

ATTACHMENT 2
PRELIMINARY
10 YEAR OPERATION AND MAINTENANCE AGREEMENT

This preliminary schedule of O&M Services may be modified and adjusted during the course of design and construction with the mutual consent of MD Energy and the City of Fresno.

1. Preventive Maintenance Site Visits: Every 6 months, or when monitoring equipment identifies a problem,
 - System testing (string voltage/amperage)
 - System visual inspection
 - Routine system maintenance to include correction of loose electrical connections, ground connections, replacement of defective modules found during testing, other minor maintenance repair work. Landscaping works not included.
 - Routine DAS maintenance to include sensor calibration and data integrity check
 - Routine sensor calibration
2. Troubleshooting and repairs
 - Dispatch of PL resources (48 hour response) for repairs
 - Major system repairs, not to include inverters, mid-voltage switchgear or transformers
3. Service Support
 - Technical support line (8a.m.-5p.m. local M-F)
4. Major components
 - Customer advocacy with vendors (PV. Inverter)
5. Reporting
 - Annual and Quarterly Performance reports
 - O&M Manual updates
6. Other System Services
 - Facility staff training , one time
 - O&M Manuals – additional copies, as needed
 - Management of long term service and warranty agreements, ongoing
7. 24 Hour real time system monitoring:
 - System testing (string voltage/amperage)
 - System visual inspection
 - Routine system maintenance to include correction of loose electrical connections, ground connections, replacement of defective modules found during testing, other minor maintenance repair work. Landscaping works not included.
 - Routine DAS maintenance to include sensor calibration and data integrity check
 - Routine sensor calibration
8. Production Guarantee
 - Dispatch of PL resources (48 hour response) for repairs
 - Major system repairs, not to include inverters, mid-voltage switchgear or transformers
9. Service Support

- Technical support line (8a.m.-5p.m. local M-F)
10. Major components
- Customer advocacy with vendors (PV. Inverter)
11. Reporting
- Annual and Quarterly Performance reports
 - O&M Manual updates
12. Other System Services
- Facility staff training , one time
 - 2 annual cleaning/washing of the PV panels (for years 1-5) or as needed to maintain performance within 5% of expected output design. Cleaning Manual and Safety Instructions will be provided as part of the close out documents)
 - O&M Manuals – additional copies, as needed
 - Management of long term service and warranty agreements, ongoing
13. Weed Control / Vegetation
- Annually or as required for preventive shading.
14. Pest Control
- Identify intrusions and or infestations annually
15. Manufactures inspections testing and routine service annually per manufacture recommendations
16. Visual Inspections
- Identify new shading concerns
 - Insure penetrations are water tight
 - Ground erosion and corrosion near supports for ground mount systems
 - Confirm electrical enclosures are secured with locks and have restricted access
 - Check and document any corrosion issues
 - Inspect equipment pads for cracking and wear
 - Inspect PV modules for defects
 - Inspect racking system for rust corrosion sagging or missing and broken clips or bolts
 - Inspect conduits for proper support and expansion joints
 - Inspect disconnects for corrosion or damage
 - Inspect Inverter interior and exterior for water ingress rodents, pests, or dust intrusion
 - Verify weather sensor placements and cleanliness
17. Testing
- Verify torque settings for major equipment
 - Voltage and current testing at Inverters and string level
 - Sensor calibration