System Advisor Model Report

Detailed Photovoltaic	12 DC kW Nameplate	33.45, -111.98
Commercial	$3.48/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

Two subarrays:	1	2
Strings	1	1
Modules per string	13	13
String Voc (DC V)	638.30	638.30
Tilt (deg from horizontal)	20.00	20.00
Azimuth (deg E of N)	90	270
Tracking	no	no
Backtracking	-	-
Self shading	no	no
Rotation limit (deg)	-	-
Shading	no	no
Snow	no	no
Soiling	yes	yes
DC losses (%)	4.44	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	5.79
POA kWh/m²/day	130.00	131.00
Net to inverter	19,220 DC kWh	
Net to grid	18,170 AC kWh	
Capacity factor	17.9	
Performance ratio	0.76	

Financial Model

Project Costs	
Total installed cost	$40,330
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	$40,330
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	3.4 cents/kWh
Net present value	$7,000
Payback period	17.2 years

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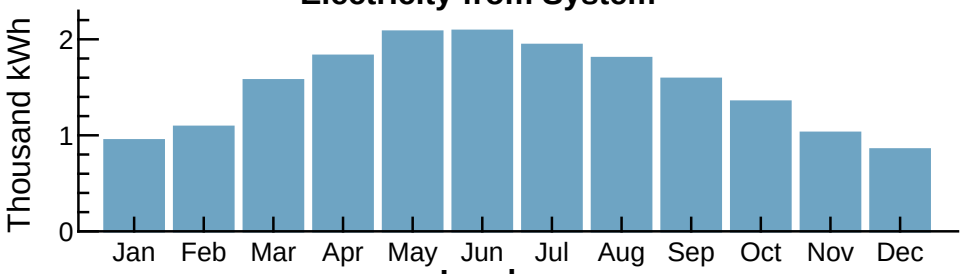
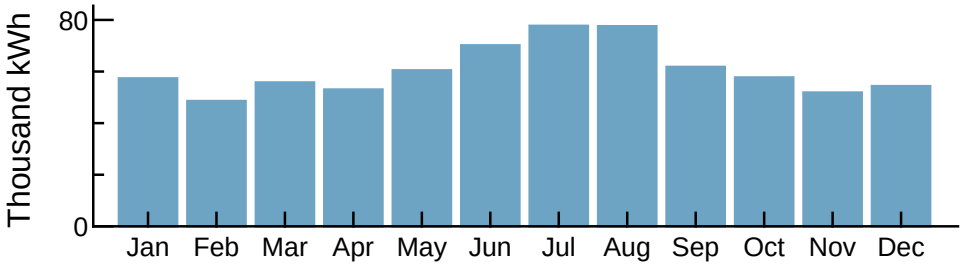
Year 1 Monthly Generation and Load Summary

Electricity from System



Load



Year 1 Monthly Electric Bill and Savings ($)

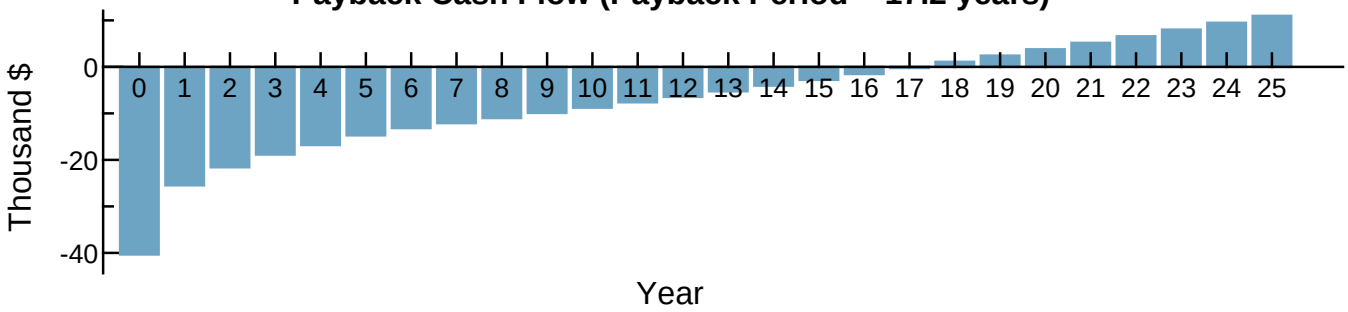
Month	Without System	With System	Savings
Jan	4,921	4,891	29
Feb	3,842	3,808	34
Mar	4,051	3,928	122
Apr	4,219	4,081	137
May	4,543	4,382	161
Jun	7,844	7,622	221
Jul	9,041	8,840	201
Aug	8,642	8,440	201
Sep	7,297	7,127	170
Oct	4,284	4,184	99
Nov	3,720	3,649	71
Dec	4,164	4,137	26
Annual	66,573	65,094	1,478

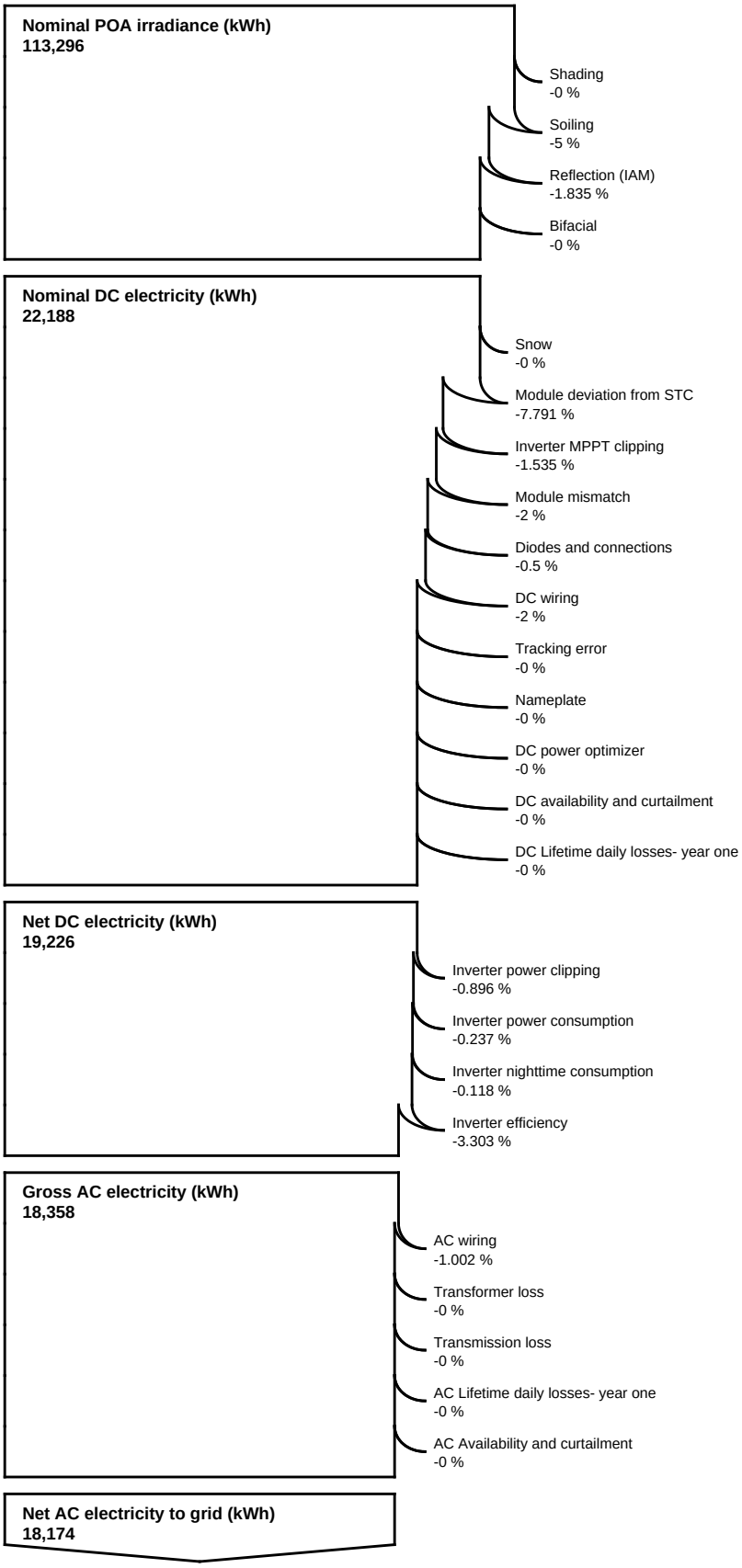
NPV Approximation using Annuities

Annuities, Capital Recovery Factor (CRF) = 0.1023		
Investment	$0	Sum:
Expenses	$-2,800	$700
Savings	$2,200	NPV = Sum / CRF:
Energy value	$1,200	$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 = 17.2 years)




Nominal POA irradiance (kWh)
113,296
Shading
-0 %
Soiling
-5 %
Reflection (IAM)
-1.835 %
Bifacial
-0 %
Nominal DC electricity (kWh)
22,188
Snow
-0 %
Module deviation from STC
-7.791 %
Inverter MPPT clipping
-1.535 %
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)
19,226
Inverter power clipping
-0.896 %
Inverter power consumption
-0.237 %
Inverter nighttime consumption
-0.118 %
Inverter efficiency
-3.303 %
Gross AC electricity (kWh)
18,358
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)
18,174