System Advisor Model Report

Detailed Photovoltaic	12 DC kW Nameplate	40.01, -75.34
Residential	$2.72/W Installed Cost	UTC -5

Performance Model

Modules	
Seraphim Energy Group Inc. SEG-440-BMA-BG	
Cell material	Mono-c-Si
Module area	1.87 m²
Module capacity	440.08 DC Watts
Quantity	28
Total capacity	12.32 DC kW
Total area	52 m²

Inverters	
Fronius USA: Fronius Primo 12.5-1	
Unit capacity	12.5 AC kW
Input voltage	260 - 800 VDC DC V
Quantity	1
Total capacity	12.5 AC kW
DC to AC Capacity Ratio	0.99
AC losses (%)	1.00

Three subarrays:	1	2	3
Strings	1	1	1
Modules per string	10	10	8
String Voc (DC V)	497.00	497.00	397.60
Tilt (deg from horizontal)	26.00	26.00	22.00
Azimuth (deg E of N)	208	208	208
Tracking	no	no	no
Backtracking	-	-	-
Self shading	no	no	no
Rotation limit (deg)	-	-	-
Shading	yes	yes	yes
Snow	no	no	no
Soiling	yes	yes	yes
DC losses (%)	3.47	3.47	3.47

Performance Adjustments	
Availability/Curtailment	none
Degradation	none
Hourly or custom losses	none

Annual Results (in Year 1)			
GHI kWh/m²/day	4.27	4.27	4.27
POA kWh/m²/day	111.00	104.00	97.00
Net to inverter	16,990 DC kWh		
Net to grid	15,850 AC kWh		
Capacity factor	14.7		
Performance ratio	0.73		

Financial Model

Project Costs	
Total installed cost	$33,535
Salvage value	$0

Analysis Parameters	
Project life	25 years
Inflation rate	2.5%
Real discount rate	6.4%

Project Debt Parameters (Mortgage)	
Debt fraction	100%
Amount	$33,535
Term	25 years
Rate	4%

Tax and Insurance Rates	
Federal income tax	15 %/year
State income tax	7 %/year
Sales tax (% of indirect cost basis)	5%
Insurance (% of installed cost)	0 %/year
Property tax (% of assessed val.)	0 %/year

Incentives	
Federal ITC	26%

Electricity Demand and Rate Summary
System delivers power directly to grid (no building load)
Residential Service (R)
Fixed charge: $10.02/month
Monthly excess with kWh rollover
Flat energy buy rate: $0.13245/kWh

Results	
Nominal LCOE	10.2 cents/kWh
Net present value	$8,300
Payback period	13.1 years

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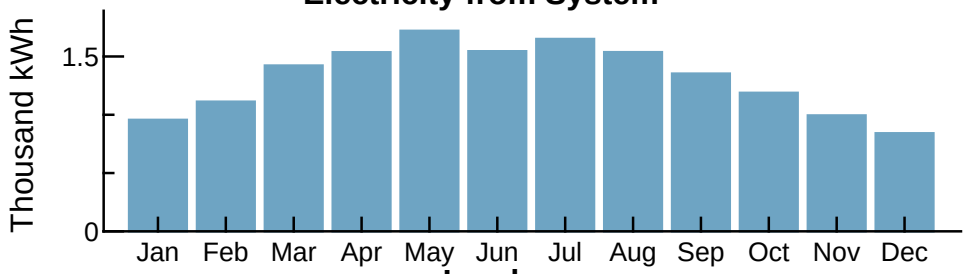
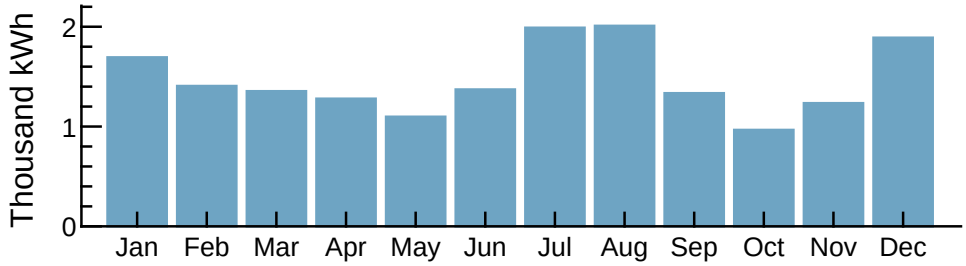
Year 1 Monthly Generation and Load Summary

Electricity from System



Load



Year 1 Monthly Electric Bill and Savings ($)

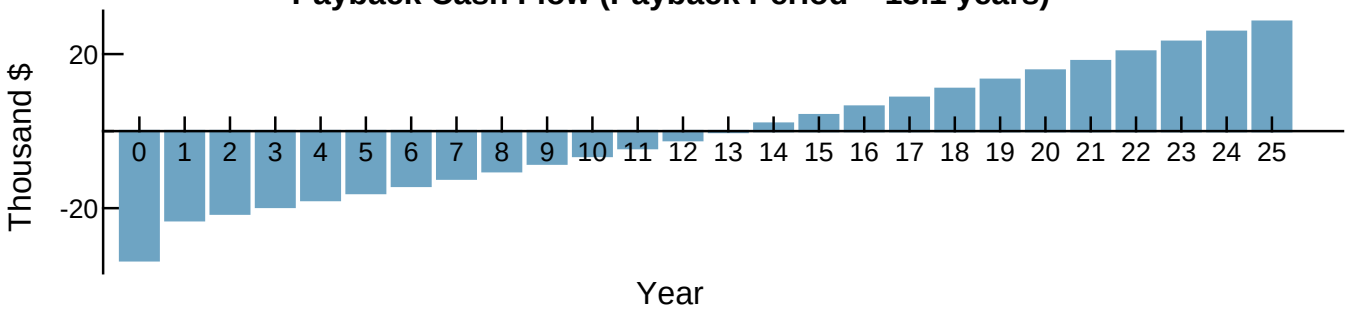
Month	Without System	With System	Savings
Jan	234	107	126
Feb	196	49	147
Mar	189	10	179
Apr	179	10	169
May	155	-56	212
Jun	191	10	181
Jul	273	32	241
Aug	276	72	203
Sep	186	10	176
Oct	138	10	128
Nov	173	10	163
Dec	260	149	111
Annual	2,455	413	2,041

NPV Approximation using Annuities

Annuities, Capital Recovery Factor (CRF) = 0.1023		
Investment	$0	Sum:
Expenses	$-2,500	$800
Savings	$1,000	NPV = Sum / CRF:
Energy value	$2,400	$8,000

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 = 9.06%

Payback Cash Flow (Payback Period = 13.1 years)



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