

PROJECT: _____

LONG TERM MAINTENANCE PLAN	<u>STANDARD</u>
Inverter Maintenance and Inspection	
Inverters - Exterior Inspection. Inspect enclosures for corrosion, damage, mechanical integrity, and evidence of overheating, moisture intrusion, or pest activity. Inspect inverter display screens for cracking or evidence of thermal fatigue. Ensure all inverters are operational.	✓
Inverters - Interior Inspection. Open inverter covers and inspect each inverter for signs of corrosion, overheating, moisture, pest activity, and other damage. Verify fan operation, filter condition, and proper cooling airflow. Clean fans, heat sinks, and clean or replace filters (filter replacement at T&M) as necessary to ensure optimal cooling. Photograph each inverter during inspection, and before and after any corrective actions. Photograph or document inverter AC and DC voltage and Current readings, Riso values, kWh, device ID numbers, serial numbers, labels, and manufacturer nameplates. Verify proper operation of inverter circuit breakers.	✓
Inverters - IR Inspection: Open inverter termination cabinets, inspect for discoloration, signs of arcing or faults, and defects. Capture IR images of inverter terminations. Re-torque any connections displaying high resistance heat. Capture before and after IR images if any corrective actions are taken.	✓
Inverters - Annual Warranty Maintenance: Perform all inspections and preventative maintenance procedures required by the manufacturer. Adequately document required inspections, service procedures and updates to preserve inverter warranties. (Firmware update to be performed at T&M, provide corrective work quote)	✓
Inverters - Fault and trip Settings Review: Review inverter fault logs when possible and make note of any recurring faults. Check inverter trip settings to confirm compliance with local requirements as applicable.	✓
Inverters - Power Capacitor Inspection: Inspect inverter power capacitors for signs of failure including rust and corrosion, expansion, overheating, and poor connection. Check fuses and where possible verify actual capacitance values measured match rating on label.	✓
DC Electrical System Inspection and Testing	
DC Combiners and Disconnects: Open all combiners and disconnects; inspect for moisture, corrosion, discoloration, signs of arcing or faults, defects, pest activity, and missing or blown fuses. Verify proper operation of DC disconnects. Record GEC current if any. Touch up enclosure exterior paint as needed to prevent rust.	✓

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DC IR Scans: Capture IR images of DC combiners and disconnects. Re-torque any connections displaying high resistance heat. Capture before and after IR images if any corrective actions are taken.	✓
DC-Side Surge Protection Devices: Through visual inspection or electrical testing, as required by device manufacturer, determine the status of any DC SPDs. (Replacement of surge protection devices to be performed at T&M, provide corrective work quote)	✓
String Function Testing: Perform 'heartbeat' check on all DC strings - DC current testing while inverter is in operation (Imp) to verify string fuses are good, and current readings are approximately as expected and matching nearby strings. Non recorded test; only issues found to be noted.	✓
Systems with Rapid Shutdown MLPE: With Inverter AC shut down, test every string's Open Circuit Voltage, and confirm the voltage reading matches the appropriate safety voltage. Record all readings.	✓
PV Modules and Array Racking	
Modules: Inspect for integrity of electrical and ground connections, wire management, visible defects or damage, connector mismatch, and proper and secure attachment to racking structures or trackers. Capture locations, serial numbers, and photos of any modules with damage. If wire management is required, provide a corrective work quote.	✓
Arrays: Inspect arrays for soiling, evidence of animal nesting, water pooling, vegetation growth and shading. Photograph general condition of each array. Photograph and note location of any issues that require remediation beyond time allocated for PM visit.	✓
Racking Structures, Ballast Blocks: Spot check for mechanical integrity, corrosion, settlement, damage, animal nesting, and any condition that could impact safety, performance or serviceability. Photograph general conditions and any abnormalities.	✓
Grounding System: Inspect grounding system connections for mechanical and electrical integrity, corrosion, and damage. Spot check torques.	✓
Tracker Systems: Inspect and Service any tracker systems in accordance with manufacturer recommendations. Note any rows that are out of alignment or not tracking properly. Inspect drive bearings and module attachments. Lubricate gearboxes with suitable products, and verify hydraulic oil levels where present. Open controller boxes and perform OEM maintenance, and inspect for moisture, corrosion, pest activity, or overheating terminations.	✓

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AC Electrical Systems	
AC Panels, Disconnects, Switchgear, and Raceways: Inspect enclosure exteriors and raceways for mechanical integrity, corrosion, damage, and evidence of overheating, moisture intrusion, or pest activity. Verify proper operation of AC disconnects and/or breakers. Check fittings for tightness. Touch up enclosure exterior paint as needed to prevent rust.	✓
AC Interior and IR Inspection. Capture IR images of AC Panel, Disconnect, and Switchgear Interiors. Address any connections displaying high temperatures or significant delta between similar connections. Capture before and after IR images if corrective action is taken. Inspect AC enclosures for mechanical integrity, moisture intrusion, corrosion, pest activity, or other issues. Vacuum clean enclosures and any related air filters.	✓
Surge Protection Devices - AC: Through visual inspection or electrical testing as required by device manufacturer, determine the state of SPDs and replace those found to be faulted. (Replacement of surge protection devices to be performed at T&M, provide corrective work quote)	✓
Transformer Exteriors: Inspect transformer exteriors for scratches, rust, corrosion, or fluid leaks.	✓
Data Acquisition System and Instrumentation	
Data Acquisition System: Inspect overall condition of DAS enclosures and equipment. Check low voltage power supplies and batteries for proper output. Inspect enclosures and raceways for mechanical integrity, corrosion, damage, and evidence of overheating, moisture intrusion, or animal nesting.	✓
Meteorological Stations and Soiling Stations: If present, visually inspect sensor clusters, reference cells, and any other installed sensor equipment to verify secure mounting and free of debris or obstructions. Clean the dome or window of irradiance sensors per the manufacturer's recommended procedure even if there is no apparent soiling. If one is installed, wash the "clean" module on the soiling station and photo-document the station.	✓
Site Maintenance	
Roof Condition Monitoring: Inspect and photo-document general condition of roof surfaces including debris, drainage, pooling and staining, degradation of roofing materials, racking wear pads, and flashings.	✓
Inspect for Pests: Note evidence of any wildlife or pests on the Project site. Document such evidence with photos and locations.	✓

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Safety Equipment and Placards: Confirm location and charge of fire extinguishers. Verify applicable signage and placards are present and legible. Photograph any deficiencies.	✓
Vegetation Inspection: Inspect and photo-document site for vegetation growth or accumulation which could increase fire risk or shade arrays and impact PV production.	✓
General Plant - Roads, Fences, Gates, Lighting, Security: Inspect and document condition of any roads to access or traverse the project Site. Inspect perimeter fences and gates for integrity and security. Inspect any lighting fixtures on project site and note any issues. Inspect any security cameras or devices notated on project site for integrity and evidence of vandalism.	✓