Appendix B-2

Scope Book

for

2021 Request for Proposals

for

Build-Own-Transfer

Style Definition ...

Solar Photovoltaic Resources

Entergy Louisiana, LLC

~~March 10~~ [July 29], 2021

~~DRAFT~~

~~CONFIDENTIAL~~

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APPENDIX- B-2

FORM OF SCOPE BOOK

(Exhibit- A to BOT Agreement)

TABLE OF CONTENTS

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1 GENERAL DATA[1]

This Exhibit- A, including its attachments, is the Scope Book. This Scope Book describes certain requirements with respect to the Work. It 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 in no way limit Seller's obligations under the Agreement or any Ancillary Agreement. 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 the minimum functional specification (MFS) for the Project, including scope and design requirements. 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 part of the B-O-T Acquisition Agreement between Seller and Buyer and is subject to 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 set forth in the main body of the Agreement shall apply to this Scope Book.

Without limiting the other provisions of this Exhibit- A and the Agreement, this Scope Book includes elements that apply to the work contemplated by and the provisions set forth in ~~the~~Appendix 9 - Collector Substation ~~Attachment (Exhibit 9)~~ and ~~the~~Appendix 10 - High Voltage Overhead Transmission Line ~~Attachment (Exhibit 10).~~ These elements include, among others, project controls; cyber security; environmental requirements; site fire protection; site security; temporary site installation and laydown areas; tools, spare part, and consumables; project utilities, redundancy; and control system and communication requirements.

1.1 Project Description

The Project will include the following main systems and equipment:

- PV Modules
- Trackers

[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 RFP or that have been reconsidered. ELL reserves the right to issue an updated version of the Scope Book at a later date.

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- Inverters
- Battery Energy Storage System (BESS)
- Transformers
- Switchgear
- High Voltage (HV) Substation
- Control System (including charge controllers and battery energy management system)
- Balance of System (BOS) and Auxiliary Equipment
- Backup Power Supply/Emergency Generator, if required for equipment protection or personnel safety (i.e., Container/Enclosure 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, long-term operations; provide maintenance access for all equipment according to the Performance Standard (including OSHA); achieve at least a thirty (30~~)~~ ~~)~~ year life (recognizing that the theoretical design life of the PV modules and inverters used in the Project will be twenty-five (25)~~-~~ years; minimize operator surveillance (the intent being that the Project will be designed to operate autonomously with minimal interaction by operators such that a limited 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 equipment and otherwise adhere to the Performance Standard.

The Project design shall provide for, and the completed Project shall allow, the free and unimpeded access of individuals and vehicles, equipment, and items that will perform vegetation management and related maintenance activities down and along any rows to maximize the efficiency of such activities; that is, to allow entry from either end of each row, free and unimpeded passage down the entire length of that row, and free and unimpeded exit from the other end of that row. Splice boxes may not be placed between rows in the Project. Combiner boxes and/or string inverters for panels in a row must be placed in direct line with the relevant row, and not to either side of the row, and must not be more than 3~~-~~ feet from the end of the row.

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1.2 Site Description

1.2.1 General

The Project Site is located in _____, as further identified on ~~Appendix 6.~~ Appendix 6.

1.2.2 Climatic Conditions

The Project shall be designed taking into account, in accordance with the Performance Standard, the climatic conditions set forth in ~~Apendix 3~~Appendix 3 and any other climactic or environmental conditions that would reasonably 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, to the extent applicable, rated for such climatic conditions. The Project shall be capable of sustaining minimal damage and operating properly at such conditions.

~~[~~Performance modeling for the Project shall utilize the Typical Meteorological Year (TMY) file set forth in ~~Appendix 5~~Appendix 5, which is based on the solar resource assessment report provided to Buyer by Seller~~.]~~.

1.3 Codes and Standards

Without limiting the other requirements applicable thereto, 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. Without limiting Section 2.1 of the Agreement, in the event of a conflict between the requirements of different codes and standards (or other Laws) applicable to the Project or the Work, the most stringent requirement~~(s)~~ shall govern and control. In the event a code or standard (or other Law) applicable to the Project (including any code or standard (or other Law) expressly referenced in this Scope Book or other provision of the Agreement) is superseded by another code or standard (or other Law), the more stringent standard or code (or other Law) shall apply and be complied with.

~~-~~Despite language in NFPA 850 suggesting that compliance with NFPA 850 is "advised, but not required," for the purposes of this Agreement and the Project, compliance with the recommendations in NFPA 850 is required except to the extent a deviation from a recommendation (i) is supported and documented in writing by an engineering justification prepared by a qualified individual with direct knowledge of the matter and (ii) has been accepted by the Authority Having Jurisdiction. For purposes of the Project and NFPA 850, Entergy Risk Engineering is the Authority Having Jurisdiction on behalf of Entergy's multiple insurance underwriters.

Seller shall perform the Work and otherwise cause the Project to comply with the applicable standards set forth in Table 1 below.

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Table ~~1.~~1. Applicable Standards	
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
ASTM	American Society for Testing Materials
AWS	American Welding Society
IBC	International Building Code
ICE	Institution of Civil Engineers
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
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
UL	Underwriters Laboratories

The PV Modules included in the Project must be certified to UL~~-~~ 1703, 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 are recognized NRTLs.

The PCUs included in the Project must be certified to UL~~-~~ 1741 SA and IEEE~~-~~ 1547 by an NRTL.

The BESS used in the Project must be certified to UL~~-~~ 9540, UL~~-~~ 1741 SA and IEEE~~-~~ 1547 by an NRTL.

1.4 Project Sequence and Milestones

The Project Execution Plan 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 the milestones set forth in Table 2 below.

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Table ~~2.~~2. Project Milestones	
Milestone	**Date**
Full Notice to Proceed	
Begin Construction	
Mechanical Completion	
Closing	
Performance Testing Completed	
Substantial Completion	
Final Completion	

1.5 Project Controls

1.5.1 Project Execution Plan

Seller shall submit a Project Execution Plan (PEP), which will include:

- Health, Safety, and Environmental Plan
- Quality Assurance/Quality Control Plan
- Project Custody Plan
- Project Organization Plan
- Engineering Plan
- Contracting Plan
- Procurement Plan
- Construction Plan
- Document Control Plan
- Project Risk Register~~-~~
- Schedule Management Plan
- Preliminary Baseline Level~~-~~ I and Level~~-~~ II Project Schedules and WBS
- Performance Measure Baseline
- Site-Specific Fire Protection Design Basis Document.

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1.5.2 Project Schedule and Schedule Management

Seller shall develop a Project Schedule in accordance with the requirements of this Scope Book. The Project Schedule shall be a linked network of time-phased, project-planned discrete activities keyed to the Project's scope of Work and the requirements of the Agreement and any applicable Ancillary Agreement. The Project Schedule shall contain critical target dates, project milestones, contractual events, deadlines, Project decision points, deliverables, and related activities to plan, coordinate, check the status of, and monitor the progress of the Project. The Project Schedule shall be developed in a version compatible with Primavera Version 6.2 or Microsoft Project in native format.

Seller shall provide three (3) levels of the Project Schedule as follows:

- The Level I Schedule shall be an integrated Project summary schedule showing major activities and milestones in a Gantt chart format with network features to show major constraints and shall be provided within the first (1st) monthly report. Level I Schedule activities will be work breakdown structure (WBS) summary tasks that are driven by the Level II WBS summary tasks. The Level I Schedule shall be an executive management tool used to monitor overall Project status and shall align with the Project's WBS.

- Like the Level I Schedule, the Level II Schedule shall be deliverable-based and aligns with the Project's WBS. When summarized, the Level II Schedule shall also be used to validate the Level I Schedule. A key objective of the Level II Schedule is to bring all Project functions together to identify critical activity sequences and risks and resolve conflicts and restraints. Level II Schedule activities will be WBS summary tasks that are driven by the Level III activities falling under the associated WBS. The Level II Project Schedule shall be developed with activities tied logically throughout using the critical path method (CPM) precedence diagram form. Seller shall clearly identify and define the critical path of the Work and the Project in the Level II Project Schedule. The preliminary baseline Level II Schedule will be provided by Seller within forty-five (45) days after the Effective Date. Seller shall provide to Buyer the final Project baseline Level II Schedule with the first (1st) monthly report.

- The Level III Schedule shall consist of a CPM network that clearly defines the sequences and restraints between activities at a detailed level. The Level III Project Schedule will be a fully integrated schedule with activities initially developed based on the Level I and Level II Project Schedules. Like the Level I and Level II Project Schedules, each activity in the Level III Schedule shall be of sufficient detail to assure adequate planning and execution of the Work throughout its duration. In addition, each Level III Schedule shall include a basis of schedule. Within sixty (60) days after the FNTP Date, Seller shall provide to Buyer the baseline Level III Schedule including the associated basis of schedule. The initial Level III Schedule will

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be frequently updated during Project execution utilizing the rolling wave planning methodology.

Seller shall provide a Schedule Management Plan, as part of the PEP, which sets forth the required schedule development approach, schedule content, update process, baseline management practices, and change management procedures. Seller shall prepare, maintain, and update the Project Schedule according to the Schedule Management Plan and the Performance Standard.

Each of the following requirements shall apply to each level of the Project Schedule (including any updates thereto):

- The logical network thereof shall be constructed primarily using the finish-to-start relationship type
- Seller shall prepare each level of the Project Schedule submitted to Buyer such that it describes a complete, realistic Work plan demonstrating completion of the Work in advance of the Guaranteed Substantial Completion Date
- Seller shall use CPM scheduling techniques in scheduling software
- The schedule option for retained logic must be used
- All calendars and activity codes assigned within the schedule must be assigned at the "Project" level and not at the "global" level
- Excluding procurement activities, Seller shall schedule Work activities in days with any Work activity requiring more than fourteen (14) days to complete being broken down further into shorter duration activities, unless Owner otherwise approves a single Work activity including a duration of more than fourteen (14) days. Each activity included in the Project Schedule shall be of sufficient detail to assure adequate planning and execution of the Work.

The Project Schedule shall not include any open-ended schedule logic, unless otherwise agreed by Buyer, except that the Final Completion milestone shall not have a successor.

1.5.3 Project Controls Reporting

Without limiting Seller's obligation to provide other documents required to be delivered under this Scope Book or the Agreement, Seller shall submit monthly reports in accordance with Section 6.2 of the main body of the Agreement (in PDF and in native file), which shall include:

- Updated Project Schedule

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- Updated schedule narrative including descriptions of the following:
    - Progress narrative
    - Monthly planned activity adherence (planned vs. actual)
    - Milestone comparisons from previous updates
    - Description of critical/near critical path
    - Narrative of any duration change
    - Narrative of any schedule variance
- Updated commodity reporting matrix breaking down key scopes of work
- Updated cumulative and monthly planned vs. actual physical progress s-curve (physical percent complete).

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.~~ 3. Units for Calculation

Measurement	Units
Area	Acre
Dimensions	Ft
Electrical Energy	kWh or MWh
Electrical Power	kW or MW
Mass	lb or ton
Temperature	°F
Velocity	Mph
Voltage	V or kV
Volume	ft^3

1.6.2 Language

Seller shall provide all information in the English language.

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2 SCOPE OF WORK

2.1 General

Without in any way limiting the definition thereof or the other terms of the Agreement, the Work shall include:

- The survey and assessment of the Project Site
- The development, design, engineering, permitting, procurement, manufacturing, factory acceptance testing (FAT), equipment and materials delivery, unloading, handling and storage at the Project Site, erection, construction, equipment and system integration, onsite quality control assurance and control, commissioning, and testing of the Project including the PV Plant, the BESS, the HV substation and the HV transmission line(s)
- Onsite quality control assurance and control programs, which shall include torqueing of electrical connections and mechanical mounting fasteners
- The works and services related to preparation, civil, mechanical, electrical, I&C, and communication
- The security of the Project Site
- The utilities and interconnections needed for construction, commissioning and testing such as potable/non-potable water, temporary power, telecommunications and internet, and fuel.

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, including Exhibits 2, 3, and 4 and the accompanying text, and the remainder of the Performance Standard. Seller shall cause all design and engineering Work to be performed in accordance with all Laws (including codes and standards), applicable Permits, and the other elements of the Performance Standard. The design shall meet the interface requirements of the ELL Transmission System, including communications and battery limits.

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

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. As a general principle, the latest/most modern, commercially proven, and up-to-date technologies shall be utilized, with the objective of maximizing value to Buyer.

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

~~Appendix 7~~Appendix 7 sets forth the list of Approved Vendors for the equipment specified therein. Pursuant to Section 5.8 of the Agreement, Seller may only procure the equipment specified in ~~Appendix 7~~Appendix 7 from an Approved Vendor.

Seller shall provide documentation, as further detailed in Section ~~9.1~~9.1 of this Scope Book, to Buyer for Buyer's design review of the Project at the following milestones:

- 30% completion of detailed design
- 60% completion of detailed design
- 90% completion of detailed design
- 100% completion of detailed design prior to issuance for construction

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 ten ~~-~~ (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 such 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 design documents, Seller shall promptly notify Buyer in writing of, document (for Buyer's review), and describe with reasonable particularity any changes made thereto, as a result of Buyer's comments or otherwise, and provide Buyer a reasonable opportunity (specified to Buyer in writing in the corresponding transmittal notice), but under no circumstance less than five (5) ~~-~~ 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. Seller's continuation to the next phase of the Project without Seller first obtaining Buyer's acceptance of each set of preliminary designs will be at the sole risk of Seller. Without limiting the Change Order restrictions in Article ~~-~~ VIII of the Agreement and other Change Order-related terms, no Change Order will be issued by Buyer for any additional Work or rework performed by Seller or required due to such continuation of work without Buyer's prior approval. Seller shall notify Buyer in writing upon each achievement of the design milestones set forth above and upon the issuance for construction of the detailed design documents for the Project.

The basis of the Project design shall be a thirty (30) ~~-~~) ~~-~~ year design life (Design Life) and the requirements of the Agreement (including the Performance Standard), the Project Site, meteorological and environmental conditions, technical requirements and specifications (including the specifications for Goods and services set forth in the Scope Book), and other elements of the Performance Standard. The preliminary Project Site

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layout in ~~Appendix 6~~Appendix 6 to the Scope Book (Preliminary Project Site Layout) sets forth the preliminary layout of the Project, including certain Project design parameters, such as, for example, ground cover ratio, selected DC:AC ratio, ~~fixed tilt or~~ tracker, rack configuration, PV Module specification sheet and watt class, inverter specification sheet and selection, PCS (inverter station/skid) configuration, Electrical Interconnection Facilities voltage and substation location, access road specifications, to include width, internal turning radii, and surfacing cross section, Project Site ingress/egress, confirmation of stringing (~~600Vdc, 1000Vdc,~~ 1500Vdc), Project generation tie lines and the Electrical Interconnection Point in accordance with the GIA and other requirements of the Agreement, and other items.[2] The basic Project design is based on or derived from the proposal submitted in the RFP that led to the Agreement. The detailed design of the Project will be finalized, in accordance with and subject to the terms of the Agreement, following the FNTP Date. Notwithstanding anything to the contrary, the final detailed design and the design changes permitted by the Agreement (see, e.g., Appendices 2, 3, and 4 hereto and the classifications therein) may not reduce the Design Life, decrease the Expected Energy Yield (defined below), adversely affect the Base Case Reliability (defined below), or increase the costs to Buyer of ownership, use, operation, or maintenance of the Project or products therefrom, including the levelized costs of energy. The "Expected Energy Yield" for the Project is the one-year P50 Project PV system energy performance calculated by the Energy Model in accordance with Section ~~4~~ 4 below. ~~[~~The reliability of the Project is based on the specifications for the Goods set forth in the Scope Book and the original equipment manufacturers warranties (the Base Case Reliability~~).]~~).

2.3 Civil and Structural

The civil and structural Work includes:

2.3.1 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 filling, leveling, and grading to the necessary lines and levels, and all other earthworks where required, including access areas

[2] ~~**NTD:** The basic design of the Project as of the Effective Date may be required to be included as an attachment to the Scope Book and the Scope Book modified to reference the basic design as appropriate.~~

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- Construction of new roads, parking areas, and pavement as a part of the required infrastructure. Roads shall be designed of sufficient bearing capacity and in accordance with the Performance Standard. The following shall be included as a minimum:
    - Main access road(s)
    - Internal roads
    - HV Substation access road(s)
    - Transmission line maintenance road(s)
- Security fence and surveillance system and lighting system
- Access gate
- All civil works for the solar arrays, including:
    - Complete civil works for the solar field, including foundations for the Tracker structure and equipment
    - Trenches
    - Service roads
    - Onsite infrastructure
- All civil works for the HV Substation
- All civil works for routing and installation of the transmission line
- Any other outdoor civil works required inside the Project Site or as needed for interconnection of the Project to the ELL Transmission System.

2.3.2 Electrical and Instrumentation & Control (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 MV and LV system cables, perimeter lighting, surveillance, I&C system, etc.
- Civil works for equipment such as PCUs, transformers, switchgear, and enclosures, including their corresponding foundations

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- Civil works for power evacuation lines from the Project's solar arrays to the HV Substation
- Civil works within the HV Substation area for power evacuation
- Civil works for the power transmission line from the HV 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 interface points
- Power and control cabling
- Transformer foundation(s)
- PCU foundations
- Switchgear foundation(s)
- Enclosure foundation(s)
- Metering (operational meters ~~[not the revenue meter~~, see Section ~~3.6.2~~**Error! Reference source not found.** below~~])~~)
- Any other outdoor civil works related to the electrical and I&C systems.

2.3.3 [Reserved]

2.3.4 Storage

A storage area on the Project Site that will be located, sized, and secured in accordance with the Performance Standard for the unloading, storing, accessing, handling, removal, and delivering of supplies, equipment, materials, consumables, and spare parts during all phases of the Project, including construction, commissioning, testing, and operation and maintenance.

2.4 Mechanical

Each Tracker shall include the following systems and components:

- Supply and assembly of a suitable main racking/tracking structure and anchor to structure foundations for the specified site conditions

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- Supply and assembly of suitable substructure (racking system and/or tracking system) and attachment to PV Modules for the specified conditions
- Corrosion protection.

2.5 Electrical

2.5.1 Solar Array and DC Distribution

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

- PV Modules
- PV Module string connectors
- PV Module mounting clamps
- Solar cabling
- Grounding system and connection
- Fused DC combiner boxes
- DC disconnect switches
- Surge arrestors and lightning protection

2.5.2 Power Conversion Stations and PV Collection System

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

- Power conversion system(s)
  - PV DC to AC power inverter(s)
  - AC disconnect switches
  - Transformer(s)
  - Switchgear
  - Auxiliary equipment and systems (including HVAC or other cooling systems)
- Backup power supply and uninterruptible power supply (UPS), if applicable
- Grounding

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- Lightning protection system, if applicable
- Conduits and cable trays
- Cables
- Relay protection
- Lighting systems (including emergency lighting)

2.5.3 MV Distribution and HV Substation

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

- HV switchgear, if applicable
- MV switchgear
- MV/HV transformer(s)
- Switchyard buses
- Revenue metering
- Circuit breakers
- Disconnect switches
- Overhead line
- Backup power supply/emergency generator
- UPS
- HVAC
- Grounding
- Lightning protection system, if applicable
- Conduits and cable trays
- Cables
- Relay Protection
- Lighting systems (including emergency lighting)

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- I&C system (including fire alarm system).

2.5.4 Auxiliary Supply System

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

- Auxiliary transformer(s)
- LV switchgear
- LV panelboard
- Busducts and cables
- Conduits and cable trays
- Protective devices for inverters, transformers, MV and main LV switchgears
- Required protection systems
- Lighting System (including emergency lighting)
- Grounding
- Electrical workshop equipment
- Backup power supply/emergency generator (including UPS)
- Lightning protection system, where applicable
- Fire suppression for high value or potentially dangerous equipment and other items stored on the Project Site (e.g., spares in the storage warehouse), unless the exclusion of fire suppression for such equipment and items is approved in writing in advance by the Entergy Risk Engineering group.

2.5.5 Instrumentation and Control

The Work with respect to the local control system (LCS)[3] includes the supply, assembly, and installation of the following components:

- Primary sensors, transmitters, actuators

[3] A distribution control system (DCS) providing equivalent or better controls or equipment is also acceptable. The term "LDC" shall be deemed to include such a DCS for purposes of this Scope Book.

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- Plant control and monitoring system for the Plant including all necessary software licenses
- Human Machine Interface (HMI) to operate and monitor the Project from the control room
- Meteorological, or "met", weather stations as described in Section 3.5.3 below
- Revenue metering systems at the HV Substation
- Plant monitoring system
- Communication systems (telephone, LAN/WAN system, etc.)
- GPS-based clock systems
- Data transfer to Buyer remote control center (e.g., via the internet)
- All works required for integration of the Project into the HV Substation control system
- All works required for implementation and integration of the Project into MISO's systems, including all required equipment and software as well as testing, auditing, and all necessary documentation as required by MISO

2.5.6 Battery Energy Storage System[4]

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

- Battery container(s)/enclosure(s)
- BESS power conversion system(s)
    - BESS bidirectional power inverter(s)/converter(s);
    - Transformer(s)
    - Switchgear
    - Auxiliary equipment and systems
- Grounding

[4] **NTD:** To be included for Projects with a battery component.

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- Conduits and cable trays
- Cables
- Relay Protection
- Metering System
- HVAC System, fully redundant
- UPS System
- Instrumentation and Control System (including firefighting system)
- Explosion/deflagration (thermal runaway) mitigation equipment.

2.6 Environmental Requirements

Without limiting the other terms of the Agreement, including the other elements of the Performance Standard, Seller shall design, build, operate, and maintain the Project to meet all applicable Environmental Laws and Permits. Seller shall demonstrate during the design and construction phase and during the 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.

Without limiting the other terms of the Agreement, including the other elements of the Performance Standard, Seller shall cause the Environmental Consultant to conduct Environmental Assessments (EA) on behalf of Seller and Buyer in compliance with Good Industry Practices and the then-current requirements and Laws reasonably in advance of the FNTP Date and within 180 days prior to the Closing. Seller shall provide to Buyer reasonable advance notice of any Environmental Assessment conducted by the Environmental Consultant. Buyer shall have to the right to witness the performance of the Environmental Assessment and to communicate directly and in real time with the Environmental Consultant regarding any Environmental Assessment.

2.7 Site Fire Protection

Seller shall provide to Buyer a complete set of the fire protection design basis documentation for the Project Site for Buyer's review and approval and shall not release equipment and material purchase orders for the Project prior to obtaining such Buyer's approval. NFPA 850, Chapter 14 (Paragraphs 14.2 and 14.4), and applicable sections in Chapters 4-10 is the current standard by which Buyer and Buyer's insurers measure property and asset protection and actions taken to mitigate fire risks to Buyer's insured assets. Buyer intends to utilize Chapter 14 and other applicable sections of NFPA 850 as a basis for Buyer's review of the fire protection design basis documentation provided

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by Seller. This set of documentation will be updated from time to time to include and record all fire protection design decisions as the Project progresses.

~~2.8~~ Site Security - Construction

The Project Custody Plan to be developed in accordance with Section 12.1(b) of the main body of the Agreement shall include the following:

- Surveillance equipment to detect unauthorized access to the Project SitePerimeter security fence
- Project Site access gate with interface for manual key entry
- Locks on any building on the Project Site that contains microprocessor-based relays

Seller shall ensure that the security systems comply with all requirements of Law, applicable Permits, and the other requirements of the Performance Standard.

~~2.10~~2.9 Temporary Site Installations and Laydown Areas

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

Seller shall provide safe, secure, weatherproof, and functional offices on the Project Site, complete with electrical, telephone, water supply, air conditioning/heating, drainage, and sewage disposal services for Buyer's use during the construction of the Project.

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.

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.

~~2.11~~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 required to be supplied by Seller hereunder, Seller shall provide, approximately

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16 weeks prior to Substantial Completion, 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 such list as follows:

- Maintenance Spares and Consumables: Items that Seller reasonably anticipates may be required or appropriate for Buyer to have in stock during the first two (2) years of normal operation of the Project.
- Overhaul Spares and Consumables: Items that Seller reasonably anticipates may be required or appropriate for Buyer to have in stock during the programmed minor and major overhauls.
- Strategic/Breakdown Spares: Items that Seller reasonably anticipates may be required or appropriate for Buyer to have in stock after commissioning 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.

All spare parts and Consumables shall be commercially available for the operational lifetime of the installation. 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.

~~2.12~~2.11 Project Utilities

In accordance with Section 5.4 of the main body of the Agreement, 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.

~~2.13~~2.12 Redundancy Concepts

Seller shall cause the Project to satisfy the following general redundancy requirements:

- If a failure in an instrument or in a control component can directly or indirectly cause the failure of the whole system, redundant instrumentation shall be provided.

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- The trip or outage of any single equipment or any single piece of auxiliary equipment shall not affect the operation of the Project.

Elements that shall be provided with full redundancy include:

- Communication links between LCS and the remote-control facilities
- Battery Container(s)/Enclosure(s) HVAC systems
- Backbone IT switches

3 TECHNICAL REQUIREMENTS

3.1 General System Requirements

The Project and all equipment, systems, materials, and components included as part of the Project shall be designed for at least a thirty (30~~)~~)-year useful life expectancy.

The rated power of the Project, as included in of this Scope Book is sustained throughout the Project and the redundancy requirements in Section ~~2.12~~2.12 of this Scope Book are satisfied.

Seller shall perform and complete the Work in a thorough, professional manner utilizing personnel skilled, competent, and appropriately licensed in their various trades, notwithstanding any omission from this Scope Book or the Agreement. All parts shall be made accurately to standard gauge when possible so that renewals and repairs may be made when necessary with the least possible expense.

The Project design shall be effective in engineering characteristics and comply with the requirements stated herein. All equipment, materials, and components shall comply with the requirements of this Scope Book.

Seller shall take necessary precautionary measures to ensure that there will be no interruption, damage, or danger to any equipment or system due to broadband, radiofrequency, or comparable interference. Seller shall ensure that there are no discharge sources from the Project that could cause interference with radio and television reception, wireless communication, telecommunication, or microwave communication systems. The Work shall include any mitigation necessary to ensure that such communication systems are not adversely affected.

Without limiting the foregoing, no aspect of the operation of the Project shall produce electromagnetic interference (EMI) that will cause faulty operation of instrumentation, communication, or similar electronic equipment within the Project or elsewhere on the ELL Transmission System. The Project shall be designed to suppress EMI effects and must meet the specifications of the latest revision of IEEE 519.

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

The system shall be of 1500Vdc design.

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, and repair, removal, and replacement of equipment and systems and, without limiting Section ~~3.4.2~~ 3.4.2 below, the economical performance of vegetation/real property management services. The Project design shall include and allow for appropriate walkways, forklift/vehicle runs, access routes, means of access, and related safety protections, including doors, stairs, landings, ladders, and other access means.

PCU and other high-profile electrical equipment shall be placed on the Project Site in a manner to prevent or, if not possible, minimize shading on the PV Modules.

3.2.2 Accessibility

3.2.2.1 Vertical Clearances at the Project Site

Without limiting the requirements of the Performance Standard, the following minimum vertical clearances shall be used in the design and construction of the Project:

- Walkways and platforms: 7 feet, 6 inches
- Work areas and aisles for forklifts: 10 feet
- Work areas and access routes at grade: 10 feet.

~~The~~Appendix 9 - Collector Substation ~~Attachment~~ and Appendix 10 - High Voltage Overhead Transmission Line ~~Attachment~~ have additional constraints.

3.2.2.2 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.

~~The~~Appendix 9 - Collector Substation ~~Attachment~~ and Appendix 10 - High Voltage Overhead Transmission Line ~~Attachment~~ have additional constraints.

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3.2.2.3 Row Spacing

Row spacing must provide a minimum of 10 feet clear space between Trackers to allow access for vegetation control or other plant maintenance. Distance shall be measured as the minimum distance at any time during operation.

Special consideration shall be given to minimize vegetation control efforts (e.g., grass mowing, trimming) at the Project Site, including providing ample row spacing for maneuvering of equipment and sufficient elevation to permit ease of vegetation removal below the PV Modules.

3.2.3 Geotechnical Investigation

Seller shall conduct geotechnical investigations on the Project Site in accordance with the Performance Standard. Without limiting Section 2.3 of the main body of the Agreement or the other requirements of the Performance Standard, the results of the investigation 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.

3.2.4 Site Clearing, Grading, and Soil Improvement

Seller shall design the general grading of the Project Site taking into account the requirements of the selected Trackers and the needs of the general drainage system. Soft, shifting, or unstable subsoil areas may be excavated down to firm subsoil and replaced with well-compacted suitable selected or imported fill material as determined by the engineer of record. Compaction levels shall be to an acceptable standard in accordance with the Performance Standard. Seller shall ensure that all Project grading and drainage and access roads are designed to the requirements of all Laws and applicable Permits.

Without limiting Section 2.3 of the main body of the Agreement or the other requirements of the Performance Standard, earthwork (excavation, fill, backfill, slopes, etc.) associated with grading and drainage, including materials and installation, shall be conducted in accordance with the final geotechnical data and as reasonably determined by Seller's geotechnical engineer(s) for the Project. Testing and monitoring of soils for earthwork shall be performed by a qualified, experienced, properly licensed independent quality control inspection and testing firm hired by Seller.

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. If existing soils contain large rocks, paving materials, cinders, large or sharply angular substances, or corrosive materials, then protection shall be provided in the form of

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granular or selected material. The backfill of trenches shall be tested for design compaction requirements.

Any debris or unsuitable material shall be removed from the site and properly disposed of in accordance with local Laws, applicable Permits, and the Performance Standard. If necessary, any surplus soil shall be transported to another suitable area inside or outside the Project Site.

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. Seller shall locate, identify, protect, and flag as necessary or appropriate all utilities, structures, facilities, sidewalk, curbs, fences, paving, vegetation, and other features that exist on the Project Site. ~~-~~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 settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations, soil conditions, or Environmental conditions. Seller shall provide erosion-control measures in accordance with the approved Project Storm Water 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 Project without any significant decrease in serviceability or strength. All construction materials shall be in accordance with the latest version of the codes and standards, as per Section ~~1.3~~1.3 of this Scope Book, and the other requirements of the Performance Standard.

3.2.6 Drainage and Stormwater Management

Without limiting the Performance Standard, the Project shall have, and 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 shall 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 NPDES Permit applications, to the appropriate Governmental Authorities. The stormwater management plan, the Work, and the Project shall comply with all such Permits.

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 storm water

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from the Project Site. 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. 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 Laws.

Underground piping and culverts shall be reinforced concrete pipe (RCP) or corrugated, dual wall, high density polyethylene pipe (HDPE). The hydraulic grade line for the storm water 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.

Areas of the Project Site not included in or affected by the Project shall be left in their existing condition.

The Parties acknowledge that an offsite fire department response to a fire at or threatening the Project Site likely will include the spraying or use of significant quantities of water or fire retardant material to protect the Project and reduce the risk of property damage, personal injury, or other harm or casualty. Seller shall design, engineer, and construct the Project to direct water introduced to the Project Site to suppress fire or mitigate fire risk to an approved safe location and contain such water within such location in accordance with the Performance Standard.

- Spill containment for Project transformers shall be as addressed in the SPCC Plan. Where applicable, the equipment, systems, structures, and other means for containment of firefighting water used for transformer fires or incidents shall be designed, engineered, and sized to accommodate, provide, or include, at a minimum, each of the following without uncontrolled flooding on the Project Site or off-site discharge:The spill of the largest single container of any flammable or combustible liquid in the area
- The maximum expected manual hose streams (below) for ten minutes
- Where open pits are used for transformer containment, a 12-inch layer of rock between steel gratings should be provided at the top of the pit.

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The Project's equipment and systems affecting fire hose flow from the local fire department response for containment and runoff considerations shall provide at least the following capacity flow volumes:

- 500- GPM for all lube oil and liquid fuel hazards on the Project Site regardless of quantity
- 500- GPM for all outdoor transformers on the Project Site containing > 1,000- gallons mineral oil
- 250- GPM for all outdoor transformers on the Project Site containing < 1,000- gallons mineral oil.

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 storm water system (e.g., Seller shall not pump silt laden water through the storm water system without proper filtration).

3.2.8 Foundations

Foundations shall be designed, constructed, and completed in accordance with the applicable codes and standards listed in Section ~~1.3~~1.3 of this Scope Book and the other elements of the Performance Standard.

Foundations shall be designed, constructed, and completed to take into account the site climatic conditions (including, heat, cold, rain, wind (including maximum wind speeds recorded in the region)), soil conditions, and seismic loads, and thermal loads caused by expected fluctuations of materials and ambient temperatures.

Foundations for outdoor electrical equipment shall be elevated ~~from the~~above ground to prevent any equipment ~~or~~, parts, systems, or other items (excluding the foundation) from coming in contact with surface water or runoff. The ~~amount~~minimum height of the ~~elevation~~above-ground portion of any such foundation (measured from the top of ground level) shall be the greater of (i) the height required by the Performance Standard based ~~upon~~on the results of the hydrological study ~~and~~for the ~~Performance Standard,~~

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~~and~~Project/Project Site conducted in ~~any event shall be at least three~~accordance with the Performance Standard plus an additional six inches ~~above the top of the ground.~~ (6") of safety margin and (ii) twelve inches (12").

3.2.9 Corrosion Protection

Seller shall be aware of and take into account the corrosion problems that would reasonably be expected to be encountered on the Project Site, especially with outdoor equipment. Seller shall provide corrosion protection for concrete and steel structures in accordance with the Performance Standard. Without limiting the foregoing, and for the avoidance of doubt, non-galvanized steel shall not be used for piles.

3.2.10 Roads

Roads and bridges shall be designed in accordance with the requirements of Law, applicable Permits, and the other elements of the Performance Standard. The design conditions stated herein are minimums and any roadways that are planned to, or would reasonably be expected to, carry equipment and vehicle loads or traffic repetitions in excess of these minimum design conditions shall be designed to meet such planned or reasonably expected use.

Without limiting the Performance Standard, new roadway lanes shall have widths of no less than twelve (12)~~-~~ feet. 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.

Access roads to each PCU shall have a minimum width of sixteen (16)~~-~~ feet with a minimum shoulder width of two (2)~~-~~ feet on each side of the road (at least twenty (20)~~-~~ feet in total).

If determined by Seller to be necessary for the Project, perimeter roads shall have a minimum width of twenty (20)~~-~~ feet with a minimum shoulder width of two (2)~~-~~ feet on each side of the road (at least twenty-four (24)~~-~~ feet in total).

At road intersections within the Project Site, the minimum turn radius shall be twenty-five (25)~~-~~ feet.

Vertical clearances above roadways for transmission lines shall be at least twenty (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 an acceptable level meeting the Performance Standard or replaced and compacted with suitable material, if necessary, and the sub-base, base, and pavement layers selected so as to provide sufficient bearing capacity to withstand the intended traffic and use. Roads shall comply with 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.

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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 that the perimeter of the Project Site is completely fenced, utilizing ~~six (6)~~ either an eight (8) foot tall "farm style" or "deer style" fence or a six (6) foot tall chain link fencing topped with a three-strand barbed wire (creating a total fence height of seven (7)~~-~~ feet), with no ground gaps greater than two (2)~~-~~ inches, and secure.

~~All fence posts shall be anchored using concrete.~~ All posts, rails, fabric, wire, and gates shall be galvanized. Road gates shall be sliding gates of the same design as the fence and have a width at least four (4)~~-~~ feet wider than the paved width of the ingress and egress road.

Safe step and touch potential of the perimeter fence shall be verified by an IEEE~~-~~ 80 compliant grounding study.

Seller may consider the possibility of installing a wind fence around the solar field (in whole or in part), if necessary and beneficial for the Tracker and the Project. In the event determines to install such a wind fence, Seller shall demonstrate to Buyer's satisfaction that the installation of such wind fence is necessary and beneficial for the Tracker and the Project reasonably prior to installation, including providing to Buyer the documents considered in Seller's determination and any information reasonably requested by Buyer.

If the Project or a portion thereof (including any ancillary structure) is exposed to known or reasonably foreseeable woodland, forest, or grassland fire hazards (as determined by industry accepted natural hazard modeling software), Seller shall establish and maintain sufficient separation to prevent the spread of offsite fire to onsite structures or ~~of~~the spread of fire from onsite structures to adjacent woodland or forest areas. For woodland and forest hazards, the separation between the nearest row of Project solar panels and the closest wood line shall be evaluated based on the typical maximum growth of neighboring trees but shall never be less than 150 ~~ft~~feet. For grassland fire hazards, the separation from the nearest row of Project solar panels to the closest edge of the fire hazard shall be a minimum of 100 ~~ft~~feet.

3.2.12 Parking and Access at the Project Site

Seller shall be responsible for assuring that 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 the Project's operation and maintenance staff, with five (5)~~-~~ or more additional parking spaces for Buyer's staff and visitors.

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Seller shall be responsible for ensuring that 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. Surfacing requirements for parking areas shall conform to the requirements for roads.

~~The~~Appendix 9 - Collector Substation ~~Attachment~~ and Appendix 10 - High Voltage Overhead Transmission Line ~~Attachment~~ have additional constraints.

3.2.13 Buildings on the Project Site

Buildings on the Project Site shall be designed in accordance with the requirements of all Laws, applicable Permits, and the other elements of the Performance Standard. 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 NFPA rules and recommendations shall be followed for the fire safety design and fire protection systems.

Separate site support structures from solar collector panels and other site support structures shall be in accordance with NFPA - 80A.

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.

Seller shall ensure that fire-rated seals in all openings and penetrations in all rated barriers for the Project are supplied and incorporated into the Project and that the fire-rating of such seals are commensurate with the fire rating of the barrier.

Seller shall provide and incorporate noncombustible or fire-rated sealing materials for all cable penetrations entering from below a raised electrical structure at the Project Site (BESS, Power Distribution Center, MCC Enclosure, 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.

~~The~~Appendix 9 - Collector Substation ~~Attachment~~ and Appendix 10 - High Voltage Overhead Transmission Line ~~Attachment~~ have additional constraints.

3.3 Electrical Requirements of the Project Site

3.3.1 General Requirements

Power shall be generated by the solar arrays through the solar inverters and stepped up through medium voltage, pad-mounted transformers to the Project medium voltage level.

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The medium voltage shall be stepped up through the GSU to the utility high voltage system. The following general criteria shall be used to design the electrical system.

Protective relaying, metering, and controls for all electrical equipment shall be according to industry standard metering and relaying, including NERC compliance, applicable codes and standards, and other requirements of the Performance Standard.

~~The~~Appendix 9 - Collector Substation ~~Attachment~~ and Appendix 10 - High Voltage Overhead Transmission Line ~~Attachment~~ have additional constraints.

3.3.2 Cables

Cables shall be designed in accordance with the proposed voltage levels of the Project. All cables shall be halogen-free, fire-retardant, and self-extinguishing, with XLPE isolation where required. For buried cable, anti-rodent and anti-termite additives shall be included for cable protection.

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

3.3.2.1 DC Source Circuit Cable

All free air and conduit string source circuit cabling shall be minimum #12 AWG, multi strand, PV-Wire/RHH/RHW-2, 1000V-2000V rated, sunlight and UV resistant, with XLPE insulation.

All DC source circuit cabling shall be sized according to the operating and short-circuit current, multi strand, PV-Wire/RHH/RHW-2, 1000V-2000V rated.

All DC source circuit cabling shall be minimum 194°F temperature rated.

Conductors shall be sized to ensure the total peak losses of the DC System are below 2% and to avoid excessive voltage drop.

All DC source circuit cabling shall be listed and comply with UL 44 and UL 854.

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.

Conductors shall be sized to ensure that 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.~~ 1.2.

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AC cables shall adhere to local AHJ and applicable standards, including IEEE and UL, for the voltage class.

AC cables shall be aluminum with bare copper ground, 100% insulated TR-XLPE, and shall meet the following specifications and construction requirements. Alternative cables shall not be substituted without approval from Buyer.

1. Specifications:

    a. ASTM B231 Standard Specification for Concentric-Lay-Stranded Aluminum 1350 Conductors

    b. ASTM B609 Standard Specification for Aluminum 1350 Round Wire, Annealed and Intermediate Tempers, for Electrical Purposes

    c. ICEA S-94-649 Standard for Concentric Neutral Cables Rated 5 – 46 kV

    d. AEIC CS-8 Specification for extruded dielectric shielded power cables rated for 5 through 46 kV

2. Construction:

    a. Conductor: Moisture blocked class B compressed Aluminum ASTM B231 1350 ¾ hard H16/H26

    b. 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

    c. Insulation: 345 Mils Tree Retardant Cross Linked Polyethylene 100% insulation level

    d. Insulation Shield: Strippable semi-conducting cross-linked copolymer

    e. Concentric Neutral: Helically applied soft drawn bare copper one-third concentric neutral

    f. Overall Jacket: Linear Low Density Polyethylene (LLDPE) Jacket, black with red extruded stripes;

3.3.2.3 Cable Management

All of the Project's AC cables shall be direct buried. All direct buried cables (whether AC or DC) must be installed in compliance with NEC 300 requirements and guidelines (including NEC 300.5), be buried at a minimum depth of 36 inches below the ground surface above the cable and at a distance of at least four (4) inches from rocks or stones

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that are 3/4- inch or more in size, and otherwise be built and installed in accordance with the Performance Standard. Without limiting the foregoing, underground cables must be spatially separated based on the thermal resistance specified in or derived from the geotechnical report for the Project Site and the Performance Standard.

Subject to the foregoing, the Project's 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, either using dedicated cable trays or weather-resistant Nylon- 12 or better cable ties or zip ties as near as reasonably possible 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.

All field-installed DC quick connectors shall be of the same manufacturer and type as the PV Module. Connectors shall be touch-proof.

3.3.2.4 DC and AC Circuit Conduit

All above-ground DC circuit conduit within the array shall be rigid PVC conduit, schedule- 80, with screw adapters. The cable runs between rows and to the combiner boxes shall be direct buried, as provided in Section ~~3.3.2,~~ 3.3.2, including Section ~~3.3.2.3,~~ 3.3.2.3, 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 may be no more than three (3)- feet from the end of the row, and must be directly in line with the row. Plastic bushings with locking nuts shall be used for all exposed threads. All sweeps and transitions from below ground to above ground shall be rigid PVC conduit, schedule- 80. All sections of conduit shall have an inside chamfer at both ends.

Non-metallic liquid tight (NMLT) flexible conduit may be used to protect RHH/RHW–2 cable (or equivalent) from abrasion or damage. The conduit shall have an inside chamfer at both ends and may not exceed 3- feet. All NMLT fittings shall be metallic with locking nuts with plastic bushings on exposed threads.

Electrical Metallic Tubing (EMT) or compression type fittings shall not be used for any DC circuit.

AC conduit shall be rigid galvanized steel conforming to ANSI C80.1 & 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.

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3.3.3 Lighting

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

- Building interior equipment (as applicable)
- Building exterior entrances (as applicable)
- Outdoor equipment within the high voltage area
- Entrance gate

Emergency lighting shall be provided by integral battery packs and shall automatically energize on loss of AC power to provide for safe egress and to 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 and the Performance Standard. 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.

Every PV Module within a string shall be bonded together (a) with a bonding procedure that is approved by the module manufacturer and complies with applicable codes and standards and (b) otherwise according to all manufacturer specifications.

Each PV Module string shall be bonded to the DC combiner box or harness assembly. Each combiner box output shall have an equipment grounding bond terminated at a ground ring or mat that is designed in accordance with the applicable standards listed in Section ~~1.3.~~ 1.3.

All low voltage and medium voltage 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.

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

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Without limiting Section 20.16 of the main body of the Agreement, Seller shall cause the Project to comply with the interconnection requirements set forth in the GIA.

3.4 Main Equipment Requirements

All equipment described in this Section shall be supplied by one of the Approved Vendors listed in ~~Appendix 7~~Appendix 7, subject to the other terms of the Agreement. ~~Appendix 4~~Appendix 4 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~~1.3 and the other elements of the Performance Standard. Hot bolting of Project components is not allowed.

3.4.1 PV Modules

The PV Modules incorporated into the Project shall have a proven track-record in terms of technology performance, durability, and quality and shall comply with the Performance Standard.

PV Modules shall be suitable for installation at the Project Site with climatic conditions described ~~in Appendix 3~~Appendix 3.

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 +5W/-0W or better.

PV Modules shall be designed to minimize the loosening of fasteners over time. Self-tapping screws shall not be used unless designed and documented for a 30-year life. Nyloc or equivalent nut shall be used to prevent loosening.

PV Module frames shall be bolted and secured in accordance with the 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 3~~Appendix 3 with an adjacent string or any string from a neighboring tracker/rack missing to ensure that the failure of a given string will not cause successive failures.

~~*3.4.2 Tracker*~~

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3.4.2 Trackers

Seller shall utilize a single axis tracking[5] system for the Trackers.[6] The tracking system shall be designed, built, and ~~built~~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.~~1.3. Each Tracker shall be installed in accordance with the Performance Standard.

Tracking systems (including Trackers, PV Modules, panel loading devices, and attachments) must be designed to withstand the Project Site climatic conditions described in ~~Appendix 3. If any of such climatic conditions require or indicate a system or portion(s) thereof must be capable of moving to a stowed position, the system or portion(s) thereof, as applicable, must demonstrate that it can provide this functionality without external power and can withstand such climatic conditions without being damaged or damaging or impairing other Project systems, equipment, or items during the transition to the stowed position.~~Appendix 3. Wind tunnel tests can be used to determine the design lateral and vertical 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 ~~inAppendix 3.~~in Appendix 3.

Seller shall perform a load analysis and verify 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 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.

[5] ~~**NTD:** The defined term "Tracker" contemplates a single axis tracking system. Bidders may bid fixed tilt racking systems and corresponding changes will be made to the Agreement and Scope Book during the negotiation phase.~~

[6] **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 3 **Error! Reference source not found.**~~Appendix 3 and determined in accordance with the Performance Standard.

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Seller shall confirm that the PV Module attachment methods are approved by the PV Module manufacturer. The Trackers shall incorporate integrated NEC/UL required grounding. The integrated grounding method shall be approved for use by the PV Module manufacturer.

The leading front edge of the PV Module shall be a minimum of two (2)~~.~~ feet clear of the ground measured from the ground to the lower edge of the PV Module. The Tracker shall allow for any undulation of the ground and sloping as per the final proposed grade of the Project Site.

All structural elements of the racking system shall be designed according to the relevant material design codes. Factors of safety other than those required by the relevant codes shall not be used.

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

~~Cold Formed Steel – AISI~~

Black steel shall not be used for piles. A minimum of 3 mil galvanization is required for piles. Black steel shall not be used for major structural elements of the tracking system.

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 (such as, 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 (i) with power generated from a generating resource located on the Project Site and (ii) 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.

3.4.3 Power Conversion Unit (PCU)

The PCU 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 LCS panel.

Where applicable, the PCU shall be provided with all necessary auxiliary equipment, including current transformers, voltage transformers, protective relays, grounding systems, breakers, and a fully integrated climate control system to ensure proper operation through all possible operating conditions at the Project Site. A lockable and visible disconnect switch shall be provided between the batteries and the PCU.~~-~~

PCU enclosures shall be rated for the prescribed site conditions in Section ~~1.2~~ 1.2 of this Scope Book and for the intended PCU configuration (indoor or outdoor).~~-~~

3.4.3.1 Inverters

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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 3.~~Appendix 3. 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
- Self-consumption less than 0.4% of its own rated power
- Efficiency minimum of 97%
- Trip limits set per local Governmental Authority inverter protection settings
- Capable of operating at a power factor as required in the GIA
- Capable of providing full VAR support without the use of capacitors
- Meets the local electrical connection requirements
- 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/write commands from the LCS and include interface protocol support, an alarm and command points list, remote connection, operation, and linkage
- Limits noise emissions to eighty-five (85)- dB or less at three (3)- feet from the source.

Grid forming capabilities shall be available at initial start-up of the inverters with the ability to activate this attribute provided to Buyer regardless of the need for this attribute at initial Project operation such that future costs are not incurred for such activation.-

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3.4.3.2 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 visual air-gap type 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 rated for AC operation and capable of breaking under full load.

3.4.3.3 AC Panelboards

Where string inverters are utilized in the Project, an AC panelboard shall be mounted near the inverters. Each AC panelboard shall be equipped with circuit breakers for each inverter or aggregated output from another panelboard. Each AC panelboard shall meet the following criteria:

a. Rated 480/277 VAC, 3-phase, 4-wire, solid neutral, with main breaker.

b. Rated 208/120 VAC, 3-phase, 4-wire, solid neutral, with main breaker.

c. Provides 100 ampere frame size bolt-on thermal-magnetic breakers with non-interchangeable trip units with an interrupting capacity compatible with the available fault current at the panelboard.

d. Branch breakers have a minimum interrupting capacity of 10,000-rms amperes symmetrical at 208-VAC and 18,000-rms amperes symmetrical series rated with the panelboard main breaker.

e. Installed with the top of panelboard approximately 6-feet above the base of the skid and spaced away from walls or columns at least 1/4-inch to prevent surface moisture from rusting the enclosure.

Provides a typed circuit directory indicating branch circuit loads. LV(Aux) and MV Transformers

Transformers shall be either dry or liquid-filled.

Attributes of Project LV(Aux) Transformers shall include:

a. 3 winding transformer with 25 kVA 480/277 VAC rating and 10 kVA 208/120 VAC rating.

b. Suitable for outdoor installation.

c. Encapsulated core and coils.

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d. Noise level not to exceed NEMA ST1 standards.

e. Class H insulation with 80°C maximum temperature rise in 40°C ambient temperature under continuous full load operation.

f. High side voltage, as required by inverter output voltage; low side, 480/277 VAC and 208/120 VAC, 3-phase, 60 hertz, delta-wye connected.

The MV transformers shall be three-phase, 60 hertz, 149° F temperature rise, self-cooled, pad mounted, dead-front, compartmentalized distribution transformers, loop feed with disconnectable elbows and +/-5% de-energized tap.

Transformers shall be rated for inverter source operation of this type of generation and the Project Site climactic conditions listed in ~~Appendix 3~~ Appendix 3.

Transformers shall be supplied with a lockable and visible fused disconnect switch on the transformer high voltage side to isolate the transformer in case of an internal fault of an oil-filled transformer.

Transformers shall be equipped with dedicated relays for oil level, pressure, and temperature.

PCUs with oil-filled transformers shall be separated from other equipment and structures as outlined below in Section 3.4.6.

~~3.4.3.5~~3.4.3.4 MV Switchgear

The complete switchgear assembly shall consist of fully compartmentalized cubicles complete with circuit breaker, instrument current and voltage transformers, primary/main bus, secondary/transfer bus, power cable terminations, and relays, switches, meters for protection, control and indication, preferably on a per bay basis. The transfer bus shall be in its own compartment. All switchgear compartments shall be easily accessible. Compartment covers may be bolted or hinged and secured.

The switchgear design and construction shall comply with IEEE Std C37.20.2. Switchgear control, protection, and instrumentation wiring shall comply with the requirements of IEEE Std C37.20.2 and IEEE Std C37.21.

The switchgear cubicle layout design shall provide that all incoming circuit breakers and the bus tie circuit breakers are of the one-high arrangement with the circuit breaker in the bottom compartment and the associated control and instrumentation in the top compartment.

The mechanical protection class of all MV and LV switchgear, as well as of all control and protection panels, shall be NEMA 4X or greater for outdoor equipment.

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The MV switchgear shall be internal arc certified IAC=AFRL in accordance with ANSI/IEEE- C37.20.7. Any arc that may be initiated in a compartment shall be contained in that compartment. The switchgear shall be designed to that overpressure in one cell shall not damage the adjacent cells. The switchgear construction shall be arc-resistant at the front, back, sides, and between compartments within the same cell or adjacent cells. All compartments of the switchgear assembly, including outgoing power cable termination compartments, shall be suitably designed and constructed to withstand safely the transient pressure and thermal effects of an internal arcing fault. Any instruments or low voltage control cable connections in or routed through the power cable compartment shall be made arc resistant by provision of suitable protective covers. Pressure relief vents, when provided, shall discharge hot ionized gases generated by an arcing fault in such a manner that the direction of discharge is not hazardous to personnel and does not create a fire hazard. A metal plenum duct with risers or flanges to collect hot ionized gasses shall be fitted to the top or to the rear of the switchgear assembly. The plenum duct or duct risers shall be securely attached over all pressure relief vents to capture all vented gasses and debris. Plenum exterior vent openings shall be provided and fitted with a hood for rain, self–closing louvers, and insect/animal proof screens.

All MV switchgear for indoor and outdoor installation shall be metal-clad. The switching element connected to the MV transformer will be vacuum or SF6 type circuit breakers.

Each cubicle shall be provided with thermostatically controlled space heaters to prevent condensation in the cubicle.

A minimum clearance of six (6)- feet shall be provided in front of the cubicles to permit withdrawal and or insertion of removable elements. Adequate working clearance shall be provided above and behind the switchgear.

All wiring shall be continuous from terminal to terminal and shall be without splices.

Switchgear buses and power carrying conductors shall be copper with silver plated joints. Aluminum conductors shall be supplied only with the prior approval of Buyer. Each primary bus bar and conductor shall be fully insulated with a non-flammable insulating material. All joints in the buswork shall be bolted and use bolts, nuts, flat washers, and Belleville washers and suitable inhibitors. Tin plating of aluminum is not acceptable.

All terminal blocks with voltage above 120V shall be fitted with insulating covers to prevent accidental contact, for greater safety. A minimum 20% spare terminal blocks shall be provided. The switchgear shall be suitable for mounting on an aggregate base, a concrete foundation, or on discrete piers or piles.

a. MV Switchgear Power Circuit Breakers

a) The circuit breaker shall be of a horizontal draw-out design with interlocks as per IEEE Std- C37.20.2. Removal of the breaker

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from the cell shall not require ramps, channels, rails, lifting device, or transport dolly.

b) Unless specified otherwise the circuit breaker operating voltage shall be 125 Vdc. Circuit breaker control switches and indicating lights shall be located on the door of the instrument compartment. Operating handles shall not be more than 6 feet above the switchgear base. All auxiliary relays, terminal blocks, fuse blocks, etc. required for circuit breaker control shall be located in the instrument compartment above the circuit breaker compartment.

c) The circuit breaker draw-out mechanism shall allow the breaker to be racked from Service to Test position with the cell door closed. The circuit breaker shall have three operating positions as follows:

i. Service: In this position the circuit breaker is fully connected and is in operation.

ii. Disconnected/Test: In this position the circuit breaker is partially drawn out, disengaged from the bus, shutters are closed, and the controls are operational.

iii. Removed: In this position the circuit breaker is completely withdrawn from the cubicle.

d) The circuit breaker shall be electrically operable from the controls in the instrumentation compartment. Wiring from the circuit breaker to the control compartment shall utilize flexible multi-conductor cable with plug and socket. The length of the flexible cable shall be sufficient to withdraw and operate the circuit breaker in the "Removed" position. It shall not be possible to disconnect this plug when the circuit breaker is in the "Service" or in the "Test" position.

e) The circuit breaker compartment shall be provided with a hinged pad-lockable door. This door shall not be used for mounting any device. It shall be possible to close and padlock the door with the circuit breaker withdrawn to ""Disconnected/Test"" position.

f) The bus bar and load bus protective shutters provided in the circuit breaker compartment shall be identified and shall have provision for padlocking in the closed position.

g) In addition to the circuit breaker mechanism operated auxiliary contacts, four auxiliary contacts actuated by the draw-out racking mechanism shall be supplied to indicate when the breaker is in the

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"Connected" position and when the breaker is in "Test" position. These contacts shall be wired to terminals in the instrument compartment. These contacts shall be rated 2- A- continuous and 0.2- A- interrupting at 125- Volts DC.

b. MV Switchgear Current Transformers

a) Quantity, rating, and location of the current transformer shall be as specified on the equipment single line diagram.

b) The current transformer shall be dry cast epoxy insulated and shall be fully rated for the appropriate voltage class.

c) The current transformers shall be readily and directly accessible for maintenance or replacement from either the front or rear of the switchgear. Current transformers may be mounted in the cable compartment.

d) All current transformers shall be multi-ratio with ratios in accordance with IEEE Std- C57.13. All secondary leads shall be brought to the instrumentation compartment. All secondary leads shall be terminated at individual short circuiting terminal blocks for each CT and individually identified.

c. MV Switchgear Voltage Transformers

a) Quantity, rating, and location of the voltage transformers shall be as specified the equipment single line diagram.

b) The voltage transformer shall be dry cast epoxy insulated.

c) The voltage transformers shall have primary current limiting fuses. Each voltage transformer including its associated fuse shall be of a draw-out design for disconnection from the power bus and maintenance. Alternatively, the voltage transformers may be stationary, and only fuses may be of a draw-out design. In the withdrawn position the voltage transformer primary terminals and the fuses shall be automatically grounded. A visible indication of positive ground shall be provided.

d. MV Switchgear Distribution/Power Transformer

a) Any distribution transformers shall be dry type.

b) Any quantity and rating of distribution transformers shall be as determined from a system study. Any distribution transformers

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shall be two plus and two minus 2½%- taps in the high voltage winding.

c) Any distribution transformers shall be provided with primary current limiting fuses. The primary fuses shall be of a draw-out design. In the withdrawn position the power transformer primary terminals and the fuses shall be automatically grounded. A visible indication of positive ground shall be provided.

d) Any distribution transformer shall be provided with a molded case circuit breaker of adequate rating. The circuit breaker shall be interlocked with the draw-out assembly so that the load is disconnected prior to draw-out.

3.4.4 Auxiliary Equipment and Systems

3.4.4.1 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- 4X or greater.

3.4.4.2 DC Auxiliary System

The DC auxiliary system shall consist of at least one (1)- 100% capacity battery bank, two (2)- 100% capacity battery chargers connected in a load sharing configuration, battery management system, a DC switchboard, and LV auxiliary panel board. The DC auxiliary system shall supply DC power for critical DC loads, including the UPS system, MV and LV switchgear, and HV equipment. The DC auxiliary system shall be sized to supply emergency loads for a minimum of two (2)- hours or as necessary for safe equipment shutdown, whichever is longer.

The entire DC auxiliary system shall be designed in accordance with NEC requirements. For outdoor applications, the panel shall be NEMA 4X or greater.

3.4.5 Battery Energy Storage System (BESS)

3.4.5.1 General-

The BESS shall be designed in accordance with the Project Site climactic conditions listed in ~~Appendix 3.~~Appendix 3.

The BESS shall meet the requirements of NFPA- 855.

The BESS and all equipment, materials, and components incorporated therein shall be designed and installed to operate as a complete, fully integrated system.– The system configuration may be either AC or DC coupled with the PV Plant. To assure compliance

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with investment tax credit (ITC) requirements, the BESS shall be designed and integrated with the PV Plant and the ELL Transmission System such that 100% of any energy used to charge the BESS is provided directly by the PV Plant (with no energy provided by the ELL Transmission System). The Project shall be designed, constructed, and completed in a manner to permit Buyer to change this control requirement at a later date to allow energy to be provided by the ELL Transmission System to charge the BESS once all of the ITC for the Project has vested.

The BESS shall be designed and constructed with sufficient redundancy such that the availability required as per this Scope Book is sustained throughout the Project and to comply with the redundancy requirements in Section ~~2.12~~2.12 of this Scope Book.

~~3.4.5.1.1~~3.4.5.2 Voltage

Reactive power capabilities for voltage control shall be 0.0 pF lead/lag to 1.0pF for full four quadrant operation. The BESS shall not cause excessive voltage flicker or introduce excessive distortion to the sinusoidal voltage or current waves as defined by ANSI (American National Standards Institute) Standard C84.1-1989, in accordance with IEEE Standard 519.

~~3.4.5.1.2~~3.4.5.3 Frequency

The continuous and momentary low and high frequency ride-through capabilities shall meet the requirements of UL 1741 SA.

~~3.4.5.1.3~~3.4.5.4 Electrical Losses

Without limiting the Guaranteed LD Performance Test Requirements, the estimated acceptable overall losses of the BESS system based on equipment specific data is set forth in ~~Appendix 4.~~ Appendix 4.

~~3.4.5.2~~3.4.5.5 Functionality and Use

The BESS shall be capable of performing all functions in accordance with this Scope Book.

~~3.4.5.2.1~~3.4.5.6 Primary Function

The primary use of the BESS shall be demand response and load shifting. The BESS shall be able to perform daily peak shifting of the distribution network requiring a minimum of one deep full cycle per day, 365 full deep cycles per year, each consisting of the full energy capacity discharge and subsequent recharge to full capacity. The Project shall autonomously manage charging and discharging to follow for the distribution network demand curve.

~~3.4.5.2.2~~3.4.5.7 Secondary Functions

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Additionally, the Project shall be capable of providing the following secondary functions:

- Extended Solar Production: The BESS shall be capable of extending the hours of solar production by collecting energy during peak generation periods and discharging energy after end of day shutdown.
- Solar Smoothing: The BESS shall be capable of simulating, collecting, storing, and discharging as dynamic real power support when necessary to provide a stable energy profile.
- Grid Stability: The BESS shall be capable of providing at least the following functions to maintain grid stability:
    - Volt-VAR
    - Voltage Control
    - Frequency-Watt
    - Volt-Watt (standard and dynamic)
    - Power Factor
    - Dynamic Reactive Power Support
    - Connect/Disconnect

The BESS's reactive power control functions shall be available independent of battery availability.

~~3.4.5.2.3~~3.4.5.8 Available Functions

~~Appendix 4~~Appendix 4 sets forth the minimum available functions that the BESS shall be able to perform.

~~3.4.5.3~~3.4.5.9 Battery

Seller shall take all necessary precautions to ensure that the BESS (and any component thereof) is protected from physical damage during transportation, unpacking, inspection, handling, storage, and installation. Battery cells shall be comprised of proven Lithium-Ion chemistry and shall utilize proven technology designed for the type of service described herein. The BESS may include only cells that are commercially available or for which suitable (though not necessarily identical) replacement cells can be supplied on short notice throughout the life of the BESS. Seller shall guarantee cell availability and replacement time to maintain the required availability as provided in

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Batteries shall be connected using string orientations and provided in modular, climate-controlled enclosures. Batteries shall be installed in a configuration that enables easy maintenance and replacement thereof and easy future battery expansion or additions.

Battery enclosures shall be stacked in a manner to ensure safe operation and shall not be stacked higher than recommended by the manufacturer or in a manner that would make maintenance and replacement difficult.

If changes to, or periodic replacements or overhauls of the components of, the BESS are necessary or contemplated throughout the life of the BESS to maintain the required functionality and proper operability of the BESS as required by this Scope Book and the Agreement, Seller shall provide a schedule for implementation of such changes and replacements over the life of the BESS as part of the documentation required to be delivered by Substantial Completion under the Agreement. The BESS design shall ensure that any such future changes to the BESS will require only installation of additional batteries and no other upgrades or modifications required.

The BESS, including the batteries, shall not release toxic gases or other emissions during normal charging, discharging, or use in excess of, or that create conditions that exceed, the permissible level(s) for such gas or gases (or combinations thereof) within the room or space in which the batteries are located or do not meet the Performance Standard.

The battery module manufacturer shall provide a recommended procedure for disposal of the battery modules at the end of their useful life and Seller shall provide such procedure and any related documentation to Buyer at the Closing.

~~3.4.5.4~~3.4.5.10 BESS Enclosures

The BESS enclosure(s) shall be in accordance with the International Building Code (IBC) and all Laws, applicable Permits, codes, and standards, including NFPA 855.

The edge of the BESS enclosure(s) shall be located at least 150 ft. from the closest perimeter property fence accessible to the public.

The enclosure(s) shall have the appropriate rating for the Project Site conditions specified in ~~Appendix 3~~Appendix 3 of this Scope Book and shall be thermally insulated with a fully integrated heating, ventilating and air conditioning (HVAC) system to satisfy the climate requirements of all equipment, materials, components, and occupants housed in the enclosure(s). The HVAC system shall be provided with full redundancy (2 x 100%) to prevent system outage and damage.

In order to prevent unacceptable hazards to adjacent BESS units or equipment, dedicated use buildings/containers housing battery assemblies shall meet one or more of the following separation criteria:

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- The batteries in their installed configuration shall be listed in accordance with UL 9540, including size, capacity, and, if part of the listing, presence of required fire suppression, OR

- In order to demonstrate that a fire in a battery container will not affect other adjacent battery containers or equipment, full-scale fire tests are performed in accordance with UL 9540A and the Performance Standard and are installed taking into account the test conditions, OR

- Individual containers (e.g., Sealand container) are separated from other battery containers, inverters, transformers, or other site equipment by a minimum of 25 feet or a 3-hour fire wall.

Seller shall ensure that the OEM/battery integrator submits to Entergy Risk Engineering a hazard mitigation analysis for Buyer's review and approval at least 90 days prior to any implementation of the battery design work for the Project. Buyer shall approve or provide to Seller any comments on the proposed analysis within 30 days after receipt. Seller shall consider and cause the OEM/battery integrator to consider in good faith any such comments made by Buyer and to issue a new or revised hazard mitigation analysis promptly after receipt of Buyer's comments. Buyer shall approve or provide to Seller any comments on the new or revised proposed analysis within 10 days after receipt. The foregoing process shall continue until Buyer's approval has been obtained. The hazard mitigation analysis shall document the UL 9540 listing and compliance with the conditions of the listing or provide the test results of the full-scale fire tests performed in accordance with UL 9540A or evidence compliance with the required separation distance or fire wall, as applicable. If no UL 9540A testing was performed, provide separation of buildings/containers housing batteries in accordance with the paragraph above.

The following protection against thermal runaway shall be provided to preclude, detect, and minimize the impact of thermal runaway:

- Installed HVAC systems shall be designed to remove the required heat load from the batteries during normal use to prevent thermal stresses

- A Battery Management System (BMS) shall be supplied that, among other things, controls the charging and discharging of the batteries in the Project, monitors the condition of each battery, and isolates the Project's battery system from exterior connections in emergencies.

- Installation of pre-emptive technologies (e.g., the Li-Ion Tamer system by Nexceris) shall be included as part of the BESS and the Project. Other pre-emptive technologies that act on signs of battery cell deterioration and are precursors to thermal runaway may be used with the prior written approval of Entergy Risk Engineering. E-Stop circuits shall be connected into the

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circuitry to automatically trip the BESS unit upon detection of thermal runaway precursors.

- E-Stop circuitry shall not prevent the operation of pre-emptive technology or other post-incident monitoring technologies.

Explosion controls shall be included in the BESS and the Project to preclude catastrophic deflagrations or explosions in the event of failures such as thermal runaway.

- The internal automatic suppression system may extinguish flames but does not remove the heat or generation of explosive gases typical of thermal runaway.

- Detection shall be provided for accumulated quantities of combustible and explosive gases and the BESS shall be designed, engineered, and installed to transmit interior concentrations of these gases to a remote safe location in accordance with the Performance Standard.

- Remote manually actuated emergency ventilation shall be provided with the BESS and the Project. Ventilation shall be sized in accordance with NFPA 68 and NFPA 69 as applicable and located to direct any potential deflagration or explosion energy in a safe direction without jeopardizing nearby personnel or the structural integrity of the container or other property.

Seller shall provide a fire suppression, smoke detection, and alarm (FASS) system for each enclosure. The FASS system shall include local and remote audible and visual alarms and a gaseous extinguishing system designed to prevent damage of or residue on the equipment housed in the enclosure(s). All FASS system alarms shall be relayed to the LCS. Protocols shall be included to extinguish fires inside the enclosure(s) without the need to open the enclosure doors.

Outdoor battery containers shall be protected internally with a self-contained automatic suppression system. The system may be Hybrid Water Mist (i.e. Victaulic Vortex) or clean agent gaseous (e.g. NOVEC 1230). Suppression system shall not utilize aerosol (Stat-X) agent or any other agent that leaves a residue.

The enclosure(s) shall be equipped with a minimum of two (2) grounding lugs per device within the container to enable proper grounding of the overall enclosure(s).

A lockable visible air gap disconnect switch is required between the batteries and the first inversion device (either DC/DC converter or DC/AC inverter)

All wiring and cables shall be sized and selected per IEEE, NEC, and any other applicable code or standard as provided in Section ~~1.3~~1.3 of this Scope Book. Internal wiring shall be pre-installed where possible. Any wiring that must be shipped separate for field installation shall be pre-terminated in the manufacturer's factory, labelled, and shipped with the enclosure for easy field installation.

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~~3.4.5.5~~3.4.5.11 BESS Power Conversion System

The BESS shall be provided with a PCU designed to match the DC voltage of the batteries and the transformers.~~-~~

For an AC-coupled system, the BESS shall be provided with a PCU in accordance with the requirements of Section ~~3.4.3~~3.4.3 of this Scope Book.

In the case of a DC-coupled system, appropriate metering must be applied to ensure that BESS RT Efficiency, BESS Availability, and BESS Storage Capacity Project Performance Tests are accurately implemented in accordance with the Agreement and this Scope Book.

~~3.4.5.6~~3.4.5.12 MV Transformers~~-~~

The MV transformers shall conform to the requirements set forth in Section ~~3.4.3.4~~3.4.3.4 of this Scope Book.

3.4.6 Generator Step-Up (GSU) Transformer

Please see ~~the~~Appendix 9 ~~-~~ Collector Substation ~~Attachment~~.

~~3.4.8~~3.4.7 **[Reserved]**

3.5 Control System and Communication Requirements

Seller shall furnish a local control system (LCS). The LCS shall be an integrated system that interfaces with the Project to allow for monitoring and/or control of all Project equipment and systems from one common location at the Project Site. In addition, the LCS shall interface with met stations, field instrumentation, and other data acquisition sensors to perform complete data acquisition, storage, and transmission functions. Seller shall also provide a remote terminal unit (RTU) and the LCS to RTU interfaces to provide for remote (off the Project Site) monitoring and control of the Project (including as required by NERC and MISO requirements). The LCS control cabinet power shall be installed and configured to feed from the UPS.

The LCS shall perform all control and monitoring functions both automatically and manually. These functions shall include:

- Control of the site electrical output to the grid
- Centralized control of all inverter parameters
- Real-time performance metrics
- Coordination and communication for all site meteorological data

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- Monitoring of the UPS, batteries, and other power generation equipment
- Monitoring of Project Site switching equipment
- Alarm generation for equipment failure or abnormal operation
- Equipment status (Trackers, including inverters)
- Sequence of event recording
- Historical storage, data retrieval, and report generation.

The LCS equipment shall include reasonable spare capacity for future expansion. Without limiting the foregoing, the installed system shall include at least 20% spare or extra discrete input/output points and at least 20% spare or extra cabinet space for future input/output points, and the capacity of the LCS controllers shall provide at least 20% more computing capacity than necessary for the LCS system as designed and transferred to Buyer.

The design, materials, manufacturing, construction, testing, cleaning, coating, and packaging of all equipment and components included in the scope of the LCS shall comply with the applicable standards listed in Section ~~1.3~~1.3 and the other elements of the Performance Standard.

3.5.1 Operational Interface

The Project shall be operated using an LCS and will leverage DNP3 over IP communications protocols. As DNP3 is not inherently secure, Seller will provide to Buyer any security options offered by Seller or expected to be used by Seller and will include these in the cyber security plan, as discussed in Section ~~3.5.4.1~~3.5.4 of this Scope Book.

Seller shall provide information regarding support and any plans/roadmaps for transition of the LCS to a DER Management System (DERMS), including adoption of IEEE- 2030.5. This information is for future planning purposes only; the implementation of DERMS and IEEE- 2030.5 is not a requirement of this Scope Book.

3.5.2 Remote Access

For operation and maintenance activities, the Project shall include access to the control and monitoring system to enable remote access to monitor, manipulate, and control the setpoints, gains, and droop curves of these functionalities.

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The control system shall:

- Include real-time data in no longer than one (1)- minute intervals at a minimum
- Ensure time-stamped data will be obtained from a consistent time source using an internal time source synchronized to GPS time and provided by Seller with the Project
- Create alerts accessible to both internal and external operators when devices under its control are not performing as expected with the communications mechanism to be proposed by Seller for review and acceptance by Buyer
- Provide remote access to all IEEE- 1547 settable parameters and any additional parameters required based on the following:
    - Access to controllable parameters may be provided via remote access over the network, but such access must be highly secure
    - The vendor will provide remote access security controls as a part of the cyber security plan, which will include user identity management, encryption standards, intrusion detection features, and any additional pertinent security controls
    - In addition to system security features, Buyer will provide transport level security for these functions as they traverse the network
- Provide a mechanism for updating system software for security patching.
- Seller shall provide Buyer "maps" to be utilized by Buyer SCADA and Historian systems 6 months prior to mechanical completion.

Seller shall comply with the list of eligible protocols in ~~Table~~ Table 4 below:

Table ~~4.~~ 4. List of Eligible Protocols

Protocol	Transport	Physical Layer
IEEE Std 2030.55 (SEP2)	TCP/IP	Ethernet
IEEE Std 1815 (DNP3)	TCP/IP	Ethernet
SunSpec Modbus	TCP/IP	Ethernet
	N/A	RS-485

3.5.3 Meteorological Station

Subject to the other terms hereof, Seller shall provide a minimum of two (2)- met stations for the Project and a Soiling Measurement Station (SMS). One (1)- main met station

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shall be located near the Project Site control building. Additional met stations shall be distributed throughout the solar arrays of the Project such that there is one (1) additional met station per 50 MW of installed capacity. 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 provided with NEMA 3R or greater enclosures. Instruments and sensors associated with the met stations shall be calibrated by a reputable, certified laboratory.

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

- One (1) global horizontal pyranometer with a minimum secondary standard according to ISO 9060
- One (1) plane of array (POA) pyranometer with a minimum secondary standard installed in the plane of the PV Modules
- One (1) unobstructed ~~anemometer~~wind speed and ~~vane~~ wind direction sensor at a minimum 3 meter height
  - ~~Six (6) thermal sensors (Pt 100 class B according to IEC 60751) installed as triple clusters at the center~~ and ~~edge~~location representative of ~~installed row to measure cell temperature with a measurement resolution up to ± 33.8°F~~array conditions, at a radial distance of 10 times the nearest obstacle height differential
  - Three (3) platinum RTD temperature 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) ~~shielded ventilated~~ louvered housing, aspirated thermal sensor to measure ambient temperature with a measurement ~~resolution of ± 33.8°F (Pt 100 class B according to IEC 60751)~~ range of -40°C to +70°C and an accuracy of 0.3°C at 25°C, installed at a height representative of array conditions
- One (1) relative humidity (RH) sensor
- One (1) Soiling Measurement Station (SMS)
- One (1) precipitation sensor
- A data logger for local saving of data 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

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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 located in the solar field shall meet the following requirements:

- One (1) global horizontal pyranometer with a minimum secondary standard according to ISO 9060
- One (1)- plane of array (POA) pyranometer with a minimum secondary standard installed in the plane of the PV Modules
- One (1)- unobstructed anemometer and vane at a minimum height of three (3) meters
- Six (6) thermal sensors (Pt 100 class B according to IEC 60751) installed as triple clusters at the center and edge of each installed row to measure photovoltaic cell temperature with a measurement resolution up to ± 33.8°F
- Three (3) platinum RTD temperature 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) shielded ventilated louvered housing, aspirated thermal sensor to measure ambient temperature with a measurement resolution of ±33.8°F (Pt 100 class B according to IEC 60751) range of 40°C to +70°C and an accuracy of 0.3°C at 25°C, installed at a height representative of array conditions
- Data logger for local saving of data and for remote data transfer through available telecommunication infrastructure and capable of accommodating all sensors. The data logger should be protected against direct sunlight. DataAll readings should be collected everysampled at three (3) second intervals and stored as 10-min averages or as the sum in the caseinclude a one minute and hourly average and standard deviation of irradiationall readings. Rainfall shall be totalized.
- Minimum twelve (12)-hour backup battery.]

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); or

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- Direct LV connection to the nearest building or inverter/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.

3.5.4 Control System Security

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 cyber security 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 cyber security plan.

Seller shall implement cyber security controls for low impact and Non-CIP Solar Sites testing NERC CIP Standards 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

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initial unit, with testing not required for subsequent units. Seller shall correct vulnerabilities identified in this testing and the completion of such corrections in accordance with the Performance Standard 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.

~~*3.5.4.2 [Reserved]*~~

3.6 Metering Requirements

Please see ~~the~~Appendix 9 - Collector Substation ~~Attachment~~.

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~~3.8~~3.7 Interconnection of Utilities

Pursuant to Section 5.4 of the main body of the Agreement, 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, waste water, sanitation (including sewage), temporary power, telecommunications, internet, and fuel.

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Seller shall provide adequate means for PV Module washing either via permanent water connection or on-site storage.

3.8 IT Infrastructure.

~~3.9~~ Seller shall provide the IT Infrastructure for the Project as provided in this Section ~~3.8~~ 3.8 and otherwise in accordance with the Performance Standard. All equipment and materials described in this Section ~~3.8~~ 3.8 to be provided by Seller shall be the "***IT Infrastructure***".

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

~~3.9.11.1.1 Telecom/Transport~~

~~The IT Infrastructure serving as the basis of connectivity from [the ELL/Buyer control house at the ELL Transmission System Interconnection Facilities (the "***ELL Control House***")] to [the Project collector substation control house (as described in Attachment [__] (the "***Project Control House***")] will be laid out in a linear route between [these two points].~~

~~3.8.1.1 Purchasing/Ownership and Configurations~~

Seller shall provide DC plant systems, ladder rack structures, equipment racks, and associated cabling installations for the Project ~~from an Avetta third party vendor~~to Buyer installed systems. This is to include Firewall, Network components, CCTV, and Access Control Systems.

3.8.1 Telecom/Transport

The IT Infrastructure serving as the basis of connectivity from the ELL/Buyer control house at the ELL Transmission System Interconnection Facilities (the ***ELL Control House***) to the Project collector substation control house (as described in Appendix 9 (the ***Project Control House***) will be laid out in a linear route between these two points.

3.8.1.1 Purchasing/Ownership and Configuration

Seller shall provide DC plant systems, ladder rack structures, equipment racks, and associated cabling installations for the Project to Buyer installed systems. This is to include Firewall, Network components, CCTV, and Access Control Systems.

Seller shall coordinate the acquisition and installation of these systems, including purchases, shipping, storage, and installation, with Buyer's IT Infrastructure Project Manager.

3.8.1.2 ~~3.8.1.2~~ Fiber constructions

Seller shall determine cable types based on specific site conditions and the Performance Standard. Standard cable shall be 48-strand, single mode fiber optic cable. Standard

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cable will be utilized to deliver network communications from Buyer and its Affiliates to the Project Site at the Project Control House.

Seller shall use optical ground wire fiber optic cable (**OPGW**) for overhead fiber optic cable installations and ADSS for underground fiber optic cable installations, as applicable. Subject to the following paragraph, the installation environment and other Performance standard considerations shall determine whether the fiber optic cable installations for the Project are overhead or underground. Such installations, regardless whether overhead or underground, shall be routed linearly to the project site.

Whenever practicable and ~~consistent~~in accordance with the Performance Standard, Seller shall install all fiber optic cable for the Project underground, to limit the risks associated with an above-ground installation, such as continuous exposure to the elements and the potential for incidental contact with overhead structures by human or other intervention.

3.8.1.3 ~~3.8.1.3~~ Transmission Line Design

For any given ~~optical ground wire fiber optic cable (~~OPGW~~)~~ project that is part of the Work, ~~Seller shall select splice locations with the best-case accessibility for maintenance and/or restoration efforts.~~ Seller shall select splice locations to minimize the number of splices required to construct a new OPGW route from [substation to substation] and with the best-case accessibility for the performance of maintenance and/or restoration work. The quantity and location of splices shall be subject to review and written acceptance by Buyer. Seller's choice of splice locations requires receipt of such acceptance prior to Seller's final route design, the creation of the material specification, and Seller's acquisition of such material. Buyer may specify "extra" splice points to provide access to the fiber optic cable for Buyer and Affiliate assets not directly located on the new OPGW path, such as service centers. Any Seller deviations from agreed splice locations will require written approval from Buyer's Telecom Engineering and Operations group (Entergy Telecom.

3.8.1.4 ~~3.8.1.4~~ Construction of Fiber

Seller shall procure and install all OPGW and all-dielectric self-supporting (ADSS) fiber optic cables as required to establish end-to-end connectivity from the Project Control House to the ELL Control House. All fiber optic cable installation Seller shall be coordinated in advance with Buyer (through Entergy Telecom) and Buyer shall be entitled to witness and review of all such installations. Buyer (through Entergy Telecom) shall be responsible for all OPGW splices and the OPGW/ADSS transition splice on first transmission pole outside of any substation.

3.8.1.4.1 ~~3.8.1.4.1~~ Pre-Installation Fiber Reel Testing

Whenever OPGW cable for the Project has been delivered to the construction laydown yard, Seller shall arrange for Buyer to conduct optical time-domain reflectometer (OTDR) testing on each OPGW reel prior to transportation of the reel to the installation

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site. Each fiber in each cable will be tested at the 1550- nm wavelength to verify that the tested fiber parameters agree with those in the factory-provided fiber optic test sheet data shipped with each reel. ~~The OTDR test data will disclose any anomalies present on any fiber on any cable that may be responsibility of the shipper or manufacturer.~~ Upon completion of the ~~testing of the~~ fiber reel testing, Buyer will mark the reel as tested and whether the reel has conformed to the factory-provided fiber optic test sheet data shipped with the reel~~, and if~~. If the reel so conforms, Seller will then be cleared to take that reel to the job site for installation.

All pre-installation reel test OTDR data gathered by Seller shall be presented, in standard "SOR" file format, to Buyer prior to installation for Buyer's review and acceptance before Buyer marks on the reel whether the reel has conformed to the factory-provided fiber optic test sheet data shipped with the reel. Each OTDR file provided by Seller shall be named according to project name, reel number, and fiber number, e.g., "PT-project-xx-yy.sor," where "PT" indicates "pre-test," "project" is the common, plain-text name of the Project, "xx" is the reel number, and "yy" is the fiber number. The file extension ".sor" is added automatically by the OTDR when saving the test data.

~~[~~Seller~~]~~ shall perform ~~post~~ OTDR traces promptly after installation ~~OTDR traces~~ to detect any damage to fibers during installation. Seller shall promptly notify Buyer of any such damage, consider in good faith any related input from Buyer regarding next steps and cure, and Remedy any installation-related cable damage to Buyer's reasonable satisfaction at Seller's sole cost and expense.

All elements of a transmission line splice point, including fiber optic cable slack coils, must be installed a minimum of fifteen ~~(15)~~ feet (15') above ground level or the structure base (whichever is higher). At each splice location (OPGW or ADSS or both), enough slack fiber optic cable shall be left to reach the ground plus at least one hundred ~~(100)~~ feet~~.~~ (100'). Splicing crews shall use only the first 10-15- feet of each fiber optic cable tail for splicing. The remainder of each fiber optic cable tail shall be mounted to the coil bracket to accommodate future splicing or repairs.

Seller shall be responsible for training the fiber optic cable down the structure and securing it to the structure at all splice locations. All fiber optic cable must be trained and secured, and structure electrical grounds must be established, before any splicing may be performed.

Seller shall be responsible for the handling of all fiber optic splice boxes mounted to structures, including lowering such boxes to ground level prior to splicing and permanently hanging such boxes after splicing has been completed to Buyer's satisfaction.

Seller will install ADSS fiber from the OPGW/ADSS transition splice point to the fiber optic patch panel in the Project Control House, leaving at least one hundred feet- (100') of slack fiber optic cable installed on the OPGW/ADSS transition splice coil bracket. At least one hundred feet- (100') of slack fiber cable shall be left on the ADSS coil bracket

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inside the Project Control House, with at least a twenty-five foot (25')~~-~~ tail at the patch panel location. The project name and location of the cable shall be clearly labeled at the far end of the cable. If wall space is insufficient for the inside ADSS coil bracket, Seller shall install an additional bracket.

All fiber optic cable shall be installed in fiber innerduct within any trough/pull box/control house riser/control house cable tray, etc. ~~The~~ Seller shall provide conduit from the OPGW/ADSS transition splice location into the ~~control house~~Project Control House or into the substation trough system. Outside the substation fence, conduit shall extend up the splice structure to a height of at least fifteen feet (15')~~-~~ above ground level~~.~~ or the structure base (whichever is higher). Conduit shall be Schedule~~-~~ 40 PVC for all below grade installations. Rigid galvanized steel conduit shall be used for all above-grade installations. ~~Conduit~~ The size of the conduit shall be two inch (2"~~–~~") inner diameter (ID~~ and~~). Conduit elbows shall be thirty-six (36") long sweep~~ (36") elbows are required.~~ All buried conduit must be installed a minimum of eighteen inches~~-~~ (18") below grade and~~ be~~ encased in concrete to ensure CIP 6 compliance. Any required pull boxes, etc. shall be installed per manufacturer's instructions except where these instructions are superseded herein.

~~The~~ Seller ~~should, whenever possible,~~shall schedule construction work such that, prior to installing/splicing the T-Line OPGW, ~~they may~~it first ~~install~~installs the ADSS fiber cables at each substation between the OPGW/ADSS transition splice outside the substation and the fiber optic patch panel inside the ~~substation control house.~~P Control House. This work should be considered "critical path" and delivered as early as possible in the project schedule. ~~Entergy Telecom Engineering and Operations recommends the Seller make the best effort~~Buyer expects Seller to install new OPGW spans in sequential order, starting at one substation transition splice point, then progressing to the next splice point in order, and so on, until reaching the opposite end substation transition splice. This approach will enable ~~Entergy Telecom~~Buyer and ~~the~~ Seller to ~~proactively~~ identify noncompliant splice losses, crossed fibers, cable problems, fiber anomalies, etc., by testing from the starting substation patch panel.

~~3.8.1.5 Entergy Standard~~ Seller shall provide and terminate fiber into an approved Fiber Patch Panels with sufficient quantity to support delivered fiber count in agreed upon locations where Buyer can connect patch fiber to fiber patch panels. This covers both transport from Buyer Substation to Collector Substation and fiber runs to support connection to PV Yard.

Seller shall design and install appropriate routing (conduit, cable tray) from patch panels to Buyer equipment installed.

Seller shall design and provide patch fibers to terminate from Fiber Patch Panel to specified equipment.

3.8.1.5 OPGW Support Material

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TABLE 1: Entergy Standard Fiber Optic Cable Materials to be Supplied by Seller		
Description	**Manufacturer**	**Part/Kit Number**
High-Count Fiber Optic Cable Material		
OPGW Fiber Optic Cable, 96-fiber, "CentraCore"	Alcoa-Fujikura, Ltd.	DNO-12160
ADSS Fiber Optic Cable, 96-fiber	Alcoa-Fujikura, Ltd.	DNA-33465
High-count Splice Enclosure Kit, includes the following individual items (one each, unless otherwise noted): • OPTI-Guard Splice Enclosure (OG03) • Bullet Shield (OGBGS-01) • Two (2)- each, Splice Trays (OGST01-96) • Ten (10)- each, Fusion Splice Sleeve Ten-pack (SPS-60) • Two (2)- each, Furcation Kits (OGFK01) • Coil Bracket (CB-44-3AL)	Alcoa-Fujikura, Ltd.	OGO3SP17
Low-Count Fiber Optic Cable Material		
OPGW Fiber Optic Cable, 48-fiber, "AlumaCore"	Alcoa-Fujikura, Ltd.	DNO-8161
ADSS Fiber Optic Cable, 48-fiber	Alcoa-Fujikura, Ltd.	DNA-28262
Low-count Splice Enclosure with Splice Tray • For projects featuring 48-count fiber cables ONLY	Alcoa-Fujikura, Ltd.	SB01-72
Parts Common to All Projects		
ADSS/OPGW Slack Cable Coil Bracket • For use on any line structures • For use with SB01 and OG03 Splice Enclosures	Alcoa-Fujikura, Ltd.	CB-44-3AL
ADSS Coil Bracket Option 1 • For use inside Substation Control House	Allen Tel	GB13C
ADSS Coil Bracket Option 2 – "Custom" • For use inside Substation Control House	DJM Welding and Fabrication	Special order
Innerduct • HDPE, orange, corrugated, non-split tube, one-inch (1") inside diameter, with pull tape and footage markings on exterior	Varies	Varies, must meet or exceed Description
Parts Common to All Projects		
ADSS/OPGW Slack Cable Coil Bracket • For use on any line structures • For use with SB01 and OG03 Splice Enclosures	Alcoa-Fujikura, Ltd.	CB-44-3AL
ADSS Coil Bracket Option 1 • For use inside Substation Control House	Allen Tel	GB13C
ADSS Coil Bracket Option 2 – "Custom" • For use inside Substation Control House	DJM Welding and Fabrication	Special order

Innerduct • HDPE, orange, corrugated, non-split tube, one-inch (1")- inside diameter, with pull tape and footage markings on exterior	Varies	Varies, must meet or exceed Description
~~**Parts Common to All Projects**~~		
~~ADSS/OPGW Slack Cable Coil Bracket~~ ~~• For use on any line structures~~ ~~• For use with SB01 and OG03 Splice Enclosures~~	~~Alcoa-Fujikura, Ltd.~~	~~CB-44-3AL~~
~~ADSS Coil Bracket Option 1~~ ~~• For use inside Substation Control House~~	~~Allen Tel~~	~~GB13C~~
~~ADSS Coil Bracket Option 2 – "Custom"~~ ~~• For use inside Substation Control House~~	~~DJM Welding and Fabrication~~	~~Special order~~
~~Innerduct~~ ~~• HDPE, orange, corrugated, non-split tube, one-inch (1") inside diameter, with pull tape and footage markings on exterior~~	~~Varies~~	~~Varies, must meet or exceed Description~~

Material detailed in **Table 2** will be provided and installed by the party responsible for fiber optic splicing.

TABLE 2: ~~Entergy Standard~~ Fiber Optic Cable Materials

Description	Manufacturer	Part/Kit Number
High-Count Fiber Optic Cable Material		
Connector Kit for DNO-12160 (96-fiber OPGW)	Alcoa-Fujikura, Ltd.	APCKC522/537
Connector Kit for DNA-33465 (96-fiber ADSS)	Alcoa-Fujikura, Ltd.	BCK554/568
Connector Kit for DNA-33465 (96-fiber ADSS) • Includes adapter for 1" flex conduit attachment • Used for substation entry cable assemblies	Alcoa-Fujikura, Ltd.	BCK554/568F
Low-Count Fiber Optic Cable Material		
Connector Kit for DNO-8161 (48-fiber OPGW)	Alcoa-Fujikura, Ltd.	APCKD522/537
Connector Kit for DNA-28262 (48-fiber ADSS)	Alcoa-Fujikura, Ltd.	ACK512
Connector Kit for DNA-28262 (48-fiber ADSS) • Includes adapter for 1" flex conduit attachment • Used for substation entry cable assemblies	Alcoa-Fujikura, Ltd.	ACK512F
Parts Common to All Projects		
Heat-shrink Fiber Optic Fusion Splice Sleeves w/ Strength Member, pack of fifty (50) • For use in Fiber Optic Patch/Splice Panel applications and SB01 applications	Corning	2806031-01
Fiber Optic Patch Panel, type to be specified by ~~Entergy Telecom Engineering~~ Buyer	Varies	Site specific

~~3.8.1.6~~

3.8.1.6 Optical Fiber Splice Technique and Performance Requirements

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Splicing for OPGW–to–OPGW and OPGW–to–ADSS splice points shall be "straight-through," that is, one-for-one in terms of the color code of the tube and fiber (blue tube-blue fiber spliced to blue tube-blue fiber, orange tube-blue fiber to orange tube-blue fiber, etc.) unless otherwise directed by Entergy Telecom Engineering. ABuyer. Buyer expects to provide to Seller a detailed fiber splicing diagram will be provided by Entergy Telecom Engineering in support ofto address any atypical splice requirements.

Preparation of fiber optic cable for splicing and fiber optic cable entry into and routing within fiber optic splice enclosures shall conform to manufacturer's specifications and written directions. Optical fibers shall be spliced using fusion splicing technique, and splice performance shall conform to the details written below and presented in Table 3.Table 3.

The bi-directional average splice loss as measured with an OTDR at the 1550 nm wavelength, should not exceed 0.1 dB for any splice, with; the target splice loss to measuresshall be less than 0.05 dB at 1550 nm. If the estimated splice loss as measured by the fusion splicer is greater than 0.1 dB, the offendingnon-conforming splice shall be cut out and the fibers re-spliced. This process shall be followed no less than three (3) times prior to accepting a substandard splice. All substandard splices must be documented for later analysis. The and made available to Buyer upon request. Seller shall provide OTDR trace data in electronic format per the standard practice detailed underin Section 5. 5. All OTDR trace data shall be provided to Entergy Telecom EngineeringBuyer in SOR format for review and acceptance.

TABLE 3: Summarized Fiber Optic Splice Performance Grid

(all measurements to be recorded at 1550 nm)

Parameter	Measured Value	Action Required
Splice Loss as estimated by Fusion Splicer:	$loss \leq 0.05$ dB	TARGET
	$0.05 \text{ dB} < loss < 0.10$ dB	acceptableAcceptable
	$loss \geq 0.10$ dB	Break and re-splice up to three times; if no improvement, note the splice location and the fiber number for further analysis.
Splice Loss as measured by OTDR:	$loss \leq 0.05$ dB	TARGET
	$0.05 \text{ dB} < loss < 0.10$ dB	acceptableAcceptable
	$loss \geq 0.10$ dB	Work with Entergy Telecom Engineering to analyze and re-splice as necessary.

Exhibit A – Page 62

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All optical fiber splices shall be supported and protected using heat shrink tubes. No part of any optical fiber shall be left bare, anywhere.

~~Entergy Telecom~~Buyer will perform end-to-end acceptance testing of the complete OPGW fiber optic cable route. Any further issues identified with any fiber optic cable after full fiber route testing shall be the responsibility of ~~the~~ Seller to assist in resolving to the satisfaction of ~~Entergy Telecom Engineering and Operations~~Buyer.

3.8.1.7 ~~3.8.1.6~~ OTDR Trace Data Requirements

~~The~~ Seller shall provide to Buyer the bi-directional OTDR trace data on all fibers installed as part of the ~~project~~Project. This data may be gathered when all field and patch panel splicing is complete. ~~This testing shall be performed using OTDR.~~ OTDR trace data shall be provided to ~~Entergy Telecom Engineering~~Buyer in electronic format for Buyer's analysis and acceptance. OTDR testing shall conform to all requirements below:

- OTDR files shall be delivered to ~~Entergy Telecom Engineering~~Buyer in SOR ("Standard OTDR Record") data format conforming to Telcordia SR-4731.
- OTDR testing shall be performed at the1550~~-~~ nm wavelength from the substation fiber patch panel using a launch fiber that is 500~~-~~ meters to 1000~~-~~ meters in length.
- OTDR traces completed at 1310~~-~~ nm wavelength shall not be utilized in support of acceptance testing requirements.
- PDF representations of OTDR traces will not be accepted.
- OTDR equipment and OTDR settings shall be approved by ~~Entergy Telecom Engineering~~Buyer to ensure accurate measurements.

Required OTDR settings:

- Test ~~Range should~~range shall be set between 1 and 2~~-~~ times the actual length of fiber optic table to be tested.
- Test ~~Pulse Width should~~pulse width shall be set ~~appropriately~~ for the length of the fiber ~~under test.~~optic cable being tested. The preferred test pulse width setting is 300~~-~~ ns or shorter.
- Each ~~Trace~~trace shall be averaged for a minimum of 60~~-~~ seconds.
- Traces shall be performed at High Resolution.

Any Seller questions regarding fiber optic cable acceptance testing shall be directed to Buyer (through Entergy Telecom Engineering~~-~~).

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3.8.1.8 ~~3.8.1.7~~ Optical Power Loss and Continuity Testing

~~The~~ Seller shall perform bidirectional optical power loss testing for each optical fiber in the new cable. Bidirectional optical power loss testing shall be conducted at the 1550- nm wavelength using a light source and a power meter approved by ~~Entergy Telecom Engineering~~Buyer. The optical power loss test will accurately measure actual end-to-end optical loss between optical patch panels at substation "A" and substation "B."

This test will also show ~~if~~whether any fibers have been cross-spliced at any splice point (i.e., "frogged"). All cross-spliced fibers shall be ~~rectified~~Remedied at ~~the contractor's~~Seller's sole expense.

~~Optical~~Seller provide optical power loss test data ~~shall be provided~~ to ~~Entergy Telecom Engineering. This data shall be provided~~Buyer, in a spreadsheet format, with each spreadsheet line listing:

1. ~~1.~~ Route Name
2. ~~2.~~ Source Optical Patch Panel Identifier
3. ~~3.~~ Source Optical Patch Panel position of the fiber under test
4. ~~4.~~ Destination Optical Patch Panel Identifier
5. ~~5.~~ Destination Optical Patch Panel position of the fiber under test
6. ~~6.~~ Transmitted optical power at 1550- nm
7. ~~7.~~ Received optical power at 1550- nm
8. ~~8.~~ Notes associated with any anomalous finding on any fiber

~~3.9.2~~3.8.2 Data Network Engineering/Data Network Operations (DNE/DNO)

3.8.2.1 ~~3.8.2.1~~ DNE

3.8.2.2 ~~3.8.2.1.1~~ Design

~~The Entergy DNE organization~~Buyer will ~~be responsible for data network~~ provide to seller the DNE design ~~and specifications~~including address space of the ~~site. The standard design~~affected zones. Zones to include the collector substation, PV Yard, Physical security (CCTV and ACCESS control), and Entergy corporate network. The DNE design will ~~have an Entergy Network and a Solar Control network for the purposes~~provide flexibility for future of division of ~~responsibly of~~ responsibility for operations ~~and deployment~~.

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Allocation of devices in defined address space will be left up to respective parties ~~for allocation of devices in address space. Entergy will specify the standard~~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 that 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.

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

Network segmentation of Seller provided network shall meet the following requirements

- Logical segments shall be filtered by Buyer onsite Firewall. Seller shall provide necessary rules for FW configuration between segments.
- Collector substation equipment ~~utilized~~(RTU, Breaker Relays, etc.) shall be on ~~the Entergy Network and will consult and approve the Solar Control Network design.~~ its own segment.

~~- The specific design of the data network for a solar site application comprises standard~~PV Yard equipment ~~utilization as is warranted on a program basis to include maintenance, break/fix, and refresh at specified regular intervals of life-cycle use.~~

~~- The design of network systems is coordinated with the telecom group to assure compatibility and appropriate integration with fiber types and transceiver~~(Inverters, Metrology, PPC, etc.) shall be on its own segment. All equipment~~. Communications protocols are subject to the~~ in~~/out bound characteristics of required data flow and are subject to moderation and restriction of Entergy cyber security apparatus.~~

- ~~Network cabling and termination types are specified by DNE design. Any cabling or end type differences from Entergy~~ collector substation shall be on separate VLAN than equipment ~~to vendor, third party or DCS configurations will be coordinated with Entergy~~ in ~~the design phase as to avoid special conversion devices or other equipment that may cause a degradation of communications signals, line interference, and generally fail points in the network system~~PV Yard.
- ~~3.8.2.1.2~~ PV Access Control and Camera system shall be on its own segment
- 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

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shall be gray; back-up ethernet shall be green; iLO/KVM shall be yellow; and serial consoles shall be black.

3.8.2.3 Procurement/Ownership

~~Entergy will~~Seller shall procure~~, own~~ equipment with a minimum 5-year manufacturing and ~~manage all network switch gear, wireless devices, routers, and other network appurtenances~~support warranty with SLA of next day replacement.

Any items that will reside on the ~~Entergy~~Buyer's network ~~or interface with secondary~~(e.g. CCTV, firewall, access control~~ systems, vendor monitoring and or third-party operators.~~

- ~~In order for Entergy to manage and maintain warranty on product in a programmatic manner, it is essential that Entergy specify, purchase and install all corporate network gear equipment. A chain of custody must be established in this manner as to assure cyber security integrity of Entergy networks and to establish equipment inventories under the appropriate warranty programs, life-cycle replacement efforts, monitoring tools and other as is standard Entergy policy for equipment placed in service on the Entergy network.~~

), 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.

~~3.8.2.1.3 Data Network Operations~~

~~Entergy DNO will collaborate with IT Infrastructure project manager and DNE to configure network gear for operations on the Entergy network. These collaborations will include setting equipment on consoles, preconfiguring with standard Entergy protocols, set permissions, monitoring tools, security patches, VLAN and port assignments, and other work as necessary and specific to the subject site.~~

~~DNO will coordinate across the Entergy project stakeholders as appropriate to coordinate firewall connectivity for various functionalities in the project.~~

~~DNO will assure that all change request for implementations are coordinated with the DNE assignee for tasks that are placed on the group via the change request process.~~

~~DNO supports trouble shooting connectivity issues and post configuration changes as appropriate to assure design integrity for the intended functionality of the network.~~

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~~3.8.3 OT IT Security~~

~~3.8.4 Wintel Services~~

3.8.3 ~~3.8.4.1 Server and~~ **Desktop Equipment**

~~3.8.4.1.1 Server Specifications~~

~~Entergy will specify all servers to be utilized in the design of the plant applications and data collection software. The Wintel team will work in cooperation with the project engineering team and IT project management to secure specifications for virtual and or physical server builds to be utilized in the project for collecting PI data, environmental data, database utilization, and general print/file purposes.~~

~~The Wintel team will coordinate storage, monitoring functions, management control, administration rights, partitioning and imaging tasks and other background services to deliver a standard Entergy server configuration to the project.~~

~~Upon completion of specifying, procuring, configuring and assignment or placement of server equipment with post installation configurations, the Wintel team will formally hand off the functionality of the server(s) to the applications group for additional software installations.~~

~~3.8.4.1.2 Desktop Equipment~~

~~Entergy~~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 ~~the~~appropriate breaker or patch panels to allow Entergy ~~network as per the client request.~~

~~Desktop units will be configured with Entergy standard imaging and placed at the site via~~ field services ~~upon the direction of the IT project manager.~~

to install and configure equipment. Desktop includes, laptops, desktop computing boxes, printers, and peripheral devices ~~as required by the project team for the functionality of the site and in support of Entergy associates or vendors onsite.~~

3.8.4 ~~3.8.5~~ **Voice/VOIP Communications**

3.8.5 ~~3.8.5.1~~ **Voice Configurations**

3.8.5.1 ~~3.8.5.1.1~~ Design

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~~Entergy Voice group will assess the network design capabilities and make recommendations as to the~~Buyer will designate placement of standard voice over internet protocol equipment ~~as to service the site with phone communications at the very least for 911 compliance with the local jurisdiction.~~ throughout site. Typical locations include relay house and other habitable structure.

Seller shall incorporate the designated placement of VOIP equipment into appropriate network and mechanical design drawings. Design to include all necessary conduit, wiring, and fixturing for VOIP equipment installation.

3.8.5.2 Procurement/Installations

~~Alternatively, the recommended voice protocols will be present as an emergency preparedness measure in the event cell coverage is disrupted and other critical communications experience storm damage, force majeure, or other incident.~~

~~There will not be a foreseeable need for analog services at these sites. However, each site will be designed with FXO/FXS card in the router equipment to cover any analog needs that arise out of special circumstance in the project.~~

Upon agreement to final design Seller will be responsible for installing fixtures and wiring terminated on appropriate breaker or patch panels to allow Entergy field services to install and configure equipment. Voice engineering will specify the phone sets, configurations, and mapping to the call center for each site. As these sites are remote and unmanned, there will be generic programming across the devices placed.

~~1.1.1.1 3.8.5.1.2~~ Buyer ~~Procurement/Installations~~

~~Upon the recommendations of the voice group,~~ IT project management will procure and arrange installation of all VOIP equipment~~.~~

~~Maintenance~~ upon notification of Seller installing fixturing and ~~life-cycle replacement, upgrades and trouble-shooting will be managed on a programmatic scale and via the Entergy Snow system. In consideration of the equipment being placed on the Entergy network,~~wiring. Entergy retains the sole responsibility for operation and maintenance thereof.

3.8.6 ~~3.8.6~~ Physical Security Installations

~~The Seller shall use Lenel OnGuard for access control systems and Avigilon for CCTV installations.~~

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~~3.8.6.1~~ The physical security of the site shall comply with Buyer and regulatory requirements. Seller is responsible to implement as described in the following sections.

3.8.6.1 CCTV Installations

An ~~Avigilon~~ NVR appliance will be installed in the structure containing ~~Entergy Corporate~~ Buyer's primary firewall/network switches ~~and~~. Cabling for all cameras at ~~site will terminate into the integrated switch on that device, traveling back on appropriate~~ the Project Site will be copper or fiber~~, as needed, based on distance.~~

~~A copper~~ traveling and connect to identified network switches supplied by Buyer. An uplink cable will connect the ~~device~~ NVR to the ~~Corporate~~Buyer's network switch. ~~There will be an Avigilon camera mounted with that provides coverage of this equipment. All Cameras are to be mounted within the physical security perimeter~~

~~Avigilon Cameras will be~~ The location of NVR equipment shall be monitored by an installed ~~to cover~~camera.

Seller shall design the system so that all cameras to be mounted at the Project Site will be mounted within a physically secure area within or enclosed by fencing installed in accordance with the Performance Standard 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 appropriately placed and connected power outlets/power supply [for Buyer to contract and install.]

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

- Exterior open space cameras shall support panoramic with PTZ 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:

- The CCTV installation site
- All ~~Site~~ gates and any other point of ingress and/or egress at the Project Site (and with coverage and clarity sufficient to identify ~~personnel and vehicle~~ any Representative of the Parties and their respective contractors and subcontractors and any other Person and markings and license ~~plate. Utilize~~plates of any vehicle entering the Project Site through the gates), with the CCTV system utilizing

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infrared illuminators ~~as~~and supporting systems as needed to ensure the required~~.~~ images are captured in dark or near-dark conditions (as well as in daylight conditions).

- ~~Buildings with~~ Either side of any human passable ~~doors shall have cameras that cover both the~~door into or inside ~~and outside of each door.~~ any building that includes such doors, including the control house.
  - ~~NEMA cabinets that contain Telecom and IT Equipment equipment that covers~~
  - ~~Solar Control equipment.~~

~~Select Camera and Installation Models from approved list.~~

~~3.8.6.2~~ Seller shall incorporate the agreed upon camera system design into appropriate design drawings and receive approval from Buyer.

Seller shall install necessary mounting camera system hardware, conduit, and wiring to Buyer patch panels per the relevant approved drawings.

Buyer is responsible for contracting with Buyer-approved vendors to install NVR, cameras, and make final connections from patch panels to the equipment to be installed.

3.8.6.2 Access Control Installations

~~3.8.6.2.1~~ Seller shall design infrastructure to allow the use of use Buyer provided access control systems.

Seller shall incorporate the agreed upon design into appropriate design drawings and receive approval from Buyer ~~High Security Chain~~

~~A chain that will be part of the gate entry or other~~ security team.

Seller shall install conduit and identified wiring to allow Entergy selected vendor to install control equipment and devices.

Buyer to contract with approved vendor to install Control Panel, Door strike/Mag locks, badge sensors, and make final connection from patch panels to equipment to be installed.

3.9 Locks

The site will be a mix of Buyers Access Control System for Control houses and Battery storage. All other points of egress to site or equipment will be managed utilizing the CyberLock family of locks where technically feasible and economical. This allows Entergy to manage a virtual keyset versus a brass key system. The Cyber Lock family of

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locks has form factors to meet the various needs of the project and shall be selected from in implementation of Lock Strategy.

Seller shall design CyberLock lock or Cylinder that is appropriate for project execution for all equipment to be locked. This includes but is not limited to gates, doors, and NEMA cabinets. General guidance is to comply best practice and with regulatory requirements paying specific attention to equipment that contains IP connected equipment or can affect the function of the site.

Seller shall provide overall plan of execution locks of site including Bill of Material prior to procurement and installation.

Seller shall include CyberLock products to cover Padlocks for gates and equipment requiring padlocks, Inverters, Network gear containing cabinets, and other high value equipment identified by Buyer and/or Seller.

Seller shall procure all onsite CyberLock equipment including locks, cylinders, Visitor keybox, Initial Key inventory for site

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

High Security Chain

~~where a chain and padlock will be required.~~Seller shall provide high security chains on appropriate gates or other site access points. The chain will be of a 3/8"- minimum heavy -duty construction, rated either "High Security" or Grade- 100 or higher, with a through tempered alloy and ~~a preferred~~ square- -sided construction to minimize cutting ability.

~~3.8.6.2.2 Locks~~

~~Lock Cylinder shall be CyberLock Cylinder matched with form factor that matches.~~

3.10 ~~3.8.6.2.2.1~~ Lock Forms

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

High Security Padlock – A ~~Padlock~~padlock that meets certain levels ~~of performance~~, 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. ~~This lock~~ uses the same high security key as

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the padlock~~. This lock uses~~, and includes a special hasp that has a surround shield that protects the hasp tab ~~&~~and hole from cutting where the shackle enters the padlock.

Clasp ~~or Camlock is typically used in~~Lock or Cam lock that fits NEMA cabinets as required.

~~• Use Cases~~

~~3.8.6.2.3~~ Lock Locations

Without limiting its obligations under the Agreement, including this Scope Book, Seller shall consider, at minimum, the following locations for inclusion of the CyberLock product

3.11 Gates

Seller shall design Primary Gate to Collector Substation to include Buyer Approved Gate Operator including on board power and local solar power cell with safety and loops(obstruction and exit) installed.

In cases of singular PV yard with continuous fence Seller shall design Primary Gate to PV yard to be sliding gate to include Buyer Approved Gate Operator including on board power and local solar power cell with safety and loops(obstruction and exit) installed.

Where appropriate Seller shall install conduit and wiring/fiber to support power of gate, External Card Reader (egress and ingress) and Pin Pad Access Control, and camera installation. This is to include NEMA enclosure that includes a 4 plex outlet and fiber. NEMA Enclosure to measure.

All ~~Gates~~other gates shall be secured with a High Security Chain and a High Security Padlock.

3.12 ~~3.8.6.2.3~~ Buildings

All ~~Egress and Ingress Doors~~egress and ingress doors on building not on Access Control System shall utilize High Security Puck Lock or a High Security Cylinder Locks

All NEMA ~~Enclosures~~enclosures shall utilize a High Security Padlock or a Clasp Lock for the following use equipment types~~. Basic test is equipment used in the security, telecommunications, management or generation of power and IP connected devices which includes: ~~:

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- ~~-~~IT
- Telecom
  - ~~Power~~
- Inverter
- Met stations
  - ~~etc~~

Standard Equipment List			
Part #	**Description**	**Manufacturer**	**Equipment Type**
920NTNNEK00000	R40	HID	Reader
ES4200-K3-T1	Door prop alarm	DSI	Sounder
S3 backbox	door prop alarm back box	DSI	Sounder
9600 630	Electric Rim Strike	HES	Lock
1500C	Electric Recessed Strike	HES	Lock
LD 22 EO SP28 3'	Electrified Crashbar	Von Duprin	Lock
LNL-X2220	Intelligent Door Controller	Lenel	Panel
LNL-1320	Door Controller	Lenel	Panel
4405-A	DPDT door contact	GRI	Contact
FPO150/250-3D8P2M8NL4E8M2 / P16-A	Enclosure Large-Life Safety-Networked 2220	Life Safety Power	Enclosure
FPO150/250-3D8P2M8NL4E8M2 / P16-C	Enclosure Large-Life Safety-Networked 1320's	Life Safety Power	Enclosure
FPO75 – B100M8PNL4E4M / T4-A	Enclosure Small-Life Safety-Networked 2220	Life Safety Power	Enclosure
FPO75 – B100M8PNL4E4M / T4-C	Enclosure Small-Life Safety-Networked 1320's	Life Safety Power	Enclosure
FPO150-Boxed	Power Supply	Life Safety Power	Panel
FPO250-Boxed	Power Supply	Life Safety Power	Panel
FPO75-Boxed	Power Supply	Life Safety Power	Panel
M8-Boxed	8 Managed Outputs	Life Safety Power	Panel
M8P-Boxed	8 Managed Outputs	Life Safety Power	Panel
NL4-Boxed	Network - 4 ports	Life Safety Power	Panel
NLX-Boxed	Network - 8 ports plus RS485	Life Safety Power	Panel
D8-Boxed	Aux Outputs	Life Safety Power	Panel
D8P-Boxed	Aux Outputs	Life Safety Power	Panel
SD-16	16 Managed Outputs	Life Safety Power	Panel
BT500-8	Midspan, 500W, 8 Port, 802.3bt	Life Safety Power	Panel
BT500-16	Midspan, 500W, 16 Port, 802.3bt	Life Safety Power	Panel
BX50-Boxed	PoE PS | 50W | FoE	Life Safety Power	Panel
BX75-Boxed	PoE PS | 75W | Local Fire	Life Safety Power	Panel
MSM25	Software	Life Safety Power	Panel
RS-Mod	RS485	Life Safety Power	Panel
VMA-AS3-16P09-NA	Video Appliance	Avigilon	Video
ACC7-ENT	Video License	Avigilon	Video
4461030	Composite - Yellow	Smartwire	Cable
775600-110DB	Cat6 Burial	Smartwire	Cable
Q3-15201806	18/6 Burial - Shielded	Houston Wire & Cable	Cable
RM-1008WBL1B	18/4 Burial	Remee Wire & Cable	Cable
Q3-15001802	18/2 Burial	Houston Wire & Cable	Cable
RM-725180L2W	18/2 Plenum	Remee Wire & Cable	Cable
RM-6BENHM3Y	Cat6 Plenum - Yellow	Remee Wire & Cable	Cable
~~DS160~~	~~Motion Detectors~~	~~Bosch~~	~~Motion Detector~~

- Tracking station

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Standard Equipment List			
Part #	**Description**	**Manufacturer**	**Equipment Type**
920NTNNEK00000	R40	HID	Reader
ES4200-K3-T1	Door prop alarm	DSI	Sounder
S3 backbox	door prop alarm back box	DSI	Sounder
9600 630	Electric Rim Strike	HES	Lock
1500C	Electric Recessed Strike	HES	Lock
LD 22 EO SP28 3'	Electrified Crashbar	Von Duprin	Lock
LNL-X2220	Intelligent Door Controller	Lenel	Panel
LNL-1320	Door Controller	Lenel	Panel
4405-A	DPDT door contact	GRI	Contact
FPO150/250-3D8P2M8NL4E8M2 / P16-A	Enclosure Large-Life Safety-Networked 2220	Life Safety Power	Enclosure
FPO150/250-3D8P2M8NL4E8M2 / P16-C	Enclosure Large-Life Safety-Networked 1320's	Life Safety Power	Enclosure
FPO75 – B100M8PNL4E4M / T4-A	Enclosure Small-Life Safety-Networked 2220	Life Safety Power	Enclosure
FPO75 – B100M8PNL4E4M / T4-C	Enclosure Small-Life Safety-Networked 1320's	Life Safety Power	Enclosure
FPO150-Boxed	Power Supply	Life Safety Power	Panel
FPO250-Boxed	Power Supply	Life Safety Power	Panel
FPO75-Boxed	Power Supply	Life Safety Power	Panel
M8-Boxed	8 Managed Outputs	Life Safety Power	Panel
M8P-Boxed	8 Managed Outputs	Life Safety Power	Panel
NL4-Boxed	Network - 4 ports	Life Safety Power	Panel
NLX-Boxed	Network - 8 ports plus RS485	Life Safety Power	Panel
D8-Boxed	Aux Outputs	Life Safety Power	Panel
D8P-Boxed	Aux Outputs	Life Safety Power	Panel
SD-16	16 Managed Outputs	Life Safety Power	Panel
BT500-8	Midspan, 500W, 8 Port, 802.3bt	Life Safety Power	Panel
BT500-16	Midspan, 500W, 16 Port, 802.3bt	Life Safety Power	Panel
BX50-Boxed	PoE PS | 50W | FoE	Life Safety Power	Panel
BX75-Boxed	PoE PS | 75W | Local Fire	Life Safety Power	Panel
MSM25	Software	Life Safety Power	Panel
RS-Mod	RS485	Life Safety Power	Panel
VMA-AS3-16P09-NA	Video Appliance	Avigilon	Video
ACC7-ENT	Video License	Avigilon	Video
4461030	Composite - Yellow	Smartwire	Cable
775600-110DB	Cat6 Burial	Smartwire	Cable
Q3-15201806	18/6 Burial - Shielded	Houston Wire & Cable	Cable
RM-1008WBL1B	18/4 Burial	Remee Wire & Cable	Cable
Q3-15001802	18/2 Burial	Houston Wire & Cable	Cable
RM-725180L2W	18/2 Plenum	Remee Wire & Cable	Cable
RM-6BENHM3Y	Cat6 Plenum - Yellow	Remee Wire & Cable	Cable
DS160	Motion Detectors	Bosch	Motion Detector

4 ENERGY MODEL AND ENERGY YIELD VERIFICATION

The Energy Model shall calculate mathematically and accurately model the Project PV system's theoretical energy output (i.e., the energy yield) over a continuous thirty (30~~)~~)-year period based on measured ambient conditions, with no deduction factors other than degradation, line losses to the point of Electrical Interconnection Point, and transformer losses. 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, including the Performance Standard.

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 2 to this Scope Book.

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The PVsyst input files for the Energy Model shall consist of .PAN, .OND, .PRJ, .VC#, and .MET files.[7]

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 for the Effective Date Energy Model are ~~shown, represented, and~~ reflected in the documentation included in Attachment ~~-~~ Y to the main body of the Agreement~~, including the supporting files and documentation within such attachment. Appendix 2~~. Appendix 2 and, to the extent applicable, Appendices - 3 and 4 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. ~~The Energy Model shall include and apply losses (post-process losses) that are not captured by the underlying PVsyst model and permitted to be included and applied under the terms of the Scope Book, including those earlier in this paragraph. Such losses shall be presented and modeled as a singular loss value shown in Appendix 2.~~

~~Seller has delivered to Buyer~~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 ~~Buyer has accepted~~modeled as a singular loss value shown in Appendix 2. The inputs and ~~approved~~assumptions for such losses in the Effective Date Energy Model ~~(including the associated files, inputs, assumptions,~~are based on assumed values and reflected in the documentation~~, including reports). -~~ included in Attachment Y to the main body of 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 2 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

[7] **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.

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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 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 ~~except as permitted and provided in this Scope Book. The Energy Model (including the associated files, inputs, assumptions, and documentation, including reports and calculations prepared by the Project Performance Test Contractor) shall be updated (to the extent permitted herein) and provided to Buyer for Buyer's review and approval on~~.

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

- On or before ten (10) ~~-~~ days after the delivery by Seller to Buyer of written notice that the issued-for-construction design package prepared following 100% completion of the detailed design of the Project (see Section ~~2.2~~ 2.2 above) (the "**Design Completion Energy Model**~~)~~")

~~- On or before the delivery by Seller to Buyer of the Mechanical Completion Certificate (reflecting the Project as then built) pursuant to Section 7.3 of the main body of the Agreement (the Mechanical 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 Section ~~-~~ 7.4(a) of the main body of the Agreement (the "**Substantial Completion Energy Model**~~)~~").

~~Seller may update inputs and assumptions for the Energy Model after the Effective Date only to the extent required to cause the Energy Model to correctly reflect those refinements to the physical Project in the final design or actual build or testing of the Project that are permitted by the terms of the Scope Book. Appendix 2 and, to the extent applicable, Appendices 3 and 4 provide which of the listed characteristics, to the extent allowed and used as inputs to the Energy Model, may be updated after the Effective Date and whether the update is conditional. Permitted updates to 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, under the terms of the Agreement to make at the time made. For the avoidance of doubt, the .MET input file for the Energy Model shall be final at the Effective Date and may not be updated or otherwise changed.~~

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 ~~all files,~~

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~~inputs, and assumptions~~any input or assumption used in the Energy Model ~~and associated documentation~~, and 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 ~~agree.~~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, which shall provide the test report to Seller and Buyer simultaneously. For an Energy Model to be final, the associated test report must be reasonably acceptable to Seller and Buyer.~~

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 (1) 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 that 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 1)~~Appendix 1) as the Project's "**Base Case Expected Energy Yield**." Seller guarantees that the Expected Energy Yield in each subsequent Energy Model ~~(including, for each such Energy Model, the associated files, inputs, assumptions, and documentation, including reports and supporting calculations prepared by the Project Performance Test Contractor)~~ delivered to Buyer under this Scope Book will equal or exceed the Base Case Expected Energy Yield (the "**Energy Yield Guaranty**~~).~~"). If the Design Completion Energy Model does not demonstrate that the Energy Yield Guaranty ~~is not met~~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. Without limiting the other terms of this Scope Book, 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 that the Energy Yield Guaranty has been satisfied, Seller may either (i) cure the cause(s) of the Energy Yield Guaranty deficiency, which cure could include Seller making permitted modifications to the Project and 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 ~~(and the Energy Model has become final).~~or (ii) pay Energy Yield Liquidated Damages in accordance with Section 9.4 of the main body of the Agreement.

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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, and the other elements of the Performance Standard, including BESS Availability, BESS Power Rating, BESS RT Efficiency, BESS Storage Capacity, PV Plant Availability, and PV Plant Capacity. The Commissioning Plan shall conform to and include, without limitation, the components set out in ~~Appendix 5,~~ Appendix 5, 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 quality assurance and quality control (QA/QC) tests prior to Mechanical Completion and completion of all Project Performance Tests prior to Substantial Completion. Seller shall perform a random pile/pull testing campaign in accordance with ISO-2859-1, and 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 ten (10) Business Days after Buyer's receipt of such Commissioning Plan. If Buyer provides such comments, Seller, within five (5) 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 that the Project has been installed and constructed in accordance with the requirements of the Agreement, this Scope Book, and the other elements of the Performance Standard.

Where manufacturing or finishing is performed at the Project Site, reviews, inspections, studies, and tests shall be conducted in accordance with the Performance Standard as a

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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 as listed below:

- 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/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

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- 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 PCUs with the information of starting date of warranty and period of warranty
- Mechanical design information/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

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- A checklist of what to do in case of system failure
- Emergency shutdown/isolation procedures

Without limiting its other NERC-related obligations under the Agreement, Seller shall cause the Project to be compliant with, and the Work to be performed in accordance with, as applicable, the more stringent of the applicable NERC reliability standards and the applicable Seller NERC program (collectively, the "NERC Standards"), including the NERC Standards in effect as of the Effective Date. The applicable NERC Standards in effect as of the Effective Date include those set forth in ~~Appendix 8~~Appendix 8 to the Scope Book. Seller shall be responsible for causing the Project to comply with, and the Work to be performed in compliance with, all "Generator Owner," or "GO," obligations in ~~Appendix 8,~~Appendix 8, to the extent applicable to the Project or the Work, and any other applicable NERC Standards through the Closing Date (and to the extent requested by Buyer and on Buyer's behalf, through the Substantial Completion Payment Date). Seller shall be responsible for causing the Project to comply with, and the Work to be performed in compliance with, all "Generator Operator," or "GOP," obligations in ~~Appendix 8,~~Appendix 8, to the extent applicable to the Project or the Work, and any other applicable NERC Standards through the Substantial Completion Payment Date. Seller's GOP obligations shall transfer to Buyer on the Substantial Completion Payment Date unless Seller or an Affiliate or Contractor or Subcontractor thereof is performing term operation and maintenance services for the Project pursuant to an operation and maintenance agreement with Buyer or an Affiliate thereof. The NERC Standards that Seller shall cause the Project to be compliant with, and the Work to be performed in accordance with, as applicable, include all applicable NERC Standards that, as of the Effective Date, (i) are not in effect but are approved to take effect after the Effective Date or (ii) are neither in effect nor approved to take effect after the Effective Date, but, subsequent to the Effective Date, are approved to take effect on or before one (1) year after the Substantial Completion Payment Date. The implementation of and compliance with any NERC Standard described in clause (i) or (ii) above shall occur by the earlier of (a) the time specified in such NERC Standard for such implementation and compliance and (b) the Closing Date. Seller provide to Buyer, within 120 days but no earlier than 90 days prior to initial synchronization of the Project, reasonable evidence of Seller's implementation of, and Seller's or the Work's compliance with, the NERC Standards and any other NERC-related documentation reasonably requested by Buyer or required by NERC.

5.2 Factory Acceptance Tests

All equipment, materials, and components specified in Section ~~3.4~~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 and the other elements of the Performance Standard. 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.

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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~~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:

1. Seller shall keep a "Three-Month Look Ahead Inspection Schedule," which shall be updated on a regular basis as part of the monthly report to be delivered under Section 6.2 of the main body of the Agreement.

2. Seller shall provide Buyer notice of its intent to inspect prior to any inspection as detailed in the Agreement.

3. Prior to notifying Buyer of its intent to inspect, Seller shall have issued and obtained Buyer's approval of the relevant inspection test plan (ITP) and all other technical documentation relevant to the inspection.

4. 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.

5. 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
- Trackers
- Step-Up transformers
- Inverter power transformers
- HV switchgear, if applicable
- MV switchgear
- LCS

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- Batteries
- BESS PCU
- BESS container(s)/enclosure(s).

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 5~~Appendix 5 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~~5 of this Scope Book.

The Project Performance Test Report shall include the following information with respect to the Project Performance Test Results:

- 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 Article 9 of the main body of the Agreement, ~~Appendix 5~~Appendix 5, and the other elements of the Performance Standard. 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. Among other things, and without limiting the other terms of the Agreement, the PV Plant must have operated and performed as designed (and must have achieved the Minimum PV Plant Availability) during such Project Performance Test in order for such Project

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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 Article ~~-~~ 9 of the main body of the Agreement, ~~Appendix 5~~Appendix 5 of this Scope Book, and the other elements of the Performance Standard.

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. Among other things, and without limiting the other terms of the Agreement, the PV Plant must have operated and performed as designed (and must have achieved the Minimum PV Plant Capacity) during such Project Performance Test in order for such Project Performance Test to be considered valid for purposes of determining the PV Plant Availability.

5.3.3 Battery Energy Storage System Performance Tests

5.3.3.1 BESS Storage Capacity and BESS Power Rating Tests

Seller shall cause Project Performance Tests to be performed to determine the BESS Power Rating and the BESS Storage Capacity in accordance with the requirements, standards, and procedures set forth in Article ~~-~~ 9 of the main body of the Agreement, ~~Appendix 5~~Appendix 5, and the other elements of the Performance Standard. Such Project Performance Tests may be run simultaneously or separately. The BESS Power Rating and the BESS Storage Capacity shall be measured at the Electrical Interconnection Point. Among other things, and without limiting the other terms of the Agreement (including Section 9.2 of the main body of the Agreement), (i) ~~-~~ the BESS and PV Plant must have operated and performed as designed (and must have achieved Minimum BESS Power Rating and the Minimum BESS RT Efficiency) during such Project Performance Test in order for such Project Performance Test to be considered valid for purposes of determining the BESS Storage Capacity, and (ii) ~~-~~ the BESS and PV Plant must have operated and performed as designed (and must have achieved the Minimum BESS Storage Capacity and the Minimum BESS RT Efficiency) during such Project Performance Test in order for such Project Performance Test to be considered valid for purposes of determining the BESS Power Rating.

5.3.3.2 BESS Round Trip (RT) Efficiency Test

Seller shall cause a Project Performance Test to be performed to determine the BESS RT Efficiency in accordance with the requirements, standards, and procedures set forth in Article ~~-~~ 9 of the main body of the Agreement, ~~Appendix 5~~Appendix 5, and the other elements of the Performance Standard. The BESS RT Efficiency shall be measured at the input/output meter(s) to the BESS and shall be measured in AC for an AC-coupled

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system and DC for a DC-coupled system. Among other things, and without limiting the other terms of the Agreement (including Section 9.2 of the main body of the Agreement), (i) the BESS and PV Plant must have operated and performed as designed (and must have achieved the Minimum BESS Storage Capacity and Minimum BESS Power Rating) during such Project Performance Test in order for such Project Performance Test to be considered valid for purposes of determining the BESS Storage RT Efficiency, and (ii) the BESS and PV Plant must have operated and performed as designed (and must have achieved the Minimum BESS Storage Capacity and the Minimum BESS Power Rating) during such Project Performance Test in order for such Project Performance Test to be considered valid for purposes of determining the BESS RT Efficiency Test.

5.3.3.3 BESS Availability Test

Seller shall cause a Project Performance Test to be performed to measure BESS Availability in accordance with the requirements, standards, and procedures set forth in Article 9 of the main body of the Agreement, ~~Appendix 5,~~Appendix 5, and the other elements of the Performance Standard.

5.3.3.4 BESS Functional Tests

Seller shall conduct functional tests to confirm that the BESS is capable of operation of each primary and secondary function required per Sections ~~3.4.5.2.1~~ 3.4.5.6 and ~~3.4.5.2.2~~3.4.5.7 of this Scope Book, and for all available functions provided per Section 3.4.5.8 of this Scope Book.

~~5.3.4~~

6 WARRANTY

In addition to the Project Warranty ~~set forth in Article 10 of the main body of the Agreement~~, and without limiting the requirements or obligations of Seller set forth in Section 5.2 or Article X of the main body of the Agreement or the other elements of the Performance Standard, Seller shall procure warranties from original equipment manufacturers that satisfy the requirements set forth in this Scope Book, including this Section ~~6~~6, and the other elements of the Performance Standard. Without limiting the foregoing, Seller shall obtain and have in effect as of the Closing the Major Warranties on terms and conditions that comply with the warranty requirements set forth in this Agreement. 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.

6.1 PV Module Warranty

The PV Modules shall be provided with original equipment manufacturer warranties, including the following (which may commence no sooner than the earlier of (i) the date

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of completion of installation of the PV Modules or (ii) ninety (90) days after delivery of the PV Modules to the Project Site):

- The product warranty for PV Modules shall warrant that the PV Modules are free from defects in materials, manufacture, workmanship, and design for at least ten (10) years from the warranty commencement date. The PV Module manufacturer shall be required to repair or replace any PV Module in breach of the PV Module product warranty.

- The power output warranty for PV Modules shall warrant the power output of the PV Modules relative to the labeled nameplate power output of the PV Modules, as adjusted only for degradation (with no additional exclusions or other conditionality on coverage), for at least twenty-five (25) years from the warranty commencement date. The annual linear degradation included in the power output warranty shall have a maximum power output degradation of 2.0% within the first year and 0.5% in each year thereafter when measured using Standard Test Conditions. In the event of a breach of the power output warranty, the PV Module manufacturer shall take corrective action at its cost to repair or replace and prevent in subsequent years breaches of the power output warranty.

6.2 Inverter Warranty

The Project inverters shall be provided with an original equipment manufacturer's warranty that the inverters are free from defects in material, manufacture, workmanship, and design, which warranty may commence no sooner than delivery of the inverters to the Project Site and continue for a minimum of five (5) years from the warranty commencement date. The inverter manufacturer shall be required to repair or replace at its cost any inverter (or any component thereof) in breach of such warranty. The inverter warranty shall cover, to the extent applicable, the cost of removal from the Project Site, transportation to and from the repair facility, reinstallation after repairs, and any and all other "in and out" work.

6.3 Transformer Warranty

~~Subject to Section 6.4,~~Without limiting Section 5.6 of Appendix 9 to this Scope Book, the Project transformers shall be provided with an original equipment manufacturer's warranty that the transformers are free from defects in material, manufacture, workmanship, and design, which warranty shall commence no sooner than the earlier of (i) energization thereof (in which case it shall continue through at least eighteen (18) months thereafter) or (ii) arrival at the Project Site (in which case it shall continue through at least thirty-six (36) months thereafter). The transformer manufacturer shall be required to repair or replace at its cost any transformer (or component thereof) in breach of such warranty. The transformer warranty shall cover the cost of removal from the Project Site, transportation to and from the repair facility, reinstallation after repairs, and any and all other "in and out" work.

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6.5 Tracker Warranty

The Trackers shall be provided with an original equipment manufacturer's warranty that the Trackers are free from defects in material, manufacture, workmanship, and design for a period of (i) for structural components of the Trackers, at least twenty (20) years from the date of completion of the installation thereof and (ii) for motor, gear, battery, and controller components of the Trackers, at least five (5) years from the date of completion of the installation thereof. The Tracker manufacturer shall be required to repair or replace any Tracker (or component thereof) in breach of such warranty. The warranty shall cover the cost of removal from the Project Site, transportation to and from the repair facility, reinstallation after repairs, and any and all other "in and out" work.

6.6 Balance of Plant Warranties

All combiner boxes shall be provided with an original equipment manufacturer's warranty that such combiner boxes are free from defects in material, manufacture, workmanship, and design for a period of at least five (5) years from the date of completion of the installation thereof. The combiner box manufacturer shall be required to repair or replace any combiner box (or component thereof) in breach of such warranty. The combiner box warranty shall cover the cost of removal from the Project Site, transportation to and from the repair facility, reinstallation after repairs, and any and all other "in and out" work.

Seller shall ensure that the provider of the LCS software commits to the following:

- Conduct reviews for emerging vulnerabilities that will potentially impact the LCS
- Notify Buyer of new vulnerabilities within a time frame acceptable to Buyer after those vulnerabilities become known
- Develop corrections (patches) to the product to address identified vulnerabilities.

6.7 Battery Energy Storage System Warranty

The BESS shall be provided with an original equipment ~~manufacturer's~~manufacturers or BESS contractor's, as applicable, warranty that all equipment, systems, and components included in the BESS are free from defects in material, manufacture, workmanship, and design for a period of at least ten (10) years from the date the Project achieves Substantial Completion. The original equipment manufacturer or BESS contractor, as applicable, shall repair or replace any equipment, system, or component of the BESS in breach of such warranty.

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The BESS shall also be provided with an original equipment ~~manufacturer's~~manufacturers or the BESS contractor's, as applicable, warranty covering the BESS RT Efficiency, the BESS Power Rating, and the BESS Capacity for a period of ten (10)~~-~~ years from the date the Project achieves Substantial Completion with an option to extend such performance warranty for a twenty (20)~~-~~ years from Substantial Completion. The original equipment manufacturer or the BESS contractor, as applicable, shall repair or replace any equipment, system, or component of the BESS causing the BESS to not meet the requirements of such performance warranty.

The BESS warranty shall cover the cost of removal from the Project Site, transportation to and from the repair facility, reinstallation after repairs, and any and all other "in and out" work.

7 TRAINING

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Buyer will identify a project team to be trained by Seller during the design, construction, commissioning, and testing of the Project.

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. Each individual shall be assigned a qualification plan and schedule according to his or her designated position within the project team.

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.

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 and auxiliary equipment and systems included in the Project.

All presented lectures shall be conducted by personnel having extensive experience both in PV solar plant start-up, operations and maintenance, 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.

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Scheduling of the training program shall be subject to mutual agreement between Seller and Buyer.

Training shall include:

- Solar resource basics
- Introduction to PV and solar
- Performance modeling basics and software operation
- BESS basics
- Introduction to Project equipment (PV Modules, PCUs, Trackers, the BESS, transformers, switchgear, etc.)
- Plant installation basics
- Inspection and testing basics
- Control system basics
- Interconnection basics.

Without limiting the other terms of this Section ~~7~~7, training will be provided with respect to the following Project equipment/systems, at a minimum:

- PCUs
- Trackers
- BESS
- LCS
- Met stations
- HV/MV switchgear.

7.1 Training Goals

The goal of the training program is to ensure that Project personnel acquire and maintain the knowledge and skills required to fulfil their responsibilities such that the Project is operated safely, efficiently, and in accordance with the Performance Standard.

7.2 Program Description

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Seller shall ensure that 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 training program shall make up the majority of all training at the Project Site. 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.

The training plan shall include the following minimum training:

- Overview of the Project and Technology
  - The training will be attended by trainees assigned by Buyer
  - The training will be delivered at the Project Site
  - The training shall cover, at a minimum, the following topics: introduction to PV and BESS, basics of electricity, PCU, rectifiers, transformers, switchgear, Project installation and testing, HSE, control system, measurement of input/output energy, transmission lines (underground and overhead as applicable), etc.
  - Training shall cover all normal and off-normal operating procedures, which Seller shall provide to Buyer
- O&M training during the construction, commissioning, and testing phases
  - The training will be attended by trainees assigned by Buyer
  - The training will be delivered at Project Site
  - The training shall include at least the following topics: Plant operation, O&M philosophy, preventive and corrective maintenance, HSE, quality assurance and control, spare parts philosophy, etc.

Seller shall be responsible for the attendance of all instructors needed to provide proper training for each piece of equipment and system.

8 HEALTH AND SAFETY REQUIREMENTS

8.1 General Requirements

Seller shall prepare and implement a comprehensive Project/Project Site-specific health, safety, and environment policy and associated procedures (HSE Plan) for the

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performance of the Work. The HSE Plan shall apply at all times during the design, preparation, construction, and operation of the Project and shall be prepared in accordance with, and require compliance with, all Laws (including codes and standards) and applicable Permits and the other elements of the Performance Standard. The terms of the HSE Plan shall not conflict with the terms of the Project Custody Plan. For the period from and after the Closing, the terms of the HSE Plan shall be no less stringent than the terms of Buyer's rules, policies, procedures, and programs applicable to sites similar to the Facility site and the performance of work similar to the Work for any of the health, safety, environmental, and other matters covered in the HSE Plan and will not eliminate, condition, or otherwise limit any rights granted to Buyer (or any member of the Buyer Group) under the Agreement or any Ancillary Agreement.

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. Without limiting Section 4.1(c) of the main body of the Agreement or the other elements of the Performance Standard, 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 (such as, for example, how to properly handle generated and stored energy in emergencies) and operation of the Project prior to Substantial Completion. Without limiting the foregoing, 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 Project Custody 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 that 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.

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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/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.

8.1.1 Fire Protection and Firefighting Systems

The fire alarm and detection systems and the fire protection and firefighting systems for the Project shall include the systems required to meet local and National Fire Protection Association (NFPA) Standards.

- All fire alarms shall be arranged to annunciate at a constantly attended location on a main fire alarm control panel. Local panels may be installed in addition to the main panel as required or appropriate.
- If the Project's local panels and main fire alarm panel are installed by multiple Contractors or Subcontractors, one of the Contractors or Subcontractors shall be designated in writing as responsible for the integration of all remote alarms to the main fire alarm panel and such record shall be transferred to Buyer at the Closing
- Each fire alarm shall be readily accessible for inspection, testing, maintenance, repair, and replacement and installed in accordance with the Performance Standard
- All communications (network) wiring shall be Class- A; individual detection circuits may be Class- B
- The main fire alarm control panel shall have the capability to serve a minimum of 500 fire alarms and to create and store an accurate, comprehensible, electronically retrievable historical record of the activation and performance of such alarms.

Smoke and/or heat detection systems at the Project shall be provided in accordance with NFPA 72 and where recommended by NFPA- 850, specifically, but not limited to, the following areas as applicable:

- Air aspirating early warning smoke detection (e.g., VESDA) shall be provided in areas with critical electronic equipment (e.g., computer rooms/DCS servers, BESS)

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- Control rooms shall have smoke detection installed throughout the control room in the spaces that may contain humans, below raised floor systems, and above suspended ceilings
- In control rooms that are or may be occupied 24/7, the detection in the operating spaces may be omitted
- Control room break areas
- In-duct detectors shall be used for ventilation systems in occupied buildings
- Switchgear rooms and relay rooms
- Battery rooms
- Warehouses and buildings.

The Project shall be designed and built with a safe operating environment for equipment and personnel. Seller shall select and install equipment and systems for the Project in accordance with such obligation and separate equipment and systems at the Project Site with sufficient distance, clearance, and other safeguards to mitigate hazards and risks, including fire. The Project shall comply with all fire protection, fire alarm, firefighting, and similar Laws (including codes and standards), applicable Permits, the NFPA (including NFPA- 850 and NFPA- 855), and the other elements of the Performance Standard.

Miscellaneous site support structures such as warehouses, oil storage buildings, vehicle maintenance facilities, bulk compressed gas storage, or other facilities not specifically mentioned above in this Section ~~8.1.1~~ 8.1.1shall be evaluated for the need for or appropriateness of automatic fire, smoke, and heat detection systems and equipment and for water-based fire suppression systems in accordance with applicable codes and standards and the other elements of the Performance Standard.

Miscellaneous site structures shall be separated from other important plant structures and equipment in accordance with NFPA- 80A.

Different firefighting systems shall be adopted according to the operational characteristics of the particular areas and improvements on and near the Project Site to be protected.

Seller shall coordinate the firefighting plan, system, and solutions for the Project and the Project Site with the local fire department, and shall obtain approval of the same from Buyer.

Portable fire extinguishers shall be provided at strategic locations in accordance with NFPA- 10 and the Performance Standard.

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- Sensitive electronic equipment areas (BESS, control room/DCS servers/computer room, etc.) shall have an ABC-rated clean agent, Halotron, water mist, or other effective agent that does not leave a residue after use. Dry chemical extinguishers shall not be used in these areas.

- General electrical hazard areas shall utilize CO_2 or a clean agent extinguisher sized appropriately for the hazard. Dry chemical extinguishers shall not be used for general electrical hazards

- General areas and oil hazard areas may use any suitable ABC-rated extinguisher, including dry chemical

- Extinguishers shall be located as follows:

    - Near entrances and/or exits to an area

    - Extinguishers in occupied buildings (warehouse, control room, DCS server/computer room, electrical distribution, etc.), if applicable, shall be located, at a minimum, at each exit door, with additional extinguishers in the interior spaces if required to meet NFPA 10 travel distances.

8.1.2 Safety Rules and Procedures

Without limiting the Performance Standard, 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.

8.2 Arc Flash Hazard Analysis Study/Calculation

Seller shall perform in accordance with IEEE Standard 1584 an arc flash hazard analysis study/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 operation and maintenance 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 in accordance with the Performance Standard.

8.3 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

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for identification of Hazardous Substances as described in NFPA- 704 shall be included in accordance with the Performance Standard on the fencing, each building, and any other enclosure at the Project Site.-

8.4 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 undertake such works and other activities as necessary or advisable to engender and maintain, and shall perform the Work and its other obligations under the Agreement in a manner that is intended to engender and maintain, a positive perception of the Project within, and a harmonious relationship with, the surrounding community, such that Buyer could reasonably be expected to inherit that perception and relationship at the Closing and thereafter preserves the same through Substantial Completion and, to the extent based on Seller's or ~~the Seller Service Providers'~~its Contractors' or Subcontractors' acts or omissions, thereafter.

9 DOCUMENTATION TO BE SUBMITTED PRIOR TO COMPLETION OF THE DESIGN AND ENGINEERING PHASE

9.1 Documentation to be Submitted During Project Design (Documents Issued for Construction)

Without limiting Seller's obligation to provide other documents required to be delivered under this Scope Book or the Agreement, Seller shall prepare and submit to Buyer the following documents during the design and engineering phase of the Project:

- Monthly progress reports in accordance with Section 6.2 of the main body of the Agreement
- Drawings and documents provided with Permit applications in accordance with Section 5.5(c) of the main body of the Agreement 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
- Subject to ~~Section 4~~Appendix 2 below, the final Energy Model, including
    - All PVsyst project files, inputs, parameters, and reports
    - 30-year estimates
    - P50 and P90 estimates
- Project documents, including:
    - General arrangement and layout drawings

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- Plans, sections, and details for each system
- Underground arrangement drawings (mechanical, electrical, and civil)
- Electrical Diagrams for each system (single line diagrams, three-line diagrams and elementary diagrams)
- Cable layouts
- Grading and drainage drawings
- Foundation drawings
- Structural Calculations
  - PV racking and foundations, including all wind tunnel test reports, load derivations, corrosion calculations, detailed structural steel code checks, soil/structural embedment and deflections calculations using LPILE or equivalent and pile load test data, and connection calculations
  - Inverter and battery/BESS foundation calculations
  - Battery/BESS enclosure structural calculations
  - Substation structure and foundation calculations
- Specifications and datasheets

- Site studies (geotechnical, hydrological, etc.)
- Construction Pile Installation QA/QC Procedure
  - Pile installation tolerances
  - Out of tolerance remediation plan
  - Pile rejection criteria
    - Damage to pile
    - Extreme out of tolerance
  - Pile testing campaign
    - Sampling population and acceptance criteria

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- Pile load test procedure

- The initial, baseline Environmental Assessment (subject to Section 7.1 or Section 7.2, as applicable, of the main body of the Agreement)
- System description of the main systems for the Project
- Start-up and shut-down diagrams
- 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
- Preliminary Commissioning Program with procedures for respective tests and activities
- The Project Performance Test procedures
- Preliminary O&M philosophy
- The site-specific fire protection design basis in accordance with NFPA 850, Chapter 4, including:

    1. Plant name/location information
    2. Plant location
    3. Responsible fire protection engineer
    4. Table of Contents
    5. Stakeholders
    6. General fire protection philosophies
    7. Assumptions
    8. Site-specific information
    9. Source documents
    10. Plant layout (description of fire areas)
    11. Water supply (fire protection water storage, fire pumps, mains, hydrants, etc.)

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12. Hazards

13. Administrative controls.

9.2 Documentation to be Submitted During Project Construction

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Without limiting any other documents required to be delivered under the Agreement or this Scope Book, Seller shall prepare and submit to Buyer the following documents from and after the Construction Commencement Date through Substantial Completion:

- Monthly progress reports in accordance with Section 6.2 of the main body of the Agreement, including: — Formatted: English (Canada)
  - Engineering, procurement and construction activities — Formatted: Bullet 1.5, No bullets or numbering
  - HSE information (near misses, incidents, accidents, training, etc.)
  - Updated Project schedule including lookahead for coming month
  - Visual report of completed activities using layout drawings and photographs
- Copy of all Project Work Permits and Project Operational Permits when obtained — Formatted: English (Canada); Formatted: O-Bullet 1",3Bullet,s27
- Final Commissioning Program — Formatted: English (Canada)
- Final Performance Test Procedure — Formatted: English (Canada)
- Final O&M Philosophy — Formatted: English (Canada)
- Construction Test Reports — Formatted: English (Canada)
  - Compaction test results and related documents for roads, substation pads, and at non-pile supported foundations and structures — Formatted: Bullet 1.5, No bullets or numbering
  - In situ pile test results and related documents.

9.3 Documentation to be Submitted at Substantial Completion Payment Date

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Without limiting any other documents required to be delivered under the Agreement or this Scope Book, Seller shall prepare and submit to Buyer the following documents prior to Substantial Completion:

- Draft As-Builts for all drawings and documents submitted during the engineering and design phase and during Project construction as described above with final As-Builts to be delivered as a condition to Final Completion — Formatted: O-Bullet 1",3Bullet,s27, No bullets or

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- Test Results
    - Factory Acceptance Test Results and Certificates for key equipment, including those listed in Section 5.2 of this Scope Book
    - Arch/Flash Test Results and Certificates
    - Project Performance Test Results and Certificate
- A Project operation and maintenance manual, including all OEM manuals and related documentation
- Reports and Other Documents
    - All Permits
    - All signed and approved design change requests
    - All site study reports (geotechnical, hydrological, EIA, etc.)
    - Training manuals
    - Punchlist in accordance with Section 7.5(b) of the main body of the Agreement, including the agreed Punchlist Holdback Amount
    - Invoices
    - Records.

9.4 Supplemental Appendix Information

For each of Appendices 1 through 6 attached hereto, and in accordance with the other terms of this Agreement, including the applicable Appendix, the Scope Book, and the remainder of this Section 9.4, 9.4, Seller shall update all cells left blank, if applicable, as of the Effective Date in such Appendix with accurate data, content, and/or information contemplated for such cell by the applicable row and heading in such Appendix. Subject to the other provisions of this Section 9.4 9.4 and the applicable Appendices, and without limiting the other terms the Agreement, Seller shall provide to Buyer, using the best information reasonably available to Seller at the time, periodic updates to each such Appendix at the intervals specified in the Agreement for Seller updates to the Schedules, provided that no cells may be updated after the date that is 90 days prior to the Closing without the prior written agreement of Buyer and Seller.

End of Scope Book Main Body

Exhibit A – Page 99

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Appendix 1: Performance Guarantees

PERFORMANCE GUARANTEES				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**NOTES**
1	**MINIMUM CRITERIA**			
1.1	Guaranteed PV Plant Capacity (@ Electrical Interconnection Point (EIP))	MWac		Final
1.2	Minimum PV Plant Capacity (@Electrical Interconnection Point (EIP))	MWac		Final. 95% of Guaranteed PV Plant Capacity
1.3	Guaranteed Run Requirement	Duration		Uninterrupted operation during the Project Performance Test for PV Plant Capacity subject to the Failure Mode Guidelines as set forth in ~~Appendix 5~~Appendix 5 of this Scope Book
1.4	Project Net Electricity Production (P50) in Year 1 (starting at the Substantial Completion Payment Date) @ Electrical Interconnection Point (EIP))	MWh		Final
1.5	Guaranteed BESS Power Rating (@Electrical Interconnection Point (EIP))	MWac		Final
1.6	Minimum BESS Power Rating (@Electrical Interconnection Point (EIP))	MWac		Final 95% of Guaranteed BESS Power Rating

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PERFORMANCE GUARANTEES				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**NOTES**
1.7	Guaranteed BESS Energy Storage Capacity (@Electrical Interconnection Point (EIP))	MWh ac		Final
1.8	Minimum BESS Storage Capacity Electrical Interconnection Point (EIP))	MWh ac		Final 95% of Guaranteed BESS Storage Capacity
1.9	BESS RT Efficiency (@ BESS)	%		Final
1.10	Minimum BESS RT Efficiency (@ BESS)	%		Final 95% of Guaranteed BESS RT Efficiency
1.11	Minimum BESS Availability (Required / As Bid)	%	99% /	Final
1.12	Long-Term BESS Availability (Required / As Bid)	%	97% /	Final

Notes:

"Final" – Seller may update data or other information for the specified characteristic only with the prior written agreement of Buyer and Seller, which shall not be unreasonably withheld by either Party.

This Appendix is subject to, without limitation, the terms of Section ~~9.4~~ 9.4 of the Scope Book.

***** END OF APPENDIX 1 *****

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Appendix 2: Energy Model

The following table sets forth certain inputs to and results from the Energy Model (PVsyst). Seller shall update information in ~~Appendix 2~~ Appendix 2according to the table below, ~~Appendix 5~~ Appendix 5- Energy Yield Verification hereto, and Section ~~9.4~~ 9.4 of the Scope Book.

CERTAIN ENERGY MODEL INPUTS				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
1	**REFERENCE SITE CONDITIONS**	-		
1.1	Global Horizontal Irradiation (GHI) @ ground level	kWh/m²		Final
1.2	Diffuse Horizontal Irradiation (DHI) @ ground level	kWh/m²		Final
1.3	Ambient temperature	°C		Final
1.4	Altitude (above sea level)	Ft		Final
2	**WEATHER DATA**	-		
2.1	Data source	-		Final
2.2	Period of data collection	Months		Final
2.3	Distance from site or spatial resolution	Km		Final
2.4	Uncertainty	%		Final
3	**MODEL PARAMETERS**	-		
3.1	Installed Capacity (DC)	MWp		2
3.2	Nominal Power (AC)	MW		2
3.3	Nominal Power at Electrical POI (AC)	MW		Final
3.4	DC/AC ratio	-		2

CERTAIN ENERGY MODEL INPUTS				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
3.5	PVsyst Software Version (should be as bid)	-		Final
3.6	Transposition Model	-		Final
3.7	Meteorological File Parameters (should be as bid)	-		Interval end is preferred
3.8	Post Processed Losses	%		2
3.9	**PV Modules**	-		
3.9.1	PV module manufacturer and model	-		1
3.9.2	PV module power at STC	Wp		1
3.9.3	Technology	-		Final
3.9.4	Number of PV Modules per string	-		1
3.9.5	Total number of PV Modules installed	-		1
3.9.6	Total number of strings	-		1
3.10	**Inverters**	-		
3.10.1	Inverter manufacturer and model	-		1
3.10.2	Input voltage rating	VDC		2
3.10.3	Number of strings per inverter	-		1
3.10.4	Number of inverters	-		1
3.11	**Mounting System**	-		
3.~~11~~11.1	Tilt angle of ~~fixed tilt system or~~ rotation limits of tracking system	°		2

CERTAIN ENERGY MODEL INPUTS				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
3.11.2	Backtracking	Yes / No		2
3.11.3	Orientation of PV Modules (azimuth)	°		1
3.11.4	Installation type (portrait / landscape)	-		1
3.11.5	Rows and columns per mounting structure	- x -		1
3.11.6	Ground Coverage Ratio	%		1
3.12	**Array losses**	-		
3.12.1	Module quality loss	%		2
3.12.2	Module mismatch losses	%		2
3.12.3	String mismatch losses	%		2
3.12.4	Light induced degradation losses	%		2
3.12.5	IAM losses defined by manufacturer	Yes / No		2
3.12.6	Constant thermal loss factor	$W/m^2/k$		1
3.12.7	Wind loss factor	$W/m^2/k/m/s$		1
3.12.8	Soiling losses January February March April May June	%		2 Average Annual and Monthly

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CERTAIN ENERGY MODEL INPUTS				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
	July August September October November December			
3.12.9	Ground Albedo January February March April May June July August September October November December			2 Average Annual and Monthly

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CERTAIN ENERGY MODEL INPUTS					
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**		**CLASSIFICATION; NOTES**
3.12.10	Spectral correction applied	Yes / No			Final
3.13	**Cabling**	-			
3.13.1	DC ohmic losses @STC (Max/Calculated)	%			2
3.13.2	AC ohmic losses @STC (Max/Calculated)	%			2
3.14	**Transformers**	-			
3.14.1	Transformer type	-			1
3.14.2	Number of transformers	-			1
3.14.3	Constant Loss	W			1
3.14.4	Peak Power Loss	W			1
3.15	**System losses**	-			
3.15.1	Year 1 (starting at the Substantial Completion Payment Date) degradation	%			2
3.15.2	Annual degradation	%			2
3.15.3	Light soaking effect	%			2
3.15.4	Inverter losses	%			2
3.15.5	Auxiliary losses	%			2
3.15.6	Unavailability	%			2
3.15.7	Combined Uncertainty	%			2
4	**ANNUAL PERFORMANCE RESULTS**	-	**PVsyst Results**	**Final Results**	Final Results include all post-processing work
4.1	Net electricity production	MWh/yr			2

CERTAIN ENERGY MODEL INPUTS					
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**		**CLASSIFICATION; NOTES**
4.1.1	Year 1 (starting at the Substantial Completion Payment Date), P50	MWh/yr			2
4.1.2	Year 1 (starting at the Substantial Completion Payment Date), P90	MWh/yr			2
4.1.3	30-year average, P50	MWh/yr			2
4.2	Specific Yield (Year 1, starting at the Substantial Completion Date, P50)	kWh/kWp/yr			2
4.3	Performance Ratio (Year 1, starting at the Substantial Completion Date, P50)	%			2

CLASSIFICATION LEGEND:

"1" – Subject to the other terms of the Agreement (including the Scope Book), Seller may update data or other information for the specified characteristic until 90 days prior to the Closing.

"2" - Subject to the other terms of the Agreement (including the Scope Book), Seller may update data or other information for the specified characteristic until 90 days prior to the Closing if the update constitutes an improvement to the specified characteristic's performance capabilities. The net effect of all updates classified as category 2 updates under Appendices 2, 3, and 4 may not be to increase the levelized cost of energy from the Project.

"Final" – Seller may update data or other information for the specified characteristic only with the prior written agreement of Buyer and Seller, which shall not be unreasonably withheld by either Party.

This Appendix is subject to, without limitation, the terms of Section ~~9.4~~ 9.4 of the Scope Book.

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***** END OF APPENDIX 2 *****

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Appendix 3: Design and Operational Data

The following table sets forth certain design and operational requirements for the overall Project. Seller shall update items in ~~Appendix 3~~Appendix 3 as noted below.

DESIGN AND OPERATIONAL DATA				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
1	**DESIGN CONDITIONS**	-		
1.1	Design lifetime of the plant (Required / As Bid)	years	~~/~~30/	Final
1.2	Average elevation	ft a.s.l.		Final
1.3	Ambient Temperature Recorded (Minimum/Average/Maximum)	°F		Final
1.4	Design Temperature for Operation (Minimum/Maximum)	°F		Final
1.5	Design Humidity Ratio (Minimum/Maximum)	Grams of water vapor / Grams of dry air		Final
1.6	Design wind speed (per ASCE 7, Risk Category- III)	Mph		2
1.7	Rainfall (Annual Avg/Annual Max/1-day Max/Design Basis Rainfall Event)	In		Final
1.8	Typical meteorological year (GHI)	kWh/m²		2
1.9	Seismic Zone	-		2 Zone and ground acceleration values shall be confirmed by the Project's geotechnical study

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DESIGN AND OPERATIONAL DATA				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
1.10	Available Area required (approx.)	Acres		2
2	**GENERAL PLANT DATA**			
2.1	PV technology type			2
2.2	Installed Capacity (total DC peak power)	MWp		2
2.3	Nominal Power (AC) (total nominal inverter output)	MW		2
2.4	Nominal Power at Electrical POI (AC)	MW		2
2.5	DC/AC ratio			2
2.6	Nighttime Auxiliary Power (Average/Peak)	MW		2
2.7	Annual Nighttime Auxiliary Power	MWh		2 Year 1 (starting at the Substantial Completion Payment Date) based on TMY
2.8	Total area covered by PV arrays	acres		2
2.9	Total area of Project	acres		2
2.10	Row to row spacing	Ft		1
2.11	Ground Coverage Ratio	%		1
2.12	Shading losses due to internal row spacing	%		1
2.13	Total number of PV panels	Qty		1
2.14	Total number of strings	Qty		1
2.15	Total number of racking system tables	Qty		1

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DESIGN AND OPERATIONAL DATA				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION;** **NOTES**
2.16	Total number of combiner boxes	Qty		1
2.17	Total number of inverters	Qty		1
2.18	Total number of LV/MV transformers	Qty		1
3	**MONTHLY PERFORMANCE RATIOS**	-		
3.1	January	%		1
3.2	February	%		1
3.3	March	%		1
3.4	April	%		1
3.5	May	%		1
3.6	June	%		1
3.7	July	%		1
3.8	August	%		1
3.9	September	%		1
3.10	October	%		1
3.11	November	%		1
3.12	December	%		1
3.13	PR Base	%		1
4	**YEARLY PERFORMANCE RATIOS**	-		
4.1	Year 1 (starting at the Substantial Completion Payment Date)	%		1
4.2	Year 2	%		1
4.3	Year 3	%		1

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DESIGN AND OPERATIONAL DATA				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION;** **NOTES**
4.4	Year 4	%		1
4.5	Year 5	%		1
4.6	Year 6	%		1
4.7	Year 7	%		1
4.8	Year 8	%		1
4.9	Year 9	%		1
4.10	Year 10	%		1
4.11	Year 11	%		1
4.12	Year 12	%		1
4.13	Year 13	%		1
4.14	Year 14	%		1
4.15	Year 15	%		1
4.16	Year 16	%		1
4.17	Year 17	%		1
4.18	Year 18	%		1
4.19	Year 19	%		1
4.20	Year 20	%		1
4.21	Year 21	%		1
4.22	Year 22	%		1
4.23	Year 23	%		1
4.24	Year 24	%		1
4.25	Year 25	%		1
4.26	Year 26	%		1
4.27	Year 27	%		1
4.28	Year 28	%		1
4.29	Year 29	%		1
4.30	Year 30	%		1

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DESIGN AND OPERATIONAL DATA				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
5	**ANNUAL DEGRADATION FACTOR**	-		
5.1	Year 1 (starting at the Substantial Completion Payment Date)	%		Final Maximum 2% allowed
5.2	Year 2	%		Final Maximum 0.5% allowed for Year 2 and afterward
5.3	Year 3	%		Final
5.4	Year 4	%		Final
5.5	Year 5	%		Final
5.6	Year 6	%		Final
5.7	Year 7	%		Final
5.8	Year 8	%		Final
5.9	Year 9	%		Final
5.10	Year 10	%		Final
5.11	Year 11	%		Final
5.12	Year 12	%		Final
5.13	Year 13	%		Final
5.14	Year 14	%		Final
5.15	Year 15	%		Final
5.16	Year 16	%		Final
5.17	Year 17	%		Final
5.18	Year 18	%		Final

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DESIGN AND OPERATIONAL DATA				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
5.19	Year 19	%		Final
5.20	Year 20	%		Final
5.21	Year 21	%		Final
5.22	Year 22	%		Final
5.23	Year 23	%		Final
5.24	Year 24	%		Final
5.25	Year 25	%		Final
5.26	Year 26	%		Final
5.27	Year 27	%		Final
5.28	Year 28	%		Final
5.29	Year 29	%		Final
5.30	Year 30	%		Final
6	**YEARLY PRODUCTION**	-		
6.1	Year 1 (starting at the Substantial Completion Payment Date)	MWh/yr		Final
6.2	Year 2	MWh/yr		Final
6.3	Year 3	MWh/yr		Final
6.4	Year 4	MWh/yr		Final
6.5	Year 5	MWh/yr		Final
6.6	Year 6	MWh/yr		Final
6.7	Year 7	MWh/yr		Final
6.8	Year 8	MWh/yr		Final
6.9	Year 9	MWh/yr		Final
6.10	Year 10	MWh/yr		Final
6.11	Year 11	MWh/yr		Final

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DESIGN AND OPERATIONAL DATA				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
6.12	Year 12	MWh/yr		Final
6.13	Year 13	MWh/yr		Final
6.14	Year 14	MWh/yr		Final
6.15	Year 15	MWh/yr		Final
6.16	Year 16	MWh/yr		Final
6.17	Year 17	MWh/yr		Final
6.18	Year 18	MWh/yr		Final
6.19	Year 19	MWh/yr		Final
6.20	Year 20	MWh/yr		Final
6.21	Year 21	MWh/yr		Final
6.22	Year 22	MWh/yr		Final
6.23	Year 23	MWh/yr		Final
6.24	Year 24	MWh/yr		Final
6.25	Year 25	MWh/yr		Final
6.26	Year 26	MWh/yr		Final
6.27	Year 27	MWh/yr		Final
6.28	Year 28	MWh/yr		Final
6.29	Year 29	MWh/yr		Final
6.30	Year 30	MWh/yr		Final

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DESIGN AND OPERATIONAL DATA				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
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***** END OF APPENDIX 3 *****

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Appendix 4: Key Equipment Datasheets

The following tables detail the design requirements for the designated Project equipment.

PV MODULE				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
1	**GENERAL**			
1.1	Manufacturer			1
1.2	Type/Model			1
1.3	Cell type			Final
1.4	Cell configuration			1
2	**ELECTRICAL DATA**			
2.1	Nominal maximum power	W		1
2.2	Power tolerance	W		1
2.4	Module efficiency	%		1
2.5	Rated voltage (Vmp)	V		1
2.6	Rated current (Imp)	A		1
2.7	Open-Circuit voltage	V		1
2.8	Short-Circuit voltage	V		1
2.9	Maximum system voltage	VDC		2
2.10	Series fuse rating	A		1
2.11	Annual degradation factor	%		2
2.12	Grounding requirements			1
3	**TEMPERATURE CHARACTERISTICS**			
3.1	Power	%/K		1
3.2	Voltage	%/K		1
3.3	Current	%/K		1
4	**MECHANICAL DATA**			
4.1	Cell type			2
4.2	Cell arrangement			1

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PV MODULE				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
4.3	Dimensions	Mm		1
4.4	Front cover			1
4.5	Frame material, if applicable			1
4.6	Junction box			1
4.7	Cable			1
4.8	Weight	Kg		1
5	**TESTED OPERATION CONDITIONS**			
5.1	Operating temperature	ºC		1
5.2	Max load	Pa		2
5.3	Impact resistance			2
6	**WARRANTIES**			
6.1	Product warranty period (Required / As Bid)	Yrs	-10 /	Final
6.2	Power warranty (Required / As Bid)	Yrs	-25 /	Final
6.3	Certifications			2

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PV MODULE				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
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Nº	CHARACTERISTICS	UNITS	DATA	CLASSIFICATION; NOTES
1	**GENERAL**			
1.1	Manufacturer			1
1.2	Type/Model			1
1.3	Nº machines			1
2	**INPUT RATING**			
2.1	Rated power	kW		1
2.2	Max. DC Input voltage	V		2
2.3	MPP voltage range	V		1
2.7	Nº of MPP trackers			1
2.8	Input overvoltage protection			1
3	**OUTPUT RATING**			
3.1	Rated output power	kW		1
3.2	Rated grid voltage	V		1
3.3	Voltage range	V		1
3.4	Max. output current	A		1
3.5	Contributory fault current	A		1
3.6	Rated frequency	~~hz~~Hz		2
3.7	Nominal power factor and adjustable range	%		
3.8	THD (rated power)	%		2
3.9	Output fuse rating	A		1
3.10	Output overvoltage protection			1
4	**OPERATING PERFORMANCE**			
4.1	Maximum efficiency	%		1
4.3	CEC weighted efficiency	%		1
4.4	Max. standby consumption	W		2
4.5	Max. self-consumption (operation)	W		2

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Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
5	**ENVIRONMENT**			
5.1	Operating temperature range	ºC		2
5.2	Noise level	dBA		2
5.3	Maximum installation altitude without derating	m a.s.l.		1
5.4	Maximum acceptable temperature at Pn	ºC		1
5.5	Installation type	indoor / outdoor		Final
5.6	Dimensions/machine (width/height/depth)			1
5.7	Weight/machine	Kgs		1
5.8	Galvanic isolation			1
6	**COOLING**			
6.1	Cooling method			1
6.2	Cooling air requirement	~~cfm~~Cfm		1
6.3	Heating system			1
7	**OTHERS**			
7.1	Communication			1 DNP3 is a preferred alternative
7.2	Emergency stop			2
7.3	Positive earth soft connection			1
7.4	External auxiliary power for inverter machine			1
7.5	Additional circuits for tracker motors			1
7.6	Disconnect parameter adjustable			1
7.7	All pole sensitive RCB			1

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Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
7.8	Isolation monitoring			1
7.9	Overload behavior			1
7.10	Internal DC switch			2
8	**WARRANTIES**			
8.1	Product warranty period (Required / As Bid)	~~yrs~~Yrs	5~~/~~	Final
8.2	Certifications			2

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TRACKER				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
1	**GENERAL**			
1.1	Manufacturer			1
1.2	Type	~~Fixed /~~ Tracking		Final
2	**BASIC DATA**			
2.1	Ground Coverage Ratio	%		1
2.2	Type of foundations			1
2.3	Corrosion protection	Yes / No		Dependent on final geotechnical studies
2.4	Type of corrosion protection			Dependent on final geotechnical studies
2.5	Design wind speed (per ASCE 7, Risk Category- III)	Mph		Final
2.6	Tilt	º		2
2.7	Module positions	landscape / portrait		1
2.8	Module arrangement			1
2.9	kWp per table	kWp		1
2.10	Number or tables			1
2.11	Dimensions (length/width/height)	M		1
3	**TRACKER SYSTEM**			
3.1	Maximum slope			2
3.2	Type of tracking system			2
3.3	Tracking range			2
3.4	Backtracking	Yes / No		2

TRACKER				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION;** **NOTES**
3.5	Rows per tracker actuator			1
3.6	Strings per row			1
3.7	Power per tracker	kWp		1
3.8	Drive type			1
3.9	Power consumption	kWh/MWp/yr		1
3.10	Stow Wind Speed	Mph		1
3.11	Motors per MWp			1
4	**WARRANTIES**			
4.1	Manufacturer's material & workmanship (Required / As Bid)	Yrs	-10 /	Final
4.2	Motor, gear, battery, controller (Required / As Bid)	yrs	-5 /	Final
4.3	Certifications			2

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TRACKER				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION;** **NOTES**
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LV/MV TRANSFORMER				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
1	**GENERAL**			
1.1	Manufacturer			1
1.2	Type/Model			1
1.3	Nº of units			1
1.4	Intellectual Properties			1
1.5	Design - manufacture standards			1
1.6	Name of datasheet attached			1
2	**TRANSFORMER CHARACTERISTICS**			
2.1	Type of Transformer			1
2.2	3 x single phase or three-phase			1
2.3	Core or shell			1
2.4	Type of tank			1
2.5	Type of cooling			1
2.6	Vector group			1
2.7	Winding material LV/HV	Al/Cu		1
2.8	Rated frequency	hz		Final
2.9	Transformer life value at IEC conditions			1
2.10	Rated power based @ 20ºC	kW		1
2.11	Higher grid voltage	kV		1
2.12	Insulation voltage level	kV		1
2.13	Short duration withstand voltage	kV		1

LV/MV TRANSFORMER				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
2.14	Test voltage (60 hz 1min)	kV		1
2.15	Transformation ratio			1
2.16	Primary rated current	A		1
2.17	First Secondary rated current	A		1
2.18	Second Secondary rated current	A		1
2.19	Primary no load current	A		1
2.20	Excitation current (rated V/110% rated V)	A		1
2.21	Maximum inrush current HV	A		1
2.22	Maximum withstand short-circuit current	kA		1
2.23	Duration of short-circuit current	S		1
2.24	Tappings			1
2.25	Load losses at 75ºC	W		1
2.26	No-load losses	W		1
2.27	Short-circuit impedance	%		1
2.28	Environmental class			1
2.29	Climatic class			1
2.30	Fire behavior class			1
2.31	Thermal class			1
2.32	Dimensions (width/height/depth)	In		1
2.33	Weight of complete transformer	lbs		1
3	**accessories**			

Exhibit A – Page 128

LV/MV TRANSFORMER				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
3.1	Accessories oil type			1
3.2	Shock tightness degree			1
3.3	Salt-fogtight			1
3.4	Tª resistance			1
3.5	Max. Rated pressure			1
3.6	Pressure range			1
3.7	Oil level			1
3.8	Tª range			1
3.9	PT 100, Dry type			1
3.10	Tª range			1
3.11	Output signal			1
3.12	Other technical characteristics			1
4	**OTHERS**			
4.1	Temperature rising windings	ºF		1
4.2	Terminals (location)			1
4.3	LV			1
4.4	MV			1
4.8	Accessories			1
5	**WARRANTIES**			
5.1	Product Warranty Period (Required / As Bid)	mo	-18-36 /	See Section ~~6.3~~ 6.3 Final
CLASSIFICATION LEGEND:				

LV/MV TRANSFORMER				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION;** **NOTES**
"1" - Subject to the other terms of the Agreement (including the Scope Book), Seller may update data or other information for the specified characteristic until 90- days prior to the Closing. "2" - Subject to the other terms of the Agreement (including the Scope Book), Seller may update data or other information for the specified characteristic until 90- days prior to the Closing if the update constitutes an improvement to the specified characteristic's performance capabilities. The net effect of all updates classified as category- 2 updates under Appendices- 2, 3, and 4 may not be to increase the levelized cost of energy from the Project. "Final" –Seller may update data or other information for the specified characteristic only with the prior written agreement of Buyer and Seller, which shall not be unreasonably withheld by either Party. Subject to the other terms of the Agreement (including the Scope Book), Seller to complete each type of LV/MV transformer used on the Project, including inverter station transformers, at least 90- days prior to Closing. This Appendix is subject to, without limitation, the terms of Section ~~9.4~~ 9.4 of the Scope Book.				

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BATTERY				
Nº	CHARACTERISTICS	UNITS	DATA	CLASSIFICATION; NOTES
1	**GENERAL**	**-**		
1.1	Manufacturer	-		1
1.2	Type/Model	-		1
1.3	Quantity required	Qty		1
1.4	Design - Manufacture standards	-		Final
2	**RATINGS**	**-**		
2.1	Continuous Real Power - Discharge (Rated/Maximum)	MW		2
2.2	Continuous Real Power - Charge (Rated/Maximum)	MW		2
2.3	Continuous Apparent Power - Charge (leading and lagging) (Rated/Maximum)	MVA		2
2.4	Continuous Apparent Power - Discharge (leading and lagging) (Rated/Maximum)	MVA		2
2.5	Continuous Reactive Power (Rated/Maximum)	MVARs		2
2.6	Rated Discharge Energy (BOL)	MWh		2
2.7	Rated Continuous AC Current	A		2
2.8	Output Voltage Range (AC grid voltage)	kV		2
2.9	Output Frequency Range	~~hz~~Hz		2
2.10	Maximum Ramp Rate (charging/discharging)	MW/min		2 Specify any associated parameters such as SOC

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BATTERY				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
2.11	Charge Time (Minimum/Typical/Maximum)	~~hr~~Hr		2 From minimum to rated maximum SOC
2.12	Recommended Charge Power	MW		2
2.13	Typical Charge Time (include any rest period between charge and discharge cycle)	~~hr~~Hr		2
2.14	Expected Availability of System	%		Final
2.15	Typical Start Up Time / Shut Down Time	~~s~~S		2
3	**EFFICIENCY AND CYCLE LIFE**	-		
3.1	Cycle Life @ Full rated power.	~~qty~~Qty		2
3.2	Total Round Trip Efficiency, 100% DOD Cycles, Full rated power (BOL and EOL)	%		2
3.3	Total Round Trip Efficiency, 100% DOD Cycles, 50% rated power (BOL and EOL)	%		2
3.4	Total Round Trip Efficiency, 50% DOD Cycles, Full rated power (BOL and EOL)	%		2
3.5	Total Round Trip Efficiency, 50% DOD Cycles, 50% rated power (BOL and EOL)	%		2
3.6	Total Round Trip Efficiency, 25% DOD Cycles, Full rated power (BOL and EOL)	%		2
3.7	Total Round Trip Efficiency, 25% DOD Cycles, 50% rated power (BOL and EOL)	%		2

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BATTERY				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
4	**AUXILIARY POWER**	-		
4.1	Average Auxiliary Power Required (continuous/peak)	kW		2
4.2	Auxiliary Nominal Voltage	VAC		1
5	**ENVIRONMENT**	-		
5.1	Rate Operating Temperature Range (Minimum-Maximum)	ºF		2
5.2	Noise Level (@ 3ft)	dBA		2
5.3	Rated Operating Relative Humidity Range (Minimum-Maximum)	%		2
5.4	Maximum Installation Altitude Without Derating	ft a.s.l		2
5.5	Installation Type	indoor/ outdoor		Final
5.6	Battery Container/Enclosure Dimension (length/width/height)	~~in~~In		1
5.7	Weight per Battery Container/Enclosure	~~lbs~~Lbs		1
5.8	Galvanic Isolation	-		Final
6	**BATTERY CONTAINER/ENCLOSURE THERMAL MANAGEMENT**	-		
6.1	Startup Time (Typical/Maximum)	~~s~~S		2
6.2	Shutdown Time (Typical/Maximum)	~~s~~S		2
6.3	Estimated Planned Outages	hr/yr		2
7	**BATTERY CONTAINER/ENCLOSURE THERMAL MANAGEMENT**	-		

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BATTERY				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
7.1	Cooling Method	-		1
7.2	Configuration (i.e. 2 x 100%)	-		2
7.3	Cooling Air Requirement	~~cfm~~Cfm		1
7.4	Heating System	-		1
8	**WARRANTIES**	-		
8.1	BESS Product Warranty Period (Required / As Bid)	~~yrs~~Yrs	10 /	Final
8.2	BESS Performance Warranty Period (Required / As Bid)	~~yrs~~Yrs	20 /	Final

CLASSIFICATION LEGEND:

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"2" - Subject to the other terms of the Agreement (including the Scope Book), Seller may update data or other information for the specified characteristic until 90~~-~~ days prior to the Closing if the update constitutes an improvement to the specified characteristic's performance capabilities. The net effect of all updates classified as category~~-~~ 2 updates under Appendices~~-~~ 2, 3, and 4 may not be to increase the levelized cost of energy from the Project.

"Final" –Seller may update data or other information for the specified characteristic only with the prior written agreement of Buyer and Seller, which shall not be unreasonably withheld by either Party.

This Appendix is subject to, without limitation, the terms of Section~~ 9.4~~ 9.4 of the Scope Book.

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BALANCE OF PLANT				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
1	**COMBINER BOXES**			
3.1	Rated output current	A		1
3.2	Number of strings			1
3.3	Permissible DC voltage	Vdc		2
3.4	Protection level, according to IS Codes			2
3.5	UV proof	Yes / No		Final
3.6	String voltage, temperature and surge protection monitoring	Yes / No		1
3.7	String current monitoring	Yes / No		1
3.8	Output DC switch	Yes / No		2
3.9	Surge protection on DC side			2
3.10	Design Ambient Temperature (min/max)	°F		2
3.11	Halogen-free and self-extinguishing housing	Yes / No		1
3.12	Cooling system	Yes / No		1
3.13	Earthing	Yes / No		1
3.14	Warranties (Required / As Bid)	~~yrs~~Yrs	~~/~~2 /	Final
3.15	Enclosure Rating			
2	**CABLES**			
2.1	Solar String Cable Voltage (rated/max)			1
2.2	Solar String Cable Material (conductor/insulator)			1
2.3	Solar String Cable Insulator Class			1
2.4	LV Cable Voltage (rated/max)			1

BALANCE OF PLANT				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
2.5	LV Cable Material (conductor/insulator)			1
2.6	LV Cable Insulator Class			1
2.7	MV Cable Voltage (rated/max)			1
2.8	MV Cable Material (conductor/insulator)			1
2.9	MV Cable Insulator Class			1
2.10	HV Cable Voltage (rated/max)			1
2.11	HV Cable Material (conductor/insulator)			1
2.12	HV Cable Insulator Class			1
3	**POWER CONVERSION AUXILIARY EQUIPMENT**			
3.1	**General**			
3.1.1	Total number of step-up transformers per station			1
3.1.2	Total number of auxiliary transformers per station			1
3.1.3	Temperature range	°F		1
3.1.4	Cooling System			1
3.1.5	Energy consumption	W		1
3.1.6	Dimensions (length/width/height)	~~in~~In		1
3.4	**UPS**			
3.4.1	Manufacturer			1
3.4.2	Type/Model			1
3.4.3	Rated Voltage	V		1
3.4.4	Rated capacity	kVA		1

BALANCE OF PLANT				
Nº	**CHARACTERISTICS**	**UNITS**	**DATA**	**CLASSIFICATION; NOTES**
3.4.5	Time Backup	~~hr~~Hr		1
3.4.6	Inverters and by pass switch redundant (2 x 100%)	Yes / No		1
3.4.7	Protection class			1
4	**INSTRUMENTATION AND CONTROL**			
4.1	Number of operator stations	Qty		
4.2	**Meteorological Stations**	Qty		2
4.2.1	GHI Pyranometer	Qty		Per met station
4.2.2	POA Pyranometer	Qty		Per met station
4.2.3	Ambient temperature	Qty		Per met station
4.2.4	Module temperature	Qty		Per met station
4.2.5	Wind speed (anemometer)	Qty		Per met station
4.2.6	Relative Humidity Sensor	Qty		Per met station
4.2.7	Soiling Monitoring System/Sensor	Qty		Per met station
4.2.8	Data Logger	Qty		Per met station
4.2.9	Battery Backup (required/as bid)	~~hr~~Hr	-12~~/~~/	Per met station
4.2.10	Cloud sensor	Qty		Per met station
4.2.11	Other			List and provide quantity per met station
5	**SPARE PARTS**			
5.1	List all recommended initial spare parts for 25 years operation			To be provided 60 days prior to Closing

CLASSIFICATION LEGEND:

"1" - Subject to the other terms of the Agreement (including the Scope Book), Seller may update data or other information for the specified characteristic until 90- days prior to the Closing.

"2" - Subject to the other terms of the Agreement (including the Scope Book), Seller may update data or other information for the specified characteristic until 90- days prior to the Closing if the update constitutes an improvement to the specified characteristic's performance capabilities. The net effect of all updates classified as category- 2 updates under Appendices- 2, 3, and 4 may not be to increase the levelized cost of energy from the Project.

"Final" –Seller may update data or other information for the specified characteristic only with the prior written agreement of Buyer and Seller, which shall not be unreasonably withheld by either Party.

This Appendix is subject to, without limitation, the terms of Section ~~9.4~~ 9.4 of the Scope Book.

***** END OF APPENDIX 4 *****

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Appendix 5: Project Performance Test Procedures[8]

[Attached]

[8] **NTD:** To be provided by Seller and approved by Buyer prior to the Effective Date. The procedures are expected to include, among other things, pre-test meetings, checks, and other requirements, test procedures and protocols, notice and engineering, equipment, instrumentation, monitoring, control system and other document deliverables, and data collection and filtering.

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***** END OF APPENDIX 5 *****

Appendix 6: Project Site Map[9]

*** END OF APPENDIX 6 ***

[9] Appendix 6 cannot be updated without approval of Buyer.

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Appendix 7: Approved Manufacturers and EPC Contractors List

A vendor appearing in the list below as an Approved Vendor for a particular type of equipment, system, or item shall not be an Approved Vendor for the manufacture of any other type of equipment, system, or item unless it is also identified therein as an Approved Vendor for such other type of equipment, system, or item. The inclusion of an entity on the list does not mean that such entity has been determined to satisfy or been pre-approved with respect to the requirements in, and other terms of, this Scope Book or the Agreement that apply, directly or indirectly, to EPC Contractors, vendors, manufacturers, or providers of equipment, systems, or items on (or not on) the list. Nothing in this Appendix 7 is intended to or shall limit the application of such requirements or terms, directly or indirectly, to any entity on the list.

Vendors or EPC Contractors not included in the list shall be considered and permitted upon Buyer's approval in its sole and absolute discretion. Vendors and EPC Contractors submitted for approval shall be evaluated based on a combination of installed capacity of largest facilities, total installed capacity of all facilities, bankability of product, company net worth, legal standing of the company, safety record and policies, quality assurance/quality control procedures, and other factors.

Approved Manufacturers List					
Major Equipment – Excludes major equipment covered in ~~the~~Appendix 9 - Collector Substation ~~Attachment~~ and ~~the~~Appendix 10 - High Voltage Overhead Transmission ~~Lines Attachment~~Line					
PV Modules	Jinko	Trina	LG	Hanwha Q CELLS	Canadian Solar
	FirstSolar	Astronergy	Talesun	LONGi	Phono Solar (SUMEC)
	Yingli	JA Solar	Suntech	SunPower	REC Solar
	Risen	HT Solar			
Inverters	GE	TMEIC	Schneider	Power Electronics	SMA
	Chint	Ingeteam	ABB		
Racking System	Array Technologies Inc.	NexTracker	Game Change	-SunLink	-Shoals
	RBI	Schletter	TerraSmart	Ideematec	Unirac
	SunPower	Soltec	Nclave		

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Approved Manufacturers List					
Major Equipment – Excludes major equipment covered in ~~the~~Appendix 9 - Collector Substation ~~Attachment~~ and ~~the~~Appendix 10 - High Voltage Overhead Transmission ~~Lines Attachment~~Line					
LV/MV Transformer	ABB	Central Maloney	ERCOM		
	Virginia Transformer with external surge arrestor	Cooper/ Eaton			
Switchgear	ABB	Cutler-Hammer	GE	Powell	
Balance of Plant					
Combiner / Recombiner Boxes	SolarBOS	Shoals	Bentek	-	
Disconnects	Square D	Siemens	Eaton	ABB	SMA
Data Logger	Campbell Scientific	Kipp and Zonen			
Pyranometer	Kipp and Zonen	Eppley Laboratory	EKO		
Temperature Sensor (cell)	Aros Solar Technology				
Anemometer	Gill Instruments				
Power Distribution Center	Powell	Zachry	PACS	-Alstom	
Battery Energy Storage System					
Batteries	Samsung	LG Chem	BYD	Panasonic	Tesla
	CATL				
Power Conversion System	SMA	TMEIC	Schneider	Power Electronics	Ingeteam
	ABB	Chint			

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EPC Contractors: [Seller to provide a list of EPC Contractors for Buyer's approval]

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APPENDIX 8: NERC Requirements - Effective Date[10]

NERC Standard	Title	Requirement(s)	NERC Responsibility
EOP-004-4	Event Reporting	R1, R2	GO/GOP
FAC-001-3	Facility Interconnection Requirements	R2, R4	GO
FAC-002-2	Facility Interconnection Studies	R2, R5	GO
FAC-003-4	Vegetation Management	R1, R2, R3, R4, R5, R6, R7	GO
FAC-008-3	Facility Ratings	R1, R2, R6, R7, R8	GO
IRO-010-2	Reliability Coordinator Data Specification and Collection	R3	GO/GOP
MOD-025	Verification and Data Reporting of Generator Real and Reactive Power Capability and Synchronous Condenser Reactive Power Capability	R1, R2	GO
MOD-026	Verification of Models and Data for Generator Excitation Control System or Plant Volt/Var Control Functions	R2, R3, R4, R5	GO
MOD-027	Verification of Models and Data for Turbine/Governor and Load Control or Active Power/Frequency Control Functions	R2, R3, R4	GO
MOD-032-1	Data for Power System Modeling and Analysis	R2, R3	GO
PRC-002-2	Disturbance Monitoring and Reporting Requirements	R2, R3, R4, R7, R8, R9, R10, R11, R12	GO
PRC-004-5(i)	Protection System Misoperation Identification and Correction	R1, R2, R3, R4, R5, R6	GO
PRC-005-1.1b	Transmission and Generation Protection System Maintenance and Testing	R1, R2	GO

[10] **NTD**: Items to be updated and current as of the Effective Date of the Agreement and as required thereafter pursuant to Sections 5 and 9.4 of the Scope Book.

NERC Standard	Title	Requirement(s)	NERC Responsibility
PRC-005-6	Protection System, Automatic Reclosing, and Sudden Pressure Relaying Maintenance	R1, R2, R3, R4, R5	GO
PRC-006-SERC-02	Automatic Underfrequency Load Shedding Requirements	R8	GO
PRC-012-2	Remedial Action Schemes	R1, R3, R5, R6, R7, R8	GO
PRC-015-1	Remedial Action Scheme Data and Documentation	R1, R2, R3	GO
PRC-016-1	Remedial Action Scheme Misoperations	R1, R2, R3	GO
PRC-017-1	Remedial Action Scheme Maintenance and Testing	R1, R2	GO
PRC-018-1	Disturbance Monitoring Equipment Installation and Data Reporting	R1, R2, R3, R4, R5, R6	GO
PRC-019-2	Coordination of Generating Unit or Plant Capabilities, Voltage Regulating Controls, and Protection	R1, R2	GO
PRC-023-4	Transmission Relay Loadability	R1, R2, R3, R4, R5	GO
PRC-024-2	Generator Frequency and Voltage Protective Relay Settings	R1, R2, R3, R4	GO
PRC-025-2	Generator Relay Loadability	R1	GO
PRC-026-1	Relay Performance During Stable Power Swings	R2, R3, R4	GO
PRC-027-1	Coordination of Protection Systems for Performance during Faults	R1, R2, R3	GO
TOP-003-3	Operational Reliability Data	R5	GO/GOP
TPL-007-3	Transmission System Planned Performance for Geomagnetic Disturbance	R6, R10	GO
VAR-002-4.1	Generator Operation for Maintaining Network Voltage Schedules	R5, R6	GO
COM-001-3	Communications	R8, R11, R12	GOP

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NERC Standard	Title	Requirement(s)	NERC Responsibility
COM-002-4	Operating Personnel Communications Protocols	R3, R6	GOP
EOP-005-3	System Restoration from Blackstart Resources	R11, R12, R13, R14, R15, R16	GOP
IRO-001-4	Reliability Coordination - Responsibilities	R2, R3	GOP
PER-005-2	Operations Personnel Training	R6	GOP
PER-006-1	Specific Training for Personnel	R1	GOP
PRC-001-1.1(ii)	System Protection Coordination	R1, R3	GOP
TOP-001-4	Transmission Operations	R3, R4, R5, R6	GOP
TPL-007-3	Transmission System Planned Performance for Geomagnetic Disturbance Events	R6	GOP
VAR-002-4.1	Generator Operation for Maintaining Network Voltage Schedules	R1, R2, R3, R4	GOP

***** END OF APPENDIX 8 *****

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APPENDIX 9: Collector Substation

Attached.

Attachment 6: Entergy Loading Districts

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