System Advisor Model Report

Photovoltaic System | 3.30 kW Nameplate | -, -
Residential | $3.40/W Installed Cost | 45.49 N, -122.82 E GMT -8

Performance Model

Modules	
SolarWorld SW275 Mono	
Cell material	Mono-c-Si
Module area	1.6 m²
Module capacity	275.2 DC Watts
Quantity	12
Total capacity	3.3 DC kW
Total area	19 m²

Inverters	
SMA America: SB3000TL-US-22 (240V) 240V	
Unit capacity	3 AC kW
Input voltage	175 - 480 VDC DC V
Quantity	1
Total capacity	3 AC kW
DC to AC Capacity Ratio	1.10
AC losses (%)	1.0

Array	
Strings	1
Modules per string	12
String voltage (DC V)	387.6
Tilt (deg from horizontal)	15.0
Azimuth (deg E of N)	135
Tracking	no
Backtracking	-
Self shading	no
Rotation limit (deg)	-
Shading	no
Snow	no
Soiling	yes
DC losses (%)	4.4

Performance Adjustments	
Availability/Curtailment	none
Degradation	0.5 %/yr
Hourly or custom losses	none

Annual Results (in Year 1)	
GHI kW/m²/day	3.6
POA kW/m²/day	3.0
Net to inverter	3,640 DC kWh
Net to grid	3,430 AC kWh
Capacity factor	11.88
Performance ratio	0.75

Financial Model

Project Costs	
Total installed cost	$11,239
Salvage value	$0

Analysis Parameters	
Project life	25 years
Inflation rate	2%
Real discount rate	5.5%

Project Debt Parameters (Standard Loan)	
Debt fraction	100%
Amount	$9,588
Term	25 years
Rate	5%

Tax and Insurance Rates	(% of installed cost)
Federal income tax	30%/year
State income tax	8%/year
Sales tax	5%
Insurance	1%/year
Property tax (% of assess. val.)	1%/year

Incentives	
Federal ITC	30%
State CBI	$0.5/W

Electricity Demand and Rate Summary
System delivers power directly to grid (no building load)
Portland General Electric Co
Residential Time-Of-Use Service (Rate 7-TOU)
Fixed charge: $10/month
Net metering
Tiered TOU energy rates: 6 periods, 2 tiers

Results	
Nominal LCOE	23.5 cents/kWh
Net present value	$-4,200
Payback period	> 25 years

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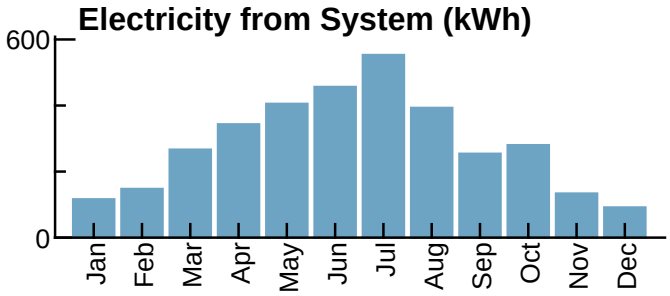
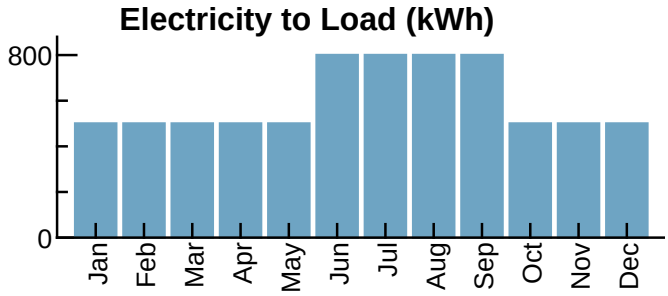
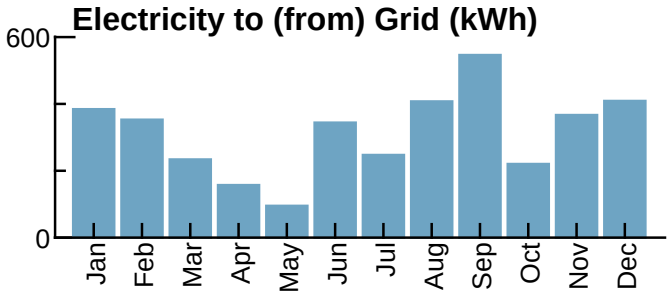






No Net Metering Credits

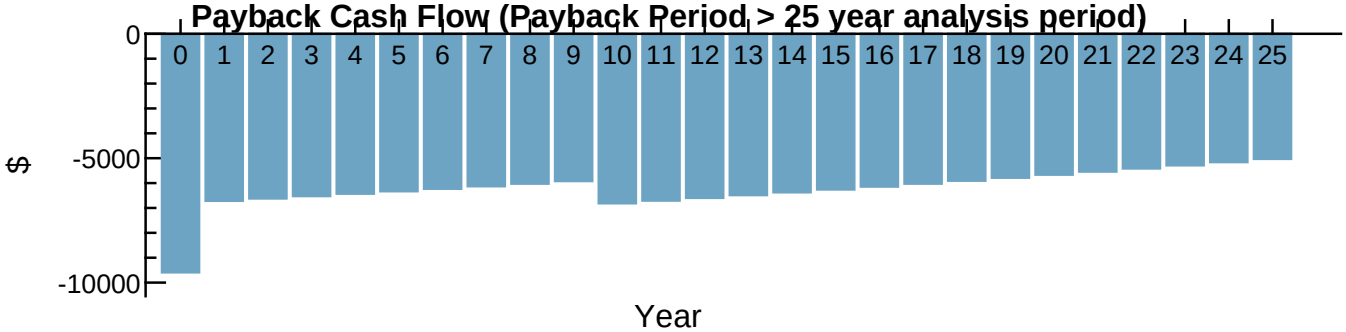
Monthly Electricity Purchases and Savings (Year 1 $)

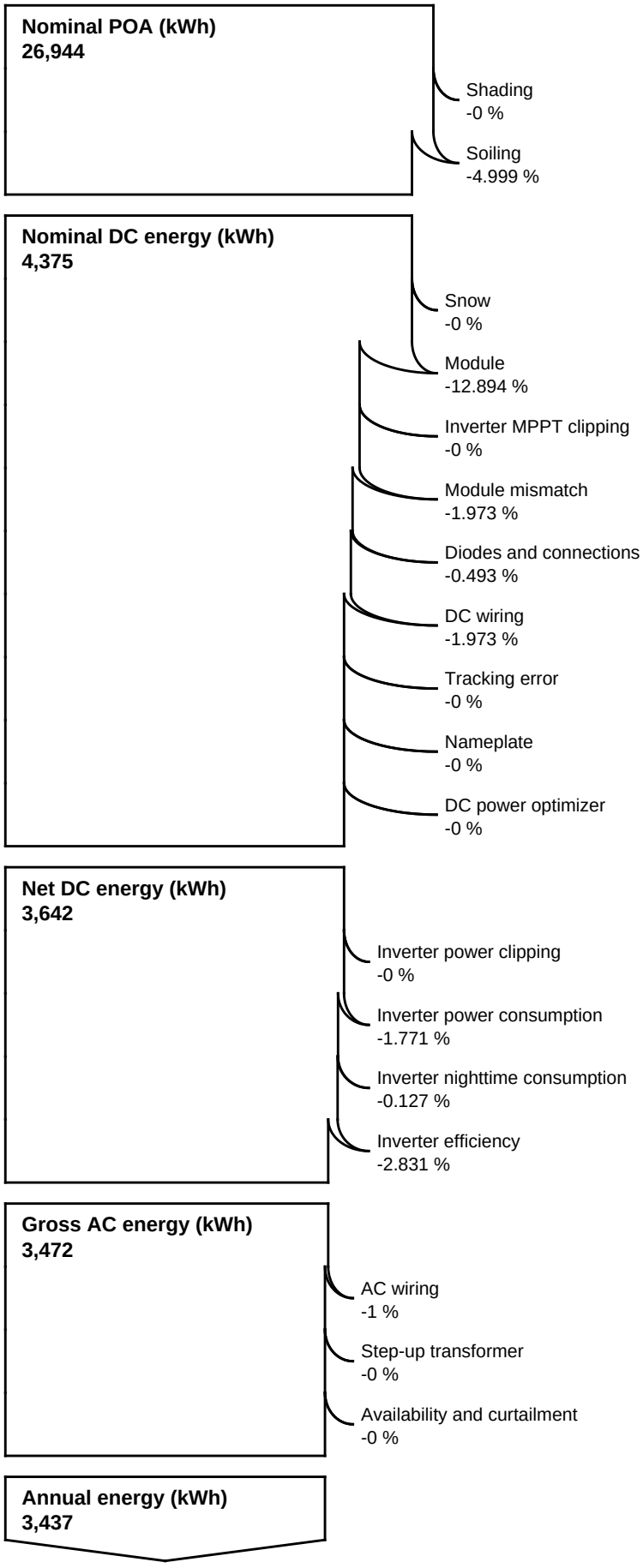
Month	Without System	With System	Savings
Jan	62	51	11
Feb	61	46	15
Mar	61	34	27
Apr	60	25	34
May	58	25	33
Jun	91	45	45
Jul	91	41	49
Aug	93	50	43
Sep	89	57	32
Oct	60	34	26
Nov	62	47	14
Dec	61	52	9
Annual	855	512	343

NPV Approximation using Annuities

Annuities, Capital Recovery Factor (CRF) = 0.0906		
Investment	$0	Sum:
Expenses	$-1,000	$-300
Savings	$200	NPV = Sum / CRF:
Energy value	$300	$-4,000

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 = 7.61%




Nominal POA (kWh)
26,944
Shading
-0 %
Soiling
-4.999 %
Nominal DC energy (kWh)
4,375
Snow
-0 %
Module
-12.894 %
Inverter MPPT clipping
-0 %
Module mismatch
-1.973 %
Diodes and connections
-0.493 %
DC wiring
-1.973 %
Tracking error
-0 %
Nameplate
-0 %
DC power optimizer
-0 %
Net DC energy (kWh)
3,642
Inverter power clipping
-0 %
Inverter power consumption
-1.771 %
Inverter nighttime consumption
-0.127 %
Inverter efficiency
-2.831 %
Gross AC energy (kWh)
3,472
AC wiring
-1 %
Step-up transformer
-0 %
Availability and curtailment
-0 %
Annual energy (kWh)
3,437