# Operations and Maintenance Manual

**24 Middle Solar**
**Ellington, CT 06029**

**4 MWac Ground Mounted Facility**

## Contact Information:

**Community Power Group, LLC**
5636 Connecticut Ave.
#42729
Washington, DC 20015
Office: 202-844-6423

**Operation and Maintenance Manual**

**IMPORTANT - READ ALL SAFETY WARNINGS AND CAUTIONS FIRST**

# Contents

# 1.0 SAFETY - READ THIS FIRST!

**The maintenance and repair of the Community Power Group, LLC 24 Middle Solar Power System involves possible contact with potentially lethal voltages and currents. No attempt to service the system should be made by anyone who is not a qualified, trained technician familiar with electrical installations and power electronic equipment.**

**Contact BEFORE attempting any repairs.**

## 1.1 WARNINGS - READ THIS FIRST!

**WARNING** Read these operation and maintenance instructions completely before using and maintaining the Power System. Contact with electrically active parts of the solar panels such as wires and connectors can result in burns, sparks, and lethal shock whether the solar panels are connected or disconnected. The word “panel” refers to the solar panel. An array refers to an assembly of panels.

**WARNING** High voltages are present in this system. Voltages of up to 600 volts DC and 13,800 volts AC or higher can be present. High voltage DC power requires special precautions. DC current will not “throw” a victim off a live part, but will instead cause their muscles to contract. DC arcing is more severe and more difficult to extinguish.

**WARNING** Solar power system repair should only be performed by trained and qualified personnel. All personnel supervising the installation or repair of a photovoltaic system should be familiar with and understand the provisions of the National Electric Code (NEC) (especially Article 690). Unauthorized persons should not be allowed near the solar electric installation.

**WARNING** Solar panels produce electricity whenever sunlight illuminates the solar cells. The voltage from a single panel is a shock hazard. Panel voltages are independent of sunlight strength and therefore full voltages may be present just after sunrise and before sunset.

**WARNING** The terminals within the DC section of an inverter will be energized to the array voltage whenever sunlight is present unless the DC disconnect is first opened (off). The solar array source circuits within the combiner boxes and array wiring will remain energized. High voltage will still be present on the array side of the disconnect switch.

**WARNING** The high voltage capacitors within an inverter require time to discharge after an inverter is shut down. Refer to the Inverter Maintenance manual for the specific time delay.

**WARNING** If you have any questions or are unsure about how to proceed, call Community Power Group **BEFORE** performing any tasks.

## 1.2 CAUTIONS - READ THIS FIRST!

- Maintain good housekeeping conditions and perform all maintenance and repairs in a safe, professional manner.
- A panel generates DC electricity when exposed to sunlight or other light sources.
- Work only under dry conditions with a dry panel and tools.
- Do not stand or step on the panel.
- Do not drill or cut holes in the panel solar modules or wiring.
- Artificially concentrated sunlight shall not be directed on the panel. Do not reflect sunlight onto the modules - this may damage the modules and will void the manufacturer's warranty.
- Use the panel for its intended use only. Do not disassemble the panel or remove any part or label installed by the manufacturer. The panels contain no user serviceable parts.

## 1.3 SYSTEM SAFETY - READ THIS FIRST!

**SOLAR ARRAY**

- Both the DC and AC disconnect switches must be OFF to ensure that the inverter side of the disconnect switch is dead and appropriate Lockout/Tagout (LOTO) procedures in place.
- The Solar Panel side of the DC disconnect switch is always live when the array has sunlight. Solar panels generate voltage when they are exposed to sunlight. There is no OFF switch on the solar panels or on the wiring from the solar array. If there is sunlight, then the panel will be at or near 300 to 600 Volts.
- A solar electric power system has unique electrical characteristics and unique hazards not common with other power sources. If you do not have the proper background and experience, do not attempt to open enclosures or work on the system.
- Test all points with a multi-meter prior to working on any conductors or terminals.
- Use appropriate tools and safety equipment rated for the appropriate voltages.
- Work with a partner in sight and have a plan in case there is an accident.
- Lock-out/Tagout all disconnect switches in the OFF (open) position when you are working on the PV system and there is any possibility that someone else may switch the disconnect switch ON (closed) without your knowledge.
- Follow safe practices and standard guidelines for working with electrical distribution systems and/or generators.
- Do not open the combiner box fuse holders while the system is operating. The fuse holders are not designed to interrupt the source circuit current and may arc if opened under load.

**INVERTER**

- The inverter enclosure has an emergency shutdown switch. This shutdown switch should be used whenever personnel safety is in question and appropriate Lockout/Tagout (LOTO) procedures in place.
- The inverter enclosure contains exposed high voltage conductors. The inverter door should remain closed except during maintenance and testing by experienced and authorized personnel.
- To reduce the risk of electric shock, do not perform any servicing other than specified by the inverter operating instructions.
- Do not open the inverter cabinet if moisture (wet floor, rain, heavy dew) is present.
- For specific inverter information, refer to the inverter manufacturer's manual in this operation and maintenance binder.

**TRANSFORMER**

- The transformer has external on/off switches. This switch should be moved to the off or open position whenever personnel safety is in question and appropriate Lockout/Tagout (LOTO) procedures in place.
- The transformer enclosure contains exposed high voltage conductors. The inverter door should remain closed except during maintenance and testing by experienced and authorized personnel.
- To reduce the risk of electric shock, do not perform any servicing other than specified by the transformer operating instructions.
- Do not open the transformer cabinet if moisture (wet floor, rain, heavy dew) is present.
- For specific transformer information, refer to the inverter manufacturer's manual in this operation and maintenance binder.

1.4 HAZARDOUS LOCATIONS

The following are deemed hazardous locations:

1. The Inverter Pads, where electrical equipment, including the PV inverters, are located;
2. The Transformer Pads, where high voltage electrical transformers are located;
3. Close Proximity to the Photovoltaic Array;
4. Field Wiring, Transition Boxes, Combiner Boxes and Fuses;

## 2.0 Project Specific Information

This manual describes the photovoltaic system at the M:053 B:47, L:0000 parcel at 24 Middle Road, Ellington, CT 06029. It should not be used to maintain or troubleshoot any other photovoltaic system.

The National Electric Code, local building codes, and OSHA safe work practices should take precedence in case of conflict with any statements made in this manual.

### 2.1 Purpose of the Operation and Maintenance Manual

This manual provides information for the operation and maintenance of the solar power system. **This manual also contains important safety information.**

The installation of photovoltaic systems is "governed" by local building jurisdictions, which typically use the National Electric Code (NEC), and in particular NEC article 690, as their guideline for electrical inspection requirements. NEC Article 690 provides rules for safe installation of PV systems including accepted system components. All components used in the installation of this system are listed to the appropriate Underwriters Laboratories Standards. All personnel supervising the installation or repair of a photovoltaic system should be familiar with and understand the provisions of the National Electric Code.

24 Middle Solar 4.0 MW PV System

### 2.2 Project Description

Power System for the site at the property leased by CPG located at 24 Middle Road, Ellington, CT 06029 consists of the following system components:

| Component | Model | Quantity | Rating |
|---|---|---|---|
| Solar Panel | Longi 600W | 9,963 | 600W |
| Inverter | CPS SCH125KTL-600 | 32 | 125kW |
| Racking System | Nextracker | N/A | N/A |

*STC = Standard Test Conditions of irradiance of 1000 watts/meter$^2$, Air Mass 1.5 spectrum, and cell temperature of 25$^o$ C (77 F) also known as factory test conditions.*

PTC = PVUSA Test Conditions of irradiance of 1000 watts/meter2, Air Mass 1.5 spectrum, ambient temperature of 20o C (68 F) at 1 meter/second wind speed 10 meters above grade.

## 3.0 SYSTEM DESCRIPTION

The 24 Middle Solar Power System installed at the site is a photovoltaic array designed with a total of 9,963 Longi 600W photovoltaic modules that are mounted on the racking systems. The system converts sunlight into electricity and is rated at 5,865.8 kW DC peak total power. The array is divided into 232 source circuits of 23 modules in a series for System #1 and 232 source circuits of 23 modules in series for System #4. These source circuits are combined at 32 combiner boxes each of which connects to one of the system's inverters, each of which

converts the system's DC electricity into AC power compatible with the utility grid. The System encompasses 32 CPS SCH125KTL-600 inverters which have a 600Vac 3-phase output that passes through [2] medium voltage transformers. The transformer's output is 13.8kVac 3-phase output which is then fed through Bay-O-Net fuses, disconnect switch, and surge arrester. This transformer connection is considered the interconnection and meter point. The system AC output is recorded using a 6 Revenue Grade Meter.

3.1 System Components and Descriptions

**3.1.1 Solar Module (Longi 600 Watt)**
The Solar Modules are ridged glass solar electric panel designed to serve needs of power generation. The wiring interconnecting all of the PV modules is achieved using MC4 connectors.

**3.1.2 Combiner Boxes**
The Combiner Box provides a connection point for the panels and meets the National Electrical Code (NEC) requirement for series fusing of solar modules. 23 panels are connected in series to produce one source circuit with the correct inverter DC input voltage. Each source circuit is connected to a 20 Amp 1500 VDC rated fuse inside the Combiner box. *The combiner box is used to connect fifteen of these 23-panel series strings together in parallel.*

**3.1.3 DC Disconnect Switches**
The direct current safety switch provides a means for disconnecting the solar array from the inverter and meets the NEC disconnecting requirement.

**3.1.4 Inverter (CPG SCH125KTL-DO-US)**
The inverter converts the direct current electricity produced by the Solar Modules into alternating current and injects this current into the Eversource Utility's electrical distribution system at the point of interconnection.

**3.1.5 AC Disconnect Switch**
The alternating current safety switch provides a means for disconnecting the inverter and meets the NEC disconnecting requirement.

**3.1.6 The Transformer**
**The transformer is rated at 13.8kV with a voltage of 600/13,800V.**

**3.1.7 The Utility Interface**
The utility interface equipment consists of the utility required locking disconnect switch, and the on-site electric service panel AC circuit breaker.

**3.1.8 User Serviceable Parts**
There are no user serviceable parts.

**3.1.9 Substitute Parts**
Never use substitute parts.

# 4.0 SYSTEM OPERATION

This section applies specifically to the Photovoltaic system installed on the Santa Monica Place Solar System.

## 4.1 WARNINGS

- **The equipment contains lethal DC and AC voltages.**
- **Only authorized personnel are permitted site access.**
- **These instructions are only for use by qualified personnel.**
- **Equipment power is supplied from multiple sources.**
- **The inverter contains energy storage devices that require 15 minutes to safely discharge lethal voltages.**

## 4.2 SITE SAFETY PROCEDURES

All personnel operating, maintaining and repairing the Solar Power System must follow the specific safety procedures in this manual and general electrical safety practices.

## 4.3 NOMINAL OPERATING PARAMETERS

The following list of parameters gives a general description of the photovoltaic system and equipment for the system installed at 24 Middle Road, Ellington, CT 06029:

| | |
|---|---|
| *Module Open Circuit Voltage:* | *37.2 V @ STC* |
| *Module Peak Power Voltage:* | *30.4 V @ STC* |
| *Module Short Circuit Current:* | *8.37 ADC @ STC* |
| *Module Peak Current:* | *7.89 ADC @STC* |
| | |
| *Number of Modules per Source Circuit:* | *23* |
| *Number of Source Circuits:* | *464* |
| *Total Modules:* | *10,665* |
| | |
| *Array Operating Voltage (Vmp):* | *431.20 VDC* |
| *Array Short Circuit Current (Isc):* | *693 ADC at 1000 W/m$^2$* |
| *Array Operating current (Imp):* | *668.64 ADC at 1000 W/m$^2$* |
| | |
| *Source Array open circuit voltage (Voc):* | *520.8 VDC @STC* |
| *Circuit operating voltage (Vmp):* | *425.60 VDC @ STC* |
| *Source Circuit operating current (Imp):* | *8.37 ADC @ STC* |
| | |
| *Inverter DC operating voltage:* | *1500 VDC* |
| *Inverter AC operating voltage:* | *600 VAC* |
| *Inverter maximum AC operating current:* | *2500 A* |

## 4.4 INVERTER MANUAL START and RESTART

Under normal operation, when there is sunlight on the solar array, the inverter will take the DC power produced by the array, convert it to AC power and feed it to the building electrical service panelboard. Excess power not used by the building loads will feed to the utility grid.

The inverter has three modes of operation:

1. Power Tracking - This is the normal operating mode with the inverter supplying power from the solar array to the building and the grid.
2. Sleep Mode - The inverter is in this state at night when there is insufficient array power to operate.
3. Fault - This represents an abnormal condition.

The output of the solar array depends on the amount of sunlight. Clouds, temperature, dust and dirt, shading time of day and season will all affect the power produced.

> *Note: Even at low sunlight and power levels, the solar array voltage will be close to its normal operating or open circuit voltages of up to 1,500 volts DC.*

At night, the inverter will switch to the sleep mode and wait until the solar array voltage rises to the preset inverter start voltage the next morning. At this point, it will automatically "wake up" and begin drawing power from the array.

If the inverter detects an abnormal condition, it will shut down and go to the fault mode. Depending on the error detected, the unit may re-start automatically or may require a technician to reset the unit manually.

The inverter gets its control power from the grid. If the grid is disconnected from the inverter or if there is a grid power failure, the inverter will not operate. When the grid power failure is connected and grid power is at the proper voltage and frequency, the inverter will re-start automatically.

**Energizing the Solar Power System**

1. Remove any lock-out devices on the disconnect switches.
2. Close (turn on) the circuit breaker at the utility service panelboard.
3. Close (turn on) the AC disconnect switch.
4. Turn on the inverter switch located on the front of the inverter. Wait for inverter to power up. See Inverter Manual for specific information. Confirm that there are no alarm indications. There is a 5-minute delay before the inverter will go into the Power Tracking mode if DC power is available from the solar array and grid voltage is correct.
5. Close (turn on) the DC disconnect switches.
6. The system is now operational.

**Inverter Manual Shutdown**

1. Turn off the inverter switch. **Caution:** The capacitors in the inverter will still be energized for a period of time after shutdown.
2. Open (turn off) the DC disconnect switches. **Caution:** The solar array source circuits within the combiner boxes and on the array side of the disconnect switch will remain energized. High voltage will still be present.
3. Open (turn off) the AC disconnect switch.
4. Open (turn off) the circuit breaker at the utility service panelboard.
5. Install lock-out devices and tags on the disconnect switches.

# 5.0 SYSTEM TESTING AND COMMISSIONING

**IMPORTANT - Read and understand this entire manual before performing system commissioning. System commissioning is to be performed only by authorized personnel with knowledge and experience with photovoltaic power systems.**

PV System hardware – Inverter and related equipment

1. Ensure all point of interconnection conduit, fittings, conductors and terminations are correct.
2. Ensure PV system ground is tied to building's electrical grounding system.
3. Utility disconnect switch installed near kWh meter.
4. Utility disconnect switch is of a "visible and lockable" type required by local utility.
5. Utility disconnect switch conduit, fittings, conductors, and ground are correct.
6. System kWh meter installed correctly.
7. AC disconnect switch current and voltage ratings are correct per single-line diagram.
8. AC disconnect switch conduit, fittings, conductors, and ground are correct.
9. Inverter installed correctly per manufacturer's installation manual.
10. Inverter conduit, fittings, conductors and ground are correct.
11. Fuse box installed correctly.
12. Fuse box current and voltage ratings are correct.
13. Fuse box conduit, fittings, conductors and ground are correct.

PV system hardware – PV modules and array

1. PV panel location meets intent of plans.
2. PV panels are clean and undamaged.
3. PV panels are secured correctly to the support structure.
4. PV array junction and/or combiner boxes installed correctly.
5. PV panel conductors and grounds are correct per single-line diagram.

PV System Operational Checks (to be completed during consistent sunlight)

1. Isolate each PV source circuit (remove fuses and/or open DC disconnect switch).
2. Verify system grounding.
3. Measure and record Voc (open circuit voltage) for each source circuit. Check polarity of each source circuit during these voltage measurements.
   Note: Open circuit voltages should be between 1000 VDC and 1500 VDC (depending on module temperature) and each voltage should be within ±5% of predicted design values.
4. Re-install combiner box fuses.
5. Check for ground faults in the isolation transformer, circuit breakers and fused disconnects.
6. Verify voltages and polarities at DC and AC disconnect switches while open.
7. Power up inverter per inverter's installation manual start-up procedures and allow inverter to reach a steady operating power level (approx 5 minutes). Perform inverter operational tests including local operation, control, wake-up and sleep separation.
8. Measure and record operating current of each source circuit using a clamp-on DC Amp meter.

Note: If array is clear of shade, all currents should be within +/- 5% of each other.

# 6.0 DAILY OPERATIONS

## 6.1 Facility Access

The PV system is located at 24 Middle Road, Ellington, CT 06029. Access to the facility is at the gate located perpendicular to Middle Road, on Pinney Street, Ellington, CT 06029. The site is private property and is accessible only by authorized personnel after permission has been granted by Community Power Group, LLC. Regular facility access is not required. A lockbox mounted on the gate contains the gate key for maintenance and emergency access. Emergency services and owner each possess keys.

## 6.2 8:00am Procedures (remote)

1. Perform daily/weekly system maintenance
2. Review prior day's logs for system alerts (multiple days if holidays or weekends intervened)
3. Review security footage
4. Examine maintenance logs and schedules. Schedule upcoming maintenance.
5. Confirm system interface with GATS

## 6.3 11:00am Procedures (remote)

1. Verify expected output vs. actual output
2. Record Variance
3. Monitor system alerts

## 6.4 3pm Procedures (remote)

1. Verify expected output vs. actual output
2. Record Variance
3. Monitor system alerts

# 7.0 SYSTEM MAINTENANCE

**IMPORTANT Read and understand all safety precautions and warnings. This is a high voltage power plant. Do not attempt any activity without a complete understanding of what you are doing. Follow appropriate lock-out/tag-out procedures before performing any maintenance.**

The solar electric system is automatic and requires very little maintenance. However, regular maintenance and trouble-free operation go hand-in-hand.

## 7.1 Grounds Maintenance

- Visually inspect perimeter fencing for damage. Report to CPG as observed.
- Mechanical vegetation control if average height is higher than 18 inches.
- Review security footage.

## 7.2 Electrical System Maintenance

*7.2.1 Daily*

- Monitor alerts from array monitoring system indicating a situation requiring urgent action. If alerts are present, see Section 9.0.

*7.2.3 Monthly Maintenance*

- Review performance data from monitoring system, comparing actual generation with predicted and historic data.
- Examine data for evidence of string failures.

*7.2.4 Every 6 Months*

- Visually inspect the solar array for dirt, dust and other debris. Clean as necessary. See Section 8.0 for Cleaning Protocol
- Visually inspect the solar array for unusual positioning.
- Inspect all electrical components in the array field and on inverter and transformer pads.
- Perform the inverter 6-month interval maintenance (see inverter manufacturer's manual).
- Inspect all wiring for mechanical damage and/or corrosion.
- Inspect all conduit runs and electrical enclosures

*7.2.5 Every 12 Months*

- Create annual report with performance data from monitoring system, comparing actual generation with predicted and historic data.

*7.2.5 As required*

- If issues with system performance are identified complete the following: Measure and record source circuit currents at the combiner boxes for all panels using a DC current clamp. Record irradiation and temperature for each combiner box at the time of measurement.

*7.2.6 Year 15*

- Prepare for Inverter replacement

# 8.0 SOLAR PANEL CLEANING PROTOCOL

**IMPORTANT WARNING –**

**Solar panels produce high voltage DC electricity and should only be cleaned, serviced and maintained by qualified, trained personnel.**

**Do not climb or walk on solar panels.**

**Never work unassisted on a solar array. Always work with skilled assistants who have successfully completed safety, first aid and CPR training.**

**Do not use sharp tools or metallic objects on panels. Extra care should be taken to make sure cleaning does not cause physical damage to the solar panels.**

Soiling of the surface of the solar panels with dust, dirt and other debris can block full sunlight from the solar cells and reduce system performance. The amount of soiling varies with local conditions.

Within Connecticut, rainfall will satisfy most cleaning requirements. If an extended dry period has been observed, the solar panels can be hosed clean with plain water using low pressure water. Washing must be done only when the solar panels are cool. The best time to wash the panels is the early morning.

- Do not wash the panels when they are hot from the sun.
- Do not wash the panels at night.
- Do not direct the water at the backs of the panels
- Do not direct water at electrical equipment (inverters, transformers, combiners).

## 8.1 PANEL WASHING

- Each panel “weep hole” shall be inspected and cleared of debris.
- Manual panel washing will be scheduled in early June and late October.
- Washing hours will be 4am to 7am in June and 5am to 8am in October
- Best efforts will be taken to assure washing occurs during a rainfall.
- Washing teams will utilize rubberized squeegee on pole extenders to scrape dirt and water from top of each panel to the bottom.
- Washing teams may supplement rainfall with low-pressure water directed from truck-mounted water tank.
- No detergents will be used.
- Truck refueling and water reservoir recharge will take place off site.
- **Water shall NOT be directed at inverters, junction boxes, transformers or the underside of panels**.

## 8.2 GROUNDS

- Grass to be mowed only by tractors with less than 6-foot cutting diameter.
- Vegetation mowed minimally according to Section 7.1
- Hand-held trimmers to be used around inverters, transformers and exposed junction boxes or wire conduits.
- All inverter and transformer slabs will be manually cleared of debris.

# 9.0 TROUBLESHOOTING AND REPAIR

**Contact Community Power Group BEFORE attempting any repairs.**

The solar electric power system is designed to be reliable and requires no user adjustments. System troubleshooting requires understanding the system configuration and components. Troubleshooting should only be performed by technicians with grid connected photovoltaic power system experience.

**FIRST**: Always look for open circuit breakers, blown fuses and loose wires.

**Inverter alarm is tripped:**

1. Follow the inverter manufacturer's manual troubleshooting instructions. If the alarm clears, attempt to restart the inverter. If the alarm persists, check the items listed below.

**Inverter will not turn on:**

1. Check that all AC disconnect switches are ON (closed).
2. Make sure all enclosure doors are closed tightly (some inverters have door sensors that will prevent the inverter from running if a cabinet door is left open).
3. Check the utility line voltage at the inverter's AC disconnect switch.
4. Check fuses in the AC disconnect switch(es).

**Inverter does not produce power or power is low for existing conditions:**

1. Check inverter display for fault indications.
2. Check that the DC disconnect switch is ON (closed).
3. Check the DC voltage from the array at the DC disconnect switch.
4. Check fuses in the DC disconnect switch.
5. Check solar panels for heavy dirt, debris, dust accumulation or shading.
6. Check for damaged solar panels.
7. Check fuses in the combiner boxes. **DO NOT check fuses under load** – power down the inverter and open the DC disconnect switch before checking fuses in the combiner boxes.

**Panel string voltage not as predicted:**

1. With AC power off, disconnect the solar panel at the junction box and measure panel open circuit voltage (Voc) of string.
2. If panel Voc is incorrect, check panel connectors to make sure they are properly engage. Also, check for damage modules such as cracks in glass.
3. If panel Voc is correct, test the homerun wire to the Combiner Box for opens, shorts or incorrect resistance reading. If wiring is bad, ensure that all conduit and conduit fittings are in good condition and replace the bad wire with new wire.

## 10.0 STARTUP/SHUTDOWN PROCEDURES

# 24 Middle Solar Array

**NOTE: Shutdown to be done by non-Community Power Group personnel only during an emergency.**

**Normal Startup**

Close the following in order:

1. Open visible disconnect cabinet of 13.8 kV transformer.
2. Insert key into lock of SWITCH A (UPPER) switch and turn key to UNLOCKED position.
3. Move SWITCH A (UPPER) switch on transformer to CLOSED position.
4. Turn the key back to the LOCKED position and remove the key.
5. Insert key into lock of SWITCH B (LOWER) switch and turn key to UNLOCKED position.
6. Move SWITCH B (LOWER) switch on transformer to CLOSED position.
7. Leave key in SWITCH B (LOWER) lock.
8. Check the viewing window to confirm that blade contacts are connected.
9. Move switchboard - 2500A Main Fused Disconnect into CLOSED position.
10. Move switchboard - Individual Breakers Connecting Inverters into CLOSED position.
11. Move inverter AC Disconnects 1, 2, & 3 into CLOSED position.
12. Move inverter DC Disconnects 1, 2, & 3 into CLOSED position.
13. Move DC Disconnect switches 1, 2, 3, 4, & 5 on DC Disconnect Pad into UPPER position.

**Normal Shutdown**

Open the following in order:

1. Move DC Disconnect switches 5, 4, 3, 2, & 1 on DC Disconnect Pad into LOWER position.
2. Move inverter DC Disconnects 3, 2, & 1 into OPEN position.
3. Move inverter AC Disconnects 3, 2, & 1 into OPEN position.
4. Move switchboard - Individual Breakers Connecting Inverters into OPEN position.
5. Move switchboard - 1000A Main Fused Disconnect into OPEN position.
6. Open visible disconnect cabinet of 13.8kV transformer.
7. Move SWITCH B (LOWER) switch on transformer to OPEN position.
8. Turn the key on the SWITCH B (LOWER) switch to the LOCKED position and remove the key.
9. Insert key into lock of SWITCH A (UPPER) switch and turn key to UNLOCKED position.
10. Move SWITCH A (UPPER) switch on transformer to OPEN position.
11. Turn the key back to the LOCKED position and remove the key.
12. Check the viewing window to confirm that blade contacts are disconnected.

# 11.0 EMERGENCY RESPONSE PROCEDURE

1. Ascertain nature of the emergency
    - Police
        - Trespassing
        - Theft
        - Vandalism/Physical Damage
        - Other Crime
    - Fire
        - Injury
        - Fire
        - Smoke
        - Electrical Arcing
        - Hazardous Materials
    - Electrical
        - Damaged Wires
        - Damaged Inverters
        - Damaged Transformers
        - Grid Related Issues
2. Contact appropriate responder below
3. Notify Community Power Group, LLC
4. If required - Initiate Emergency Shutdown (Front and Back pages)

11.1 Police
Ellington Police Department
33 Arbor Way
Ellington, CT 06029

11.2 Fire
Ellington Volunteer Fire Department
29 Main Street
Ellington, CT 06029

11.3 Electric
Eversource**:**
**Electrical Shut Off: 1-877-944-5325**

11.4 Owner's Contact Information
Community Power Group, LLC
5636 Connecticut Ave NW #42729
Washington,DC 20015
**202-844-6423**

# PV Array

## EMERGENCY SHUT DOWN PROCEDURES

**1. Open visible disconnect located in each of the six AC panelboards.**
**2. Open visible disconnect located on each of the six pads for the solar inverter equipment.**

**Contact Community Power Group at (202) 844-6423**