CCR OPERATIONS & MAINTENANCE AEGIS SOLAR SCOPE OF SERVICES



Cypress Creek O&M, LLC



AEGIS SOLAR OPERATIONS AND MAINTENANCE PLAN

Cypress Creek will provide a scope of services based on the best industry practices and the latest technology and methodologies for preventative and predictive maintenance. The below items constitute an overview of Operations and Maintenance (O&M) Services that our team will apply to ensure the long-term success of the proposed Aegis Solar project. Further detail on site-specific vegetative management and scheduling is provided within this plan.

PV Operations

Administration of Operations:

 Effective implementation and control of O&M activities including document management, equipment inventories, owners and operating manuals, and warranties

• <u>Conducting Operations:</u>

• Reliable process operations to achieve the optimum balance between cost of scheduled maintenance, yield, and cash flow through the life of the system

Directing Performance of Work:

 Specification of rules and provisions to ensure that maintenance is performed safely and efficiently

<u>Monitoring:</u>

- Closely monitor the day-to-day operation of plants through remote DAS monitoring systems
- Data analysis of underperforming systems
- Manage and refine DAS alerts across all plants
- Aid field technicians with system troubleshooting (via DAS)

- Create monthly operability and major issue/downtime reports
- Predict future issues via data analytics and trends
- Create monthly and annual system performance reports for asset management and project finance teams

• Analytics:

- Optimization of condition-based O&M, such as identification of blown fuses and under-performing sub-systems
- Operator Knowledge, Protocols, Documentation:
 - Thorough operator knowledge, training, and performance to support safe and reliable plant operation
- Workmanship Warranties:
 - Thorough operator knowledge, training, and performance to support safe and reliable plant operation

Product Warranties:

• Thorough operator knowledge, training, and performance to support safe and reliable plant operation

PV Maintenance

- <u>Administration of Maintenance</u>:
 - Ensuring the effective implementation, control, and documentation of maintenance activities and quality results
- Preventative Maintenance:
 - Focus on maximizing system output, preventing expensive failures from occurring, and maximizing the life of a PV system

• Maintain a schedule for routine maintenance, service, trouble shooting and repair of equipment at solar photovoltaic facilities

• <u>Corrective Maintenance:</u>

• Focus on rapid response times and execution of work required to repair damage or replace failed components in a timely and cost effective manner

• <u>Predictive Maintenance:</u>

 Use of real-time information and historic data to schedule preventative measures such as fuse replacements, or to head off corrective maintenance problems by anticipating failures or catching them early

• <u>People</u>:

• We have a team of highly qualified managers, service technicians and electricians with extensive experience in solar PV O&M

• <u>Vehicle Fleet</u>:

• Technicians have trucks fully stocked with essential tools and commonly used spare parts for rapid repair

• <u>Tools</u>:

• Use of industry leading tools and testing equipment

• Spare Parts:

• Spare parts management and inventory control at centralized warehouse/s and on-site storage solutions

• Systems and Software/CMMS:

 Enterprise Grade Asset Management and O&M Platform with comprehensive Service Ticket Management, Vendor Management and Contract Management System

• Protocols and Procedures:

• Use and improvement of O&M Industry Best Practices

Aegis Solar Vegetation Maintenance

Cypress Creek Renewables approaches the Aegis solar site as an opportunity to provide local renewable energy, as well as to maintain or improve upon Canandaigua's local ecosystem. From a vegetation perspective, our goal is to stabilize the soil to add strength and durability for the long-term success of the generation facility and health of the land.

In many cases, there is a need to re-seed the portions of the property that have been impacted by construction equipment. There is not a single solution that works for all climates throughout our national footprint, but rather we work to employ best practices and techniques that are most appropriate for each unique, local environment. Seed mixes native to New York and the Canandaigua area are proposed in the Landscaping Plan enclosed with this application. No seed mix will be utilized on site without prior Planning Board approval. Some of the factors that we evaluate when making decisions on frequency and quantity of O&M services are:

- Preventing runoff
- Carbon sequestration
- Pollination and other insect services
- Air quality concerns
- Invasive species resistance
- Viable wildflower areas
- Rate of fescue growth

One of the most important considerations for the vegetation plan is the maintenance requirements for the site. Our landscape managers' top priority is to minimize mechanical mowing and reduce the use of pesticides and herbicides. Cypress Creek Renewables employs many different strategies to minimize the use of mechanical and herbicidal treatments, such as the use of local vegetation with slow growth cycles.

Estimated mowing maintenance schedules and soil amendments are discussed in the Notes section of the proposed Aegis Solar Landscaping Plan. Maintenance schedules can be adjusted to fit the requirements of the Canandaigua Planning Board. Contracted vegetative maintenance

employees will arrive on-site in pickup trucks. The Aegis Solar site is characterized by primarily flat, cleared land. After construction of the proposed project, low-growth, native plants will cover the area underneath the array. Maintenance employees will mow the site approximately 4-6 times during the growing season to ensure grasses don't encroach upon the panels and limit energy production or create a visual nuisance for neighbors. Snow will be removed from the access road to allow emergency and maintenance vehicle access when it reaches a height of 8".

Vegetative Screening will be maintained to specifications approved by the Town of Canandaigua Planning Board. All tree species defined in the Landscaping Plan along the northern and eastern boundary of the proposed project will be trimmed and maintained at their max height of 10 feet to preserve adjacent property views of Canandaigua Lake. Any part of the buffer that dies will be removed and replanted by maintenance employees within the following planting season for the tree species in question. Contact information for our O&M team will be posted alongside emergency contact information outside the site.

In rare circumstances where herbicides are deemed necessary, an effort is made to minimize use and to only apply highly bio-degradable, EPA registered and approved, organic solutions that are nontoxic to pets and wildlife.

Cypress Creek Renewables understands the value of sustainable long-term management practices and will continue to develop solutions to enhance these techniques and promote healthy biodiversity within local ecosystems.

AEGIS SOLAR MAINTENANCE SCHEDULE

The Aegis Solar Maintenance Schedule shows frequency for O&M services. The Monitoring Systems discussed earlier in this plan allow Cypress Creek to perform any service quickly and efficiently should unexpected maintenance be required. Schedules can be adjusted based on the requirements of the Town of Canandaigua Planning Board. Final Contracts for O&M services will be provided to the Town of Canandaigua Planning Board.

| Item # | Service | Service Description | Frequency | |
|---|--|--|---|--|
| 1. Monitoring, Reporting, and Inventory | | | | |
| 1.1 | Active Site Monitoring | Monitor inverters and meter output data for issues and alarms. | Daily | |
| 1.2 | Annual Maintenance Plan | Provision of Annual Maintenance Plan, including baseline schedule for all maintenance services contemplated to occur in such year. | Annually | |
| 1.3 | Monthly Reporting | Provide monthly operating report for the project including a summary of (i) operations; (ii) weather data, power and environmental attributes; (iii) Project performance; (iv) reports of any environmental or Site disturbances; (v) safety/accident reports; (vi) Non-Agreed Services; (vii) maintenance and inspection reporting; and (viii) any proposal of recommended maintenance for the upcoming month. | Monthly | |
| 1.4 | Annual Reporting | Provide annual maintenance/inspection reports for the project for the preceding calendar year. | Annually | |
| 1.5 | Incident and Maintenance Reporting | Provide written report (in .pdf format) on any event involving unplanned Services, personnel injury associated with the project or material damage to the project or any part thereof. | No later than five (5) business days after the occurrence, or immediately for OSHA recordable events, but no later than 24 hours. | |
| 1.6 | Security Incident Reporting | Notify Company following provider receiving information indicative of a security issue on site. | Immediately, but no later than 24 hours. | |
| 1.7 | Maintain Spare Parts | Store, maintain, and replenish spare parts inventory at Company's expense. Inventory will be stored either on- site in an O&M storage structure or off-site at a centralized storage facility or warehouse. | Continuously maintained | |
| 2. Site Prop | perty Inspection/Main | tenance | | |

| Item # | Service | Service Description | Frequency |
|--------|-----------------------------------|---|--|
| 2.1 | Vegetation Management | Maintain vegetation and debris removal/control and landscaping, for all property within the fence line and all property immediately surrounding fencing (within reason), specifically ensuring vegetation does not encroach on modules. | Mowing every 4-6 weeks during the growing season 2-4 times per year during other seasons |
| 2.2 | Weed Abatement | Remove all invasive weeds and spray where necessary to prevent future growth | Combined with Veg. Management visits |
| 2.3 | Perimeter and Fence Inspection | Inspect all fencing for signs of damage, intrusion, and overgrowth of vegetation. Inspect signage to ensure all originally installed signs are present and legible | Every 6 months (2X/year) following commencement of Cypress Creek O&M services |
| 2.4 | Roads | Inspect all roads for soil erosion concerns | Every 6 months (2X/year) following commencement of Cypress Creek O&M services |
| 2.5 | Site Security | Inspect entire site for general vandalism or other signs of security related issues. | Every 6 months (2X/year) following commencement of Cypress Creek O&M services |
| 2.6 | Wildlife and Pest Management | Maintain site to address problematic wildlife matters including but not limited to nest and hive removal | During summer months or if wildlife and pests are reported on site during routine inspections |

| Item # | Service | Service Description | Frequency | |
|---------------|---|---|---|--|
| 2.7 | Vegetative Screening and Buffer Maintenance | Trim Northern and Eastern project boundary buffers to 8'- 10' max height. Replace dead trees/bushes within buffer. | Buffers will be assessed during routine operations within each growing/planting season. If CCR O&M is notified that Buffers need maintenance, this vegetative management will be performed during the following planting season. | |
| 3. DC Systems | | | | |
| 3.1 | Racking Inspection | Inspect all racking, racking mounts and conduits on racking for damage, corrosion, settling and stability | Every 12 months (1X/year) following commencement of Cypress Creek O&M services | |
| 3.2 | Module Inspections | Visually inspect 25% sampling of modules for soiling, breakage, delamination, discoloring, hot spots (only via aerial thermal audits), rotating sample areas annually to achieve 100% inspection every 4 years. Inspections may be done either on the ground or via aerial visual analysis and aerial thermal imaging. If systemic issues are identified, notify Company and propose a corrective action plan to be implemented as needed. | Every 12 months (1X/year) following commencement of Cypress Creek O&M services | |
| 3.3 | Broken Module Replacement | Replace modules that have previously been identified as broken (within reason), or identified as broken at the time of inspection. The cost of replacement modules (either for immediate use or to replenish spare parts) will be paid for by the Company as needed. The procurement of replacement modules is conditional to Company approval. | When notified by Daily Monitoring Services | |

| Item # | Service | Service Description | Frequency | |
|---------------|---|---|---|--|
| 3.4 | Wire Inspection | Visually inspect for proper wire management and any possible damage on exposed conductors. | Every 6 months (2X/year) following commencement of Cypress Creek O&M services | |
| 3.5 | Combiner Box and Re-Combiner Inspections | Electrical/mechanical inspection of combiners & disconnects. Visually inspect bonding bushings and grounding, check for wire damage especially at entrance/exit locations, terminal corrosion, any discoloration, and inspect fuses for proper functionality. Remove insects/pests debris from all enclosures. | Every 6 months (2X/year) following commencement of Cypress Creek O&M services | |
| 3.6 | Combiner Box and Re-Combiner Torque Inspections | Confirm and correct terminal torque settings for both sides of all fuse holders, grounded (negative) terminal bar, grounding bar, PV output circuit and DC Disconnects. | Every 12 months (1X/year) following commencement of Cypress Creek O&M services | |
| 4. AC Systems | | | | |
| 4.1 | Inverters | Perform annual inverter preventative maintenance work for all inverters per manufacturer's recommendations and manufacturer's warranty requirements. | Per Manufacturer's Recommendations and Manufacturer's Warranty Requirements | |
| 4.2 | Inverter Air Filters and Transformer heat sinks | Inspect inverter air-filters and heat sinks, and clean or replace air filters if applicable. | Every 3 months (4X/year) following commencement of Cypress Creek O&M services or Per Manufacturers Recommendations, whichever is more frequent. | |
| 4.3 | Transformers | Visually inspect and clean all transformers per manufacturer recommendations, including but not limited to oil level measurement and clearing heat sink of debris. | Every 12 months (1X/year) following commencement of | |

| Item # | Service | Service Description | Frequency |
|------------|---|---|--|
| | | | Cypress Creek O&M services |
| 4.4 | AC Disconnect (if applicable) | Inspection of latches and seals on enclosure, verify proper operation of disconnect, visually inspect terminations and confirm and correct terminal torque settings. Check for signs of arcing. | Every 12 months (1X/year) following commencement of Cypress Creek O&M services |
| 5. DAS/SC | ADA Inspections | | |
| 5.1 | General DAS Inspection | Perform monitoring system maintenance per manufacturer's specifications; verify orientation and attachment of pyranometers and module temperature sensors and MET station, and verify back up power supply functionality. | Every 12 months (1X/year) following commencement of Cypress Creek O&M services |
| 5.2 | Pyranometers | Clean pyranometer domes with a soft cloth. | All scheduled & unscheduled site visits |
| 5.3 | Pyranometer Calibration | Coordinate with Company to cause calibration of pyranometers per manufacturer's specifications. | Per manufacturer specifications |
| 5.4 | Data/Instrument Accuracy and Communications Verification | Test MET station sensors (GHI and POA pyranometers, ambient temperature, back-of-module, anemometer, Revenue Grade Meter (including current transducers), and inverter direct | Every 12 months (1X/year) following commencement of Cypress Creek O&M services |
| 6. Testing | | | |
| 6.1 | IV Curve String Testing or Module Level Thermal Audits | 100% IV Curve Testing on strings, or 100% Module Level Thermal Audits | Every 12 months (1X/year) following commencement of Cypress Creek O&M services |
| 6.2 | Thermal Imaging | Thermal imaging of all: overcurrent protection devices (OCPD) and bolted electrical connections including | Every 12 months (1X/year) following commencement of |

| Item # | Service | Service Description | Frequency |
|--------|----------------------------|---|--|
| | | terminations in combiners and all disconnects, inverters and transformers | Cypress Creek O&M services |
| 6.3 | Transformer Oil Testing | Conduct transformer oil sampling and testing per nationally and/or internationally recognized testing standards | Every 24 months (1X/2 years) following commencement of Cypress Creek O&M services |
| 6.4 | Point-to-Point Testing | For 5% random sampling of combiner boxes, inspect grounding from modules & rack to combiners for wear, corrosion, and secure connections, and test the point-to- point resistance between modules, rack and EGC per NETA-ATS 2013 Section 7.13; document location, measure resistance and record results. Investigate point- to-point resistance readings that exceed 0.5 ohms. Notify Company of any issues identified and propose a corrective action plan to be implemented as needed. | Every 12 months (1X/year) following commencement of Cypress Creek O&M services |

Emergency Action Plan For

Aegis Solar Project

5932 Monks Road, Canandaigua, NY 14424

LAT: 42.7679 LONG: -77.3464

Prepared by: Dennis Costner

1.0 Construction Emergency Response Plan for CYPRESS CREEK

The (EAP) emergency action plan will take effect in the case of a Safety, fire or Medical Emergency. The plan will be initiated by three horn blasts and followed with radio or cellular communications as applicable. Once the three horn blasts are heard, supervision must immediately clear the air waves of all non-essential traffic and wait for further instruction, as applicable. The emergency radio channel will be channel 5. All incident responders should communicate with the Cypress Emergency Response Coordinator (ERC). The ERC will coordinate with all municipals prior to the start of the project to provide them with a scope of work, emergency procedures and how to access the site.

2.0 Pre-Emergency Planning

Cypress Creek's Emergency Response Coordinator (ERC), which is the onsite safety manager. The (ERC) will perform applicable pre-emergency planning tasks before starting field activities and will coordinate emergency response with onsite personnel, the facility and the local emergency service providers. These activities include the following:

- Ensure that there is a good contact list for all personnel onsite See Section 10.0.
- Verify that two way radio communications are available and serviceable.
- Verify that all emergency contact information is correct and up to date.
- Post "Exit and Fire Extinguishers" signs above exit doors and above locations of fire extinguishers, also keep areas exits and fire extinguisher access clear.
- Evaluate site condition, onsite operations, and personnel availability for emergency response procedures.
- Take an inventory of the site's equipment, supplies and potable water.
- Visit with local fire department, EMS, coordinate with a local doctor's office to handle advanced first-aid incidents and locate the local hospital.
- Communicate emergency procedures for site hazards such as personal injury, exposures, fires, explosions and releases.

• The Safety team will brief new workers on the emergency action plan and evaluate emergency response actions during a new hire orientation.

3.0 Emergency Equipment and Supplies

The onsite Safety Coordinator for Cypress Creek will ensure the following emergency equipment is on site and that the equipment is functional and serviceable. The Safety Coordinator will also note the locations of equipment and communicate that to all employees:

Emergency Equipment and Supplies include:

- Appropriate number and size of Class A, B, and C Fire Extinguisher based on construction site and construction activities
- Medical Jump Bag
- First Aid kit located in office
- AED
- Potable water
- Blood borne Pathogen Kit
- Additional equipment needed for site specific reasons
- Spill Kits
- Spill containment systems as required
- Lightning monitor
- WBGT meter

4.0 Incident Response

In case of a fire, explosion or chemical release, please follow the steps below:

- Alert the appropriate response personnel, Canandaigua Fire Department.
- Shut down operations and evacuate the immediate work area.
- Perform a head count of the designated assembly area(s).
- Assess the need for site evacuation, and evacuate the site as warranted.
- Conduct Incident Notification, Reporting and Investigation as required by OSHA and employer.
- Notify and submit reports to clients to owner and municipals as required.

Please note: Fires or spills that present a minimal safety or health hazard may be controlled with onsite spill kits or fire extinguishers without activating the sites evacuation procedure. When in doubt evacuate.

5.0 Emergency Medical Treatment

In the event that emergency medical treatment is needed whether life threatening or not, it must be immediately reported to site safety (ERC). Site safety will evaluate the course of action that is needed. Major medical emergencies include injuries of severe bleeding, loss of consciousness, breathing or heart failure. A minimum of two first aid, CPR and AED trained persons shall be onsite at all times for medical emergencies. In the event of such, please follow the steps below:

- Notify Safety.
- Notify 911 or other appropriate emergency response authorities that are listed at the site.
- Initiate first aid and CPR and AED if needed.
- Make certain that the injured person is accompanied by Safety personnel to the doctor or emergency room.

6.0 Evacuation

The site map should have clear detailed evacuation routes, assembly areas, severe weather shelters as well as any alternative routes and assembly locations.

- The Cypress primary Muster point is the admin trailer.
- The Cypress secondary Muster is the Laydown yard.
- If site evacuation is needed Canandaigua Fire Department will become the muster point.
- The evacuation routes are shown on the map in section 9.0.
- All members of staff will gather at the muster point upon hearing the emergency signal for evacuation.
- The Safety personnel and a "buddy" will remain on the site after the site has been evacuated, if the situation is safe to assist local responders
- The Safety team will account for all personnel in the onsite assembly area.
- A designated person will account for personnel at alternate muster area(s).
- The Safety Coordinators will follow the incident reporting protocols.

7.0 Inclement Weather

Sudden inclement weather can infringe upon field personnel. Emergency preparedness and caution are the best defense. Field crew members performing work outdoors should carry the appropriate clothing for this type of weather. Staff should pay close attention to the weather forecast on a daily basis to look for signs of inclement weather. These signs include towering thunderheads, darkening skies, or a sudden increase in wind. If stormy weather ensues, field personnel should discontinue work and seek shelter until the storm has passed. Stay away from open water, metal equipment, wire fences and metal pipes. Other general precautions include, but are not limited to:

- Know where to go and how long it will take to get there. If possible, take refuge in a large building or vehicle. Do not go into a shed in an open area.
- The inclination to see trees as enormous umbrellas is the most frequent and deadly mistake. Avoid standing under large trees, poles, antennae's and towers.
- If the area is wide open, go to a valley or ravine, but be aware of flash flooding.
- If you are caught in a level open area during an electrical storm and start to feel your hair stand on top of your head then you should drop to your knees, bend forward and crouch. This technique will make you less vulnerable to electrocution.
- Do not lie down this is dangerous and can cause the wet earth to conduct electricity.
- Do not touch the ground with your hands.
- Do not use telephones during electrical storms, except in the case of emergency.
- Remember: lightning can strike several miles from the parent cloud, so work should be stopped and restarted accordingly.
- Lightning safety recommendation is 30-30, this translates to seek protection when thunder sounds within 30 seconds after a lightening flash and do not resume work until 30 minute after the last thunder clap. Stay alert for high winds that can cause unsafe conditions. Working in high wind conditions should be avoided. If continuous high wind persists then staff should seek shelter. All employees will stand down when lightning reaches a range of 8 Miles.

8.0 Emergency Directions

Hospital Directions:



5932 Monks Road,

Canandaigua, NY 14424

- Head east on Monks Road towards Seneca Point Road (0.4 mi)
- Turn left onto Seneca Point Road (2.2 mi)
- Turn right onto NY-21 N (5.0 mi)
- Turn right onto Parrish St Ext (1.2 mi)
- Continue onto Parrish St (0.2 mi)

350 Parrish Street, Canandaigua, NY, 14424

Fire Department Directions:



5932 Monks Road

Canandaigua, NY 14424

- Head east on Monks Rd towards Seneca Point Rd (0.4 mi)
- Turn left onto Seneca Point Rd (2.2 mi)
- Turn right onto NY-21 N (1.9 mi)

4285 NY-21

Canandaigua, NY 14424



9.0 **Evacuation Route and Muster Point Aerial View**

10.0 Emergency Contacts

IN THE EVENT THAT THERE IS AN EMERGENCY THE AIR HORN A WILL SOUND. AFTER THE HORN THERE WILL BE A MESSAGE INDICATING THE TYPE OF EMERGENCY FOLLOWED BY DIRECTION.

IMMEDIATE MUSTER POINT: CYPRESS CREEK CONSTRUCTION TRAILER **IMMEDIATE ALTERNATE: LAYDOWN YARD OFFSITE MUSTER POINT: CANANDAIGUA FIRE DEPT**

CYPRESS CREEK SAFETY MANAGER (ERC):

| Dennis Costner | Safety Director | (704) 300-5450 |
|----------------|-----------------|----------------|

ADDITIONAL ERC PERSONNEL:

| TBD | |
|-----|--|
| | |
| | |

FIRE:

| Cheshire Fire Department | Canandaigua, NY | 585) 394-4866 |
|--------------------------|-----------------|---------------|
| | | |

MEDICAL/FIRST AID CLINIC:

| | | - | |
|--|--|---|--|
|--|--|---|--|

HOSPITAL:

POLICE DEPARTMENT:

| Canandaigua Police Dept. | Canandaigua | (585) 394-3311 |
|--------------------------|----------------|----------------|
| Ontario County Sherriff | Ontario County | (585) 394-4560 |

ALTERNATE EMERGENCY CALL: 911