



**Photovoltaic Project Technical Documentation Worksheet**

Please complete both pages of this form with all required information. Technical information is reviewed electronically, therefore we require that each worksheet as well as supplemental information (photos and one-line diagrams) be submitted either via email to [partners@revermont.org](mailto:partners@revermont.org) or copied onto a CD-ROM and mailed via post to the address listed below.

Customer Name(s): \_\_\_\_\_ Phone: \_\_\_\_\_

Location of Installation: \_\_\_\_\_ Date of Installation: \_\_\_\_\_

Solar Electric Array Location:  Rooftop  Pole  Ground Mount

Solar Electric Module Orientation: \_\_\_\_\_ degrees ( magnetic or  true)

Solar Electric Module Tilt: \_\_\_\_\_ (0 degrees horizontal, 90 degrees vertical)

Solar Module Tracking:  fixed  single axis  double axis  
 If fixed with adjustable tilt, please check fixed

Estimated Annual Output of the system as installed: \_\_\_\_\_ kWh/year

**Warranty Information:**

Modules: \_\_\_\_\_ years at \_\_\_\_\_ % rated power output (minimum of 1 yr required)  
 Inverter: \_\_\_\_\_ years (minimum of 1 yr required)  
 Installation: \_\_\_\_\_ years (minimum of 1 yr required)

**PV Power Source:** Information as posted on PV Power Source Sign (permanently located on site at DC disconnect, as required by the NEC).

**Operating Current**

$$\frac{\text{Module operating current (Ip)}}{\text{Module operating current (Ip)}} \times \frac{\text{Qty strings or modules connected in parallel}}{\text{Qty strings or modules connected in parallel}} = \text{_____}$$

**Operating Voltage**

$$\frac{\text{Module operating voltage (Vp)}}{\text{Module operating voltage (Vp)}} \times \frac{\text{Qty modules connected in series}}{\text{Qty modules connected in series}} = \text{_____}$$

**Maximum System Voltage**

$$\frac{\text{Module Voc}}{\text{Module Voc}} + \left( \frac{\text{VOC x*temp correction factor}}{\text{VOC x*temp correction factor}} \times \frac{\text{°C delta}}{\text{°C delta}} \times \frac{\text{modules in series}}{\text{modules in series}} \right) \times \frac{\text{_____}}{\text{_____}} = \text{_____}$$

Module Voc + (VOC x\*temp correction factor x °C delta x modules in series = Max system voltage

\*where temperature correction factor is one of the following:

- 1) Temperature factor in volts/degree C (i.e. .143V/°C)
  - 2) Module Voc x % voltage change/degree C (i.e. 21.3 x .34%/°C)
- and

°C delta is difference in temperature between STC (25°C) and lowest expected temperature of array as determined by ASHRAE minimum mean temperature data, or record low temperature for the location.

**Notes:**

For further information about the Maximum System Voltage calculation, consult "Guidelines for the Expedited Permit Process for PV Systems" by Bill Brooks, [www.brooksolar.com](http://www.brooksolar.com) and also "Array Voltage Considerations" by Bill Brooks, Solar Pro Magazine, Oct/Nov 2010 issue, [www.solarprofessional.com](http://www.solarprofessional.com)

Maximum System Voltage (per NEC Article 690.7(A)) The Vermont Small Scale Renewable Energy Incentive Program documentation does not yet require that Maximum System Voltage be calculated using this formula.

**Short Circuit Current**

$$\frac{\text{Module short circuit currents (Isc)}}{\text{Qty of modules in parallel}} \times \text{Inverter continuous output current rating} = \text{Maximum System Voltage}$$

**AC Point of Connection:** Information as posted on sign identifying AC point of connection (permanently located on site at AC point of connection, as required by NEC)

**Maximum Operating Current:** \_\_\_\_\_  
 Inverter continuous output current rating

**Operating AC Voltage:** \_\_\_\_\_  
 Nominal AC voltage at interconnect

Can the system operate independent of the grid as a stand-alone power source and in parallel with the grid?

- Yes. If so, there must be a sign at the main service disconnect notifying the type and location of the optional standby system – indicate on one-line schematic.
- No, the system is grid connected but is not capable of operating independently of grid power.
- No, the system is off-grid. Only one off-grid system per application can be submitted as proof of professional experience.

**One-line diagram(s)\*** and/or schematic for system as installed – showing all major field-installed structural, mechanical, and electrical components including:

<p><b>a.</b> All major field-installed electrical components including inverter make and model</p> <p><b>b.</b> Detailed module information and series/parallel configuration of modules</p> <p><b>c.</b> Wire type, all wire run lengths and wire size to all major system components, including grounding details</p> <p><b>d.</b> Conduit type and size</p> <p><b>e.</b> Ratings for all circuit breakers and fuses</p>	<p><b>f.</b> For battery systems: charge controllers and non-PV generators where applicable</p> <p><b>g.</b> Details of PV Output Circuit as posted on DC disconnect</p> <p><b>h.</b> Location of junction or combiner boxes</p> <p><b>i.</b> The utility disconnect type and location</p> <p><b>j.</b> Means and location of connecting to the building electrical system</p>
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**Note:** The one-line diagram can be either hand drawn or computer generation, but must be submitted electronically.

**Labeled digital photographs** showing all major field-installed structural, mechanical and electrical components listed below. Photos must be submitted electronically. They can be sent as email attachments to [partners@revermont.org](mailto:partners@revermont.org) or copied onto a CD-ROM and mailed via post to the address listed at the bottom on this page.

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| <p><b>a.</b> PV Array (front and back for ground mounted)</p> <p><b>b.</b> Mechanical attachment points and conduit roof penetration points or wire junction boxes</p> | <p><b>d.</b> Balance of the system: all equipment necessary to integrate the PV with the site load (i.e. array circuit wiring and management of wiring, fusing, disconnects, power processing equipment, batteries, charge controllers, location where solar-electric system interconnects to the utility. <i>NOTE:</i> pictures must show all wiring enclosures open, and be close enough to see the details of the wiring, connections, etc.)</p> |
| <p><b>c.</b> All labeling required by NEC posting requirements</p>   | <p><b>e.</b> System grounding</p>   |