Sample Shading Report and Estimate of Annual Output using Solmetric Suneye and PVWatts

For this example, assume there are 10 250-Watt modules on a south-facing house roof and 8 modules on an east-facing garage roof.

The contactor must run a shading report and a PVWatts report for each of the two arrays.

The overall TSRF (total solar resource fraction) for the site is calculated as follows, taking a weighted average of the TSRF of each roof:

Array 1 (House): 10 modules divided by 18 modules X 93%TSRF = 51.7%

Array 2 (Garage): 8 modules divided by 18 modules X 65%TSRF = 28.9%

Array 1 Plus Array 2 = 51.7% + 28.9% = 80.6%, round to nearest whole number, TSRF = 81%.

Estimate of Annual Output = Array 1 Plus Array 2

Estimate of Annual Output = 3,083kWh + 1,838kWh

Estimate of Annual Output = 4,921kWh/year

Session Properties

Name		54 (Asal)
Creation Date	12/15/2014 8:41	
Note	(none)	13. ×111
Location	42.4°N, 76.5°W Mag Dec: 12.1°W Time Zone: GMT-05:00	

Solar access averages of 4 skylines in this session

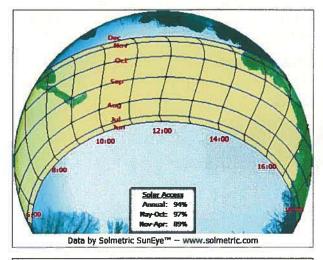
Skylines Averaged: Sky01, Sky02, Sky03, Sky04

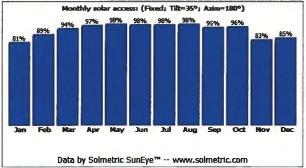


TSRF averages of 4 skylines in this session: 93%

Sky01 – 12/15/2014 9:31 – (no skyline note)

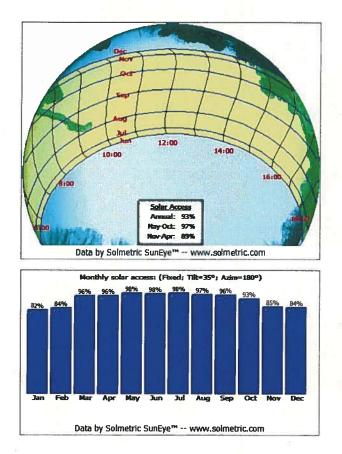
Panel Orientation: Tilt=35° – Azimuth=180° – Skyline Heading=180° Solar Access: Annual: 94% – Summer (May-Oct): 97% – Winter (Nov-Apr): 89% TSRF: 94% – TOF: 100%





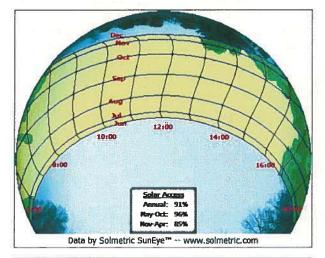
Sky02 – 12/15/2014 9:31 – (no skyline note)

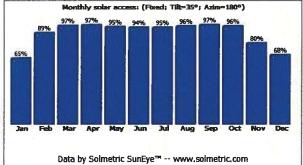
Panel Orientation: Tilt=35° – Azimuth=180° – Skyline Heading=181° Solar Access: Annual: 93% – Summer (May-Oct): 97% – Winter (Nov-Apr): 89% TSRF: 93% – TOF: 100%



Sky03 - 12/15/2014 9:33 - (no skyline note)

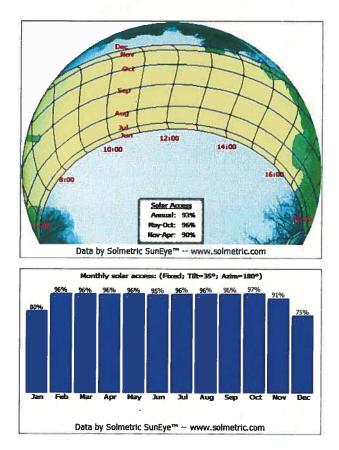
Panel Orientation: Tilt=35° – Azimuth=180° – Skyline Heading=179° Solar Access: Annual: 91% – Summer (May-Oct): 96% – Winter (Nov-Apr): 85% TSRF: 91% – TOF: 100%





Sky04 – 12/15/2014 9:34 – (no skyline note)

Panel Orientation: Tilt=35° – Azimuth=180° – Skyline Heading=180° Solar Access: Annual: 93% – Summer (May-Oct): 96% – Winter (Nov-Apr): 90% TSRF: 93% – TOF: 100%



Session Properties

Name		
Creation Date	6/25/2015 17:14	
Note	(none)	- 1 -
Location	42.4°N, 76.5°W Mag Dec: 12.1°W Time Zone: GMT-08:00	

Solar access averages of 4 skylines in this session

Skylines Averaged: Sky01, Sky02, Sky03, Sky04

Annua	al May-Oc	t Nov-Apr	73%	82%	77%	83%	88%	87%	88%	88%	81%	78%	78%	66%
83%	86%	78%												
			1	Eak	him	-			2.4		6	0.4		-

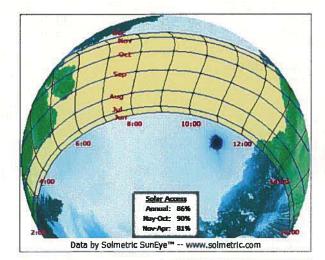
Monthly Solar Acce

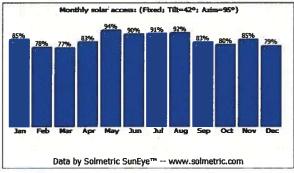
a Ave

TSRF averages of 4 skylines in this session: 65%

Sky01 – 6/25/2015 17:20 – (no skyline note)

Panel Orientation: Tilt=42° – Azimuth=95° – Skyline Heading=178° Solar Access: Annual: 86% – Summer (May-Oct): 90% – Winter (Nov-Apr): 81% TSRF: 67% – TOF: 78%

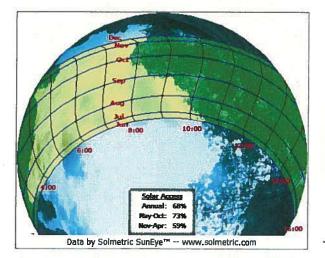


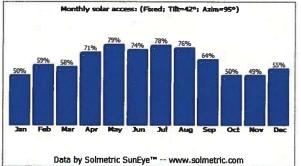


* x m

Sky02 – 6/25/2015 18:27 – (no skyline note)

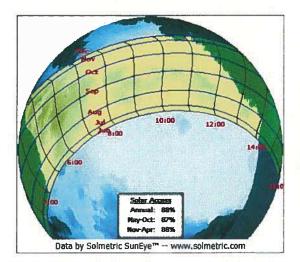
Panel Orientation: Tilt=42° – Azimuth=95° – Skyline Heading=181° Solar Access: Annual: 68% – Summer (May-Oct): 73% – Winter (Nov-Apr): 59% TSRF: 53% – TOF: 78%

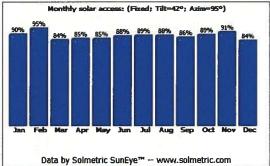




Sky03 - 6/25/2015 18:37 - (no skyline note)

Panel Orientation: Tilt=42° – Azimuth=95° – Skyline Heading=194° Solar Access: Annual: 88% – Summer (May-Oct): 87% – Winter (Nov-Apr): 88% TSRF: 68% – TOF: 78%

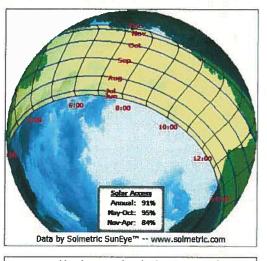


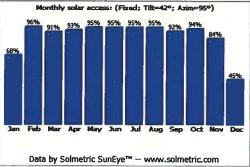


SAMPLE SOLMETRIC AND PVWATTS

Sky04 - 6/25/2015 18:44 - (no skyline note)

Panel Orientation: Tilt=42° – Azimuth=95° – Skyline Heading=156° Solar Access: Annual: 91% – Summer (May-Oct): 95% – Winter (Nov-Apr): 84% TSRF: 71% – TOF: 78%





PVWatts Calculator

SAMPLE SOLMETRIC AND PVWATTS

RESULTS

Califon: Photo-valiak system performance predictions calculated by PVWattas, andude many wherent assumptions and uncertainties and do not reflect validions boluwen PV technologies no site-specific characteristics except as represented by PVWattas) hyputa. For example, PV modelies with better performance are not differentiated within PVWattash hom lesser performing modules. Both INEL and phylite companies privide more applicational PV modeling tools (such as the System Advisor Model at http://sam.net.gov) that allow for more precise and complex modeling of PV systems.

Disclaimer: The PWWatts-), Model ("Model") is provided by the National Renewable Energy Laboratory ("NREL"), which is operated by the Alliance for Sustainable Energy, LLC ("Alliance") for the U.S. Department Of Energy ("DOE") and may be used for any purpose whatsoever.

The names DOE/NREL/ALLIANCE shall not be used in any representation, advertising, publicity or other manner whataoever to enforce or promote any entity that stoppts or uses the Model. DOE/NREL/ALLIANCE shall not provide

any support, consulting, training or assistance of any kind with regard to the use of the Model or any updates, revisions or new versions of the Model.

YOU AGREE TO INDERNUPY DOE/NRE/ALLIANCE, AND ITS APPLICATES, OPPICESS, AGENTS, AND EMPLOYEES AGENEST ANY CLANK OR DENAND, INCLUDING REASONABLE ATTORNEYS PEES, RELITED TO YOUR USE, RELIANCE, OR ADOPTION OF THE MODEL FOR ANY FURNESS WHATSOPVEL THE MODEL IS REVIEDD BY DOE/NRE/ALLIANCE 'AS IS' AND ANY EXPRESS OR IMFLED WARRANTES, INCLUDING BUT NOT LIMITED TO THE IMPLED WARRANTES OF MEROAWTABLITY AND DETRESS OR A PARTICULAR PURPOSE ANE EOPRESSIV DISCLAMED IN NO EYENT SHALL DOERRE/ALLIANCE BL LABLE FOR ANY SPECILA INDERCET OR COMERCIENTIAL DAMAGES OR ANY DAMAGES WHATSOFYER, INCLUDING BUT NOT LIMITED TO CLAIDS ASSOCIATED WITH THE LOSS OF DATA OR PROFITS, MAICH MAY RESULT FROM ANY ACTION IN CONTRACT, NECLIDINGE LOR OF THE TORTIOUS CLAIM THAT ARISES OUT OF OR IN COMIECTION WITH THE USE OR PRAFORMANCE OF THE

			• KITI POL TOUL			
Month	Solar Radiation	AC Energy	Energy Value			
	(kWh / m ² / day)	(kWh)	(\$)			
January	2.99	197	N/A			
February	3.90	230	N/A			
March	4.24	269	N/A			
April	5.06	302	N/A			
Мау	5.70	332	N/A			
June	5.57	307	N/A			
July	5.93	331	N/A			
August	5.60	317	N/A			
September	4.95	278	N/A			
October	3.91	234	N/A			
November	2.34	143	N/A			
December	2.18	144	N/A			
nnual	4.36	3,084	0			

Location and Station Identification

12156		
(TMY2) ALBANY, NY 19 mi		
42.75° N		
73.8° W		
2.5 kW		
Standard		
Fixed (open rack)		
35°		
180°		
17.62%		
96%		
1.1		
No utility data available		
3.30 \$/Wdc		
not determined		

 For economic incentives to be calculated, Average Cost of Electricity Purchased be set on the SYSTEM INFO page.

3.083 kWh per Year *

PVWatts Calculator

SAMPLE SOLMETRIC AND PVWATTS

Caution: Photovoltaic system performance predictions calculated by PVWatts3 include many inherent assumptions and uncertainties and do not reflect assumptions and uncertainties and do not reflect variations between PV technologies not alte-specific diaracteritatics except as represented by PW/wtbb2 inputs. For example, PV modules with better performance are not differentiated within PW/wtb3 from lesser performing modules. Both rRBL and prhate companies provide more sophisticated PV modeling book (such as the System Advisor Hodel at http://sam.nei.gov) that allow for more precise and complex modeling of PV systems.

Disclaimer: The PVWatts-b Model ("Model") is provided by the National Renevable Energy Laboratory ("NREL"), which is operated by the Allance for Statishable Energy, LLC ("Allance") for the U.S. Department Of Energy ("DOE") and may be used for any purpose whatsoever.

The names DOE/NREL/ALLIANCE shall not be used in any representation, advertising, publicity or other manner whatsoever to enforce or promote any entity that adopts or uses the Model. DOE/MREL/ALIZANCE shall not provide

any support, consulting, training or assistance of any kind with regard to the use of the Model or any updates, revisions or new versions of the Model.

YOU AGREE TO INDEMNIFY DOE/WREL/ALLIANCE AND ITS AFFILIATES, OFFICERS, AGENTS, AND EMPLOYEES AGAINST ANY CLAIM OR DEMAND, INCLUDING REASONABLE ATTORNEYS' PEES, INCLUDENCE REASONABLE ATTORNESS PEES, RELATED TO YOUR USE, RELANCE, OR ADOPTION OF THE MODEL FOR MY PURPOSE WHATSOFWAY. THE MODEL IS PROVIDED BY DOR/RELALAUMCE 'AS IS' AND ANY EXPRESS OR INFLIED INPLIED WARRANTES OF MERCHAITABILITY AND FITNESS FOR A PARTICULAR PURPOSE ABLE EXPRESSLY DISCLAIMED. IN NO EVENT SHALL DOR/RELALILANCE BE LIABLE FOR ANY SPECIAL, INDRECT OR CONSEQUENTIAL MUNKES OR ANY INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER, INCLUDING BUT NOT LIMITED TO CLAINS ASSOCIATED WITH THE LOSS OF DATA OR PROFITS, WHICH MAY RESULT FROM ANY ACTION IN CONTRACT, NEGLIGENCE OR OTHER TORTIOUS CLAIM THAT ARISES OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE MODEL

RESULTS		1,838 kV	Vh per Year *
Month	Solar Radiation (kWh / m ² / day)	AC Energy (kWh)	Energy Value (\$)
January	1.81	87	N/A
February	2.72	120	N/A
March	3.22	154	N/A
April	4.17	188	N/A
May	5.03	221	N/A
June	5.23	218	N/A
July	5.40	5.40 227	
August	4.83	206	N/A
September	3.80	161	N/A
October	2.71	2.71 122 N	
November	1.47	66	N/A
December	1.40	68	N/A
Annual	3.48	1,838	0

Location and Station Identification

Requested Location	12156
Weather Data Source	(TMY2) ALBANY, NY 19 mi
Latitude	42.75° N
Longitude	73.8° W
PV System Specifications (Residential)	
DC System Size	2.0 kW
Module Type	Standard
Array Type	Fixed (open rack)
Array Tilt	42°
Array Azimuth	95°
System Losses	22.93%
Inverter Efficiency	96%
DC to AC Size Ratio	1.1
Initial Economic Comparison	
Average Cost of Electricity Purchased from Utility	No utility data available
Initial Cost	3.30 \$/Wdc
Cost of Electricity Generated by System	not determined

· For economic incentives to be calculated, Average Cost of Electricity Purchased be set on the SYSTEM INFO page.

Page 1 of 2