum accuracy requirements and range requirements set forth in the table below:

Sensor Requirements

Table 1 Sensor Requirements

Measurement	Instrument Type	Test Function	Range	Accuracy
Irradiance	Pyranometer (Global Horizontal Irradiance (GHI))	Primary for Energy Performance Test	0 to 1600 W/m^2 285 to 2800 nm	±2.0% daily
	Pyranometer (Plane of Array (POA))	Primary for Capacity Test and Availability Test		
Ambient Air Temperature	Temperature Probe	Primary for both Capacity Test and Energy Performance Test	-40°C to +60°C	±1°C
Wind Speed	Sonic Wind Sensor	Primary for Capacity Test and Energy Performance Test	0 – 60 m/s	±5%
PV Plant Power	PV Power Revenue Meter	Primary for both Capacity Test and Energy Performance Test primary for Capacity Test	0 to PV Power Plant size +20%	ANSI C-12.20
Inverter Power	Inverter Meter	Primary for Availability Test and Capacity Test	determined from inverter data sheet	determined from inverter

				data sheet
Soiling	Soiling Monitoring System (SMS)	Primary for Energy Performance Test	0 to 100%	±0.2%

2.5.5. Multiple Measurements

2.5.5.1. Multiple Measurements shall be recorded for all environmental data throughout the Site in order to capture the operating conditions for all regions of the array. There is a high probability that there will be periods of time in which portions of the Project are exposed to significantly different irradiance conditions than other portions, e.g. due to isolated clouds.

2.5.6. Below are the main measurement devices and sensors to be used in the Availability Test:

2.5.6.1. Plane of Array Irradiance (POA): A minimum of one sensor shall be installed for each orientation (within ±2°). Multiple orientations or large arrays shall require Multiple Measurements. For projects or unique project Blocks within a project with potentially different irradiance conditions (like change in azimuth, tilt, or tracking range of motion) greater than 5 MW, at least 3 POA sensors shall be installed.

2.5.6.2. Inverter Meter: The power reading for each inverter.

2.6. Appendix 2: Availability Test Calculator

2.6.1. The table below provides the file names for all files needed for the Availability Test Calculator. Contractor shall provide the Availability Interval Data file once the test is complete.

Table 2 Availability Test Calculator Files

File Name	File Type	Comments
Availability Test Calculator	.xlxs	Used to log all raw measured data, Inverter Interval Data, and calculate the availability
Availability Interval Data	.csv	Interval values of measured Inverter Power Output, plane of array irradiance (POA), and Revenue Meter.

3. Capacity Test

3.1. Purpose

3.1.1. The Capacity Test will verify the plant is fully operational and ready for commercial operation by achieving the Guaranteed Capacity.

3.2. Definitions

3.2.1. Capacity Test – A short-term, plant-wide test meeting the requirements of ASTM E2848 – Standard Test Method for Reporting Photovoltaic Non- Concentrator System Performance and this Attachment K.1 and a condition to Substantial Completion used to verify the plant is fully commissioned and ready for commercial operation.

3.2.2. Capacity Test Calculator – An Excel tool to be used to calculate the Target Capacity and Measured Capacity during the Capacity Test Measurement Period.

3.2.3. Capacity Test Measurement Period – The period when the Capacity Test is performed, which period shall be at least 2 days, and shall continue until for consecutive additional days until the Minimum Irradiance has been met, which may be up to a total of 15 days depending on weather conditions during the test.

3.2.4. Capacity Test Procedures –A detailed plan for administering the Capacity Test to be provide by Contractor 30 Calendar Days prior to the first date of the scheduled Capacity Test Measurement Period, which plan shall meet all of the requirements therefor set forth herein and include, at a minimum, all points to monitored and identification of key personnel and parties.

3.2.5. Capacity Test Report – A summary report of the Capacity Test results, conditions during the test, the Capacity Test Procedures, Data Quality and Instrumentation Plan and applicable calibration certificates for equipment used in the test, which report shall meet all of the requirements therefor set forth herein.

3.2.6. Capacity Test Bifacial Gain (CTBG) – The bifacial gain as calculated using the CTBG procedures outlined herein.

3.2.7. Guaranteed Capacity – A Measured Capacity Ratio of at least 100.0% or greater.

3.2.8. Minimum Guaranteed Capacity – A Measured Capacity Ratio of at least 97.0% or greater.

3.2.9. Minimum Datapoints – Occurs when at least 150 allowable data points meeting the requirements set forth in this Exhibit K.1 are recorded after all data filtering has occurred as outlined herein. If the Minimum Irradiance criteria set forth is causing a delay in the test and pushing it beyond the Guaranteed Project Substantial Completion Date, the test procedure may, subject to prior agreement by both parties, be modified to allow fewer data points.

3.2.10. Minimum Irradiance. 400 W/m2.

3.2.11. Measured Capacity – The measured capacity as calculated using the procedures outlined herein.

3.2.12. Measured Capacity Ratio – The Measured Capacity divided by the Target Capacity, calculated to the nearest 0.1%.

3.2.13. Monthly Reporting Conditions – The plane of array irradiance (POA), ambient temperature, and wind speed calculated for each month using the Project Model and P50 weather file as agreed to by the Parties and recorded in Table 4 of Appendix 2 attached herein.

3.2.14. Project Model – The Contractor PVSYST generation model for the Project, including post-processing that occurs outside of the program.

3.2.15. Project Capacity Model –The Project Model as adjusted to remove assumptions for snow, availability, and module degradation losses.

3.2.16. Revenue Meter – The revenue meter for the Project as agreed by the Parties.

3.2.17. Capacity Test Bifacial Gain (CTBG) – The bifacial gain as calculated using the CTBG procedures outlined herein.

3.2.18. Target Capacity – The target capacity as calculated using the procedures outlined herein.

3.3. Procedure

3.3.1. No less than 45 Business Days prior to the first day of the scheduled Capacity Test Measurement Period, a draft Capacity Test Procedures shall be submitted to the Owner by the Contractor for Owner's review and comment. Contractor shall incorporate all of Owner's reasonable comments into the final Capacity Test Procedures and resubmit the same for Owner's review and approval (such approval not to be unreasonably withheld or delayed).

3.3.2. The Contractor shall give written notice to the Owner 12 Business Days prior to the start of the Capacity Test (including any re-performance thereof).

3.3.3. Contractor shall perform the Capacity Test in accordance with the final approved Capacity Test Procedures.

3.3.4. Capacity Test Procedures shall identify the final Monthly Reporting Conditions and Target Capacities using the Project Capacity Model, and data filters described below.

3.3.5. The Capacity Test Measurement Period shall last no less than two (2) consecutive days. If the Minimum Irradiance requirement is not met during such 2-day period, the Capacity Test Measurement Period shall be extended for consecutive days until the Minimum Irradiance requirement is met.

3.3.6. The following input parameters shall be measured during the Capacity Test (collectively, the "Input Parameters"):

3.3.6.1. Plane-of-Array Irradiance (POA): An estimate of the average irradiance incident upon the PV array in the Project. No provision is allowed for shading, so any significant shading during any aggregation interval is causing to exclude that data record from the regression.

3.3.6.2. Ambient Temperature: As recorded by the Project meteorological stations as defined in Appendix 1 to this Exhibit K.1.

3.3.6.3. Wind Speed: As recorded as recorded by the Project meteorological stations as defined in Appendix 1 to this Exhibit K.1.

3.3.6.4. CTBG Parameter: Power measurement from the bifacial reference modules and monofacial reference modules

3.3.6.5. Revenue Meter Energy Generation: Energy as recorded by the Revenue Meter during the Capacity Test Measurement Period.

3.3.6.6. Inverter-Level Energy Generation: AC output data for each inverter shall be provided for the purposes of identifying periods of inverter clipping.

3.3.7. During the Capacity Test Measurement Period, irradiance data shall be sampled at no greater than five (5) second intervals. Irradiance data shall be reported at no greater than five (5) minute intervals, consisting of averaged five (5) second sampled data. Power generation data shall either be sampled and reported at the intervals required for irradiance, as noted above. Other data shall be sampled at no greater than one (1) minute intervals and shall be reported at no greater than five (5) minute intervals, consisting of averaged one (1) minute sampled data. All data shall be reported in time-synchronized intervals.

3.3.8. Data shall be averaged and filtered in accordance with the procedures below:

3.3.8.1. Missing Data: Missing records shall be marked as missing with a non-numeric identifier. Missing records shall not have a value included in the analysis, but shall be documented.

3.3.8.2. SCADA Equipment Malfunction: Data records with invalid Input Parameters (e.g. all sensor readings reported as out of range by the SCADA) shall also be marked as invalid.

3.3.8.3. Below Minimum Irradiance: To avoid large uncertainty in results due to increased impact of variable losses at low irradiance, all records with a minimum plane-of-array irradiance input parameter of 400 W/m^2 or less shall be marked as irradiance too low.

3.3.8.4. Unstable irradiance: Irradiance measurements shall be deemed stable if i) all individual sensor readings are within 25 Watts per meter squared of the average of all the sensor readings and ii) the average of all sensor readings is not more than 10% greater or less than the previous interval reading. If both conditions above are not met, the irradiance will be deemed unstable, flagged and the data will not be used in the test.

3.3.8.5. Inverter clipping: Any intervals where the power output of one (or more) inverters is greater than 98.0% of the rated or programmed power limit.

3.3.8.6. Power Factor: Any intervals where the inverter power factor is less than ±0.98 will be excluded from the test data.

3.3.8.7. Array shading by internal (array self-shading) or external (nearby objects). A schedule of expected shade times shall be defined in the Capacity Test Procedures. This schedule may be altered during the Capacity Test. Records occurring during these shade intervals identified during testing shall be marked as shaded and excluded from the test. Photographic evidence of array conditions shall be provided.

3.3.8.8. Array shading by environmental conditions (e.g. frost, snow or debris). Onsite observers shall record time intervals when such conditions exist as the Capacity Test progresses. Photographic evidence of array conditions shall be provided.

3.3.8.9. Wind Speed: Any intervals where average wind speed is greater than 15 meter per sec will be excluded from the test data.

3.3.9. Data will be collected for a minimum of 3 days until at least 150 allowable data points are collected.

3.3.10. Using the Capacity Test Calculator and the data filtering described herein, calculate the linear regression coefficients and Measured Capacity.

3.3.11. Calculate the Measured Capacity Ratio using the calculated Measured Capacity and appropriate monthly Target Capacity identified in the Table 4 of Appendix 2 attached herein.

3.3.12. If the Measured Capacity Ratio of the Project does not meet or exceed the Minimum Guaranteed Capacity, the Contractor shall identify and promptly resolve the source of the problem and promptly perform the Capacity Test again in accordance with these procedures (other than Paragraph 1 hereof) until the Measured Capacity of the Project achieves the Minimum Guaranteed Capacity. If the Measured Capacity Ratio is more than the Minimum Guaranteed Capacity but is less than the Guaranteed Capacity, then Contractor shall be responsible for the liquidated damages as set forth in the Agreement.

3.4. Capacity Test Bifacial Gain Calculation Procedure

3.4.1. This will be calculated by directly comparing the irradiance measured from the mono-facial reference modules to that of the bifacial reference modules. The calibrated reference modules shall be used in this test and their serial numbers shall be recorded to correlate to flash test data.

3.4.2. The power will be measured in 5-minute intervals from these reference modules at each MET station. The data shall be filtered as follows:

3.4.2.1. Dataset shall be limited to allowable data points of the Capacity Test.

3.4.2.2. Bifacial gain shall be calculated for each MET station and instances where the gain differs more than 5% from the average gain shall be excluded

3.4.2.3. Missing, unavailable, or NaN (Not a Number) data points will be excluded.

3.4.3. The CTBG for each module type shall be calculated as follows:

$$CTBG_i = \frac{\sum_{i=1}^{n} \frac{Power_{bi}/Power_{bi,STC}}{Power_{mono}/Power_{mono,STC}}}{n}$$

Where:
$CTBG_i$ = Capacity Test Bifacial Gain of module type i (%)
n = total number of filtered 5-minute data points (unitless)
$Power_{bi}$ = Power measured by the bifacial reference module (Watts)
$Power_{bi,STC}$ = STC Power of the bifacial reference module (Watts)
$Power_{mono}$= Power measured by the monofacial reference module (Watts)
$Power_{mono,STC}$= STC Power of the monofacial reference module (Watts)

3.4.4. Both the mono-facial and bifacial modules shall be cleaned prior to the Capacity Test. The CTBG shall be calculated specifically for the duration of the Capacity Test. For example, if the Capacity Test takes place from April 10 to April 20, the CTBG shall be calculated for all the filtered 5-minute data points in that time period.

3.5. Capacity Test Report

3.5.1. No later than three (3) Business Days following the end of the Capacity Test Measurement Period of a Successfully Run Capacity Test, a draft Capacity Test Report will be submitted to the Owner by the Contractor. Owner shall have five (5) Business Days to accept or reject the results of the draft Capacity Test Report, and provide in writing any comments of Owner on such draft Capacity Test Report. In the event that Owner rejects all or any part of the draft Capacity Test Report, Contractor shall, within five (5) Business Days thereafter address any comments of Owner and re-submit the draft Capacity Test Report to Owner. This procedure shall continue until Owner accepts the draft Capacity Test Report. Any dispute regarding the results of the Capacity Test or the Capacity Test Report shall constitute a Dispute as described in the Agreement.

3.6. Appendix 1: Additional Requirements

3.6.1. Test Plan

3.6.1.1. The Capacity Test Procedures shall include (at a minimum) the following information:

3.6.1.1.1. Identification of key personnel and parties to be involved in the test

3.6.1.1.2. The Project Model

- For the purposes of the Capacity Test, the Project Model shall exclude array soiling loss, module/system degradation and assume 100% availability
- Meteorological data used for calculation of the Monthly Reporting Conditions

3.6.1.1.3. Identification of the Project under test (at a minimum)

- Number and make/model of PV modules
- Array orientation
- Location (latitude, longitude, street address)
- Racking type and tilt
- Tracker range of motion (if applicable)
- Number and make/model of Inverters
- Row to row spacing (ground coverage ratio)

3.6.1.1.4. Identification of all data points to be monitored during the test

3.6.1.1.5. The Monthly Reporting Conditions and Target Capacity values

3.6.1.1.6. The starting and ending dates of the scheduled Capacity Test Measurement Period.

3.6.1.1.7. Table of all sensors and transducers to be used, including cut sheets, calibration records, map of sensor locations with sufficient detail to allow observers to locate the sensors and transducers. This includes sensors required for all applicable Input Parameters (MET station sensors, inverters, and Revenue Meter).

3.6.1.1.8. MET station and pyranometer quality assurance and/or commissioning documentation (as an appendix).

3.6.1.1.9. Identification of SCADA nomenclature for data channels, and any SCADA calibration parameters (default or custom) for those data channels

3.6.1.1.10. Identification of SCADA data channels intended for use as auxiliary measurements

3.6.1.1.11. Identification of known data quality concerns, such as time intervals when inter-row shading may be expected to occur

3.6.1.1.12. Time-stamp convention and data logger averaging technique/interval to be used in reporting data

3.6.1.1.13.

3.6.1.2. Measured data are to be made available to the Owner upon request during the Capacity Test Measurement Period, for use in evaluating the progress of the Capacity Test.

3.6.2. Capacity Test Report

3.6.2.1. The Capacity Test Report shall contain:

3.6.2.1.1. The Capacity Test Procedures, including all requirements as outlined herein.

3.6.2.1.2. The actual start and end date/times of the Capacity Test Measurement Period

3.6.2.1.3. Comments on environmental conditions during the Capacity Test Measurement Period that affect the results of the test

3.6.2.1.4. Summary of data quality control results for all data records

3.6.2.1.5. Summary of test results

3.6.2.1.6. Regression coefficients used to calculate Target Capacity and Measured Capacity

3.6.2.1.7. Comparison of test results with Minimum Guaranteed Capacity and Guaranteed Capacity

3.6.2.1.8. All calibration certificates for pyranometers, temperature sensors, and revenue meters used in the test

3.6.2.2. Raw data used as input to the Capacity Test, along with QC disposition for each input data record, shall be provided electronically (via CSV, XLS, or XLSX formats) to the Owner with the Capacity Test Report.

3.6.3. Data Quality and Instrumentation Requirements

3.6.3.1. Data quality shall be identified as one item from a set of quality categories for each data record analyzed. Only data from records where all input parameters are valid and within specified limits shall be used in computing capacity estimates.

3.6.4. Sensor Requirements

3.6.4.1. Irradiance sensors shall be at a minimum “High Quality” classified pyranometer(s) as defined in ASTM2848-A1.2 (Secondary Standard per ISO 9060). Pyranometers shall include device-specific characterization data that shall, at minimum, include cosine and temperature response. Alternative pyranometers may only be used if approved by the Owner.

3.6.4.2. Pyranometers shall be used only within their valid calibration period and shall be cleaned at the start of the Capacity Test Measurement Period and cleaned daily during the test if the Capacity Test Measurement Period extends beyond one (1) week. Bifacial reference modules (same batch from the field) shall be installed to measure bifacial plane of array and monofacial reference module to measure plane of array irradiance.

3.6.4.3. All measurement devices and sensors shall meet the minimum accuracy requirements and range requirements set forth in the table below:

Table 3 Sensor Requirements

Measurement	Instrument Type	Test Function	Range	Accuracy

Plane of Array Irradiance	**Front Pyranometer** **Rear Pyranometer** **Bifacial reference module** **Monofacial reference module**	Primary for Capacity Test	0 to 1600 W/m² 285 to 2800 nm	**±2.0% daily**
Global Horizontal Irradiance	**Pyranometer**	Secondary for Capacity Test	0 to 1600 W/m² 285 to 2800 nm	**±2.0% daily**
Ambient Air Temperature	Temperature Probe	Primary for Capacity Test	**-40°C to +60°C**	**±1°C**
Wind Speed	Sonic Wind Sensor	Primary for Capacity Test	0 – 60 m/s	±5%
PV Plant Power	PV Power Revenue Meter	Primary for Capacity Test	**0 to PV Power Plant size +20%**	ANSI C-12.20
Inverter Power	Inverter Meter	Primary for Capacity Test	**determined from inverter data sheet**	determined from inverter data sheet

3.6.5. Multiple Measurements

3.6.5.1. Multiple Measurements shall be recorded for all environmental data throughout the Site in order to capture the operating conditions for all regions of the array. There is a high probability that there will be periods of time in which portions of the Project are exposed to significantly different irradiance conditions than other portions, e.g. due to isolated clouds.

3.6.5.2. Below are the main sensors to be used in the Capacity Test:

3.6.5.2.1. Plane of Array Irradiance (POA): Plane of Array readings shall be averaged from sensors installed as outlined in SOW (MET Spec). To be clear, MET station will include front pyranometer, back pyranometer, bifacial reference module and monofacial reference module.

3.6.5.2.2. Ambient Air Temperature: Ambient temperature readings shall be averaged from sensors installed as outlined in SOW (MET Spec).

3.6.5.2.3. Wind Speed: wind speed sensors shall be averaged from sensors installed as outlined in SOW (MET Spec).

3.6.5.2.4. Inverter Meter: The power reading for each inverter.

3.6.5.2.5. PV Plant Meter: The power reading of the Revenue Meter.

3.7. Appendix 2: Project Capacity Model and Reporting Conditions Definition

3.7.1. Project Capacity Model

3.7.1.1. The requirements for the Project Capacity Model to be used for evaluating the Measured Capacity is detailed in this Exhibit K.1. This section outlines all input parameters required to create the PVSYST simulation, in the event that PVSYST electronic project files are no longer available. This section shall be populated and submitted with the Capacity Test Procedures.

3.7.2. PVSYST Model Files

3.7.2.1. The table below provides the file names for all model files necessary to run the PVSYST simulation in the PVSYST version specified in the subsequent section. Contractor shall provide all Project Capacity Model files to the Owner.

Table 1: PVSYST File Names

Table 4 PVSYST File Names

PVSYST File Type	File Name
Project file [PRJ, VC0] Including all variants	
Meteorological file [MET]	
Site file [SIT]	
Module file [PAN]	
Inverter file [OND]	
Shade file [SHD]	
Horizon file [HOR]	

3.7.3. PVSYST Input Parameters

3.7.3.1. In the event that data files are lost or corrupted, all PVSYST inputs and assumptions have been documented in this section. The table below provides many of the PVSYST inputs required in the simulation.

Table 2: PVSYST Input Parameters

Input Parameter	Value	Comment
PVSYST Software Version		
Transposition Model		
Meteorological File		It is critical that the time stamp and other parameters are accurately accounted for when importing meteorological data. Data import files and techniques shall be documented and provided with

Input Parameter	Value	Comment
		the Performance Test Report.
Latitude / Longitude		
Altitude [m]		
Ground Albedo		
Array Orientation (PVSYST Field Type)		
Tilt		
Azimuth		0° is due South
Tracker Backtracking		
Min / Max Rotation Angle		
Number of sheds		
Ground Cover Ratio (GCR)		
Pitch [m]		
Collector width [m]		
Inactive band, Left (m)		
Inactive band, Right (m)		
Near Shading Type		
Electrical Effect		
Number of strings in row width		
Horizon		
Module Type		
Qty. of modules		
Qty. of modules per string		
Qty. of parallel strings		
Inverter Type		
Qty. of inverters		
Heat Transfer: Constant loss factor		
Heat Transfer: Wind loss factor		
DC circuit ohmic loss at STC		
Module Bifaciality factor	Off	Gain from bifacial module as per manufacturer specsheet
Module Quality	MQ - CTBG	CTBG is calculated during the capacity test and MQ is typical module quality factor that is used in the modeling
Mismatch [%]		
LID – Light Induced		

Input Parameter	Value	Comment
Degradation [%]		
Soiling Loss [%]	1%	1% soiling to be assumed for test unless a soiling station is installed. Then the soiling station soiling will be used.
Incidence Angle Modifier Factors or ASHRAE b0 value		User defined profile
AC circuit ohmic loss at STC		If modeled in PVSYST
External Transformer No Load Loss [%]		If modeled in PVSYST
External Transformer Full Load Loss [%]		If modeled in PVSYST
External Transformer Nighttime disconnect		If modeled in PVSYST

3.7.3.2. There are many additional settings required to recreate PVSYST files such as meteorological data import techniques, module file [PAN], inverter file [OND], etc. PVSYST version and model files will be placed in escrow to perform simulation. The files to be included in escrow include (a) all files listed in Table 2 of this Appendix 2 of Exhibit K.1, and (b) a copy of PVSYST version X.

3.7.4. Additional Losses (Post-Processed Loss)

3.7.4.1. There are multiple losses associated with an operating Project that may not be accounted for in PVSYST. Such losses include night-time demand of inverters, as well as auxiliary loads including but not limited to HVAC, lighting, security, SCADA, etc.

3.7.4.2. These losses have been included in the modeled power generation, the details of which are defined in the table below.

Table 3: Model Additional Loss

Parameter	Value	Comment
AC circuit ohmic loss [%]		
External Transformer Iron loss [%]		
External Transformer Resistive loss [%]		
External Transformer Nighttime disconnect		
Availability loss [%]		Not Included in Project Capacity Model
Curtailment loss [%]		Not included in Project Capacity Model
Auxiliary Loads [%]		

Parameter	Value	Comment
Nighttime Loads [%]		

3.7.5. Reporting Conditions and Target Capacities Identification

3.7.5.1. The Monthly Reporting Conditions and Target Capacities are to be specified below. Table 4 will be completed by Contractor and approved by Owner once the Project Capacity Model is complete. The following algorithm is recommended for identifying Reporting Conditions.

3.7.5.1.1. The Reporting Conditions shall be determined based on measured data set. Data records shall include the measured POA irradiance, ambient temperature and wind speed input parameters, as well as any simulated auxiliary parameters necessary for marking data records according to the primary data exclusion criteria.

3.7.5.1.2. Apply the primary data exclusion criteria identified in Section 3.3.8 of this procedure to the measured data records. (The secondary data exclusion is not applied.)

3.7.5.1.3. Grouping the remaining data records by month, compute the median values of incident plane-of- array irradiance, ambient air temperature, and wind speed. The reporting condition for plane-of-array (POA) irradiance shall not be less than 400 W/m².

3.7.5.1.4. Round median irradiance to the nearest integer W/m², median temperature to the nearest °C, and corrected median wind speed to the nearest 0.1 m/s. Use values as reporting conditions in Table 4.

3.7.5.1.5. Procure PVSyst hourly output from the Project Capacity Model. Project Capacity Model shall include following parameters:

- Soiling, Availability and Curtailment Losses shall be assumed 0%
- Module Quality Factor shall be adjusted with Capacity Test Bifacial Gain (CTBG) for bifacial modules
- Bifaciality factor in PVSyst simulation shall be turned off

3.7.5.1.6. The PVSyst hourly output, after post-processing, must contain at a minimum the plane of array irradiance, the ambient temperature, wind speed, inverter energy output, modeled power generation, shade loss, and clipping loss (GlobInc, TAmb, WindVel, EOutInv, POI Limited, ShdBLss, and IL Pmax) respectively.

3.7.5.1.7. Apply the data exclusion criteria identified in Section 3.3.8 to the simulation data records.

3.7.5.1.8. Compute regression coefficients and Target Capacity for the month(s) of the test. If the Capacity Test overlaps two months a weighted average based on the proportion of Qualifying Data points for each month will be used to calculate the Target Capacity.

Table 4: Example Monthly Reporting Conditions and Target Capacities Table

Month	Reference POA Irradiance (W/m^2)	Reference Ambient Temperature (°C)	Reference Wind Speed (m/s)	Target Capacity (kW)

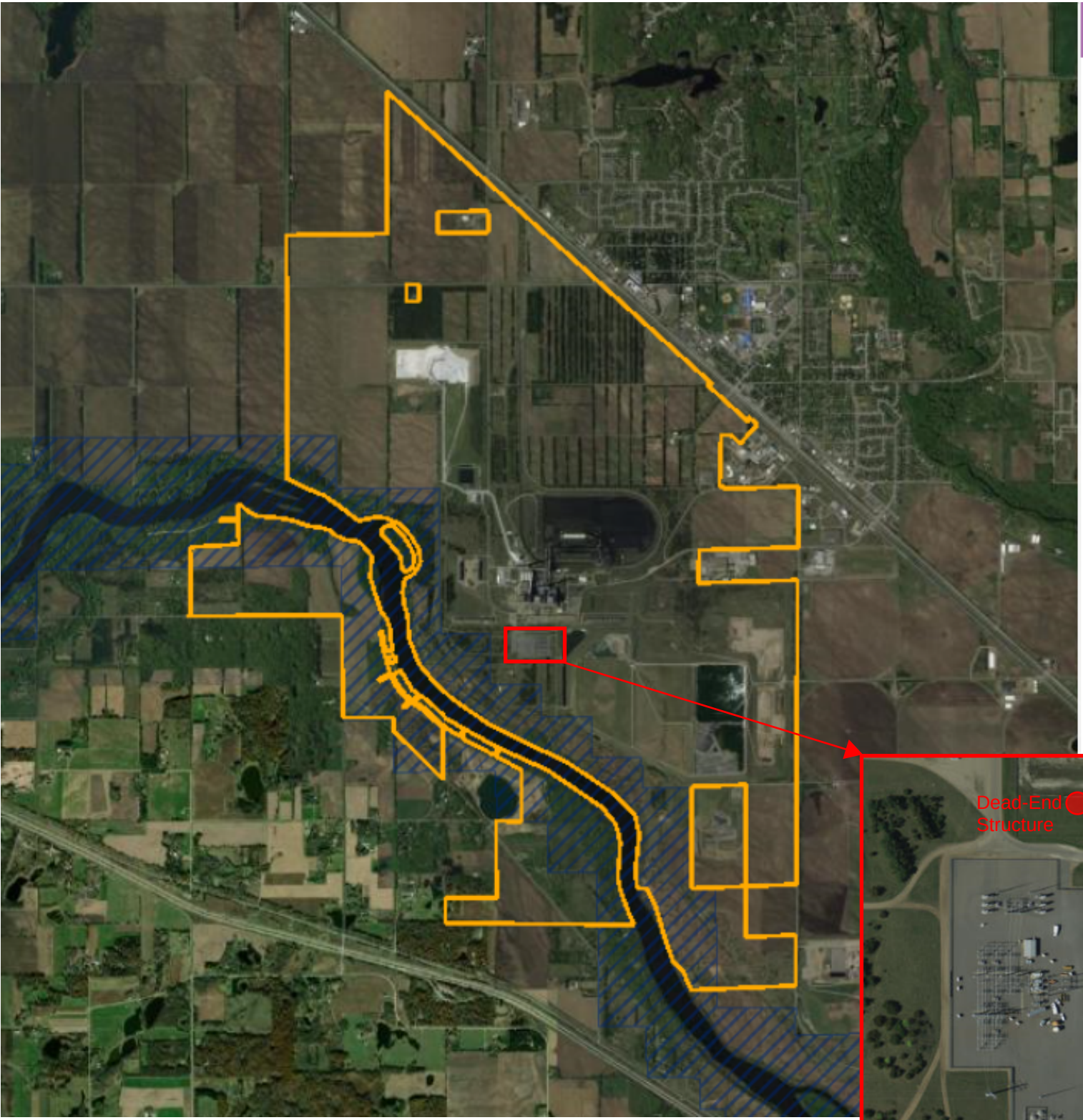
Month	Reference POA Irradiance (W/m^2)	Reference Ambient Temperature (°C)	Reference Wind Speed (m/s)	Target Capacity (kW)

3.8. Appendix 3: Capacity Test Calculator

3.8.1. The table below provides the file names for all files needed for the Capacity Test Calculator. Contractor shall provide the Project Capacity Model Hourly Data file once the Project Capacity Model is complete. If the Project design changes significantly, the Project Capacity Model Hourly Data shall be updated by the Contractor to reflect the As Built design and such updated Project Capacity Model Hourly Data shall be submitted to the Owner for review and approval. All Changes to Project Capacity Model shall be documented and approved by the Owner.

Table 1: Capacity Test Calculator Files

File Name	File Type	Comments
Capacity Test Calculator	.xlxs	Used to calculate reporting conditions, regression coefficients, Measured Capacity, and Target Capacity values
Project Capacity Model Hourly Data	.csv	Hourly Plane of Array (Global Incident in PVSYST), Ambient Temperature, Wind Speed, and Energy (after post processing, as necessary)



Legend

Layers

Sherco Land Management

Plant Current

Sherco Boundary

Other

Wild and Scenic River Administration

Form 0 - Notice of Intent to Respond (NOIR)

2022 NSP RFP

While this Form is not required to submit a proposal, submitting it helps the Company prepare for the RFP evaluation period. This form will be collected up until the RFP closes on September 29 (self-build) and September 30 (build-transfer and PPA proposals), but the Company's preference is for this form to be submitted by August 15, 2022. Please submit to NSP2022RFP@xcelenergy.com. *Please use a separate form for each separate RFP Project.*

BIDDING COMPANY INFORMATION

1) **Company Name**

2) **Company Location**
Street Address, City, State, Zip

3) **Company Representative**
Name & Title

4) **Signature of Representative**

5) **Email of Representative**

6) **Phone # of Representative**

PROJECT INFORMATION

7) **Project Name**

8) **Generation Technology**
Solar, or solar + storage ("hybrid")

9) **Nameplate Capacity (MW-ac)**
Nameplate of Solar or Solar Component of Hybrid project

10) **Storage Capacity (MWh)**
Nameplate of Storage Component of Hybrid project (e.g. solar + storage)

11) **Capacity Factor (%)**
Annual as a % of Nameplate (MW-ac)

12) **Location**
(City, County, State)

13) **COD (mm/dd/yyyy)**
Proposed Commercial Operation Date (COD)

14) **Point of Delivery is on the:**

- ☐ Transmission System (MISO Zone 1)
- ☐ Reuse of Sherco 2 point of interconnection (Gen Tie)
- ☐ NSP Distribution System

If on the NSP Distribution System, select an option below:

- ☐ Interconnection Application Submitted with Deemed Complete day on or before July 18, 2022
- ☐ Interconnection Application Yet To Be Submitted If Bid is Shortlisted (expected on or after December 7, 2022)

15) **Ownership/Contract Type**

- ☐ Build-Transfer or Self-Build
- ☐ Power Purchase Agreement (PPA)

16) **Diverse/Diversity Suppliers**

- ☐ Please contact me at the information in 1) - 6) above to help me identify diverse/diversity suppliers

17) Notes to NOIR

Confidentiality

2022 NSP RFP

I hereby state that I will not disclose or disseminate any confidential information (as will be marked/labelled by NSP) I receive as part of the 2022 NSP Request for Proposals or during the negotiations of a Power Purchase Agreement to any third party other than to those who are specifically authorized to review such confidential information and who have signed Form 1: Confidentiality Agreement. At the conclusion of the 2022 NSP Request for Proposals process, I agree to return all confidential information to Northern States Power Company, if requested by the Company.

Name

Title

Employer or Firm

Business Address

Bidder Represented

Date

Signature

Bid Certification | Build-Transfer and Self-Build Bids

2022 NSP RFP

The bidder hereby certifies that all of the statements and representations made in this proposal are true to the best of the bidder's knowledge and belief, and agrees to be bound by the representations, terms, and conditions contained in the Solicitation including restrictions on the bidder's claims of confidentiality. The bidder agrees to move forward with negotiation of a Purchase & Sale Agreement based on the terms and conditions noted in the applicable Term Sheet except as specifically noted in writing.

The bidder certifies that the proposal pricing submitted includes use of union labor for the construction of the RFP Project as per the Union Labor Provision below, and the full cost for all transmission and distribution interconnection and system upgrade costs previously identified or that will be identified by MISO and all transmission costs from the RFP Project associated with delivery to the POD, except as specifically noted in Section (D) of the Pricing Form.

The bidder has included the solar site pollinator habitat assessment state form with its bid documents, and the bidder certifies that the project will comply with applicable state permitting requirements.

BT Bidder acknowledges that as detailed in the RFP document, BT bidder will pay a second bid fee to begin contract negotiations, if the bid is shortlisted for negotiations.

The bidder agrees to abide by the Conduct Code posted below and agrees to indemnify, defend, hold harmless and reimburse Xcel Energy, its affiliates and their respective successors and assigns for, from, and against any and all losses, expenses, damages, fees or the like of whatever nature, which may be incurred as a result of or arising out of or in connection with this RFP due to: (i) bidder's breach of these terms, (ii) bidder's negligent acts or omissions; or (iii) bidder's reckless or intentional misconduct.

The bidder acknowledges that the officer whose signature appears below is able to contractually commit the bidder for its proposal.

Submitted by:	(exact legal name of firm)
Bidder:	(if different than above)
Signature of an Officer of Bidder:	
Name of Officer:	
Title:	
Date Signed:	
List of Addenda issued by NSP:	

Conduct Code: All parties will prohibit unethical behavior and are expected to notify the RFP Manager if they witness practices that are counter-productive to the RFP process. Participant is required to disclose any existing or potential conflict of interest, and all parties will act in such a way to avoid the perception of a conflict of interest before, during and after the RFP has closed (September 29, 2022 for self-build bids; September 30, 2022 for build-transfer bids). If Participant is aware of unethical behavior, an existing or potential conflict of interest or experiences any difficulties that would be counter-productive to the fair operation of the RFP process, Participant must notify the RFP Manager immediately.

Union Labor Provision: The use of Union Labor for the construction of the RFP Project means that an officer of Seller, authorized to bind Seller and who is familiar with the Facility, shall certify in writing that all Construction Craft Employees were covered by a collective bargaining agreement with a union affiliated with the local council of North America's Building Trades Unions ("Building Trades CBA"). If Seller cannot provide such certification as to a specified portion of the work, then an officer of Seller, authorized to bind Seller and who is familiar with the Facility shall certify in writing that Seller met and conferred, in good faith, with the local council of North America's Building Trades Unions and attempted to find and hire those trade(s) of Construction Craft Employee(s) covered by a Building Trades CBA for that portion of the work, and, if such Construction Craft Employee(s) covered by a Building Trades CBA were not available, that Seller (or Seller's construction contractor) entered into a site-specific building trades collective bargaining agreement covering that portion of the work.

Bid Certification | Power Purchase Bids

2022 NSP RFP

The bidder hereby certifies that all of the statements and representations made in this proposal are true to the best of the bidder's knowledge and belief, and agrees to be bound by the representations, terms, and conditions contained in the Solicitation including restrictions on the bidder's claims of confidentiality. The bidder shall accept the applicable NSP Model Power Purchase Agreement (Appendix B of the RFP) except as specifically noted in writing.

The bidder certifies that the bidder has considered applicable accounting standards in regard to finance lease and variable interest entities and that, to the bidder's knowledge, the bidder's proposal will not result in finance lease or variable interest entity treatment to the Company.

The bidder certifies that the proposal pricing submitted includes use of union labor for the construction of the RFP Project as per the Union Labor Provision and the Model PPA Template, and the full cost for all transmission and distribution interconnection and system upgrade costs previously identified or that will be identified by MISO or NSP and all transmission costs from the RFP Project associated with delivery to the POD, except as specifically noted in Section (D) of the Pricing Form submitted in this bid.

The bidder has included the solar site pollinator habitat assessment state form with its bid documents, and the bidder certifies that the project will comply with applicable state permitting requirements.

The bidder certifies that, in the event that the Company needs to communicate with MISO regarding interconnection specifics, that they will take all steps to enable such communication.

Bidder acknowledges that as detailed in the RFP document, bidder will pay a second bid fee to begin contract negotiations, if the bid is shortlisted for negotiations.

The bidder agrees to abide by the Conduct Code posted below and agrees to indemnify, defend, hold harmless and reimburse Xcel Energy, its affiliates and their respective successors and assigns for, from, and against any and all losses, expenses, damages, fees or the like of whatever nature, which may be incurred as a result of or arising out of or in connection with this RFP due to: (i) bidder's breach of these terms, (ii) bidder's negligent acts or omissions; or (iii) bidder's reckless or intentional misconduct.

The bidder acknowledges that the officer whose signature appears below is able to contractually commit the bidder for its proposal.

Submitted by:	(exact legal name of firm)
Bidder:	(if different than above)
Signature of an Officer of Bidder:	
Name of Officer:	
Title:	
Date Signed:	
List of Addenda issued by NSP:	

Conduct Code: All parties will prohibit unethical behavior and are expected to notify the RFP Manager if they witness practices that are counter-productive to the RFP process. Participant is required to disclose any existing or potential conflict of interest, and all parties will act in such a way to avoid the perception of a conflict of interest before, during and after the RFP has closed (September 30, 2022). If Participant is aware of unethical behavior, an existing or potential conflict of interest or experiences any difficulties that would be counter-productive to the fair operation of the RFP process, Participant must notify the RFP Manager immediately.

Union Labor Provision: The use of Union Labor for the construction of the RFP Project means that an officer of Seller, authorized to bind Seller and who is familiar with the Facility, shall certify in writing that all Construction Craft Employees were covered by a collective bargaining agreement with a union affiliated with the local council of North America's Building Trades Unions ("Building Trades CBA"). If Seller cannot provide such certification as to a specified portion of the work, then an officer of Seller, authorized to bind Seller and who is familiar with the Facility shall certify in writing that Seller met and conferred, in good faith, with the local council of North America's Building Trades Unions and attempted to find and hire those trade(s) of Construction Craft Employee(s) covered by a Building Trades CBA for that portion of the work, and, if such Construction Craft Employee(s) covered by a Building Trades CBA were not available, that Seller (or Seller's construction contractor) entered into a site-specific building trades collective bargaining agreement covering that portion of the work.

Bid Cover Sheet

2022 NSP RFP

1) Project / Facility Name:

2) Project Location (City, County, State):

City, County, State: City: County:

State:

Latitude, Longitude: °N °W
(decimal format; accurate to five (5) decimal places)

3) Bidder Contact:

The individual whose name appears as the Bidder Contact will be the person designated by the bid respondent to receive and respond to communications regarding this bid.

Name:
Company:
Address:
Phone / Fax:
email:

4) Alternate Contact:

Name:
Company:
Address:
Phone / Fax:
email:

5) Generation Technology Type *(select from drop-down list)*

6) Generation Technology Overview

Solar PV Nameplate Capacity * **MW** **Net Annual Capacity Factor (%) at POD:**

* Unless noted otherwise, MW, MWh refer to AC power and energy. **Estimated Annual Curtailment (% of Gross Annual Generation):**

Solar PV Nameplate Capacity (MW-DC) **MW-DC**

Storage Nameplate Capacity (MW) **MW** *(only if bid includes a storage component)*

Storage Duration of Nameplate Capacity (hours) *(only if bid includes a storage component)*

7) Net Annual Generation at POD: **MWH**

8) Anticipated Commercial Operation Date ("COD") (mm/dd/yyyy):

9) Proposed Structure *(select from drop-down list)*

10) Estimated Useful Life of Project at COD (Years):

11) Point of Delivery Is on the *(select from drop-down list)*

12) Point of Interconnection Description:

13) Point of Delivery Description (if same as POI indicate "same"):

14) Transmission Interconnections Only: Name of Utility Providing Retail Service at Generation Location.

15) Transmission Interconnections Only: MISO Interconnection State

16) Is the Proposal being submitted through a partnership, joint venture, consortium, or other association?
If so, please please identify all partners, joint ventures, members, or other entities or persons comprising same on Tab 9 - Creditworthiness.

17) Summary of Exceptions - For Build-Transfer and PPA Bids Only

Build-Transfer Bids

Bidder has made no exceptions to the BT Term Sheet and accepts all terms therein.

Bidder has provided redlined exceptions to the BT Term Sheet, noted them in 4-Pricing - BT,SB Bid question (H), and as per Form 2 accepts all other terms in the BT Term Sheet to which no exception has been made.

PPA Bids

Bidder has made no exceptions to the Model PPA Sheet and accepts all terms therein.

Bidder has provided redlined exceptions to the Model PPA Template, noted them in 4-Pricing - PPA Bid question (G), and as per Form 2 accepts all terms in the Model PPA Template not red-lined.

18) Automatic Generator Control

Can the RFP Project as bid be controlled by Automatic Generator Control (AGC)?

If the RFP Project cannot be controlled by AGC, is the RFP Project as bid compatible with AGC, should it be added later?

Pricing

2022 NSP RFP

If bidder proposes more than one pricing option, a separate bid must be submitted.

(A) Purchase Price. As indicated in the RFP text and to match Bidder's value in BOT Term Sheets: the proposal pricing shall include the cost to fully construct the facility, including all engineering, procurement & construction costs, union labor, as well as the estimated distribution and transmission interconnection costs. Engineering & Procurement costs include, but are not limited to: Design, site preparation/survey, transportation, Professional Engineer approval, testing, electrician and installation labor, wiring, fencing, testing, commissioning, and enrollment in energy markets. **For BT bids**, all pricing is expected to be fully compliant with the Company's applicable Model Term Sheet for the Purchase and Sale of an Operational Solar or Solar with Storage Project (Appendix A). Any exceptions to Appendix A should be noted in Section (H) of this Form as well as provided in a redlined TS from Appendix A. In the case that exceptions are submitted to applicable Model Term Sheet, the bid price must be fully compliant with the written exceptions submitted and respondents should note that exceptions may lower the project score. **For both BT and SB bids,** all pricing is expected to be fully compliant with the applicable Technical Specifications (Appendix C). Any exceptions should be noted on Form 14-BT,SB Tech Specs Excepts, not in Section (H) of this form. In the case that exceptions are submitted to applicable Technical Specifications, the bid price must be fully compliant with the written exceptions submitted and respondents should note that exceptions may lower the project score.

(B) Identify the costs within (A) that correspond to the project's estimated interconnection costs, where estimated interconnection costs include application and required upgrades, studies cost.

(C) Confirm whether the interconnection equipment is expected to qualify to be treated as energy property for Investment Tax Credit (ITC) purposes.

(D) Identify the year in which construction of the project is expected to be treated as beginning for Investment Tax Credit/Production Tax Credit (PTC) purposes.

(E) Identify whether the ITC or PTC is expected to be available for the project.

(F) Identify the PTC rate expected to be available for the project. If the PTC is not being used, leave blank.

(G) Identify the ITC (%) expected to be available for the project. If the ITC is not being used, leave blank.

(H) Verify whether the RFP Project's estimated bid price in (A) remains valid through March 31, 2023.

(I) Expected Generation (Solar Only) & O&M Costs (BESS Only) - Provide expected solar generation levels for each year of the project's expected life, net of expected degradation impacts, if any, parasitic loads, and losses. Expected generation should be estimated at the Point of Delivery. For solar + storage bids only: provide estimated annual Variable O&M and Fixed O&M costs for the BESS component only (I.e., regular maintenance, equipment warranties, and storage augmentation, as needed). For both Variable O&M and Fixed O&M estimates, use (H) below to identify which cost categories are included in the O&M estimate and assumptions used. Please be advised that the primary use case of assets sought in this RFP is Resource Adequacy.

(J) Schedule of Post-Closing Payments - Provide a schedule and amount of ongoing payments to be assumed by NSP post-closing that separately identifies payments for 1) land and easement costs, 2) optional items available for selection at NSP's discretion, and 3) all other project related payments to be made by NSP. Solar + storage bids should also supply a Long-Term Services Agreement of the type mentioned in Appendix B if they choose. Payments can be made in a periodic or single lump sum manner. All dollar amounts should be entered in nominal dollars.

(K) Notes to Generation and Pricing - Include pricing assumptions related to this bid, including any exceptions to the Company's applicable Model Term Sheet for the Purchase and Sale of an Operational Solar or Solar with Storage Project (Appendix A). Section (H) should also include any relevant assumptions regarding the level of federal tax incentives the proposed project is expected to attain. Describe for each year the optional items available for Selection at NSP's discretion, including any service management agreements and annual costs, remote monitoring and annual costs, EMS annual costs, origin for primary equipment components, recommended spare parts, BESS parts pricing/company purchase options or option pricing as described in the applicable Technical Specifications in Appendix C of the RFP. Describe for each year all other Project related payments to be made by NSP. All pricing is required to assume the use of union labor for the construction of the RFP Project (any exceptions are to be noted in section H).

(L) Notes to the use of Diverse / Diversity Suppliers. For each component of the construction and operations of the project that will use Diverse / Diversity Suppliers, please indicate the supplier name and associated value of each component, if known. Please utilize the subcontracting plan in Appendix D, to identify the Diverse Supplier and the associated supplier certification confirming their classification. In the instance you don't have specific supplier details at the time of bid submission, please submit an overview of your companies subcontracting program that reflects a listing of diverse suppliers and the percentage of business done with each for 2021 at a minimum.

(M) Notes to the Manufacturing, Transportation, and Tariff Risk. Confirm if any components or subcomponents originate from Xinjiang, China. Confirm that all components and subcomponents will be compliant with the Uyghur Forced Labor Prevention Act. Describe if bidder is willing to accept all U.S. import tariff and transporation costs from the date the contract is executed until delivery of the equipment? If no, please specify how you propose the tariff risk and transportation risk costs be allocated.

(N) Identify if prevailing wage and apprenticeship requirements are expected to meet in order to receive full credit.

(O) Identify if any ITC or PTC adders will be available for the project (e.g., domestic content and/or energy community).

(P) Identify whether the project is expected to be eligible for an allocation for solar projects constructed in low income communities.

(Q) Identify any tax exempt bonds, subsidized energy financings, private activity bonds or other financing be used that may impact the ITC/PTC for the project.

(A) Purchase Price	(B) Identify the estimated interconnection costs included in the Purchase Price (A)

(C) Is interconnection equipment in (B) expected to qualify to be treated as energy property for Investment Tax Credit purposes?

(D) Beginning Year of Construction (ITC/PTC)		(E) Identify whether the ITC or PTC is assumed:	
(F) PTC Rate Estimated to be Available ($/MWH):		(G) % of ITC Estimated to Be Available:	

(H) Purchase Price Bid in (A) Will Remain Valid through March 31, 2023: Yes ☐ No ☐

(I) Expected Generation & BESS O&M Costs

Year	Solar MWh	BESS Component Only: Variable O&M	BESS Component Only: Fixed O&M
20xx		$	$

(J) Schedule of Ongoing, Post-Closing Payments

Date (mm/dd/yyyy)	Land and Easement Costs	Solar + Storage Bids Only: Long-Term Services Agreement Option	Optional Items Available for Selection at NSP's Discretion	All Other Project Related Payments to be Made by NSP	Total
XX/XX/20XX	$	$	$	$	$ -

20xx		$	$	XX/XX/20XX	$	$	$	$	$	-
20xx		$	$	XX/XX/20XX	$	$	$	$	$	-
20xx		$	$	XX/XX/20XX	$	$	$	$	$	-
20xx		$	$	XX/XX/20XX	$	$	$	$	$	-
20xx		$	$	XX/XX/20XX	$	$	$	$	$	-
20xx		$	$	XX/XX/20XX	$	$	$	$	$	-
20xx		$	$	XX/XX/20XX	$	$	$	$	$	-
20xx		$	$	XX/XX/20XX	$	$	$	$	$	-
20xx		$	$	XX/XX/20XX	$	$	$	$	$	-
20xx		$	$	XX/XX/20XX	$	$	$	$	$	-
20xx		$	$	XX/XX/20XX	$	$	$	$	$	-
20xx		$	$	XX/XX/20XX	$	$	$	$	$	-
20xx		$	$	XX/XX/20XX	$	$	$	$	$	-
20xx		$	$	XX/XX/20XX	$	$	$	$	$	-
20xx		$	$	XX/XX/20XX	$	$	$	$	$	-
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20xx		$	$	XX/XX/20XX	$	$	$	$	$	-
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20xx		$	$	XX/XX/20XX	$	$	$	$	$	-
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20xx		$	$	XX/XX/20XX	$	$	$	$	$	-
20xx		$	$	XX/XX/20XX	$	$	$	$	$	-

(K) Notes to Generation and Pricing:

(L) Notes to the use of Diverse / Diversity Suppliers:

(M) Notes to Manufacturing, Transportation, and Tariff Risk:

Pricing | Power Purchase Agreement Bids

2022 NSP RFP

Bidders may propose PPA term lengths between 7 and 25 years. Mutliple term lengths are allowed to be proposed for the same generation asset, but e*ach separate PPA term length proposed will be regarded as a separate proposal and will require a separate bid fee.*

Please be advised that the primary use case for resources sought in this RFP is Resource Adequacy.

Proposal pricing shall include the cost to fully construct and commission the project and must include the estimated distribution and transmission interconnection costs. All pricing is expected to be fully compliant with the Company's applicable Model Power Purchase Agreement Template. Any exceptions should be noted both in Section (G) of this Form and provided in a redlined version of the applicable agreement in Attachment B. In the case that exceptions are submitted, the bid price must be fully compliant with the written exceptions submitted and respondents should note that exceptions may lower the project score.

(A) Annual Committed Energy Production - Provide estimated energy generation (MWh) for each year of the proposed PPA Term, net of expected degradation impacts, if any, parasitic loads, and losses. Annual Committed Energy levels should be estimated at the Point of Delivery.

(B) Energy Payment Rate - Provide Energy Payment Rates ($/MWh) for each year of the proposed PPA Term assuming the use of union labor for the construction of the project and including any anticipated federal tax incentives. All dollar amounts should be entered in nominal dollars. Prices must contain a fixed base price. Respondents may not submit proposals with variable base year pricing or variable escalators.

(C) Battery Payment Rate - For bids containing a storage component. See the Company's Solar + Storage Model Power Purchase Agreement Template. The Battery Payment Rate is part of the Energy Payment Rate and is only used for the Guaranteed Storage Availability Payment Adjustment and associated cap and for Force Majeure Battery Only Amount.

(D) Round Trip Efficiency (RTE) - Please provide the annual Round Trip Efficiency of the BESS, where RTE is the amount of Battery Energy discharged by the BESS relative to the amount of Charging Energy, measured at the Battery Storage System Electric Metering Device.

(E) Identify whether the ITC or PTC is expected to be available for the project.

(F) Beginning Year of Construction (ITC/PTC) - Identify the year in which construction of the project is expected to be treated as beginning for Investment Tax Credit/Production Tax Credit (PTC) purposes.

(G) Verify whether the RFP Project's estimated bid price in (A) remains valid through March 31, 2023.

(H) Identify the PTC rate expected to be available for the project. If the PTC is not being used, leave blank.

(I) Identify the ITC (%) expected to be available for the project. If the ITC is not being used, leave blank.

(J) Notes to PPA Pricing - Include pricing assumptions related to this bid, including any exceptions to the Company's applicable Model Power Purchase Agreement Template. This should include any additional assumptions regarding federal tax incentives applicable to the proposed project on the proposed in-service date. Also identify if these incentives are due to expire or decline during the term of the proposed agreement.

(K) Notes to the use of Diverse / Diversity Suppliers. For each component of the construction and operations of the project that will use Diverse / Diversity Suppliers, please indicate the supplier name and associated value of each component, if known. Please utilize the subcontracting plan in Appendix D, to identify the Diverse Supplier and the associated supplier certification confirming their classification. In the instance you don't have specific supplier details at the time of bid submission, please submit an overview of your companies subcontracting program that reflects a listing of diverse suppliers and the percentage of business done with each for 2021 at a minimum.

(L) Notes to the Manufacturing, Transportation, and Tariff Risk. Confirm if any components or subcomponents originate from Xinjiang, China. Confirm that all components and subcomponents will be compliant with the Uyghur Forced Labor Prevention Act. Describe if bidder is willing to accept all U.S. import tariff and transporation costs from the date the contract is executed until delivery of the equipment? If no, please specify how you propose the tariff risk and transportation risk costs be allocated.

(M) Identify whether the interconnection equipment is expected to qualify to be treated as energy property for Investment Tax Credit purposes.

(N) Identify any tax exempt bonds, subsidized energy financings, private activity bonds or other financing be used that may impact the ITC/PTC for the project.

Operating Year	(A) Committed Energy (MWh)	(B) Energy Payment Rate ($/MWh)	(C) Battery Payment Rate ($/MWh)	(D) Round Trip Efficiency
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E) Identify whether the ITC or PTC is assumed:	F) Beginning Year of Construction (ITC/PTC)

(G) Verify whether the RFP Project's estimated bid price in (A) remains valid through March 31, 2023.

Yes ☐
No ☐

H) Production Tax Credit Rate ($/MWH)	I) Investment Tax Credit Percentage (%)

(J) Notes to PPA Pricing:

(K) Notes to the use of Diverse / Diversity Suppliers:

(L) Notes to Manufacturing, Transportation, and Tariff Risk:

Pricing | Power Purchase Agreement Bids - *Alternate Term*

2022 NSP RFP

Bidders may propose PPA term lengths between 7 and 25 years. Mutliple term lengths are allowed to be proposed for the same generation asset, but e*ach separate PPA term length proposed will be regarded as a separate proposal and will require a separate bid fee.* ***The Alternate Term form is for submitting PPA of an additional term length, all else constant from the original bid. To submit an alternate bid, simply complete this tab and "4- Pricing - PPA Bid" within a single file.***

Proposal pricing shall include the cost to fully construct and commission the project and must include the estimated distribution and transmission interconnection costs. All pricing is expected to be fully compliant with the Company's applicable Model Power Purchase Agreement Template. Any exceptions should be noted both in Section (G) of this Form and provided in a redlined version of the applicable agreement in Attachment B. In the case that exceptions are submitted, the bid price must be fully compliant with the written exceptions submitted and respondents should note that exceptions may lower the project score.

(A) Annual Committed Energy Production - Provide estimated energy generation (MWh) for each year of the proposed PPA Term, net of expected degradation impacts, if any, parasitic loads, and losses. Annual Committed Energy levels should be estimated at the Point of Delivery.

(B) Energy Payment Rate - Provide Energy Payment Rates ($/MWh) for each year of the proposed PPA Term assuming the use of union labor for the construction of the project and including any anticipated federal tax incentives. All dollar amounts should be entered in nominal dollars. Prices must contain a fixed base price. Respondents may not submit proposals with variable base year pricing.

(C) Battery Payment Rate - For bids containing a storage component. See the Company's Solar + Storage Model Power Purchase Agreement Template. The Battery Payment Rate is part of the Energy Payment Rate and is only used for the Guaranteed Storage Availability Payment Adjustment and associated cap and for Force Majeure Battery Only Amount.

(D) Round Trip Efficiency (RTE) - Please provide the annual Round Trip Efficiency of the BESS, where RTE is the amount of Battery Energy discharged by the BESS relative to the amount of Charging Energy, measured at the Battery Storage System Electric Metering Device.

(E) Identify whether the ITC or PTC is expected to be available for the project.

(F) Beginning Year of Construction (ITC/PTC) - Identify the year in which construction of the project is expected to be treated as beginning for Investment Tax Credit/Production Tax Credit (PTC) purposes.

(G) Verify whether the RFP Project's estimated bid price in (A) remains valid through March 31, 2023.

(H) Identify the PTC rate expected to be available for the project. If the PTC is not being used, leave blank.

(I) Identify the ITC (%) expected to be available for the project. If the ITC is not being used, leave blank.

(J) Notes to PPA Pricing - Include pricing assumptions related to this bid, including any exceptions to the Company's applicable Model Power Purchase Agreement Template. This should include any additional assumptions regarding federal tax incentives applicable to the proposed project on the proposed in-service date. Also identify if these incentives are due to expire or decline during the term of the proposed agreement.

(K) Notes to the use of Diverse / Diversity Suppliers. For each component of the construction and operations of the project that will use Diverse / Diversity Suppliers, please indicate the supplier name and associated value of each component, if known. Please utilize the subcontracting plan in Appendix D, to identify the Diverse Supplier and the associated supplier certification confirming their classification. In the instance you don't have specific supplier details at the time of bid submission, please submit an overview of your companies subcontracting program that reflects a listing of diverse suppliers and the percentage of business done with each for 2021 at a minimum.

(L) Notes to the Manufacturing, Transportation, and Tariff Risk. Confirm if any components or subcomponents originate from Xinjiang, China. Confirm that all components and subcomponents will be compliant with the Uyghur Forced Labor Prevention Act. Describe if bidder is willing to accept all U.S. import tariff and transporation costs from the date the contract is executed until delivery of the equipment? If no, please specify how you propose the tariff risk and transportation risk costs be allocated.

(M) Identify whether the interconnection equipment is expected to qualify to be treated as energy property for Investment Tax Credit purposes.

(N) Identify any tax exempt bonds, subsidized energy financings, private activity bonds or other financing be used that may impact the ITC/PTC for the project.

Operating Year	(A) Committed Energy (MWh)	(B) Energy Payment Rate ($/MWh)	(C) Battery Payment Rate ($/MWh)	(D) Round Trip Efficiency
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E) Identify whether the ITC or PTC is assumed:	F) Beginning Year of Construction (ITC/PTC)

(G) Verify whether the RFP Project's estimated bid price in (A) remains valid through March 31, 2023.

Yes ☐
No ☐

H) Production Tax Credit Rate ($/MWH)	I) Investment Tax Credit Percentage (%)

(J) Notes to PPA Pricing:

(K) Notes to the use of Diverse / Diversity Suppliers:

(L) Notes to Manufacturing, Transportation, and Tariff Risk:

Construction Milestones

2022 NSP RFP

Insert the proposed date for each milestone shown here. Milestones should be based on the requirements to achieve the proposed commercial operation date. If a milestone is not applicable for your bid, mark "n/a".

Date	Construction Milestones
XX/XX/20XX	Seller and all required counterparties have executed major procurement contracts, the Construction Contract, any operating agreements, and the Interconnection Agreement needed to commence construction of the Facility.
XX/XX/20XX	Seller shall have obtained all required permits needed to construct the Facility.
XX/XX/20XX	Seller shall have obtained all required site control for the construction of the Facility.
XX/XX/20XX	Seller shall have achieved closing on financing for the Facility or provided the Company with proof of financial capability to construct the Facility.
XX/XX/20XX	Commencement of construction of the Facility.
XX/XX/20XX	Seller issues construction drawings complete (IFC set)
XX/XX/20XX	Seller to start post installations with foundations
XX/XX/20XX	Seller to deliver inverters and battery units if included
XX/XX/20XX	Contractor starts module installation
XX/XX/20XX	The generator(s)/step-up transformer shall have been delivered to, and installed at the Site.
XX/XX/20XX	Seller shall have constructed necessary Seller's Interconnection Facilities; such facilities are capable of being energized
XX/XX/20XX	Start-up testing of the Facility commences
XX/XX/20XX	Seller shall make all applications and/or filings required by Applicable Law for REC accreditation and for the provision of such RECs to Company.
XX/XX/20XX	Commercial Operation Milestone
XX/XX/20XX	Guaranteed Project Final Completion

Construction Execution Details - Provide onsite construction execution details, including anticipated personnel sizes for construction labor and management, identification of primary EPC firm, expected on site manpower labor curves, construction union labor trade compositions, and required equipment laydown or other warehousing sizes and locations.

Technical Description | Battery Energy Storage

2022 NSP RFP

This Form is only required for bids containing a BESS component. Parameters in this section are for the entire energy storage system. Please see cell comments for definitions.

1) Battery & PCS Unit Summary Information

Manufacturer of Battery	
Battery Model Number	
Battery Storage Chemistry	
Contracting Status of Battery	
(System) Integrator	
Inverter Manufacturer/Model:	
PCS Unit Power (kW):	
Percent of Energy Charged by Solar Array	

2) BESS Ratings

Nameplate Capacity (MW)		
Dispatchable Capacity (MW)	-	
Storage Duration (hours)	-	
Storage Capacity	-	MWH

3) BESS Unit Dispatchable Range

	Annual		Winter	Spring	Summer	Fall
Minimum Storage Level (SoC_min)		MWH				
Maximum Storage Level (SoC_max)		MWH				
Preferred Resting State of Charge (RSoC)		MWH				
Maximum Real Power Charge Limit (Cmax_p)		MW				
Minimum Real Power Charge Limit (Cmin_p)		MW				
Maximum Real Power Discharge Limit (Dmax_p)		MW				
Minimum Real Power Discharge Limit (Dmin_p)		MW				
Self-Discharge Rate		MWH/Month				
Minimum Duration for Full Charge at Cmax_p (SoC_min to SoC_max) (minutes)		Minutes				
Minimum Duration for Full Discharge at Dmax_p (SoC_max to SoC_min)		Minutes				

4) Dispatch Time Limitations & Ramp Rates

Minimum Run Time Per Charge Period		Minutes
Minimum Run Time Per Discharge Period		Minutes
Minimum Down Time Required Between Two Discharge Periods		Minutes
Minimum Down Time Required Between Two Charge Periods		Minutes
Maximum Ramp Up Rate (Dmin_p to Dmax_p)		MW/second
Maximum Ramp Down Rate (Dmax_p to Dmin_p)		MW/second
Response Time		Seconds
Cmax_p to Cmin_p		MW/second
Cmin_p to Cmax_p		MW/second
Ramp Rate Reduction at High SoC		(3 part answer: Min %, Max %, High SoC (MWH))
Ramp Rate Reduction at Low SoC		(3 part answer: Min %, Max %, Low SoC (MWH))

5) Cycle Limitations (within manufacturer's warranty)

Maximum Cycles per Day		# of Cycles
Maximum Cycles per Year		# of Cycles
Planned Cycles per Year		# of Cycles
Guaranteed Lifetime Number of Cycles		# of Cycles

6) Throughput Limitations (within manufacturer's warranty)

Maximum Daily Discharge Throughput		MWH
Maximum Annual Discharge Throughput		MWH
Guaranteed Lifetime Discharge Throughput		MWH

7) Capacity Degradation

Average Annual Capacity Degradation *(in addition to warranty curve)*		MWH/yr
Expected Capacity Degradation per Year		(% of MW)/ yr

8) Other

Maximum Power for Station Use		MW
Planned Outage (hours/year)		(Hours/Year)

9) Notes to Technical Description | Battery Energy Storage. Include availability of equipment and planned or estimated delivery dates.

10) Operations & Maintenance Plan Description (For All Bids: BT, Self-Build, and PPA bids)

Technical Description | Solar

2022 NSP RFP

This Form is only required for all bids unless otherwise designated.

1) Module Level Information

Manufacturer:	
Model #:	
Cell Material:	
Contracting Status of Module:	
Manufacturer Warranty:	
Total # of Modules:	
Long-term Average Annual Module Energy Degradation Rate (%/yr):	

2) Array Level Information

# Modules per String:	
Strings in Parallel:	
Total Active Surface Area (m^2):	

3) Inverter Information

Manufacturer:			
Model #:			
Contracting Status of Inverter:			
Cooling System and Design Temperature			
Manufacturer Warranty:			
Total # Inverters:		DC Voltage	

4) Mounting/Orientation

☐ Fixed ☐ 1-Axis Tracking

Azimuth (degree):		Elevation (degree):	

5) Tracker Information

Manufacturer:			
Model #:			
Description of Drive System			
Panel Orientation and Ground Clearance			
High Wind Stow Design			
Manufacturer Warranty:			
Trackers per MWAC		Row Spacing	

6) Facility Level Information

Annual Plant Availability (%)		Average Annual Capacity Degradation (%):	
DC/AC Ratio:			
Ground Coverage Ratio:			
Estimated Land Area (acres) - Solar PV:			
Access Roads (miles):			

7) Operation & Maintenance Plan Description (For All Bids: BT, Self-Build, and PPA bids)

8) Notes to PV Technical Description. Include availability of equipment and planned or estimated delivery dates.

9) QA/QC Plan Description (BT Bids Only):

10) (Required for All Bids) Describe your contingency plan if the preferred module above is unavailable. Include descriptions such as number of frame agreements with primary and secondary panel suppliers.

Energy Production Estimate for Specific Years | Solar

2022 NSP RFP

A) Assuming the solar facility had been in commercial operation during 2019, 2020, and 2021, provide the estimated annual energy production (AC) for each of these years utilizing whatever historical meteorological data are available for the site or a nearby site with similar meteorological characteristics. Estimated energy production should be at the POD and net of any expected plant degradation over time. Time is hour ending, Central Standard Time; do not adjust for daylight savings time. **For solar + storage bids**, the information below should be absent of any dispatch of storage.

B) Explain fully each of the assumption sets used for the response to part A).

A)

Calendar Year	Estimated Annual Energy P50 Production (AC MWh)
2019	
2020	
2021	

B) Explanation of Assumptions

Explain all Meteorological Assumptions and Data Sources used to produce the estimates in part A

Provide any Energy production report and/or PVsyst model output used for part A)

Provide summary of all losses or loss factors used in PVsyst model or energy production report for the response to part A)

Provide summary of all uncertainties used to prepare the P50 annual production estimates in part A).

Provide any other comments about part A)

Energy Production Profile Data | Solar

2022 NSP RFP

A) Enter the annual expected global horizontal irradiance and annual average estimated solar shading for the Solar Facility. The annual expected solar shading should be expressed as a percentage of the total P50 expected annual energy in (B) below.

B) Provide P50, P75, and P90 estimates of Annual Energy Production for a typical year. Estimated energy production should be at the POD and net of any expected plant degradation over time. **For solar + storage bids**, the information below should be absent of any dispatch of storage.

C) Provide the estimated hourly energy production (AC) for the same typical year used to complete the P50 annual estimate in part B). Estimated energy production should be at the POD and net of any expected plant degradation over time. Time is hour ending, Central Standard Time; do not adjust for daylight savings time. **For solar + storage bids**, the information below should be absent of any dispatch of storage.

D) Explain fully the meteorogical data, and source, used for the typical year assumptions in the responses to part C) and part B).

E) Provide the energy production report and/or PVsyst model used in the responses to B) and C).

F) Provide a summary of all uncertainties used to prepare P90, P75, and P50 annual production estimates in part B).

G) Provide the contact information, resume, and experience of the external, unaffiliated consultant preparing the third party energy production report. Provide any additional notes regarding the responses to A), B), or C).

H) If a model besides PVsyst was used for the energy production report in items B), C), and E), please provide the required PVsyst report. If the report used to answer B), C), and E) was PVsyst, please confirm this in the response to H) below.

I) Provide a summary file, in MS Excel format, that provides the assumptions being used by the PVsyst report indicated in the response to H).

A) **Annual Expected Global Horizontal Irradiance (kWh/m^2/yr) for Solar Projects**

GHI (kWh/m^2/yr) _____

Annual Expected Solar Shading

(%) _____

B)

Expected Annual Energy P50 Production (AC MWh)	Expected Annual Energy P75 Production (AC MWh)	Expected Annual Energy P90 Production (AC MWh)

C) Expected Hourly Production for Typical Year (AC MWh)

	Hour																							
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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D) Explain fully the meteorogical data, and source, used for the typical year assumptions in the responses to part C) and part B).

E) Provide the third party energy production report and any PVsyst model(s) used in the responses to B) and C). Include a summary of losses or loss factors assumed.

F) Provide a summary of all uncertainties used to prepare P90, P75 and P50 annual production estimates in part B).

G) Provide the contact information, resume, and experience of the external, unaffiliated consultant preparing the third party energy production report. Also provide any Additional Notes regarding the responses to A), B), or C).

H) If PVsyst was not used for B), C), and E), provide the required PVsyst model with the RFP Bid, and supply the name of the file or report name enclosed with the proposal. If PVsyst was used for B), C), and E) above, confirm this in this response. Also provide any Additional Notes regarding the responses to A), B), or C).

I) Provide a summary file, in MS Excel format, that provides the assumptions being used by the PVsyst report referenced in the response to H).

Interconnection Details - Opt 1 (Interconnection to NSP Distribution System)

2022 NSP RFP

Instructions: Please complete fields in yellow. Fields in grey are automatically populated by other portions of your proposal.

1) Interconnection Application Progress (Choose applicable option and follow directions to complete the rest of the form)

OPTION TYPES	DIRECTIONS FOR COMPLETING THIS FORM
Option #1: For projects in which no interconnection applications have been submitted and Deemed Complete by July 20, 2022;	Skip the rest of Section 1) and provide planned information further below in 2), 3). *Interconnection Application may not be submitted until shortlist announcement (currently planned for December 7).*
Option #2: For projects in which an interconnection application has been submitted and Deemed Complete by July 20, 2022 but is for a project that does not conform with the requirements of the RFP (i.e., application is for 5 MWac or less);	Complete the questions immediately below using data from the **existing** application. Complete Section 2) using information that reflects the total bid size submitted to the NSP RFP. Section 3) below, which involves a new Pre-Application, can be omitted (no Pre-Application is required). *The new Interconnection Application for project included in the NSP RFP may not be submitted until shortlist announcement (December 7).*

Date of existing Interconnection Application Submittal	
Deemed Completion Date of existing Interconnection Application	
Application/Case #:	
Please submit copies of all interconnection study results received to date as part of this Interconnection Process. Itemize here what is attached.	

Option #3: For projects in which an interconnection application, for capacity larger than 5 MWac, **HAS** been submitted & Deemed Complete by July 20, 2022	Complete the questions immediately below using data from the **existing** application. Sections 2) and 3) may be skipped in entirety.
Date of Interconnection Application Submittal	
Deemed Completion Date of Interconnection Application	
Application/Case #:	
Please submit copies of all interconnection study results received to date as part of this Interconnection Process. Itemize here what is attached.	

2) Project Information *(Section only to be completed by Bids choosing Option #1 or Option #2 above). For projects choosing Option #2, this section is to be completed using information that reflects the total bid size submitted to the NSP RFP, not the existing interconnection application.*

Project Name *(as indicated on 3-Cover Sheet)*	0
Solar Nameplate AC Capacity (kW) *(from 3 - Cover Sheet)*	0
If applicable, Storage Nameplate AC Capacity (kW) *(from 3 - Cover Sheet)*	0
Size of Proposed Point of Interconnection (kW)	
Latitude of Project (From Form 3 - Cover Sheet)	0
Longitude of Project (From Form 3 - Cover Sheet)	0

3) Renewable Developer Pre-Application *(Section only to be completed by Bids choosing Option #1 above). Projects choosing Options #2 or #3 should not complete this section.*

Please visit https://mn.my.xcelenergy.com/s/renewable/developers/interconnection and submit a Pre-Application Request (where available based on State jurisdiction). This includes creating a profile and signing an NDA.	
Please provide a copy of your completed Pre-Application Request and all completed Pre-Application Results as of the date of application submission with your proposal. Please itemize here what is attached.	

Interconnection Details - Option 2 (New Interconnection in MISO Zone 1)

2022 NSP RFP

Projects are eligible to bid into the RFP if they have as a minimum, 1) completed MISO Decision Point #2, or 2) have received the MISO DPP Phase 2 Draft Study.

Bidders must also provide a summary of all anticipated interconnection and/or system upgrade costs for the proposal that are included in the proposal pricing. This includes financial analyses related to any costs expected to be incurred with regard to interconnection, including the cost of installing the interconnection facilities, the network upgrades, distribution upgrades, affected system upgrades, and system protection facilities that have been

1) Project Information

Project Name	
Project MW (AC) for interconnection request	
Project Description	
What is the projects's proposed Commercial Operating Date	

2) Generator Interconnection Request Information

MISO Project Number(s)	
Definitive Planning Stage ("DPP") Cycle	
Specify whether the interconnection request is for a Proposed New Generating Facility, a Generating Facility requesting Surplus Interconnection Service, a Fast Track Process for Small Generating Facility, or Other.	
Amount of Energy Resource Interconnection Service requested (MW)	
Amount of Network Resource Interconnection Service requested (MW)	
Identify the Existing Generating Facility if Surplus Interconnection Service was.requested and identify the amount and type of interconnection service (ERIS, NRIS) owned by the Existing Generating Facility.	

3) Generator Interconnection Study or Agreement Information

Interconnection Study: MISO Study Request Date	
Interconnection Study: MISO Study Status (ongoing or expected completion date)	
Interconnection Agreement: GIA Execution Date (please designate whether it is actual or expected)	
Generator feeder transmission line status (routing, permitting, etc.)	
Provide copies of all existing/completed System Impact Studies, Restudies, or Facility Studies	
Provide copies of Facility Construction Agreements or Multi-Party Construction Agreements	

4) Project Transmission Information

Location of Point of Interconnection (including substation name)	
Interconnection voltage (kV)	
Location of Point of Delivery, if different than POI	
Transmission Owner at Point of Interconnection	

5) Point of Contact for Transmission Information

Contact Name	
Contact Phone Number	
Contact e-mail	

6) Collector Substation Design Information

Main Power Transformer Quantity	
Main Power Transformer Manufacturer/Model	
Capacitor Bank Quantity/Rating	

7) Project Congestion/Curtailment Information

Provide any analysis performed regarding projected congestion at the project POD	
Provide any analysis performed regarding projected curtailment at the project POD	

Interconnection Details - Option 3 (Reuse of Sherco Interconnection)

Proposals are not required to request MISO generator interconnection service to participate in this option of the RFP.

Bidders must provide a summary of all anticipated costs for all interconnection upgrade costs associated with delivering energy from the project to the POI including any Gen-Tie line. Gen Tie design, routing, regulatory approval and permitting information should also be provided.

1) Project Information

Project Name	
Project MW (AC) for interconnection request	
Project Description	
What is the projects's proposed Commercial Operating Date	
Name the two closest CPNodes in physical proximity to the requested Point of Interconnection. Note: These CPNodes must have been in commercial operation as of May 31, 2020.	

2) Project Transmission Information

Generator feeder transmission line length (collector substation to POI)	
Generator feeder transmission line design details	
Generator feeder transmission line status (routing, permitting, etc.)	
Summary of interconnection upgrades associated with delivering energy from the project to the POI including the gen-tie line.	
Anticipated costs for interconnection upgrades associated with delivering energy from the project to the POI including the gen-tie line.	

3) Point of Contact for Transmission Information

Contact Name	
Contact Phone Number	
Contact e-mail	

4) Collector Substation Design Information

Main Power Transformer Quantity	
Main Power Transformer Manufacturer/Model	
Capacitor Bank Quantity/Rating	

5) Which Delivery Option Is Provided with Proposal?

Associated Interconnection Costs (From Form 4-Pricing - BT,SB Bid)	$0
If the 115 kV Option is selected as the delivery option, please identify the cost of the substation transformer required at the Sherco substation to enable delivery at 345 kV. This cost must be included in the total Associated Interconnection Costs estimated provided on Form 4.	

6) Notes to Delivery Option - Include detailed plans for route, design, regulatory approval, and permitting information for the transmission facilities delivery option in your response to 5).

Project Financing, Credit Worthiness, and Legal Claims

1) Project Financing

Confirm the Bidder's type of organization (Corporation, Partnership, etc)	
Describe the financial and legal organizational structure including any subsidiaries. In addition please enclose an ownership structure showing the legal name and the percentage of ownership of each owner.	
Describe the financing or funding plan, equity participants and any project financing guarantees, including but not limited to any form agreement(s) utilized in similar past transactions. Include any financing requirements and an indicative financing structure (construction and permanent). Describe how current financial markets are likely to impact ability to access the debt and tax equity markets.	
Disclose any threshold requirements that must be met prior to having access to the various components of the financing or funding plan described above.	
Do you foresee any issues in obtaining and maintaining a security fund per the requirements described in the applicable NSP Model Term Sheet (Appendix A) or NSP Model Power Purchase Agreement (Appendix B)?	
Please identify the guarantor	
Provide the current credit rating of the guarantor.	
Is the guarantor on credit watch?	

2) Credit Worthiness

Provide three of your most recent audited annual reviews with financial statements in either a standalone pdf format and/or website link including any relevant supplemental financial information. If you are unable to provide these, what can you provide to demonstrate credit worthiness?	
Describe any credit issues (e.g. bankruptcy, events of default, etc.) for any participant who will have a more than a 20% share of the equity position in the project.	

3) Legal Claims

Disclose any past, current, or anticipated future litigation related to projects owned, developed, or managed by the bidder or any of its affiliates or predecessors in the United States.	

Siting Environmental - Build-Transfer and Self-Builds Bids

2022 NSP RFP

Please complete each item below. If an item is not applicable to the specific bid, please write "N/A".

1) Project Description	
Overview of Project	
Project Site Map and Geospatial Data: Illustrate physical location of project as related to other area features, including roads, county boundaries, State or Federal Owned properties and transmission facilities	
Legal Description: Describe project location by Section(s), Township(s) and Range(s)	
Timeline: Provide an overall project acquisition plan, permitting plan and schedule for the project.	
2) Site Control	
Overall Land Lease and Easement Acquisition Document Completeness: Provide an overview of the lease, easement, and acquisition process for solar arrays & battery energy storage systems (BESS), access roads, collector lines. Include status of agreements (signed, in process, declined), timeline to complete and any potential issues and include on a corresponding map.	
Documents: Provide copies of all signed agreements, provide copies of any draft agreements, and any easement templates	
Existing Property Easements/Programs: Describe any parcels that have state or federal agency conservation easements, including the USFWS, state DNR, Dept. of Agriculture Conservation Programs	
Other Agreements: Provide a discussion of additional agreement types other than Land Lease and provide on map. (Example: Setback or Neighbor Agreements)	
Records Related to Land Owner Meetings: Provide landowner diaries	
Itemized Costs of Long-term Land Leases For the Site: Provide overview of the long term payment commitments to landowners	
Please confirm whether an O&M building is included in the proposal	
Land Ownership Agreements for O&M Building and Substation: Provide land ownership or option agreements for O&M building, substation, laydown yard, and batch plant.	
Non Participant Land Owner Risks: Provide overview of any known non-participants opposed to the project.	
Land Title/Tax Risks: Provide an overview of any impacts to landowner tax payments that may fall to owner. Describe any potential title issues identified.	
Collector Lines and Substation: Provide copies of all signed agreements, provide copies of any draft agreements	
Generation Tie Line: Provide copies of all signed agreements, provide copies of any draft agreements	
Project Transmission Line Easement: Complete list of Transmission Easement Agreements signed and targeted. Include copies of signed Transmission Easement Agreements and Transmission Easement compensation schedules	
Underground Utility Crossing Risks: Please provide all consent agreements for all foreign utility crossings	
3) Local Permitting	
Local Zoning/Permits: Provide an overview of any local zoning permit requirements (including CUPs), timeline to acquire, and the status of acquiring those permits.	
Local Government Interactions: Provide an overview of local government interactions, describe any local support and include all correspondence from county and townships as well as project notes	
Roadway Improvement Agreements: Provide a summary of any discussions with the local governments regarding road use and commitments to repair after construction. Include any draft or final documents. Provide a copy of all road crossing agreements.	
4) State Permits, Overall Permit Requirements	
State Site Permits: Provide an overview of any State Site permit requirements and the status of acquiring those permits	
Overall State Permit Document Completeness: Please provide Site Permit application including supporting studies, surveys, and data.	
Permitting Analysis: Provide an analysis of all permits required for the project, including, but not limited to any state permits, local permits, take permits, wetland permits, stream crossing permits, storm water permits. Include timeline to acquire permits and expected cost.	
5) Environmental studies, agency consultation and permit analysis	
Site Environmental Studies: Provide a general summary of environmental studies related to project.	
Potential Project Risks: Provide a summary of any environmental permitting risks, possible impact to project and expected mitigation steps, if any.	
Site Assessments: Provide any Phase I ESAs for the project that were completed within the last two years.	

History and Background: Provide any past environmental issues related to the project site	
Tribal Cultural Resources: Please provide copies of assessments or analysis of potential impacts to tribal cultural resources in the area and any communications with local Native American Tribe(s) regarding the project.	
Cultural Resource Studies: Please provide copies of state historic preservation consultation and literature survey reports for the project.	
Raptor Studies: Please provide copies of raptor nest surveys, or raptor nest survey plans, if completed.	
T&E and State Projected Species: Please provide copies of T&E and T&E Critical Habitat surveys completed. Provide a summary of any T&E species that may require additional follow-up work or mitigation	
Agency Consultation: Provide status of discussions with permitting agencies including those listed in this section.	
USFWS Consultation: Provides copies of all USFWS correspondence to date	
State DNR Consultation: Provides copies of all State DNR correspondence to date	
Department of Agriculture: Provide amount of impacted Prime Farm Land and any correspondence with either federal or state Departments of Agriculture.	
Army Corps of Engineers: Please provide any 404 jurisdictional determination obtained by the project, if needed.	
Wetlands: Provide an overview of potential wetland impacts and any completed wetland delineation reports	
Noise Model: Please provide any noise modeling report developed for the project if required by federal, state, or local permitting agencies. If not requried, provide justification.	
Communications Studies: Please provide any microwave beam path and local broadcast interference assessments or studies conducted for the project, if applicable.	
Vegetation Plan: Please provide any vegetation and vegetation management plans for the site.	
Solar Glare/Glint Studies: Please provide any solar glare/glint studies developed for the project.	
Aeronautical Studies: Provide any information concerning aeronautical assessments or studies (including FAA Study numbers, if available) that have been conducted or initiated for the project.	
Other Environmental Issues and Risks: Provide a summary and documentation regarding any other potential environmental concerns or risks.	
Provide documentation on any known or past environmental issues related to the project and how the issue was resolved.	

6) Geospatial Data

Provide the following information in ESRI GIS Shape files. This list may include information previously identified.

Project Boundaries	
Planned Site Layout, including anticipated placement of major equipment and other project facilities, including transmission layouts and POD.	
Solar Array Coordinate Information	
Access roads	
Site substation and feeder lines	
For projects with construction of Gen-tie facilities: Gen-tie	
Site layout design optimization potential	
Unique Site features and Setback risks - Identify acquired easements, expired easements	
Lease & Easement polygons	
Collector and transmission line locations	
Environmental data	

7) Legal Claims

Disclose any past, current, or anticipated future litigation related to projects developed, owned or managed by the bidder or any of its affiliates in the United States.	

8) Decommissioning

Describe what infrastructure will be abandoned and/or removed during site decommissioning at the end of life. Ensure you describe how the decommissionign plan meets the requirements of any applicable agreement or permit conditions.	
Describe the final depth below grade for the top of any abandoned foundations and any abandoned underground cabling and how they meet the requirements of any applicable agreement or permit conditions.	

Describe the following: - How the physical components will be removed, transported off-site and disposed of. - Plans for recycling or scrap of removed components. - Assumed cost of decommissioning. Including solar array dismantling costs, foundation removal, access road removal, site restoration, transportation, disposal fees and estimated scrap value.	

9) Pollinator Habitat

Describe the quantity and location of pollinator habitat that the bidder is planning on establishing along with requirements for maintaining the habitat.	
Describe how you plan on evaluating the effectiveness of the pollinator habitat created.	

Siting Environmental - PPA

1) Project Description

Overview of Project	
Project Site Map and Geospatial Data: Illustrate physical location of project as related to other area features, including roads, county boundaries, State or Federal Owned properties and transmission facilities.	
Legal Description: Describe project location by Section(s), Township(s) and Range(s).	
Timeline: Provide an overall project acquisition plan, permitting plan and schedule for the project.	

2) Land Control and Permits

Site Control: Provide a summary of the status of acquired lease and easement agreements, targeted parcels for each generation asset and include on a corresponding map with the acquired agreements.	
Provide a discussion of additional agreement types other than Land Lease and wind Easements and Provide on map (Example: Setback or Neighbor Agreements, Utility Crossing Consent Agreements	
Provide a map showing proposed substation, O&M building, and transmission line.	
Provide a copy of any easement templates	
State Site Permits: Provide an overview of any State Site permit requirements and the status of acquiring those permits.	
Federal Site Permits: Provide an overview of any Federal Site permit requirements and the status of acquiring those permits.	
Local Zoning/Permits/Agreements: Provide an overview of any local zoning permit requirements, including CUPs, development agreements. road use agreements, drainage agreements, and the status of acquiring those permits.	
Timeline: Provide an overall project acquisition plan, permitting plan and schedule for the project.	
Siting Issues: Disclose any siting issues with landowners or permitting agencies and how those are being mitigated.	

3) Environmental Studies

Local Government Interactions: Provide a summary of local government interaction and project support.	
Site Environmental Studies: Project a general summary of environmental studies.	

Other Environmental Issues and Risks: Provide a summary of any environmental permitting risks including state historic and tribal cultural resources.	
Provide a summary of and documentation for any known or past environmental concerns related to the Facility, including but not limited to any avian or bat concerns, e.g. eagle take permit, whooping crane sighting etc. and how the issue was resolved.	

4) Legal Claims

Disclose any past, current, or anticipated future litigation related to projects owned, managed, or developed by the bidder or any of its affiliates in the United States.	

5) Pollinator Habitat

Describe the quantity and location of pollinator habitat that the bidder is planning on establishing along with requirements for maintaining the habitat.	
Describe how you plan on evaluating the effectiveness of the pollinator habitat created.	

Warranties, One-Line Diagram, BESS Fire Safety

2022 NSP RFP

Unless otherwise designated in specific questions below, this Form applies to all bid types.

1) Identify each major equipment Contractor and attach all corresponding warranties.

2) Solar Warranties: Attach copies of the following solar equipment warranties: Solar module warranty, single-axis tracker mounting system and inverter. Indicate the module defects warranty and performance warranty planned below, including their duration.

Warranty Type	Name & Location of Document Attached with Bid	Describe Defects Warranty & Duration	Describe Performance Warranty & Duration
Solar Module			
Mounting System			
Inverter			

3) Battery Energy Storage System (BESS) Warranties: Attach copies of the following BESS warranty plan. Identify the name of the document attached, the location in the bid materials, and the duration of the plan (minimum requirement of 5 years).

4) Battery Energy Storage System (BESS) Degradation: Provide references, including file name and location in the bid materials, of any attached correction or degradation curves.

5) PV Array Degradation: Provide references, including file name and location in the bid materials, of any attached correction or degradation curves.

6) Attach a one-line diagram for the proposed facility with the proposal. Provide the name of the included attachment and any additional notes below.

7) BESS Fire Safety, Part 1: For bids with Storage Components Only.

For PPA Bids: Please confirm whether the BESS fire safety and fire suppressions systems comply with NFPA 855: Standard for the Installation of Stationary Energy Storage Systems

BT and Self-Build Bids: Please see the applicable Technical Specifications in Exhibit C regarding BESS fire detection and fire suppression systems. Address any exceptions regarding this in Form 14 - Tech Specs Excepts (Exceptions to Exhibit C of the Technical Specifications). Skip this question below.

8) BESS Fire Safety, Part 2: For bids with Storage Components Only.

For PPA Bids: Please describe the BESS design features to address cascading thermal runaways below. For further reference, please see Appendix J: NERC Lesson Learned, BESS Cascading Thermal Runaway.

BT and Self-Build Bids: Please see the addendum to the Technical Specifications in Exhibit C labeled "NERC Lesson Learned, BESS Cascading Thermal Runway". Address any exceptions regarding this in Form 14 - Tech Specs Excepts (Exceptions to Exhibit C of the Technical Specifications). Skip this question below.

9) BESS Fire Safety, Part 3: For bids with Storage Components Only.

For PPA Bids: Please describe the plan for coordinating with local and emergency authorities prior to placing the BESS in service, as per the recommendations on page 1 of Appendix J: NERC Lessons Learned: BESS Cascading Thermal Runaway.

BT and Self-Build Bids: Please see the Technical Specifications in Exhibit C. Address any exceptions regarding coordination plans in Form 14 - Tech Specs Excepts (Exceptions to Exhibit C of the Technical Specifications). Skip this question below.

10) Security (For PPA Bids Only)

a) Is your equipment subject to Executive Order 13920 barring the installation of bulk system electric equipment from a foreign adversary? If not, do you or any of your vendors source any equipment, materials, or components from the US Department of Commerce's Entity List (restrictions)?

b) Identify any cyber security events that have affected the ability of your existing facilities to perform within the terms of contracts within the last 2 years. Describe the initiatives your company has taken to combat the risk of cyber security events.

c) Describe the physical security features (fencing, signage, security cameras, etc) that you typically include at generation facilities you own and operate.

d) Do you have a control center that allows for remote access to your facilities? How is this remote access protected? Do any other parties have remote access or the ability to obtain remote access?

10) Security (For Self-Build & Build-Transfer Bids Only)

a) Confirm your bid includes all specified physical security features (fencing, signage, security cameras, etc). Are there any other features you would propose to enhance the site physical security beyond what is specified?

b) Confirm your bid contains all specified cyber/data security features. Are there any other cyber/data security features you would propose to enhance the site's security beyond what is specified?

Solar Projects Completed

2022 NSP RFP

This Form applies to all bid types.

1) Please report on solar projects contracted within the last five years that have not been placed into service, or are expected to not be placed into service, consistent with the originally executed contract terms.

Total Number of Projects	Total Size of Projects (MW)	Please describe the circumstances resulting in the project(s) identified not being in-serviced consistent with the originally executed contract terms, or not being expected to be in-serviced consistent with the originally executed contract terms.	Please describe actions your company took to mitigate or remedy the circumstances described.

2) Please provide any additional comments or information regarding projects listed in the response to 1)

3) Provide a summary of all solar projects at least 5 MWac in size that Bidder has successfully developed and completed in the United States or Canada (fully operational projects). For each project, describe the Bidder's specific role in the project.

Project	Location	MWac	Bidder's Role

Storage Projects Completed

2022 NSP RFP

This Form applies only for bids containing a storage component.

1)

Please report on storage projects contracted within the last five years that have not been placed into service, or are expected to not be placed into service, consistent with the originally executed contract terms.

Total Number of Projects	Total Size of Projects (MW)	Please describe the circumstances resulting in the project(s) identified not being in-serviced consistent with the originally executed contract terms, or not being expected to be in-serviced consistent with the originally executed contract terms.	Please describe actions your company took to mitigate or remedy the circumstances described.

2) Please provide any additional comments or information regarding projects listed in the response to 1)

3)

Provide a summary of all storage or solar + storage (hybrid) projects at least 5 MWac in size that Bidder has successfully developed and completed in the United States or Canada (fully operational projects). For each project, describe the Bidder's specific role in the project.

Project	Location	MWac	Bidder's Role

Exceptions to Exhibit C Technical Specifications (Build-Transfer, Self-Build Only)

2022 NSP RFP

This Form is for Build-Transfer and Self-Build Bids only. If the space below is insufficient, please enclose additional documentation to proposal, titled "Exceptions or Proposed Alternatives to Technical Specifications".

Specific Section of Technical Specification where Exception is Taken	Exception Description	Reason for Exception	Is it Possible to Meet Specification, but would require a change in the price from what is currently proposed? (Y/N)

Additional ITC/PTC and Project Information

2022 NSP RFP

Unless otherwise specified in the questions below, this Form applies to all bid types.

1) Please provide any additional socioeconomic factors or information that should be considered with this proposal.

2) Please provide evidence of any local stakeholder support of the planned project.

3) Jobs - Please provide a) the number of estimated construction jobs that would be generated by this project; and b) the number of estimated ongoing operational jobs that would be sustained by this project.

a) b)

4) Payments - Please provide an estimate of the a) total payments landowners will receive during the proposed project term; and b) total estimated tax payments the proposed project would generate over the term.

a) b)

5) Please provide the assumptions you used to answer 3) above or enclose an attachment with these details and indicate the attachment name here.

6) Additional ITC questions - For BT or SB projects only

a) ITC/PTC Compliance Strategy - Summarize the strategy for compliance with the ITC, including whether the beginning of construction test will be satisfied using the physical work test or the 5% safe harbor. If the physical work test is identified, identify what equipment will be constructed and the work that is planned to be undertaken during the beginning of the construction year. If the 5% safe harbor strategy is identified, estimate how much will be paid or incurred in the beginning of the construction year, what percentage of the anticipated ITC eligible project costs that amount will represent, what equipment will be acquired for such payment, and the expected dates of payment and delivery of such equipment.

Prevailing Wage and Apprenticeship Requirements - Confirm how the prevailing wage and apprenticeship requirements will be met in order to receive the full credit.

Domestic Content - Confirm if and how the domestic content requirements will be met in order to receive the increased percentage.

Energy Community - Confirm if project expected to meet requirements to be considered built in an energy community in order to receive the increased percentage.

Low Income Community - Confirm if project expected to be eligible for an allocation for solar projects constructed in low income

b) Transfer Date - Confirm the stage of the project at which, and the target date on which, the project is expected to be transferred for federal income tax purposes.

c) **Continuity Safe Harbor -** Confirm whether it is expected that the continuity safe harbor will be satisfied. If not, describe how the continuity requirement will be satisfied.

d) **Documentation of Strategy -** Provide or describe the documentation that will be available to support the ITC strategy described in 7 a) above. Such documentation may include agreements, third party verification, and tax opinions. Provide a copy of any such documentation that currently is available.

e) **Non-ITC -** Describe generally the Non-ITC tax representation and warranties, and covenants to be provided.

f) **Other Tax Credits or Grants -** Confirm whether any prior tax credits or Section 1603 grants have been claimed with respect to the project.

g) **Special Purpose Vehicle -** Is a newly formed special purpose vehicle (SPV) planned to hold the project? If so, state the whether a transfer of that SPV is contemplated.

Bidder Checklists

2022 NSP RFP

Item	Completed
Section 1 Executive Summary (<u>for all bids</u>)	
Relevant Bidder Experience	
Section 2 Standard Bidder Forms <u>for all Bids</u> (plus all required attachments for each form)	
1 - Confidentiality	
2 - Bid Certification - BT,SB Bid OR 2 - Bid Certification - PPA Bid	
3 - Cover Sheet	
4 - Pricing - BT,SB Bid OR 4 - Pricing - PPA Bid OR 4 - Pricing - PPA Bid Alt Term	
5 - Construction	
6 - Tech Desc Solar	
7 - Solar Specific Yr Production	
7 - Solar Typical Year Production	
8 - Interconnect - Opt 1 OR 8 - Interconnect - Opt 2 OR 8 - Interconnect - Opt 3	
9 - Creditworthiness	
10 - Siting Environ BT,SB OR 10 - Siting Environ PPA **<u>AND</u>** Required MN Pollinator Scorecard	
<u>(WI Projects Only)</u> Required WI Pollinator Scorecard	
11 - Warranties, 1Line, Safety	
12 - Solar Projects History	
15 - Additional Information	
16 - Bidder Checklists	
Additional Standard Bidder Forms (<u>Required for Bids with BESS Components Only</u>)	
6 - TechDescStorage	
13 - Storage Projects History	
Additional Standard Bidder Form (<u>Required for BTs,SBs Only</u>)	
14 - BT,SB Tech Specs Excepts	
Section 3 Compliance with Agreements (<u>for all bids</u>)	
PPA Bids: Model PPA Template (Appendix B) OR BT Bids: BOT Term	

Appendix H

2022 NSP RFP – Threshold Analysis Details

As indicated in Section 5.2 of the RFP, the second stage of the RFP evaluation is threshold review. This review ensures proposals comply with all minimum bid requirements, including but not limited to the following items below (locations where bidder supplies relevant data for each item is listed in parentheses):

a. **RFP Project type -** verification that the proposed RFP Project Type is an eligible and proven technology *(Appendix F: 3-Cover Sheet, and based on the technology type, 6 – TechDescStorage and/or 6 - TechDescSolar)*;

b. **RFP Project size –** verification that the size of the RFP Project meets the minimum requirement *(Appendix F: 3-Cover Sheet, and, based on the technology type, the applicable, 6 – TechDescStorage, and/or 6 – TechDescSolar, and, based on the RFP Project's mode of interconnection: (8 – Interconnect – Opt 1, 8_Interconnection Opt 2, or 8_Interconnection Opt 3)*;

c. **RFP Project location –** verification that the RFP Project is physically located in an eligible location *(Appendix F: 3-Cover Sheet, and the applicable Form 8, based on the RFP Project's mode of interconnection (8 – Interconnect – Opt 1, 8_Interconnection Opt 2, 8_Interconnection Opt 3)*;

d. **RFP Project anticipated commercial operation date (COD) –** verification that the RFP Project has an anticipated COD prior to 12/31/2025 and that the project can reasonably meet this milestone *(Appendix F: 3-Cover Sheet, the applicable Form 4, 4-Pricing – BT,SB Bid or 4-Pricing – PPA Bid, 5-Construction, based on the technology type, 6 – TechDescStorage and/or 6 - TechDescSolar 9-Creditworthiness, based on the RFP Project's contract structure, Form 10-Siting Environ BT,SB, 10-Siting Environ PPA, and the applicable Form 8, based on the RFP Project's mode of interconnection (8 – Interconnect – Opt 1, 8_Interconnection Opt 2, 8_Interconnection Opt 3))*;

e. **Interconnection viability –** verification of the project's capability to attain satisfactory interconnection for accredited capacity:

- MISO Zone 1: verification that the project's Generator Interconnection Application completed MISO Decision Point #2 or have received the MISO DPP Phase 2 Draft Study *(Appendix F: 8 Interconnection_Opt 2)*;

- Sherco Reuse: verification that the project structure is a Build-Transfer or a Self-Build *(Appendix F: 3-Cover Sheet)*;

- Distribution: verification that the estimated time in the interconnection queue allows for COD by 12/31/2025, the project is "front-of-the-meter", and the Company will have full control of operation, including (if applicable), charge and discharge of storage *(Appendix F: 3-Cover Sheet and 8 – Interconnect – Opt 1)*;

f. **Technical Specification compliance –** constructability and verification that any exceptions to technical specifications and scope of work are minor and non-material relevant to the bid type and technology type proposed *(Appendix F: 6-TechDescStorage, 6-TechDescSolar, 11 – Warranties, 1Line, Safety, and additionally for BT and SB bids, 14 – BT,SB Tech Specs Excepts);*

g. **Use of union labor for RFP Project construction –** verification that the Bidder's price includes the use of labor covered by a collective bargaining agreement for project construction *(For PPA bids: Appendix F: 2-Bid Certification – PPA Bid, question (G) in 4-Pricing – PPA Bid, and*

redlined version of Appendix B: NSP's Model PPA Templates. For BT and SB bids: Appendix F: 2-Bid Certification – BT,SB Bid);

h. Bidder creditworthiness – verification that the bidder's balance sheet is sufficient relative to the size of the project *(Appendix F: 9-Creditworthiness)*;

i. AGC – verification that the RFP Project can be controlled by automatic generator control or compatible with AGC, should it be added later *(For PPA bids: Appendix F: 3-Cover Sheet and question (G) in 4-Pricing – PPA Bid, and redlined version of Appendix B: NSP's Model PPA Templates. For BT and SB bids: Appendix F: 3-Cover Sheet and 14-BT,SB Tech Specs Excepts)*;

j. Sourcing requirements – verification that all components and subcomponents will be compliant with the Uyghur Forced Labor Prevention Act *(based on the proposal type, the applicable Form 4 in Appendix F: 4-Pricing – BT,SB Bid or 4-Pricing – PPA Bid).*

k. **Accounting assessment –** verification, as part of compliance with the Model PPA template, that no lease obligations, derivative accounting treatment or a consolidated variable interest entity are created for PPA proposals. *(For PPA bids only: Appendix F: 2-Bid Certification – PPA Bid, question (G) in 4-Pricing – PPA Bid), and redlined version of Appendix B: NSP's Model PPA Templates)*;

l. For projects with a BESS component – verification that the BESS design includes adequate fire safety measures *(For PPA bids: Appendix F: 11-Warranties,1Line, and Safety. For BT or SB bids: 14 – BT,SB Tech Specs Excepts).*

m. Pollinator Scorecard – verification that the proposal contains a completed pollinator scorecard for the State of Minnesota and, if required by the state in which the RFP Project is located, a pollinator scorecard for the state in which the RFP Project is located. *(For PPA bids: Appendix F: 10 – Siting Environ PPA and all required pollinator scorecards indicated on 16-Bidder Checklists. For BT and SB bids: Appendix F: 10 – Siting Environ BT,SB and all required pollinator scorecards indicated on 16-Bidder Checklists.*

n. Material exceptions to the applicable Model PPA or Model Term Sheet – verification of whether proposed exceptions or redline edits to the applicable Model PPA Agreement or Model Term Sheet are material and unacceptable to the Company? NOTE: Bidders will have an opportunity for a timely cure of unacceptable items to the Company. *(For PPA bids: Appendix F: question (G) in 4-Pricing – PPA Bid and redlined version of Appendix B: NSP's Model PPA Templates. For BT bids: Appendix F: question (H) in 4-Pricing – BT,SB Bid and redlined version of applicable TS in Appendix A: NSP's Build-Transfer Term Sheets).*

Any proposal that does not meet the above threshold requirements, based on an analysis of all supporting information and data in the bid forms, will be excluded from further evaluation. However, prior to exclusion from further evaluation, NSP will endeavor to allow bidders to cure any deficiencies for any of the threshold categories above.

Pollinator-Friendly Solar Certification Program

Establishment Plan (page 1 of 2)

Site Name: _____ **Date:**_____

Purpose/Introduction:
The Establishment Plan was developed by the University of Wisconsin-Madison Department of Entomology and is designed to provide guidance when planning, installing and maintaining pollinator-friendly habitat in solar arrays.
All questions on this form must be filled out.

Establishment plan checklist:
- ☐ Step 1: Site preparation section
  - ☐ Attach seed mix and seeding rates
  - ☐ Attach site photo
- ☐ Step 2: Management plan
- ☐ Step 3: Score card

Contact information:

Solar developer:
Point of contact name:
Phone:
Email:

Vegetation management company:
Contact:
Phone:
Email:

Project details:

Project location:

Project area (acres):

☐ If the vegetation management company already has their own establishment and management plans, please attach them.

1. Site Preparation:

Site History:
What was this site **used for** in the past 5 years? (e.g. corn, pasture) Describe existing vegetation.

Has **herbicide** been applied in the past 5 years? If yes, when? Which one(s)?

☐ **Attach Site Photo**

Site Preparation:
How will the **soil and/or existing vegetation** be **prepared** for planting?

How will the site be **planted**?
- ☐ Broadcast seeded
- ☐ Drill seeding
- ☐ Other (describe below)
- ☐ Drop seeding
- ☐ Transplants

Time line of key activities: Fill out the table below with the anticipated dates of the key activities. Use the blank rows to add any additional key steps you will take.

Activity:	Date (Month and year)
Write Establishment plan	
Order seeds	
Start site preparation	
Start soil preparation	
Plant seeds	
Year 1 maintenance	
First habitat assessment	

Seed Mix:
From whom do you source your **seeds**?
_____
What percent of seed mix is grasses? _____%
What percent of seed mix is forbs? _____%
What percent of seed mix is native? *Native means plant species native to Wisconsin.* _____%
☐ **Attach a list of plant species and seeding rate in seed mix**

Pollinator-Friendly Solar Certification Program

Establishment Plan (page 2 of 2)

Site Name: _____ **Date:**_____

2. Management plan: After planting, how will you manage the pollinator-friendly habitat?

Mowing:

Are you going to mow or string-trim your pollinator-friendly solar habitat?

☐ Yes ☐ No

If mowing or string-trimming, how often do you plan to do so?

☐ Once only in Year 1
☐ More than once in Year 1
☐ Other:

Weed management:

Do you plan to apply herbicides of any kind to your pollinator-friendly solar habitat?

☐ Yes ☐ No

If yes, which method of herbicide application do you plan to use?

☐ Spot-spraying ☐ Grass-selective herbicide
☐ Other selective herbicide
☐ Other herbicide method: _____
_____

Which herbicides will you use? Please list below.

3. Score Card:

☐ **Site Preparation section completed** (10 points)
☐ **Management plan completed** (10 points)

Buffer Habitat:

1. What percentage of site border is **buffered***?

☐ 0-49%	0 points
☐ 50-74%	5 points
☐ 75-100%	10 points

What percentage of buffer is **spatial***? _____%
What percentage of buffer is **non-flowering vegetative***? _____%

2. How far away is the closest crop field to pollinator planting?

☐ 0-30 feet	0 pts
☐ 30+ feet	5 pts

For more information on buffers, see the Appendix

Insecticide use:

1. Planned on-site insecticide use (includes prior application to seeds/plants)

☐ Yes -40 points ☐ No 0 points

Seed Mix:

1. Percentage of site area to be seeded

☐ 0-50 %	0 points
☐ 51-99%	5 points
☐ 100%	10 points

2. Percent of perennial seed mix made up of *native* plant species

☐ 0-50%	0 points
☐ 51-99%	5 points
☐ 100%	15 points

3. Number of flowering (forb) species in seed mix

☐ 1-9 species	5 points
☐ 10-19 species	10 points
☐ 20-39 species	15 points

4. Anticipated seasons with 3+ blooming plant species (Select all that apply)

☐ Spring (April-May)	5 points
☐ Summer (June-August)	5 points
☐ Fall (September-October)	5 points

5. Milkweed present in seed mix

☐ Yes 5 points ☐ No 0 points

6. Perennial seed mix supplemented with flowering annuals to provide pollinator forage in year 1:

☐ Yes 5 points ☐ No 0 points

WISCONSIN UNIVERSITY OF WISCONSIN-MADISON
Department of Entomology

Total Score: _____

☐ Bronze: 65-74
☐ Silver: 75-84
☐ Gold: 85-94
☐ Platinum: 95+

To submit your Year 1 Pollinator-friendly Solar Establishment Plan and upload associated documents, visit www.wisconsinpollinators.org/solar

NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Lesson Learned

Battery Energy Storage System Cascading Thermal Runaway

Primary Interest Groups
Generator Operators (GOPs)
Generator Owners (GOs)
Transmission Operators (TOPs)
Transmission Planners (TPs)
Resource Planning (RP)

Problem Statement
A fire started in a Battery Energy Storage System (BESS), resulting remote alarm triggering at approximately 16:55 PST. The utility, the maintenance provider, and fire fighters responded to the site. At approximately 20:04 PST, an explosion occurred that injured several firefighters and significantly damaged the BESS. A comprehensive investigation of the event was performed that identified the cause of the fire as being a cascading thermal runaway event that was initiated by an internal cell failure within one battery cell in the BESS.

Details
On the day of the event, the 2 MW/2 MWh BESS was performing a solar smoothing function (this entails charging during the daytime; absorbing solar energy produced from rooftop solar on the circuit) and discharging through evening load peak.

At approximately 16:54 PST, a battery cell in the BESS experienced a sudden drop in voltage during a charging cycle. Moments after, the voltage dropped and a battery cell went into thermal runaway. This event generated off-gassing and smoke that activated the smoke detection system, leading to the discharge of the fire suppression system. The initial cell's thermal runaway cascaded into neighboring cells and subsequently into the batteries contained within neighboring modules.

Figure 1 shows the general layout of the BESS. Figure 2 shows how a single cell failure propagated through one Module and consumed the whole rack, releasing a large plume of explosive gases. This could have occurred without a flame, explaining why the gases were not burned as they were emitted.

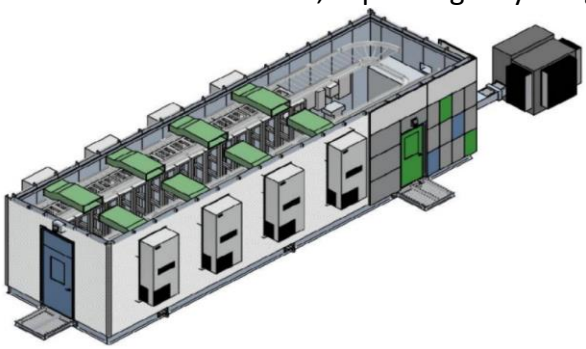

Figure 2: General layout of the BESS (Image credit: APS)

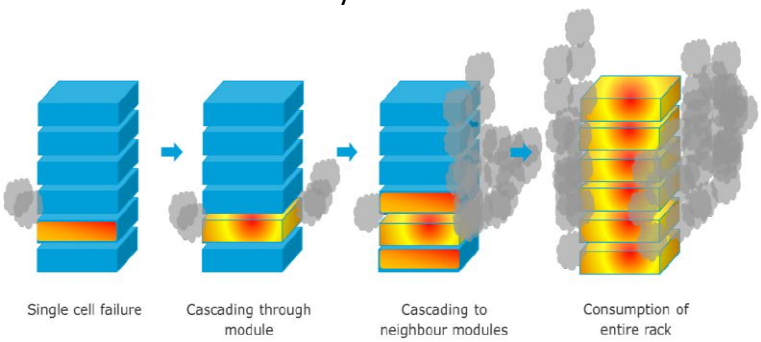

Figure 1: A single cell failure propagated through one Module (Image credit: APS).

A "clean agent" fire suppression system was built into the BESS and functioned as designed. However, the high temperatures generated by the thermal runaway and battery fire negated the agent's ability to suppress the fire.

Approximately three hours after initiation of the event, emergency responders opened the BESS side container door and approximately two minutes later, an explosion occurred.

Figure 3: BESS Exterior after event (image credit: APS)

An extensive investigation of this event was led by the involved entity that included emergency responders, vendor partners, forensic experts, and nationally recognized research institutions. The investigation uncovered the following five main contributing factors:

Figure 4: All modules in Rack 15 were severely damaged by thermal runaway while leaving nearby racks mostly intact (image credit: APS)

- Internal failure in a battery cell initiated thermal runaway
- Lack of thermal barriers between cells led to cascading thermal runaway
- The fire suppression system was incapable of stopping thermal runaway
- Flammable off-gases concentrated without a means to ventilate
- Emergency response plan did not have an extinguishing, ventilation, and entry procedure

Corrective Actions

The primary hazard during a BESS incident is flammable gas in an enclosed space. Planning, training and design modifications will reduce this risk. The following are actions the entity took:

- Improve training, emergency response planning, and procedures for first responders, operations, and maintenance personnel that account for the risks and hazards of cascading thermal runaway, including flammable gases and how to enter systems after a failure.
- Work with suppliers, industry experts, and standards bodies to improve battery safety and limit potential risk in the following areas:
  - Minimize or eliminate cell-to-cell and module-to-module heat transfer to stop thermal runaway.
  - Implement fire detection and suppression system designs that will fully manage a thermal runaway.
  - Implement design changes incorporating monitoring and remote reporting of flammable gas concentrations and implement ventilation systems to mitigate.

Lesson Learned

NERC Lessons Learned normally provide anonymity for the entities involved in the source events. However, in this case, the entity wished to be known in order to expedite the dissemination of information by providing access to their complete investigation report that contains much more detail and photos and can be found at: www.aps.com/mcmicken

The potential for and impact of the contributing factors to this event were not well known at the time this BESS was commissioned, so these risks were not addressed in the design of that system even though it was constructed according to the standards at the time. Energy storage is a vital (but maturing) technology and entities need to consider these findings and the risk of similar events in their own storage implementations. Standards and regulations have developed slower than the technology and still need some improvement. As a result of this event, the NFPA 855 standard is making progress and now addresses several of these learnings.

Until NFPA 855 has been finalized, entities owning BESS should consider:

- The key to managing risk associated with the installation of a BESS focuses on a hazard mitigation analysis. This will identify gaps along with the appropriate control measures like design modifications, suppression, and training.
- The fire services should not be seeing a BESS for the first time when 911 is called. Consideration should be given to developing a pre-incident guide which will serve as the mutual platform for future training of utility personnel and the fire services.
- Conduct training, familiarization tours and exercises with your local fire department. The approach laid out in previous NERC Lesson Learned 20190202 "Substation Fires: Working with First Responders" can be used as a template.

NERC contacted an industry substation fire expert who had additional suggestions:

- A registered fire protection engineering firm should perform a hazard mitigation analysis that includes a review of the UL 9540a test data.
- As a best practice, consider following NFPA 68 guidelines for the installation of deflagration venting on future BESS installations.
- Discontinue use of clean agents as a method of suppression.
- Install a fire alarm control panel in a remote location in the facility to allow fire department to monitor conditions without being in harm's way.
- The panel should have also flammable gas monitoring capabilities along with a purge control feature.
- Install a class 1 /division 1 purge system.
- The design of the BESS container should consider garage type doors that would facilitate suppression operations without having to enter the container
- A fire protection engineering firm should also produce a Pre-incident guide (NFPA 1620) that outlines the hazards and response tactics that should be employed during an incident.
- Training should be provided. This will guide both the utility and fire services as to the appropriate actions when responding to low frequency high hazards events, such as BESS emergencies.
- Prior to placing a BESS in service, a familiarization tour should be conducted with local fire services along with any specialized units, such as hazmat, who may respond during an incident.
- Consider conducting an annual exercise with the members of the first response community to validate the plan or identify gaps.

NERC's goal with publishing lessons learned is to provide industry with technical and understandable information that assists them with maintaining the reliability of the BPS. NERC is asking entities who have taken action on this lesson learned to respond to the short survey provided in the link below.

Click here for: Lesson Learned Comment Form

For more Information please contact:

NERC – Lessons Learned (via email)

Lesson Learned #: 20210301

Date Published: March 29, 2021

Category: Transmission Facilities

This document is designed to convey lessons learned from NERC's various activities. It is not intended to establish new requirements under NERC's Reliability Standards or to modify the requirements in any existing Reliability Standards. Compliance will continue to be determined based on language in the NERC Reliability Standards as they may be amended from time to time. Implementation of this lesson learned is not a substitute for compliance with requirements in NERC's Reliability Standards.

BWSR

Habitat Friendly Solar Site Assessment Form for Project Planning

For solar companies and local governments to meet Habitat Friendly standards
5-26-2020

1) PLANNED % OF SITE DOMINATED BY NATIVE SPECIES COVER (wildflowers, grasses, sedges, shrubs, trees)

- ☐ 26-50% +5 points
- ☐ 51-75% +10 points
- ☐ 76% and above +15 points

Total points ☐

2) PERCENT OF PROPOSED SITE VEGETATION COVER TO BE DOMINATED BY WILDFLOWERS (not grasses and sedges)

- ☐ 10-20 % +5 points
- ☐ 21-30 % +10 points
- ☐ 31% and above +15 points

Total points ☐

Note: Projects may have "array" mixes and diverse border mixes; forb dominance should be averaged across the entire site. The dominance should be calculated from total numbers of forb seeds vs. grass seeds based on seeds per square foot(from all seed mixes to be planted).

3) PLANNED COVER DIVERSITY (# of species in seed mixes; numbers from upland and wetland mixes can be combined)

- ☐ 10-19 species +5 points
- ☐ 20-25 species +10 points
- ☐ 26 or more species +15 points

Total points ☐

4) PLANNED SEASONS WITH AT LEAST 3 BLOOMING SPECIES PRESENT (check/add all that apply)

- ☐ Spring (April - May) +10 points
- ☐ Summer (June - August) +5 points
- ☐ Fall (September - October) +5 points

Total points ☐

See BWSR Pollinator Toolbox about bloom season.

5) AVAILABLE HABITAT COMPONENTS WITHIN SITE OR WITHIN .25 MILES (check/add all that apply)

- ☐ Native bunch grasses for nesting +3 points
- ☐ Native flowering shrubs +4 points
- ☐ Clean, perennial water sources +3 points
- ☐ Created nesting feature/s (bee blocks, etc.) +4points

Total points ☐

6) SITE PLANNING AND MANAGEMENT

- ☐ Detailed establishment and management plan (see notes) developed with funding/ contract to implement. +15 points

- ☐ Signage legible at forty or more feet stating pollinator friendly solar habitat (see notes for number of signs). +5 points

Total points ☐

7) SEED MIXES

- ☐ Mixes are composed of at least 40 seeds per square foot. +5 points
- ☐ All seed genetic origin within 175 of site (see notes). +8 points
- ☐ At least 1% milkweed cover to be established from seed/plants. +10 points

Total points ☐

8) INSECTICIDE RISK

- ☐ Planned on-site insecticide use or pre-planting seed/plant treatment (excluding buildings/electrical boxes, etc.). -40 points
- ☐ Communication with local chemical applicators/neighbors about need to prevent drift from adjacent areas (see notes). +10 points

Total points ☐

Grand Total ☐

Gold Standard - Provides Exceptional Habitat **85+**

Meets Pollinator Standards **70**

Project Name: _____
Vegetation Consultant: _____
Project County: _____
Project Size: _____
Projected Seeding Date: _____

See notes related to the question on the back side of this form.

Notes:

Estimates of percent "cover" should be based on "absolute cover" (the percent of the ground surface that is covered by a vertical projection of foliage as viewed from above).

All project plans must include detailed vegetation establishment and management specifications to ensure the success of projects (see sample specifications on *BWSR's Habitat Friendly Solar Webpage*).

Seed mixes provided for projects need to show seeds per square foot for each species in the mix.

Question 1 - *Native plant species provide benefits to a wide range of pollinators and other wildlife species. The Minnesota DNR List should be used to determine if a species is native. Native species include wildflowers, graminoids (grasses, sedges rushes), shrubs and trees. The percent areal cover of native vs. non-native species should be estimated based on the seeds per square foot of all species to be used across all seed mixes.*

Question 2 - *There is a focus on wildflowers on this assessment form to maximize benefits to the approximately 450 species of native bees in Minnesota, honeybees and other pollinators. Wildflowers in question 2 refer to "forbs" (flowering plants that are not woody or graminoids such as grasses and sedges) and can include introduced clovers and other non-native species beneficial to pollinators. No noxious weeds or invasive plants can be included in the total.*

Question 3 - *Plant diversity adds to wildlife benefits, as well as the resiliency of projects. For this question, planned native and non-native species from all seed mixes can be combined for the total. Species must be planned to be used in a seed mix that will cover at least two acres at the site to be used for the total.*

Question 4 - *Having blooming species throughout the season helps support pollinator species. See BWSR's Pollinator Toolbox for a listing of bloom seasons for species.*

Question 5 - *The planting of native bunch forming prairie grasses, as well as native flowering shrubs is promoted as part of projects to increase nesting opportunities. If bunch grasses are included as part of plantings it is important that they are not mowed below four inches as part of yearly maintenance to ensure that they are not damaged. Habitat components must be within sites or within .25 miles of the site for this question.*

Question 6 -
To meet requirements for a long-term management plan projects must provide information about:

- *Timing of yearly inspections,*
- *Evidence of funding and a contract for management for at least the first three years.*
- *A detailed native vegetation establishment plan with detailed instructions for contractors.*
- *A detailed maintenance schedule for the first three years of the project listing timing of establishment mowing/ trimming, spot herbicide application, prescribed grazing or other management actions.*
- *Proposed maintenance schedule for year four and beyond.*
- *List of weed species that may become problematic at the site how they will be managed if needed.*
- *Maintenance needs for any constructed nest habitat for the project.*

Visible signage can play an important role in communicating the multiple benefits of Habitat Friendly Solar. Signs must be legible at forty or more feet in locations where the public can view the signs and state that the project is a Habitat Friendly Solar project. At least one sign is recommended every 20 acres up to a maximum of 5 signs.

Question 7 - *All mixes being used for the project must include at least 40 seeds per square foot to receive points for the first category. Please refer to pages 7-8 of BWSR's Native Vegetation Establishment and Enhancement Guidlines for more information about appropriate seed sources. To obtain points for including milkweed in projects at least 1% must be in seed mixes based on seeds per square foot, or a combination of seed and containerized plugs could be used with a plan to cover 1% of the ground surface with milkweed.*

Question 8 - *It is important that seeds treated with insecticides are not used at project sites and that insecticides are not being sprayed at the site. To meet requirements for communication/registration with local landowners/applicators about the need to prevent drift from adjacent areas, information provided can be in the form of email communication or copies of letters. Communication must be provided to all landowners adjacent to the property including municipalities.*

Send completed forms, project plans, seed mixes (showing seeds per square foot for each species) and any communications with pesticide applicators to local government staff with decision making authority for the project or BWSR at Paul.Erdmann@state.mn.us if local government staff are not involved in reviewing the project.