

System Advisor Model Report

Detailed Photovoltaic
Residential

5.88 kW Nameplate
\$1.24/W Installed Cost

15.61, 32.58
UTC +3

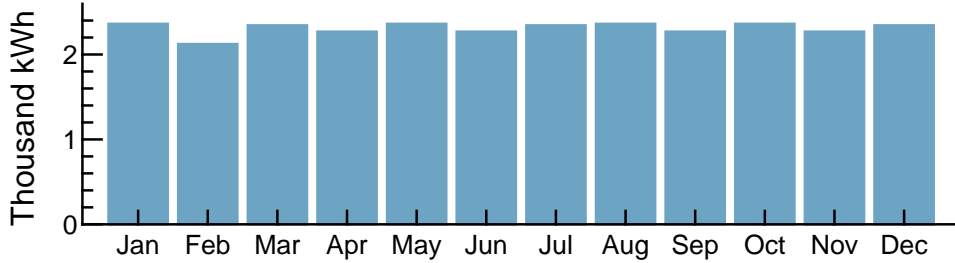
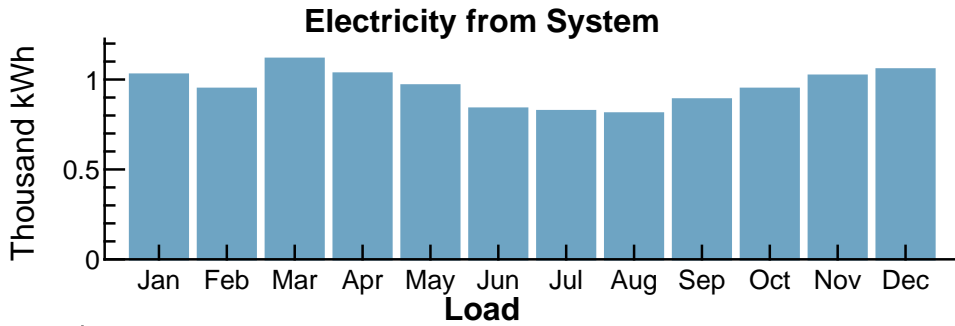
Performance Model	Financial Model																																																																																																																																														
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: left;">Modules</th> </tr> </thead> <tbody> <tr> <td colspan="2">Sunpreme Inc. SNPM-GxB-490</td> </tr> <tr> <td>Cell material</td> <td>Thin Film</td> </tr> <tr> <td>Module area</td> <td>2.59 m²</td> </tr> <tr> <td>Module capacity</td> <td>489.81 DC Watts</td> </tr> <tr> <td>Quantity</td> <td>12</td> </tr> <tr> <td>Total capacity</td> <td>5.88 DC kW</td> </tr> <tr> <td>Total area</td> <td>31 m²</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: left;">Inverters</th> </tr> </thead> <tbody> <tr> <td colspan="2">SMA America: SB5.0-1TP-US-41</td> </tr> <tr> <td>Unit capacity</td> <td>5.060000 AC kW</td> </tr> <tr> <td>Input voltage</td> <td>220 - 480 VDC DC V</td> </tr> <tr> <td>Quantity</td> <td>1</td> </tr> <tr> <td>Total capacity</td> <td>5.06 AC kW</td> </tr> <tr> <td>DC to AC Capacity Ratio</td> <td>1.16</td> </tr> <tr> <td>AC losses (%)</td> <td>1.00</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: left;">Array</th> </tr> </thead> <tbody> <tr> <td>Strings</td> <td>2</td> </tr> <tr> <td>Modules per string</td> <td>6</td> </tr> <tr> <td>String Voc (DC V)</td> <td>430.80</td> </tr> <tr> <td>Tilt (deg from horizontal)</td> <td>20.00</td> </tr> <tr> <td>Azimuth (deg E of N)</td> <td>180</td> </tr> <tr> <td>Tracking</td> <td>no</td> </tr> <tr> <td>Backtracking</td> <td>-</td> </tr> <tr> <td>Self shading</td> <td>no</td> </tr> <tr> <td>Rotation limit (deg)</td> <td>-</td> </tr> <tr> <td>Shading</td> <td>no</td> </tr> <tr> <td>Snow</td> <td>no</td> </tr> <tr> <td>Soiling</td> <td>yes</td> </tr> <tr> <td>DC losses (%)</td> <td>4.44</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: left;">Performance Adjustments</th> </tr> </thead> <tbody> <tr> <td>Availability/Curtailment</td> <td>none</td> </tr> <tr> <td>Degradation</td> <td>none</td> </tr> <tr> <td>Hourly or custom losses</td> <td>none</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: left;">Annual Results (in Year 1)</th> </tr> </thead> <tbody> <tr> <td>GHI kWh/m²/day</td> <td>6.36</td> </tr> <tr> <td>POA kWh/m²/day</td> <td>153.00</td> </tr> <tr> <td>Net to inverter</td> <td>11,980 DC kWh</td> </tr> <tr> <td>Net to grid</td> <td>11,480 AC kWh</td> </tr> <tr> <td>Capacity factor</td> <td style="background-color: yellow;">22.3</td> </tr> <tr> <td>Performance ratio</td> <td style="background-color: yellow;">0.8</td> </tr> </tbody> </table>	Modules		Sunpreme Inc. SNPM-GxB-490		Cell material	Thin Film	Module area	2.59 m ²	Module capacity	489.81 DC Watts	Quantity	12	Total capacity	5.88 DC kW	Total area	31 m ²	Inverters		SMA America: SB5.0-1TP-US-41		Unit capacity	5.060000 AC kW	Input voltage	220 - 480 VDC DC V	Quantity	1	Total capacity	5.06 AC kW	DC to AC Capacity Ratio	1.16	AC losses (%)	1.00	Array		Strings	2	Modules per string	6	String Voc (DC V)	430.80	Tilt (deg from horizontal)	20.00	Azimuth (deg E of N)	180	Tracking	no	Backtracking	-	Self shading	no	Rotation limit (deg)	-	Shading	no	Snow	no	Soiling	yes	DC losses (%)	4.44	Performance Adjustments		Availability/Curtailment	none	Degradation	none	Hourly or custom losses	none	Annual Results (in Year 1)		GHI kWh/m ² /day	6.36	POA kWh/m ² /day	153.00	Net to inverter	11,980 DC kWh	Net to grid	11,480 AC kWh	Capacity factor	22.3	Performance ratio	0.8	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: left;">Project Costs</th> </tr> </thead> <tbody> <tr> <td>Total installed cost</td> <td style="text-align: right;">\$7,300</td> </tr> <tr> <td>Salvage value</td> <td style="text-align: right;">\$3,650</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: left;">Analysis Parameters</th> </tr> </thead> <tbody> <tr> <td>Project life</td> <td style="text-align: right;">25 years</td> </tr> <tr> <td>Inflation rate</td> <td style="text-align: right;">2.5%</td> </tr> <tr> <td>Real discount rate</td> <td style="text-align: right;">6.5%</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: left;">Project Debt Parameters (Standard Loan)</th> </tr> </thead> <tbody> <tr> <td>Debt fraction</td> <td style="text-align: right;">90%</td> </tr> <tr> <td>Amount</td> <td style="text-align: right;">\$6,570</td> </tr> <tr> <td>Term</td> <td style="text-align: right;">25 years</td> </tr> <tr> <td>Rate</td> <td style="text-align: right;">5%</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: left;">Tax and Insurance Rates</th> </tr> </thead> <tbody> <tr> <td>Federal income tax</td> <td style="text-align: right;">0 %/year</td> </tr> <tr> <td>State income tax</td> <td style="text-align: right;">0 %/year</td> </tr> <tr> <td>Sales tax (% of indirect cost basis)</td> <td style="text-align: right;">5%</td> </tr> <tr> <td>Insurance (% of installed cost)</td> <td style="text-align: right;">0 %/year</td> </tr> <tr> <td>Property tax (% of assessed val.)</td> <td style="text-align: right;">0 %/year</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: left;">Incentives</th> </tr> </thead> <tbody> <tr> <td colspan="2" style="text-align: center;">None</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: left;">Electricity Demand and Rate Summary</th> </tr> </thead> <tbody> <tr> <td colspan="2">Annual peak demand 7.3 kW</td> </tr> <tr> <td colspan="2">Annual total demand 27,676 kWh</td> </tr> <tr> <td colspan="2">Generic Residential</td> </tr> <tr> <td colspan="2">Monthly excess with \$ rollover</td> </tr> <tr> <td colspan="2">Tiered TOU energy rates: 1 period, 2 tiers</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: left;">Results</th> </tr> </thead> <tbody> <tr> <td>Nominal LCOE</td> <td style="text-align: right;">4.5 cents/kWh</td> </tr> <tr> <td>Net present value</td> <td style="text-align: right;">\$3,000</td> </tr> <tr> <td>Payback period</td> <td style="text-align: right;">9.7 years</td> </tr> </tbody> </table>	Project Costs		Total installed cost	\$7,300	Salvage value	\$3,650	Analysis Parameters		Project life	25 years	Inflation rate	2.5%	Real discount rate	6.5%	Project Debt Parameters (Standard Loan)		Debt fraction	90%	Amount	\$6,570	Term	25 years	Rate	5%	Tax and Insurance Rates		Federal income tax	0 %/year	State income tax	0 %/year	Sales tax (% of indirect cost basis)	5%	Insurance (% of installed cost)	0 %/year	Property tax (% of assessed val.)	0 %/year	Incentives		None		Electricity Demand and Rate Summary		Annual peak demand 7.3 kW		Annual total demand 27,676 kWh		Generic Residential		Monthly excess with \$ rollover		Tiered TOU energy rates: 1 period, 2 tiers		Results		Nominal LCOE	4.5 cents/kWh	Net present value	\$3,000	Payback period	9.7 years
Modules																																																																																																																																															
Sunpreme Inc. SNPM-GxB-490																																																																																																																																															
Cell material	Thin Film																																																																																																																																														
Module area	2.59 m ²																																																																																																																																														
Module capacity	489.81 DC Watts																																																																																																																																														
Quantity	12																																																																																																																																														
Total capacity	5.88 DC kW																																																																																																																																														
Total area	31 m ²																																																																																																																																														
Inverters																																																																																																																																															
SMA America: SB5.0-1TP-US-41																																																																																																																																															
Unit capacity	5.060000 AC kW																																																																																																																																														
Input voltage	220 - 480 VDC DC V																																																																																																																																														
Quantity	1																																																																																																																																														
Total capacity	5.06 AC kW																																																																																																																																														
DC to AC Capacity Ratio	1.16																																																																																																																																														
AC losses (%)	1.00																																																																																																																																														
Array																																																																																																																																															
Strings	2																																																																																																																																														
Modules per string	6																																																																																																																																														
String Voc (DC V)	430.80																																																																																																																																														
Tilt (deg from horizontal)	20.00																																																																																																																																														
Azimuth (deg E of N)	180																																																																																																																																														
Tracking	no																																																																																																																																														
Backtracking	-																																																																																																																																														
Self shading	no																																																																																																																																														
Rotation limit (deg)	-																																																																																																																																														
Shading	no																																																																																																																																														
Snow	no																																																																																																																																														
Soiling	yes																																																																																																																																														
DC losses (%)	4.44																																																																																																																																														
Performance Adjustments																																																																																																																																															
Availability/Curtailment	none																																																																																																																																														
Degradation	none																																																																																																																																														
Hourly or custom losses	none																																																																																																																																														
Annual Results (in Year 1)																																																																																																																																															
GHI kWh/m ² /day	6.36																																																																																																																																														
POA kWh/m ² /day	153.00																																																																																																																																														
Net to inverter	11,980 DC kWh																																																																																																																																														
Net to grid	11,480 AC kWh																																																																																																																																														
Capacity factor	22.3																																																																																																																																														
Performance ratio	0.8																																																																																																																																														
Project Costs																																																																																																																																															
Total installed cost	\$7,300																																																																																																																																														
Salvage value	\$3,650																																																																																																																																														
Analysis Parameters																																																																																																																																															
Project life	25 years																																																																																																																																														
Inflation rate	2.5%																																																																																																																																														
Real discount rate	6.5%																																																																																																																																														
Project Debt Parameters (Standard Loan)																																																																																																																																															
Debt fraction	90%																																																																																																																																														
Amount	\$6,570																																																																																																																																														
Term	25 years																																																																																																																																														
Rate	5%																																																																																																																																														
Tax and Insurance Rates																																																																																																																																															
Federal income tax	0 %/year																																																																																																																																														
State income tax	0 %/year																																																																																																																																														
Sales tax (% of indirect cost basis)	5%																																																																																																																																														
Insurance (% of installed cost)	0 %/year																																																																																																																																														
Property tax (% of assessed val.)	0 %/year																																																																																																																																														
Incentives																																																																																																																																															
None																																																																																																																																															
Electricity Demand and Rate Summary																																																																																																																																															
Annual peak demand 7.3 kW																																																																																																																																															
Annual total demand 27,676 kWh																																																																																																																																															
Generic Residential																																																																																																																																															
Monthly excess with \$ rollover																																																																																																																																															
Tiered TOU energy rates: 1 period, 2 tiers																																																																																																																																															
Results																																																																																																																																															
Nominal LCOE	4.5 cents/kWh																																																																																																																																														
Net present value	\$3,000																																																																																																																																														
Payback period	9.7 years																																																																																																																																														

Detailed Photovoltaic
Residential

5.88 kW Nameplate
\$1.24/W Installed Cost

15.61, 32.58
UTC +3

Year 1 Monthly Generation and Load Summary



Year 1 Monthly Electric Bill and Savings (\$)

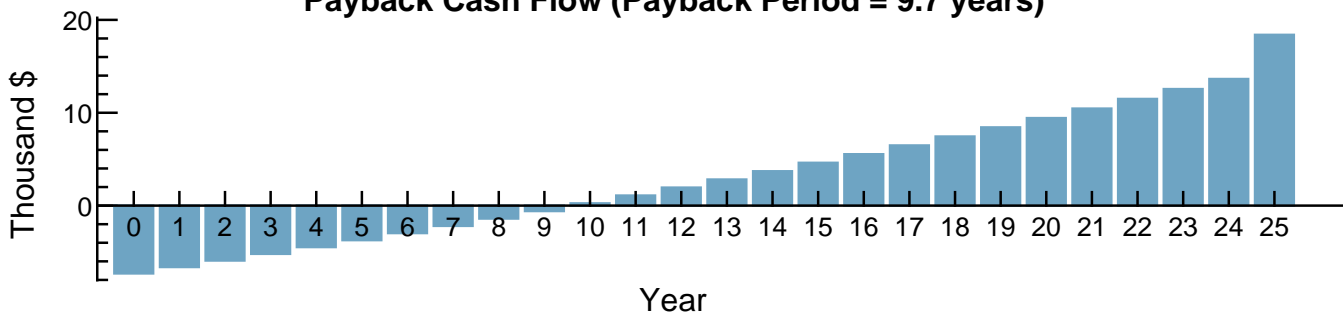
Month	Without System	With System	Savings
Jan	136	74	61
Feb	122	65	56
Mar	135	68	66
Apr	130	68	62
May	136	78	58
Jun	130	80	50
Jul	135	85	49
Aug	136	87	48
Sep	130	77	53
Oct	136	79	56
Nov	130	69	61
Dec	135	71	63
Annual	1,598	909	688

NPV Approximation using Annuities

Annuities, Capital Recovery Factor (CRF) = 0.1031		
Investment	\$-0	Sum:
Expenses	\$-400	\$300
Savings	\$0	NPV = Sum / CRF:
Energy value	\$800	\$3,000

Investment = Installed Cost - Debt Principal - IBI - CBI
 Expenses = Operating Costs + Debt Payments
 Savings = Tax Deductions + PBI
 Energy value = Tax Adjusted Net Savings
 Nominal discount rate = 9.1625%

Payback Cash Flow (Payback Period = 9.7 years)



Detailed Photovoltaic
Residential

5.88 kW Nameplate
\$1.24/W Installed Cost

15.61, 32.58
UTC +3

