



## FY2017 SREC Registration Program (SRP)

### Final As-Built Technical Worksheet

#### Instructions

Page 1

Please carefully read all of the following information. With the help of your installation electrical contractor, fully complete sections A through G. **ALL PARTIES MUST SIGN SECTION G.** When submitting information that will not fit in the fields of this form, you may use a proprietary attachment if it contains the same headers.

**If the SRP Registration was submitted in paper form, the Final As Built Packet must be submitted in paper. If the SRP Registration was submitted via the online portal, the Final As Built documents must be upload to the online portal.**

#### A. PREMISE CONTACT INFORMATION

1. **Premise Contact Name:** The name of the person listed on the SRP Certification Form under "Premise Contact."
2. **SRP Registration #:** The SRP or NJSRRE Project number that has been issued on the SRP Acceptance Letter or email for the corresponding project.
3. **Premise Company Name (if applicable):** The name of the company listed under Section A. Premise Contact on the SRP
4. **Install Address:** The street address of the site where the solar array is installed. (i.e.: 2 Solar St., Trenton, NJ, 08625)

#### B. INSTALLATION INFORMATION

1. **Interconnection Type: (Choose one)** Indicate the Interconnection Type as either **Behind-the-Meter** or **Direct Grid-Supply**.  
For "**behind-the-Meter**" solar PV system is a customer-generator facility defined at N.J.A.C. 14:8-4.2, which is interconnected with a New Jersey Electric Distribution Company (EDC) and receives retail credit for the electricity produced via net metering.  
For "**Direct Grid-Supply**" solar PV system is a merchant power generator interconnected to the New Jersey distribution system in compliance with federal rules established for wholesale electricity suppliers managed by PJM Interconnection, LLC, the regional transmission operator.
2. **Land Use Type:** List percent of project capacity on each type, total must add up to 100%.

#### C. EQUIPMENT INFORMATION

1. **Solar Electric Module & Array Data:** The equipment listed in this section of the SRP Final As-Built Worksheet must be a true representation of the equipment installed at the site. If the system consists of multiple array planes and/or orientations, indicate the orientation, tilt and modules per string, per inverter for each array plane. A separate attachment may be used for additional overflow information. Please use the same headers and a similar layout as provided on the SRP Final As-Built Technical Worksheet. (Reference the image in **Exhibit A** for guidance.) **This information is required to be entered in the online portal under the Equipment Tab.**
  - a. **Manufacturer:** For projects that include multiple manufacturers for modules, specify all manufacturers, model numbers and power ratings. If additional space is needed, please attach an additional equipment page utilizing the same column format as provided on the SRP Final As-Built Technical Worksheet.
  - b. **Model Number:** The specific model number of the installed solar module, as written on the manufacturer's specification sheet or a UL listing label located on the solar module frame.
  - c. **DC Power Rating (Watts):** The maximum DC wattage output rating of the installed solar module, as written on the manufacturer's specification sheet or UL listing label located on the solar module frame.
  - d. **Quantity in Array:** The amount of modules installed on a particular array plane.
  - e. **Total Array DC Output:** The total maximum rated DC wattage for the sum of modules placed on a particular array plane.
  - f. **Array Location(s):** Indicate array mounting location or type of mount utilized.
    1. **Roof-top:** Signifies any array that has been mounted on a roof structure or carport. (i.e.: Flat, tile, sloped, composite shingle, residential, commercial, ballasted, carports, etc. Normally fixed-mount, but occasionally may be designed with
    2. **Pole Mount:** Signifies any array that has been mounted on a minimal-mast structure. (i.e.: Single or multi-module on "top-of-pole" or "side-of-pole", etc. May be fixed or multi-adjustable tracking.)
    3. **Ground Mount:** Signifies any array that is mounted on the ground, other than pole mount. (i.e.: May include fixed solar mounts, adjustable mounting systems, ballasted ground mounts, etc.)
  - g. **Array Location(s) Other:** Indicate array mounting location or type of mount utilized.



- h. **Orientation/Azimuth°:** The “True” orientation of the solar modules on a particular array plane. Magnetic compass measurements should be corrected using the proper magnetic declination factor.
- The system installation information supplied in this section must coincide with the program inspection within an accuracy of **+/- 3 degrees** of that reported on this form.
- Orientation shall be documented in true degrees (*I.e.: New Jersey “true°” = (Magnetic Azimuth° – Magnetic Declination° = True Azimuth°)*)
- i. **Tilt°:** The tilt of the solar modules, in “Degrees”. Construction roof “Pitch” measurements are not acceptable. Use of an inclinometer is required to obtain an accurate tilt measurement.
- The system installation information supplied in this section must coincide with the program inspection within an accuracy of **+/- 3 degrees** of that reported on this form. Inaccuracies will require paperwork revisions.
- j. **Tracking:** Indicate which mounting method or tracking feature the solar photovoltaic racking system contains for tracking the solar path. More than one selection may be possible and is permitted, depending on the design of the system. (*See the image in Exhibit A for reference.*) Options include: **Fixed, 1-Axis, or 2-Axis**
1. **Fixed:** A stationary racking structure, with no adjustability or tracking capability.
  2. **Single-Axis:** A single directional tracking configuration. (*I.e.: Single axis trackers can track the sun from East to West or from North to South on a single pivot point.*)
  3. **Dual-Axis:** A dual directional tracking configuration. (*I.e.: Dual Axis trackers may track East to West, and tilt for North to South tracking using multiple pivot points.*)
- k. **Solar Access %:** Solar Access is defined by the SREC Registration Program (SRP) as the estimated percentage of annual exposure to the sun, minus shade impact. A shading analysis shall be performed using a minimum sampling of two lower corners and two upper corners of each distinct array plane. The system installation information supplied in this section must coincide with the SRP program verification within an accuracy of **+/- 3 degrees** of that reported on this form. Enter the Solar Access percentage associated with the completed shading analysis for each array plane, with a maximum of two decimal places. **The SRP Processing Team reserves the right to request a complete copy of the full shading analysis and Solar Access summary from the installer at any time.**

Exhibit A										
a. Manufacturer	b. Model Number	c. DC Power Rating (Watts)	d. Quantity in Array	e. Array DC Output (w) (c x d)	f. Location	g. Location (Other)	h. Orientation (Azimuth)	i. Tilt	j. Tracking	k. Solar Access %
1. Prism Solar	PSM-245-PA05	245	50	12250	Rooftop	House	175	24	Fixed	96.25%
2. Prism Solar	PSM-245-PA05	245	150	36750	Rooftop	House	180	0	Fixed	89.60%
3. Prism Solar	PSM-245-PA05	245	10	2450	Rooftop	House	265	35	Fixed	91.30%
4. Prism Solar	PSM-245-PA05	245	20000	4900000	Rooftop	House	180	39	Fixed	99.00%
<b>Totals:</b>			<b>20210</b>	<b>4951.45 KW</b>						

2. **Inverter Data:** The equipment listed in this section of the SRP Final As-Built Worksheet must be a true representation of the equipment installed at the site. A separate attachment may be used for additional overflow information. Please use the same headers and a similar layout as provided on the SRP Final As-Built Technical Worksheet. (*Reference the image in Exhibit B for guidance.*)
- a. **Manufacturer:** For projects that include multiple manufacturers for inverters, specify all manufacturers, model numbers and power ratings. If additional space is needed, please attach an additional equipment page utilizing the same column format as provided on the SRP Final As-Built Technical Worksheet.
  - b. **Model Number:** The specific model number of the installed inverter, as written on the manufacturer’s specification sheet or a UL listing label located on the inverter frame.



## FY2017 SREC Registration Program (SRP)

### Final As-Built Technical Worksheet

#### Instructions

#### Page 3

- c. **Rated AC Watts:** Also called "Nominal Output Power" in some manufacturer specifications. The maximum AC wattage output rating of each installed inverter, as documented on the manufacturer's specification sheet or UL listing label located on the inverter frame.
- d. **Quantity:** The amount of the same make/model inverter installed. You may group similar inverters which have similar quantities of modules per string. (See the image in **Exhibit B** for reference.)
- e. **Inverter AC Output (w):** The total maximum rated AC wattage for the sum of inverters.  
Total Inverter AC Output = (Rated AC Watts) x (Quantity of Inverters)
- f. **Peak Efficiency %:** The inverter's Peak Efficiency is entered as a percent (i.e.: 96.3%). Refer to manufacturer's peak efficiency rating.
- g. **Inverter Location(s):** Indicate whether the inverter is installed in an **indoor** or **outdoor** location.
- h. **Inverter Location (Other):** Identify the physical location of the inverter(s). Document the general location (s) of the inverter(s). (i.e., "roof under modules", "basement", "field util pads")

Exhibit B							
a. Manufacturer	b. Model Number	c. Rated AC Watts	d. Quantity	e. Inverter AC Output (c x d)	f. Peak Efficiency %	g. Location	h. Location (Other)
1. Solar One	S1-8000US-11	8000	2	16000	96.50%	Indoor	Garage
2. Micro Inverter	S2-2015-60	215	50	10750	96.30%	Outdoor	Panel
3. Micro Inverter	S3-M380-72	380	15	5700	95.50%	Outdoor	Panel
4. Solar Four	S4-10-UM-1	9995	2	19990	96.20%	Indoor	Garage
5. Solar Five	S5-5000	5000	1	5000	97%	Indoor	Garage
<b>Total</b>			<b>70</b>	<b>57.44 kW</b>			

### D. SYSTEM ESTIMATED PRODUCTION CALCULATION

Estimated production calculations are one of the critical system information requirements of this SRP Final As-Built Technical Worksheet. Calculations can be performed using a combination of a shading analysis tool and one of the approved online production estimation tools made available on the National Renewable Energy Laboratory (NREL) website. NREL's PVWatts® (any available version) and NREL's System Advisor Model (SAM) are among the formats that are presently being accepted by the SRP Processing Team. For the purpose of these instructions, the term "PVWatts®" will be used to define production estimate requirements.

- 1. **Solar Access Average:** Shading analysis shall be performed per the **SRP Final As-Built Checklist**. The system installation information supplied in this section must coincide with the program inspection within an accuracy of +/- 3 degrees of that reported on this form. The Solar Access Average is calculated using the Solar Access Percentages performed in Section C1, column "k". (i.e.: add all the percentages together and then divide by number of occurrences.) **The SRP Processing Team reserves the right to request a complete copy of the full shading analysis from the installer at any time.**
  - a. **Shading Analysis Tool Utilized:** Check the box representing the name of the shading analysis tool utilized. If the tool name is not listed, select "Other" and enter the tool name in the space provided. In order to provide accurate and complete data collection within the SRP Final As-Built Technical Worksheet and PVWatts®, the tool that is utilized should be able to provide a full solar site analysis.



## FY2017 SREC Registration Program (SRP)

### Final As-Built Technical Worksheet

#### Instructions

#### Page 4

2. **Production Estimates:** Installers must provide the appropriate inputs as described below for the ideal system versus designed system when using the online NREL estimation tool to ensure accurate completion of this section. See the SRP Final As-Built Technical Worksheet instructions for more information.

**The SRP Processing Team reserves the right to request complete copies of all estimation paperwork to support the data on the SRP Final As-Built Technical Worksheet.** The PVWatts® values showing the system energy production kilowatt hour (kWh) estimates of the installed system should match the data input onto the SRP Final As-Built Technical Worksheet. (See the image in **Exhibit C** for reference.)

- a. **Designed estimate (kWh):** When calculating the production estimate for the **designed system**, use the actual data (DC kilowatt system size, true tilt, and true orientation) submitted on the SRP Final As-Built Technical Worksheet. Indicate shading impact for the array plane by changing the PVWatts® Derate Calculator derate factor for shading, if applicable. This demonstrates the estimated system output for the designed installation based upon the specific conditions achieved.
  - Indicate the **Designed** total estimated annual kWh production for each array plane. If your data does not fit into the SRP Final As-Built Technical Worksheet, you are permitted to submit a separate attachment containing the remaining data.
  - **For systems with 0% shading AND no changes to the default PVWatts® derate factors:**  
Production estimate(s) shall be calculated using the actual data from the SRP Final As-Built Technical Worksheet and the default-derate factors supplied within PVWatts®.
  - **For systems with shading AND/OR changes to the PVWatts® derate factor:**  
Production estimates shall be calculated using the actual data from the SRP Final As-Built Technical Worksheet and the actual derate factors. Only the following 3 values are permitted to be altered in the **PVWatts® Derate Calculator**.
    - (a) PV Module Nameplate DC Rating (module *DC Power Rating - watts*)
    - (b) Inverter and Transformer (inverter *Peak Efficiency %* )
    - (c) Shading (*Solar Access % for the array plane*)
  - **For systems with multiple arrays:**  
Each distinct array plane shall have a separate shading analysis and PVWatts® performed.
- b. **Ideal estimate (kWh):** When calculating the production estimate for the **ideal system**, use the Actual DC kilowatt system size, as submitted on the SRP Final As-Built Technical Worksheet, but use the default PVWatts® settings: true south (180 degrees) for the orientation (azimuth), and the default location latitude for the tilt. Do not include shading and do not alter any PVWatts® Derate Calculator derate factor. This demonstrates NREL's proposed best possible system output for the installation design.

Indicate the **Ideal** total estimated annual kWh production for each array plane. If your data does not fit into the SRP Final As-Built Technical Worksheet, you are permitted to submit a separate attachment containing the remaining data.

Exhibit C								
	Array 1	Array 2	Array 3	Array 4	Array 5	Array 6	Array 7	Array 8
a. Designed estimate (kWh)	821937	48624	4752	18295				
b. Ideal Estimate (kWh)	913764	68426	5963	18076				
c. Total of All (Designed) Arrays	893608							



## FY2017 SREC Registration Program (SRP)

Final As-Built Worksheet

Instructions

Page 5

- Disclaimer:** It is acknowledged that the production estimate is for SREC calculation only and may not be a precise representation of annual system production. The installer certifies that the estimated production calculation has been completed and is accurate to the best of their technical and administrative ability. **The SRP Processing Team reserves the right to request a complete copy of the production estimate paperwork from the installer at any time.**
- Over-Flow Data:** Table C1 and C2 must be used to provide information for up to eight unique array planes. If there are more than eight unique array planes, please create a supplemental array data overflow form. Table D2 must be used to provide information for up to eight unique array planes. If there are more than eight array planes please create a supplemental overflow document.

### E. REVENUE GRADE PRODUCTION METER

All solar energy systems eligible to earn SRECs must report system production based upon readings from a revenue-grade meter that meets the American National Standards Institute (ANSI) Standard C12.1-2008. This meter is in addition to the electric meter installed by the local utility to measure the home or business' electric consumption. On May 1, 2012, the New Jersey Board of Public Utilities (BPU) re-adopted Chapter 8 (renewable energy and energy efficiency) rules with amendments that became effective upon publication on June 4, 2012. In re-adopting N.J.A.C. 14:8-2.9(c), the Board eliminated the use of production estimates for systems with a capacity of less than 10 kW. The revenue-grade meter must be installed by November 30, 2012. Following that date, SRECs will be issued to systems based only upon readings obtained from a revenue-grade meter measuring the system output. See NJ Administrative Code.

For **behind-the-meter systems**, the production meter must be installed on the side of the transformer that is directly serving the building load.

For **grid-supply systems**, the production meter must be installed on the side of the transformer that matches the grid voltage at the point of interconnection.

For an **Integrated Revenue Grade Meter** (all renewable energy systems)-[see example photo below]. The Installer must be present for on-site inspection to grant access to a revenue-grade meter which is housed inside of an enclosure of any kind.



### F. SYSTEM COST INFORMATION

Total Installed System Cost: Registrants must supply cost information that is accurate and has been updated to reflect the total installed cost of the as-built system as of the date of this submittal. Cost can be submitted for protection under OPRA by following the Board of Public Utilities' procedures found at [www.nj.gov/bpu](http://www.nj.gov/bpu).

### G. CERTIFICATION (SIGNATURES REQUIRED)

By signing the certification, the installer/developer, site host contact/applicant and system owner, if different, attest to the accuracy and completeness of the information. A certified digital signature is accepted.

The signature for the installer shall be from an Officer, Principle or Executive of the company that has signing authority for the company.