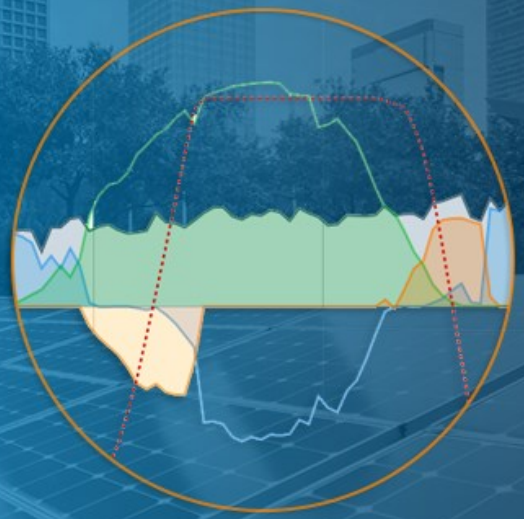
NEM-3

"NET BILLING" REPORT



PREPARED FOR:

California NEM-3 modeling

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SCE, TOU-D-PRIME, Resi PV+ESS, NEM-3

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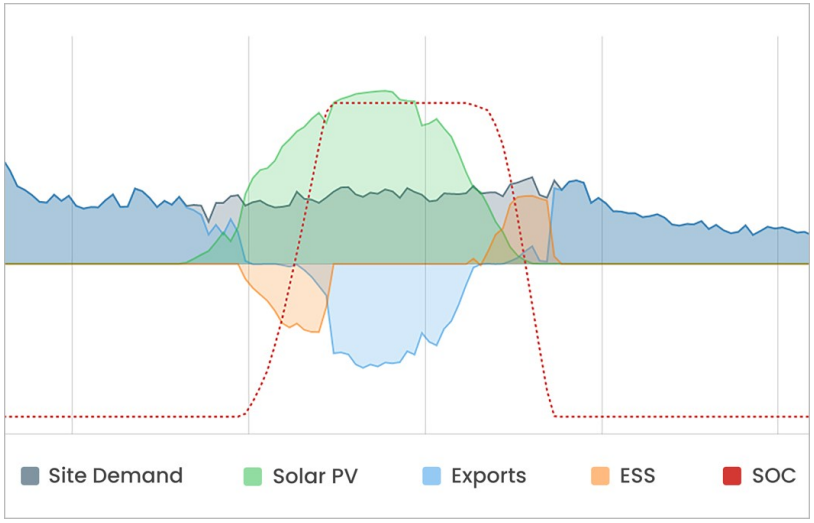
NEM-3 "Net Billing" Explained

The California Public Utilities Commission (CPUC) finalized the state's new Net Metering version 3.0 (NEM-3) "Net Billing" tariff on December 15th, 2022. The NEM-3 tariff is scheduled to go into effect on April 13, 2023. "Net Billing" decouples the value of imported energy and exported energy. The new framework values exported energy based on hourly values determined by the Avoided Cost Calculator (ACC) model.

ACC export values will be set individually for each investor-owned utility (IOU). Hourly ACC values differ each month, and by weekday and weekend. Customer's lock in ACC export rates for 9-years and float thereafter. Customer's can elect to leave the lock-in period early. The ACC model is updated every two years, which determines floating values.

Exports occur when a site generates more solar PV production than it consumes during a specific interval (e.g., 1 to 2 pm).

Energy storage can be paired with solar to prevent exports to the grid and self-consume more energy.



How much are exports worth?

The average blended value of solar exports will vary by customer depending on their seasonal consumption patterns, the design specifications of the solar system, and which utility territory they are located in. The typical annual weighted average of exports will range between $0.03 to $0.05/kWh based on 2023 ACC values.

What effect will NEM-3 have on solar + storage project economics?

Solar. The value of solar and the economics of PV-only projects will get eroded considerably when comparing NEM-3 versus NEM-2 projects, driven by the sharp decline in export values. PV-only projects that have a high percentage of exports (e.g., > 50%) will see the most value erosion.

Storage. The dramatic reduction in the value of exported energy will create a strong price signal for pairing storage with solar to prevent exports and self-consume more energy. The project economics of PV+ESS projects will beat PV-only for many customer types and use cases. It is widely expected that storage attachment rates will go up considerably once NEM-3 is implemented.

Current Usage & Utility Bill Cost

Utility Details			Cost Details		
Utility Company	**Current Rate Schedule**	**Utility Escalation Rate**	**Total Utility Bill**	**Total Usage (kWh)**	**Avg blended cost**
SCE-NEM3	TOU-D-PRIME.	3.0%	$5,058	14,401 kWh	$0.351 /kWh

Monthly Usage & Billing Data:

Time Periods	Energy Use (kWh)				Charges			
Bill Ranges & Seasons	On Peak	Mid Peak	Off Peak	Super Off Peak	Other	NBC	Energy	Total
1/1/2022 - 2/1/2022 W	-	394	466	340	$14	$31	$372	$417
2/1/2022 - 3/1/2022 W	-	390	464	346	$12	$31	$370	$414
3/1/2022 - 4/1/2022 W	-	358	489	353	$14	$31	$359	$404
4/1/2022 - 5/1/2022 W	-	394	439	367	$13	$31	$372	$416
5/1/2022 - 6/1/2022 W	-	388	469	343	$14	$31	$370	$415
6/1/2022 - 7/1/2022 S	306	112	782	-	$13	$31	$391	$436
7/1/2022 - 8/1/2022 S	272	136	791	-	$14	$31	$381	$426
8/1/2022 - 9/1/2022 S	297	104	800	-	$14	$31	$387	$432
9/1/2022 - 10/1/2022 S	295	112	793	-	$13	$31	$387	$432
10/1/2022 - 11/1/2022 W	-	409	391	400	$14	$31	$377	$422
11/1/2022 - 12/1/2022 W	-	415	447	338	$13	$31	$379	$423
12/1/2022 - 1/1/2023 W	-	405	463	333	$14	$31	$376	$421
Total	**1,170**	**3,617**	**6,794**	**2,820**	**$160**	**$376**	**$4,521**	**$5,058**

Facility Information:

Residential meter
San Diego, CA

Utility Bill Breakdown:

Total Bill: $5,058
"Energy" Cost: $4,898
"Demand" Cost: $0
Avg blended cost*: $0.351 /kWh

** Average blended cost = total bill / total usage (kWh)*

** Cumulative Cost of Doing Nothing:

1 yr cost: $5,058
10 yr cost: $57,979
20 yr cost: $135,897

*** Assumes 3.0% annual utility bill escalation rate.*

Solar + Storage Summary

PV System Specs			ESS (Energy Storage System) Specs		
DC kW	AC CEC kW	Yr 1 Production	kW Power	kWh Energy Capacity	Yr 1 kWh Discharge
9.4 kW-DC	8.2 kW-AC	14,394 kWh	5.0 kW	13.5 kWh	4,625 kWh

PV / ESS monthly summary:

Time Periods	Solar PV (kWh)				Energy Storage (kWh)			
Bill Ranges & Seasons	On Peak	Mid Peak	Off Peak	Super Off Peak	On Peak	Mid Peak	Off Peak	Super Off Peak
1/1/2022 - 2/1/2022 W	-	24	17	818	-	364	22	-414
2/1/2022 - 3/1/2022 W	-	42	26	857	-	338	7	-383
3/1/2022 - 4/1/2022 W	-	144	22	1,080	-	221	114	-376
4/1/2022 - 5/1/2022 W	-	204	27	1,196	-	191	128	-361
5/1/2022 - 6/1/2022 W	-	218	37	1,209	-	171	152	-366
6/1/2022 - 7/1/2022 S	164	57	1,212	-	142	55	-238	-
7/1/2022 - 8/1/2022 S	170	84	1,256	-	102	51	-196	-
8/1/2022 - 9/1/2022 S	169	62	1,253	-	128	42	-213	-
9/1/2022 - 10/1/2022 S	105	43	1,074	-	190	69	-299	-
10/1/2022 - 11/1/2022 W	-	104	12	1,016	-	304	65	-410
11/1/2022 - 12/1/2022 W	-	23	32	840	-	376	-12	-405
12/1/2022 - 1/1/2023 W	-	14	22	760	-	382	0	-424
Total	**608**	**1,019**	**4,990**	**7,776**	**562**	**2,564**	**-470**	**-3,139**

Consumption Mix

Utility	7 kWh (0.05%)
Solar PV	14,394 kWh (99.95%)

PV Generation (pre-ESS):

Total PV Production:
14,394 kWh
PV reduces imports:
8,520 kWh | (41%)
PV exports to grid:
5,001 kWh | (59%)

ESS Dispatch:

Annual Energy Discharged:
4,625 kWh
Annual Energy Losses:
(486) kWh
Annual Discharge Cycles:
361

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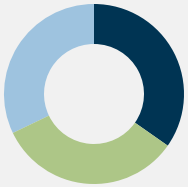
Imports & Exports, after PV/ESS

PV System Specs			ESS System Specs		
DC kW	AC CEC kW	Yr 1 Production	kW Power	kWh Energy Capacity	Yr 1 kWh Discharge
9.4 kW-DC	8.2 kW-AC	14,394 kWh	5.0 kW	13.5 kWh	4,625 kWh

Imports & Exports, after PV/ESS:

Time Periods	Energy Import (kWh)				Energy Export (kWh)			
Bill Ranges & Seasons	On Peak	Mid Peak	Off Peak	Super Off Peak	On Peak	Mid Peak	Off Peak	Super Off Peak
1/1/2022 - 2/1/2022 W	-	7	427	119	-	0	0	182
2/1/2022 - 3/1/2022 W	-	11	432	98	-	1	0	227
3/1/2022 - 4/1/2022 W	-	5	353	96	-	11	0	447
4/1/2022 - 5/1/2022 W	-	4	284	59	-	5	0	527
5/1/2022 - 6/1/2022 W	-	0	281	51	-	1	0	552
6/1/2022 - 7/1/2022 S	0	0	337	-	0	0	528	-
7/1/2022 - 8/1/2022 S	0	1	268	-	0	0	538	-
8/1/2022 - 9/1/2022 S	0	0	296	-	0	0	536	-
9/1/2022 - 10/1/2022 S	0	0	409	-	0	0	392	-
10/1/2022 - 11/1/2022 W	-	1	314	75	-	0	0	280
11/1/2022 - 12/1/2022 W	-	16	428	104	-	0	0	200
12/1/2022 - 1/1/2023 W	-	9	441	77	-	0	0	80
Total	**0**	**54**	**4,270**	**679**	**0**	**18**	**1,994**	**2,495**

Imports post PV/ESS



Utility	5,001 kWh (34.73%)
Solar PV	4,774 kWh (33.15%)
Battery	4,626 kWh (32.12%)

Exported PV Energy:

Before ESS:
8,512 kWh |
59.1% of PV generation

After ESS:
4,508 kWh |
31.3% of PV generation

Exports Offset by ESS:
4,004 | 47%

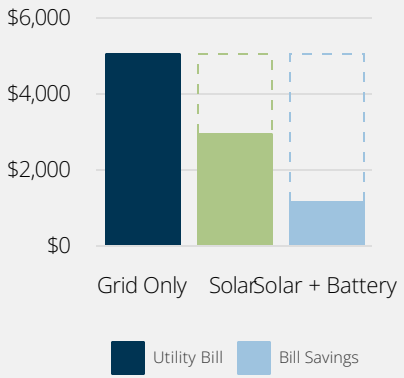
Future Savings, Usage & Utility Bill Cost

Utility Details			Savings Details		
Utility Company	**Post-project Rate Schedule**	**Annual usage**	**Total Savings**	**Total Solar Production**	**Avg blended savings PV**
SCE-NEM3	TOU-D-PRIME.	14,401 kWh	$3,911	14,394 kWh	$0.146 /kWh

Monthly Utility Bills, Post-project

Time Periods	Energy Use (kWh)				Charges			
Bill Ranges & Seasons	On Peak	Mid Peak	Off Peak	Super Off Peak	Other	NBC	Energy	Total
1/1/2022 - 2/1/2022 W	-	6	427	-63	$14	$14	$104	$132
2/1/2022 - 3/1/2022 W	-	11	431	-129	$12	$14	$104	$130
3/1/2022 - 4/1/2022 W	-	-6	353	-351	$14	$12	$84	$110
4/1/2022 - 5/1/2022 W	-	-1	284	-468	$13	$9	$67	$89
5/1/2022 - 6/1/2022 W	-	-1	281	-500	$14	$9	$58	$80
6/1/2022 - 7/1/2022 S	0	0	-192	-	$13	$9	$47	$69
7/1/2022 - 8/1/2022 S	0	1	-269	-	$14	$7	$26	$47
8/1/2022 - 9/1/2022 S	0	0	-240	-	$14	$8	$24	$45
9/1/2022 - 10/1/2022 S	0	0	18	-	$13	$11	$70	$93
10/1/2022 - 11/1/2022 W	-	1	314	-206	$14	$10	$65	$89
11/1/2022 - 12/1/2022 W	-	16	428	-97	$13	$14	$105	$132
12/1/2022 - 1/1/2023 W	-	9	441	-3	$14	$14	$103	$131
Total	**0**	**36**	**2,276**	**-1,817**	**$160**	**$131**	**$856**	**$1,146**

Bill Savings



Year 1 Savings:

Utility bill before: $5,058
Utility bill after: $1,146
Total bill savings: $3,911
PV bill savings: $2,101 (54%)
ESS bill savings: $1,810 (46%)

Lifetime Savings:

1 yr savings: $3,911
10 yr savings: $41,955
20 yr savings: $94,663

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