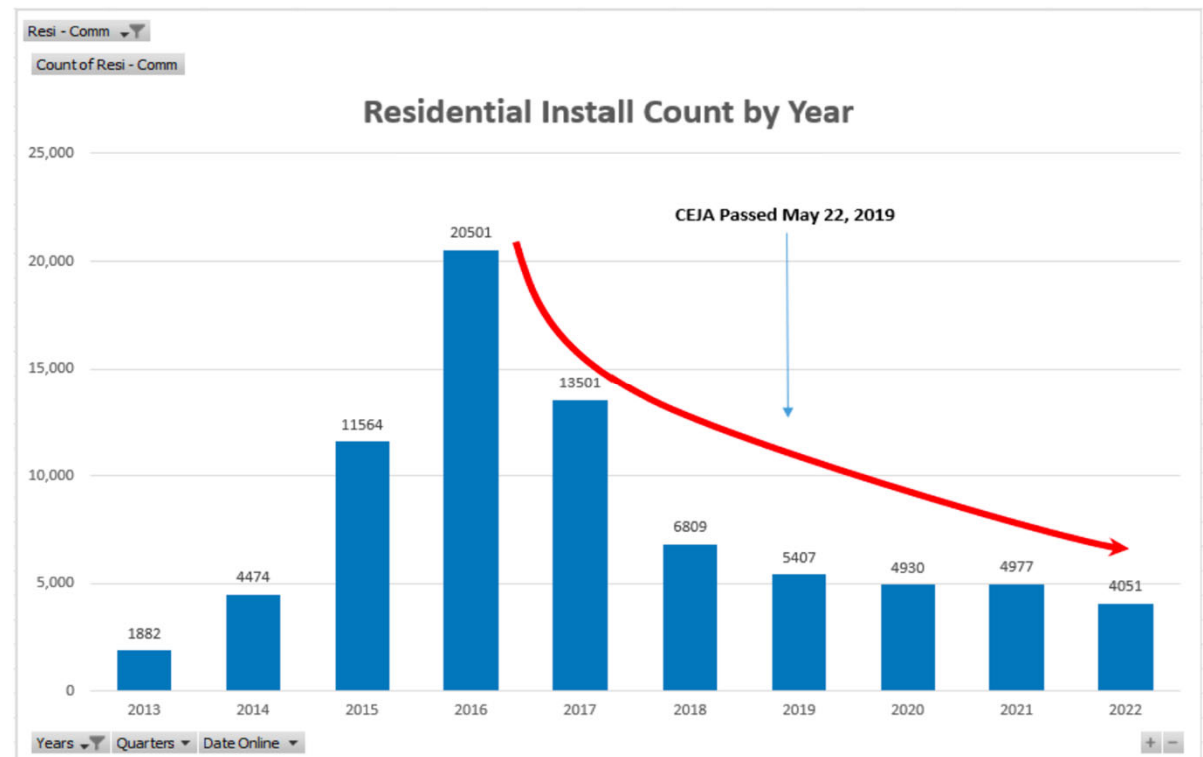


MARYLAND
ROOFTOP **SOLAR**
COALITION

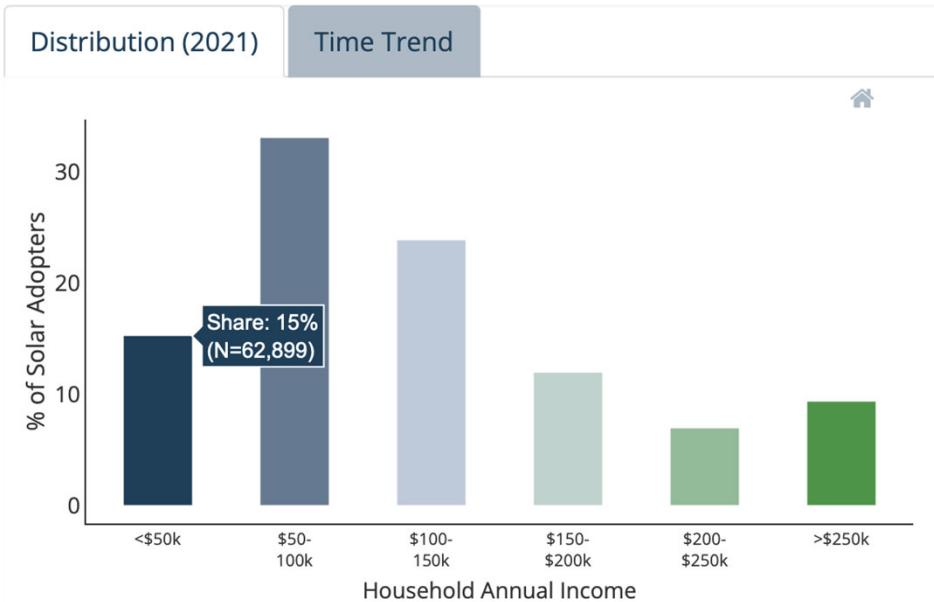
Customer Solar
Economics
September 2023

Residential Rooftop Solar In MD

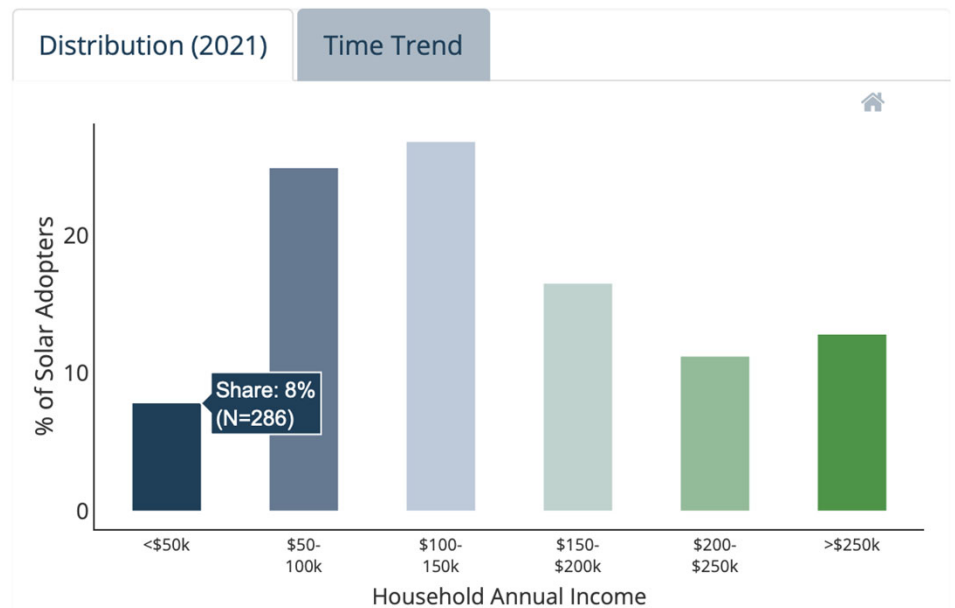
- Since 2016, new residential solar installations have dropped roughly 80%, and with it, the concentration of LMI customers putting solar on their roofs. The market has since stabilized at ~5,000 installations annually.



National Solar Adopter Income Distributions
(Annual Income)

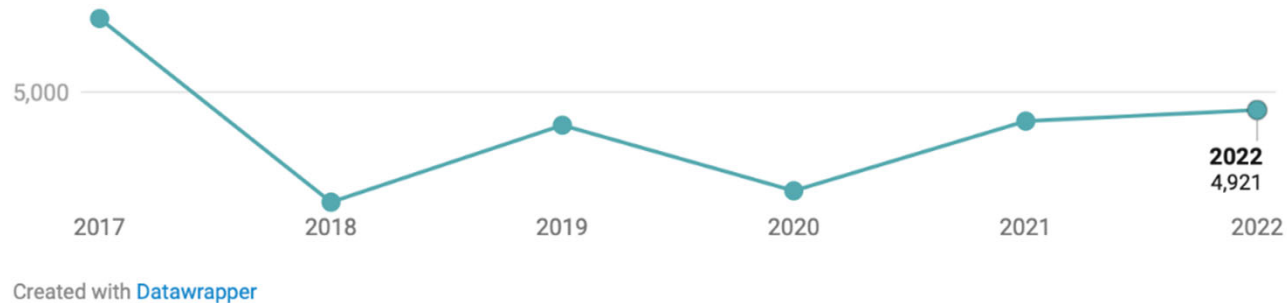


Maryland Solar Adopter Income Distributions
(Annual Income)



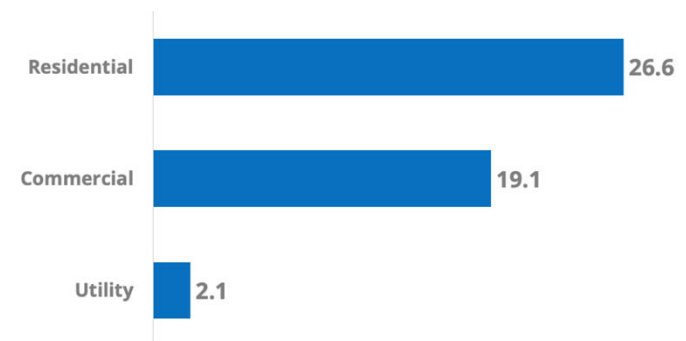
- In 2021 Nationally 15% of all homeowners going solar had an annual income below \$50,000 per year.
- Maryland Households in 2016 making \$50,000 or less per year comprised 10% of new rooftop solar installations in the state (2,027 individual installations). In 2021, that income category was less than 8% of Maryland residential solar installations (286 individual installations).

Maryland 5-Year Growth



- Residential solar projects create 27 jobs per megawatt installed, which is more than any other type of solar project
- Solar installation jobs are projected to increase 27% from 2021 through 2031 — well above the 5% average growth rate for all occupations.

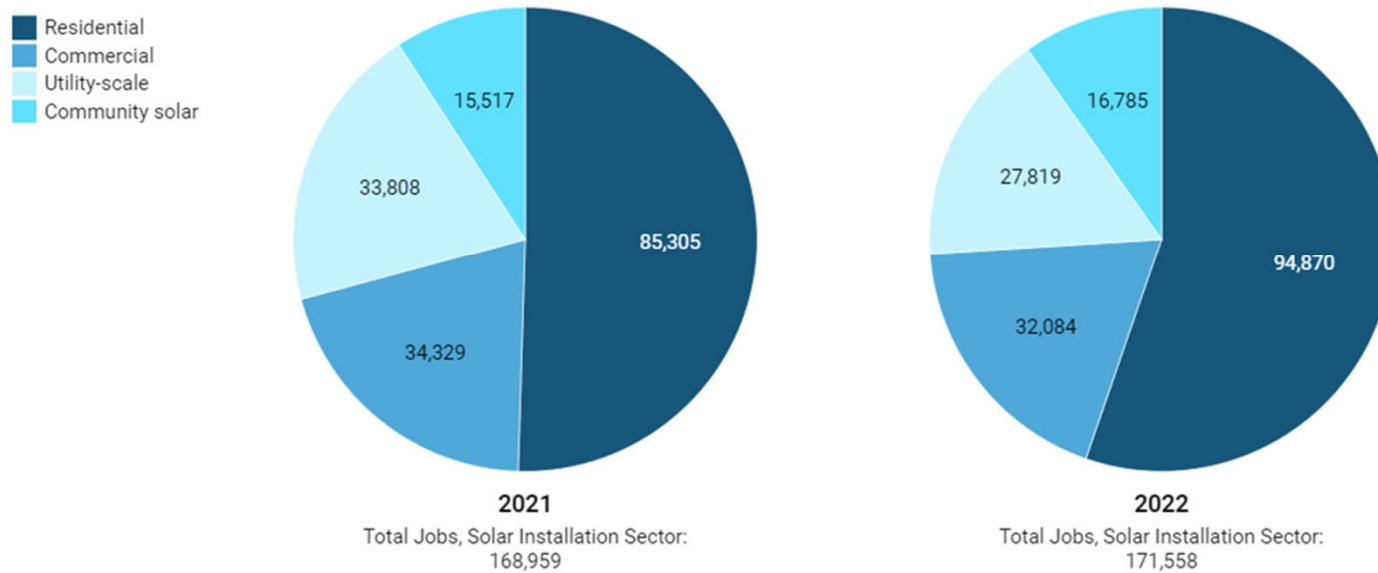
Small-scale solar installations create 10x more jobs (Jobs per MW installed 2020)



Sources: Solar Foundation National Solar Jobs Census 2020 and SEIA Solar Market Insight Report 2020 | [fep.org/g207](https://www.fep.org/g207)

Residential Solar Jobs makeup 55% of all Solar Jobs

U.S. Solar Installation Jobs by Market Segment, 2021-2022



Nationally, Residential Solar continues to see growth while Maryland has fallen behind



MD Cash Payback Analysis



Cash Payback – \$1000 grant -> 10yr payback

Inputs	
System Size (kW)	10
Estimated Solar Production (kWh)	11,500
Annual SREC Production (units)	11.50
System Degradation Rate	0.50%
Electricity Rate (\$/kWh)	\$0.165
Energy Rate Escalation	3.00%

Year Count	0	1	2	3	4	5	6	7	8	9	10	11
Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Estimated Energy Production		11,443	11,385	11,328	11,272	11,215	11,159	11,103	11,048	10,993	10,938	10,883
Estimate SREC Production		11.44	11.39	11.33	11.27	11.22	11.16	11.10	11.05	10.99	10.94	10.88
Estimated Electric Rate		\$0.165	\$0.170	\$0.175	\$0.180	\$0.186	\$0.191	\$0.197	\$0.203	\$0.209	\$0.215	\$0.222
SREC ACP		\$60.00	\$55.00	\$45.00	\$35.00	\$32.50	\$25.00	\$22.50	\$22.50	\$22.50	\$22.50	\$22.50
Cash Flow - \$1000 Grant: Year -->	0	1	2	3	4	5	6	7	8	9	10	11
System Cost @ \$3.50/W	(\$35,000)											
Tax Credit	\$10,500											
Grant	\$1,000											
Annual Solar Electric Savings		\$1,888	\$1,935	\$1,983	\$2,032	\$2,083	\$2,135	\$2,188	\$2,242	\$2,298	\$2,355	\$2,413
SREC Income (@ 90% of ACP)		\$618	\$564	\$459	\$355	\$328	\$251	\$225	\$224	\$223	\$221	\$220
Total Savings + Income	(\$23,500)	\$2,506	\$2,499	\$2,442	\$2,387	\$2,411	\$2,386	\$2,412	\$2,466	\$2,520	\$2,576	\$2,634
Net Cash Total	(\$23,500)	(\$20,994)	(\$18,496)	(\$16,054)	(\$13,666)	(\$11,256)	(\$8,870)	(\$6,458)	(\$3,992)	(\$1,472)	\$1,105	\$3,738

Cash Payback – \$5000 grant -> 8yr payback

Inputs	
System Size (kW)	10
Estimated Solar Production (kWh)	11,500
Annual SREC Production (units)	11.50
System Degradation Rate	0.50%
Electricity Rate (\$/kWh)	\$0.165
Energy Rate Escalation	3.00%

Year Count	0	1	2	3	4	5	6	7	8	9	10	11
Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Estimated Energy Production		11,443	11,385	11,328	11,272	11,215	11,159	11,103	11,048	10,993	10,938	10,883
Estimate SREC Production		11.44	11.39	11.33	11.27	11.22	11.16	11.10	11.05	10.99	10.94	10.88
Estimated Electric Rate		\$0.165	\$0.170	\$0.175	\$0.180	\$0.186	\$0.191	\$0.197	\$0.203	\$0.209	\$0.215	\$0.222
SREC ACP		\$60.00	\$55.00	\$45.00	\$35.00	\$32.50	\$25.00	\$22.50	\$22.50	\$22.50	\$22.50	\$22.50

Cash Flow - \$5000 Grant: Year -->	0	1	2	3	4	5	6	7	8	9	10	11
System Cost @ \$3.50/W	(\$35,000)											
Tax Credit	\$10,500											
Grant	\$5,000											
Annual Solar Electric Savings		\$1,888	\$1,935	\$1,983	\$2,032	\$2,083	\$2,135	\$2,188	\$2,242	\$2,298	\$2,355	\$2,413
SREC Income (@ 90% of ACP)		\$618	\$564	\$459	\$355	\$328	\$251	\$225	\$224	\$223	\$221	\$220
Total Savings + Income	(\$19,500)	\$2,506	\$2,499	\$2,442	\$2,387	\$2,411	\$2,386	\$2,412	\$2,466	\$2,520	\$2,576	\$2,634
Net Cash Total	(\$19,500)	(\$16,994)	(\$14,496)	(\$12,054)	(\$9,666)	(\$7,256)	(\$4,870)	(\$2,458)	\$8	\$2,528	\$5,105	\$7,738



PPA Rate Analysis



PPA Breakeven Analysis

Inputs	
System Size (kW)	10
Estimated Solar Production (kWh)	11500
Annual SREC Production (units)	11.50
System Degradation Rate	0.50%

Electricity Rate (\$/kWh)	\$0.165
Energy Rate Escalation	3.00%
PPA Rate (\$/kWh)	\$0.135
PPA Escalation Rate	2.9%

Electric Bill without Solar - 3% Electricity Rate Inflation

Year	Electricity Consumption	Utility Electric Rate	Utility Bill	Total Electric Bill
1	11,500	\$0.165	\$1,898	\$1,898
2	11,500	\$0.170	\$1,954	\$1,954
3	11,500	\$0.175	\$2,013	\$2,013
4	11,500	\$0.180	\$2,073	\$2,073
5	11,500	\$0.186	\$2,136	\$2,136
6	11,500	\$0.191	\$2,200	\$2,200
7	11,500	\$0.197	\$2,266	\$2,266
8	11,500	\$0.203	\$2,334	\$2,334
9	11,500	\$0.209	\$2,404	\$2,404
10	11,500	\$0.215	\$2,476	\$2,476
11	11,500	\$0.222	\$2,550	\$2,550
12	11,500	\$0.228	\$2,627	\$2,627
13	11,500	\$0.235	\$2,705	\$2,705
14	11,500	\$0.242	\$2,787	\$2,787
15	11,500	\$0.250	\$2,870	\$2,870
16	11,500	\$0.257	\$2,956	\$2,956
17	11,500	\$0.265	\$3,045	\$3,045
18	11,500	\$0.273	\$3,136	\$3,136
19	11,500	\$0.281	\$3,230	\$3,230
20	11,500	\$0.289	\$3,327	\$3,327
Total				\$50,987

Electric Bill with Solar - 3% Electricity Rate Inflation - No State Grant

Year	Electricity Consumption	Solar Electricity Production	Utility Electric Rate	PPA Rate	Utility Bill	PPA Bill	Total Electric Bill
1	11,500	11,500	\$0.165	\$0.135	\$0	\$1,553	\$1,553
2	11,500	11,443	\$0.170	\$0.139	\$10	\$1,590	\$1,599
3	11,500	11,385	\$0.175	\$0.143	\$20	\$1,627	\$1,648
4	11,500	11,328	\$0.180	\$0.147	\$31	\$1,666	\$1,697
5	11,500	11,272	\$0.186	\$0.151	\$42	\$1,706	\$1,748
6	11,500	11,215	\$0.191	\$0.156	\$54	\$1,747	\$1,801
7	11,500	11,159	\$0.197	\$0.160	\$67	\$1,788	\$1,856
8	11,500	11,103	\$0.203	\$0.165	\$80	\$1,831	\$1,912
9	11,500	11,048	\$0.209	\$0.170	\$94	\$1,875	\$1,969
10	11,500	10,993	\$0.215	\$0.175	\$109	\$1,919	\$2,029
11	11,500	10,938	\$0.222	\$0.180	\$125	\$1,965	\$2,090
12	11,500	10,883	\$0.228	\$0.185	\$141	\$2,012	\$2,153
13	11,500	10,829	\$0.235	\$0.190	\$158	\$2,060	\$2,218
14	11,500	10,775	\$0.242	\$0.196	\$176	\$2,109	\$2,285
15	11,500	10,721	\$0.250	\$0.201	\$195	\$2,160	\$2,354
16	11,500	10,667	\$0.257	\$0.207	\$214	\$2,211	\$2,425
17	11,500	10,614	\$0.265	\$0.213	\$235	\$2,264	\$2,499
18	11,500	10,561	\$0.273	\$0.219	\$256	\$2,318	\$2,574
19	11,500	10,508	\$0.281	\$0.226	\$279	\$2,373	\$2,652
20	11,500	10,455	\$0.289	\$0.232	\$302	\$2,430	\$2,732
Total							\$41,793

- PPA Customer Saves \$9,194 vs Utility
- 8 Years for PPA Rate to match Year 1 electricity rate

PPA Breakeven Analysis - \$1,000 State Grant

Inputs	
System Size (kW)	10
Estimated Solar Production (kWh)	11500
Annual SREC Production (units)	11.50
System Degradation Rate	0.50%

Electricity Rate (\$/kWh)	\$0.165
Energy Rate Escalation	3.00%
PPA Rate (\$/kWh)	\$0.130
PPA Escalation Rate	2.9%

Electric Bill without Solar - 3% Electricity Rate Inflation

Year	Electricity Consumption	Utility Electric Rate	Utility Bill	Total Electric Bill
1	11,500	\$0.165	\$1,898	\$1,898
2	11,500	\$0.170	\$1,954	\$1,954
3	11,500	\$0.175	\$2,013	\$2,013
4	11,500	\$0.180	\$2,073	\$2,073
5	11,500	\$0.186	\$2,136	\$2,136
6	11,500	\$0.191	\$2,200	\$2,200
7	11,500	\$0.197	\$2,266	\$2,266
8	11,500	\$0.203	\$2,334	\$2,334
9	11,500	\$0.209	\$2,404	\$2,404
10	11,500	\$0.215	\$2,476	\$2,476
11	11,500	\$0.222	\$2,550	\$2,550
12	11,500	\$0.228	\$2,627	\$2,627
13	11,500	\$0.235	\$2,705	\$2,705
14	11,500	\$0.242	\$2,787	\$2,787
15	11,500	\$0.250	\$2,870	\$2,870
16	11,500	\$0.257	\$2,956	\$2,956
17	11,500	\$0.265	\$3,045	\$3,045
18	11,500	\$0.273	\$3,136	\$3,136
19	11,500	\$0.281	\$3,230	\$3,230
20	11,500	\$0.289	\$3,327	\$3,327
Total				\$50,987

Electric Bill without Solar - 3% Electricity Rate Inflation - \$1,000 State Grant

Year	Electricity Consumption	Solar Electricity Production	Utility Electric Rate	PPA Rate	Utility Bill	PPA Bill	Total Electric Bill
1	11,500	11,500	\$0.165	\$0.130	\$0	\$1,495	\$1,495
2	11,500	11,443	\$0.170	\$0.134	\$10	\$1,531	\$1,540
3	11,500	11,385	\$0.175	\$0.138	\$20	\$1,567	\$1,587
4	11,500	11,328	\$0.180	\$0.142	\$31	\$1,605	\$1,636
5	11,500	11,272	\$0.186	\$0.146	\$42	\$1,643	\$1,685
6	11,500	11,215	\$0.191	\$0.150	\$54	\$1,682	\$1,736
7	11,500	11,159	\$0.197	\$0.154	\$67	\$1,722	\$1,789
8	11,500	11,103	\$0.203	\$0.159	\$80	\$1,763	\$1,844
9	11,500	11,048	\$0.209	\$0.163	\$94	\$1,805	\$1,900
10	11,500	10,993	\$0.215	\$0.168	\$109	\$1,848	\$1,958
11	11,500	10,938	\$0.222	\$0.173	\$125	\$1,892	\$2,017
12	11,500	10,883	\$0.228	\$0.178	\$141	\$1,938	\$2,079
13	11,500	10,829	\$0.235	\$0.183	\$158	\$1,984	\$2,142
14	11,500	10,775	\$0.242	\$0.189	\$176	\$2,031	\$2,207
15	11,500	10,721	\$0.250	\$0.194	\$195	\$2,080	\$2,274
16	11,500	10,667	\$0.257	\$0.200	\$214	\$2,129	\$2,343
17	11,500	10,614	\$0.265	\$0.205	\$235	\$2,180	\$2,415
18	11,500	10,561	\$0.273	\$0.211	\$256	\$2,232	\$2,488
19	11,500	10,508	\$0.281	\$0.217	\$279	\$2,285	\$2,564
20	11,500	10,455	\$0.289	\$0.224	\$302	\$2,340	\$2,642
Total							\$40,341

- PPA Customer Saves \$10,646 vs Utility
- 9 Years for PPA Rate to match Year 1 electricity rate

PPA Breakeven Analysis - \$5,000 State Grant

Inputs	
System Size (kW)	10
Estimated Solar Production (kWh)	11500
Annual SREC Production (units)	11.50
System Degradation Rate	0.50%

Electricity Rate (\$/kWh)	\$0.165
Energy Rate Escalation	3.00%
PPA Rate (\$/kWh)	\$0.110
PPA Escalation Rate	2.9%

Electric Bill without Solar - 3% Electricity Rate Inflation

Year	Electricity Consumption	Utility Electric Rate	Utility Bill	Total Electric Bill
1	11,500	\$0.165	\$1,898	\$1,898
2	11,500	\$0.170	\$1,954	\$1,954
3	11,500	\$0.175	\$2,013	\$2,013
4	11,500	\$0.180	\$2,073	\$2,073
5	11,500	\$0.186	\$2,136	\$2,136
6	11,500	\$0.191	\$2,200	\$2,200
7	11,500	\$0.197	\$2,266	\$2,266
8	11,500	\$0.203	\$2,334	\$2,334
9	11,500	\$0.209	\$2,404	\$2,404
10	11,500	\$0.215	\$2,476	\$2,476
11	11,500	\$0.222	\$2,550	\$2,550
12	11,500	\$0.228	\$2,627	\$2,627
13	11,500	\$0.235	\$2,705	\$2,705
14	11,500	\$0.242	\$2,787	\$2,787
15	11,500	\$0.250	\$2,870	\$2,870
16	11,500	\$0.257	\$2,956	\$2,956
17	11,500	\$0.265	\$3,045	\$3,045
18	11,500	\$0.273	\$3,136	\$3,136
19	11,500	\$0.281	\$3,230	\$3,230
20	11,500	\$0.289	\$3,327	\$3,327
Total				\$50,987

Electric Bill without Solar - 3% Electricity Rate Inflation - \$5,000 State Grant

Year	Electricity Consumption	Solar Electricity Production	Utility Electric Rate	PPA Rate	Utility Bill	PPA Bill	Total Electric Bill
1	11,500	11,500	\$0.165	\$0.110	\$0	\$1,265	\$1,265
2	11,500	11,443	\$0.170	\$0.113	\$10	\$1,295	\$1,305
3	11,500	11,385	\$0.175	\$0.116	\$20	\$1,326	\$1,346
4	11,500	11,328	\$0.180	\$0.120	\$31	\$1,358	\$1,389
5	11,500	11,272	\$0.186	\$0.123	\$42	\$1,390	\$1,432
6	11,500	11,215	\$0.191	\$0.127	\$54	\$1,423	\$1,478
7	11,500	11,159	\$0.197	\$0.131	\$67	\$1,457	\$1,524
8	11,500	11,103	\$0.203	\$0.134	\$80	\$1,492	\$1,572
9	11,500	11,048	\$0.209	\$0.138	\$94	\$1,528	\$1,622
10	11,500	10,993	\$0.215	\$0.142	\$109	\$1,564	\$1,673
11	11,500	10,938	\$0.222	\$0.146	\$125	\$1,601	\$1,726
12	11,500	10,883	\$0.228	\$0.151	\$141	\$1,640	\$1,780
13	11,500	10,829	\$0.235	\$0.155	\$158	\$1,679	\$1,837
14	11,500	10,775	\$0.242	\$0.160	\$176	\$1,719	\$1,894
15	11,500	10,721	\$0.250	\$0.164	\$195	\$1,760	\$1,954
16	11,500	10,667	\$0.257	\$0.169	\$214	\$1,802	\$2,016
17	11,500	10,614	\$0.265	\$0.174	\$235	\$1,845	\$2,079
18	11,500	10,561	\$0.273	\$0.179	\$256	\$1,889	\$2,145
19	11,500	10,508	\$0.281	\$0.184	\$279	\$1,934	\$2,212
20	11,500	10,455	\$0.289	\$0.189	\$302	\$1,980	\$2,282
Total							\$34,533

- PPA Customer Saves \$16,454 vs Utility
- 15 Years for PPA Rate to match Year 1 electricity rate