# Instructions for Listers Using PV Value® for Commercial PV Systems

PV Value® is a web-based tool that calculates the energy production value for a residential or commercial photovoltaic (PV) system. The tool complies with the Uniform Standards of Professional Appraisal Practice and has been endorsed by the Appraisal Institute for the income approach method. Valuing a PV system is done using an *income capitalization approach*, which considers the present value of projected future energy production along with estimated operating and maintenance costs that are anticipated to occur during the PV module power production warranty timeframe. For more information, see the following:

- Form PV-604, Vermont Photovoltaic (PV) System Inventory Form https://tax.vermont.gov/sites/tax/files/documents/PV-604.pdf
- Office of Energy Efficiency & Renewable Energy https://www.energy.gov/eere/solarpoweringamerica/pv-value

# Step 1. Register an account

You must register at **pvvalue.com** to use the PV Value® tool.

Registration is quick and easy. To begin, click Quick Registration [A]. The next screen will be the form.

- a. Make sure you write down your Username and Password.
- b. Once the form is complete, click **Register** [B].
- c. You will see this message: Your account has been created successfully and we have sent you an email.
- d. The system will send an email to the address you've entered on the form. Please click the **verification link** within that email.
- e. Check your email (and junk email) to find the system email and validate that your email address has been registered. Once this is done, you are registered in PV Value.
- f. Next time you visit the website, click Sign In [C] at the top of the home page at pvvalue.com/login.





Disclaimer: The information provided here is intended to be an overview only. Vermont tax statutes, regulations, Vermont Department of Taxes rulings, or court decisions supersede information presented here.

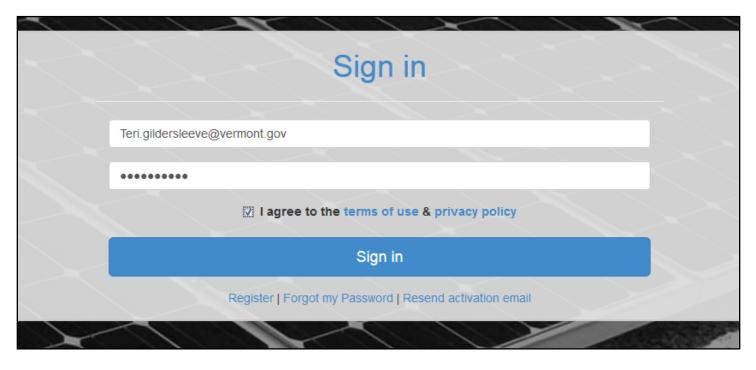
VERMONT DEPARTMENT OF TAXES

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# Step 2. Sign in

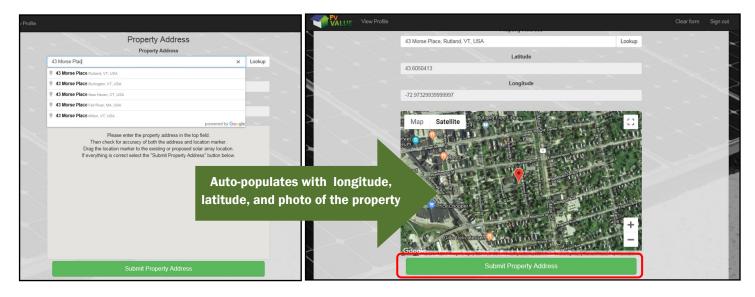
Sign in with your **Username** and **Password**.

Check the box beside "I agree to the terms of use & privacy policy."



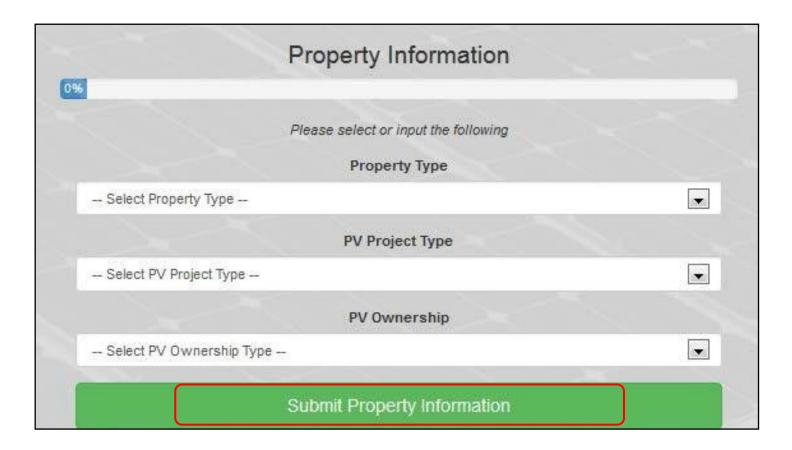
# **Step 3. Enter Property Address**

Begin by entering the solar property address. You will need the "911" physical location. The **Latitude** and **Longitude** will auto-populate along with a photo of the property. Click **Submit Property Address**.



# **Step 4. Enter Property Information**

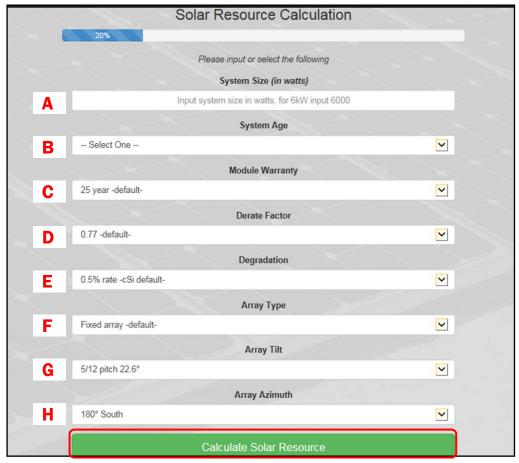
- a. Select **Property Type:** Always select "Commercial" for Residential or Commercial or Utility Scale.
- b. Select **PV Project Type**: Existing or Under Construction or Proposed.
- c. Select PV Ownership: Always select "Owned" for Owned or Leased.
- d. Click Submit Property Information.



### Step 5. Enter data for Solar Source Calculation

Note: Use the default option unless the solar owner gives more specific information.

- A. Select System Size: enter in DC\* Watts (1kW = 1000W). If group or net-metered, the first 50kW (50,000W) is exempt under Act 174. Calculate 75kW array input at 25kW or 25000 Watts DC. Note: Contracts in Generation or Sustainably Priced Energy Enterprise Development (SPEED) projects do not get an exemption.
- B. Select **System Age:** Find this on the property owner Inventory Form.
- C. Select **Module Warranty:**Use information from the owner or use **"25 year—default."**
- D. Select **Derate Factor**:Calculate from site plan by dividing the AC system size



- by DC capacity. Derate factor may also be furnished by owner/installer. This will vary by array type. All Certificates of Public Good are required to have an engineered site plan filed with the application. If unknown, use "0.77—default" DC to AC conversion.
- E. Select Degradation: If unknown, use ".05% rate -cSi default."
- F. Select **Array Type**: Use **"Fixed array default."** Fixed array is Fixed Array / Single Axis Tracker / Dual Axis Tracker. Most PV installations are fixed and will not track the sun. If there is a tracker, then the single or double axis will need to be selected. Single axis is typically east to west with the tilt angle fixed. Dual axis tracks east to west and changes the tilt angle to where the direct component of the solar irradiance is perpendicular to the array at all times.
- G. Select Array Tilt: Enter value reported by the owner or use default to zip code "5/12 pitch 22.6."
- H. Select Array Azimuth: Enter value reported by owner or use default "180° South."

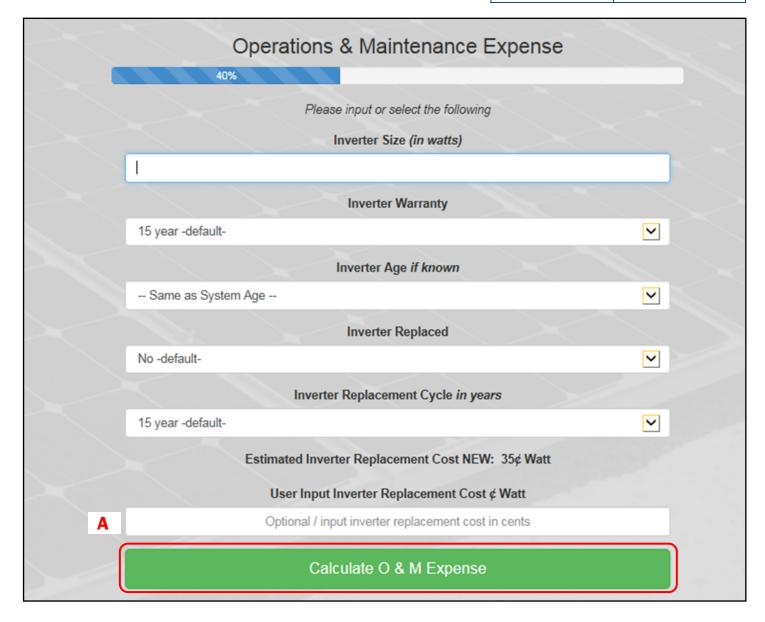
When you've entered all data, click Calculate Solar Resource.

\*30 V.S.A. § 8002 (15): "Plant capacity" means the rated electrical nameplate for a plant, except that, in the case of a solar energy plant, the term shall mean the aggregate AC nameplate capacity of all inverters used to convert the plant's output to AC power.

# Step 6. Enter data for Operations and Maintenance Expense

- a. Enter **Inverter Size (in watts)**: Use watts from Certificate of Public Good or inventory form.
- b. Select Inverter Warranty: If unknown, use "15 year-default-."
- c. Select **Inverter Age**: If unknown, use "Same as System Age."
- d. Select **Inverter Replaced**: No or Yes. If unknown, use "No-default-."
- e. Enter **Inverter Replacement Cycle in years**: If unknown, use "15 year-default-."
- f. Enter **User Input Inverter Replacement Cost** ¢ **Watt**: Select appropriate cost per watt based on total system size as whole number. Do not use a decimal. [A]

A			
System Size in Kw Before exemption	0 & M Cost Per Watt		
>50 Kw to 100kW	55¢		
>100kW	40¢		



### Step 7. Enter data for Discount Rate Calculation

- a. Enter **User Input Interest Rate:** 13.31
- b. Select **Min Basis Points**: Use 12.5 basis points | 1/8%
- c. Select **Max Basis Points**: Use 25 basis points | 1/4%
- d. Click Calculate Discount Rate.



# Step 8. Enter data for Utility Rate Calculation

a. Enter **Custom Utility Rate:** 19 if Net Metered. Enter as a whole number. Do not use a decimal.

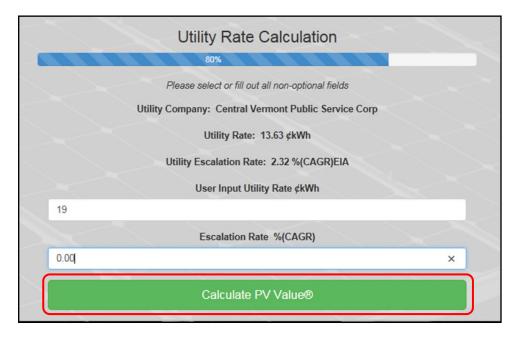
### OR

Enter **Custom Utility Rate** if based on contract rate for Group Net Metered on inventory form.

#### OR

If commissioned prior to 1/1/2015, **Custom Utility Rate** is 20.

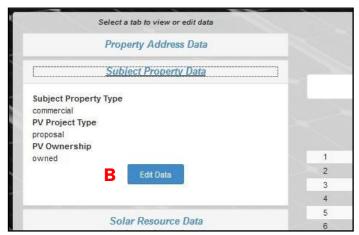
- b. Enter **Escalation Rate:** 0.00 . (Must be entered as 0.00; otherwise value will not calculate correctly.
- c. Click on Calculate PV Value®.

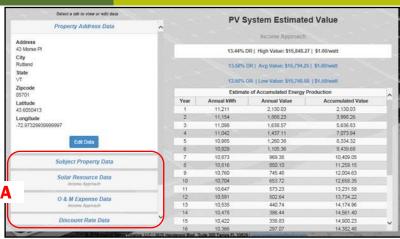


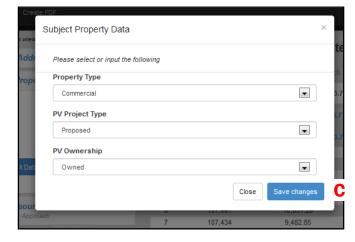
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### How to correct data entered

- a. You may make corrections on this page by clicking on the titles in blue [A], which are hyperlinks to the sections in the PV Value<sup>®</sup> Tool.
- b. Once in the section you wish to edit, click **Edit Data** [**B**].
- c. Edit as needed and click **Save Changes** [C].

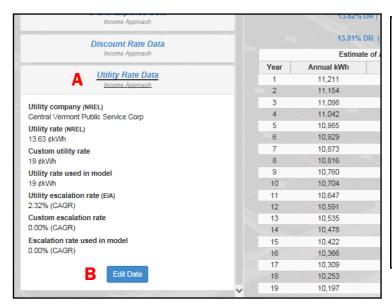


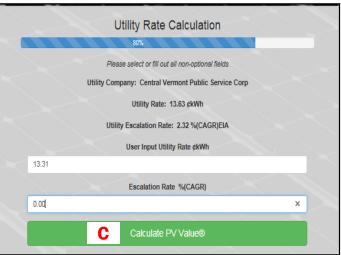




## How to save changes

- a. Once all edits are made to the form, go to **Utility Rate Data** [A].
- b. Click **Edit Data** [B].
- c. Click Calculate PV Value® [C].



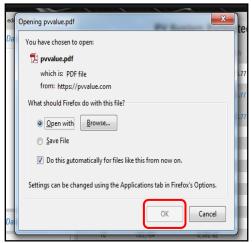


# **DEPARTMENT OF TAXES**

# How to create a PDF and print

- Click **Create PDF** at the top of the page.
- The "pvvalue.pdf" will open.
- Your options are to:
  - "Open with" [the software you select]— If you choose this option, you may view and then print the file.
  - "Save File"—If you choose this option, you will have to reopen the file to view and print.
  - Click **OK**.

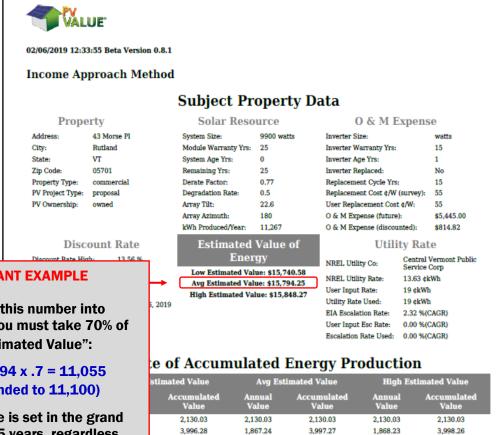




### How to view and print

Now you may view the estimated value of energy and the data you've entered.

We recommend you print your document on legal paper so it the print will be larger. If you use letter paper, you may adjust the print to 90%, and it will print all on one page in the largest print possible.



1,636.84

5,634.11

1,638.57

5,631.40

# **IMPORTANT EXAMPLE**

To enter this number into CAMA, you must take 70% of "Avg Estimated Value":

> $15,794 \times .7 = 11,055$ rounded to 11,100)

The value is set in the grand list for 25 years, regardless of reappraisal.

5,636.83

### **Review the Data Sheet**

Check all numbers circled in red on the example Data Sheet shown below. These numbers should match your data entry. Note: These numbers may be different if the owner sent in Form PV-604, Vermont Photovoltaic (PV) System Inventory Form, giving different information.

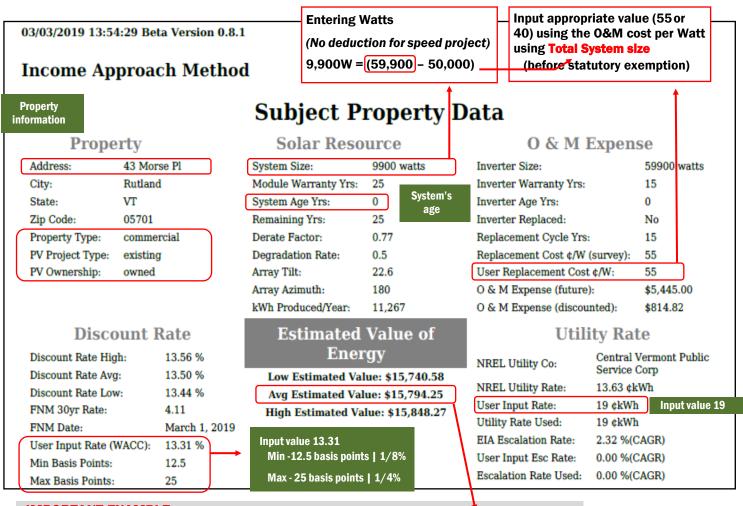
#### Numbers that should be entered:

- User **Replacement Cost** of 55 cents or 40 cents according to array Total Watts (see table at right)
- User Utility Rate of 19 or rate provided by property owner on inventory form
- Escalation Rate entered as 0.00
- User Discount Rate of 13.31
- Min discount 12.5 basis points | 1/8%
- Max discount 25 basis points | 1/4%

System Size in Kw Before exemption	0 & M Cost Per Watt
>50 Kw to 100kW	55¢
>100kW	40¢

### **Example Data Sheet**

Check these fields when Data Sheet is complete.



#### **IMPORTANT EXAMPLE**

To enter this number into CAMA, you must take 70% of "Avg Estimated Value":

 $15,794 \times .7 = 11,055$  (rounded to 11,100)

The value is set in the grand list for 25 years, regardless of reappraisal.

# **Entered in NEMRC MicroSolve CAMA**

Enter as an "outbuilding."

Rounded value 11,055 is entered in the "Rate" field as **11,100** [A].

Outbld ID	Add for solar	
Area/Diam	1	
Name	Solar Array	
Rate [A]	11,100	
May be entered as:		
Add to Hsite [B]	N (if commercial only)	
Ad to Hmstd [C]	N (if commercial only)	

Quality:	0 ▼ No Data	Finish:	
Quantity:	0 ▼ No Data	Class:	0 ▼ No Data
SI Name:		Quality:	0 ▼ No Data
Rate:		% Good:	
Add to Hsite:	0 ▼ NoData	Name:	Solar Array 2018
Add to Hmstd:	0 ▼ NoData	A Rate:	11100.00
Outbld ID:	1	B Add to Hsite:	1 No
Type:	0 ▼ No Data	Silo/BarnHt:	
Area/Diam:	1	C Add to Hmstd:	1 No
Siding:	0 ▼ NoData		

# **From CAMA Cost Sheet**

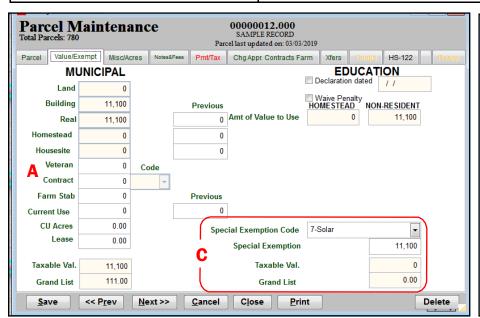
OUTBUILDING S	Hsite/Hstd	% Good	Size	Rate.	Extras	
Solar Array 2018	n/n	0	1	11,100.00		<b>A</b> 11,100
Total						11,100
TOTAL PROPERTY VALU	IE					11,100

## **Entered in NEMRC Value/Exempt Tab**

Create a new parcel ID for the solar array. Use category code "UE" (Utility Electric). The land should be valued separately with an individual parcel ID.

### Town DID NOT vote Solar Exempt under 32 V.S.A. § 3845 (a) Alternate energy sources:

Municipal and Education Contract [A] [B]	Leave blank
Special Exemption [C]	Enter values as shown

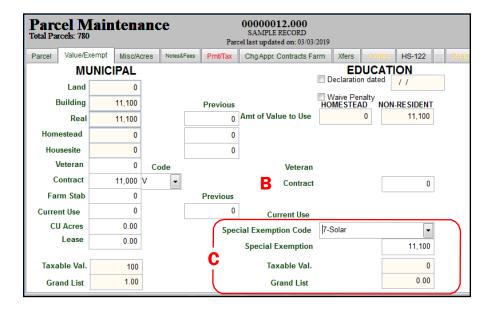




# Town voted Solar Exempt under 32 V.S.A. § 3845 (a) Alternate energy sources:

Municipal Contract [A]	Enter 11,100 and Code V (Voted)
Education Contract [B]	Leave blank
Enter values as shown [C]	
Date Voted D]	Date of town vote
Beginning Date [E]	Grand List exemption date

Ending Date [f]	Leave blank
State Statute Invoked [G]	3848:3849
Approved by State [H]	N
Bill Education Tax to Contract Holder [I]	N





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