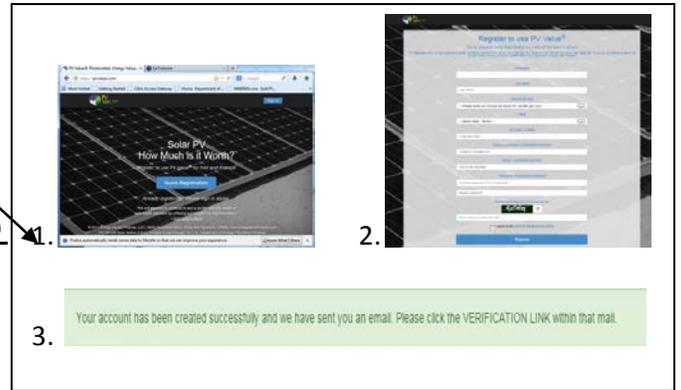


Photovoltaic (PV) Energy Valuation Instructions

Go to: <https://pvvalue.com/>

REGISTER / SIGN IN

You must Register on this website in order to use the PVValue® tool. It is quick and easy. Make sure you write down your username and password. Check your email (junk email also) to validate that your email address has been registered. Once this is done you will be able to sign in. Once you have a successful Login you may begin!

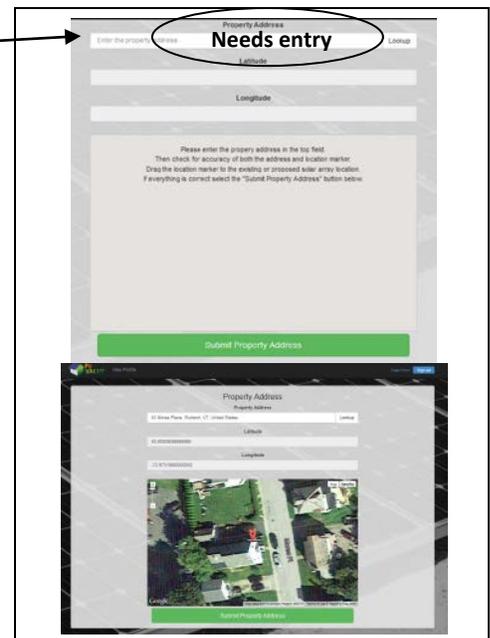


PROPERTY ADDRESS

Enter the solar property address: (Needs 911 address to populate latitude and longitude) The latitude and longitude will populate with a picture of the property.

Click on Submit Property Address

****If any information entered is incorrect you may not go back a page but it may be changed at the end of the data entry.****



PROPERTY INFORMATION

Select Property Type: always select **Commercial**

Residential / **Commercial** / Utility Scale

Select PV Project Type:

Existing / Under Construction / Proposed

Select PV Ownership:

Owner / Leased

Click on Submit Property Information



*****IMPORTANT NOTE: Speed projects do not get 50K exemption*****

Photovoltaic (PV) Energy Valuation Instructions

SOLAR RESOURCE CALCULATION

Enter System Size: in Watts (1kW = 1000W) (**The first 50kW (50,000W) is exempt per Act 174 – if Group or Net metered**). 75kW array input would be calculated @ 25kW or 25,000Watts DC. Speed project do not get exemption.

Select System Age: Provided by property owner Inventory Form.

***Select Module Warranty** – Information by owner or use default – 25yrs

***Select Derate factor** – System default of 0.77 DC to AC conversion – 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 CPG's are required to have an engineered site plan filed with application.

<http://rredc.nrel.gov/solar/calculators/PVWATTS/derate.cgi>

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.

***Select Degradation (use default to .05% rate –cSi)**

Select Array type: Fixed array (default) - Fixed Array / Single Axis Tracker / Dual Axis Tracker – Most PV installations are fixed and will not track the sun. If a tracker is encountered then the number of 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 also changes the tilt angle to where the direct component of the solar irradiance is perpendicular to the array at all times.

***Select Array Tilt (use default)** (to zip code) unless otherwise provided by owner.

***Select Array Azimuth (use default 180° South)** (enter value if reported by owner)

Click Calculate Solar Resource

The screenshot shows the PVWATTS calculator interface. The 'System Size' field is annotated with 'Needs entry'. The 'System Age' dropdown is annotated with 'Needs selection'. The 'Array Type' dropdown is annotated with 'Needs selection'. A green button at the bottom is labeled 'Calculate Solar Resource'.

Photovoltaic (PV) Energy Valuation Instructions

OPERATIONS & MAINTENANCE EXPENSE

*Enter Inverter Size

*Select Inverter Warranty **15yr** (use default if unknown)

10 / 15 / 20

*Select Inverter Age (if known (use default if unknown))

*Select Inverter Replaced – **No** / Yes (use default if unknown)

Enter User Input Inverter Replacement Cost ¢ Watt

User Input Inverter Replacement Cost ¢ Watt
(Select appropriate cost per Watt based on **Total system size** as whole number do not use decimal)

SYSTEM SIZE IN KW (Before Exemption)	O&M COST PER WATT
>50KW TO 100KW	55 ¢
>100KW	40 ¢

Click Calculate O & M Expense

DISCOUNT RATE CALCULATION

Enter User Input Interest Rate **13.31**

Select Min Basis Points as **12.5 basis points | 1/8%**

Select Max Basis Points as **25 basis points | 1/4%**

Click on Calculate Discount Rate

UTILITY RATE CALCULATION

Enter Custom Utility Rate **19** if Net Metered **OR**
Enter Custom Utility Rate – **based on contract rate for Group Net Metered on inventory form**

Enter Escalation Rate **0**

Click on Calculate PV Value®

CORRECTING DATA ENTERED

Any corrections needed may be done on this page.
Click on the Blue title

***Select = use default** unless Solar owner gives more specific information.

PV System Estimated Value		
Income Approach		
13.63% DR Low Value:	\$157,823.77	\$1.58/watt
13.63% DR Avg Value:	\$157,823.77	\$1.58/watt
13.63% DR High Value:	\$157,823.77	\$1.58/watt
1	110,774	21,047.13
2	110,218	18,429.43
3	109,661	16,136.89
4	109,104	14,129.17
5	108,548	12,370.93
6	107,991	10,831.20
7	107,434	9,482.85
8	106,878	8,302.14
9	106,321	7,268.24

*Select = **use default** unless Solar owner gives more specific information

Photovoltaic (PV) Energy Valuation Instructions

Select a tab to view or edit data

Property Address Data

Subject Property Data

Subject Property Type
commercial
PV Project Type
proposal
PV Ownership
owned

Edit Data

2
3
4
5
6

Solar Resource Data

Subject Property Data

Please select or input the following

Property Type
Commercial

PV Project Type
Proposed

PV Ownership
Owned

Close Save changes

Once the blue tab is opened **Click** on Edit Data
Enter the information needing editing
Click on Save Changes

To Save Changes

Select a tab to view or edit data

O & M Expense Data

Discount Rate Data

Utility Rate Data

Utility Company (IRELL)
Central Vermont Public Service Corp
Utility Rate (IRELL)
13.63 \$/kWh
User Provided Utility Rate
13.5 \$/kWh
Utility Rate Used In Model
13.5 \$/kWh
Utility Escalation Rate (ISA)
2.32 %(CAGR)
User Provided Escalation Rate
0 %(CAGR)
Escalation Rate Used In Model
0 %(CAGR)

1 11.9
2 11.02
3 10.9
4 10.9
5 10.9
6 10.9
7 10.7
8 10.6
9 10.5
10 10.5
11 10.5
12 10.4
13 10.4
14 10.3
15 10.2
16 10.2
17 10.1

Edit Data

Utility Rate Data

Please select or input the following

Utility Company: Central Vermont Public Service Corp

Utility Rate: 13.63 \$/kWh

Utility Escalation Rate: 2.32 %(CAGR/ISA)

User Input Utility Rate \$/kWh
13.5

Escalation Rate %(CAGR)
0

Close Save changes

1. 2.

Once all changes to original form are completed
Go to:

1. Utility Rate Data and click on **Edit**.
2. Click on **Save changes**.

To Create PDF and Print

Click on Create PDF
Opening PVValue.PDF will open

PV VALUE View Profile Create PDF

Select a tab to view or edit data

Property Address Data

Subject Property Data

Opening pvvalue.pdf

You have chosen to open:

pvvalue.pdf
which is: PDF file
from: https://pvvalue.com

What should Firefox do with this file?

Open with Save File

Do this automatically for files like this from now on.

Settings can be changed using the Applications tab in Firefox's Options.

OK Cancel

If you click on [• Save file] you will have to reopen file to view and print.
If you click on [• Open with] you will view the file and may print.
You do not need to [Browse..] to view. Click [OK]

8/12/2015 16:45:52 Beta Version 6.0.0

Income Approach Method

Property: 45 Morse Pl
City: Burlington
State: VT
Zip Code: 05401
Property Type: commercial
PV Project Type: proposal
PV Ownership: owned

Solar Resource
System Size: 9000 watts
Module Warranty Yrs: 25
System Age Yrs: 0
Remaining Yrs: 25
Service Factor: 0.75
Degradation Rate: 0.5
Array Tilt: 22.6
Array Azimuth: 180
kWh Produced/Year: 10,860

O & M Expense
Inverter Size: watts
Inverter Warranty Yrs: 15
Inverter Age Yrs: 0
Inverter Replaced: No
Replacement Cycle Yrs: 15
Replacement Cost \$/W (inverter): 55
User Replacement Cost \$/W: 55
O & M Expense (Inverter): \$5,445.00
O & M Expense (Inverter): \$5,445.00

Discount Rate
Discount Rate High: 13.56 %
Discount Rate Avg: 13.50 %
Discount Rate Low: 13.44 %
PVWf Input Rate: 3.27
PVWf Date: January 27, 2015
User Input Rate (PVWf): 13.51 %
Min Break Points: 13.5
Max Break Points: 25

Estimated Value of Energy
Low Estimated Value: \$15,327.69
Avg Estimated Value: \$15,386.62
High Estimated Value: \$15,432.69

Utility Rate
NREL Utility Co: Burlington VT (City)
NREL Utility Rate: 14.1 \$/kWh
User Input Rate: 13 \$/kWh
Utility Rate Used: 13 \$/kWh
ISA Escalation Rate: 2.32 %(CAGR)
User Input Esc Rate: 0 %(CAGR)
Escalation Rate Used: 0 %(CAGR)

Estimate of Accumulated Energy Production

Year	Low Estimated Value			Avg Estimated Value			High Estimated Value		
	Annual	Accumulated	Annual	Accumulated	Annual	Accumulated	Annual	Accumulated	
00	2,076.90	2,076.90	2,076.90	2,076.90	2,076.90	2,076.90	2,076.90	2,076.90	
01	3,897.58	1,821.04	3,898.54	3,897.58	1,821.04	3,898.54	3,897.58	1,821.04	
02	5,443.00	1,597.71	5,446.25	5,443.00	1,597.71	5,446.25	5,443.00	1,597.71	
03	6,892.54	1,491.27	6,897.51	6,892.54	1,491.27	6,897.51	6,892.54	1,491.27	
04	8,118.98	1,238.95	8,136.45	8,118.98	1,238.95	8,136.45	8,118.98	1,238.95	
05	9,143.93	1,077.19	9,204.25	9,143.93	1,077.19	9,204.25	9,143.93	1,077.19	
06	10,136.14	945.20	10,149.45	10,136.14	945.20	10,149.45	10,136.14	945.20	
07	10,961.97	828.90	10,976.35	10,961.97	828.90	10,976.35	10,961.97	828.90	
08	11,665.79	726.69	11,705.23	11,665.79	726.69	11,705.23	11,665.79	726.69	
09	12,232.18	637.61	12,342.65	12,232.18	637.61	12,342.65	12,232.18	637.61	
10	12,676.17	558.94	12,891.58	12,676.17	558.94	12,891.58	12,676.17	558.94	
11	13,003.44	480.11	13,391.69	13,003.44	480.11	13,391.69	13,003.44	480.11	
12	13,296.46	429.74	13,821.44	13,296.46	429.74	13,821.44	13,296.46	429.74	
13	14,104.09	376.60	14,198.24	14,104.09	376.60	14,198.24	14,104.09	376.60	
14	14,462.62	332.58	14,528.62	14,462.62	332.58	14,528.62	14,462.62	332.58	
15	15,065.19	289.66	14,903.66	15,065.19	289.66	14,903.66	15,065.19	289.66	
16	14,216.90	253.85	14,257.41	14,216.90	253.85	14,257.41	14,216.90	253.85	
17	14,437.94	222.64	14,480.06	14,437.94	222.64	14,480.06	14,437.94	222.64	
18	9,942	191.31	14,588.96	10,324	14,626.90	14,575.24	9,942	191.31	
19	9,887	167.71	14,754.67	10,640	14,800.20	14,866.35	9,887	167.71	
20	9,823	146.96	14,963.23	10,892	14,940.90	15,000.58	9,823	146.96	
21	9,778	128.80	15,030.14	11,064	15,079.04	15,127.64	9,778	128.80	
22	9,723	113.40	15,142.15	11,160	15,182.77	15,263.10	9,723	113.40	
23	9,668	96.60	15,241.25	11,180	15,202.50	15,344.13	9,668	96.60	
24	9,613	86.34	15,327.69	11,144	15,266.02	15,432.69	9,613	86.34	

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Photovoltaic (PV) Energy Valuation Instructions

Review

Check all numbers below on the Data Sheet circled in red.

These numbers should match your data entry (These numbers may be different if the owner sent in the inventory of plant form giving different information).

Numbers that should be entered:

User **Replacement Cost** of 55 or 40 cents according to array Total Watts (see chart above)

User **Utility Rate** of 19 or rate provided by property owner on inventory form

User **Discount Rate** of 13.31

Min discount 12.5 basis points | 1/8%

Max discount 25 basis points | 1/4%

EXAMPLE ONLY: Fields to check when Data sheet is complete.



01/27/2015 16:30:56 Beta Version 0.8.0

Income Approach Method

Entering Watts
(No deduction for speed project)
9,900W = (59,900 - 50,000)

Input appropriate value (55 or 40) using the O&M cost per Watt using **Total System size**

Subject Property Data

Property

Address: 43 Morse Pl
City: Burlington
State: VT
Zip Code: 05401
Property Type: commercial
PV Project Type: proposal
PV Ownership: owned

Entered property information

Solar Resource

System Size: 9900 watts
Module Warranty Yrs: 25
System Age Yrs: 0
Remaining Yrs: 25
Derate Factor: 0.77
Degradation Rate: 0.5
Array Tilt: 22.6
Array Azimuth: 180
kWh Produced/Year: 10,986

System's Age Entered

O & M Expense

Inverter Size: watts
Inverter Warranty Yrs: 15
Replacement Cycle Yrs: 15
Replacement Cost €/W (survey): 65
User Replacement Cost €/W: 55
O & M Expense (future): \$5,445.00
O & M Expense (discounted): \$814.82

Discount Rate

Discount Rate High: 13.56 %
Discount Rate Avg: 13.50 %
Discount Rate Low: 13.44 %
FNM 30yr Rate: 3.27
FNM Date: January 27, 2015
User Input Rate (WACC): 13.31 %
Min Basis Points: 12.5
Max Basis Points: 25

Estimated Value of Energy

Low Estimated Value: \$15,327.69
Avg Estimated Value: \$15,380.02
High Estimated Value: \$15,432.69

Input value 13.31
Min -12.5 basis points | 1/8%
Max - 25 basis points | 1/4%

Utility Rate

NREL Utility Co: Burlington VT (City of)
NREL Utility Rate: 14.1 €/kWh
User Input Rate: 19 €/kWh
Utility Rate Used: 19 €/kWh
EIA Escalation Rate: 2.32 %(CAGR)
User Input Esc Rate: 0 %(CAGR)
Escalation Rate Used: 0 %(CAGR)

Input value 19

SYSTEM SIZE IN KW Before exemption	O&M COST PER WATT
>50kW TO 100kW	55 ¢
>100kW	40 ¢

To enter this number into CAMA you must take 70% of total Avg estimated Value: 15,380 x .7 = 10,766 (rounded to **10,800**)

Photovoltaic (PV) Energy Valuation Instructions

Entered in Microsolve CAMA

Enter as an **outbuilding** (rounded value of 10,786 enter as **10,800**)

Finish:
 Class: 0 No Data
 Quality: 0 No Data
 % Good:
 Name: Solar Array
 Rate: 10800.00
 Add to Hsite: 1 No
 Add to Hmstd: 1 No
 Silo/BarnHt:
 Outblid ID: 1
 Type: 0 No Data
 Area/Diam: 1
 Siding: 0 NoData

Outblid ID: add for solar
Area/Diam: enter 1
Name: Solar Array
Rate: 10,800
 May be entered as:
Add to Hsite: N (if commercial only)
Add to Hmstd: N (if commercial only)
 *May be entered as **Yes** to homestead and housesite if owned and occupied by resident and files a HS122.

From CAMA Cost Sheet

OUTBUILDINGS	Hste/Hstd	% Good	Size	Rate	Extras
Solar Array	n / n	0	1	10,800.00	10,800
Tool Shed	y / y	0	1	20,000.00	20,000
Total					30,800
TOTAL PROPERTY VALUE					238,300

Entered in NEMRC Value/Exempt Tab

(If the CPG is not owned by the property owner create a new parcel ID)

Town **did not** vote Solar Exempt under **32 VSA § 3845 (a) Alternate energy sources**

MUNICIPAL: Land 35,000; Building 203,300; Real 238,300; Homestead 227,500; Housesite 227,500; Veteran 0; Contract 0; Farm Stab 0; Current Use 0; CU Acres 0.00; Lease 0.00; Taxable Val. 238,300; Grand List 2,383.00

EDUCATION: Declaration dated 04/14/2014; Waive Penalty HOMESTEAD; NON-RESIDENT; Amt of Value to Use 227,500; 10,800; Taxable Val. 227,500; 0; Grand List 2,275.00; 0.00

Special Exemption Code: 7-Solar; Special Exemption: 0; 10,800; Taxable Val. 227,500; 0; Grand List 2,275.00; 0.00

Contract: Date Voted //; Beginning Date //; Ending Date //; State Statute Invoked //; Approved by State //; Bill Education Tax to Contract Holder //

Town voted Solar Exempt under **32 VSA § 3845 (a) Alternate energy sources**

MUNICIPAL: Land 35,000; Building 203,300; Real 238,300; Homestead 227,500; Housesite 227,500; Veteran 0; Contract 10,800; Farm Stab 0; Current Use 0; CU Acres 0.00; Lease 0.00; Taxable Val. 227,500; Grand List 2,275.00

EDUCATION: Declaration dated 04/14/2014; Waive Penalty HOMESTEAD; NON-RESIDENT; Amt of Value to Use 227,500; 10,800; Taxable Val. 227,500; 0; Grand List 2,275.00; 0.00

Special Exemption Code: 7-Solar; Special Exemption: 0; 10,800; Taxable Val. 227,500; 0; Grand List 2,275.00; 0.00

Contract: Date Voted 03/04/2014; Beginning Date 07/01/2014; Ending Date //; State Statute Invoked 8701; Approved by State N; Bill Education Tax to Contract Holder Y