



1241 University Avenue, Rochester, NY 14607

NSF KIRKWOOD

OPERATIONS AND MAINTENANCE PLAN

Property Operation & Maintenance Plan for Three Sites

- NSF Kirkwood Site 1, LLC
- NSF Kirkwood Site 2, LLC
- NSF Kirkwood Site 3, LLC

Project Location

- 149 Quilty Hill Road & 165 Foley Road, Kirkwood, NY 13795

Property Maintenance and Housekeeping

- Observation and review of the property and planting buffer to include tree, vegetation, and grass trimming to prevent obstruction of the solar arrays as well as access and egress of the site.
- Clearing of snow on an as-needed basis in and around the electrical equipment requiring inspections.
- Vegetation management is described in Site Plan Drawings C100, C102 and C502.
- NSF will comply with all requirements of the Kirkwood Town Code regarding vegetation, including but not limited to section 706(B)(2).
- Seeding and Fertilizing will follow the NY Ag and Markets Guidelines entitled, "Fertilizing, Lime and Seeding Recommendations For Restoration of Construction Projects on Farmland in New York State, rev 9-25-12" as amended.

Full Site Visual Inspection – to be completed annually or more frequently as needed

- **PV Panel Condition**
 - Inspect for cleanliness, cracked/chipped/scratched/ shattered panels, fading/discoloration, burn marks, seal condition, frame damage or rust.
- **PV Mounting Structure**
 - Inspect mounts and mounting structures (loose panels, loose rack/clips missing hardware, rusted bolts, flashing issues, ballast condition, rack anchor condition).
- **PV Array Ventilation**
 - Inspect conditions under panels, remove of any large debris or pests; visual check to ensure maximum ventilation under panels.
- **PV System Foundations**
 - Ground mount arrays (visual inspection of grounds and vegetation, identify issues related to mud, water pooling, soil erosion).
- **Balance of System**
 - Inspect conduit runs (separated/cracked conduits, misaligned wire runs)
 - Inspect panel interconnectivity and string lines (wire/cable wear, wire fading, chewed wire due to pests, identify loose/detached wires)
 - Inspect junction/combiner enclosure(s) condition (seals, rust, damage, locks)
 - Inspect electrical equipment enclosure(s) (seals, rust, damage, door condition, locks, equipment pad(s))



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- **Inverter(s)**
 - Inspect inverter structure(s) and enclosure(s) (seals, rust, damage, door condition, switch/handle condition, locks).
 - Inspect inverter equipment pad(s) (cracks, base damage, soil erosion).
- **Data Acquisition System (DAS)**
 - Inspect DAS device condition (screen, seals, rust, damage).
- **Weather Station Condition**
 - Inspect alignment of irradiance sensor, condition of wind and temperature meters/
- **Shading Conditions**
 - Visual inspection to identify any shading issues, preventive care if shading caused by nearby vegetation).
- **System Security**
 - Visually inspect fence line or confinement structures for wear, damage, breach, vandalism, or problems.
 - Visually inspect any electronic surveillance equipment (cameras, alarms, etc.) and assess for proper operation.
 - Check condition of any locks, chains or other protection measures preventing unauthorized access to the system.

Site Visits, Inspections and Service

- Document site inspections with a Service Report or Inspection report as appropriate.
- **Service Reports**
 - Include details of preventative maintenance work, such as electrical measurements, meter readings, thermal images, and system testing results.
 - Include non-conformance reports to identify potential short- and long-term power production issues.
 - Provide reports annually to Distribution identified above.

Performance Report(s) (Additional Service)

- Provide analysis of monthly system/inverter performance against weather adjusted performance metrics. Identify and document any known production loss issues.

Inverter Preventative Maintenance

- Conduct preventative maintenance in accordance with manufacturer specifications.
- Clean and vacuum enclosure, vents and heat sink / remove any identifiable debris and clean any accumulation of dust.
- Change air filters according to manufacturer specifications (filters are billed at cost, installation is included in O&M fees).
- Check fuses and switchboards (visually inspect for signs of corrosion/burning of components).
- Check wiring (visually inspect for breaks, deterioration, or signs of corrosion/burning, check cable wire protection)

Warranty Enforcement

- Make and coordinate claims for reimbursement and/or replacement under any available warranty from manufacturers, installers or other similar entities relating to the System.

String Level Voc, DC Operating Current

- Perform testing to measure the open circuit voltage (Voc) and operating current of each string in the system.



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- Analyze and document any anomalies that effect system performance and propose corrective actions if necessary.

String Level IV Curve Tracing (Additional Service)

- Perform string level IV Curve tracing with a minimum of 400 w/m2 irradiance.
- Analyze and document any anomalies that effect system performance and propose corrective actions if necessary.

Thermal Imaging Combiners, Inverters and Disconnects

- Thermal imaging of combiners, inverters and disconnects by a trained thermographer.
- Analyze and document all images taken, identify any potential hot spots and propose corrective actions if necessary.

System Performance Monitoring: (system login information required)

- Using the DAS, monitor the day-to-day system output and performance daily.
- Non-Conformance: Upon notice from System Asset Manager or the DAS that the system is not performing in accordance with the specifications as set forth in the Alert Service Request section.

The following table lists the Norbut Solar Farms contacts for the Project.

Description	Name	Phone Number
Norbut Solar Farms Safety Manager	Terrence Halloran	716 946 6328
Norbut Solar Farms Operations and Maintenance	Terrence Halloran	716 946 6328
Norbut Solar Farms Operations Manager	Terrence Halloran	716 946 6328
General Information Requests	Peyton Langless	585 694 0441

Statement Required By Section 706(D)(6) of the Town Code

The proposed commercial solar energy system shall be maintained in a safe manner and in compliance with all conditions of the site plan approval, without exception, unless specifically granted relief by the Board in writing, as well as all applicable and permissible local codes, ordinances and regulations, including any and all applicable county, state and federal laws, rules, and regulations.