System Advisor Model Report

Detailed Photovoltaic	12 DC kW Nameplate	33.45, -111.98
Commercial	$5.03/W Installed Cost	UTC -7

Performance Model

Modules	
LONGi Green Energy Technology Co. Ltd. LR4-72HPH-44	
Cell material	Mono-c-Si
Module area	2.12 m²
Module capacity	445.21 DC Watts
Quantity	26
Total capacity	11.58 DC kW
Total area	55 m²

Inverters	
SMA America: SB7.7-1TP-US-40	
Unit capacity	7.76 AC kW
Input voltage	270 - 480 VDC DC V
Quantity	1
Total capacity	7.76 AC kW
DC to AC Capacity Ratio	1.49
AC losses (%)	0.00

Array	
Strings	2
Modules per string	13
String Voc (DC V)	638.30
Tilt (deg from horizontal)	0.00
Azimuth (deg E of N)	90
Tracking	1 axis
Backtracking	no
Self shading	no
Rotation limit (deg)	45
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/m²/day	5.79
POA kWh/m²/day	167.00
Net to inverter	24,510 DC kWh
Net to grid	21,860 AC kWh
Capacity factor	21.6
Performance ratio	0.73

Financial Model

Project Costs	
Total installed cost	$58,196
Salvage value	$0

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

Project Debt Parameters	
Debt fraction	100%
Amount	$58,196
Term	25 years
Rate	4%

Tax and Insurance Rates	
Federal income tax	21 %/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	30%

Electricity Demand and Rate Summary
Annual peak demand 274.2 kW
Annual total demand 726,208 kWh
SG - Secondary General Service
Fixed charge: $40/month
Monthly excess with kWh rollover
Flat energy buy rate: $0.03156/kWh

Results	
Nominal LCOE	3.6 cents/kWh
Net present value	$7,700
Payback period	19.9 years

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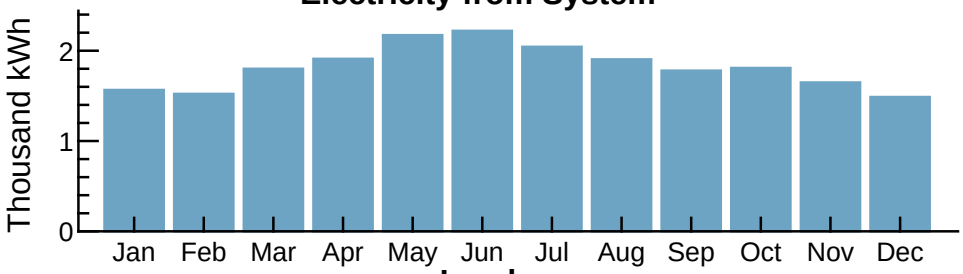
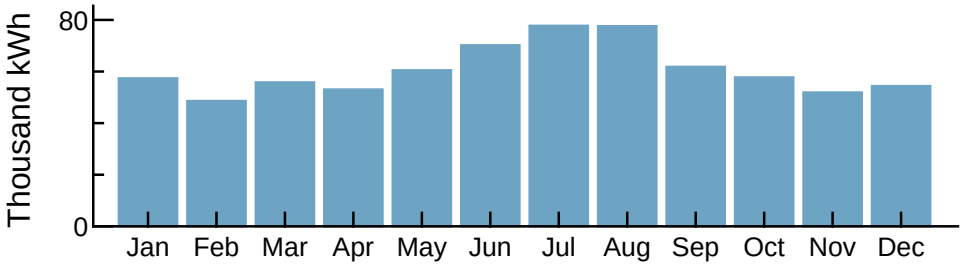
Year 1 Monthly Generation and Load Summary

Electricity from System



Load



Year 1 Monthly Electric Bill and Savings ($)

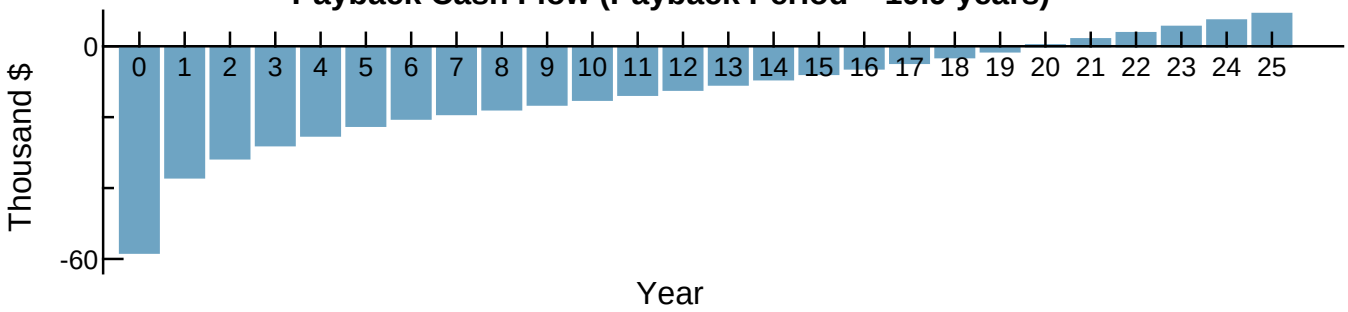
Month	Without System	With System	Savings
Jan	4,921	4,872	49
Feb	3,842	3,794	47
Mar	4,051	3,900	150
Apr	4,219	4,068	150
May	4,543	4,374	169
Jun	7,844	7,610	233
Jul	9,041	8,830	211
Aug	8,642	8,426	216
Sep	7,297	7,093	204
Oct	4,284	4,145	138
Nov	3,720	3,595	125
Dec	4,164	4,117	46
Annual	66,573	64,829	1,743

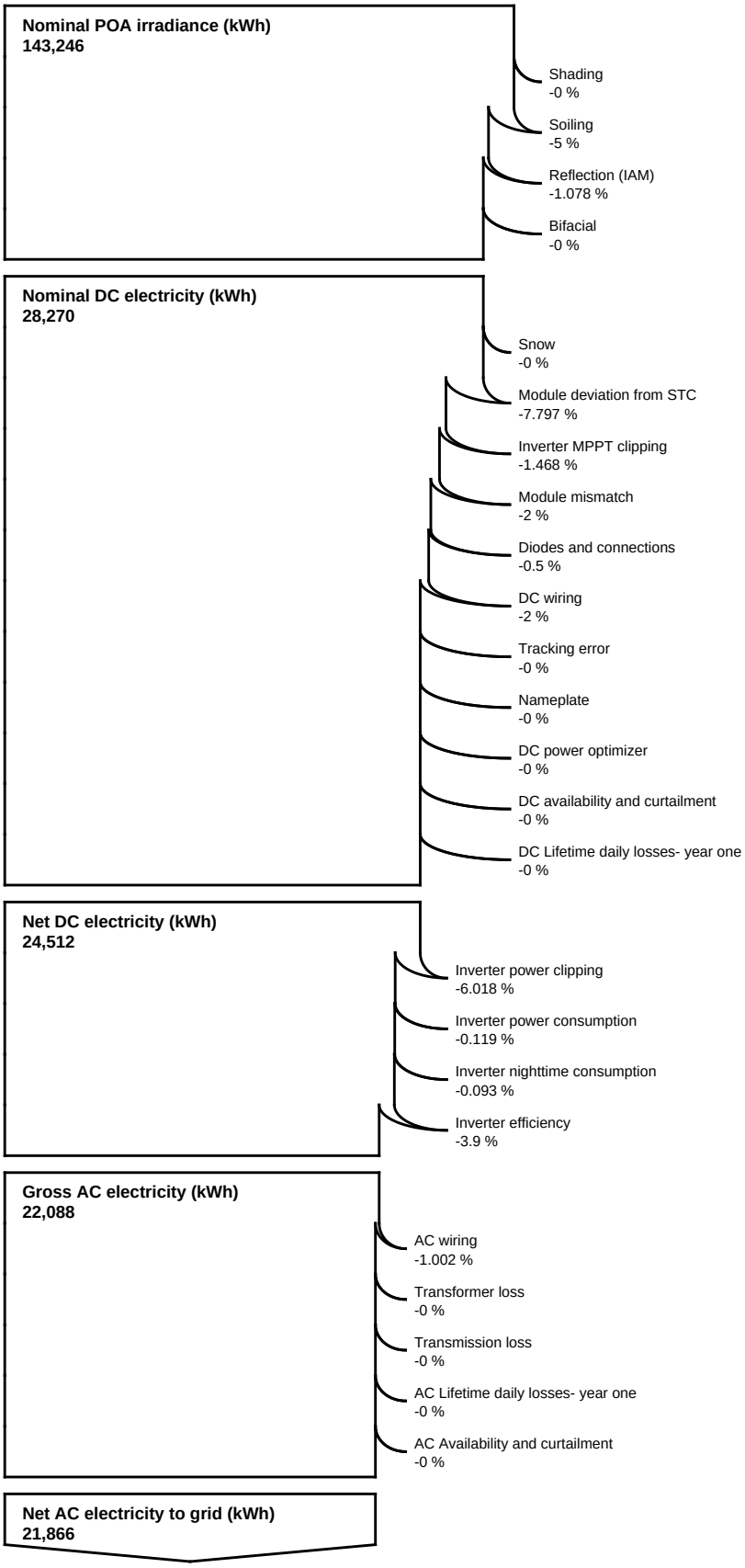
NPV Approximation using Annuities

Annuities, Capital Recovery Factor (CRF) = 0.1023		
Investment	$0	Sum:
Expenses	$-3,900	$700
Savings	$3,200	NPV = Sum / CRF:
Energy value	$1,500	$7,000

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 = 19.9 years)




Nominal POA irradiance (kWh)
143,246
Shading
-0 %
Soiling
-5 %
Reflection (IAM)
-1.078 %
Bifacial
-0 %
Nominal DC electricity (kWh)
28,270
Snow
-0 %
Module deviation from STC
-7.797 %
Inverter MPPT clipping
-1.468 %
Module mismatch
-2 %
Diodes and connections
-0.5 %
DC wiring
-2 %
Tracking error
-0 %
Nameplate
-0 %
DC power optimizer
-0 %
DC availability and curtailment
-0 %
DC Lifetime daily losses- year one
-0 %
Net DC electricity (kWh)
24,512
Inverter power clipping
-6.018 %
Inverter power consumption
-0.119 %
Inverter nighttime consumption
-0.093 %
Inverter efficiency
-3.9 %
Gross AC electricity (kWh)
22,088
AC wiring
-1.002 %
Transformer loss
-0 %
Transmission loss
-0 %
AC Lifetime daily losses- year one
-0 %
AC Availability and curtailment
-0 %
Net AC electricity to grid (kWh)
21,866