California C&I Energy Storage Market – State of the Union

MAY 25, 2022

Energy Toolbase - Webinar Presenters

Adam Gerza
VP Business Development

Jordyn Fenner
Enterprise Account Manager

Brandon Maze
Supply Chain Manager

Agenda – CA C&I ESS State of the Union

1. SGIP sunsetting
2. ITC step-down
3. ESS Supply Chain Challenges

headwinds

4. NEM-3
5. ETB Developer data
6. Survey Data

tailwinds

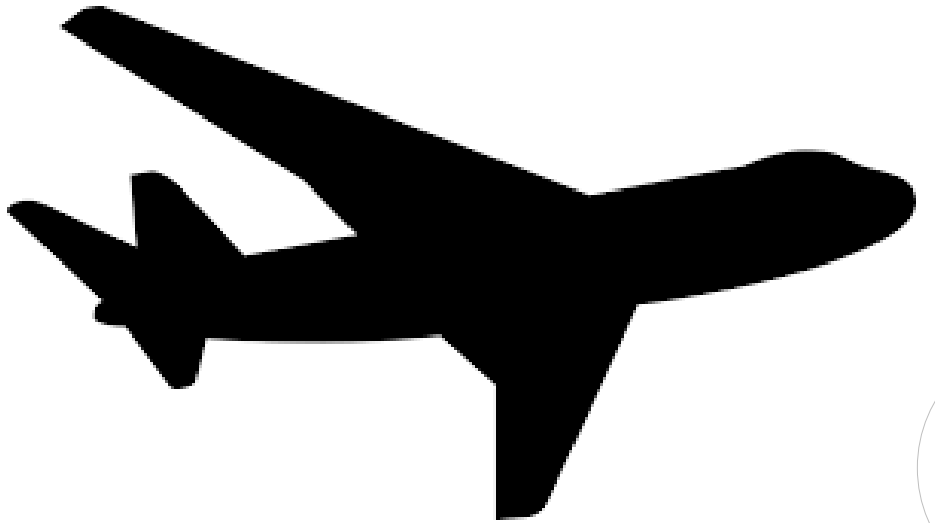
7. Other Tailwinds (DRAM, Rate inflation, financing)
8. Key Takeaways
9. Q&A

The C&I energy storage market in California currently has strong headwinds and tailwinds

NEM-3

ETB sourced datapoints

Rate inflation, DRAM, financing



SGIP sunsetting

ITC stepdown

ESS supply chain

Tailwinds

Headwinds

SGIP INCENTIVE PROGRAM UPDATE

- Historical reservations
- Remaining funds

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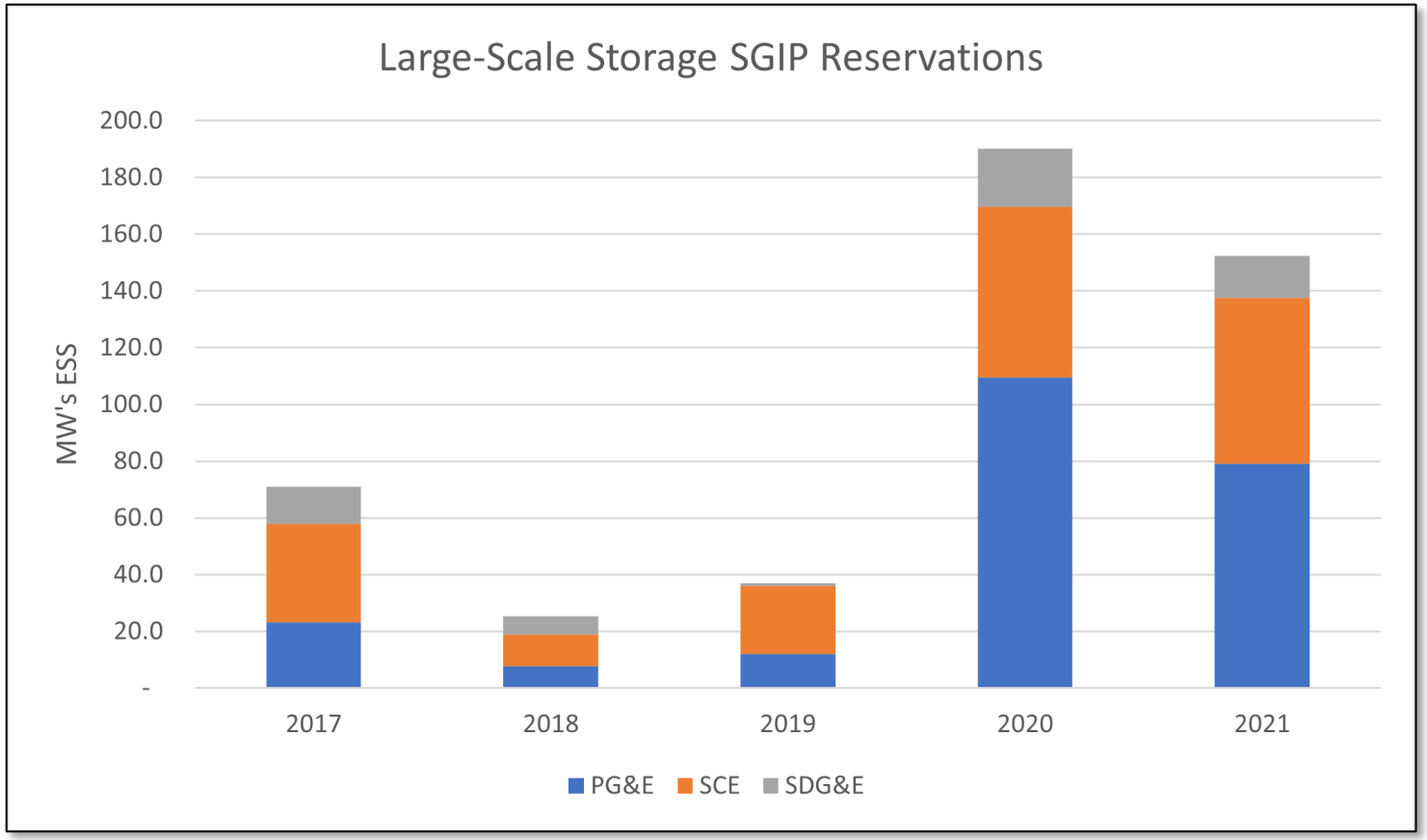
Large-Scale Storage category SGIP Reservations ramped up in 2020 when the program re-launched



PG&E Large-Scale Storage:

1,656 reservations | 245 MWs

SCE Large-Scale Storage:

910 projects | 204 MWs

SDG&E Large-Scale Storage:

442 projects | 58 MWs

Source: *SGIP Incentive Program Data*

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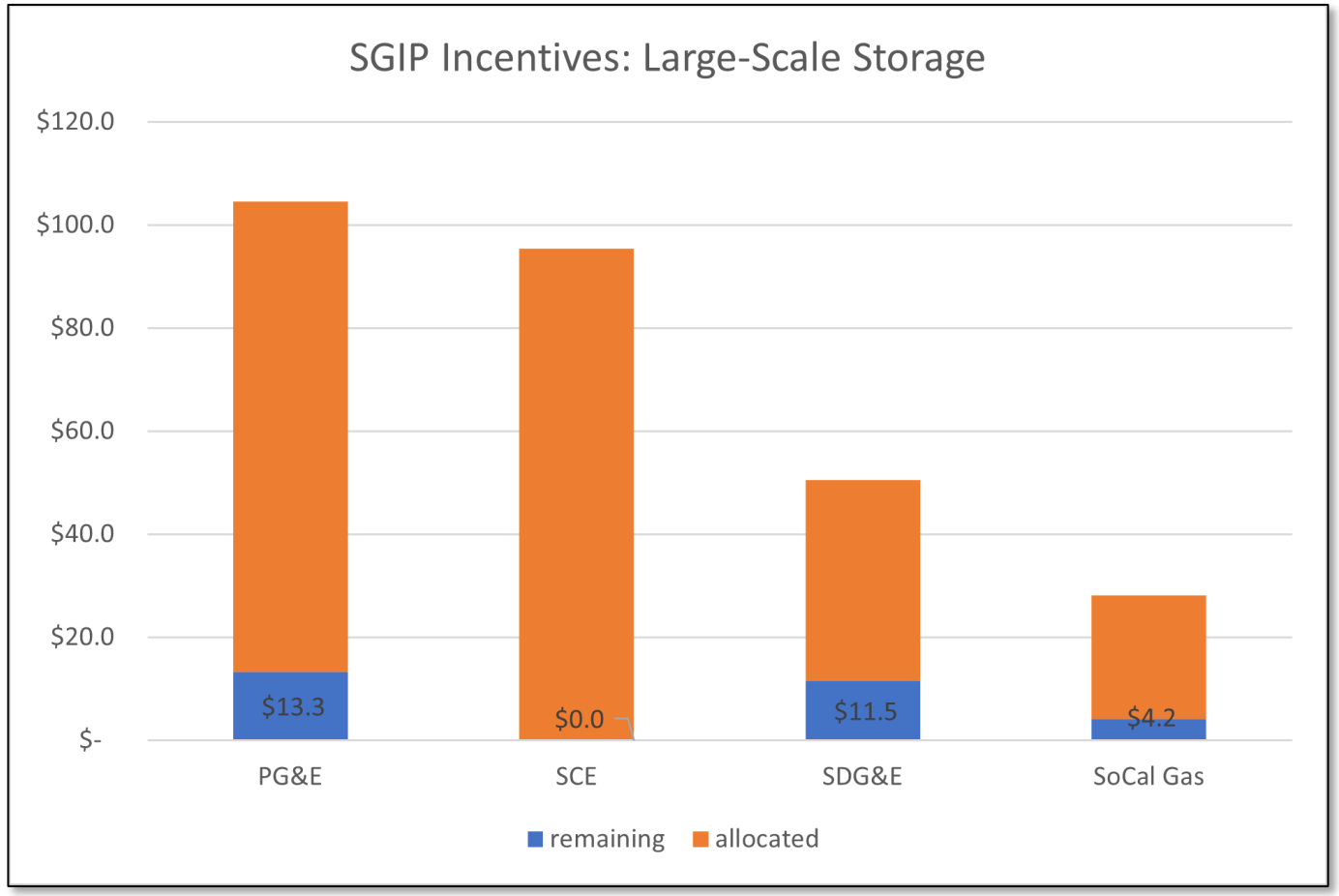
There are not a lot of Large-Scale Storage category SGIP funds remaining



PG&E: $13.3 of $104.5
13% remaining

SCE: $0 of $95.4
0% remaining

SDG&E: $11.5 of $50.5
23% remaining

SoCal Gas: $4.2 of $28.1
15% remaining

Source: *SGIP Incentive Step Tracker*
Data as of 5/16/22

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Last Call for Commercial Storage SGIP incentives

- Dec 2021, CPUC reallocated $67m of SGIP storage incentives to other budget categories; accelerated the end of the Large-Scale budget
- **SCE:** ran out of Large-Scale Storage funds in March 2022
- **PG&E:** $13.2m remaining; ~9 months remaining (estimate)
- **SDG&E:** $11.5m remaining; ~6 months remaining (estimate)
- The end is in sight; reserve now or risk missing out
- (ETB Blog) Last Call for Commercial Storage SGIP Incentives: SCE's Budget is Exhausted, and the End is in Sight for PG&E and SD&GE

FEDERAL ITC

- ITC Stepdown schedule
- Standalone ESS ITC legislation

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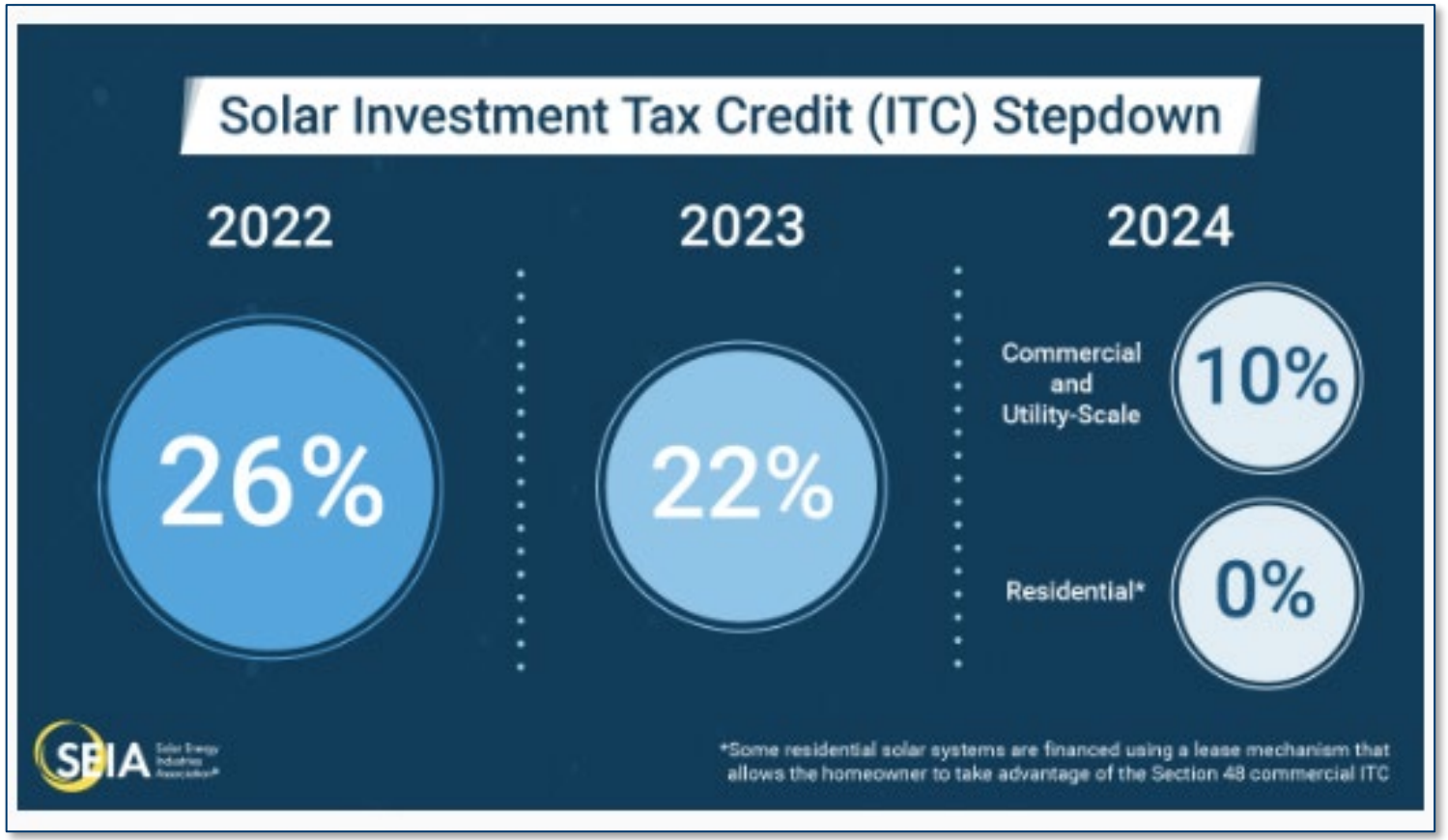
ITC (Investment Tax Credit) phase-down schedule



Source: *SEIA ITC info page*

ESS ITC eligibility for Commercial customers: ESS must be paired with PV and charge at least 75% from solar

Section 48 of the Internal Revenue Code governs commercial and utility projects

ITC qualification for commercial projects; commence construction and placed in service language

IRS Notice 2018-59 established Commence Construction guidance, which determines the amount of ITC a project qualifies for based on when construction starts. There are two ways to start construction:

1. *Starting "physical work of a significant nature" at the project site or on equipment for the project at a factory (Physical Work Test)*
2. *Incurring at least 5 percent of the total project cost (Five Percent Safe Harbor Test). Costs are not considered incurred until equipment or services are delivered.*

Both methods require that a taxpayer make continuous progress toward the completion of the project once construction has begun.

The ITC is taken in the year equipment is put in service. Equipment is considered “placed in service” once it has been fully installed and delivered to the owner and is capable of being used by the owner for its intended purpose.

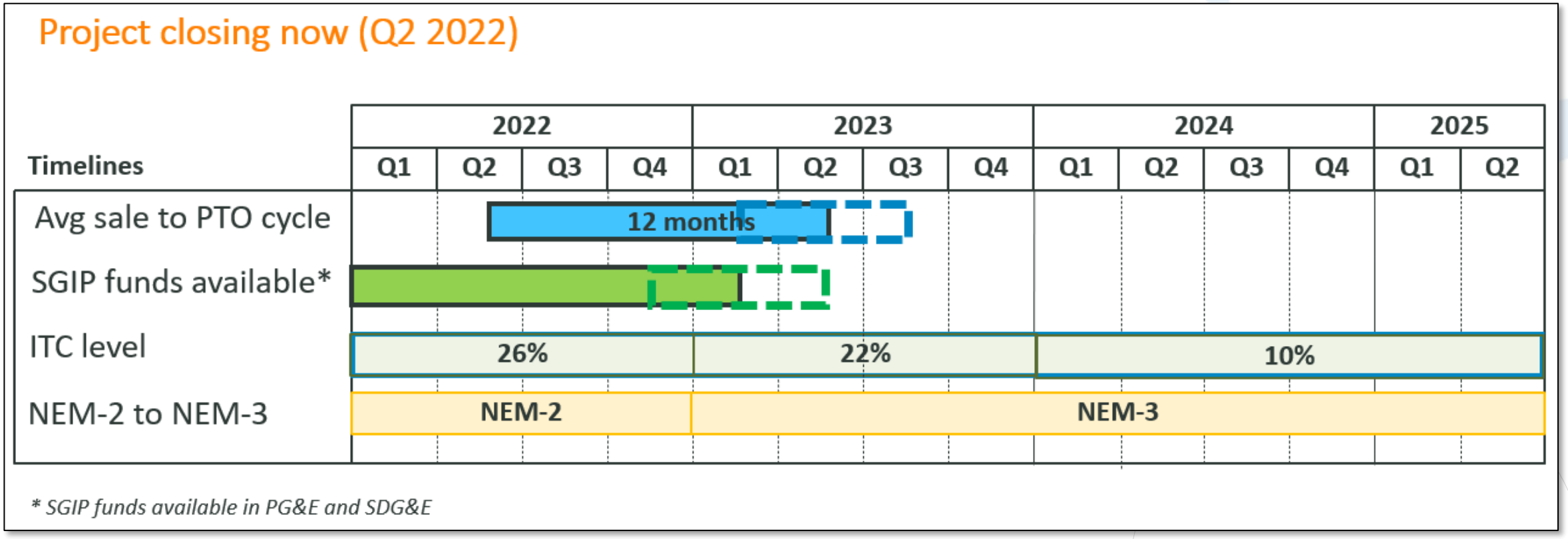
The prospect for standalone Energy Storage ITC legislation is still alive, but remains uncertain

- The $2.2 trillion Build Back Better (BBB) bill passed the House in Nov 2021; died in Dec 2021 when Senator Manchin (D-WV) publicly opposed the bill, which needed the support of all 50 senate Democrats.

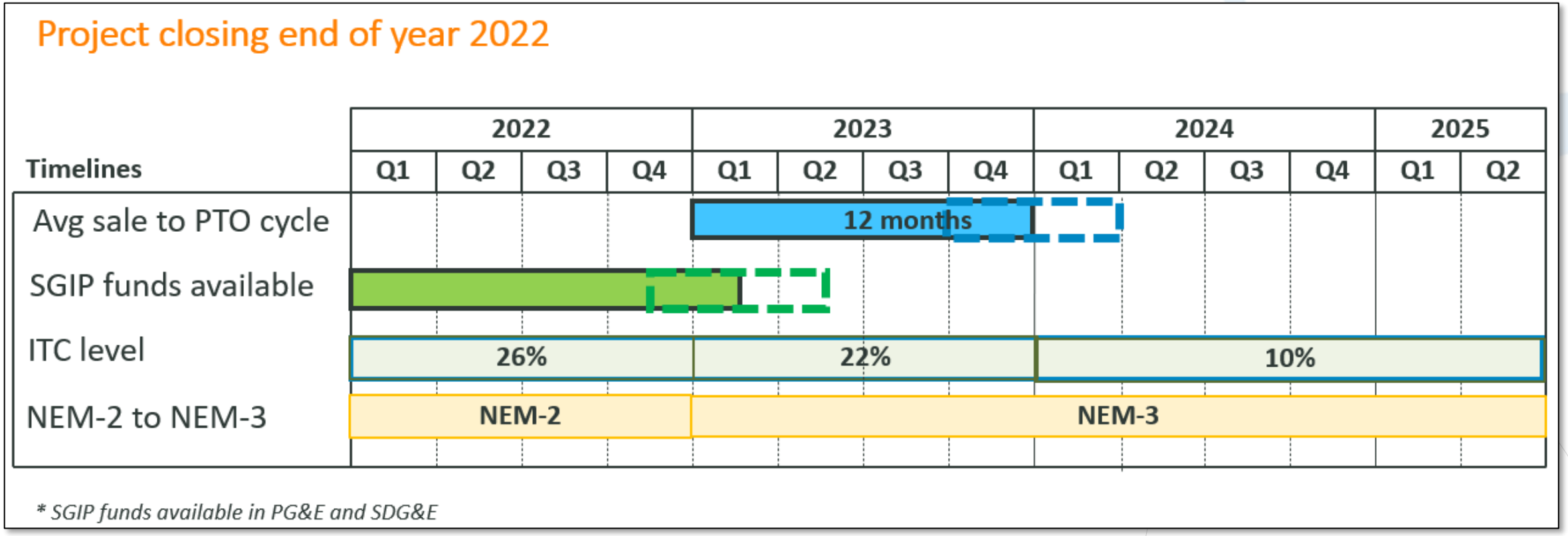
- BBB bill that passed the House included $555 billion in climate change investments, $320 billion of which were tax credits. This included a 30% federal investment tax credit (ITC) for standalone energy storage projects, which also included a “direct pay” option that provides direct cash payment for those that qualify, enabling tax-exempt entities to access the credits.

- House Democrats are working to revive the climate change portion of the BBB legislation via a narrower, scaled-back version of the bill. Recent reporting has indicated there is still hope and a path for the tax credits to get done.

A project closing now would likely get a 22% ITC, NEM-2, and SGIP funds*.



A project closing end of this year *would likely* get a 22% ITC, NEM-3, and no SGIP.



ESS SUPPLY CHAIN & PRICING

ETB's Battery & Energy Storage System – Supply Chain and Pricing Report (Q2 2022)

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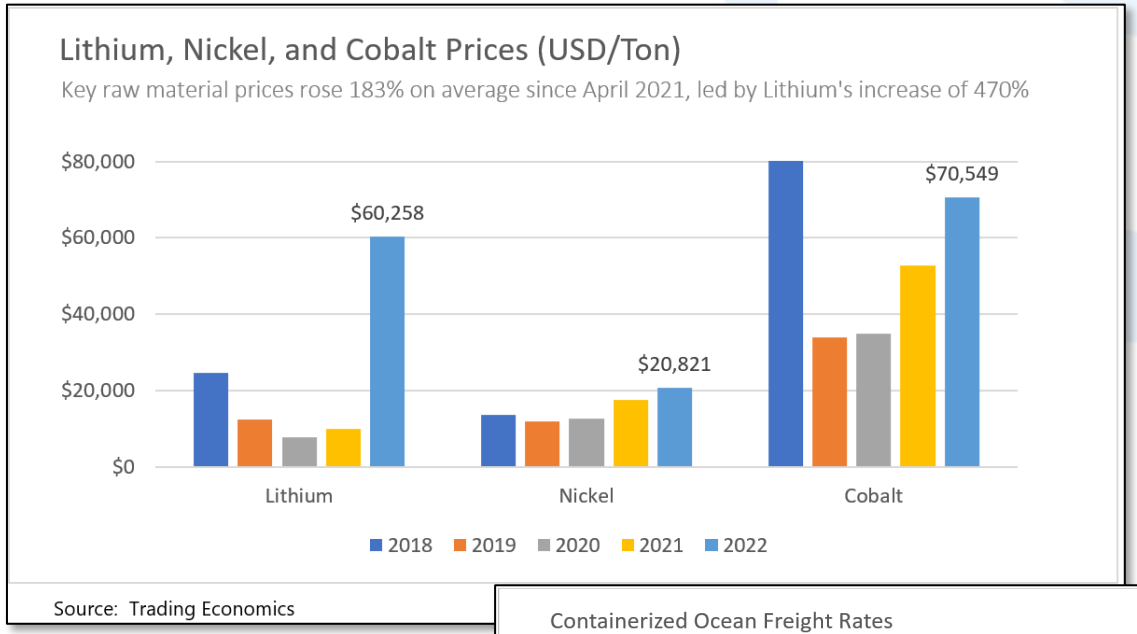
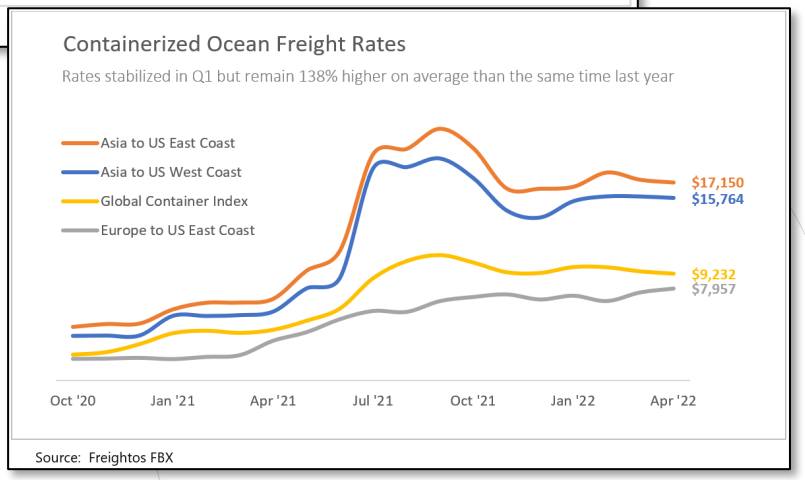
Last Call for Commercial Storage SGIP incentives

[ETB's Battery & Energy Storage System – Supply Chain and Pricing Report (Q2 2022)]

Sections of the report:

- COVID Disruptions
- Raw Materials
- Electric Vehicles
- Inflation
- Shipping and Transportation





NEM-3

- What's the latest timeline?
- What will it mean for ESS?

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The key NEM-3 issues for C&I customers from the December 2021 Proposed Decision (PD)

- Exports are based on the Avoided Cost Calculator (ACC), using hourly time-of-export periods. ACC gets updated every year.
- No Grid Benefits Charge (GBC) for commercial; only residential
- MTC (Market Transition Credit) is the glidepath mechanism
- Also: 15-year term for NEM-2, instant netting, monthly true-ups
- [(ETB Blog) Energy Toolbase's Summary of the CPUC's NEM-3 Proposed Decision (PD) – Key Issues to Know]

May 2022 Update: NEM-3 is delayed once again as the CPUC re-opens the record and requests additional information

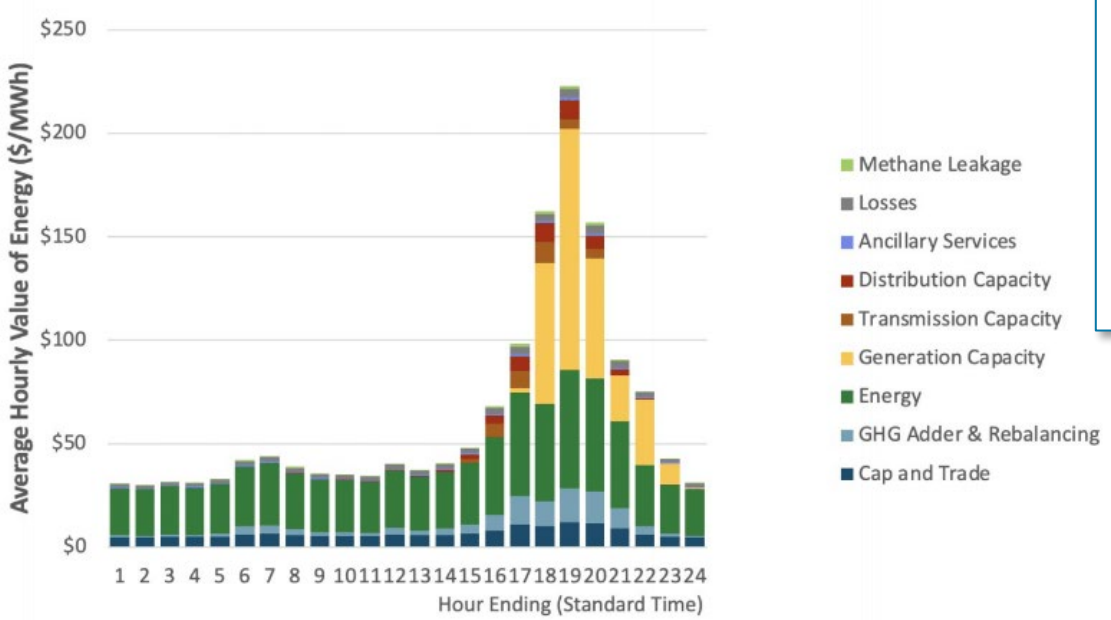
CPUC issued a ruling in May-2022 requesting more information in 3 categories: (1) Solar Tax, (2) The Glidepath, (3) Low-income community solar

How does this affect the NEM-3 implementation timeline?

- Opening comments due June 10; Reply comments due June 24
- Earliest final Decision is now around the end of August
- Implementation deadline for NEM-3 comes ~120 days after the final decision, this would set a cutover date for the new NEM-3 tariff around the end of this year

Based on 2022 ACC values, PV exports will be worth $0.05 to $0.06/kWh on average

Avoided Cost Calculator Values



Value of Solar in the Avoided Cost Calculator ($/kWh)

	01	02	03	04	05	06	07	08	09	10	11	12
1	0.052	0.042	0.019	-0.004	0.004	0.016	0.012	0.040	0.047	0.055	0.043	0.043
2	0.042	0.040	0.021	0.008	0.005	0.020	0.009	0.039	0.043	0.042	0.054	0.041
3	0.044	0.041	0.025	-0.001	0.022	0.018	0.024	0.037	0.047	0.041	0.042	0.039
4	0.044	0.042	0.024	0.004	0.006	0.027	0.011	0.039	0.049	0.047	0.041	0.040
5	0.046	0.039	0.026	0.015	0.012	0.020	0.009	0.041	0.049	0.055	0.044	0.040
6	0.045	0.048	0.045	0.034	0.029	0.030	0.033	0.041	0.050	0.043	0.051	0.057
7	0.054	0.045	0.068	0.026	0.031	0.032	0.045	0.038	0.048	0.046	0.046	0.050
8	0.054	0.049	0.038	0.029	0.016	0.036	0.043	0.033	0.038	0.038	0.043	0.051
9	0.042	0.048	0.032	0.010	0.018	0.052	0.038	0.032	0.036	0.035	0.036	0.047
10	0.045	0.039	0.028	0.006	0.022	0.049	0.047	0.033	0.035	0.035	0.040	0.047
11	0.042	0.033	0.030	0.011	0.022	0.038	0.064	0.037	0.034	0.031	0.030	0.045
12	0.038	0.033	0.023	0.010	0.018	0.048	0.058	0.094	0.035	0.034	0.039	0.054
13	0.044	0.039	0.018	0.007	0.016	0.058	0.064	0.059	0.041	0.036	0.030	0.041
14	0.037	0.035	0.020	0.005	0.016	0.069	0.075	0.068	0.038	0.038	0.036	0.051
15	0.037	0.045	0.032	0.005	0.024	0.072	0.092	0.069	0.044	0.085	0.035	0.041
16	0.042	0.064	0.050	0.018	0.050	0.067	0.145	0.117	0.062	0.057	0.101	0.043
17	0.101	0.065	0.090	0.104	0.079	0.073	0.147	0.146	0.138	0.075	0.095	0.067
18	0.071	0.072	0.065	0.087	0.075	0.086	0.177	0.168	0.938	0.079	0.071	0.064
19	0.100	0.086	0.087	0.058	0.084	0.096	0.150	0.197	1.575	0.105	0.077	0.073
20	0.079	0.091	0.109	0.087	0.105	0.110	0.160	0.138	0.806	0.055	0.074	0.075
21	0.074	0.075	0.082	0.086	0.065	0.056	0.065	0.065	0.342	0.046	0.064	0.070
22	0.060	0.070	0.041	0.028	0.008	0.029	0.038	0.048	0.431	0.042	0.056	0.062
23	0.051	0.052	0.026	0.007	0.003	0.017	0.017	0.039	0.163	0.040	0.052	0.050
24	0.046	0.046	0.021	0.018	0.001	0.013	0.008	0.040	0.048	0.043	0.046	0.045

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PV+ESS Economics: NEM-2 vs NEM-3, Church 100% Offset

NEM-3 run assumptions:

- SDG&E, DG-R
- PV system sized to offset 100% of annual consumption
- 42% of PV reduces imports ($0.244/kWh value)
- 58% of PV exports to grid ($0.062/kWh value)
- $14.92/kW DC PV – Grid Benefits Charge

	NEM-2	NEM-3 (exports @ 2022 ACC)
Avg blended value of PV ($/kWh)	$0.262	$0.175
ESS Savings ($/kWh of ESS Capacity)	$85	$137

NEM-2		NEM-3 (exports @ 2022 ACC)		NEM-3 (exports @ 2022 ACC + GBC)	
Payback (yrs)	4.7	Payback (yrs)	5.2	Payback (yrs)	9.6
IRR (25-yr)	17.8%	IRR (25-yr)	15.9%	IRR (25-yr)	8.9%

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Support CALSSA and take action to help save the solar industry

- June 2nd rallies in SF & LA. Register here.
- Call the Governor. Scripts and info here.
- Donate to CALSSA's NEM Defense Fund

ESS DEVELOPER – SURVEY RESULTS

Take our survey

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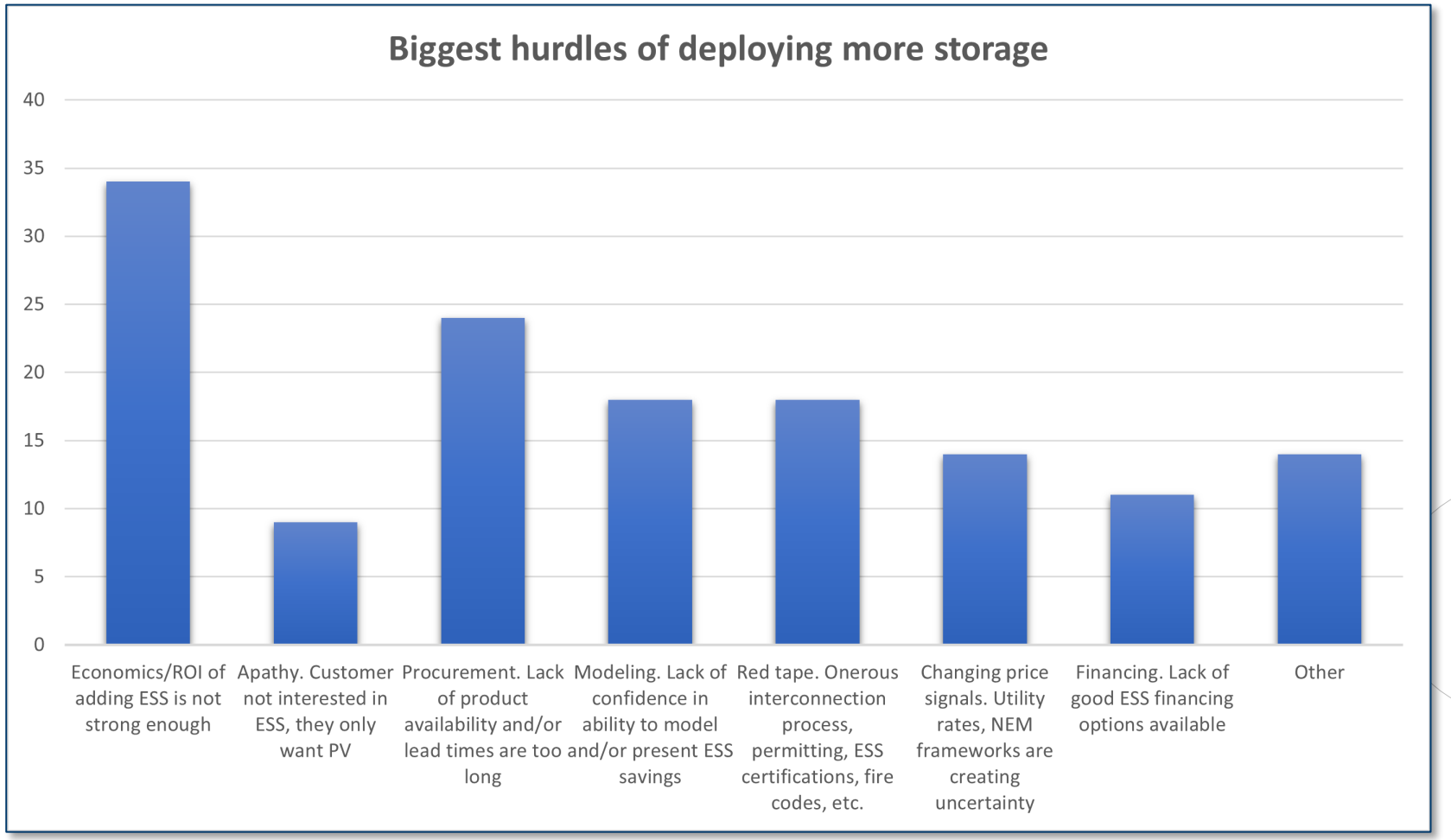
What are the biggest hurdles preventing you from deploying more Energy Storage projects? (check all that apply)



Economics/ROI of adding ESS is not strong enough

Apathy. Customer not interested in ESS, they only want PV

Procurement. Lack of product availability and/or lead times are too long

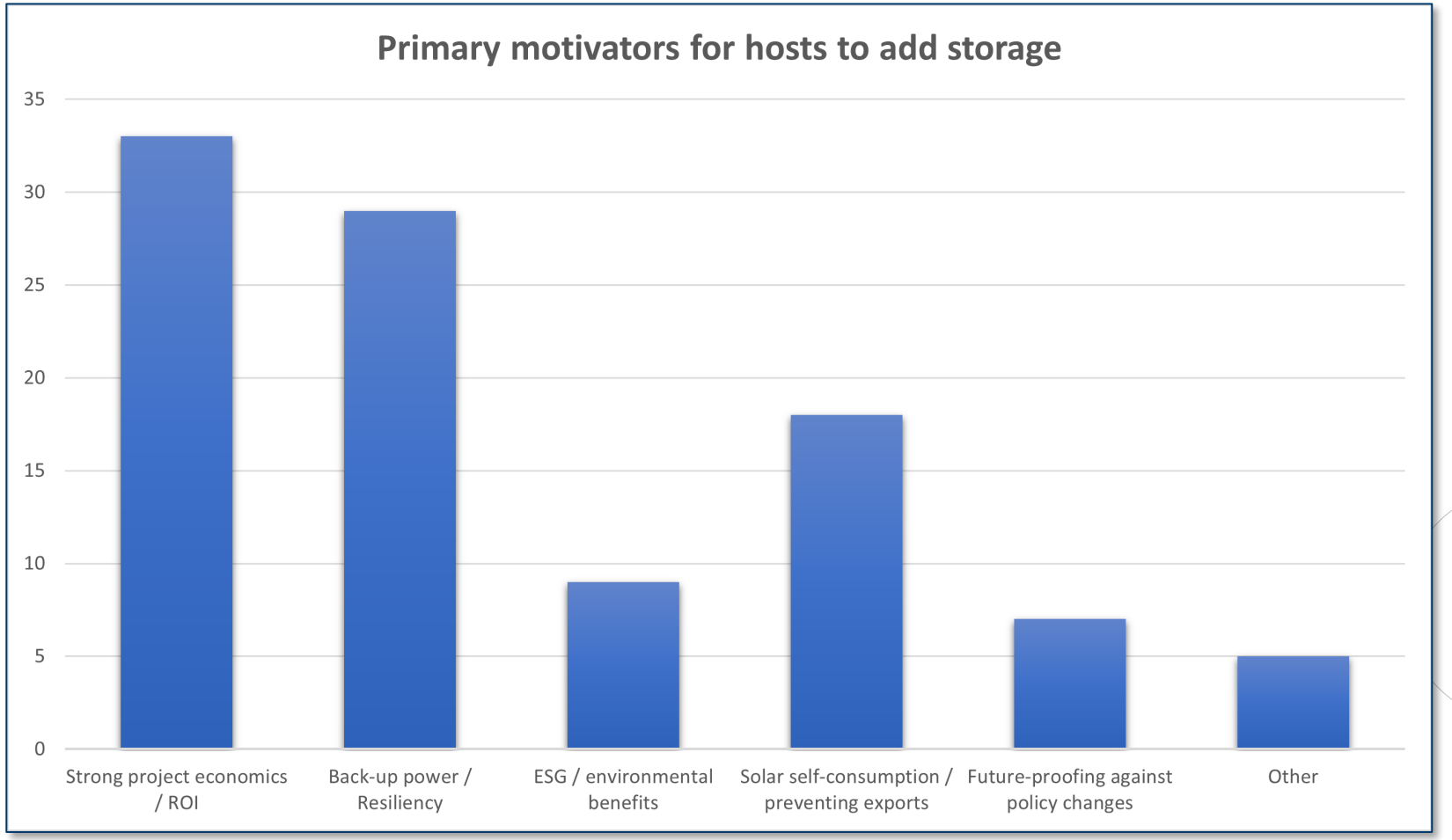
Modeling. Lack of confidence in ability to model and/or present ESS savings

Red tape. Onerous interconnection process, permitting, ESS certifications, fire codes, etc.

Changing price signals. Utility rates, NEM frameworks are creating uncertainty

Financing. Lack of good ESS financing options available

What are the primary motivators for your host customers to add energy storage? (check all that apply)



Strong project economics / ROI

Back-up power / Resiliency

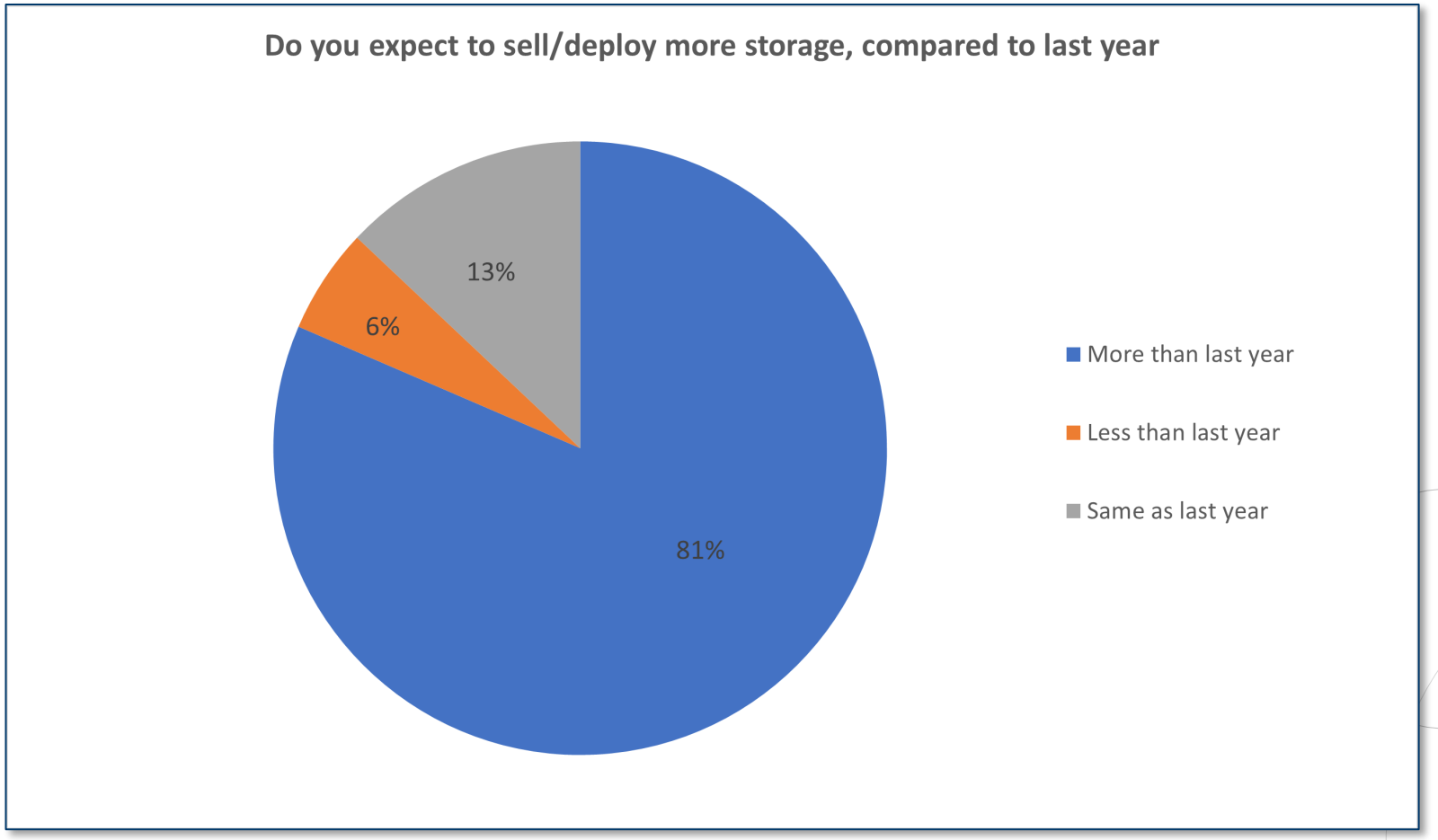
ESG / environmental benefits

Solar self-consumption / preventing exports

Future-proofing against policy changes

**** C&I responses only displayed***

Do you expect to sell/deploy more ESS over the next year, compared to last year?



More than last year:

81%

Less than last year:

6%

Same as last year:

13%

ETB DEVELOPER – ESS MODELING STATS

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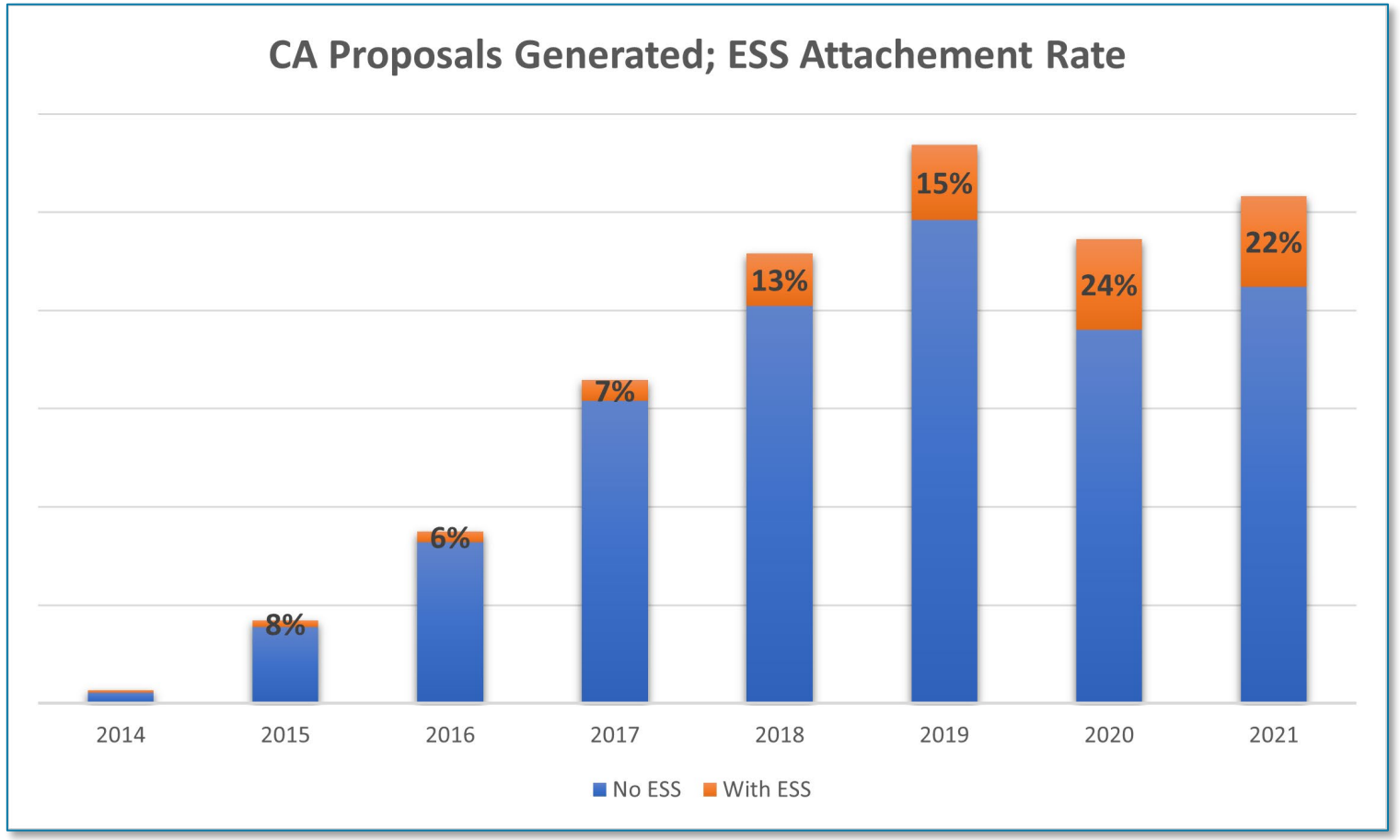
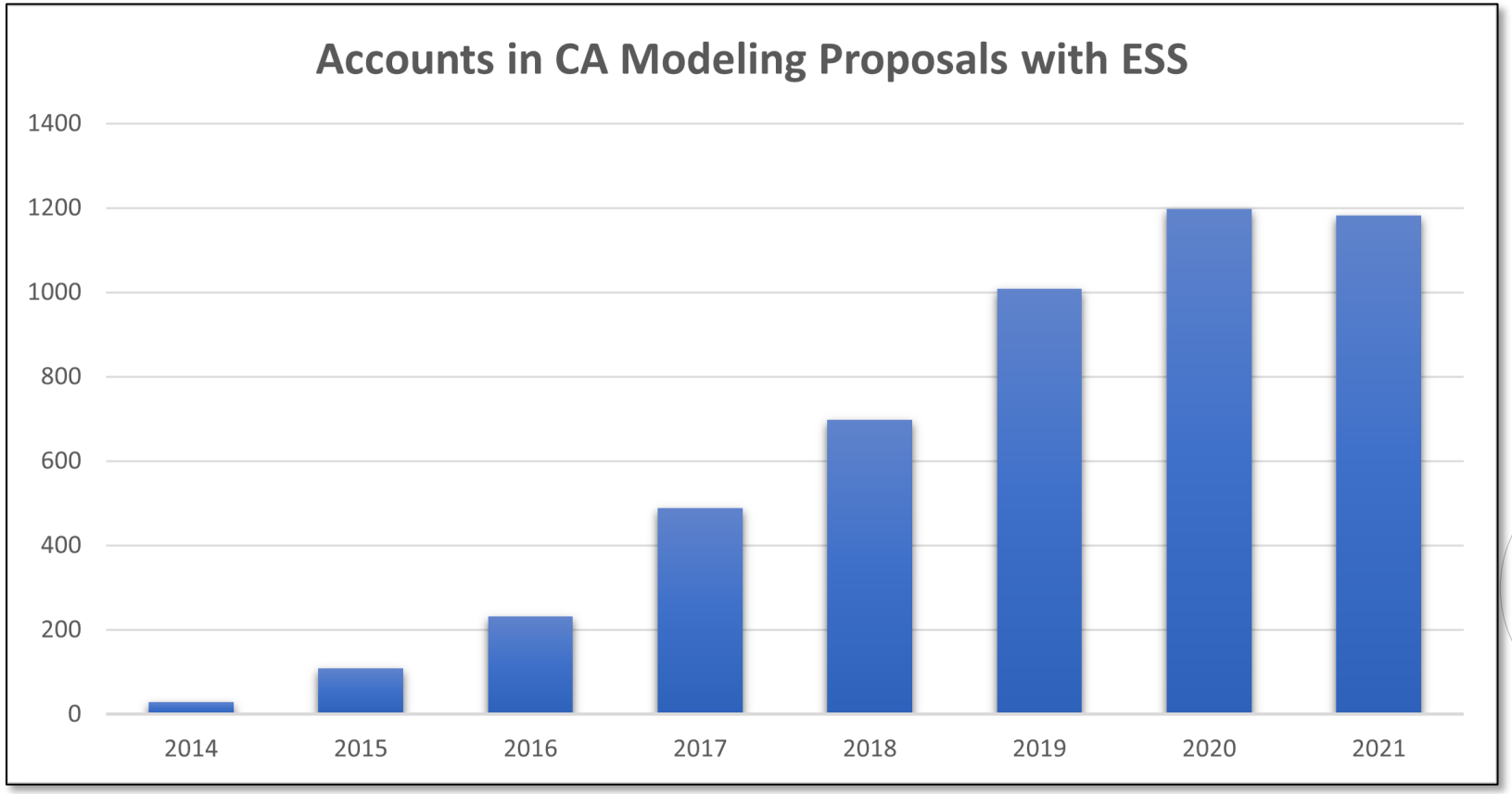
The ESS attachment rate for C&I projects modeled in ETB Developer in California are steadily growing



"Attachment rate" is steadily growing.

COVID pothole in 2020, explains the reduction in overall proposals.

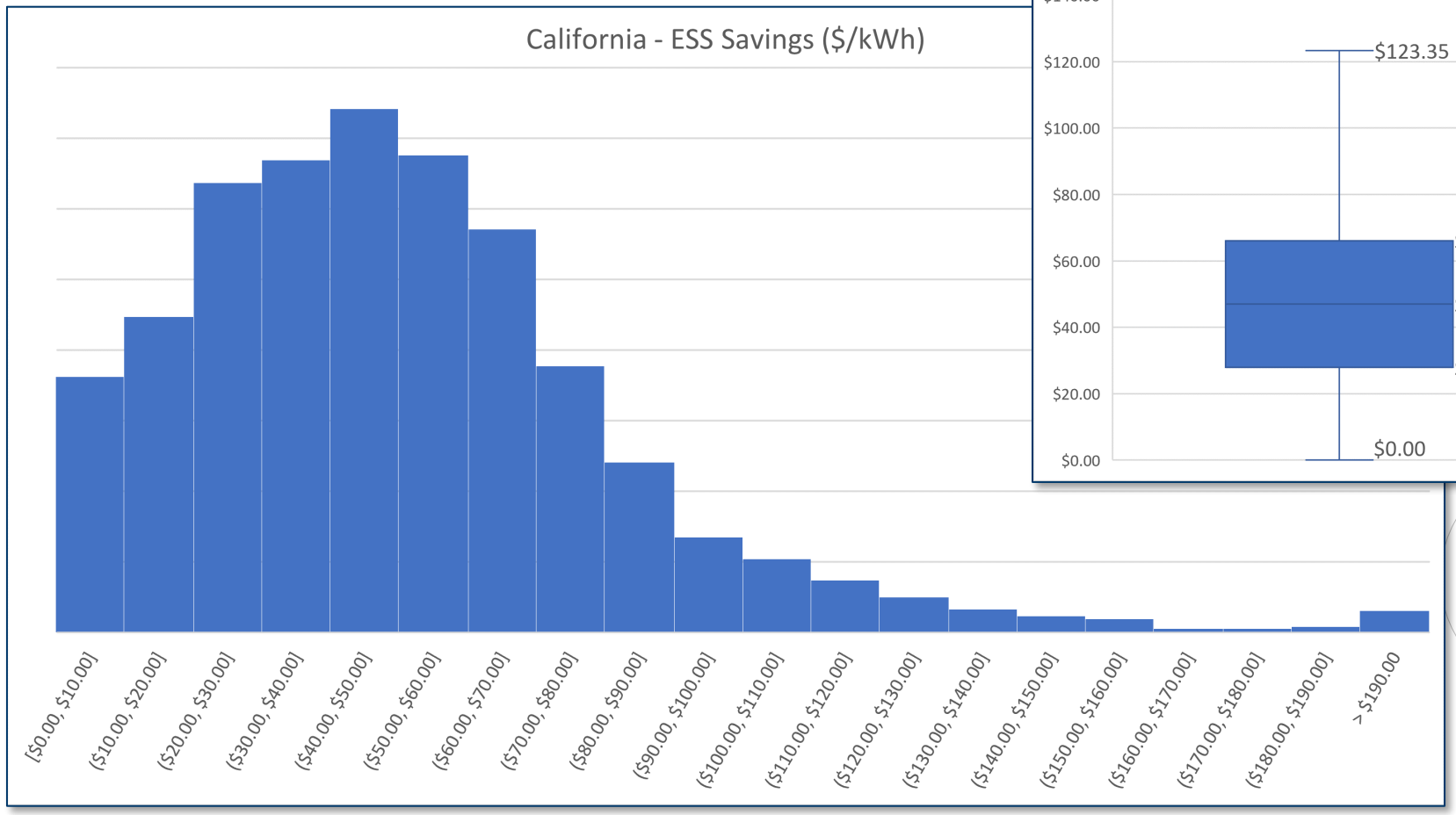
The number of companies that have modeled an ESS project in California in ETB Developer is steadily growing



The number of Accounts modeling ESS in California is consistently and rapidly growing

70% CAGR from 2014 to 2021

California C&I runs – ESS Savings ($/kWh)



ESS Savings ($/kWh) =

Total Bill Savings from ESS / ESS Battery Capacity (kWh)

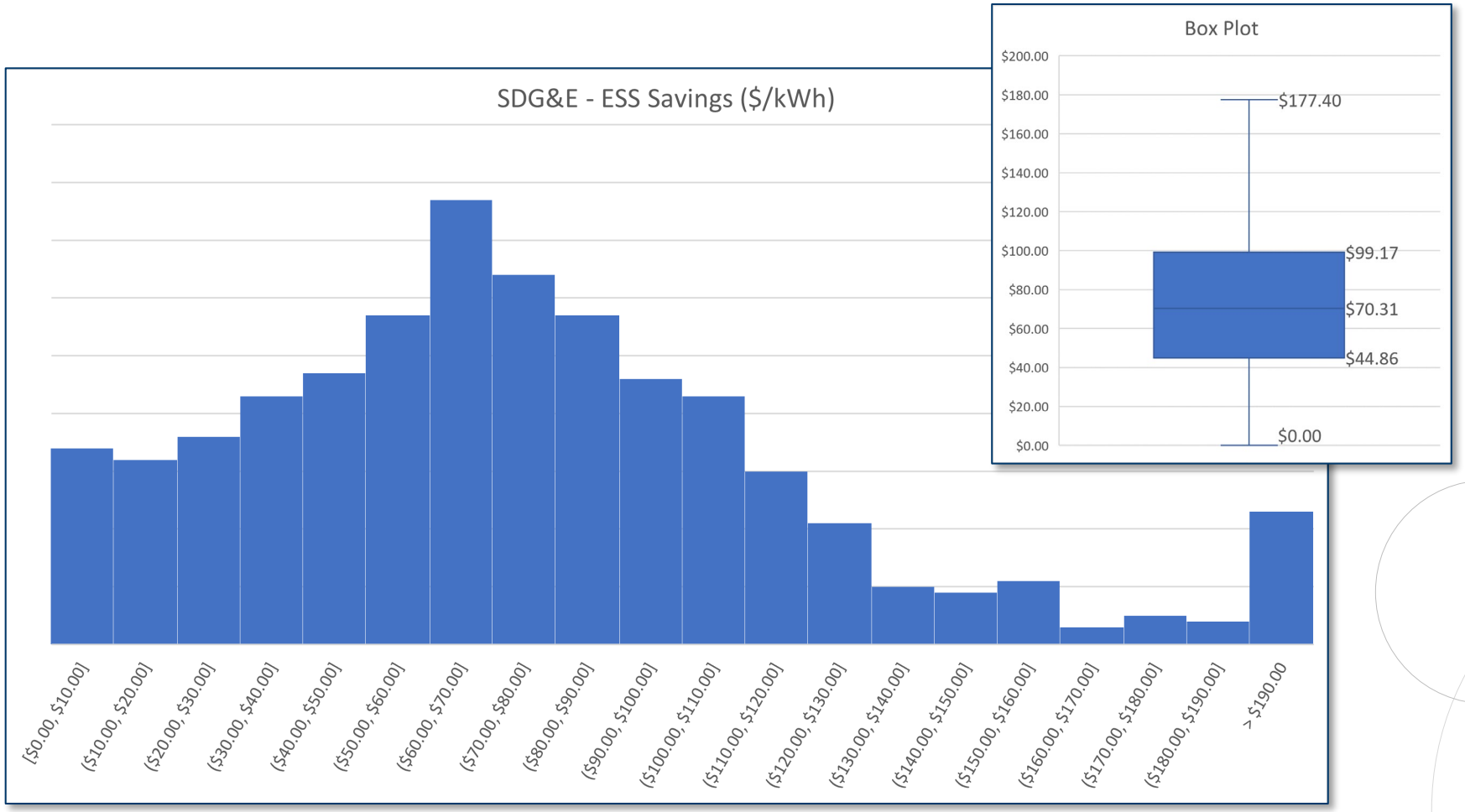
Quartiles:

- $27.88/kWh
- $46.95/kWh
- $66.07/kWh

Assumptions:

- > 30 kW ESS projects
- EMS Vendor runs only
- v4 site only

Of the 3 IOU's, SDG&E had the highest median and quartile levels for ESS Savings ($/kWh)



ESS Savings ($/kWh) =

Total Bill Savings from ESS / ESS Battery Capacity (kWh)

Quartiles:

- $44.86/kWh
- $70.31/kWh
- $99.17/kWh

Assumptions:

- > 30 kW ESS projects
- EMS Vendor runs only
- v4 site only

OTHER TAILWINDS

- DRAM Program / Leap
- Utility rate inflation
- PV+ESS PPA Financing

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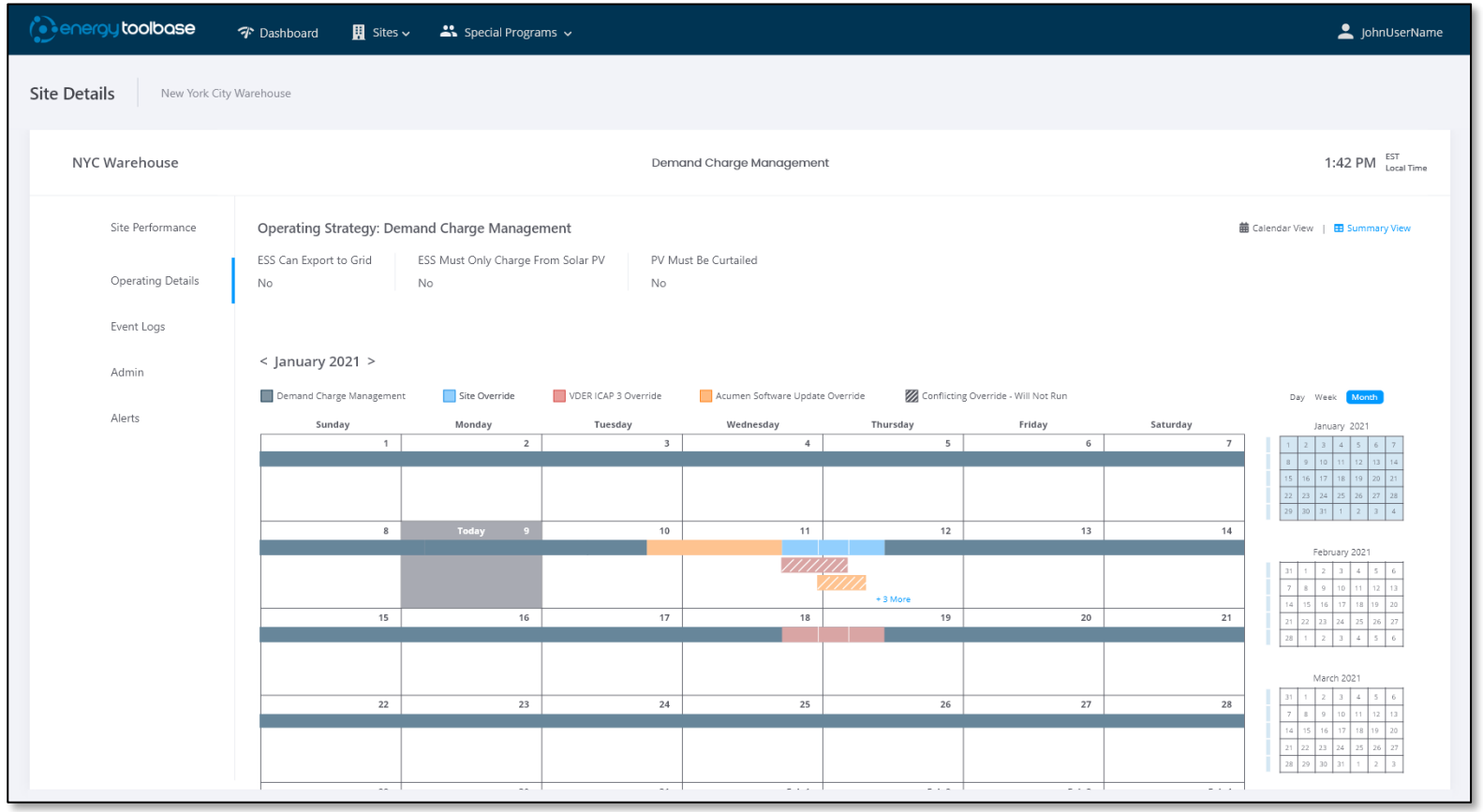
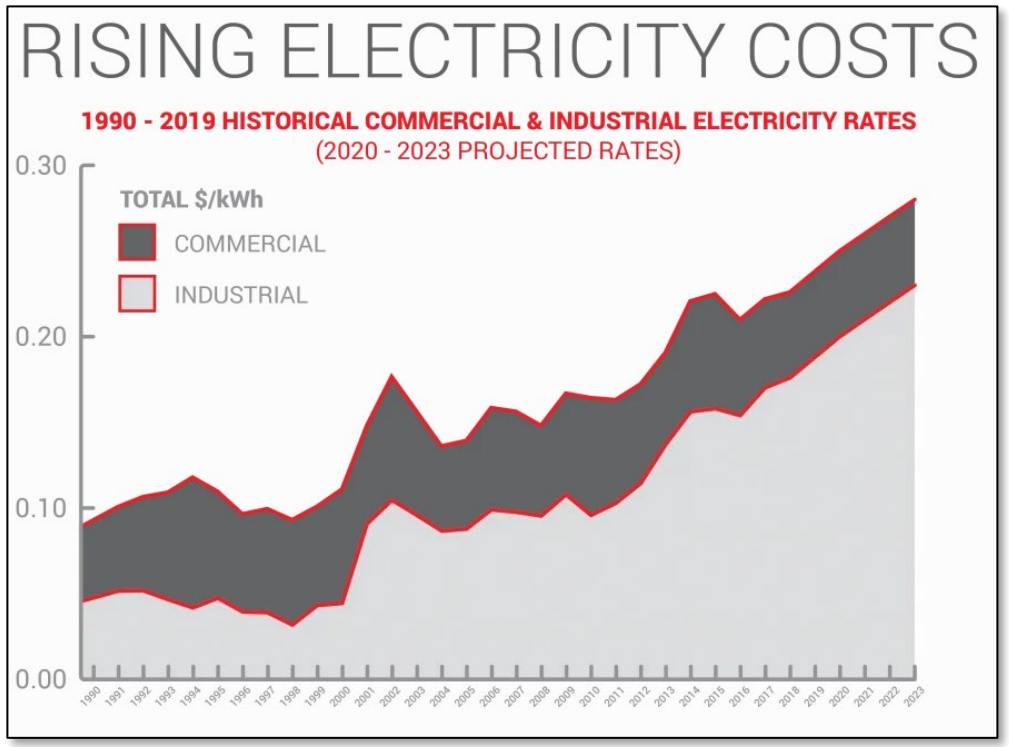
DRAM (Demand Response Auction Mechanism) Program offers C&I BTM Storage projects an additional revenue opportunity

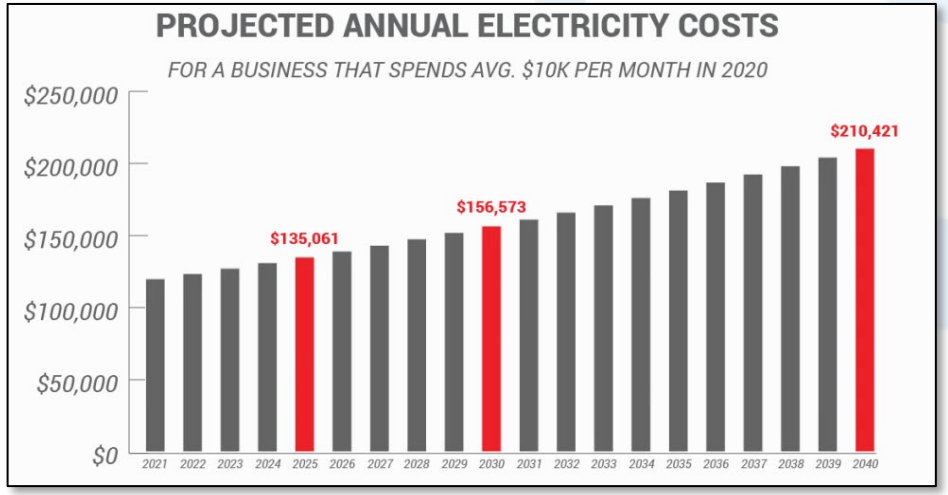


- DRAM was created by CPUC in 2014 to help balance the grid for CAISO.
- DRAM is a day ahead, pay-as-bid program, for curtailing energy.
- ETB is currently in the process of deploying its first portfolio of DRAM projects, working with Leap Energy.

Retail electric rates in California continue to escalate, making solar and storage projects economically viable



Source: ***Revel Energy***



Recent IOU rate increases driven by:

- Grid hardening and modernization efforts for wildfire safety programs
- Distribution and transmission upgrades
- Increasing natural gas costs

Financing options for C&I Solar + Storage projects are continuing to mature and get more cost-competitive.

- 3rd Party Financing market: mature, competitive, credible

- ETB recently announced the launch of our Financial Integrations feature, enabling instantaneous financing quotes for solar + storage projects. More integrations will be announced soon.

- Green Bridge PPA's and operating leases for:
  - C&I, Municipal and State governments, Universities and Colleges, K-12 schools, and Hospitals, non-profits such as churches, and C&I customers such as office, retail, industrial, and warehouse-type facilities.

5.2 PPA GreenBridge

Assumptions and Key Financial Metrics

Total Payments	$4,113,470	Energy Cost Escalation Rate	3.0%	Total Electric Bill Savings over Term	$7,746,417
PPA Annual Escalation Rate	3	PV Degradation Rate	0.80%	PPA Rate	0.1821
Payback Period	0.0 Years	TERM	20		

Years	PPA Payments	SGIP Incentive	Electric Bill Savings	State Tax Effect	Federal Tax Effect	Total Cash Flow	Cumulative Cash Flow
Upfront	-	$200,004	-	-	-$42,001	$158,003	$158,003
1	-$167,091	$71,747	$320,777	-$12,295	-$44,759	$168,380	$326,383
2	-$170,727	$71,747	$325,683	-$12,397	-$45,004	$169,302	$495,685
3	-$174,430	$56,510	$330,594	-$12,493	-$42,038	$158,142	$653,828
4	-$178,203	-	$335,507	-$12,584	-$30,391	$114,329	$768,156
5	-$182,044	-	$340,417	-$12,670	-$30,598	$115,105	$883,262
6	-$185,956	-	$345,319	-$12,749	-$30,789	$115,825	$999,087
7	-$189,938	-	$350,209	-$12,822	-$30,964	$116,485	$1,115,572
8	-$193,993	-	$355,082	-$12,887	-$31,123	$117,080	$1,232,652
9	-$198,119	-	$359,932	-$12,945	-$31,262	$117,606	$1,350,258
10	-$202,318	-	$364,754	-$12,995	-$31,383	$118,058	$1,468,316
11	-$206,592	-	$369,541	-$13,036	-$31,482	$118,431	$1,586,747
12	-$210,939	-	$374,287	-$13,068	-$31,559	$118,721	$1,705,468
13	-$215,361	-	$378,985	-$13,090	-$31,612	$118,921	$1,824,390
14	-$219,859	-	$383,628	-$13,101	-$31,640	$119,027	$1,943,417
15	-$224,433	-	$388,208	-$13,102	-$31,641	$119,032	$2,062,448
16	-$229,083	-	$471,171	-$19,367	-$46,771	$175,949	$2,238,397
17	-$233,811	-	$477,955	-$19,532	-$47,169	$177,444	$2,415,842
18	-$238,616	-	$484,723	-$19,689	-$47,548	$178,871	$2,594,713
19	-$243,498	-	$491,467	-$19,837	-$47,908	$180,224	$2,774,936
20	-$248,459	-	$498,179	-$19,978	-$48,246	$181,496	$2,956,433
Totals:	-$4,113,470	$400,008	$7,746,417	-$290,636	-$785,887	$2,956,433	-

From Project Conception through End of Life

Our team and suite of products takes you through every step of your project's lifecycle

Pre-Install

Post-Install

MODEL THE SITE

ETB Developer

Gold standard, industry leading software platform for modeling and proposing the economics of solar and storage projects.

CONTROL THE ASSETS

Acumen EMS™

Intelligent control system software utilizing machine learning and AI to forecast and optimally discharge energy storage systems.

MONITOR THE PERFORMANCE

ETB Monitor

Robust monitoring platform providing complete transparency into the real-time operation and performance of solar + storage systems.

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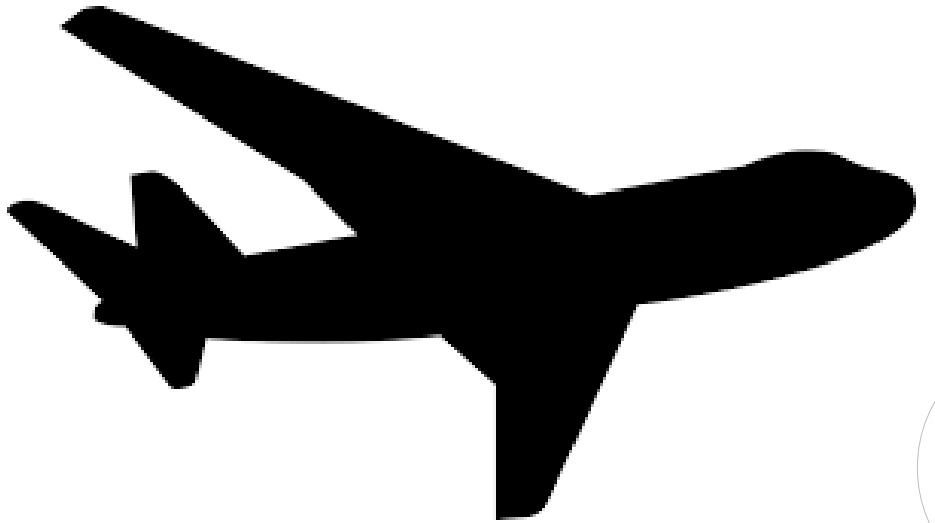
Key takeaways: CA C&I energy storage market headwinds and tailwinds



Tailwinds

- NEM-3
- ETB sourced datapoints
- Rate inflation, DRAM, financing

Headwinds

- SGIP sunsetting
- ITC stepdown
- ESS supply chain

Q&A

California C&I Energy Storage market – State of the Union