Appendix B-2
Model Solar Scope Book

2025 Request for Proposals

for

Renewable and Storage Resources

for

Entergy Arkansas, LLC

Entergy Services, LLC
May 19, 2025

Solar BOT Scope Book

Rev. 1

June 6, 2024

REVISION RECORD – SOLAR BOT SCOPE BOOK MAIN BODY			
Revision No.	Approval Date	Section / Page Revised	Reason / Description of Change
0	9/14/2023	All	Initial Issue
1	6/6/2024		• Added firebreak requirements • Added Fixed Tilt Racking, revised climatic conditions language • Revised risk section • Revised storm drainage requirements • Added class 8 truck requirements • Revised Fencing & Gates requirements, • Edits to Building on the Project Site, • Edits to Cable Management, • Edits to Grounding, • Edit to Lightning Protection, • Electrical Grounding will be captured in the design basis document • Edits to SCADA • Edits to Physical Security Installations, • Edit to Signage • Edit to Documentation to be Submitted at Substantial Completion Payment Date

SOLAR BOT SCOPE BOOK

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LIST OF APPENDICES

1 General Data[1]

This Appendix, including its attachments, is the Scope Book. This Scope Book is part of the B-O-T Acquisition Agreement, dated effective _____, between Seller and Buyer and subject to the terms, including the rules of interpretation, set forth therein. Terms with initial capital letters used but not defined in this Scope Book shall have the meanings ascribed to such terms in the Agreement unless the context otherwise requires. For the avoidance of doubt, the rules of interpretation and precedence of documents set forth in Section 1.2 and Section 1.3, respectively, of the Agreement shall apply to this Scope Book.

This Scope Book sets forth certain requirements with respect to the Work. In performing the Work, Seller shall comply with the requirements specified in this Scope Book, all Laws and applicable Permits, and the other elements of the Performance Standard.

This Scope Book provides, among other things, the minimum functional specification (MFS) for the Project, including scope and design requirements, and describes certain requirements with respect to the Work. [In addition to the requirements set forth in the Agreement (including this Scope Book), the high voltage (HV) substations and the HV transmission lines shall comply with all requirements specified in the GIA or any other Required Deliverability Arrangement.] This Scope Book is not intended to be, and shall not be construed to be, a comprehensive list of each and every element or other requirement applicable to the Work and shall not limit Seller's obligations under the Agreement or any Ancillary Agreement (including the GIA).

This Scope Book includes elements that apply to the Work contemplated by and the provisions set forth in Appendix 1 - Collector Substation and Appendix 2 - High Voltage Overhead Transmission Line. These elements include, among others, project controls; cybersecurity; Environmental requirements; site fire protection; site security; temporary site installation and laydown areas; tools, spare part, and consumables; project utilities and redundancy; and control system and communication requirements.

1.1 Project Description

The Project will include the following main systems and equipment:

- Photovoltaic (PV) modules
- Trackers or Fixed Tilt Racking
- DC collection system
- Inverters
- Foundations
- Meteorological (met) stations including all sensors, data collection, and supervisory control and data acquisition (SCADA)
- Transformers
- Switchgear

[1] NTD: The Scope Book remains subject in all respects to Buyer's continued due diligence and internal review (including by Buyer's subject matter experts). This draft may need to be revised to reflect certain matters included or not addressed in the Agreement or the request for proposal (RFP) or that have been reconsidered. Entergy reserves the right to issue an updated version of the Scope Book at a later date.

- Balance of system (BOS) and auxiliary equipment
- Backup power supply and emergency generator, if required for equipment protection or personnel safety (i.e., container and enclosure for heating, ventilation, and air conditioning [HVAC] and emergency lighting)
- Access and internal roads
- Water, fuel, power, and all other utilities

Seller shall provide all other ancillary equipment, systems, materials, and components necessary to deliver to Buyer a fully functional and operational Project meeting the Performance Standard. Among other things, the Project will be designed to comply with at least the following principles:

- Allow safe, reliable, and long-term operations.
- Provide maintenance access for all equipment (including Occupational Safety and Health Administration [OSHA] requirements).
- Achieve at least a 30-year life for structural components (recognizing the seller warranted performance guarantee of the PV modules used in the Project may be 25 years).
- Minimize operator surveillance intending the Project be designed to operate autonomously with minimal interaction by operators so limited operations and maintenance (O&M) staff is required.
- Provide reliable power to the interconnected electric grid.
- Minimize adverse local community impacts.
- Minimize impact of fire and natural hazards on site.

1.1.1 Access

General Spacing Requirements

Table 1 and correlating figure are to indicate spacing requirements within the site for various pieces of equipment, roads, and fencing. Nothing herein shall limit spacing, set back, or other similar requirements of Laws, applicable Permits, or other applicable elements of the Performance Standard.

Figure 1: Clearances required for solar project construction

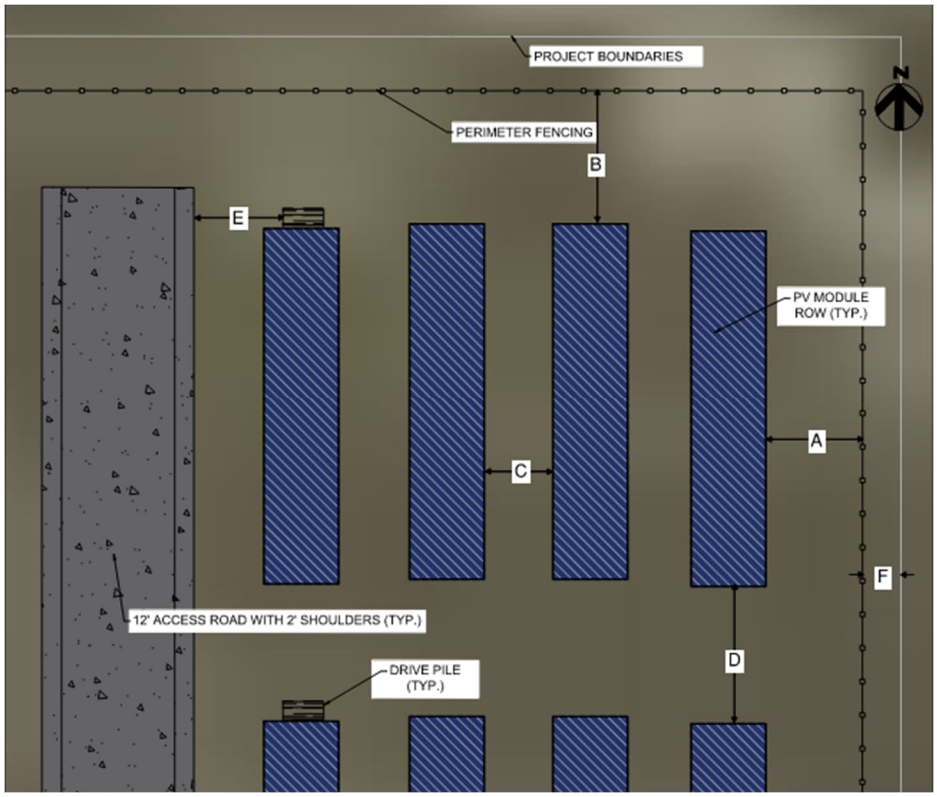


Table 1: Row spacing and clearance requirements

Code	Description	Dimension	Comment
A	Edge of Module to E/W fence	25 ft	Maintain appropriate distance for access/maintenance.
B	N/S edge to N/S fence	25 ft	Maintain appropriate distance for access/maintenance.
C	Edge to edge spacing	10 ft	Spacing between module edges for maintenance access – when modules are in horizontal position.
D	N/S edge to N/S edge	15 ft	Vehicle access requirements must be considered.
E	Drive pile to road	7 ½ ft	To row end pile and edge of modules (when horizontal).
F	Fence to property line	5 ft	Or otherwise mandated by the local jurisdiction.

1.1.1.1 Access Gates

One motor operated sliding gate is required at every entrance to any fenced section of the PV Yard which contains, either on a DC or AC ratio, greater than or equal to 30% of the total site's respective DC or AC. One non-motor operated sliding gate which can be easily converted to a motor operated sliding gate is required at every entrance to any fenced section of the PV Yard which contains, either on a DC or AC ratio, less than 30% and greater than or equal to 15% of the total site's respective DC or AC. Either sliding gates or swing style gates shall be used to access all other areas of the PV yard (i.e., those which contain, either

on a DC or AC ratio, less than 15% of the total site's respective DC or AC.) Refer to section 3.9 for keypad access details and section 3.2.11 for fencing and gate requirements.

1.1.1.2 Site Perimeter Fire Break

A minimum 10-foot wide noncombustible fire break surface shall be provided at the site boundary.

In general, the fire break shall consist of a gravel roadway provided between the modules and perimeter fencing that communicates to any adjacent property. The width of the fire break is included in Code A or B of Figure 1 and Table 1 above. Refer to 3.2.10 for construction requirements.

Based on the specific site conditions, Seller may propose an alternate fire break to Buyer for approval. The alternate fire break must meet all of the following conditions and be approved by the Buyer prior to installation:

- The perimeter fire break must be a continuous noncombustible surface.
- The credited property shall be under the control of the owner or publicly accessible, with provisions made to maintain vegetation height along both sides of the alternate fire break feature.
- Surface grade profile should be less than 4% for the adjacent vegetation and fire break feature.

1.2 Site Description

1.2.1 General

The Project Site physical address is_____, and s generally depicted on the site map included in Appendix 8.

1.2.2 Climatic Conditions

The Project shall be designed considering the climatic conditions set forth in Appendix 5 and any other climactic or environmental conditions that would be expected to be encountered or occur at the Project Site during the expected Project life. The Project equipment, materials, and components incorporated into the Project shall be suitable and rated for such climatic conditions. The Project shall be capable of sustaining minimal damage and operating properly at such conditions.

The site shall be designed in accordance with the following:

- Minimum Design Temperature is the lowest 0.2% percentile of the hourly temperatures measured in the months of December, January, and February from 01/01/2000 through the date the measurement is calculated. The hourly data set shall be mutually agreed upon but is expected to come from sources such as the National Weather Service/National Oceanic and Atmospheric Administration and is expected to be the closest available reporting station to the project site.
- Maximum Design Operating Temperature is the greater of 40°C OR 0.4% Cooling Dry Bulb temperature as determined by the latest ASHRAE dataset using the closest reporting station to the project site.
- Maximum Design Analyzed Temperature is the 50-year Maximum Extreme Annual Dry Bulb temperature as determined by the latest ASHRAE dataset using the closest reporting station to the project site.

- The site shall be designed to operate at full contractual capacity from the Minimum Design Temperature to the Maximum Design Operating Temperature.
- The site is allowed to derate at no more than 10% nameplate power / 1°C from Maximum Design Operating Temperature to Maximum Design Analyzed Temperature.
- The site shall be designed and analyzed to operate between the Minimum Design Temperature and the Maximum Design Analyzed Temperature without causing any short- or long-term damage to any equipment.

Performance modeling for the Project shall utilize a bankable weather data file such as Solar GIS, 3Tier, or Clean Power Research. This data shall be included as Appendix 4, which is based on the solar resource assessment report provided to Buyer by Seller.

Design wind speed for the Project and all components shall be per American Society of Civil Engineers (ASCE) 7, Risk Category III.

1.3 Codes and Standards

Seller shall design, procure, construct, commission, and test the Project, including all equipment, materials, components, and auxiliary facilities and systems, in accordance with the most recently established codes and standards, or the code agreed upon at the time of the agreement.

Seller shall perform the Work and otherwise cause the Project to comply with the applicable standards set forth in Table 2 below.

There are additional requirements in Appendix 12-Risk.

Contractor shall design the Project in accordance with all applicable federal, state, and local laws and codes, regulations and standards provided by the organizations listed below. Where these codes do not govern specific features of the equipment or system, Contractor, and Original Equipment Manufacturer (OEM) standards shall be applied. Where local codes or ordinances will have an impact on the design (e.g., building height restrictions) or equipment selection, Contractor shall jointly address these with the local authorities having jurisdiction (AHJ). Contractor shall review all applicable laws, codes, and standards throughout the project duration. Any change in requirements which become applicable to the Work prior to final turnover shall be identified and presented to Owner with recommended implementation options for Owner's consideration and final approval.

Table 2: Applicable Standards and Organizations

Applicable Standards and Organizations	
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers

Applicable Standards and Organizations	
ASTM	American Society for Testing Materials
AWS	American Welding Society
IBC	International Building Code
ICE	Institution of Civil Engineers
ICEA	Insulated Cable Engineers Association
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IESNA	Illuminating Engineering Society of North America
ISO	International Standardization Organization
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NERC	North America Electric Reliability Corporation
NESC	National Electrical Safety Code
NFPA	National Fire Protection Association
OSHA	Occupational Health & Safety Administration
SSPC	Steel Structures Painting Council
UL	Underwriters Laboratories

1.4 Project Sequence and Milestones

The Project Execution Plan (PEP) shall include a Project Schedule for the engineering, procurement, construction, commissioning, and testing of the Project in accordance with the milestones for the Project, including these milestones:

- Limited notice to proceed
- Full notice to proceed
- Begin construction
- Mechanical completion
- Backfeed
- Closing
- Performance testing completed
- Substantial completion
- Final completion

1.5 Project Controls

Refer to Appendix 11 for requirements related to Project Controls.

1.6 Units and Language

1.6.1 Units for Calculations

Unless otherwise indicated, English units will be used in all calculations, as specified in Table 3 below.

Table 3: Units for Calculations

Measurement	Units
Area	Acre
Dimensions	Feet (Ft) or Mile (Mi)
Electrical Energy	Kilowatt per hour (kWh) or megawatt per hour (MWh)
Electrical Power	Kilowatt (kW) or megawatt (MW)
Mass	Pound (lb) or ton
Temperature	Fahrenheit (ºF)
Velocity	Miles per hour (mph)
Voltage	Volt (V) or kilovolt (kV)
Volume	Feet cubed (ft^3)

1.6.2 Language

Seller shall provide all information in the English language.

2 Scope of Work

2.1 General

The Work shall include:

- Survey and assessment of the Project Site
- Development, design, engineering, permitting, procurement, manufacturing, and factory acceptance testing (FAT) of major engineered equipment
- Equipment and materials delivery, unloading, handling, and storage at the Project Site
- Erection, construction, equipment and system integration, onsite QA/QC, commissioning, and testing of the Project
- Onsite QC system, description, and execution program
- Works and services related to preparation, civil, mechanical, electrical, instrumentation and control (I&C), and communication
- Security of Project Site
- Utilities and interconnections needed for construction, commissioning, and testing such as potable and non-potable water, temporary power, telecommunications and internet, and fuel
- Site specific safety plan and implementation
- Project hand-off and training

- Environmental compliance and implementation
- Site restoration as required

2.2 Design and Engineering

Seller shall be responsible for all design and engineering of the Project and Project Site in accordance with this Scope Book. Seller shall perform all design and engineering Work in accordance with all Laws (including codes and standards) and applicable permits. The design shall meet the interface requirements of the [Entity] Transmission System, and the Independent System Operator (ISO) if applicable, including communications and battery limits.

The energy and other products delivered to the grid shall comply with the requirements of the GIA.

All equipment incorporated into the Project or otherwise sold to Buyer under the Agreement shall be of proven design for the intended use of such equipment.

The Project shall include a well-established classification and identification "tagging" system consistently in all phases of the Project. Seller shall obtain Buyer approval prior to implementation of the tagging system.

Appendix 9 sets forth the list of approved vendors for the equipment specified therein. Seller may only procure equipment specified in Appendix 9 from an approved vendor. Alternative vendors must be approved in writing by Buyer.

Seller shall provide documentation as further detailed in Section 8.1 of this Scope Book to Buyer for Buyer's design review of the Project at the following milestones:

- 30% detailed design completion
- 60% detailed design completion
- 90% detailed design completion
- 100% detailed design completion prior to issuance for construction
- As-built drawings after project completion

Seller may deliver documents for a given system as it reaches a design milestone instead of delivering all documents in a single package. Buyer shall have 10 business days to review and provide comments to each set of design documents provided by Seller. Seller shall consider in good faith comments from Buyer on each set of documents and any subsequent input from Buyer regarding such comments or Seller's response thereto.

For Buyer comments provided to Seller following delivery of the proposed issued for construction (IFC) design documents, Seller shall promptly notify Buyer in writing of, document (for Buyer's review), and describe any changes made thereto, as a result of Buyer's comments or otherwise, and provide Buyer no less than five business days to review and comment on the modified design documents. This process shall continue until Seller proposes no additional changes to Buyer or Buyer provides no additional comments to Seller. Buyer and seller shall follow RFI procedure and guidelines to achieve change management completion and acceptance.

The preliminary Project Site layout in Appendix 8 sets forth the preliminary layout of the Project, including certain Project design parameters:

- Ground cover ratio as used in the performance guarantee

- Selected direct current: alternating current (DC:AC) ratio as used in the performance guarantee
- Major equipment used (solar module, tracker/racking, PCS)
- Electrical interconnection facilities voltage and substation location
- Access road specifications, including width, internal turning radii, and surfacing cross section
- Flood inundation analysis
- Project Site ingress and egress
- Confirmation of temperature-corrected maximum voltage calculation (1,500 Vdc)
- Project generation tie lines and the electrical interconnection point in accordance with the GIA.

The detailed design of the Project shall be finalized in accordance with the Project Schedule.

2.3 Property Protection

2.3.1 Risk Identification Process

2.3.1.1 General Inputs

Seller shall design and build the project to meet all laws, codes, and practices applicable to life preservation, property preservation, and limiting liability to the public. Seller shall conduct studies and necessary evaluations to support any proposed deviation from requirements or industry standards.

The property protection methodology places emphasis on passive design that requires little to no external actions. Material selection, design considerations, and site layout should prevent a single event from propagating damages to the extent possible.

The standards shall be utilized as appliable for the design basis considerations:

- Codes

    - International Building code (IBC) of the edition adopted by the state and local jurisdiction.
    - International Fire code (IFC) of the edition adopted by the state and local jurisdiction.
    - NFPA 850 “Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations”, (Performance-Based Criteria in Chapter 4)
    - ASTM E2908-12 “Standard Guide for Fire Prevention for Photovoltaic Panels, Modules, and Systems”
    - National Wildfire Coordinating Group (NWCG), PMS 437-1 “NWCG Guide to Fire Behavior Assessment”
    - Best Practices: EEI, EPRI, IEEE
    - NFPA Fire Protection Handbook

2.3.1.2 Project Specific requirements

Each facility will have its own special conditions that impact the nature of the installation. The project-specific design process shall include but not limited to the following considerations:

- Assumed onsite staffing levels for operation

- An all-weather road that parallels the entire perimeter fence shall be designed and kept clear of vegetation suitable for a fire break.
    - Site vegetation design with detailed vegetation control parameters for a wildfire prevention program consistent with ASTM E-2908-12 section 8.5.5 or equivalent standard considering dormant 1 hour fuels with 20 percent or less fuel moisture content as described in PMS 437-1 “NWCG Guide to Fire Behavior Assessment”

- Discussion of plant layout and geographic location in relation to natural or manmade hazards that could physically impact operation or damage onsite property
- Equipment design and redundancy when credited to actively mitigate damage. (Eg automatic stow features, emergency equipment isolations)
- Proximity fire services and suitable water supply as agreed by local AHJ
- Proximity of medical emergency services responding to the site
- Fences shall discourage trespass or inadvertent human access to the facility. Perimeter fence postings interval shall be legible from all perimeter vantage points.

- Publicly recognized discrete physical address at each point of entry with normal and emergency contacts posted on the gate.

- Methodology of providing prompt emergency responder access to the facility from Buyers remote and continually staffed operations center.

-
- Historical geographic loss information / industry operational experience
- Use of structure / equipment smoke detection and relay to control center.

2.3.2 Design Basis Document

The Seller shall prepare a site-specific Design Basis Document (DBD) in accordance with the Scope Book and Appendices to establish the design summary for the facility. This document will be maintained and revised for the life of the facility as it is key to the management of change process. This document outlines the design basis for achieving the objectives agreed upon by the stakeholders (for example, Seller, Buyer, AHJ, and any local jurisdictions) and the subsequent decision-making process, including:

- o Identification of source documents and assumptions,
- o Identification of hazards and which fire protection/prevention features are to be provided or omitted, and
- o Where operational and administrative controls are assumed to be in place to mitigate operational or natural hazards.

This DBD has been developed specifically for the project description, design parameters, and hazards identified within this document. As each project has unique conditions, parameters, and hazards, this document and the analysis contained within shall not be applied to other projects.

The development of this document is an iterative process and will be revised as the design progresses based on dialogue among the stakeholders. Seller shall create the document at 30% design completion

and maintain the document through Closing. Stakeholders establish goals and objectives and evaluate whether the design is adequate to meet those goals and objectives.

Appendix 5 of this document serves as the minimum considerations for the Property protection elements of the DBD. Seller shall input the requested information into the tables in Appendix 5 and should provide any additional information relevant to the parameters of this DBD.

2.3.2.1 Risk Considerations

Hazards associated with PV generating plants to be addressed in the design are as follows:

- Damage assumptions associated with failed PV module connections or string cabling and station equipment response
- Assumptions or failure consequences associated with tracker positioning of the PV modules
- Assumptions for Inverter, switchgear, and cable protection (Flood, Fire, vandalism, etc.)
- Oil filled transformer failures and response for fires and oil confinement
- Safe vegetation height for power production and fires under and around arrays of PV modules
- Flood frequency and maximum depth of water inundation
- Hail maximum survivable diameter and tracker storm safe position assumptions
- Wind design operation and safe position assumptions Seismic activity if applicable

2.4 Civil and Structural

The civil and structural Work is described in the following sections.

2.4.1 Infrastructure and Outdoor Works

Civil works, structures, and foundations for the Project Site, such as:

- Rerouting of existing underground services, such as piping, cabling, and ducts, if appropriate.
- Civil works for discharging rainwater (grading provides positive drainage to rainwater to avoid ponding).
- General site clearing/grubbing, filling, leveling, and grading to the necessary lines and levels and all other earthworks where required including access areas.
- Construction of new roads, parking areas, and pavement as part of the required infrastructure. The following shall be included as a minimum:

    - Main access road(s)
    - Internal roads
    - Collector substation access road(s)
    - Transmission line maintenance road(s)

- Security fence and surveillance system and lighting system
- Access gate(s)
- All civil works for the solar arrays, including:

    - Complete civil works for the solar field, including foundations for the tracker or racking structure and equipment

- Bollards for equipment near access road
- Crossings (swales, blisters, and culverts)
- Duct banks
- Trenches
- Service roads
- Onsite infrastructure
- Permanent erosion control
- SWPPP compliance
- Restoration as required
- Retainage and overflow as required

- All civil works for the collector substation (if substation is in Seller's scope of work)
- All civil works for routing and installation of the transmission line (if in Seller's scope of work)
- Any other outdoor civil works required inside the Project Site or as needed for interconnection of the Project to the [Entity] Transmission System.

2.4.2 Electrical and I&C Systems

Civil works, structures, and foundations for the electrical and I&C systems, including:

- Construction of ducts, culverts, underground cable ducts, trenches, manholes, and other routing methods and access points for medium voltage (MV) and low voltage (LV) system cables, perimeter lighting, surveillance, I&C system, etc.
- Civil works for equipment such as power conversion systems (PCSs), transformers, switchgear, and enclosures, including their corresponding foundations
- Civil works for power evacuation lines from the Project's solar arrays to the collector substation
- Civil works within the collector substation area for power evacuation
- Civil works for the power transmission line from the collector substation to the electrical interconnection point, including tower foundations if required
- Civil works for the electrical interconnection point, if required
- Underground cable for MV and data connections inside of the PV array
- Connecting MV and I&C cables to the agreed demarcation points
- Metering (operational meters, see Section 3.7 below)
- Any other outdoor civil works related to the electrical and I&C systems

2.4.3 Storage

A storage area at the Project Site will be located, sized, and secured for the unloading, storing, accessing, handling, removal, and delivering of supplies, equipment, materials, consumables, and spare parts during all phases of the Project. This includes construction, commissioning, testing, restoration, and operation and maintenance. Material storage shall be at an elevation above the maximum floodplain for the selected area.

2.5 Mechanical

Racking shall include the following systems and components:

- Supply and assembly of a suitable main tracking structure or fixed-tilt rack and anchor to structure foundations for the specified site conditions
- Supply and assembly of suitable substructure (racking system and/or tracking system) and attachment to PV modules for the specified conditions
- Corrosion protection

2.6 Electrical

2.6.1 PV System Circuits

The Work includes the supply, assembly, and installation of, but is not limited to the following components:

- PV modules
- PV string harness
- PV module string connectors
- PV module mounting clamps
- DC wiring
- Grounding system
- Fused DC combiner boxes
- DC disconnect switches
- Surge arrestors and lightning protection

2.6.2 Power Conversion System and PV Collection System

The Work includes the supply, assembly, and installation of the following components:

- PCS(s)
    - PV DC to AC power inverter(s)
    - AC disconnect switches
    - Inverter step up transformers
    - Convenience transformer(s)
    - Switchgear (if required)
    - Auxiliary equipment and systems (including HVAC or other cooling systems)
- Backup power supply and uninterruptible power supply (UPS) for SCADA and met stations, tracker stow (if applicable), and other systems if applicable
- Grounding
- Lightning protection system, if applicable
- Conduits and cable trays
- Vaults, if applicable
- DC conductors
- Cables
- Relay protection and fuses

2.7 Environmental Requirements

Seller shall design, build, operate, and maintain the Project to meet all applicable /environmental laws and permits, as outlined in the Environmental Guidelines in Appendix 14. Seller shall demonstrate during the design and construction phase and performance tests that the Project is able to (design) or does (construction) comply with all applicable environmental laws and permits. Applicable standards for environmental protection must be fulfilled without any restriction.

Seller shall conduct studies and necessary evaluations for activities commonly associated with new construction, including but not limited to:

- Conduct Environmental Assessments (EA) in compliance with Good Industry Practices and current requirements and Laws
- Conduct Wetlands Delineation and Threatened and Endangered Species Survey
- Conduct a site flood assessment
- Develop National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Permit
- Develop Stormwater Pollution Prevention Plan (SWPPP)
- Develop a Spill Prevention, Control, and Countermeasures (SPCC) Plan for project construction activities
- Hazard communication and chemical storage requirements found in 29 CFR 1910.1200
- Waste Management for non-hazardous, hazardous, and universal wastes.
- Waste management for broken, damaged, or waste solar panel modules
- Above ground storage tanks
- On-site sewage facilities (Septic Systems)
- Development of an environmental considerations report as required by State Public Utility Commissions
- Develop a site emergency response guide

2.8 Site Security – Construction

The Site Security Plan developed in accordance with the Agreement shall include the following:

- Project Site access gate with interface for manual key entry
- Locks on any building or enclosure on the Project Site that contains microprocessor-based relays

Seller shall ensure the security systems comply with all requirements of law and applicable permits.

Seller shall be responsible and maintain care and custody of all project equipment, tools, and material after delivery and acceptance and until project turnover.

2.9 Temporary Site Installations and Laydown Areas (Including Buyer's Dedicated Office Trailer)

Seller shall obtain all necessary approvals and/or permits for the installation of the temporary site installations and laydown areas.

Seller shall maintain site cleanliness and perform housekeeping in accordance with good industry practices.

Seller is responsible for the mobilization of field forces and all necessary construction facilities at the Project Site, including temporary office trailers as necessary or advisable for completion of the Work.

Seller shall provide dedicated temporary office trailer for Buyer's use from mobilization to substantial completion, complete with reliable 24/7 power, potable water, sewer, restroom facilities with flushing toilets, and broadband internet. Janitorial service shall be provided for Buyer's trailer weekly. After substantial completion, Buyer shall have an option to assume contractual obligations for this temporary office trailer.

Promptly after the substantial completion payment date and as a condition to final completion, Seller shall remove all temporary installations and demobilize, leaving the Project Site clean and orderly, and clear of debris or pollution. Any laydown, construction parking, and/or work areas constructed on a temporary basis shall remain for future use.

2.10 Tools, Spare Parts, and Consumables

Seller shall provide all equipment and tools, including cranes, lifting equipment, and special tools, necessary for operation and maintenance of the plant through the substantial completion payment date.

In addition to the transferred closing inventory and any transferred post-closing inventory outlined in the Agreement, Seller shall provide a list of recommended spare parts and consumables, including the list price of each item. The recommended spare parts and consumables should be classified in a list as follows:

- Maintenance spares and consumables: Items Seller reasonably anticipates may be required or appropriate for Buyer to have in stock during the first two years of normal operation of the Project.
- Overhaul spares and consumables: Items Seller reasonably anticipates may be required or appropriate for Buyer to have in stock during the programmed minor and major overhauls.
- Strategic and breakdown spares: Items Seller reasonably anticipates may be required or appropriate for Buyer to have in stock after commissioning and before extensive testing to refurbish the equipment.

Seller shall be responsible for supplying and fitting any spare parts required during construction, commissioning, and testing without charge to Buyer.

For all categories of spare parts and consumables, Seller shall recommend in accordance with good industry practices proper storage procedures for all items.

Following receipt of such list, Buyer shall inform Seller of the spare parts and consumables for operations that it is electing to maintain (whether that is the full list provided by Seller or a modified list). Seller will support Buyer's review and finalization of such list. Following finalization of the list of such spare parts and consumables for operations that Buyer is electing to maintain, Seller shall, for Buyer's account and at Buyer's direction and cost, manage the procurement and delivery to the site designated by Buyer of such spare parts and consumables.

2.11 Project Utilities

Seller shall procure and provide the necessary means of transportation and delivery to the Project Site of each commodity, utility, utility product, and service necessary or desirable for the performance of the Work.

3 Technical requirements

3.1 General System Requirements

Seller shall perform and complete the Work in a thorough, professional manner utilizing personnel skilled, competent, and appropriately licensed in their various trades. The Project design shall comply with the requirements stated herein. All equipment, materials, and components shall comply with the requirements of this Scope Book.

No aspect of Project operation shall produce electromagnetic interference (EMI) that will cause faulty operation of instrumentation, communication, or similar electronic equipment within the Project or elsewhere on the [Entity]Transmission System. The Project shall be designed to suppress EMI effects and must meet the specifications of the latest revision of the Institute of Electrical and Electronic Engineers (IEEE) 519.

Seller shall take necessary precautions to ensure that the modules installed at the Project or included in inventory do not degrade or experience damage/diminished performance as a result of micro-cracking, micro-fracturing, or other similar damage.

3.2 Civil and Structural Requirements

3.2.1 General

The Project shall be designed, constructed, and installed with sufficient access aisles, equipment separation, and clearance to ensure the safe operation, maintenance, inspection, repair, removal, and replacement of equipment and systems. The design shall give priority to the economical management of vegetation and long term operation and management cost and safety. The Project design shall include and allow for appropriate walkways, forklift and vehicle runs, access routes, means of access, and related safety protections, including doors, stairs, landings, ladders, and other access means.

Design wind speed for the Project and all components shall be per American Society of Civil Engineers (ASCE) 7, Risk Category III.

PCS and other high-profile electrical equipment shall be placed at the Project Site in a manner to prevent or, if not possible, minimize shading on the PV modules. Adjacent property use and future tree line shading should be considered in the site layout.

3.2.2 Accessibility

3.2.2.1 Platform Access at the Project Site

Reasonable access shall be provided for systems components and equipment that require regular or anticipated maintenance activities or operator access for normal operations or repair of the Project. All platforms shall provide space for maintenance of equipment and pull-space.

3.2.2.2 Row Spacing

Refer to Section 1.1.1, Access for row spacing requirements.

3.2.3 Geotechnical Investigation

Seller shall conduct geotechnical investigations on the Project Site. The results of the investigations shall serve as a basis for the Project's civil, structural, and architectural design, including identifying the required foundations and earthworks, selection of materials and corrosion protection methods, trench and cable sizes, erosion potential, or any other aspect in which soil characteristics are relevant.

Geotechnical investigation shall include specific guidance for site road construction, steel corrosion, and driven piles.

3.2.4 Site Clearing, Grading, Soil Improvement, and Revegetation

Seller shall design the general grading of the Project Site considering the requirements of the selected trackers or racking system and the needs of the general drainage system. Seller shall ensure all Project grading and drainage and access roads are designed to the requirements of all laws and applicable permits.

Earthwork (excavation, fill, backfill, slopes, etc.) associated with grading and drainage, including materials, installation, and testing, shall be conducted in accordance with the final geotechnical data and as reasonably determined by Seller's geotechnical engineer(s) for the Project. Construction damage to earthwork shall be remediated prior to Substantial Completion.

Seller shall provide for the inspection and testing of all load-bearing surfaces (foundations, slabs, roadways, trench bottom, etc.) by qualified, experienced, properly licensed independent inspectors.

Backfill for trenches shall be selected to prevent physical damage to raceways or cables. The backfill of trenches shall be tested for design compaction requirements and shall meet the requirements of the Geotechnical Report.

Any debris or unsuitable material shall be removed from the site and properly disposed of in accordance with the rules and regulations for waste management outlined in Appendix 14. If necessary, any surplus soil shall be transported to another suitable area inside or outside the Project Site.

Adequate streamside vegetation buffers should be established based on project needs and site-specific conditions identified in the US Army Corps of Engineers Jurisdictional Determination of wetlands and waters of the US. If a streamside buffer cannot be feasibly established, adequate BMPs should be utilized for soil stabilization. Refer to Appendix 14 for additional requirements.

Low growth seed mix shall be planted on all ground inside the fence line. Seed mix shall be selected by consultation with local, regional, or state NGOs, universities, co-ops, and /or ag-business professionals and the local state extension agency. Areas inside and outside the fence line disturbed during construction or site remediation shall be reseeded prior to closure of the construction stormwater permit, as outlined in Appendix 14.

Seller shall obtain all required Project work permits and Project operational permits from applicable governmental authorities. Seller shall locate the Work from horizontal and vertical control monuments. If the removal or relocation of utilities is required, Seller shall notify utility companies.

Seller shall protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by earthwork operations, soil conditions, or environmental conditions.

Seller shall provide erosion-control measures in accordance with the approved Project Stormwater Pollution Prevention Plan (SWPPP) for the Project to prevent or mitigate erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties, including roads, walkways, waterways, and wetlands.

3.2.5 Construction Materials

All materials shall be of good quality and capable of withstanding the environmental and subsoil conditions they will be exposed to during the life span of the asset without any significant decrease in serviceability or strength.

3.2.6 Drainage and Stormwater Management

The Seller shall be responsible for developing, constructing, and maintaining through the substantial completion date a Project Site stormwater management plan that meets all laws and applicable permits. Seller shall conduct a topographical survey to define the general drainage for the Project Site and use the survey as a basis for the design of the Project Site stormwater management plan. Seller shall complete and submit all necessary permitting applications, including stormwater discharge National Pollutant Discharge Elimination System permit applications, to the appropriate governmental authorities. The stormwater management plan, the Work, and the Project shall comply with all such permits as outlined in Appendix 14.

Seller shall develop, design, engineer, and construct an adequate drainage system, including any necessary inlets, pipes, channels, manholes, stormwater swales, surface flow, outlets, or other components for collecting, directing, and disposing of stormwater from the Project Site. Site drainage during construction shall be designed so inundation due to a 100-year 24-hour storm event within 48 hours. A clear path for the collected stormwater out of the Project Site shall be provided, without flooding, while complying with all laws (including codes and standards) and permits.

Stormwater runoff shall replicate existing pre-development stormwater runoff to the greatest extent possible. Modification of existing hydrologic conditions due to construction/development shall not result in an increased potential for flooding (upstream or downstream) or adverse drainage, negatively impact water quality or unnecessarily impact other uses in the vicinity. There should be no net increase in quantity, frequency, and / or duration of storm water runoff pre and post construction/development. Any contaminated runoff shall be segregated and detained separately in strict accordance with all laws and applicable permits. Permanent stormwater drainage systems shall be designed to carry the storm return period as required by all.

Underground piping and culverts shall be reinforced concrete pipe (RCP), aluminized corrugated metal pipe, or corrugated, dual-wall, high density polyethylene pipe (HDPE). The hydraulic grade line for the stormwater pipeline system shall be as required by all laws and applicable permits. Ditches shall be lined with vegetation, rip-rap, and/or concrete, as applicable, based on the water velocity.

All areas not drained via a stormwater drainage system shall be drained via an open-ditch system consisting of trapezoidal ditches with culverts or grating at road crossings or, where slope can be achieved, sheet flow.

When culverts are utilized, the culvert inlets and outlets shall be provided with end sections and permanent erosion protection.

Project Site areas not included in or affected by the Project shall be left in their existing conditions.

Spill containment for Project transformers shall be as addressed in the Spill Prevention Control and Countermeasure (SPCC) Plan.

Transformers shall employ an environmentally friendly oil that has a higher flash point than regular oil (e.g., Cargill Envirotemp 360 fluid).

3.2.7 Erosion Control

An erosion and sediment control plan shall be developed by Seller's professional engineer licensed in conjunction with the SWPPP for the construction phase of the Project. During Project construction, erosion and sediment control measures shall be implemented to prevent sediment-laden runoff from leaving the Project Site. Construction runoff shall be directed to the erosion and sediment control systems prior to leaving the Project Site. The plan shall include, at minimum, the incorporation of silt fencing, silt bags, straw bale dikes, storm inlet protection, sediment basins, swales, piping, stream crossings, and other measures as required or appropriate to promote sediment and erosion control as prescribed in the approved plan and/or by periodic inspection by the local soil conservation district. Silt bags or reasonable equivalent shall be included as necessary when dewatering excavations to prevent sediment from collecting in the stormwater system (e.g., Seller shall not pump silt-laden water through the stormwater system without proper filtration).

3.2.8 Foundations

Foundations shall be designed, constructed, and completed to consider the site climatic conditions (heat, cold, rain, earthquake, ice, and wind), soil conditions, and thermal loads caused by expected fluctuations of materials and ambient temperatures.

Foundations for outdoor electrical equipment shall be elevated above ground to prevent any equipment, parts, systems, or other items (excluding the foundation) from coming in contact with surface water or runoff. The minimum height of the above ground portion of any such foundation (measured from the top of ground level to top of concrete) shall be the greater of:

- The height required based on the results of the 100-year maximum flood hydrological study for the Project and Project Site plus an additional 6 inches of freeboard
- 12 inches

3.2.9 Corrosion Protection

Seller shall account for the corrosion of steel components on structures and pile foundations that are expected to be encountered on the Project Site. Seller shall galvanize all steel structures, steel foundations, and their components. No bare steel structures or components are allowed.

Seller shall use ASTM A123 (From ASTM A123 Table 1: W6x9 – grade 75: 3 mils, W6x9 grade 85: 3.3 mils) for the minimum coating thickness on all hot dipped steel sections including steel piles. A minimum of 3.0 mils of galvanizing shall be used on all piles. All fasteners and bolts shall be galvanized in accordance with ASTM A153.

Galvanization thickness greater than 3.9 mils up to 5.0 mils are acceptable on steel sections and components if the Corrosion Engineer and the pile Engineer of Record provide written confirmation from the galvanizer that they will be able to achieve such a nonstandard coating thickness on the steel components and that the quality and adhesion strength will be in accordance with ASTM A123.

3.2.9.1 Corrosion Rate Estimation Methodology and Requirements

Estimate the corrosion rates of buried ferrous structures in the soil using a similitude analysis.

Foundation design life is the same as the Plant design life as defined in Section 1.1.

Use the corrosion database compiled by Melvin Romanoff in the National Institute of Standards and Technology (formerly National Bureau of Standards, NBS) Circular 579 entitled Underground Corrosion[2]. This procedure requires some corrosion knowledge and experience and shall only be performed by a Corrosion Engineer[3].

The procedure shall include performing onsite resistivity testing and conducting laboratory analyses on soil samples collected from the site. Seller shall ensure the number and type of soil samples is representative of the overall project site and accounts for the areas with most aggressive exposure. A minimum of 1 resistivity test shall be performed on site per 25 acres. Perform laboratory testing per the following standards: saturated electrical resistivity values per AWWA G187, pH per AWWA G51, and chloride and sulfate concentrations per ASTM D4327. Report the results.

A soil in the corrosion database shall be selected that most closely matches the worst-case onsite parameters in the soil samples. It may be necessary to select two or more soil samples based on site heterogeneity. Select the sample(s) with special emphasis on the following parameters:

- Lowest electrical resistivity
- Lowest pH
- Highest concentration of chloride ions
- Highest concentration of sulfate ions
- Geographic location
- Site drainage conditions

Use the corrosion database to estimate the uniform corrosion rates after selecting the soil sample(s). If multiple soil samples are selected report the highest corrosion rate amongst the soil samples.

- Report the steel corrosion rate in mils per year (mpy)
- For galvanized steel, estimate the corrosion rate of zinc and steel separately and report in mpy; and
- Utilize a safety factor of 1.5 on the calculated corrosion rate when reporting the corrosion rates.
- Calculate the anticipated section loss of the steel substrate based on the corrosion rate and desired service life. Include this value in the design as the corrosion allowance.
- On galvanized piles subtract the consumption life of the zinc layer from the structure design life and calculate the steel corrosion rate on the remaining years.

[2] Romanoff, Melvin. (1989). Underground Corrosion, NBS Circular 579. Houston, TX, United States of America: Reprinted by NACE.

[3] The Corrosion Engineer is herein defined as a licensed Professional Engineer with certification or licensing that includes education and experience in corrosion of buried or submerged metal structures, or a person certified by NACE International at the level of Corrosion Specialist or Cathodic Protection Specialist (i.e. NACE International CP4). The Corrosion Engineer shall have not less than five years' experience with corrosion control at solar facilities.

- Consider the structure geometry to determine if the corrosion progresses from one side or both sides. For example, for an H-beam section, multiply the corrosion rates by 2 to account for corrosion progression occurring form both sides of steel surfaces exposed to soil (referred to as “two-sided” corrosion rates). The corrosion rate for hermetically sealed pipe piling where only the outer steel surfaces are exposed to soil is “single-sided” and do not need to be multiplied by 2.
- The localized corrosion rates listed in the corrosion database can be disregarded unless pitting and localized corrosion penetration could either compromise the structure integrity during the service life of the structure or alter the estimated corrosion rate. For example, a through-wall pit in a pipe pile would cease to be hermetically sealed and a single-sided corrosion rate would not be appropriate.
- There are other corrosion mechanisms such as galvanic coupling between steel piles and copper grounding, and pH concentration cells between steel piles and concrete pile caps. Either include corrosion allowances for these mechanisms or ensure the design prevents these mechanisms from occurring.

An alternative method for determining the corrosion rates is to perform Linear Polarization Resistance (LPR) laboratory testing per ASTM G59 or with suitable proprietary instrumentation that integrates the Stern-Geary equation. This method also requires representative soil samples from the project site.

- Ensure that the LPR testing is conducted by a qualified laboratory with a minimum of 5 years of experience performing such tests. Submit documented experience along with proof of up-to-date device calibrations along with the results.
- Report corrosion rates for both steel and zinc in mpy
- Report initial and steady state corrosion rates.
- If utilizing proprietary instruments additionally report the imbalance, which is a measure of pitting tendency.

Calculate the anticipated section loss as detailed above.

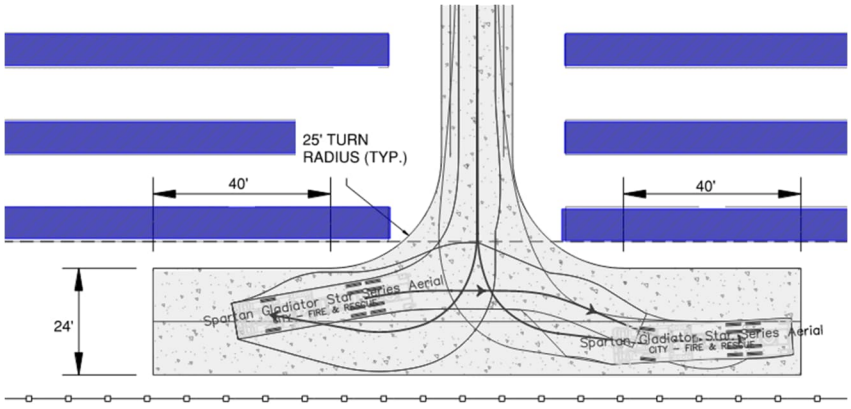
Seller shall provide calculations for galvanization thickness and corrosion allowance steel structures in contact with soil for the stated design life of the plant. The depletion rate for galvanization and steel loss after depletion of galvanization shall be considered constant over the life of the plant using the values developed by Romanoff in “Corrosion of Galvanized Steel in Soils.”

3.2.10 Roads

Roads shall be constructed using minimum construction requirements as shown in Table 4.

The Project design shall provide for, and the completed Project shall allow a 35’ class 8 truck access with the ability to turn around at intersections for all roads. Road Design shall also allow for for Delivery truck/trailer and 100 ton crane for the non-standard event of a PCS skid or PCS major component replacement to those equipment areas. An AutoTURN feature shall be used in AutoCAD to show final design accommodations.

Figure 2: AutoTURN example of a fire truck turn-around pad using a three-point turn



The road conditions must meet IFC Section 503 as well as all the requirements detailed below. Figure 2 above depicts the completed AutoTURN with the mentioned turn and turnaround requirements given the listed minimums.

- Road width: minimum 12 ft (with 2 ft shoulders)
- Turn radius: minimum 25 ft inside diameter
- Turnaround requirements: Required, through road available preferred
- Turn around pad dimensions: 24 ft x 40 ft

Roads and bridges shall be designed in accordance with the requirements of codes, including the International Fire Code, law, and applicable permits. A geotechnical engineering report shall include recommendations for site roads to accommodate planned vehicle access for construction and operations, including a class 8 vehicle. Adjustments to road width from minimum detailed below will further update the turn radius to ensure drive path can meet vehicle requirements.

Table 4: Road construction requirements

Road Description	Lane Width Requirements	Turn Requirements	Construction details
Main Entrance Road to Project Site	Road Width – 20 ft Shoulders – 2 ft Total Width – 24 ft	Must support largest vehicle accessing the site through this entrance.	• Road base must be stabilized and compacted • Must meet recommendations from geotechnical engineering report; however, at a minimum, two lifts of four inches each of aggregate with compaction on each lift (for a total of eight inches of aggregate) shall be used
Road to Collector Substation	Road Width – 20 ft Shoulders – 2 ft Total Width – 24 ft	Must support a minimum inside turn radius of 50 ft or required minimum of largest vehicle accessing the substation.	

Road Description	Lane Width Requirements	Turn Requirements	Construction details
Access Roads to Each PCS	Road Width – 12 ft Shoulders – 2 ft Total Width – 14 ft	Tractor trailer and/or crane to enter and exit (backing up acceptable) once project is constructed.	• Must meet recommendations from geotechnical engineering report; however, at a minimum, road base must be stabilized and compacted and two lifts of three inches each of aggregate with compaction on each lift (for a total of six inches of aggregate) shall be used
Fire Break	Total Width - 10 ft	50 ‘ radius	• Must meet recommendations from geotechnical engineering report; however, at a minimum, road base must be lime or geotextile stabilized and compacted and one lift of four inches of aggregate with compaction

Where a new road meets an existing road, the width of the new road shall smoothly transition back to the width of the existing road.

Vertical clearances above roadways for transmission lines shall be at least 20 feet unless additional clearances are required for special equipment access or other design requirements.

The existing grade of any road shall be compacted to a level specified by the engineer of record or replaced and compacted with suitable material, if necessary, and the sub-base, base, and pavement layers selected to provide sufficient bearing capacity to withstand the intended traffic and use. Roads shall comply with American Association of State Highway and Transportation Officials (AASHTO) requirements. Road surfaces for the Project Site shall be designed based on the recommendations from the final geotechnical report and the engineer of record.

Seller shall be responsible for checking any possible limitations on the transportation of sensitive material, heavy equipment, or other items to be delivered to the Project Site or use of vehicles or other modes of transportation due to the loading capacities and clearances of existing bridges and roads linking the roads, waterways, or other places to the Project Site.

3.2.11 Fencing and Gates

Seller shall ensure the perimeter of the Project Site is completely fenced by utilizing either a seven-foot-tall “farm style”, “wildlife style”, or “deer style” fence or a six-foot-tall chain link fence topped with a three-strand barbed wire (creating a total fence height of seven feet). The Seller shall ensure there are no ground gaps greater than two inches and the fence is secure. Signs in accordance with Section 7.3. If permits require specialty fencing for wildlife or species concerns, fencing shall comply with recommendations and/or requirements from permitting. All posts, rails, fabric, wire, and gates shall be galvanized. Steel fence posts

shall have wall thickness suitable for pile driving and shall meet corrosion requirements for the project as outlined in section 3.2.9.

- Features of the motor operated sliding gates shall include the following:Sliding gate shall be four (4') feet greater than entrance road
- An electric gate operator (Lift Master Elite or newer equivalent or better), including associated items
- A hard-wired continuous power connection (if available)
- A hard-wired keypad gate opener (not wireless) located at the gated entrance (exterior side of the PV Project Site fence)
- A pedestal mount, conduits, and wiring at the gated entrance
- A hard-wired push-button gate opener located at the gated exit t (interior side of the PV Project Site fence exit ground loop not required
- A pedestal mount, conduits, and wiring for the gated exit
- Sliding gate shall be grounded in accordance with the following:

The sliding gate shall be grounded as specified in Appendix 12 which contains the Entergy Substation Grounding Design Guideline STD# SF0201 and Substation Grounding Specification STD# SF0202 If the gate post and gate frame is schedule 40 or larger steel pipe, direct exothermic connections to the steel shall be used. All gate posts shall be bonded to the grid using an exothermic connection as shown in Entergy Drawing SMGR06A0.

Swing gates shall be four (4") greater than entrance road.

All other gates shall be secured with a high security chain and a high security padlock.

Fencepost for gates and transitions/pull fencepost shall be concrete poured. Fence posts may be pile driven.

Safe step and touch potential of the perimeter fence shall be verified by an IEEE 80 compliant grounding study. Appropriate grounding and isolation shall be installed per drawings and applicable standards.

3.2.12 Parking and Access at the Project Site

Seller shall be responsible for assuring parking areas are included next to all buildings and enclosures required for the Project based on Seller's final design. The quantity of parking spaces shall be sufficient for six vehicles. Surfacing requirements for parking areas shall conform to the general requirements for roads.

Seller shall be responsible for ensuring adequate parking is available for Project construction and commissioning staff, and parking and access areas are sufficient for all construction and commissioning activities, including lifting of heavy loads.

3.2.13 Buildings on the Project Site

Buildings at the Project Site shall be designed in accordance with the requirements of all laws and applicable permits. Construction materials used in Project buildings and enclosures shall meet the definition of non-combustible or limited combustible, except roof coverings, which shall be Class A in accordance with standard methods of fire tests of roof coverings. Metal roof deck construction, where used, shall be "Class 1" or "fire classified." The local fire protection and National Fire Protection Association (NFPA) rules

and recommendations shall be followed for the fire safety design and fire protection systems. The collector substation control house is specified in Appendix 11.

Minimum separation of permanent site equipment and support structures shall be in accordance with NFPA 80A assuming no fire response.

Particular attention shall be focused on sloping floors and roofs and adding drains around equipment to preclude any pooling of water and flashing to preclude water penetration inside the building.

If used, seller shall ensure fire-rated barriers and appropriate fire seals are installed in openings per the design.

Seller shall provide and incorporate noncombustible or fire-rated raceway sealing materials for all cable penetrations entering or exiting electrical enclosures or structure at the Project Site consistent with NEC (Power Distribution Center, new or existing offices, transformers, control structures, other installed equipment, etc.).

An adequately designed HVAC system that considers the specific needs of every room and the climatic conditions set forth in Section 1.2.2 shall be installed.

3.3 Electrical Requirements of the Project Site

3.3.1 General Requirements

Protective relaying, metering, and controls for all electrical equipment shall be according to industry standard metering and relaying, including North America Electric Reliability Corporation (NERC) compliance, applicable codes and standards, and other requirements of the Performance Standard. Capacitor banks may be used to meet the power factor at the Point-of-Interconnect (POI) according to the LGIA.

3.3.2 Cables

All cables shall be fire-retardant, and self-extinguishing, with cross linked polyethylene (XLPE) isolation where required. For buried cable, anti-rodent additives shall be included for cable protection. In lieu of anti-rodent cabling, other rodent mitigations may be allowed pending Owner approval.

All cable (regardless of voltage level and use) shall have a fire-retardant jacket and shall have successfully passed the appropriate (IEEE, American Society for Testing Materials [ASTM], or Underwriters Laboratories [UL]) flame-spread and smoke-generated test for the class, voltage rating, and size of the specific cable.

3.3.2.1 PV DC Wiring

PV DC wiring shall be UL listed as PV wire and meet UL 4703 requirements.

Conductors shall be rated for 2,000 V_{dc}, 90°C, wet rated, sunlight-resistant and rated for direct-burial.

PV source circuit conductors shall be multi-strand copper, minimum 12 American Wire Gauge (AWG).

Copper for #8AWG or smaller, either AL or CU for larger than #8.

Sized to ensure the total peak losses of the DC system are below 2% (on average) and to avoid excessive voltage drop.

3.3.2.2 AC Cables

AC cables shall be rated for the correct maximum voltage and sized according to the operating and short-circuit currents. All low voltage 600 V cables are copper and XHHW-2 insulated.

Conductors shall be sized to ensure peak losses are below 2% and to avoid excessive voltage drop.

Insulation shall be adequate for the climactic and environmental conditions of the Project as listed in Section 1.2.

AC cables shall adhere to local authorities having jurisdiction and applicable standards, including IEEE and UL, for the voltage class. Dual class rating is prohibited.

3.3.2.3 Medium Voltage AC Cables

AC cables shall be rated for the correct maximum voltage and sized according to the operating and short-circuit currents. MV Cables are MV-90 or MV105, TR-XLPE or EPR, 100% or 133% insulation, with concentric neutral to be sized for maximum ground fault. MV cables are UL listed and according to the standards below as minimum.

3.3.2.4 Specifications:

- ASTM B231 Standard Specification for Concentric-Lay-Stranded Aluminum 1350 Conductors
- ASTM B609 Standard Specification for Aluminum 1350 Round Wire, Annealed and Intermediate Tempers, for Electrical Purposes
- Insulated Cable Engineers Association S-94-649 Standard for Concentric Neutral Cables Rated 5 through 46 kV
- Association of Edison Illuminating Companies CS-8 Specification for extruded dielectric shielded power cables rated for 5 through 46 kV

3.3.2.5 Construction:

- Conductor: Moisture-blocked class B compressed aluminum ASTM B231 1350 .75 hard H16/H26
- Conductor shield: Conventional semi-conducting, cross-linked copolymer; supersmooth conductor shield optional; a conductor tape is used for cable size larger than or equal to 1500 kcmil
- Insulation: 345 mils tree-retardant, cross-linked polyethylene, 100% insulation level
- Insulation shield: Strippable semi-conducting, cross-linked copolymer
- Concentric neutral: Helically applied soft-drawn, bare copper one-third concentric neutral
- Overall jacket: Linear low density polyethylene (LLDPE) jacket, black with red extruded stripes

3.3.2.6 Cable Management

MV AC cable shall be direct buried and in conduits where required under access road or under equipment foundation. DC cable may be either direct buried or a CAB system may be used and in conduits under the pad foundation. All above grade cables (e.g., CAB system) shall be 18 inches above grade at maximum sag, to allow clearance for maintenance. All 600 V cables are to be installed in conduits. All conduits to be

Schedule 40 PVC underground and Schedule 80 PVC UV-resistant above ground. All sections of conduit shall have an inside chamfer at both ends and shall be closed to be watertight and prevent animal entry.

All direct-buried cables must be installed:

- In compliance with National Electrical Code (NEC) 300 requirements and guidelines, including NEC 300.5 and NEC 300.50.
- Buried at a minimum depth of 36 inches below the ground surface for MV with 3" min of filtered native soil underlayment. PV cables and 600 V cable circuits can be installed at shallower depth the NEC if installed at a distance of at least four inches from rocks or stones that are ¾ inch or more in size.
- At a distance of at least four inches from rocks or stones 3/4 inch or more in size.
- Where direct bury cables transition above grade, protect by conduit to a height of 18" above grade

DC cables running the length of the torque tube above ground, such as module cables and string cables, shall be routed and secured to the tracker torque tube, racking, or PV modules AL frames either using dedicated cable trays, torque tube ratchet clips, or stainless steel clips to the underside of the applicable racking structure and to the applicable torque tube. Cables shall be protected from direct sun exposure, standing or dripping water, and abrasion by any edges of the tracker or racking. Contractor to perform a golden row for Owner to review and approve. All wiring under a tracker row shall be installed in neatly arrangement and be accommodated for PV module rotations.

All field-installed DC quick connectors shall be of the same manufacturer and identical type as the PV module. Compatibility is not allowed. Contractor to procure spare connectors for field wiring and repairs.

3.3.2.7 DC and AC Circuit Conduit

All aboveground DC circuit conduit within the array shall be rigid PVC conduit, schedule 80, with threaded adapters. Add expansion joints for all risers and fixed terminations as required by code. All terminations at the bottom of cabinets to include appropriate sealing material.

All terminations shall occur at the bottom of cabinets and include appropriate sealing material.

The cable runs between rows and to the combiner boxes may be direct buried or hung using a CAB system, as provided in Section 3.3.2, including Section 3.3.2.6, and transition directly from the row to the combiner box at the end of the row.

The combiner box at the end of a row shall be no more than three feet from the end of the row and must be directly in line with the row.

Combiner boxes shall be above the greater of (1) the height required based on the results of the hydrological study for the Project and Project Site plus an additional six inches of safety margin or (2) 18 inches.

Plastic bushings with locking nuts shall be used for all exposed threads.

All sweeps and transitions from below ground to aboveground shall be rigid polyvinyl chloride (PVC) conduit, schedule 80. All sections of conduit shall have an inside chamfer at both ends.

AC conduit shall be rigid galvanized steel conforming to the American National Standards Institute (ANSI) C80.1 and UL 6.

All below grade and concrete encased conduit (DC or AC) shall be rigid schedule 40 PVC.

Seller shall provide pull boxes and conduit bodies to facilitate wire pulls and maintain compliance with NFPA 70.

3.3.3 Lighting

At a minimum, lighting shall be provided in the following areas:

- Entrance gate
- Seller's control house (if in scope of work)

Emergency lighting shall be provided by integral battery packs and automatically energize on loss of AC power to provide for safe egress and light occupied control rooms and other critical areas. Illumination levels shall satisfy OSHA standards for their given service and location. Luminaires shall be standardized as much as practicable to reduce the number of components the Project must stock.

3.3.4 Grounding

A comprehensive soil resistivity measurement shall be performed in accordance with IEEE Standard 81. All exposed equipment shall be fully grounded and bonded in accordance with law, applicable permits, the requirements of any governmental authority, and the applicable standards listed in Section 1.3.

Solar arrays shall be installed in accordance with the original equipment manufacturer's recommendations for grounding and bonding.

All LV and MV electrical equipment bonding will be bonded to the grounding ring or mat and be designed in accordance with the applicable standards listed in Section 1.3.

PV trackers shall be UL 2703 and UL 3703 compliant. Racking systems shall be UL 2703 compliant. Contractor to provide Owner UL certificate.

3.3.5 Lightning Protection

Lightning protection for buildings shall be provided in accordance with NFPA 780, IEEE Std. 998-2012, and UL 96A. Lightning protection shall also be provided for major electrical equipment where applicable. Master Labels shall be provided for structures that require lightning protection.

3.3.6 Interconnection Requirements

Project to comply with the interconnection requirements set forth in the GIA. Notable requirements include reactive power requirements of +/- 0.95 per FERC 827.

3.4 Main Equipment Requirements

All equipment described in this Section shall be supplied by one of the approved vendors listed in Appendix 9, subject to the other terms of the Agreement. Appendix 6 of this Scope Book sets forth the complete datasheets for the Project's key equipment. The design, materials, manufacturing, construction, testing, cleaning, coating, and packaging of all equipment and components shall comply with the applicable standards listed in Section 1.3.

3.4.1 PV Modules

PV modules shall be handled and installed in accordance with the manufacturer's installation guidelines.

Seller shall take necessary precautions to ensure that the modules are installed at the Project (or included in inventory/storage) do not degrade or experience diminished performance as a result of microcracking, micro fracturing, or similar damage.

The PV modules incorporated into the Project shall have a proven track-record in terms of technology performance, durability, and resistance to similar climatic conditions to the Project Site.

PV modules shall be suitable for installation at the Project Site with climatic conditions described in Appendix 5.

The PV modules included in the Project must be certified to International Electrotechnical Commission (IEC) 61215, and IEC 61730 by a nationally recognized testing laboratory (NRTL). UL, CSA, Intertek, MET Laboratories, TUV America, and TUV Rheinland of North America, and PV Evolution Labs are recognized NRTLs.

PV modules included in the Project must be certified to UL 1703, including without limitation, the Class C Fire Rating pursuant to UL 790 and UL 1703 by a recognized NRTL (listing by other nationally recognized test laboratories such as ETL or CSA will not be accepted).

Module shall be UL listed for the planned voltage (1,500 Vdc).

Meet minimum efficiency of at least 20.5%.

Meet load ratings that are compatible with the site design conditions, including wind and snow loads.

PV modules shall be UL 1703 Type 1, Type 2, Type 3, Type 10, or Type 13. Use of any other UL 1703 type will require the prior written approval of an authorized representative of Buyer prior to use.

The PV Module manufacturer shall provide a recommended procedure for disposal of the PV Modules at the end of their useful life.

PV Modules shall have a power tolerance of +5 W and -0 W or better.

PV module manufacturer shall provide factory flash test results including serial number, model number, manufacturer date, ISC, VOC, IMP, VMP, PMP, and fill factor. Factory flash test results to be provided upon commissioning.

PV modules may be rejected for visible damage including but not limited to bubbles, delamination, yellowing, browning, bending, breakage, burning, oxidation, broken or cracked cells or glass, corrosion, discoloration, anti-reflection, water damage evidenced by a water line, and misalignment.

3.4.2 Single Axis Trackers

Seller shall utilize a single axis tracking [4] system for the trackers.[5] The tracking system shall be designed, built, and maintained to minimize interference with the free movement of equipment, including vegetation management equipment, or personnel between any rows of the Project. Each tracker shall be designed to resist all imposed loads in all possible working conditions as per the applicable standards and the conditions listed in Section 1.3.

Trackers shall be designed to ASCE 7, risk category III or IV

3.4.2.1 Single Axis Tracker Systems

Tracking systems (including trackers, PV modules, panel loading devices, and attachments) must be designed to withstand the Project Site climatic conditions described in Appendix 5.

Tracking system shall be installed per the manufacturer's instructions.

Tracking system shall be installed so all rows are properly aligned in accordance with manufacturer's requirements and alignment tolerances. Seller shall identify methodology being utilized to ensure alignment and document verifying compliance.

Power for the tracking system can be self-supplied or from solar PV array auxiliary power. Seller shall state the source of tracking power with the request for proposal (RFP) response. For systems with onboard batteries, replacement frequency and associated O&M costs shall be identified.

Seller shall provide a controls narrative describing all active control functions and setpoints programmed into the tracking control system.

Dynamic modeling or wind tunnel tests can be used to determine the design lateral, vertical and dynamic loads. Any reduction in the loads stipulated in the codes due to such approach shall be kept within the limits established in the applicable standards. A written report describing the test(s), including the relevant conditions under which the test(s) were performed, and the test results shall be provided to Buyer promptly after the performance of the test(s). The conditions under which the test(s) were performed must be representative of the ones encountered at the Project Site. If wind tunnel tests are not performed as part of the Project, Seller shall provide Buyer recent wind tunnel test results previously conducted for the proposed trackers. Such review shall not alleviate or diminish Seller's responsibility to provide trackers that are suitable for the Project Site climatic conditions provided in Appendix 5.

Seller shall perform a load analysis and design the foundation type and embedment depth for the Trackers based upon, without limitation, the geotechnical and climatic conditions specific to the Project Site. If bored

[4] The defined term "tracker" contemplates a single axis tracking system.

[5] NTD: Any limitation on the normal operation of the PV plant arising out of wind speed, snow load, or other climatic or environmental condition being above a certain threshold value applicable to the tracker must be properly incorporated into the inputs to and reflected in the outputs of the energy model. The loss of power generation or performance arising out of such limitation shall be based on the meteorological data provided in Appendix 5.

or rammed pile foundations are selected for the structure, Seller shall carry out a sufficient number of load tests in order to refine and/or validate the preliminary design before the Construction Commencement Date.

Seller shall confirm that the PV Module attachment methods are approved by the PV module manufacturer and are designed for the design loads expected to occur on the modules. The trackers shall incorporate integrated NEC/ and UL required grounding. The integrated grounding method shall be approved for use by the PV module manufacturer.

3.4.2.2 Structural Systems

All structural systems shall be in accordance with Appendix 5: Design and Operational Data. Factors of safety for steel design shall be in accordance with AISC 360 and for foundation soil-structure interaction allowable strengths shall be per the local building code and IBC.

Structural steel – AISC 360. Torque Tubes, Torque Tube connection to foundations, and foundation piles shall be fabricated from steel designed per the AISE 360.

Black steel shall not be used for major structural elements of the tracking system. Refer to Section 3.2.9 for pile requirements and corrosion calculation requirements.

The trackers shall resist the wind loading without resulting in damage due to resonance or fatigue of the tracker proper and the modules. The tracking system shall be designed to address wind-induced dynamic resonance and torsional galloping. The Contractor shall provide calculations from the tracker manufacturer showing the system is designed to avoid or accommodate the magnified loads due to the dynamic loads. This shall include specifically providing the following: mode shape frequencies of the tracker system (longitudinal, lateral, and torsionally along the torque tube), the damping characteristics of the system, and how the wind tunnel study provided recommendations on the magnitude of the dynamic loads that have been addressed. If the lowest natural torsional frequency of the tracker is less than 4 Hz, then the Contractor shall provide additional analysis and calculations to the Buyer that demonstrates how the dynamic effects of the wind are mitigated and the risk for damage due to dynamic wind events are negligible.

The capacity of the bolts or clips used to attach the modules to the top of the tracker shall also be shown to withstand localized increased wind pressure effects due to wind on corners and edges of the tracker system as identified in the wind tunnel study.

3.4.2.3 Piles and Foundations

Black steel shall not be used for piles. Black steel shall not be used for major structural elements of the tracking system. Refer to Section 3.2.9 for pile requirements and corrosion calculation requirements.

Seller shall perform a load analysis and design the foundation type and embedment depth for the trackers based upon, without limitation, the geotechnical and climatic conditions specific to the Project Site. Seller shall carry out a minimum of 1 % Pile Pull Test in order to refine the foundation design recommendations by the Geotechnical Engineer of Record and incorporate these recommendations into the foundation design before the construction commencement date.

3.4.2.4 Clips and Module Attachment

Seller shall confirm the PV module attachment methods are approved by the PV module manufacturer. The trackers shall incorporate integrated National Electrical Code (NEC) and Underwriters Laboratory (UL) required grounding.

The capacity of the bolts or clips used to attach the modules to the top of the tracker shall also be shown to withstand localized increased wind pressure effects due to wind on corners and edges of the tracker system as identified in the wind tunnel study.

PV module clips shall be designed to minimize the loosening of fasteners over time. Self-tapping screws shall not be used unless designed and documented for the Plant design life. Factory applied threadlocker or better (in terms of resistance to loosening from vibration) shall be used to prevent loosening.

PV module frames shall be bolted and secured in accordance with the module manufacturer installation guidelines. PV module frames shall be bolted in accordance with design windspeed using clamps that hold the modules individually or independently. Module “T” clamps or similar binders that depend on adjacent panels for tightness are permitted within a given module string only to minimize successive failure and each string must begin and end with an independent clamp design that isolates each string from the next. If such “T” clamps design is implemented, all strings must be capable of withstanding the Project Site climatic conditions as specified in Appendix 5 with an adjacent string or any string from a neighboring tracker and rack missing to ensure failure of a given string will not cause successive failures.

3.4.2.5 System Tracking and Stowing

The leading front edge of the PV module shall be a minimum of 18 inches clear of the ground for a single axis tracking system, or 12 inches above the 100-year onsite storm event or floodplain when tracker is in full tilt.

If AHJ has additional requirements (more than 12”), then AHJ requirements shall prevail.

The tracking system shall be able to track to a minimum +/- 52 degrees and accept alternative tracking limitations to accommodate weather conditions such as snow level, flood conditions, hail impact force reduction, and high winds. The tracker system shall have a backtracking (shade avoidance) feature to eliminate shading and maximize energy production.

The tracker shall allow for any undulation of the ground and sloping as per the final proposed grade of the Project Site.

The PV plant must include tracking systems that have the functionality to move the PV plant’s solar arrays expeditiously to a stow or safe position in preparation for, or during unexpected, extreme weather events (for purpose of illustration only, hail, high wind, snow, and ice) to mitigate the potential adverse effects of such events on the PV plant. This functionality must be able to be provided (1) with power generated from a generating resource located on the Project Site and (2) without causing Project components, systems, equipment, or items to become damaged or impaired during the transition to or from, or while in, a stow or safe position.

For a tracking system that relies on active measures to resist design basis wind loads, the system shall have a stow strategy that takes appropriate action in advance of the critical wind speed and be provided with a backup power supply to implement the stow strategy upon loss of primary power and/or communication of meteorological input data. Active stow system shall be designed to handle sustained critical wind speeds and have the ability to actively reposition throughout full range of travel during these sustained critical wind speeds, as required by the active stow system design and approach.

For a tracking system that utilizes passive stow system, the system shall be installed and tested per manufacturer’s recommendations to ensure full functionality of system.

3.4.2.6 Electrical Grounding

Seller shall confirm the PV module attachment methods are approved by the PV module manufacturer. The trackers shall incorporate integrated National Electrical Code (NEC) and Underwriters Laboratory (UL) required grounding.

3.4.2.7 Corrosion Protection of Racking System

Provide corrosion protection in accordance with site requirements and Section 3.2.9.

3.4.3 Fixed Tilt Racking

Fixed tilt racking systems (including racking, PV modules, panel loading devices, and attachments) must be designed to withstand the Project Site climatic conditions described in Appendix 5.

Racking system shall be installed per the manufacturer's instructions.

Racking system shall be installed so all rows are properly aligned in accordance with manufacturer's requirements and alignment tolerances. Seller shall identify methodology being utilized to ensure alignment and document verifying compliance.

Dynamic modeling or wind tunnel tests can be used to determine the design lateral, vertical, and dynamic loads. Any reduction in the loads stipulated in the codes due to such approach shall be kept within the limits established in the applicable standards. A written report describing the test(s), including the relevant conditions under which the test(s) were performed, and the test results shall be provided to Buyer promptly after the performance of the test(s). The conditions under which the test(s) were performed must be representative of the ones encountered at the Project Site. If wind tunnel tests are not performed as part of the Project, Seller shall provide Buyer recent wind tunnel test results previously conducted for the proposed racking. Such review shall not alleviate or diminish Seller's responsibility to provide racking that is suitable for the Project Site climatic conditions provided in Appendix 5.

Seller shall perform a load analysis and design the foundation type and embedment depth for the racking based upon, without limitation, the geotechnical and climatic conditions specific to the Project Site. If bored or rammed pile foundations are selected for the structure, Seller shall carry out a sufficient number of load tests in order to refine and/or validate the preliminary design before the Construction Commencement Date.

Seller shall confirm that the PV Module attachment methods are approved by the PV module manufacturer and are designed for the design loads expected to occur on the modules. The racking shall incorporate integrated NEC/ and UL required grounding. The integrated grounding method shall be approved for use by the PV module manufacturer.

3.4.3.1 Structural Systems

All structural systems shall be in accordance with Appendix 5: Design and Operational Data. Factors of safety for steel design shall be in accordance with AISC 360 and for foundation soil-structure interaction allowable strengths shall be per the local building code and IBC.

Structural steel – AISC 360. Torque Tubes, Torque Tube connection to foundations, and foundation piles shall be fabricated from steel designed per the AISE 360.

Black steel shall not be used for major structural elements of the tracking system. Refer to Section 3.2.9 for pile requirements and corrosion calculation requirements.

The racking shall resist the wind loading without resulting in damage due to resonance or fatigue of the racking and the modules. The Contractor shall provide calculations from the racking manufacturer showing the system is designed to avoid or accommodate the magnified loads due to dynamic loads.

The capacity of the bolts or clips used to attach the modules to the top of the racking shall also be shown to withstand localized increased wind pressure effects due to wind on corners and edges of the tracker system as identified in the wind tunnel study.

3.4.3.2 Piles and Foundations

Black steel shall not be used for piles. Black steel shall not be used for major structural elements of the tracking system. Refer to Section 3.2.9 for pile requirements and corrosion calculation requirements.

Seller shall perform a load analysis and design the foundation type and embedment depth for the trackers based upon, without limitation, the geotechnical and climatic conditions specific to the Project Site. Seller shall carry out a minimum of 1% Pile Pull Test in order to refine the foundation design recommendations by the Geotechnical Engineer of Record and incorporate these recommendations into the foundation design before the construction commencement date.

3.4.3.3 Clips and Module Attachment

Seller shall confirm the PV module attachment methods are approved by the PV module manufacturer. The trackers shall incorporate integrated National Electrical Code (NEC) and Underwriters Laboratory (UL) required grounding.

The capacity of the bolts or clips used to attach the modules to the top of the tracker shall also be shown to withstand localized increased wind pressure effects due to wind on corners and edges of the tracker system as identified in the wind tunnel study.

PV module clips shall be designed to minimize the loosening of fasteners over time. Self-tapping screws shall not be used unless designed and documented for the Plant design life. Factory applied threadlocker or better (in terms of resistance to loosening from vibration) shall be used to prevent loosening.

PV module frames shall be bolted and secured in accordance with the module manufacturer installation guidelines. PV module frames shall be bolted in accordance with design windspeed using clamps that hold the modules individually or independently. Module “T” clamps or similar binders that depend on adjacent panels for tightness are permitted within a given module string only to minimize successive failure and each string must begin and end with an independent clamp design that isolates each string from the next. If such “T” clamps design is implemented, all strings must be capable of withstanding the Project Site climatic conditions as specified in Appendix 5 with an adjacent string or any string from a neighboring rack missing to ensure failure of a given string will not cause successive failures.

3.4.3.4 Electrical Grounding

Seller shall confirm the PV module attachment methods are approved by the PV module manufacturer. The racking shall incorporate integrated National Electrical Code (NEC) and Underwriters Laboratory (UL) required grounding.

3.4.3.5 Corrosion Protection of Racking System

Provide corrosion protection in accordance with site requirements and Section 3.2.9.

3.4.4 PCS

The PCS will be the integration of inverters, LV (aux) and MV transformers, MV switchgear (if applicable), and auxiliary components such as the LV auxiliary panel, the communication system, and local control system (LCS) panel.

PCS shall be capable of complying with local utility ride-through settings as required.

PCS design shall verify equipment coordination to handle step-up/step down operation, static shield requirement between high side and low side, handling over-voltages up to 10% continuously, required winding impedance, suitability for operation with pulsed inverter and maximum voltage to ground as required, and efficiency meets or exceeds Department of Energy (DOE) targets. PCS output current harmonics shall contain <5% total harmonic distortion at rated power output.

PCS shall have the capability to accommodate the final installed DC capacity.

PCS shall be pad lockable.

3.4.4.1 Inverter step up transformer

Transformer shall be dead-front pad-mount, loop-fed and designed for inverter-based generation applications with continuous step-up operation. Transformer shall meet all requirements of the connected inverter including grounded electrostatic shield and pulse withstand if required by manufacturers.

Transformer shall be provided with primary overcurrent protection with partial range current limiting and Bayonet fuses at a minimum, under-oil surge arresters and equipped with under-oil, visible load break rated gang-operated disconnect switch, capable of keeping the loop closed while the transformer is de-energized.

If oil cooled, transformer coolant shall be non-toxic, less flammable, biodegradable insulating fluid, with secondary containment.

Step-up transformer shall have:

- High-side De-Energized Tap Changer (DETC) with 5 positions, nominal + two 2.5% adjustments +/-
- Specific test and ground points for commissioning and operations
- Visible NEMA rated ground connections

3.4.4.2 Inverters

Seller shall select a suitable technology to achieve the guaranteed PV plant capacity (and associated energy) level for the Project. The inverters selected by Seller shall have proven track records for performance, durability, and quality.

Inverters shall be selected and equipped to operate at rated capacity with respect to the local climatic and environmental conditions in Appendix 5. The inverters shall be designed, among other things, for reliability and to avoid significant power loss in case of failure.

Each inverter shall meet the following requirements:

- Designed in accordance with UL 1741 SA
- Includes an output AC circuit breaker or load interrupting disconnect switch
- DC inputs rated for continuous duty, including overcurrent protection devices
- DC inputs with ground fault protection, isolation monitoring, and instrumentation to measure current to an accuracy of 1% or lower
- Efficiency minimum of 97%
- Trip limits set per interconnecting utility, SCADA, and calculated system alarms and trips per design and inverter manufacturer recommended protection settings
- Capable of providing nighttime VAR support
- Equipped with communication capabilities and able to control the main parameters (DC power, AC power, and auxiliary consumptions at a minimum) from the LCS
- Allows for remote operation utilizing read and write commands from the LCS and includes interface protocol support, an alarm and command points list, remote connection, operation, and linkage

3.4.4.3 AC Disconnect Switches

An AC disconnect switch shall be located within the inverter transformer. If installed externally and in addition to the AC disconnect switch associated with the inverter, AC disconnect switches shall be designed to provide a manual means of electronically isolating inverters allowing for disconnection of all three phases of output wiring from the inverter(s). AC switches shall be capable of breaking under full load.

3.4.4.4 Auxiliary transformers

Attributes of Project LV(Aux) Transformers shall include:

- Dry type transformers with minimum 7.5 kVA rating and 10 kVA 208/120 VAC rating
- Larger 3 winding transformers with minimum (25 kVA (or higher as needed) 480/277 VAC if needed for tracker)

3.4.5 Auxiliary Equipment and Systems

3.4.5.1 AC Auxiliary System

The LV electrical panel for indoor applications shall be a fixed, mounted design in accordance with NEC standards. For outdoor applications, the panel shall be NEMA 3R or greater.

3.4.6 SCADA

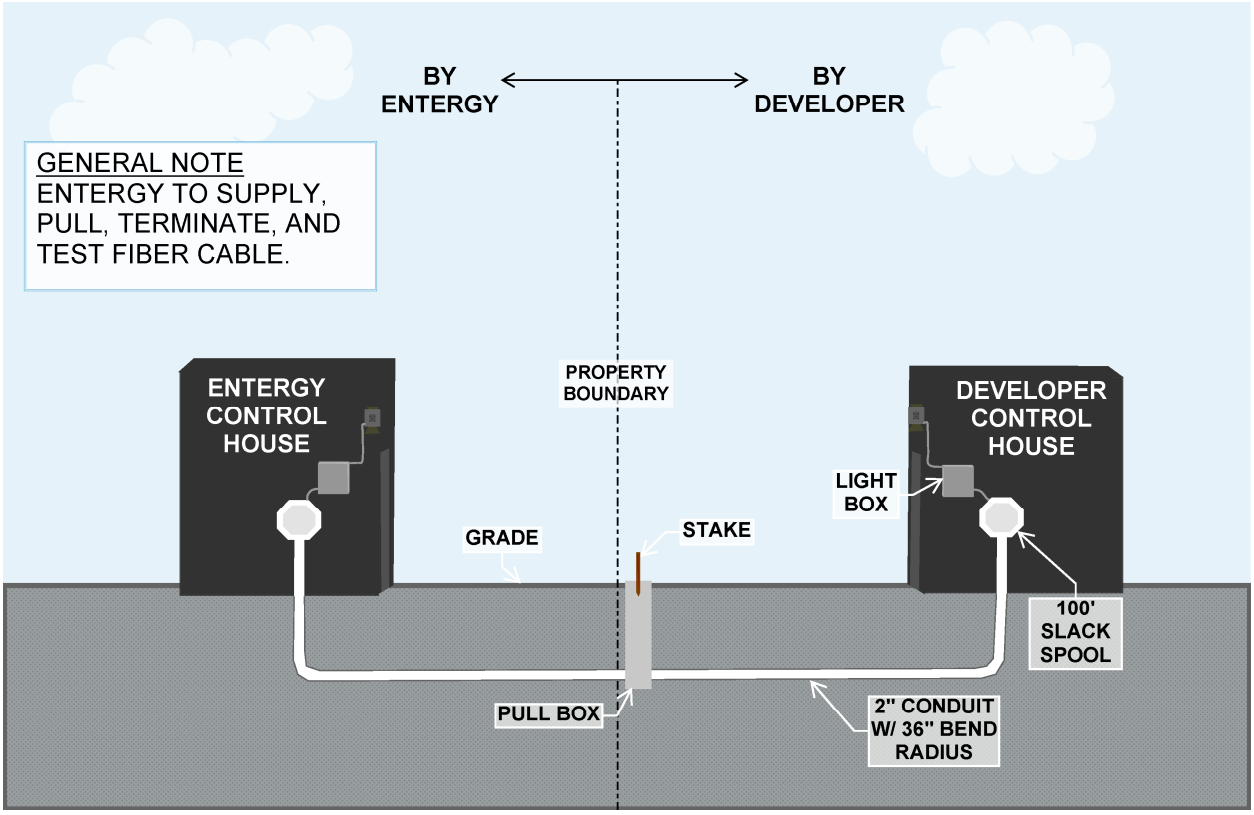
- Seller/Developer to design, supply, and install a redundant fiber-based network connecting all of the inverters, meteorological (met) stations, trackers, and step-up transformers
- Seller to design, supply, and install SCADA enclosures to integrate the inverters, met stations, and trackers
- Seller to develop communication system single line and network block diagram

- Seller to design, supply, and install Collector Substation Control House communication rack layout, including BOM and elevation drawings. All projects to have redundant SCADA system with primary and secondary switches and connections on both PV and collector substation.
- Seller to design, supply, and install appropriate SCADA, communications, wiring, fiber, splice details
- Seller to design, supply, and install field installed SCADA communication panels at each inverter with layer 2,3 looped switch and fiber patch panel in a National Electrical Manufacturers Association (NEMA) 4X enclosure
- Seller supplies Seller controlled fiber to the site (i.e., ATT fiber which the Seller is the account owner of) – this is to support Commissioning activities
- All fiber optic cable shall be 96-strand, single mode, meeting Telecommunications Industry Association (TIA) 568.3-E
- This site will have an additional fiber for the Entergy network from the interconnecting substation to the Collector Substation

    - If the distance from the Entergy substation to the Collector Substation is cost effectively short and Entergy owns the property rights, then: (refer to Figure 3)

        - Underground the fiber
        - Owner supplied fiberoptic cable shall be underground rated
        - ADSS fiber to be pulled in microduct/conduit
        - Demarcation point between Seller/Developer installed microduct/conduit from Collector Substation and Entergy's installed pvc/conduit is a Seller installed pull box or similar at a mutually agreed to point, typically at or the near the property boundary, between the interconnect substation and Collector Substation (often initially marked as a stake in the ground) – refer to Figure 3
        - Innerduct/Conduit shall be conduit or microduct (e.g., 2" PEX) with a minimum 2" diameter and 36" bend radius
        - Seller to install lightbox and 100 ft slack spool and associated innerduct/conduit in the Collector Substation
        - Owner/Entergy will supply and terminate fiber on both ends

Figure 3: SCADA connection-all underground



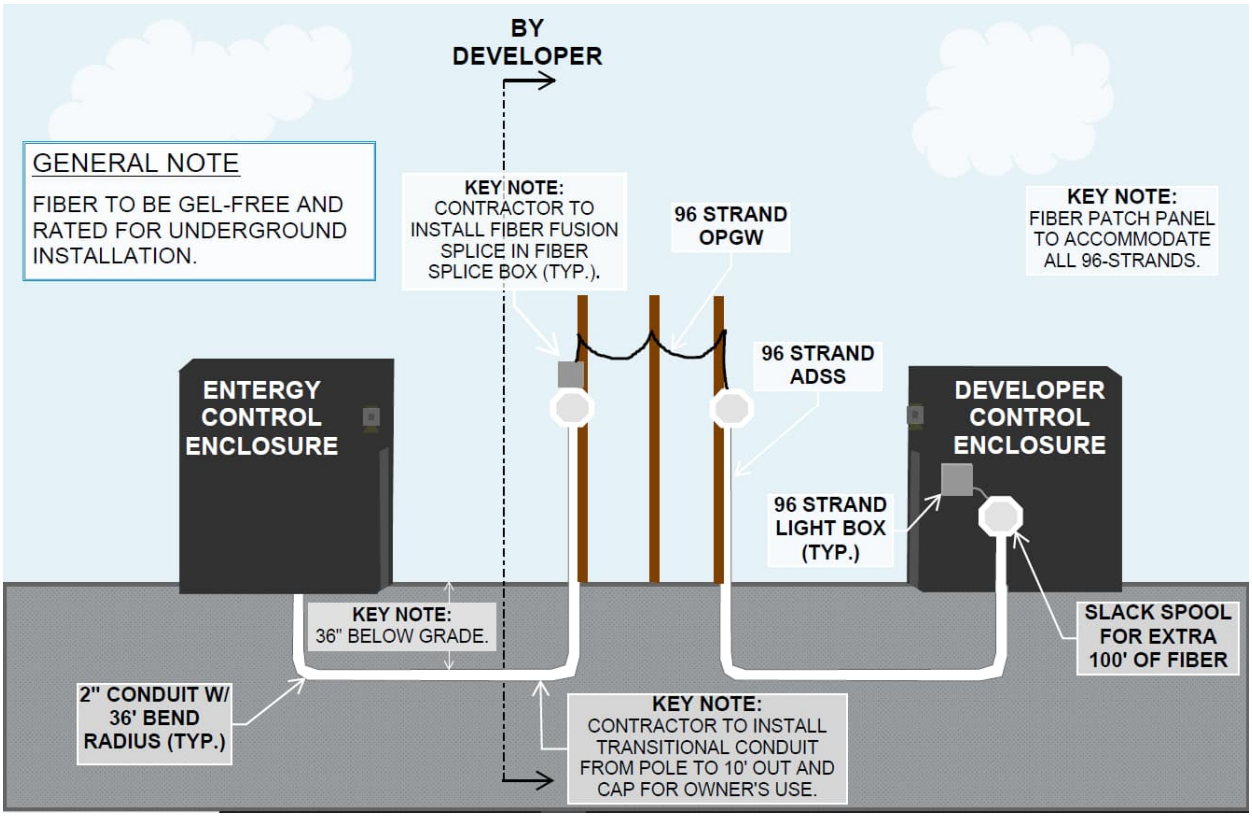
- If the distance from the Owner/Entergy substation to the Collector Substation is not cost effective for underground fiber or if Entergy does not own property rights, then (refer to Figure 4):

    - Seller/Developer to install 96-strand OPGW fiber and associated fiber splice box on pole to transition to underground to the collector substation, including all fiber fusions in the splice box as required
    - Seller furnished fiberoptic cable shall be underground rated (from existing control house to dead end pole)
    - Seller fiber shall OTDR reel test at 1550 nm and results provided to Entergy in .SOR format
    - OPGW fiber shall be installed at a height >15’ on structures
    - At all splice locations, a 100’ plus height above ground level reel of fiber shall be installed on a Seller supplied and installed coil bracket
    - Between the final structure and the Collector Substation Control House lightbox, Seller to supply and install innerduct/conduit and associated ADSS fiber
    - Seller to terminate ADSS fiber with Collector Substation Control House
    - Seller to leave 100’ of fiber and slack spool on a Developer supplied and installed coil bracket within the Control House

- Microduct/Schedule 40 PVC conduit with a minimum 2” diameter with 36” bend radius
- For purpose of developing a project, the Seller can assume the following:

    - Demarcation point between Developer/Seller installed Innerduct/conduit from the first structure and Buyer’s installed innerduct/conduit is a Seller installed pull box or similar at a mutually agreed to point, typically at or the near the property boundary, between the interconnect substation and first structure Collector Substation (often initially marked as a stake in the ground)
    - Seller to supply and install a splice box on the first structure
    - Entergy will supply and terminate fiber on both ends
    - Entergy to perform OTDR on all splices with no losses greater than 0.10 dB allowed

Figure 4: SCADA connection-some aboveground



o Seller to land the Seller controlled fiber (i.e., ATT) on a Seller supplied and installed firewall (Palo Alto or CheckPoint are acceptable firewalls)

- Seller to supply and install a firewall managed Level II switch with 3 VLANs configured (Seller to supply subnet information)
- The 3 VLANs consist of the following

- Collector Substation
- PV Yard
- Control
- Seller to work with Entergy's Information Technology group in configuring the firewall using allow by exemption principle and opening only ports and protocols necessary for required functionality
- Configure VLAN Access Control Lists to manage routing for only necessary functions

o Seller to supply and install redundant core switches (IE4010 switch or similar) and connect to upstream SM SFPs
o Seller to supply and install fiber patch panels
o Seller to supply and install 42U server rack
o Seller to supply and install 8hr UPS
o Seller to supply and install miscellaneous fiber, ethernet jumpers, and cable management
o For purposes of design, assume that the site will be a CIP Low site
o Seller shall configure the SCADA system for access credentials including Admin, Operator, and View Only credentials; SCADA shall be View Only upon launch with credentials required for operational changes
o Seller supplies and configures a Power Plant Controller

- The Power Plant Controller can be two SEL 3555 – RTACs in redundant configuration or similar
- Power Plant Controller shall be configured with the with the following Control Aspects
- Control Modes
    - Voltage
    - VAR
    - Power Factor
- Setpoint Control
    - Local
    - Remote – Automatic Generation Control
- A narrative of the control configuration shall be supplied

o Seller shall supply and configure Ignition as the plant's SCADA system

- Seller to supply and install redundant Type I virtualized servers hosting the Ignition (DEL PowerEdge Rackmount server or equivalent)
- Each Type I server shall be sized (hard drive, memory, etc.) to allow both Ignition servers to be running in either location if needed.
- Seller to supply and install one KVM switch with 19" display, keyboard, mouse
- Ignition shall be supplied with Historian and unlimited tag licenses
- Historian shall be sized for 2 weeks of 1 second data

- Seller shall supply and install one Inductive Automation Ignition HMI package
- Seller shall supply and install one SQL server license (or equivalent)
- Seller to configure web portal access
- Within Ignition, the Seller shall buildout the Graphical interface to include the following screens at a minimum:

    - Site overview
    - Control
    - Alarm management
    - Trending management
    - Inverters details
    - Tracker details
    - MET details
    - SCADA health (i.e., communication detail)
    - One-Line (to include Meter details and all other high level RTU-RTU datapoints)
    - Reporting Functions

- Install Ignition utilizing least functionality privilege and operating system utilizing CIS Benchmark
- Seller to work with Buyer to define Ignition security user groups credentials including Admin, Operator, and View Only credentials; Ignition shall be View Only upon launch with credentials required for operational changes
- Within Ignition, seller to configure the object alarm configuration based on the I/O List

o Seller to configure Major Interfaces including the following

- PI
- RTU-RTU (Collector Substation to interconnecting Entergy Substation) - Seller to provide Entergy the following Point List
- Overall Point List
- Abbreviated Point List focused on Seller's typical importance list

o Seller supplies and installs an IT rack for Entergy's exclusive use in the Collector Substation

- 19" rack with 24"x36" footprint
- Front and back lockable mesh doors and cable entry slots in roof
- 36" front clearance and 24" rear clearance
- Dual 120 V_{ac} UPS backed power strip with UPS ethernet monitoring capability, with UPS capable of 12 hours of backup run-time

o At Substantial Completion

- Seller to transfer all licenses procured on Entergy's behalf to Entergy

- During license procurement, Seller shall work with Entergy in establishing Terms and Conditions which will allow for seamless transfer
- Seller and its subsidiaries shall surrender all rights to software development work for this project to Entergy for use within this site at a minimum.

- Seller transfers Seller owned fiber account ownership to ETR (we take over ATT account)
- ETR installs and interconnects Firewall (between ETR network fiber and the site's Seller supplied Palo Alto/CheckPoint firewall)
- Seller to develop and supply system documentation consisting of the following

  - Hardware/software manuals
  - Server setup and configuration details
  - All username and passwords
  - Drawings list and specifications
  - Testing and commission documentation
  - Tag list with tag name, units, description, and range as a minimum

3.5 Control System and Communication Requirements

3.5.1 Control System Security

3.5.1.1 Cyber Security

Seller shall design, build, and deliver a cyber security system and plan for the Project that conforms to applicable NERC CIP rules, regulations, standards, and Laws. Buyer shall provide Security controls that will be required to be tested prior to site acceptance. If Seller becomes the site operator, there will be shared responsibility between the construction and operator divisions agreed to by all parties. Seller shall develop and provide to Buyer a cybersecurity plan that includes accommodations to test the defined security controls. (Buyer may elect in its discretion to provide a sample plan for Seller to consider and possibly utilize.) The plan must include and cover:

- Steps taken in software development to detect and correct security flaws, including plans for code scanning
- Methods used to protect system user identities and logins, including methods of encryptions and use of certificates
- Methods to assure reliable and confidential communications of inbound commands and outbound data.
- A description of software maintenance processes, including the process to patch security vulnerabilities in the vendor's product
- Test planning to assure compliance with the cybersecurity plan

Seller shall implement cybersecurity controls for low impact and non-CIP solar sites testing NERC CIP in development of cyber security plan. Buyer expects to provide additional guidance or input in the development of the plan to ensure the Project's cyber systems are compatible with and provide the protection required or appropriate for Buyer's cyber systems. The plan is subject to Buyer's review and approval in advance of the FNTP date.

Buyer will contract for a third-party vulnerability assessment and penetration test during Project testing. Such testing shall be done, at Seller's expense, as a "type" test for the initial unit, with testing not required for subsequent units. Seller shall correct vulnerabilities identified in this testing and the completion of such corrections shall be a condition to substantial completion.

Seller shall:

- Undertake periodic reviews of emerging vulnerabilities that will potentially impact the Project.
- Provide notice to Buyer of new vulnerabilities within a specified time frame from a new vulnerability becomes known.
- Develop corrections (patches) to address identified vulnerabilities.

Seller shall assure the above software support, including operations and maintenance, is provided through Substantial Completion. Buyer reserves the right to perform periodically independent, recurring security audits to assure compliance with the security maintenance requirements of this Scope Book during the performance of the Work.

Once the Project's cyber security system is in operation, Seller shall not provide communications directly to the system and must access the system via Buyer security controls. If Seller reasonably requires monitoring (read-only) information to perform the Work, Buyer will use commercially reasonable efforts to provide such information via internet solutions to Seller or the applicable vendor after Seller's request therefor. Any remote access to the cyber security system shall be covered in the cyber security plan, and Buyer agrees to use commercially reasonable efforts to cooperate with Seller to provide mutually agreeable solutions for gaining access to the system once in operation.

3.6 Met Station

Subject to other terms hereof, Seller shall a minimum of two met stations for the Project and a soiling measurement station (SMS). One main met station shall be located near the Project Site control building. The stations shall be arranged to allow for the determination of and provide an accurate weather profile for the overall solar field and the Project.

Met stations shall be compliant with the International Electrotechnical Commission (IEC) 61724-1:2021 (Photovoltaic System Performance – Part 1: Monitoring). Class A table requirements shall be used.

The number of met stations shall be compliant with IEC 61724 – Part 1, Table 3.

Met stations shall be provided with NEMA 3R or greater enclosures. Instruments and sensors associated with the met stations shall be calibrated by a reputable, certified laboratory. Refer to Table 2 and 3 of IEC 61724 for the number of stations required.

The main met station shall contain or meet, among other things, the following requirements as a minimum:

2) module backed resistance temperature detectors (RTDs) (per met station) to be mounted on production racking within 150 feet (45 meters) of met station and at least 50 feet (15 meters) from each other

Three (3) platinum resistance temperature detector (RTD) sensors with a range of -40 °C to +70 °C and an accuracy of +/-0.5 °C, installed as per IEC 61724 and manufacturer recommendations

One (1) SMS (strategically located to capture any expected differences in soiling rates across the site) per 100 MWac

One (1) barometer

Flood sensors shall be provided for all areas of solar array installed within a floodplain or where site drainage characteristics may introduce localized ponding to depths that reduce the lower module edge clearance above flood inundation and drainage ponding levels to less than 12 inches (30 centimeters) [Note: quantity of flood sensors shall be determined by Seller but shall be sufficient to protect affected modules within independent flood and ponding zones independently of strings outside of these zones and allowed by tracker or rack grouping]

A data logger for local data saving and for remote data transfer through available telecommunication infrastructure; the data logger shall be capable of accommodating all sensors and be protected against direct sunlight; irradiation data should be collected every second and stored as ten (10)-min averages (in W/m2) and as the sum total for any defined time period (in Wh/m2)

Minimum twelve (12)-hour backup battery.

The additional met stations, as prescribed by the standard, shall meet the following requirements:

Similar equipment manufacturers as in the primary met station

Compliance with IEC 61724-1:2021

The met stations shall be powered either by:

PV modules and batteries (sizing of the system shall ensure complete autonomy throughout the year and avoidance of power shortage)

Direct LV connection to the nearest building or inverter and transformer block. Seller shall design a backup system to ensure a minimum of three (3) days of autonomy to the Project in case of a grid failure.

Data can be directly transferred to the unit or block equipped with communication capacities and available in the monitoring system.

Batteries and all electronics shall be installed in a protected area away from direct heat and protected against the elements by a sunshade.

Please see Appendix 1- Collector Substation.

3.7 Metering Requirements

Project shall include a revenue grade meter(s) for performance and capacity testing.

Please see Appendix 1- Collector Substation.

3.8 Interconnection of Utilities

Seller shall provide all utility interconnections needed for construction, commissioning, and testing of the Project or performance of the Work in each case or any portion thereof (e.g., potable and non-potable water, wastewater, sanitation (including sewage), temporary power, telecommunications, broadband internet, and fuel).

3.8.1 Data Network Engineering and Data Network Operations (DNE/DNO)

3.8.1.1 DNE Design

Buyer will provide to Seller the DNE design including address space of the affected zones. Zones to include the collector substation, PV yard, physical security (CCTV and ACCESS control), and Entergy corporate network. The DNE design will provide flexibility for future of division of responsibility for operations.

Allocation of devices in defined address space will be left up to respective parties network address space of networks will be provided by Entergy DNE and filtered by Entergy onsite firewall to ensure separation of separately managed network and in compliance with applicable Buyer and regulatory requirements.

Seller is responsible for ensuring address space provided by Buyer is adequate to support devices being installed and configured by Seller. Seller shall install Cisco network devices unless otherwise approved by Buyer.

Seller's design shall be subject to Buyer approval at Buyer's sole discretion.

Seller shall provide redundant Layer 2 network switches. Network segmentation of Seller-provided network shall meet the following requirements:

- Collector substation equipment (RTU, breaker relays, etc.) shall be on its own VLAN segment
- PV yard equipment (Inverters, Metrology, PPC, etc.) shall be on its own VLAN segment
- PV access control and camera system shall be on its own VLAN segment
- Prior to substantial completion, segments shall be filtered by a Seller-provided firewall. Logical segments shall be filtered by a Buyer onsite firewall after substantial completion Seller shall provide to Buyer reasonable and necessary requirements for firewall configuration between segments
- Prior to substantial completion, network connectivity shall be provided by Seller. After substantial completion, network connectivity shall be provided by Buyer
- Seller to use defined cable and connectors. User-defined color codes for low CIP sites are as follows: primary ethernet shall be blue, secondary ethernet shall be gray, back-up ethernet shall be green, iLO/KVM shall be yellow, and serial consoles shall be black

3.8.1.2 Procurement and Ownership

Seller shall procure equipment with a minimum five-year manufacturing and support warranty with service level agreement of next day replacement.

Any items that will reside on the Buyer's network (e.g., CCTV, firewall, access control), Buyer will be responsible for procuring, installing, operating, maintaining, and managing. Special cases may be considered but are subject to strict review of cyber asset protection and monitoring. As such a third-party operation of a facility may be allowed to purchase, configure, install, and maintain network equipment if the equipment will be protected or isolated from the Entergy network via firewall apparatus or diode and the third party will be establishing means to replace failed equipment through a five-year period of operation.

3.8.2 Desktop Equipment

As required by Buyer for the functionality of the site and in support of Entergy associates or vendors onsite, Buyer will specify desktop equipment to be utilized. Seller shall install fixtures and wiring terminated on

appropriate breaker or patch panels to allow Entergy field services to install and configure equipment. Desktop equipment includes laptops, desktop computing boxes, printers, and peripheral devices.

3.9 Physical Security Installations

The physical security of the site shall comply with Buyer and regulatory requirements. Seller is responsible to implement as described in Table 5 below and the following sections.

Table 56: Physical security installation requirements

Location	Description	Equipment by Seller	Equipment by Buyer
Motor Operated Sliding Gates	Electrically operated slide gate with keycard reader	Keypad, slide gate, gate operator, wiring (power and communications), grounding loop, exit button and hardware for mounting keycard reader	Keycard reader

3.9.1.1 CCTV Installations

Seller shall supply the network video recorder (NVR), Genetec Streamvault SVR-500A or approved equal, and pan, tilt, zoom cameras for the project site.

Seller-supplied cabling for all cameras at the Project Site will be copper or fiber traveling and connect to identified network switches supplied by Buyer. A Seller-supplied uplink cable will connect the NVR to the Buyer's network switch.

The location of NVR equipment shall be monitored by an installed camera.

Seller shall design the system so all cameras to be mounted at the Project Site will be mounted within a physically secure area within or enclosed by fencing installed and will have an unobstructed line of sight and the ability to obtain and record reasonably clear images, at minimum, at and around each location to be covered by the camera. The design and installation of the system will include proper conduit, ethernet, and fiber and will have appropriately placed and connected power outlets and power supply for Buyer to contract and install. Wireless equipment is not allowed.

Seller shall use the following camera design criteria for camera mounting locations:

- Exterior open space cameras shall support panoramic with pan, tilt, and zoom attachment below
- Interior cameras focused on doors shall be fixed dome providing a double-ganged, ceiling-mounted junction box
- Exterior cameras focused on doors shall support panoramic, fixed dome, or fixed bullet style providing a double-ganged, ceiling-mounted junction box

Locations to be recorded:

- CCTV installation site

- All gates and any other point of ingress and/or egress at the Project Site with coverage and clarity sufficient to identify any representative of the parties and their respective contractors and subcontractors and any other person and markings and license plates of any vehicle entering the Project Site through the gates.
- Either side of any human passable door into or inside any building that includes such doors, including the control house

3.10 Locks

The site will be a mix of Buyers access control system for control houses and battery storage. All equipment shall be lockable per NERC/CIP requirements. Seller responsible for project until COD. Buyer will supply its own locks at COD.

All egress and ingress doors on building not on access control system shall utilize keyed high security puck lock or a high security cylinder lock that will not delay occupant egress.

All NEMA equipment enclosures shall utilize a high security padlock or a clasp lock for the following use equipment types:

- IT
- Telecom
- Inverter
- Met stations

Seller shall coordinate with Entergy Security to intake and begin management of CyberLock equipment using the CyberLock system managed by Buyer.

3.11 High Security Chain

Seller shall provide high security chains on appropriate gates or other site access points. The chain will be .375-inch minimum, heavy-duty construction rated either “high security” or grade 100 or higher with a through-tempered alloy and square-sided construction to minimize cutting ability.

3.12 Lock Forms

The acceptable types of locks Seller shall provide at the Project Site are:

- High Security Padlock – A padlock that meets certain levels, a minimum grade of F5/S6/K5/C4 per ASTM F883-13 in each of the areas of concern is desired
- High Security Puck Lock – A padlock in the form of a hockey puck with the shackle hidden in a recess on the back side. This type of lock provides its high security by protecting the shackle itself from access, uses the same high security key as the padlock, and includes a special hasp that has a surround shield protecting the hasp tab and hole from cutting where the shackle enters the padlock
- Clasp Lock or Cam lock that fits NEMA cabinets as required

4 Energy Model and Energy Yield Verification

Any Energy Model for the Project provided to Buyer after the Effective Date shall be compliant and function in accordance with the terms of this Agreement.

The Energy Model requires a PVsyst software program and PVsyst input files to run the PVsyst simulation in the Energy Model. The version of the PVsyst software program for the Energy Model shall be as specified in item 3.5 of Appendix 4 to this Scope Book. The PVsyst input files for the Energy Model shall consist of .PAN, .OND, .PRJ, .VC#, and .MET files.6

The Energy Model also requires inputs and assumptions to generate projections of PV plant output. These inputs and assumptions are based on or include discrete design parameters, physical characteristics, equipment capabilities, and similar attributes of the Project, Project layout and location, relevant meteorological and environmental conditions, and other factors. The inputs and assumptions shall be developed and mutually agreed to between parties for the Effective Date Energy Model and shall be reflected in the in the Final Agreement. Appendix 4 and, to the extent applicable, Appendix 3 to this Scope Book set forth certain inputs for the PV plant used in the Effective Date Energy Model. The inputs to the Effective Date Energy Model are based on or derived from the proposal submitted in the RFP that led to the Agreement.

In addition, the Energy Model requires the application of losses (post-process losses) not captured by the underlying PVsyst model. Such losses shall be presented and modeled as a singular loss value shown in Appendix 4. The inputs and assumptions for such losses in the Effective Date Energy Model are based on assumed values and reflected in the documentation included in the Agreement.

The Effective Date Energy Model shall establish and be considered the final form of the Energy Model. The Effective Date Energy Model version of the PVsyst program, the types and versions of the PVsyst program files, the types of inputs and assumptions used in the PVsyst program input files, the types of post-process loss adjustments, and the form of the Energy Model report created after a run of the PVsyst program shall not be changed after the Effective Date without Buyer's prior approval, which may be provided in Buyer's sole and absolute discretion. Subject to the remainder of this paragraph, the inputs and assumptions to the Energy Model shall be updated after the Effective Date to cause the Energy Model to correctly reflect the Project design and/or physical attributes or characteristics of the Project as of 100% Project design completion or substantial completion. Appendix 4 and, to the extent applicable, Appendices 3 and 4 identify which of the characteristics listed therein are subject to limitations that restrict Seller's ability when designing, procuring items for, or building the Project to deviate from the value or data entry for a particular characteristic specified for the Project in the applicable Appendix. Other provisions of the Scope Book or the Agreement may include similar restrictions. Seller is not authorized to update any input or assumption used in the Effective Date Energy Model to the extent the updated input or assumption fails to comply with the limitations or requirements of this Scope Book or the Agreement applicable to such input or assumption. Permitted updates to the inputs or assumptions used in the Energy Model could include, for example, changes reflecting certain supplier data obtained after final equipment selection and overall refinements to the physical PV plant during the design phase that do not deviate from the basic design of the Project and that Seller is permitted to make under the terms of the Agreement. For the avoidance of doubt, the inputs

[6] NTD: Depending on the Energy Model used and accepted as the Effective Date Energy Model, .SIT, .SHD, and/or .HOR files could also be included.

and assumptions used in the .MET input file for the Energy Model shall be final as of the Effective Date and may not be updated or otherwise changed.

The Energy Model shall be rerun on each of the following dates (each, an Energy Model Delivery Date):

- On or before 10 days after the delivery by Seller to Buyer of written notice that the IFC design package prepared following 100% completion of the detailed design of the Project (see Section 2.2 above) (the Design Completion Energy Model)
- On or before the delivery by Seller to Buyer of the substantial completion certificate (reflecting the Project as then built and tested) pursuant to the Agreement (the Substantial Completion Energy Model).

Seller shall maintain an up-to-date, accurate log recording the date and basis for and a reasonable description of each change, if any, to the Energy Model from the Effective Date through the substantial completion payment date, including changes to any input or assumption used in the Energy Model. Seller also shall provide the then-current log of all such changes (and associated documentation reasonably requested by Buyer) to Buyer upon Buyer's request or at intervals or times as the Parties may otherwise agree. Such log may include versions of Appendices 2, 3, and 4 that have been updated in accordance with, and subject to the limitations set forth, herein and therein. Seller shall notify Buyer in writing reasonably in advance of any running of the Energy Model and consider in good faith any Buyer comments made to Seller regarding the Energy Model, including any objections to inputs or assumptions proposed to be used in the Energy Model.

The Energy Model shall be prepared and run by (the Project Performance Test Contractor), and the Energy Model report (along with the associated Energy Model files, inputs, assumptions, and documentation, including any supporting calculations prepared by the Project Performance Test Contractor) shall be provided to Buyer within one day after completion of each required model run specified above. For an Energy Model to be final and the results thereof given effect, the associated test report (including the contents thereof) must be completed in accordance with the requirements of this Scope Book and be free from any errors, omissions, or other defects.

The parties agree the Effective Date Energy Model establishes the expected energy yield for the PV portion of the Project as of the Effective Date (specified in item 1.4 of Appendix 3) as the Project's "Base Case Expected Energy Yield." Seller guarantees the expected energy yield in each subsequent Energy Model delivered to Buyer under this Scope Book will equal or exceed the Base Case Expected Energy Yield or the "Energy Yield Guaranty". If the design completion Energy Model does not demonstrate the Energy Yield Guaranty has been satisfied, Seller shall undertake to diagnose and cure the cause(s) of the Energy Yield Guaranty deficiency, which cure could include Seller making permitted modifications to the Project design to ensure the Energy Yield Guaranty will be satisfied at substantial completion. Seller shall update the inputs and assumptions to and re-run the Energy Model, in accordance with and subject to the terms of this Scope Book, after completion of such cure until the Energy Yield Guaranty has been satisfied. If the Substantial Completion Energy Model does not demonstrate the Energy Yield Guaranty has been satisfied, Seller has two options:

- Cure the cause(s) of the Energy Yield Guaranty deficiency. The cure could include Seller making permitted modifications to the Project, updating the inputs and assumptions to, and re-running the Energy Model in accordance with and subject to the terms of this Scope Book until the Energy Yield Guaranty has been satisfied.
- Pay Energy Yield Liquidated Damages in accordance with the Agreement.

5 Commissioning and Testing

Seller shall develop a commissioning plan and process (Commissioning Plan) that ensures all Project components meet the requirements of the Agreement, this Scope Book. The Commissioning Plan shall conform to and include, without limitation, the components set out in Appendix 7, Project Performance Test Procedures. The Commissioning Plan shall outline the tasks, processes, procedures, and deliverables required to commission the Project, conduct the performance tests, and prove the function and performance of the Project, including its components. The Commissioning Plan shall designate the tests and processes required to be completed and performed prior to mechanical completion and substantial completion in accordance with the Agreement, including completion of all QA/QC tests prior to mechanical completion and completion of all project performance tests prior to substantial completion. Seller shall perform a random pile and pull testing campaign in accordance with ISO-2859-1, subject to general inspection level II, and an acceptance quality limit of 0.10.

Seller shall provide the Commissioning Plan to Buyer reasonably prior to the commencement of Seller's commissioning activities. Buyer shall provide comments, if any, in good faith on such Commissioning Plan to Seller within 10 business days after Buyer's receipt of such Commissioning Plan. If Buyer provides such comments, Seller, within five business days after Seller's receipt of Buyer's comments, shall revise the Commissioning Plan to address Buyer's comments and resubmit the revised Commissioning Plan to Buyer for review and approval. This procedure shall be repeated until the Commissioning Plan as modified is approved by Buyer. Buyer shall promptly notify Seller in writing if and when it has approved the Commissioning Plan.

Buyer shall be given reasonable advance notice of and a reasonable opportunity to review, monitor, and witness all commissioning and testing activities performed as part of the Work. Seller shall provide Buyer a schedule of all factory and Project Site tests, inspections, and performance tests within thirty (30) days after the FNTP date and any update to such schedule promptly after such update is made.

Buyer and its contractors and representatives shall be permitted access to the Project Site at all times and shall be permitted to visit factories during the manufacturing of equipment, materials, and components for the Project and to witness factory tests and inspections. Buyer may contract with one or more third parties to conduct individual inspections and tests at any time to confirm test results and to verify the Project has been installed and constructed in accordance with the requirements of the Agreement and this Scope Book.

Where manufacturing or finishing is performed at the Project Site, reviews, inspections, studies, and tests shall be conducted as a replacement for an appropriate workshop test. The preliminary check-out and test runs, the reliability test run, and the project performance tests shall be carried out by Seller under the witnessing of and review by Buyer and its contractors and representatives.

These tests shall demonstrate among other things:

- Completeness of the mechanical and electrical construction works
- Correctness of the assembly and installation
- Safety and reliability of the Project under all operating conditions
- Proper functioning of the components and system under all operating conditions.

5.1 Commissioning Documentation and NERC Compliance

The minimum required information for commissioning shall be documented and checked, if appropriate, during the commissioning period, including:

- Basic system information
- Project location and installation date
- Rated system capacity (DC and AC)
- PV modules and inverter – manufacturer, model, and quantity
- Commissioning date
- System designers' information
- System installer and contractor information
- Detailed single-line diagram of the Project
- Array general specifications
- PV module type
- PV module number
- Number of PV modules per string
- Number of strings
- PV string information
- String cable type, size, and length
- Specification (current and voltage rating) of overvoltage protection device
- Array electrical characteristics
- Array junction box location
- Array main cable specification
- Location, type, and rating of over voltage protective devices
- Earthing and over-voltage protections
- Single-line diagram(s) showing the details of all earthing, lightning protection, and surge protection systems
- A single-line diagram showing AC isolator location, type, and rating and similar information for AC over-current protection device
- Technical data sheet for all major components
- Warranty documentations for PV modules and PCSs with the information of starting date of warranty and period of warranty
- Mechanical design information and data sheet of array mounting structure (static report)
- Documentation of all required permits
- Documentation and stock of spare parts and consumables
- Documentation of PV module flash test data
- Commissioning test reports
- Equipment calibration certificates
- Operation and maintenance information, including:

    - Procedures for verifying correct system operation and minimum guaranteed performance parameters
    - Preventive and corrective maintenance procedures
    - Scheduling of routine maintenance
    - A checklist of what to do in case of system failure
    - Emergency shutdown and isolation procedures

Seller shall be compliant with the applicable NERC reliability standards in effect as of the Effective Date including those set forth in Appendix 10 to the Scope Book. Seller shall be responsible for the Project

complying with all Generator Owner (GO) and Generator Operator (GOP) obligations in Appendix 10 through Substantial Completion.

Seller shall provide to Buyer reasonable evidence of Seller's compliance with the NERC Standards and any other NERC-related documentation reasonably requested by Buyer or required by NERC as requested by the due dates listed in Appendix 10.

5.2 Factory Acceptance Tests

All equipment, materials, and components specified in Section 3.4 of this Scope Book shall be factory tested to ensure such items are suitable for use at the Project and will be able to satisfy the requirements of the Agreement, including this Scope Book. Quality check lists and test protocols for such equipment, materials, and individual components shall be submitted by Seller prior to and during the factory tests.

All equipment, materials, and components shall be "routine" or "type"-tested in the factory in accordance with the applicable standards set forth in Section 1.3 of this Scope Book. The frequency of testing shall be as agreed between Seller and Buyer prior to the FNTP date. Type tests shall not be repeated if type test certificates of identical equipment designed and fabricated to a specification identical to that of the Project are available. Any proposed type test certificates must be submitted to Buyer for review and approval.

The following sequence shall be included in Seller's QA/QC Plan provided as part of the PEP:

- Seller shall keep a three-month look ahead inspection schedule, which shall be updated on a regular basis as part of the monthly progress report
- Seller shall provide Buyer notice of its intent to inspect prior to any inspection as detailed in the Agreement
- Prior to notifying Buyer of its intent to inspect, Seller shall have issued and obtained Buyer's approval of the relevant inspection test plan and all other technical documentation relevant to the inspection
- Buyer will notify Seller of Buyer's intent to attend the inspection. Buyer may contract with third-party inspectors to attend the inspection with or on behalf of Buyer
- Upon completion of the inspection, Seller shall issue an inspection test report summarizing the results of the inspection, including any reports generated by the manufacturer, for review and approval by Buyer.

Seller should expect Buyer to attend the inspections of at least the following equipment:

- PV modules
- Inverters and PCS
- Trackers
- Step-up transformers
- Inverter power transformers
- HV switchgear, if applicable
- MV switchgear
- LCS
- First install / "golden row"

5.3 Project Performance Tests

Seller shall conduct all project performance tests after the closing and synchronization of the Project to the interconnected electric grid. Project performance tests may be run simultaneously when possible.

Appendix 7 sets forth certain requirements, standards, and procedures for the performance of the project performance tests, which shall be conducted in accordance with the Commissioning Plan under Section 5 of this Scope Book.

The Project Performance Test Report shall include the following information with respect to the project performance test:

- Summary
- Test Protocols
- Instrument Calibration Certificates
- Test data (manual and data acquisition)
- Field Notes
- Calculations
- Conclusions

5.3.1 PV Plant Capacity Test

Seller shall cause a Project Performance Test to be performed to determine PV Plant Capacity in accordance with the requirements, standards, and procedures set forth in Appendix 7. The PV plant capacity shall be measured at the electrical interconnection point.

The project performance test conducted to determine the PV Plant Capacity may not be interrupted or suspended and then resumed without Buyer's prior written approval. The PV plant must have operated and performed as designed (and must have achieved the minimum PV plant availability) during such project performance test for such project performance test to be considered valid for purposes of determining the PV plant capacity.

5.3.2 PV Plant Availability Test

Seller shall cause a project performance test to be performed to measure PV Plant availability in accordance with the requirements, standards, and procedures set forth in Appendix 7 of this Scope Book.

The project performance test conducted to determine the PV plant availability may not be interrupted or suspended and then resumed without Buyer's prior written approval.

5.4 Equipment Warranties

Seller shall notify Buyer of any procedure, activity, or other Work that may void a manufacturer warranty or violate any law or applicable permit reasonably in advance of the performance of such procedure, activity, or Work. Seller shall provide to Buyer all original equipment manufacturer warranty documents. Refer to Table 7 for warranty requirements.

The original equipment manufacturer's warranty shall cover the equipment is free from defects in material, manufacture, workmanship, and design. In the event of a breach of the warranty, the PV module

manufacturer shall take corrective action at its cost to repair or replace and prevent in subsequent years breaches warranty.

Table 7.Table of warranties

Equipment	Warranty Type		Comment
	Workmanship	Performance	
Solar Module	10 years	25 years	The original equipment manufacturer warranties for the PV modules shall cover the following that may commence no sooner than the earlier of • The date of completion of installation of the PV modules or • 90 days after delivery of the PV modules to the Project Site: The power output warranty shall warrant the power output relative to the labeled nameplate power output (with no additional exclusions or other conditionality on coverage).
Inverter/PCS		5 years	The original equipment manufacturer's warranty shall commence no sooner than delivery of the inverters to the Project Site and continue for a minimum of five years from the warranty commencement date.
Transformer (excluding GSU transformers)	36 months	36 months	The original equipment manufacturer's warranty shall commence no sooner than the earlier of: • Energization thereof (in which case it shall continue through at least 18 months thereafter) or • Arrival at the Project Site (in which case it shall continue through at least 36 months thereafter).
Tracker		10 years	The original equipment manufacturer's warranty that the trackers are free from defects in material, manufacture, workmanship, and design for a period of: for structural components of the trackers, at least 10 years from the date of completion of the installation thereof and for motor, gear, battery, and controller components of the trackers, at least five years from the date of completion of the installation thereof.
Fixed Tilt Racking		10 years	The original equipment manufacturer's warranty that the racking is free from defects in material, manufacture, workmanship, and design for a period of: for structural components of the racking, at least 10 years from the date of completion of the installation.

Equipment	Warranty Type		Comment
	Workmanship	Performance	
Balance of Plant	5 years		The original equipment manufacturer's warranty shall cover combiner boxes for a period of at least five years from the date of completion.

6 Training

Buyer will identify a project team to be trained by Seller during the design, construction, commissioning, and testing of the Project. Seller shall provide the required training to 8 to 12 people and through a 40-hour course. Scheduling of the training program shall be subject to mutual agreement between Seller and Buyer. The objective of the training program shall be to train Buyer's personnel to be qualified and self-sufficient in the overall operation, maintenance, and troubleshooting of each system included, so the Project is operated safely and efficiently.

Seller shall provide for Buyer's operation and maintenance staff a training program that includes training for all components and systems of the Project, including use of all related equipment and software. The training program shall include a training plan, training materials, and presentation schedule designed to ensure a successful training program. The training program shall consist of on-the-job training during different stages of the Project and shall be supplemented by classroom instruction and computer-assisted training.

All training shall be conducted at the Project Site prior to initial operation of the Project or the generation of power therefrom. All costs of training shall be borne by Seller. Expenses incurred by Buyer's project team to attend training at the Project Site will be borne by Buyer. Seller shall be responsible for any expenses incurred by Buyer's project team for any training that occurs at any alternative locations. Training shall be held only during normal working days and hours and shall not be held on holidays or weekends or require the need for overtime of Buyer's personnel.

All presented lectures shall be conducted by personnel having extensive experience both in PV solar plant start-up, O&M, and training. All training shall include classroom and hands-on field instruction. Additional hard copies and one electronic equivalent of the training manual shall be provided to Buyer.

Training shall include:

- Plant overview
- Performance modeling basics and software operation, including control algorithms
- Introduction to Project equipment (PV modules, PCSs, trackers, met stations, transformers)
- SCADA
- Collector substation
- Control system basics
- Interconnection basics
- Operations and maintenance

Seller shall ensure the instructors have the knowledge and qualifications to participate in the training program. All instructors must be fluent in both written and spoken English.

The routine training program consists of assigning each individual a qualification goal and schedule for accomplishment. Each individual will receive position qualification requirements (PQRs) based on their specific qualification schedule, which shall outline the specific knowledge and demonstrated skill requirements for satisfactorily performing in the required position.

7 Health and safety requirements

7.1 General Requirements

Seller shall prepare and implement a comprehensive Project and Project Site-specific HSE policy and associated procedures (HSE Plan) for the performance of the Work. The HSE Plan shall apply at all times during the design, preparation, construction, and operation of the Project and be prepared in accordance with and require compliance with all laws (including codes and standards) and applicable.

Seller shall submit to Buyer at least one hundred twenty (120) days prior to the Construction Commencement Date an initial HSE Plan that demonstrates Seller's commitment to the highest standards of health and occupational hygiene of the construction workforce during the development, construction, operation, maintenance, and repair of the Project. Buyer shall provide its comments to the initial proposed HSE Plan, if any, to Seller within forty-five (45) days after Buyer's receipt of the initial proposed HSE Plan from Seller and within ten (10) Business Days after Buyer's receipt of any modification to a proposed HSE Plan from Seller, and Seller shall, in each case, consider in good faith timely comments from Buyer on the proposed HSE Plan. Seller shall be responsible for implementing, complying with, and enforcing, and performing the Work in accordance with, the approved HSE Plan. Seller shall not commence Work at the Project Site until the HSE Plan has been approved by Buyer. Buyer shall not unreasonably withhold, condition, or delay its approval of an HSE Plan.

The HSE Plan shall address and include pertinent information regarding any known or reasonably anticipated safety issues arising out of the Work on the Project Site, including the equipment to be incorporated into the Project (e.g., how to properly handle generated and stored energy in emergencies) and operation of the Project prior to substantial completion. The HSE Plan also shall set forth Seller's detailed plan for addressing environmental risks and challenges that may arise during the construction, commissioning, testing, operation, maintenance, and repair phases of the Project.

The Project shall be designed and HSE Plan (and Site Security Plan) developed to minimize the risk of injury to personnel and to the public during performance of the Work, including during the use, operation, maintenance, repair, and replacement of the Project or components thereof.

Seller shall ensure guidelines and policies for maintaining hygienic conditions and appropriate shelter or shading at eating, resting, drinking, washing facilities, and restrooms are established and adhered to by individuals at the Project Site.

The Project shall be designed to cease to energize and trip off in the event of a grid power outage. In such circumstance, the Project shall cease to energize, trip off, and physically isolate from the interconnected grid to prevent interaction with the grid (nominal auxiliary load contactors may continue to serve these loads). This shutdown and isolation mode includes both normal shutdown and system trips requiring reset.

Hazardous areas on or at the Project Site shall be identified and marked as such, and Seller shall select and install suitable equipment for use in such areas.

7.1.1 Safety Rules and Procedures

The Work shall be performed and completed in accordance with the HSE Plan and Site Security Plan. Any safety rules and procedures required for any specific activities of the Work shall be included in the HSE Plan.

7.2 Arc Flash Hazard Analysis Study and Calculation

Seller shall perform in accordance with IEEE Standard 1584 an arc flash hazard analysis study and calculation for all equipment installed pursuant to the Agreement. Arc flash hazard incident energy levels shall be limited to 8 cal/sq.cm. Arc flash hazard reduction maintenance systems may be utilized to achieve the required levels. Where 8 cal/sq.cm levels cannot be achieved, site-specific O&M procedures shall be required to address Project equipment clearance requirements.

Labeling that lists arc flash incident energy exposure levels, including instructions on disconnecting devices required for the replacement of battery modules, shall be provided.

7.3 Signage

All necessary safety signs and warnings described in ANSI Z535-2002 (entire series from Z535.1 through Z535.6) shall be included on Project Site fencing and each enclosure and any other buildings at the Project Site. All necessary signs and warnings for identification of hazardous substances as described in NFPA 704 shall be included on the fencing, each building, and any other enclosure at the Project Site. Warning signs on perimeter fencing shall be placed no further than 50-foot intervals, communicating electrical hazard and NO TRESSPASS. Each entry gate sign shall have a unique identification name and physical 911 address with contact information for emergency access.

Any object within the mowable pathway 24 inches in height or less shall have a warning sign with metal pole at least 48 inches high warning of the obstruction.

7.4 Community Relations

Seller shall manage for community relations with respect to the Project through substantial completion (except as otherwise directed by Buyer after the closing). Seller shall use best efforts to perform the Work and its other obligations under the Agreement in a manner intended to engender and maintain a positive perception of the Project within and a harmonious relationship with the surrounding community. Buyer could reasonably be expected to inherit that perception and relationship at the closing, through substantial completion, and, to the extent based on Seller's or its contractors' or subcontractors' acts or omissions, thereafter.

8 Submittals

8.1 Documentation to be Submitted During Project Design (Documents IFC)

Seller shall prepare and submit to Buyer the following documents during the design and engineering phase of the Project. Refer to Table 8 for requirements during design.

Table 8: Submittal requirements during project design

Item	Description	Due
8.1.1	Monthly progress reports in accordance Appendix 11 of the Scope Book	Monthly
8.1.2	Project Schedule showing, among other things, design and engineering work, procurement, and delivery of major equipment, FAT of major equipment, site surveys and studies, site preparation, construction activities, commissioning activities, and performance tests	30 days after FNTP, then with each monthly report
8.1.3	Project Execution Plan (PEP) document	As specified in Appendix 11
8.1.4	Drawings and documents provided with permit applications in accordance with Appendix 11 and copies of all correspondence exchanged prior to and after the closing date between or on behalf of Seller and any governmental authority with respect to the Project	As specified in Appendix 11
8.1.5	The initial, baseline Environmental Assessment (subject to the main body of the Agreement)	As specified in Appendix 11
8.1.6	Subject to Appendix 4 below, the final Energy Model, including all PVsyst project files, inputs, parameters, and reports; 30-year estimates; and P50 and P90 estimates	As specified Appendix 11
8.1.7	Project Plot Plan with landscaping notes	Per design milestones in Scope Book Section 2.2
8.1.8	General arrangement drawings	Per design milestones in Scope Book Section 2.2
8.1.9	Plans, sections, and details for each system	Per design milestones in Scope Book Section 2.2
8.1.10	Underground arrangement drawings (mechanical, electrical, and civil)	Per design milestones in Scope Book Section 2.2
8.1.11	Terminal point list	Per design milestones in Scope Book Section 2.2
8.1.12	One-line diagrams	Per design milestones in Scope Book Section 2.2
8.1.13	Three-line diagrams	Per design milestones in Scope Book Section 2.2
8.1.14	Cable layouts	Per design milestones in Scope Book Section 2.2
8.1.15	Electrical load flow studies	Per design milestones in Scope Book Section 2.2

Item	Description	Due
8.1.16	Electrical grounding calculations	Per design milestones in Scope Book Section 2.2
8.1.17	Protective relaying settings and coordination study	Per design milestones in Scope Book Section 2.2
8.1.18	Electrical short circuit analysis	Per design milestones in Scope Book Section 2.2
8.1.19	Grading and drainage drawings, including hydrology report	Per design milestones in Scope Book Section 2.2
8.1.20	Geotechnical Investigation Report	Per design milestones in Scope Book Section 2.2
8.1.21	Foundation and structural steel drawings sealed by a PE licensed in the state where the project is located	Per design milestones in Scope Book Section 2.2
8.1.22	Structural calculations for PV racking and foundations, including: All wind tunnel test reports Load derivations Corrosion calculations Detailed structural steel code checks Soil and structural embedment and deflections calculations using LPILE or equivalent Pile load test data Connection calculations Wind stow strategy plan	Per design milestones in Scope Book Section 2.2
8.1.23	Tracker or racking manufacturer drawings and calculations	Per design milestones in Scope Book Section 2.2
8.1.24	Structural calculations for PCS foundations	Per design milestones in Scope Book Section 2.2
8.1.25	Structural calculations for substation structure and foundation calculations	Per design milestones in Scope Book Section 2.2
8.1.26	Specifications and datasheets for PV modules, PCS, tracker or racking, combiner box, cables, wire management, fasteners, PV module clamps, and other equipment datasheets	Per design milestones in Scope Book Section 2.2
8.1.27	Site hydrological study	Per design milestones in Scope Book Section 2.2
8.1.28	Site Environmental Impact Assessment study	Per design milestones in Scope Book Section 2.2
8.1.29	Construction pile installation QA/QC procedure, including: • Pile installation tolerances • Out of tolerance remediation plan	30 days prior to commencement of pile installation

Item	Description	Due
	• Pile rejection criteria for damage to pile, extreme out of tolerance • Pile testing campaign for sampling population and acceptance criteria, pile load test procedure	
8.1.30	System description of the main systems for the Project	Per design milestones in Scope Book Section 2.2
8.1.31	Start-up and shutdown diagrams	Per design milestones in Scope Book Section 2.2
8.1.32	Preliminary Commissioning Program with procedures for respective tests and activities	Per design milestones in Scope Book Section 2.2
8.1.33	Draft project performance test procedures	Per design milestones in Scope Book Section 2.2
8.1.34	Preliminary O&M philosophy	Per design milestones in Scope Book Section 2.2
8.1.35	Property Protection Design Basis Document as described in Section 2.3.1	Per design milestones in Scope Book Section 2.2
8.1.36	Project Site Security Plan	120 days prior to construction commencement date
8.1.37	Initial Point list for SCADA system	Per design milestones in Scope Book Section 2.2
8.1.38	Project design basis (including design criteria)	At 30% design
8.1.39	Equipment receiving, handling, storage, and installation instructions and manuals	120 days prior to construction commencement date
8.1.40	Corrosion engineering report	At 30% design
8.1.41	Field touch-up procedures of painted equipment	120 days prior to construction commencement date
8.1.42	Site finish grade	At 30% design
8.1.43	I&C drawings (instrument list, network diagram, control panel layout, architecture, alarm list))	Per design milestones in Scope Book Section 2.2
8.1.44	MSDS documentation	120 days prior to construction commencement date
8.1.45	Visual weld inspection procedures	120 days prior to construction commencement date
8.1.46	HVAC equipment	Per design milestones in Scope Book Section 2.2
8.1.47	Electrical package including cable schedule	Per design milestones in Scope Book Section 2.2
8.1.48	Transformer recommended assembly and filling procedure	Per design milestones in Scope Book Section 2.2

8.2 Documentation to be Submitted During Project Construction

Seller shall prepare and submit to Buyer the following documents from and after the construction commencement date through substantial completion. Refer to Table 9.

Table 9: Submittal requirements during project construction

Item	Description	Due
8.2.1	Monthly progress reports in accordance with Appendix 11	Monthly
8.2.2	Weekly construction status report in accordance with Scope Book Appendix 11	No later than 5 PM Tuesday
8.2.3	Copy of all Project Work permits and Project operational permits when obtained	As obtained
8.2.4	Final Commissioning Program	30 days prior to mechanical completion
8.2.5	Final performance test procedure	Prior to mechanical completion
8.2.6	Final O&M philosophy	Prior to mechanical completion
8.2.7	Construction Test Reports, including compaction test results and related documents for roads, substation pads, and at non-pile supported foundations and structures; in situ pile test results and related documents	Prior to mechanical completion
8.2.8	System graphics	Prior to mechanical completion
8.2.9	Certificate of achievement of mechanical completion	Prior to mechanical completion
8.2.10	Final post-mechanical completion punchlist	Prior to mechanical completion
8.2.11	OEM FAT and shop test reports for equipment listed in Scope Book Section 5.2	Prior to initial energization
8.2.12	Environmental Assessment	No earlier than 180 days prior to closing
8.2.13	Environmental test reports, inspections, and records	Closing
8.2.14	Training manuals	Prior to mechanical completion
8.2.15	Coating specifications	Prior to mechanical completion
8.2.16	Paint color samples	Prior to mechanical completion

8.3 Documentation to be Submitted at Substantial Completion Payment Date

Seller shall prepare and submit to Buyer the following documents as shown in Table 10 prior to Substantial Completion.

Table 10: Submittal requirements prior to Substantial Completion

Item	Description	Due
8.3.1	Punchlist in accordance with the Agreement, including the agreed punchlist holdback amount	Substantial completion
8.3.2	Draft as-builts for all drawings and documents submitted during the engineering and design phase, during project construction and the final site design basis document summary.	Substantial completion
8.3.3	Power production estimates	Substantial completion
8.3.4	OEM performance field test reports	Substantial completion
8.3.5	Software licenses and Project intellectual property rights	Substantial completion
8.3.6	Instrument calibration list and certificates	Substantial completion
8.3.7	Protective relay settings list	Substantial completion
8.3.8	Equipment list	Substantial completion
8.3.9	Equipment O&M manuals	Substantial completion
8.3.10	Construction turnover documentation	Substantial completion
8.3.11	Commissioning turnover documentation	Substantial completion
8.3.12	Input and output list	Substantial completion
8.3.13	SCADA FAT results	Substantial completion
8.3.14	Commissioning test results, bills of material, and drawings to demonstrate compliance with NERC standards	Substantial completion
8.3.15	Project Site specific operating procedures	Substantial completion
8.3.16	Arc flash study	Substantial completion
8.3.17	NERC test reports and calibration records	Substantial completion
8.3.18	Project performance test results	Substantial completion
8.3.19	All permits	Substantial completion
8.3.20	All signed and approved design change requests	Substantial completion
8.3.21	Invoices	Substantial completion
8.3.22	Spare parts and consumables lists	16 weeks prior to substantial completion

8.4 Documentation to be Submitted after Substantial Completion Payment Date

Seller shall prepare and submit to Buyer the following documents as shown in Table 11 after Substantial Completion.

Table 11: Submittal requirements after Substantial Completion

Item	Description	Due
8.4.1	Final as-builts for all drawings and documents submitted during the engineering and design phase and during project construction	Final completion
8.4.2	Red line drawings	Final completion
8.4.3	Operator and maintenance personnel training records	Final completion
8.4.4	Final equipment O&M manuals	Final completion
8.4.5	Final system descriptions of as-built systems	Final completion

8.5 Supplemental Appendix Information

For each of Appendices 1 through 14 and in accordance with the other terms of this Agreement, Seller shall update all applicable cells left blank as of the Effective Date in the Appendix with accurate data and content. Seller shall provide to Buyer periodic updates to each Appendix at the intervals specified in the Agreement for Seller's updates to the schedules. However, no cells may be updated within 90 days of closing without the prior written agreement of Buyer and Seller.

***** END OF SCOPE BOOK MAIN BODY *****