System Advisor Model Report

Detailed Photovoltaic	12 DC kW Nameplate	33.45, -111.98
Commercial	$4.70/W Installed Cost	UTC -7

Performance Model

Modules	
LONGi Green Energy Technology Co. Ltd. LR4-72HBD-45(	
Cell material	Mono-c-Si
Module area	2.11 m²
Module capacity	450.02 DC Watts
Quantity	26
Total capacity	11.7 DC kW
Total area	54 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	1.51
AC losses (%)	0.00

Array	
Strings	2
Modules per string	13
String Voc (DC V)	644.80
Tilt (deg from horizontal)	90.00
Azimuth (deg E of N)	90
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/m²/day	5.79
POA kWh/m²/day	76.00
Net to inverter	11,560 DC kWh
Net to grid	11,000 AC kWh
Capacity factor	10.7
Performance ratio	0.77

Financial Model

Project Costs	
Total installed cost	$54,987
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	$54,987
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	6.9 cents/kWh
Net present value	$-2,400
Payback period	> 25 years

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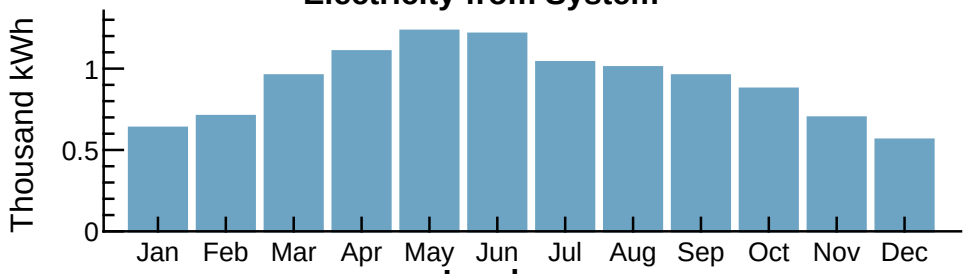
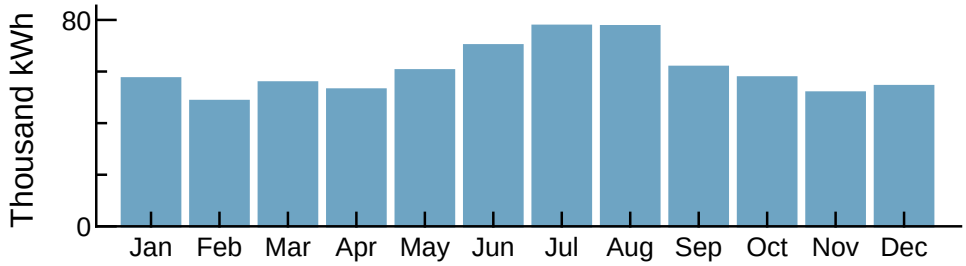
Year 1 Monthly Generation and Load Summary

Electricity from System



Load



Year 1 Monthly Electric Bill and Savings ($)

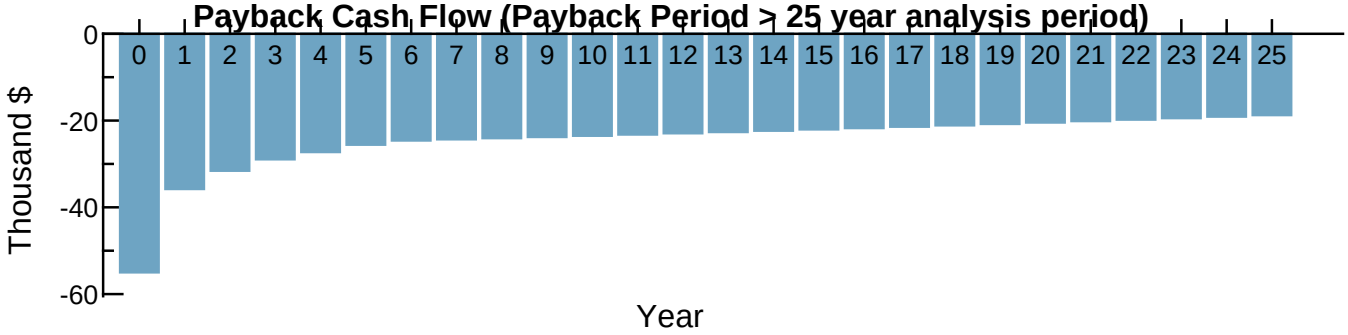
Month	Without System	With System	Savings
Jan	4,921	4,901	20
Feb	3,842	3,820	22
Mar	4,051	4,008	42
Apr	4,219	4,169	49
May	4,543	4,488	55
Jun	7,844	7,777	66
Jul	9,041	8,979	62
Aug	8,642	8,585	56
Sep	7,297	7,245	51
Oct	4,284	4,245	38
Nov	3,720	3,690	30
Dec	4,164	4,146	17
Annual	66,573	66,058	514

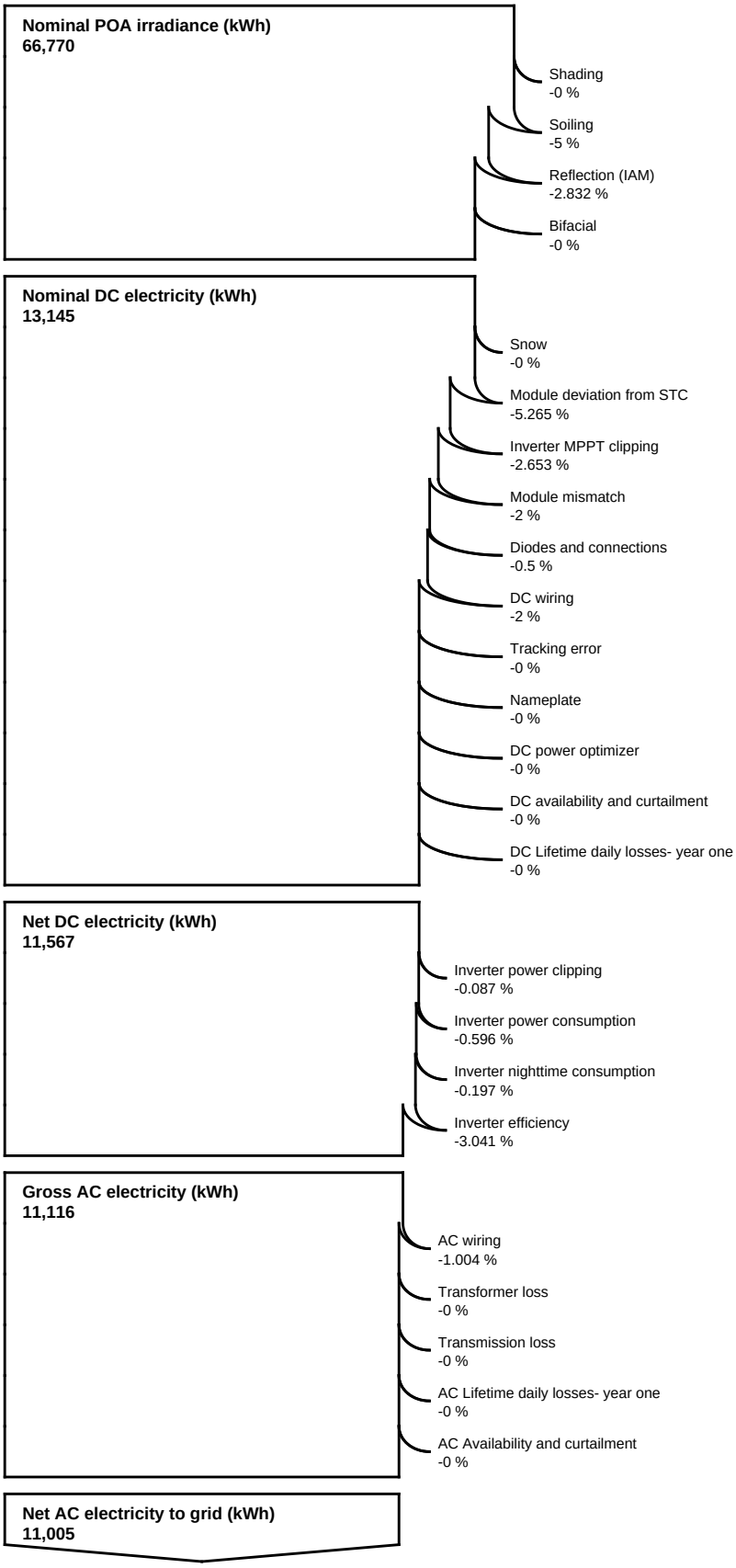
NPV Approximation using Annuities

Annuities, Capital Recovery Factor (CRF) = 0.1023		
Investment	$0	Sum:
Expenses	$-3,700	$-200
Savings	$3,000	NPV = Sum / CRF:
Energy value	$400	$-2,000

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 > 25 year analysis period)




Nominal POA irradiance (kWh)
66,770
Shading
-0 %
Soiling
-5 %
Reflection (IAM)
-2.832 %
Bifacial
-0 %
Nominal DC electricity (kWh)
13,145
Snow
-0 %
Module deviation from STC
-5.265 %
Inverter MPPT clipping
-2.653 %
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)
11,567
Inverter power clipping
-0.087 %
Inverter power consumption
-0.596 %
Inverter nighttime consumption
-0.197 %
Inverter efficiency
-3.041 %
Gross AC electricity (kWh)
11,116
AC wiring
-1.004 %
Transformer loss
-0 %
Transmission loss
-0 %
AC Lifetime daily losses- year one
-0 %
AC Availability and curtailment
-0 %
Net AC electricity to grid (kWh)
11,005