

APPENDIX “A”

SCOPE OF SERVICES

A. Performance Monitoring

1. ONBOARDING	FREQUENCY
i. Establish Owner login and user access to data monitoring platform.	Once

2. OPERATIONS MANAGEMENT	FREQUENCY
i. Monitor the Projects system performance at the inverter level and review production data.	Daily
ii. Diagnose all warnings, alarms or anomalies identified or issued.	Daily
iii. Provide cost / benefit analysis and recommendations for corrective maintenance decisions.	As Required
iv. Coordinate any unscheduled services that might be required, including but not limited to warranty repairs or unwarranted repairs caused by vandalism or uncovered causes.	As Required
v. Manage and coordinate all warranty and insurance claims relating to the Project, and provide all claims and correspondence relating thereto to Owner.	As Required
vi. Update and manage key data related to the Projects’ equipment such as as-built drawings, specification sheets, serial numbers, flash test information, warranties, and spare inventories.	As Required

B. Reporting, Communication & Administration

TASK	FREQUENCY	FREQUENCY
Annually, Semi Annually, or YR1+1 (Completed the first year then every other year thereafter)	>250kw	<250kw
1. Site visit / preventative maintenance inspection report shall be submitted no later than (15) days after visit to include:	As Needed	As Needed
2. O&M activity and alarm log report.	Monthly	Monthly
3. PM and Testing Reports, , separated and organized by project 3.1. Visual checklist initialed by O&M Contractor 3.2. Visual confirmation of torque marks on terminations 3.3. Photos listed, Inside and out, Inverters, Combiners, DAS, Array, Panoramic, POCC Area, Transformers	Annually	YR 1+1

3.4. Any necessary recommendations and quotes for any corrected action 3.5. Photo verifying irradiance sensor tilt 3.6. Photographs documenting the site and system conditions are required as part of PV System Preventive Maintenance visits to document potential problems, newly installed equipment or noteworthy site conditions. Contractor should provide pictures of any system deficiencies identified during the Preventive Maintenance visit, along with any repairs performed.	Annually	YR 1 +1
4. PM and Testing Reports, separated and organized by project 4.1. I-V curve trace data and/or reports 4.2. IR photos of wire terminations/connections	Annually	YR 1 +1
5. Update and manage key data related to the project equipment such as as-built drawings, specification sheets, serial numbers, flash test information, warranties, and spare inventories.	As Needed	As Needed

C. Preventative Maintenance

TASK	FREQUENCY	FREQUENCY
Annually, Semi Annually, or YR1+1 (Completed the first year then every other year thereafter)	>250kw	<250kw
1. Visual inspection of general site conditions, electric and mounting equipment, grounds, vegetation, corrosion, erosion, and any additional damage. All photos shall be organized per site and uploaded	Annually	YR 1 +1
2. Inspect for corrosion inside combiner box.	Annually	YR 1 +1
3. Remove insect/pest detritus from enclosures.	Annually	YR 1 +1
4. Inspect for all signage being present and legible.	Annually	YR 1 +1
5. Inspect racking and conduit for damage.	Annually	YR 1 +1
6. Perform monitoring system maintenance (per manufacturer warranty requirements).	Annually	YR 1 +1
7. Inspect for wire management and damage on exposed conductors.	Annually	YR 1 +1
8. Perform inverter maintenance work: check screens, air filters, fans (per manufacturer warranty requirements).	Semi-Annually or as required	Semi-Annually or as required
9. Inspect site for general vandalism.	Annually	YR 1 +1
10. Inspect modules for soiling and breakage.	Annually	YR 1 +1
11. Identify and photograph abnormal wear and tear.	Annually	YR 1 +1
12. Electrical/mechanical inspection of combiner & disconnects: Bonding, bushings and grounding, wire damage: especially at entrance/exit locations, terminal corrosion, any discoloration anywhere.	Annually	YR 1 +1
13. Confirm terminal torque settings for both sides of fuse holders, grounded (negative) and terminal bar, grounding bar, PV output circuit and both DC and AC disconnects.	Annually	YR 1 +1
14. Inspect enclosures: combiners, switches, inverter transformers for external damage or corrosion. Inspect for corrosion on all metal parts entering and exiting enclosures.	Annually	YR 1 +1

15. Inspect grounding from modules & rack to combiner: testing of continuity between modules, rack and EGC; measure resistance and record.	Annually	YR 1 +1
16. Thermal imaging of overcurrent protection devices (OCPD) and wire termination (combiner and all disconnects). 16.1. Before testing, note if array is free of inter-module shading and unshaded shaded from roof/ground obstructions. 16.2. Perform IR scans on all inverter dc and ac wire terminations. 16.3. Perform IR scans on all combiner box wire terminations. 16.4. Perform IR scans on all splices and junction boxes (not pull boxes). 16.5. Perform IR scans on all serviceable AC terminations (e.g. AC combiner panels, LV switchgear, transformers, CT cabinets, etc.). 16.6. All photos shall be organized per site and uploaded	Annually	YR 1 +1
17. I-V Curve 17.1. Before testing, note if array is free of inter-module shading and unshaded from roof/ground obstructions. 17.2. Record make and model of I-V Curve Tracer. 17.3. Conduct I-V Curve tracing on 100% of strings. 17.4. The test shall be conducted during periods of irradiance greater than 400 W/m2. If such conditions are not present during visit, may request customer permit Voc and Imp values to be measured in lieu of I-V curves. 17.5. All photos shall be organized per site and uploaded	Annually	YR 1 +1
18. Annual Continuity Check 18.1. Check continuity between racking system and ground wire terminal in each inverter. Note any locations that do not exhibit continuity.	Annually	YR 1 +1
19. Process and administer equipment warranty claims	As Needed	As Needed

D. Reactive Maintenance

TASK	FREQUENCY
1. Perform field diagnostics and unscheduled repairs approved in advance. Reactive maintenance activities may include, but are not limited to: 1.1. DC and AC circuit malfunction diagnostics, including fault situations; 1.2. Monitoring equipment and sensor malfunction diagnostics; 1.3. Repairing or replacing system components including but not limited to inverters, trackers (if applicable), PV modules, switchgears and transformers; 1.4. Coordinating unscheduled services; 1.5. Coordinating warranty eligible repairs performed by EPC contractor or equipment vendor; and 1.6. Performing warranty eligible repairs.	As Needed
2. Guaranteed Response Time & Protocol 2.1. Upon the occurrence of any incident affecting the production of the Solar Facility, a technical support team member will diagnose the alarm	As Needed

category. Operator will notify Owner for approval to dispatch, upon approval, Dispatch and keep Owner informed of the estimated completion date, activity/progress, changes to schedule, and actual completion activity, or additional corrective action needed. and shall respond to the alarm to assess the incident and the resulting damage or problems as per the guaranteed response times outlined below (“Guaranteed Response Times”).

- 2.2. Notifications and responses to the three alarm categories shall be as follows:

Notification and Guaranteed Response Time Table:

Alarm Category	Impact on Production	Notification Time to Owner	Response Time
High Priority Alarm	> 25%	24 hours	24 hours
Normal Priority Alarm	10-25%	24 hours	36 hours
Low Priority Alarm	5-10%	36 hours	48 hours

- 2.3. Operator will notify Owner of identified issues within the notification times set forth in the Notification Table. Operator will notify Owner for approval to dispatch, upon approval, Dispatch and keep Owner informed of the estimated completion date, activity/progress, changes to schedule, and actual completion activity, or additional corrective action needed. Operator will respond to an alarm within the response times indicated in the Notification Table. Responding to an alarm means that Operator shall develop a solution to resolve the issue and take all commercially reasonable measures to begin to deploy such solution.
- 2.4. Operator shall first attempt to resolve the issue remotely. Should that not be feasible, Operator will notify Owner for approval to dispatch, upon approval, shall dispatch technicians to the Site. Operator will notify Owner for approval to dispatch, upon approval, Dispatch and keep Owner informed of the estimated completion date, activity/progress, changes to schedule, and actual completion activity, or additional corrective action needed. Upon arrival to the Site for high priority alarms, Operator will determine the cause and safely isolate issues with the intent of mitigating any adverse consequences, to the extent commercially reasonable, and avoidance of re-occurrence or continuation, and shall endeavor to make proper repairs to the Solar Facility. Operator shall investigate and make a determination of the impact of the alarm and any requirements for intervention to resolve the alarm. In the event Operator determines that it cannot, within forty-eight (48) hours of its arrival at the site, resolve the incident in its entirety and have the Solar Facility working properly, Operator shall, within forty-eight (48) hours of its arrival at the site, provide to Owner a written description of the problems or damages assessed on the Solar Facility and a proposed corrective and remediation plan to be taken in connection thereof (the "Reactive Maintenance Plan ").
- 2.5. Upon receipt of Operator’s description of the incident and the Reactive

Maintenance Plan above. Operator will notify Owner for approval to dispatch, upon approval, Dispatch and keep Owner informed of the estimated completion date, activity/progress, changes to schedule, and actual completion activity, or additional corrective action needed. Owner shall notify Operator of its acceptance of the Reactive Maintenance Plan suggested by Operator or, otherwise, provide Operator with any requested changes Owner may have thereto.

- 2.6. Normal Business Hours: Operator shall be available between the hours of 7 am and 7 pm (local time) five (5) days a week during the business week ("Normal Business Hours"). Operator will respond to all low priority alarms only within the Normal Business Hours. In the event a low priority alarm occurs outside Normal Business Hours, the Guaranteed Response Times set forth in the Notification Table shall be calculated beginning at 7 AM on the next Business Day.
- 2.7. On Call Hours: Operator shall be on call between the hours of 7 am and 7 pm (local time) on Saturdays and Sundays, and holidays ("On Call Hours"). Operator will notify Owner for approval to dispatch, upon approval, Dispatch and keep Owner informed of the estimated completion date, activity/progress, changes to schedule, and actual completion activity, or additional corrective action needed. Operator will respond to high priority alarms during On Call Hours. **In the event a high priority alarm occurs outside On Call Hours, the** Guaranteed Response Times set forth in the Notification Table shall be calculated beginning at 7 AM on the next day.