

# 2025 STATEWIDE LOAD IMPACT EVALUATION OF CALIFORNIA CAPACITY BIDDING PROGRAMS

CALMAC STUDY ID: PGE0516

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Submitted to:  
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April 1, 2026

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## ABSTRACT

This report details the Program Year (PY) 2025 load impact evaluation for the statewide Capacity Bidding Programs (CBP), offered by three California investor-owned utilities (IOUs): Pacific Gas and Electric (PG&E), Southern California Edison (SCE), and San Diego Gas and Electric (SDG&E). The objective of this evaluation is to assess the performance of the PY2025 CBP in a manner that conforms to the Load Impact Protocols (LIP) adopted by the CPUC in Decision (D.) 08-04-050. The two primary objectives of the CBP load impact evaluation are to conduct an ex post analysis and an ex ante analysis of each IOU's CBP. The goal of the ex post analysis is to estimate CBP load impacts for each PY2025 event, using methods that conform to the LIP. The goal of the ex ante analysis is to forecast CBP aggregate (MWh/h) and per capita (kWh/h) load reductions for PY2026 through PY2036 and conduct a "backcast" of PY2025 under 1-in-2 and 1-in-10 weather scenarios.

The CBP is a statewide price-responsive aggregator program launched in 2007. While each of the IOUs' CBP offerings are slightly different, the PY2025 program enables aggregators to contract with groups of residential and non-residential customers to collectively respond to CBP events. Each aggregator can make nominations to one or more of the various CBP offerings (referred to as "products") that vary by customer class, event triggers, and prices. The aggregator receives day-ahead (DA) or day-of (DO) notifications<sup>1</sup> of events and arranges for load reductions during the event. The aggregator then receives monthly capacity payments based on nominated capacity (even if an event is not called), plus additional energy payments for bundled customers based on the kWh reductions during CBP events. These additional energy payments are only available at SCE and SDG&E.

PG&E had three test event days in PY2025, SCE had two test event days, and SDG&E had two test event days. The number of customers dispatched for each event ranged from less than 15 to 685 across the IOUs. All SCE and SDG&E customers nominated in a given month were dispatched for each test event, while close to all nominated PG&E customers were dispatched for each test event.

The ex post analysis used a customer-specific hourly regression approach for estimating the load impact of each event dispatch. Estimated load impacts are detailed for each event dispatch in this report along with the event performance by local capacity area (LCA), SubLAP, and industry type. Ex ante load impacts are presented by LCA, SubLAP, and customer size for each IOU's CBP from 2026 through 2036 based on participant enrollment forecasts and prior program performance.

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<sup>1</sup> PG&E and SCE only have Day-Ahead CBP products.

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# 1 EXECUTIVE SUMMARY

This report presents the statewide load impact evaluation of the Capacity Bidding Program (CBP) for the Program Year (PY) 2025. The report covers the statewide CBP offered by three California investor-owned utilities (IOUs): Pacific Gas and Electric (PG&E), Southern California Edison (SCE), and San Diego Gas and Electric (SDG&E).

## Evaluation Objectives

The objective of this evaluation is to assess the PY2025 CBP in a manner that conforms to the Load Impact Protocols (LIP) adopted by the CPUC in Decision (D.) 08-04-050. At a high level, there are two main objectives related to the CBP load impact evaluation:

- **Ex Post Analysis:** The goal of the ex post analysis is to estimate load impacts for PY2025 CBP events that conforms to the LIP.
- **Ex Ante Analysis:** The goal of the ex ante analysis is to forecast CBP aggregate (MWh/h) and per capita (kWh/h) load reductions out 11 years for PY2026 through PY2036 and conduct a “backcast” for PY2025 under both 1-in-2 and 1-in-10 weather scenarios in a manner that conforms to the LIP.

## Program Overview

The CBP is a statewide price-responsive aggregator program launched in 2007. While each of the IOUs’ CBP programs are slightly different in their offerings, the current program enables aggregators to contract with groups of residential and non-residential customers to collectively respond to events. Each aggregator can make nominations to various program offerings (referred to as “products”) that vary by customer class, event triggers, and prices. The aggregator receives day-ahead and/or day-of notifications of events and arranges for load reductions during the event (only SDG&E offers day-of CBP products). <sup>2</sup>

## ROLE OF AGGREGATORS

In the CBP, third-party aggregators are the entities responsible for contracting with eligible customers for participation. They design and manage their customer marketing, customer acquisition, and retention, and also notify all contracted customers of CBP events. Additionally, aggregators receive all payments and penalties from the IOUs and compensate their enrolled customers for participation. Each aggregator’s customers are grouped into distinct resources<sup>3</sup> by sub-load aggregation points (SubLAP), and each

<sup>2</sup> PG&E and SCE only have Day-Ahead CBP program products.

<sup>3</sup> A resource is a group of enrolled CBP customers under a single option, aggregator, and SubLAP, to be dispatched together.

resource provides a single monthly nomination, whereupon all contracted customers within a resource are dispatched by the aggregator.

### ELIGIBILITY

The CBP is open to all bundled customers that are billed on a utility residential (PG&E and SCE only), commercial, industrial or agricultural rate schedule. The CBP is also available to Direct Access and Community Choice Aggregation (CCA) customers. CBP participation is available through a third-party aggregator or is accessible to qualifying customers acting as a self-aggregator. Customers may not be enrolled in another capacity DR program but can, however, dually enroll in the Emergency Load Reduction Program (ELRP) or the Critical Peak Pricing (CPP) plan (SDG&E only).

### INCENTIVES

Aggregators receive capacity payments based on their monthly nominated capacity, product selection, event duration, and delivery performance. If an aggregator's delivery capacity underperforms the stated tariff threshold, the aggregator receives a capacity shortfall penalty. For months with no dispatched events, CBP aggregators receive the full monthly capacity payment (based on their nominations) with no energy payments. Additional energy payments (\$/kWh) are made to the aggregator based on the measured kWh reductions achieved during dispatched events. Additional energy payments are only available for SCE and SDG&E bundled customers.

### CBP PRODUCT OFFERINGS

As stated previously, each IOU's CBP product offerings are unique. Each IOU's CBP products are described below.

**PG&E CBP.** PG&E's CBP operates from May through October and only offers day-ahead participation. PG&E's CBP offered one product in PY2025: Elect DA. The Elect DA product operates with a maximum event duration of four hours and can be dispatched between 5 p.m. and 10 p.m. during the month of May and between 4 p.m. and 9 p.m. during the months of June through October. For PG&E, Aggregators set their own CAISO market bid price. CBP events can be called Monday through Saturday, excluding holidays, and aggregators provide separate nominations for weekday and Saturday events. PG&E's CBP is open to both residential and non-residential participation. However, there was no residential CBP participation in PY2025.

**SCE CBP.** In 2025, SCE launched the CBP Elect (CBP-E) product, replacing the prior CBP Day Ahead (CBP DA) product. The CBP-E has three price trigger options (\$200/MWh, \$400/MWh, and \$600/MWh) and operates from May through October, between 5 p.m. and 10 p.m. during the month of May and between 4 p.m. and 9 p.m. during the months of June through October. As of the publication of this report, SCE's CBP-E has only had enrollment in the \$600/MWh option. Events can be called Monday through Saturday (excluding holidays) during May through September and Monday through Friday (excluding holidays) in

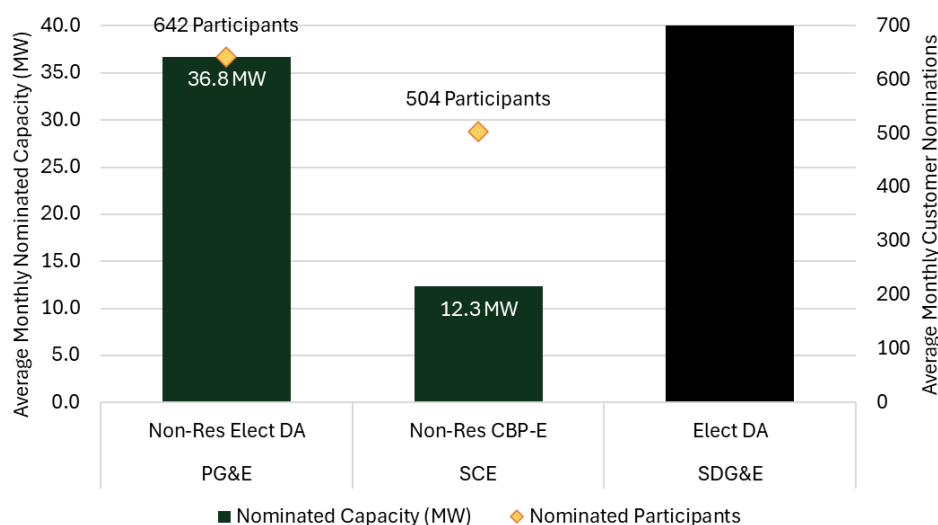
October. SCE's CBP-E is open to both residential and non-residential participation. However, there was no residential participation in SCE's CBP-E product in PY2025.

**SDG&E CBP.** SDG&E offers two CBP products that are only open to non-residential customers: the *Elect DA 1-9 Hour* and the *Elect DO 1-9 Hour*. The *Elect DA 1-9 Hour* is a day-ahead product, and the *Elect DO 1-9 Hour* is a day-of product. Both products operate from 1 p.m. to 9 p.m., have the same three price trigger options between them (\$200/MWh, \$400/MWh, and \$600/MWh), and operate Monday through Saturday during the months of May through October. In PY2025, SDG&E only had participation in the *Elect DA 1-9 Hour* product with the \$600/MWh option.

### PROGRAM NOMINATIONS

Figure 1-1 presents the CBP average monthly nominations for the subscribed IOU's CBP products. No residential participation occurred in PY2025. Additionally, there was no participation in SDG&E's Elect DO product.

**FIGURE 1-1: PY2025 AVERAGE MONTHLY CBP NOMINATIONS BY IOU**



### PY2025 Events

Table 1-1 presents the CBP event day details for PG&E, SCE and SDG&E. These details include the event date, event type, start and end times, and duration, as well as the dispatched customer counts and capacity. As shown, all PY2025 events were test events. PG&E had three test events while SCE and SDG&E each had two test events.

**TABLE 1-1: PY2025 CBP EVENT DETAILS**

IOU	Event Date (2025)	Event Type	Event Start (Prevailing Time)	Event End (Prevailing Time)	Event Duration	Dispatched Customers	Dispatched Capacity (MW)
PG&E	June 27 <sup>th</sup>	Test	7:00 PM	8:00 PM	1	576	35.5
	August 21 <sup>st</sup>	Test	6:00 PM	8:00 PM	2	685	40.8
	September 26 <sup>th</sup>	Test	6:00 PM	7:00 PM	1	83	3.9
SCE	July 30 <sup>th</sup>	Test	5:00 PM	7:00 PM	2	500	12.4
	September 24 <sup>th</sup>	Test	7:00 PM	9:00 PM	2	527	12.9
SDG&E	August 22 <sup>nd</sup>	Test	6:00 PM	8:00 PM	2	■	■
	September 23 <sup>rd</sup>	Test	6:00 PM	8:00 PM	2	28	■

## Methodology

The ex post analysis includes all CBP events in PY2025. Given there was no residential CBP participation in PY2025, the ex post analysis approach was developed exclusively for non-residential customers, relying on a customer-specific regression approach for ex post impacts. The ex post regression models are hourly models, where each hour of the day is modelled separately from other hours of the day. Non-residential customers typically have heterogenous loads, making it difficult to broadly apply a given regression model specification across all customers and thus necessitating site-specific models. Additionally, customer-specific regressions facilitate the various aggregations of results required for reporting (i.e., industry type, customer size, etc.).

For the ex ante analysis of non-residential customers, Verdant used the ex post regression models to develop weather-adjusted reference loads for each customer. Most non-residential customers only participated in one or two events in PY2025, which did not allow for the estimation of weather-adjusted load reductions directly using ex post regression models. As a result, Verdant applied the percent load reductions seen in the ex post analysis to the reference loads to develop ex ante load impacts. Additional degradation rates were applied to the third and fourth hours of dispatch in the ex ante analysis to account for participant fatigue during longer duration event as applicable for each IOU. These are explained further within each IOU's ex ante methodology sections (Sections 4.4, 5.4, and 6.4).

For SCE's residential ex ante analysis, SCE anticipates that the residential CBP-E participants will be comprised of SGIP participants. As a result, the estimation of reference loads is based on Self Generation Incentive Program (SGIP) participants who are expected to participate in DR as a part of SGIP eligibility rules. These reference loads were initially developed for the PY2024 impact evaluation and were carried forward to the PY2025 ex ante analysis. Residential ex ante impacts were derived from PY2025 ex post results of SGIP customers participating in Critical Peak Pricing (CPP). Given no residential participation has occurred in CBP-E, these customers represent the best source of SGIP customer participation in DR.

## Statewide Ex Post Results

Across all IOU's, the PY2025 CBP events represent only non-residential, Day-Ahead CBP participation. PG&E and SCE saw no residential participation in their CBP products, and SDG&E's non-residential Elect Day-Of product was unsubscribed.

Table 1-2 presents the ex post results for each IOU event day as well as the average ex post impact to be used for making comparisons with prior program years, while Table 1-3 presents the average PY2025 delivery performance metrics.

**TABLE 1-2: STATEWIDE EX POST RESULTS SUMMARY BY EVENT**

IOU	Event Date (2025)	Event Hours (HE)	Num. of Customers	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Dispatch Delivery Perf. (%)	Temp (F)
				Ref. Load	Load Impact	Ref. Load	Load Impact			
PG&E	June 27 <sup>th</sup>	20	576	118.8	36.5	206.2	63.3	31%	103%	86
	August 21 <sup>st</sup>	19-20	685	128.4	35.6	187.5	52.0	28%	87%	92
	September 26 <sup>th</sup>	19	83	11.0	1.4	132.4	17.0	13%	36%	76
	Avg. Impact*	20	630	123.4	35.7	195.7	56.6	29%	94%	88
SCE	July 30 <sup>th</sup>	18-19	500	79.8	12.3	159.6	24.6	15%	99%	86
	September 24 <sup>th</sup>	20-21	527	83.8	11.0	159.1	21.0	13%	85%	79
	Avg. Impact**	18-21	514	81.9	11.7	159.4	22.7	14%	92%	82
SDG&E	August 22 <sup>nd</sup>	19-20						%	%	75
	September 23 <sup>rd</sup>	19-20	28					%	%	72
	Avg. Event	19-20						%	%	73

\*No formal average event day was developed for PG&E's PY2025 ex post impact analysis. However, HE 20 was a common event hour on June 27<sup>th</sup> and August 21<sup>st</sup> and is used to represent average event performance when making comparisons to prior years.

\*\*No formal average event day was developed for SCE's PY2025 CBP-E ex post impact analysis. The average impact represents the average hourly impact across all PY2025 event hours.

**TABLE 1-3: STATEWIDE DELIVERY PERFORMANCE**

IOU	Program	Average Nominations		Average Dispatch		Avg. Ex Post Impact	
		Number of Customers	Capacity (MW)	Number of Customers	Capacity (MW)	Capacity (MW)	Delivery Perf. (%)
PG&E	Non-Residential Elect DA	640	38.8	631	38.2	36.1	94%
SCE	CBP-E DA	513	12.7	513	12.7	11.7	92%
SDG&E	Non-Residential Elect DA						%

Note: Average delivery performance metrics include the average nominations from months with a CBP dispatch, excluding PG&E's September re-test event. PG&E delivery performance differs from Table 1-2 as all event hours are included (not just HE 20).

For each IOU, the following ex post results were identified:

**PG&E.** Delivery performance exceeded 100% on June 27<sup>th</sup> (103%), was slightly below expectations on August 21<sup>st</sup> (87%), and was substantially below expectations on September 26<sup>th</sup> (36%). The September 26<sup>th</sup> event was mostly comprised of a re-test of poor performers. As a result, it was expected that this event would yield low dispatch delivery. Average impacts during HE20 (the most common event hour, incorporating June 27<sup>th</sup> and August 21<sup>st</sup> results) yielded per capita load reductions of 65.6 kWh/h on average (29% of load) with an average dispatch delivery performance of 94%. In this hour, PG&E's CBP delivered an average of 35.7 MWh/h.

**SCE.** Delivery performance nearly met nominated capacity on July 30<sup>th</sup> (99%) and was below expectations on September 24<sup>th</sup> (85%). Across all event hours, the average dispatch delivery performance was 92%. Additionally, average per capita load impacts were 22.7 kWh/h across all event hours, with a 14% load reduction, resulting in an average delivery of 11.7 MWh/h in aggregate.

**SDG&E.** SDG&E's CBP ex post performance was substantially influenced by one customer. [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED] As a result, program delivery performance was below expectations in PY2025 with [REDACTED]% and [REDACTED]% dispatch delivery performances for the August and September events, respectively. On average, the PY2025 CBP DA provided [REDACTED] MWh/h of load curtailment ([REDACTED]% load reduction) during PY2025 events.

## Statewide Ex Ante Results

Each IOU provided enrollment forecasts for future program years. Across all years in the ex ante forecast, PG&E anticipates 711 non-residential CBP Elect DA customers in the month of August. PG&E is forecasting zero residential participation for all program years. Additionally, SDG&E anticipates 25 customers to participate in its CBP Elect DA and zero participation in the CBP Elect DO across all years and months in the ex ante forecast. SCE's ex ante forecast contains 609 non-residential participants in 2026 and 795 and in 2027 through 2036. SCE is also forecasting 729 residential customers in all months and years included in the forecast.

There were several ex ante assumptions that influenced the ex ante results for the three IOUs. These are discussed in detail in each IOU's ex ante section later in this report as well as in the general ex ante methodology section (Section 3.3.1). However, there are several high level forecast assumptions worth addressing here. These include:



- **Program and Portfolio Ex Ante Impacts.** While there were some dually enrolled CBP customers for PG&E and SDG&E in PY2024 and PY2025, there were no dual-program event days for these customers. With collaboration from PG&E and SDG&E, it was decided that program and portfolio ex ante impacts would assume no dual-program event days for CBP customers in the ex ante forecasts. Additionally, because the SCE CBP-E customers did not have dual enrollment in PY2025, this same assumption was made for the SCE ex ante analysis as well.
- **Four-Hour Event Dispatch.** The Load Impact Protocol (LIP) 24-Hour Slice-of-Day requirements state that a four consecutive hour dispatch is required in ex ante within Availability Assessment Hours on the worst day of each month<sup>4</sup>. As a result, the ex ante analysis assumes a four-hour dispatch for each IOU. PG&E requested that the first four hours of the five-hour RA window be selected to represent the four-hour event dispatch. SCE and SDG&E requested the last four hours of the RA window to represent the four-hour dispatch. For SDG&E, this represents the hours in which all SDG&E CBP Elect DA events have occurred within the last four program years (from PY2022 to PY2025).
- **SCE Residential Ex Ante.** In PY2025, there was no residential participation in SCE’s CBP-E. As a result, there is no CBP-E ex post analysis available to inform the residential ex ante analysis. Given that SCE anticipates residential participation from SGIP participants, ex ante reference loads were developed from AMI data of SGIP participants that are likely to participate in DR. Residential CBP-E load shapes were developed during the PY2024 evaluation cycle and carried forward into the PY2025 ex ante analysis. Ex ante impacts were developed using PY2025 ex post results of SGIP customers participating in CPP.

Table 1-4 presents the statewide ex ante aggregate (MWh/h) and per capita (kWh/h) load impacts under the August Utility 1-in-2 worst day scenario. Given that PG&E, SCE residential, and SDG&E enrollment forecasts for August do not change from year to year, those August forecasts are the same for PY2026 through PY2036. Ex ante impacts for non-residential SCE CBP-E represent only 2026 impacts due to different forecasted enrollment in subsequent years.

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<sup>4</sup> [LIP Filing Guide 6.1](#) at 11.

**TABLE 1-4: STATEWIDE UTILITY 1-IN-2 AUGUST SYSTEM WORST DAY AVERAGE EX ANTE LOAD IMPACT OVER A 4-HOUR DISPATCH**

IOU	Program	Number of Customers	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
			Ref. Load	Load Impact	Ref. Load	Load Impact		
PG&E	Non-Residential Elect DA	711	148.6	40.0	209.1	56.3	27%	93.0
	Residential Elect DA	0	--	--	--	--	--	--
SCE	CBP-E (Non-Residential)	609	98.9	14.5	162.4	23.8	15%	90.1
	CBP-E (Residential)	729	1.33	0.04	1.82	0.05	3%	87.7
SDG&E	Non-Residential Elect DA	25					%	80.2
	Non-Residential Elect DO	0	--	--	--	--	--	--

Table 1-5 presents the hourly aggregate ex ante load impacts for the 1-in-2 system worst day conditions for CBP operating months. The highlighted yellow, green, and blue hours represent the hours of the RA window for each month. Additionally, the green and blue highlighted hours represent the hours of the four-hour event dispatch. Blue hours alone represent the 2027 CEC forecasted peak hours. These data also represent the slice of day impacts (MWh/h) given the assumptions in the ex ante analysis.

**TABLE 1-5: STATEWIDE ELECT CBP HOURLY TABLES (HE16 THROUGH HE24, MWH/H)**

IOU	Program	Month	Hour Ending								
			16	17	18	19	20	21	22	23	24
PG&E	Non-Residential Elect DA	May	0.0	0.0	28.7	29.5	25.7	25.9	10.3	6.0	0.0
		June	0.0	35.7	36.2	31.4	33.1	13.2	7.9	0.0	0.0
		July	0.0	43.1	43.6	38.1	40.1	16.1	9.5	0.0	0.0
		Aug.	0.0	42.6	42.1	36.9	38.6	14.9	8.9	0.0	0.0
		Sept.	0.0	35.1	34.7	30.1	30.7	11.3	7.1	0.0	0.0
		Oct.	0.0	23.8	23.6	20.5	20.7	7.5	4.9	0.0	0.0
SCE	CBP-E (Non-Residential)	May	0.0	0.0	0.0	12.8	11.8	10.7	11.3	0.9	0.0
		June	0.0	0.0	14.3	13.6	12.2	13.2	1.1	0.0	0.0
		July	0.0	0.0	15.3	14.5	12.9	14.0	1.2	0.0	0.0
		Aug.	0.0	0.0	15.7	14.8	13.2	14.4	1.2	0.0	0.0
		Sept.	0.0	0.0	15.5	14.6	13.0	13.9	1.2	0.0	0.0
		Oct.	0.0	0.0	15.5	14.7	13.0	13.8	1.1	0.0	0.0
	CBP-E (Residential)	May	0.00	0.00	0.00	-0.13	-0.01	0.12	0.17	0.00	0.00
		June	0.00	0.00	-0.13	-0.01	0.12	0.17	0.00	0.00	0.00
		July	0.00	0.00	-0.13	-0.01	0.12	0.17	0.00	0.00	0.00
		Aug.	0.00	0.00	-0.13	-0.01	0.12	0.17	0.00	0.00	0.00
		Sept.	0.00	0.00	-0.13	-0.01	0.12	0.17	0.00	0.00	0.00
		Oct.	0.00	0.00	-0.13	-0.01	0.12	0.17	0.00	0.00	0.00
SDG&E	Non-Residential Elect DA	May									
		June									
		July									
		Aug.									
		Sept.									
		Oct.									

Note: PG&E and SCE non-residential DA impacts are anticipated to exhibit some persistence beyond the four-hour dispatch.

## Findings by IOU

The PY2025 Load Impact analysis findings for each IOU are as follows:

### PG&E FINDINGS

- PY2025 non-residential Elect DA delivery performance decreased relative to PY2024 but was comparable to other previous program years outside of PY2024. The dispatch delivery performance for the June 27<sup>th</sup> test event exceeded dispatched capacity with a 103% delivery performance. The August 21<sup>st</sup> test event had an 87% dispatch delivery performance. The September 26<sup>th</sup> test event, mostly focused around a re-test of poor performers, had a dispatch delivery performance of 36%. On average across June 27<sup>th</sup> and August 21<sup>st</sup> event hours, dispatch delivery performance was 94%.
- Average aggregate impacts for the three PY2025 test events are as follows: 36.5 MWh/h on June 27<sup>th</sup>, 35.6 MWh/h on August 21<sup>st</sup>, and 1.4 MWh/h on September 26<sup>th</sup>.

- HE20 was the most common event hour in PY2025, comprising 62% of all participant event hours. On average, non-residential Elect DA customers provided 56.6 kWh/h of load reductions during this hour.
- The non-residential Elect DA ex ante analysis finds that the non-residential customer segment is anticipated to provide an average hourly load reduction of 40.0 MWh/h to 40.4 MWh/h (depending on the weather scenario) during a four-hour dispatch in 2026 in the month of August.
- The residential Elect DA had no participation in PY2025. PG&E is expecting that the residential customer segment will remain unsubscribed for future program years.

### SCE FINDINGS

- PY2025 was the first year of operation for SCE's CBP-E. Program enrollment in CBP-E increased substantially from the prior PY2024 CBP DA product. Average monthly nominations increased from 1.1 MW in PY2024 to 12.3 MW in PY2025. The number of enrolled customers also increased substantially from 38 on average in PY2024 to 506 in PY2025.
- The CBP-E product had two test events in PY2025. CBP-E customers delivered 12.3 MWh/h during the July event and 11.0 MWh/h during the September event, with dispatch delivery performances of 99% and 85%, respectively. The average delivery performance across all event hours in PY2025 was 92%.
- The SCE CBP-E non-residential ex ante analysis estimates 14.4 to 14.6 MWh/h of dispatchable capacity in August of 2026, depending on the weather scenario. Additionally, SCE CBP-E residential ex ante analysis forecasts an additional 0.04 MWh/h for 2026 for all weather scenarios.

### SDG&E FINDINGS

- SDG&E CBP Elect DA dispatch delivery performance was poor in PY2025. However, this primarily results from one customer, [REDACTED].
- On average, the CBP Elect DA provided [REDACTED] MWh/h of load reductions representing a [REDACTED]% load reduction during event hours. Per capita load impacts were [REDACTED] kWh/h.
- The SDG&E Elect DA ex ante analysis finds that the non-residential customer segment is anticipated to provide an average hourly load reduction of [REDACTED] MWh/h during a four-hour dispatch in 2026, regardless of weather scenario.
- Verdant anticipates dispatch delivery performance to improve for 2026 after the de-enrollment of [REDACTED]. SDG&E is forecasting 25 customers in the ex ante, which represent the enrolled CBP Elect DA customers as of October 2025. These customers' ex post results serve the basis of the ex ante MW forecasts, which closely align with October nominated capacity. Based on these observations, overall delivery performance is expected to improve significantly in PY2026.

## Recommendations

The evaluation team's recommendations for the CBP and future evaluations are as follows:

- **Identify customers with battery storage.** Verdant carries forward the recommendation from the prior evaluations to identify customers that have battery storage. These customers have specific load shape patterns that necessitate thoughtful modeling. This is especially relevant for residential customers who are typically evaluated using a panel model with a matched control group within the LIP framework. Residential battery storage customers often need to be segmented separately from other residential customers to accurately estimate load reductions. However, tracking storage participants is still helpful for non-residential customers, as it allows for a more tailored set of candidate model specifications. Tracking which participants have battery storage will improve the estimation of ex post and ex ante impacts going forward, especially for residential customers.
- **Long Duration Events.** No CBP event in PY2025 lasted longer than two hours in duration. The evaluation team recognizes that CBP dispatches are based on market conditions and needs, so longer duration market events (market award events lasting longer than two hours) may not “naturally” occur in PY2026. We recommend conducting test events for an event lasting longer than two hours. However, we also recognize that test events are capped at two hours for CBP events, and this recommendation would require program changes. Additionally, customer retention may be impacted by requiring longer test events.

## 2 INTRODUCTION

This report presents the statewide load impact evaluation of the Capacity Bidding Program (CBP) for the 2025 program year (PY2025). The report covers the statewide CBP offered by three California investor-owned utilities (IOUs): Pacific Gas and Electric (PG&E), Southern California Edison (SCE), and San Diego Gas and Electric (SDG&E).

### 2.1 EVALUATION OBJECTIVES

The objective of this evaluation is to assess the PY2025 CBP in a manner that conforms to the Load Impact Protocols (LIP) adopted by the CPUC in Decision (D.) 08-04-050. At a high level, there are two main objectives related to the CBP load impact evaluation:

- **Ex Post Analysis:** The goal of the ex post analysis is to estimate load impacts for PY2025 CBP events that conforms to the LIP.
- **Ex Ante Analysis:** The goal of the ex ante analysis is to forecast CBP aggregate (MWh/h) and per capita (kWh/h) load reductions for PY2026 through PY2036 and conduct a “backcast” of PY2025 under 1-in-2 and 1-in-10 weather scenarios in a manner that conforms to the LIP.

### 2.2 PROGRAM OVERVIEW

The CBP is a statewide price-responsive aggregator program launched in 2007. While each of the IOUs’ CBP programs are slightly different in their offerings, the current program enables aggregators to contract with groups of residential and non-residential customers to collectively respond to events. Each aggregator can make nominations to various program offerings (referred to as “products”) that vary by customer class, event triggers, and prices. The aggregator receives day-ahead and/or day-of notifications of events and arranges for load reductions during the event (only SDG&E has a day-of CBP products).<sup>5</sup>

Aggregators receive monthly capacity payments based on nominated capacity (even if an event is not called), plus additional energy payments based on the kWh reduction during CBP events. Aggregators are also notified of reduced payments or penalties if their aggregation of customers does not collectively achieve the nominated capacity. CBP aggregators can adjust their nominations and product participation monthly.

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<sup>5</sup> PG&E and SCE only have Day-Ahead CBP program products.

In PY2025, no residential customers were enrolled in the CBP. Additionally, SDG&E did not have any participation or events called for the day-of notification products within its program. As a result, the PY2025 CBP only includes non-residential day-ahead notification events across all IOUs.

### **2.2.1 Role of Aggregators**

In the CBP, third-party aggregators are the entities responsible for contracting with eligible customers for participation. Each aggregator is responsible for designing its own demand response offering, including customer acquisition, retention, and marketing. Aggregators are also responsible for notifying contracted customers after an IOU has notified them of a CBP event; the IOUs do not directly notify customers enrolled through aggregators of an event. Additionally, aggregators are the entity receiving payments and penalties from each IOU and are responsible for compensating their enrolled customers for participation. Each aggregator's customers are grouped into distinct resources by sub-load aggregation points (SubLAP). Each resource provides a single monthly nomination, whereupon all contracted customers in a resource are dispatched by the aggregator.

### **2.2.2 Eligibility**

Customers are considered eligible for the CBP program schedule if they are a bundled customer and billed on a utility residential (PG&E and SCE only), commercial, industrial or agricultural rate schedule. The CBP is also available to Direct Access ("DA") and Community Choice Aggregation ("CCA") customers. CBP participation is available through a third-party aggregator or to qualifying customers acting as a self-aggregator. Customers may not be enrolled in another capacity DR program. However, a customer can dually enroll in the Emergency Load Reduction Program (ELRP) or the Critical Peak Pricing (CPP) (SDG&E only).

### **2.2.3 Incentives**

Aggregators receive capacity payments based on their monthly nominated capacity, product selected, event duration, and delivery performance. If an aggregator's delivery capacity underperforms the stated tariff threshold, the aggregator receives a capacity shortfall penalty. For months with no dispatched events, CBP aggregators receive the full monthly capacity payment based on their nominations with no energy payments. Additional energy payments (\$/kWh) are made to the aggregator based on the measured kWh reductions achieved during dispatched events (SCE and SDG&E only).

### **2.2.4 CBP Product Offerings**

As stated previously, each IOU's CBP product offerings are unique. Each IOU's CBP products are described at length below.



## PG&E CBP

PG&E's CBP operates from May through October and only offers day-ahead participation. PG&E's CBP offered one product in PY2025: Elect DA. The Elect DA product operates with a maximum event duration of four hours and can be dispatched between 5 p.m. and 10 p.m. during the month of May and between 4 p.m. and 9 p.m. during the months of June through October. For PG&E, Aggregators set their own CAISO market bid price. CBP events can be called Monday through Saturday, excluding holidays, and aggregators provide separate nominations for weekday and Saturday events. PG&E's CBP is open to both residential and non-residential participation. However, there was no residential CBP participation in PY2025.

## SCE CBP

In 2025, SCE launched the CBP Elect (CBP-E) product, replacing the prior CBP Day Ahead (CBP DA) product. The CBP-E has three price trigger options (\$200/MWh, \$400/MWh, and \$600/MWh) and operates from May through October, between 5 p.m. and 10 p.m. during the month of May and between 4 p.m. and 9 p.m. during the months of June through October. As of the publication of this report, SCE's CBP has only seen enrollment in the \$600/MWh option. Events can be called Monday through Saturday (excluding holidays) during May through September and Monday through Friday (excluding holidays) in October. SCE's CBP-E is open to both residential and non-residential participation. However, there was no residential participation in SCE's CBP-E product in PY2025.

## SDG&E CBP

SDG&E offers two CBP products that are only open to non-residential customers: the *Elect DA 1-9 Hour* and the *Elect DO 1-9 Hour*. The *Elect DA 1-9 Hour* is a day-ahead product, and the *Elect DO 1-9 Hour* is a day-of product. Both products operate from 1 p.m. to 9 p.m., have the same three price triggers options (\$200/MWh, \$400/MWh, and \$600/MWh), and operate Monday through Saturday during the months of May through October. In PY2025, SDG&E only had event participation in the *Elect DA 1-9 Hour* product with a \$600/MWh option. Additionally, SDG&E's ex ante forecasts only include participant forecasts for the *Elect DA 1-9 Hour* product with a \$600/MWh option.

## 2.3 REPORT TERMINOLOGY

To keep the PY2025 report consistent and comparable with prior years, Verdant adopted reporting terminology used for previous program years. Key terminology used throughout this report is defined in Table 2-1.

**TABLE 2-1: REPORT TERMINOLOGY**

Terminology	Definition
<b>Program</b>	The combination of IOU and customer sector.
<b>Product</b>	An offering within each program. For example, PG&E's non-residential Elect DA.
<b>Option</b>	An enrollment option within a product. For example, SDG&E has three price triggers options (\$200/MWh, \$400/MWh, and \$600/MWh) within their two CBP products (Elect DA and DO).
<b>Resource</b>	A group of enrolled CBP customers under a single option, aggregator, and SubLAP, to be dispatched together.
<b>Sector</b>	Residential or non-residential. Note that CBP only had non-residential participants in PY2025.
<b>Nomination</b>	A monthly nominated resource by program, product, aggregator, and SubLAP. A nominated resource has a corresponding capacity nomination (MW) for its enrolled customers.
<b>Dispatch</b>	An entity called for a market-triggered or test event. An entity can include a dispatched resource, dispatched customers, dispatched capacity, etc. Not all nominated entities are dispatched during a given event.
<b>Average Event Day</b>	For each product, the average event day is calculated as the average of all events dispatched, regardless of event hours and number of SubLAPs. The program-level average event day is the sum of all product-level average event days. However, in some cases events may be excluded from the average event day.
<b>Delivery Performance</b>	A percentage metric equal to the ex-post aggregate load impacts divided by the overall dispatched capacity. For the average event day, the delivery performance is based on an adjusted nomination, where only the nominations for the dispatched resources in each respective hour are included. As a result, the nominations for the average event day can vary by hour.
<b>Dually Enrolled</b>	If a customer is concurrently enrolled in the CBP and a separate demand response (DR) program, they are considered as dually enrolled within the CBP.

## 2.4 REPORT ORGANIZATION

The remainder of this report plan is organized into the following sections.

- **Section 3 - Study Methodology** presents an overview of the data sources and ex post and ex ante impact methodologies used for this study.
- **Section 4 - PG&E PY2025 Results** presents an overview of PY2025 PG&E CBP participation and events, the estimated ex post and ex ante load impacts, and a summary of key findings.
- **Section 5 - SCE PY2025 Results** presents an overview of PY2025 SCE CBP-E participation and events, the estimated ex post and ex ante load impacts, and a summary of key findings.
- **Section 6 - SDG&E PY2025 Results** presents an overview of PY2025 SDG&E CBP participation and events, the estimated ex post and ex ante load impacts, and a summary of the key findings.

## 3 METHODOLOGY

This section presents the data sources and the ex post and ex ante methodologies used for the Load Impact Evaluations of the CBP in PY2025.

### 3.1 DATA SOURCES

Verdant worked with the IOUs to obtain the data necessary for conducting the ex post and ex ante load impact analyses for the CBP. Descriptions of the data sources are detailed below.

**Aggregator Nomination and Resource Data.** These data include the monthly capacity nomination, products, and resources for each program, along with the monthly nominated customer enrollment.

**Customer information.** These data consist of customer-level information for all PY2025 customers enrolled in the CBP through an aggregator. These data generally contain customer account and premise IDs alongside a variety of other attributes useful for the segmentation of impacts, including customer size, nearest weather station, SubLAP, net-energy-metering (NEM) status, and North American Industry Classification System (NAICS) codes and/or descriptions.

**AMI data.** The service-point-level Advanced Metering Infrastructure (AMI) data for CBP customers. AMI data was requested for the period starting April 1<sup>st</sup>, 2025, through October 31<sup>st</sup>, 2025. All AMI data was provided as hourly or sub-hourly usage intervals.

**Weather data.** The study used hourly weather data for all weather stations represented in the customer information data. The dates of the hourly weather data match those of the AMI data (April 1<sup>st</sup>, 2025, through October 31<sup>st</sup>, 2025).

**CBP, AutoDR, and other DR program data.** The study required comprehensive data on customer enrollment in CBP and any other DR programs available to customers for dual enrollment. These data include CBP event dates and times, the duration of each CBP event, and event type (test vs. market award) information. Verdant also requested relevant information for the AutoDR program and other programs in which CBP participants can be dually enrolled.

**Ex Ante Participant forecasts.** The ex ante forecasts rely on participation projections over the 11-year forecast horizon. Each IOU provided their participant forecasts for their respective CBP products.

**Weather scenarios.** The ex ante forecasts rely on data representative of the various weather scenarios for each weather station under different conditions (e.g., 1-in-2 and 1-in-10 weather years, typical event day, system peak, etc.). Separate versions of the weather scenario data were provided for both CAISO and each utility, though they are typically very similar.

**PY2025 Ex Post Results from Relevant Programs.** To aid in the development of SCE's CBP-E residential ex ante forecasts, Verdant, with collaboration from SCE, requested ex post results from residential Self Generation Incentive Program (SGIP) customers participating in SCE's Critical Peak Pricing (CPP) program. These customers represent the most applicable DR participation data to inform the CBP-E residential ex ante forecast.

### **Data Validation**

Upon data receipt, Verdant cataloged and validated the completeness of all datasets. Missing or erroneous data points were reported back to each IOU via a data completeness summary. Verdant flagged gaps in the participant-level AMI data to identify and submit additional requests for these missing AMI usage intervals. To detect potentially erroneous AMI data, Verdant programmatically and visually reviewed daily load shapes for all nominated participants. For example, Verdant reviewed periods of zero or near-zero AMI usage reads that may have indicated that a meter was not reporting usage normally for a given period. Verdant generally aimed to omit as little AMI data as possible. However, for a small number of customers, some intervals of data were excluded from the analyses, as they were either not representative of customer event day conditions or contained incomplete data.

Verdant also reviewed all weather data files for completeness and accuracy. For a few weather stations, Verdant filled in small gaps of missing hourly temperature reads using interpolated values (by way of the average of leading and lagging hourly intervals). Some weather stations included gaps of consecutive hourly readings or highly irregular or erroneous temperature readings. For these stations, the weather data were not used, and the corresponding participants were remapped to the next closest weather station within the same region (e.g., the next closest coastal weather station for a coastal customer).

## **3.2 EX POST METHODOLOGY**

The ex post analysis relied on a regression-based approach for estimating impacts. The ex post regression models are hourly models, where each hour of the day is modelled separately from other hours of the day. Given the variety of CBP customer types and aggregators, hourly customer-specific regressions were used to estimate program impacts. Non-residential customers typically have heterogenous loads, making it difficult to broadly apply a given regression model specification across all customers and necessitating the use of customer-specific models. Additionally, customer-specific regressions facilitate various aggregations of results required for reporting (i.e., industry type, customer size, etc.).

Verdant's ex post approach included four main steps as depicted in Figure 3-1. Each of these steps are described in further detail in the following subsections.

FIGURE 3-1: EX POST ANALYSIS STEPS



### 3.2.1 Participant Analysis

CBP participants come from a large pool of customer types and aggregators across the three IOUs. The participant analysis is a preliminary exploratory analysis to determine if there are any obvious issues or participant characteristics that may influence the approach for estimating load impacts. For example, reviewing customers' daily load shapes to determine whether explanatory variables are needed or if a custom model should be included in the candidate model selection for a given customer.

A key component of the participant analysis is a preliminary weather sensitivity analysis to determine whether a participant's non-event day load is temperature sensitive. For participants found to have weather sensitive loads, their corresponding ex post model typically include a temperature-based weather variable (e.g., cooling degree hours) to control for the influence of temperature on energy consumption (kWh). The weather sensitivity analysis uses a linear regression of daily average load as a function of month of the year, day of the week, and a degree day threshold. If the regression resulted in positive and statistically significant degree day coefficients at the 95<sup>th</sup> percentile, the CBP participant was considered weather sensitive. In some cases, weather sensitive customers did not include a weather based explanatory variable in the regression model. These cases represent loads that have overall variations in daily loads that correlate to long term temperature trends; however, temperature may not play a substantial role in the hour-to-hour energy usage. Agriculture pumping sites are a primary example of this phenomenon, where daily usage is typically higher during hotter periods, but the hour-to-hour load is a binary of on or off. Additional details regarding model specification and results of the weather sensitivity analysis are provided in Appendix B.

### 3.2.2 Proxy Day Selection

The second step of the ex post analysis was to select proxy days to use for testing candidate models in model selection. Proxy event days represent non-event days with event-like conditions (based on temperature). In many programs, these are typically the hottest or coldest non-event days within the relevant season. However, since the CBP events are not necessarily driven by temperature and all PY2025 events were test events, Verdant chose proxy event days based on a distance metric,<sup>6</sup> selecting the non-

<sup>6</sup> The distance metric for proxy day selection used to select proxy days included:

$$\text{Distance Metric} = |(MaxTemp\_RA\_Window_{avg\ event} - MaxTemp\_RA\_Window_{non-event})| + |(AvgDailyTemp_{avg\ event} - AvgDailyTemp_{non-event})|$$

event, non-holiday days that are closest to the temperature for the average event day during the CBP season. Verdant selected 5 weekday and 3 weekend proxy days. However, no weekend CBP events occurred in PY2025 and thus the weekend proxy days were not used in the ex post analysis. Given that each CBP participant can be dispatched on different event days (depending on their SubLAP), the selection of proxy event days is specific to each customer and may result in a different set of dates selected between CBP participants. Additional details on the selected proxy event days are included in Appendix C.

### 3.2.3 Model Selection

Verdant tested candidate model specifications separately for each customer. While the candidate models differ, they are comprised of two components: a set of independent variables to capture CBP event impacts and a second set of independent variables to capture effects related to the reference loads. Insights from the participant analysis helped inform which model specifications to test for the customer base. For example, customers with weather sensitive loads (as identified in the participant analysis) were tested with model specifications that contained weather variables, primarily cooling degree hour (CDH) and cooling degree day (CDD) variables, meant to capture the weather effects on hourly energy consumption, while models for weather insensitive customers did not contain weather variables and instead relied more heavily on other time-based effects. In all cases, the regression models control for the following: month, event days, and dual-program enrollment, as applicable.

Verdant considered a variety of factors to determine which model specification was the most appropriate or applicable to estimate CBP impacts for each customer. This process included the following steps:

1. First, Verdant reviewed its catalog of model specifications from prior DR evaluations to develop a catalog of candidate models, incorporating new adjustments or additional models based on the needs of the analysis and model performance.
2. The performance of candidate models was evaluated using proxy event days as holdout days with presumed event hours to assess the bias and error of each candidate model and to establish whether a candidate model generated statistically significant impact parameters. When a candidate model consistently produced statistically significant impact estimates for the selected proxy event days, the model was rejected, as there should not be statistically significant impacts for days where events did not occur.<sup>7</sup>
3. Next, an arbitration routine assessed the model coefficients for anticipated sign and statistical significance. This routine was primarily used to assess accurate accounting of weather-based coefficients. Parameters meant to capture temperature effects should not be negative. Second, the model fit statistics were considered to ensure the model adequately explained the variance in the data. Models failing these tests were rejected.

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<sup>7</sup> As a general rule, candidate models were rejected if statistically significant impacts (p-value of 0.05) were produced for two or more hours within the RA window (HE17 to HE21).

4. Next, Verdant examined the error and bias values of the remaining candidate models. Normalized Mean Absolute Error (NMAE) and Normalized Mean Bias Error (NMBE) were the primary metrics explored. NMAE represents the average of the normalized absolute error between actual load and estimated load on proxy event days, while NMBE represents the normalized average bias between actual load and estimated load on proxy event days. For some customers, the presence of zero load prevented the NMAE and NMBE metrics from being properly calculated. For these customers, the root mean squared error (RMSE) was used for scoring candidate models. The candidate model with the lowest score was selected, which represents the model that minimized error and bias. In the odd case of a tie between model specifications for a given customer, the candidate model with the highest adjusted R-squared was selected. Performance metrics are presented in more detail in Appendix C.
5. The average estimated proxy event load shape was then compared to the average actual proxy event day load shape. If the selected model did not produce a load shape that sufficiently matches the actual proxy event day or a shape that contains erroneous load fluctuations, then the candidate models for that participant were revised and/or modeling data was examined for outliers. After which, steps one through four of the model selection were revisited as necessary.

### 3.2.4 Impact Estimation

The final selected models were used to predict event day load and estimate program impacts for each hour of each event day. Importantly, model specifications included an event day impact variable to help capture additional event day effects outside of the event window (e.g., pre-cooling and snapback effects before or after an event window). Equation 3-1 presents the general model specification used to estimate ex post impacts.

#### EQUATION 3-1: EX POST GENERAL MODEL SPECIFICATION

$$kWh_{d,h} = \beta_{0,h} + \beta_{1d,h}EventDay_dEventID_d + \beta_{2,h}Weather_h + \sum_m \beta_{3h,m}Month_m + \sum_w \beta_{4h,w}Wday_w + \beta_{5d}AvgLoad_d + \beta_{6h}OtherEventHour_h + \varepsilon_{d,h}$$

Where:

$kWh_{d,h}$	The hourly delivered kWh usage on event day $d$ during hour $h$ .
$\beta_{0,h}$	The intercept of the regression model for hour $h$ .
$\beta_{1d,h}$	The impact of an event on usage for day $d$ .
$EventDay_d$	A dummy variable indicating an event day $d$ .
$EventID_d$	An ID that corresponds to a specific event on day $d$ .
$\beta_{2h}$	The average impact of weather on usage for hour $h$ .
$Weather_h$	A temperature-based weather variable in hour $h$ .
$\beta_{3h,m}$	The collection of fixed effect impacts of each month $m$ on hour $h$ .
$Month_m$	A dummy variable for each month $m$ .
$\beta_{4h,d}$	The collection of fixed effect impacts for each day of the week $w$ on hour $h$ .



$Wday_w$	A dummy variable indicating the day of the week $d$ (Monday through Friday).
$\beta_{5d}$	The impact of average daily load during a specific period for day $d$ .
$AvgLoad_d$	The average daily load during a specific period (e.g., the afternoon) of day $d$ .
$\beta_{6h}$	The impact of participation of dually enrolled program event participation on usage.
$OtherEventHour_h$	A dummy variable, indicating whether hour $h$ is an event hour for a participant dually enrolled in another event-based demand response program.
$\varepsilon_{d,h}$	The error term.

The interaction between  $EventDay_d$  and  $EventID_d$  results in a set of 24 coefficient estimates  $\beta_{1d}$  (one for each hourly model) that capture event-specific impacts. This set of 24 coefficients is used to estimate program impacts during the event window and capture any other event day effects (e.g. precooling or snapback) for hours outside of the event window. In essence, the  $\beta_{1d,h}$  coefficients capture the difference between actual event day load for a given hour and the estimated baseline. For the ex post analysis, the set of  $\beta_{1d,h}$  estimates corresponding to the event window collectively describe the impact estimates for each event day.

The estimated impacts for each participant are aggregated to multiple domains of interest for each CBP product (including but not limited to industry type, customer size, and geographical location) to provide the IOUs with data on participant and resource performance at the desired levels.

### Confidence Intervals and Uncertainty Adjusted Impacts

The uncertainty adjusted impacts in the ex post analysis represent the confidence intervals around the event day impact coefficients  $\beta_{1d,h}$  for each hour of an event day. When estimating confidence intervals, Verdant assumed that impacts were independent across participants. To estimate the 5<sup>th</sup>, 10<sup>th</sup>, 50<sup>th</sup>, 90<sup>th</sup> and 95<sup>th</sup> percentiles, the variance of each estimate was pooled to each level of reporting aggregation and then converted to standard errors for each hour. The calculated standard errors were then used to develop the uncertainty adjusted impacts as confidence intervals.

## 3.3 EX ANTE METHODOLOGY

Verdant produced ex ante load impacts for the 11 years following PY2025 (12 years including the current PY backcast). For each IOU, the ex ante impacts include at a minimum the hourly ex ante load impacts by CBP product, local capacity area (LCA), SubLAP, and customer size at the aggregate and per-nominated customer (per capita) levels. Verdant produced ex ante impacts for each typical event day and monthly IOU and CAISO system worst day under 1-in-2 and 1-in-10 weather conditions. Additionally, the ex ante impacts were produced for the average hourly load impacts across the RA hours (5 PM to 10 PM for May, and 4 PM to 9 PM for June through October). The Load Impact Protocol (LIP) 24-Hour Slice-of-Day requires a four consecutive hour dispatch in ex ante within Availability Assessment Hours on the worst day of each

month.<sup>8</sup> For PG&E, the first four hours of the RA window were used to represent a four-hour dispatch. For SCE and SDG&E, the last four hours of the RA window represent event hours.

### 3.3.1 Key Ex Ante Analysis and Enrollment Forecast Assumptions

Prior to discussing the ex ante methodology, it is worth highlighting key ex ante and enrollment forecast assumptions associated with each IOU as they pertain to the ex ante approach. The following subsections discuss key enrollment assumptions for each IOU, and more detailed discussions on enrollment forecasts are provided in each IOU's respective sections. Any additional assumptions are included in each IOU's specific ex ante results sections.

#### Key PG&E Ex Ante Analysis and Enrollment Assumptions

There are three key assumptions for PG&E's ex ante analysis. These are:

- **Consistent Load Reductions.** A key assumption underlying PG&E's enrollment forecast is that load reductions (expressed as a percentage of reference load) will remain consistent between PY2025 and future program years. In other words, if customers curtailed an average of 50% of their load in PY2025, it is assumed that this level of performance will continue in subsequent years. Nomination delivery performance is not directly incorporated into this assumption. Instead, aggregators are expected to adjust their nominated capacity in future years based on demonstrated performance capabilities. Accordingly, the enrollment forecast was developed to target an approximate 100% delivery performance for currently enrolled nominated customers (approx. 40 MW in August).
- **No Residential Participation.** There has not been any participation in the PG&E's Residential Elect DA program since PY2023. PG&E anticipates that the residential customer segment will continue to be unsubscribed. As a result, the ex ante forecast for PG&E's CBP contains zero residential participation.
- **Program and Portfolio Ex Ante Impacts.** While there were dually enrolled CBP customers in PY2025, there were no dual-program event days for enrolled customers in either PY2024 or PY2025. With collaboration from PG&E, it was decided that program and portfolio ex ante impacts would be identical and assume no dual-program event days for CBP customers.

#### Key SCE Ex Ante Analysis and Enrollment Assumptions

There are three key assumptions for SCE's ex ante analysis. These are:

- **Non-Residential Customer Type Distribution.** SCE's non-residential participant forecast includes 609 customers for 2026 and 795 for 2027–2036. However, the enrollment forecasts did not include the number or distribution of customers by customer type. As a result, Verdant assumes that future program enrollment will maintain the same distribution of customers as PY2025. The only exception

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<sup>8</sup> [LIP Filing Guide 6.1](#) at 11.

to this is the assumption that none of the newly enrolled customers will be a large university customer. As result only one customer of this type is forecasted for future program years.

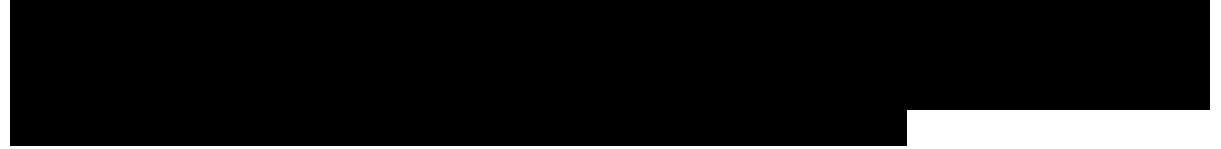
- **Non-Residential Hourly Impacts.** The PY2025 CBP-E had two events, each with distinct event hours. As a result, ex post impacts from HE 18, 19, 20 and 21 were used to estimate ex ante impacts in those respective hours. For example, HE18 ex ante impacts were derived from HE18 ex post impacts. We also assume there is no additional degradation of impacts associated with longer duration events as there is no historical degradation rate to apply to these customers, and it is observed that the impacts across these hours naturally degrade over time (i.e., impacts are smaller in the last two hours than the first two hours of the four hour dispatch). As a result, Verdant has no evidence that additional impact degradation is needed for the CBP-E non-residential ex ante forecast. This assumption will be revisited once the program has an event with a duration of longer than two hours.

**Residential Ex Ante Impacts.** There was no residential participation in SCE’s PY2025 CBP-E to inform an ex ante estimate of residential customers. To estimate ex ante impacts for residential customers, Verdant relied on ex post impacts from residential SGIP customers enrolled in CPP. SCE anticipates that the future residential participant population will be comprised of SGIP battery storage participants. As a result, the residential CPP ex post results provide a good source for ex ante impacts development.

The residential SGIP CPP ex post analysis uses net load. As a result, Verdant carried forward the ex ante reference loads developed in the PY2024 evaluation of CBP. These reference loads are based on delivered load of SCE SGIP participants that are likely to enroll in DR.

- **Program and Portfolio Ex Ante Impacts.** The ex ante impact analysis assumes no dual program days for enrolled CBP Elect DA customers. No dual enrollment occurred in PY2025, and that assumption is carried forward into future program years. As a result, program and portfolio impacts are identical.

## Key SDG&E Ex Ante Analysis and Enrollment Assumptions

- 
- **No Customer Growth.** SDG&E ex ante participant forecast contains 25 customers for all months and future program years. This aligns with the October 2025 customer nominations. As a result, we assume that these customers will continue to participate in CBP (with their aggregator) and act as the basis for the ex ante MW forecasts. All customers that de-enrolled prior to October 2025 were eliminated from the ex ante analysis and do not inform CBP impacts for future program years. However, they are included in the ex ante backcast.
- **Program and Portfolio Ex Ante Impacts.** While there were dually enrolled CBP customers in PY2025, there were no dual-program event days for enrolled CBP customers. With collaboration from SDG&E, it was decided that program and portfolio ex ante impact forecasts would be equivalent.

### 3.3.2 Non-Residential Customer Ex Ante Methodology

Verdant’s approach to the estimation of ex ante load impacts for non-residential participants is largely informed by the ex post methodology and impact estimates. The generalized steps for the non-residential ex ante analysis are depicted in Figure 3-2.

**FIGURE 3-2: EX ANTE ANALYSIS STEPS – NON-RESIDENTIAL CUSTOMERS**



1. **Develop Ex Ante Drivers.** Prior to ex ante modeling, Verdant developed the ex ante drivers dataset. This dataset contains assumptions about ex ante event day characteristics for each month and for each ex ante weather scenarios required to predict the ex ante reference loads for each customer. Whereas the ex post impacts reflect actual event day conditions, the ex ante impacts are based on different planning assumptions, primarily the different scenarios that reflect typical or extreme weather conditions. While the weather scenarios are the most obvious element of the ex ante drivers, the models used to estimate reference loads often require the development of other variables related to load characteristics. Examples of this include average morning loads or days of the week, which often include several model specifications to help ensure that the baseline more reliably reflects event day conditions prior to dispatch. For the ex ante drivers, these variables were based on conditions seen in PY2025. As for any weekday dummy variables (i.e., those that take on a value of either 0 or 1 depending on day of the week), the ex ante drivers assume a value of 0.2 (1 divided by 5) to represent each weekday with equal weight.
2. **Estimate Reference Loads.** Using the customer-specific ex post models with the ex ante driver data as predictive inputs, Verdant estimated ex ante reference loads for each customer.
3. **Estimate Ex Ante Impacts.** For each IOU, most customers were only dispatched for one or two events during PY2025 (discussed in each IOUs respective results section, 4.2 and 6.2). As a result, Verdant could not establish a reliable relationship between temperature and load impacts to estimate weather adjusted impacts through the inclusion of an interaction between the temperature and event hour terms within the models. This required an examination of the percent load reduction as a function of hour of the day, the nth hour of an event, and temperatures by various customer groupings. Verdant found that there was no clear relationship between temperature conditions and percent load reductions and, in most cases, no clear relationship between hour and percent load reductions. As a result, ex ante impacts are derived from the percent load reductions seen in the ex post analysis. Only SCE’s non-residential ex ante analysis included hourly variations in the percent load impacts applied. Given that reference loads vary by temperature, estimated load reductions also vary by weather scenario, as percent load reductions represent a ratio of impacts divided by reference load.
4. **Apply Participant Forecasts.** After producing ex ante reference loads and load impacts, each customer is grouped into the lowest level domain (i.e., participant groups of LCA, SubLAP, and customer size) of the participant forecast. Reference loads and impacts in each domain are then averaged to represent

the typical customer of a given domain. This is then multiplied by the share of participants in the enrollment forecasts to produce the MW forecast for each month and year by the lowest level of aggregation. Each group’s MW forecast is then summed at each respective level of reporting.

### Confidence Intervals and Uncertainty Adjusted Impacts

The uncertainty adjusted impacts in the ex ante analysis represent the variance and confidence intervals of the ex post impact estimates. Given impacts are estimated as a function of ex post percent load reductions, the uncertainty of the ex ante impacts relate directly to the uncertainty of the ex post analysis.

### Large Load Customers

Pursuant to the Load Impact Protocol Process Guide (version 6.1, released by the Energy Division on March 5, 2026), “Large loads (e.g. data centers, EV fleet charging station load) should be reported as a distinct load type within ex-ante and ex-post table generators.”

In PY2025, there were ■ customers with average hourly loads over 1 MW enrolled in PG&E’s CBP Elect, ■ in SCE’s CBP-E, and ■ in SDG&E’s CBP Elect DA. Judged from the NAICS code, none of these customers appear to be a data center or an EV fleet charging station. In both the ex post and ex ante impact table generators, there is a customer size indicator, which defines large as 200 kW or above for PG&E and SDG&E, and 250 kW or above for SCE. Hourly load Impacts are available by customer size. Should a different definition for large load be desired, clarification in a future update to the Load Impact Protocol Process Guide would be helpful.

## 3.3.3 Residential Customer Ex Ante Methodology

### SCE Residential Customer Ex Ante Methodology

While the PY2025 CBP-E did not have any residential participation, SCE is forecasting residential enrollment in PY2026 and beyond. SCE anticipates these participants to be SGIP battery storage customers. In the PY2024 CBP evaluation, Verdant estimated reference loads from SGIP customers identified as likely to participate in DR (based on application submission dates) and requested their AMI data to develop weather adjusted reference loads. Verdant carried forward these reference loads into the PY2025 ex ante analysis. While these reference loads were developed in PY2024, the methodology for these reference loads is discussed below. Generalized steps for the SCE residential ex ante analysis are presented in Figure 3-3 and discussed in further detail below.

**FIGURE 3-3: EX ANTE ANALYSIS STEPS – SCE RESIDENTIAL STORAGE CUSTOMERS**



1. **Develop Ex Ante Drivers.** As with the non-residential customer ex ante analysis, the residential ex ante drivers dataset contains assumptions about ex ante event day characteristics for each month, and each ex ante weather scenario required to predict the ex ante reference loads for each customer.
2. **Estimate Reference Loads.** As mentioned previously, ex ante reference loads were developed during the PY2024 evaluation and were carried forward into the PY2025 evaluation. The PY2024 model selection approach for ex ante reference loads followed the same approach used for ex post model selection with a slight difference. The SCE residential ex ante reference loads relied upon an hourly panel model with customer fixed effects, where customers from each SubLAP were segmented into their own modeling groups. Equation 3-2 describes the SCE residential general model specification.

#### EQUATION 3-2: SCE RESIDENTIAL EX ANTE GENERAL REFERENCE LOAD MODEL SPECIFICATION

$$kWh_{d,h,i} = \beta_{0,h} + \beta_{1,h}Weather_h + \sum_m \beta_{2,h,m}Month_m + \gamma_i + \varepsilon_{d,h,i}$$

Where:

$kWh_{d,h,i}$	The hourly delivered kWh usage on event day $d$ during hour $h$ for participant $i$ .
$\beta_{0,h}$	The intercept of the regression model during hour $h$ .
$Weather_h$	A temperature-based weather variable in hour $h$ .
$\beta_{1,h}$	The average effect of weather on usage during hour $h$ .
$Month_m$	A dummy variable for each month $m$ .
$\beta_{2,h,m}$	The fixed effect of month $m$ on usage during hour $h$ .
$\gamma_i$	Customer fixed effect for customer $i$ .
$\varepsilon_{d,h,i}$	The error term.

Using the selected ex ante models with the ex ante driver data as predictive inputs, Verdant estimated ex ante reference loads for each customer group.

3. **Estimate Per Capita Impacts Loads.** Verdant reviewed the ex post impacts of CPP residential SGIP customers and determined that ex post impacts were negatively correlated with temperature when looking at ex post reduction across all hours. However, when looking at event hours individually, this relationship disappears. As a result, residential SGIP CPP ex post impacts are more dependent on the hour in which dispatch occurs rather than on temperature during the event. Therefore, Verdant applied the SGIP customer CPP average event day impacts observed in the last four hours of the RA window to the ex ante MW forecast. Due to this approach, all per capita impacts are the same across customer segments, regardless of weather scenario.
4. **Apply Participant Forecasts.** After producing per capita ex ante reference loads and load impacts, the participant forecasts were applied to each respective SubLAP and multiplied to generate separate overall, LCA-level, and SubLAP-level aggregate forecasts.

**Confidence Intervals and Uncertainty Adjusted Impacts**

The uncertainty adjusted impacts in the residential ex ante impact analysis represent the confidence intervals surrounding respective hourly impact estimates from the residential SGIP customer CPP ex post analysis.



## 4 PACIFIC GAS & ELECTRIC

This section presents PG&E’s PY2025 CBP participation, event days, and both the ex post and ex ante load impact summaries. As discussed previously, PG&E offered residential and non-residential CBP products in PY2025 under *CBP Elect DA*. The *Elect DA* product operates with a maximum event duration of four hours and can be dispatched between 5 p.m. and 10 p.m. during the month of May and between 4 p.m. and 9 p.m. during the months of June through October. In PY2025, PG&E had no residential participation in the *Residential Elect DA* product.

### 4.1 PG&E CBP PARTICIPATION

Table 4-1 below presents the monthly distribution of enrolled customers and nominations for the PG&E CBP Elect DA products. For the non-residential Elect DA product in PY2025, there was an average monthly enrollment nomination of 642 customers, ranging from a low of 546 in May to a high of 690 in September. Monthly weekday capacity nominations ranged from 31.4 MW in May to 40.8 MW in August, and Saturday nominations ranged from 4.7 MW in September to 9.6 MW in July.

**TABLE 4-1: PG&E PY2025 CBP ELECT DA MONTHLY NOMINATIONS**

Month	Number of Aggregators	Residential Elect DA			Non-Residential Elect DA		
		Enrolled Customers	Nominated Capacity (MW)		Enrolled Customers	Nominated Capacity (MW)	
			Weekday	Saturday		Weekday	Saturday
May	4	0	--	--	546	31.4	6.0
June	5	0	--	--	591	36.7	8.2
July	5	0	--	--	655	39.9	9.6
August	5	0	--	--	689	40.8	7.0
September	5	0	--	--	690	38.8	4.7
October	5	0	--	--	678	32.9	NA

In PY2025, there were 832 distinct customers in the non-residential Elect DA product nominated for at least one month. Table 4-2 describes the distribution of enrolled customers by industry type and customer size. Agriculture, Mining & Construction was the most common industry type with 334 enrolled customers (40% of all PG&E PY2025 CBP customers), followed closely by Retail Stores with 311 enrolled customers (37%). This distribution of industry type differs from the PY2024 CBP, wherein 74% of all customers were in the Agriculture, Mining & Construction industry.

Within the non-residential Elect DA product, customer distribution also varies meaningfully by size category. Roughly 95% of customers belong to either the large (200 kW or greater) or medium (20 kW to

199.99 kW) size groups. Customers in the Agriculture, Mining, and Construction industry type make up the majority of the medium size group, accounting for 57% of all medium customers. Retail Stores represent the largest share of customers in the large size group (200 kW or greater), comprising 52% of all large customers.

The Water, Wholesale, Transport, and Other Utilities industry type also shows substantial participation, with enrollment distributed across both the medium (41 customers) and large (56 customers) size groups.

**TABLE 4-2: PG&E PY2025 NON-RESIDENTIAL CBP ELECT DA ENROLLMENT BY INDUSTRY AND CUSTOMER SIZE**

Industry Type	Under 20 kW (Small)	20kW to 199.99 kW (Medium)	200kW or Greater (Large)	Total
Agriculture, Mining & Construction	19	227	88	334
Retail Stores	10	96	205	311
Water, Wholesale, Transport, Other Utilities	9	41	56	106
Offices, Hotels, Finance, Services	2	13	14	29
Schools	1	17	9	27
Manufacturing	1	2	18	21
Institutional/Government	2	--	2	4
<b>Total</b>	<b>44</b>	<b>396</b>	<b>392</b>	<b>832</b>

## 4.2 PG&E EVENT SUMMARY

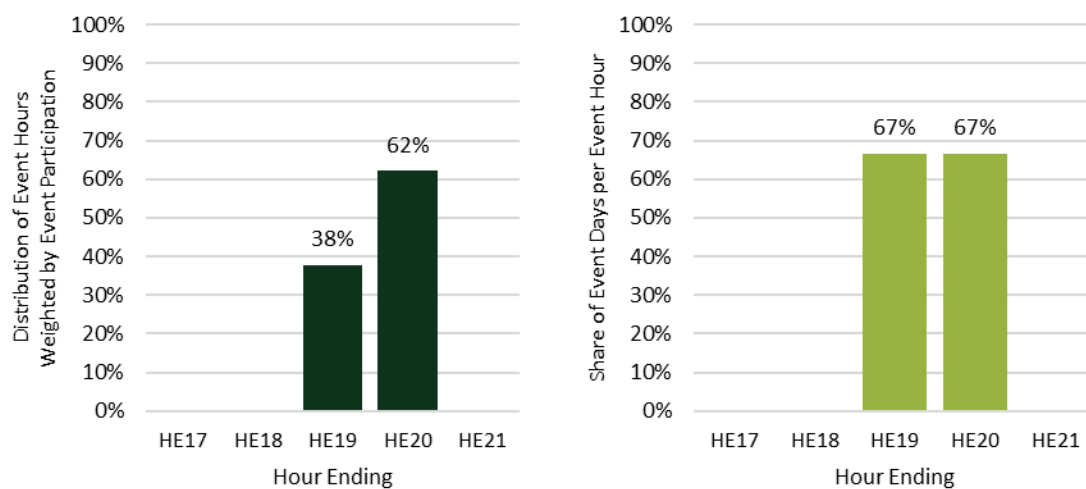
Table 4-3 presents the details for the three event days called for PG&E's Elect DA product in PY2025. All three events were test events, meaning no market or emergency events were called in PY2025. The June 27<sup>th</sup> and August 21<sup>st</sup> events accounted for the majority of participation, with 576 and 685 customers dispatched, respectively. The third event, held on September 26<sup>th</sup>, had substantially lower participation at 83 customers dispatched. This event was primarily a re-test targeting customers identified as poor performers during the prior two events but also included customers added to the monthly nominations after August. All three events were either one or two hours in duration and took place only during the 6:00 p.m. to 8:00 p.m. window.

**TABLE 4-3: PG&E PY2025 CBP ELECT DA EVENT DETAILS**

Event Date (2025)	Event Type	Event Start (Prevailing Time)	Event End (Prevailing Time)	Event Duration (Hours)	Dispatched Customers	Dispatched Capacity (MW)
June 27 <sup>th</sup>	Test	7:00 PM	8:00 PM	1	576	35.5
August 21 <sup>st</sup>	Test	6:00 PM	8:00 PM	2	685	40.8
September 26 <sup>th</sup>	Test	6:00 PM	7:00 PM	1	83	3.9

Figure 4-1 presents the distribution of event hours weighted by event participation for each PY2025 event hour (left) and the share of events that contained each hour of the event window (right). As shown, only hour ending (HE) 19 and 20 were dispatched in PY2025, with 62% of all participant-hours occurring during HE20. The two largest events on June 27<sup>th</sup> and August 21<sup>st</sup> both included HE20, whereas the third and smallest event on September 26<sup>th</sup> occurred only during HE19. Since the August 21<sup>st</sup> event also included HE19, both HE19 and HE20 were event hours on just two of the three event days.

**FIGURE 4-1: PG&E PY2025 CBP ELECT DA DISTRIBUTION OF EVENT HOURS BY HOUR (LEFT) AND SHARE OF EVENTS WITH A GIVEN HOUR (RIGHT)**



### Definition of the Average Event Day

In collaboration with PG&E, it was decided to forgo estimating an average ex post event day. The reasoning behind this follows that the three events have distinct characteristics and participant compositions that make combining them less suitable for generalizing event performance compared to previous years, especially in the context of the table generator format. However, to draw comparisons with the prior year's participation, the average impacts from HE20 for the June 27<sup>th</sup> and August 21<sup>st</sup> event are presented in absence of a more meaningful representation of typical performance.

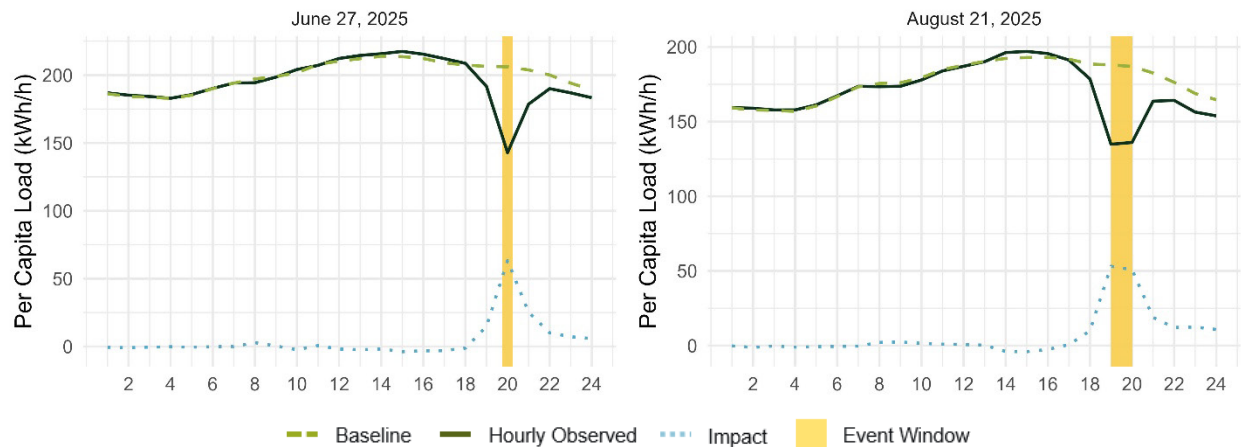
## 4.3 PG&E EX POST IMPACTS

Figure 4-2 presents the event day per-capita load shapes for non-residential CBP Elect DA participants for the June 27<sup>th</sup> and August 21<sup>st</sup> events.<sup>9</sup> Together, these event days represent "typical" PY2025 PG&E CBP performance. The figure includes the average estimated baseline (or reference load), the actual hourly

<sup>9</sup> The September 26<sup>th</sup> event is not included as it is deemed not representative of a typical CBP Elect DA event.

observed load, and the estimated impacts (or load reductions) for both event days, and the yellow highlighted hours indicate the CBP event hour(s) called for each event. The underlying data points for these load shapes are available in Appendix A within the PG&E Ex Post Table Generator.

**FIGURE 4-2: PG&E PY2025 NON-RESIDENTIAL CBP ELECT DA JUNE 27<sup>TH</sup> (LEFT) AND AUGUST 21<sup>ST</sup> (RIGHT)**



For both event dates presented in Figure 4-2 above, there are visually identifiable load impacts within the event dispatch window (HE20 for June 27<sup>th</sup> and HE19–HE20 for August 21<sup>st</sup>). Modeled curtailment also extends into the hours proceeding each event and through the end of the day, as demonstrated by slightly positive impacts in the hours beyond HE20. Persistent load curtailment after event hours can be attributed primarily to large agricultural customers who either sharply reduce load or completely shut off during an event and do not immediately increase load back to pre-event levels. These load profiles thus cause the estimated baseline to be higher than the observed values on average after the conclusion of the event.

### PG&E Ex Post Impact Results by Event Day

Table 4-4 presents the average event hour load impacts for each event dispatched. In PY2025, all customers were included in the same dispatch (i.e., all customers participated during the same hours during a given event). The table below presents the number of nominated customers that were called for each event, the hours in which the events occurred, and the aggregate and per capita reference loads and load impacts. In lieu of an average event day, the average HE20 impact for June 27<sup>th</sup> and August 21<sup>st</sup> is presented for comparison.

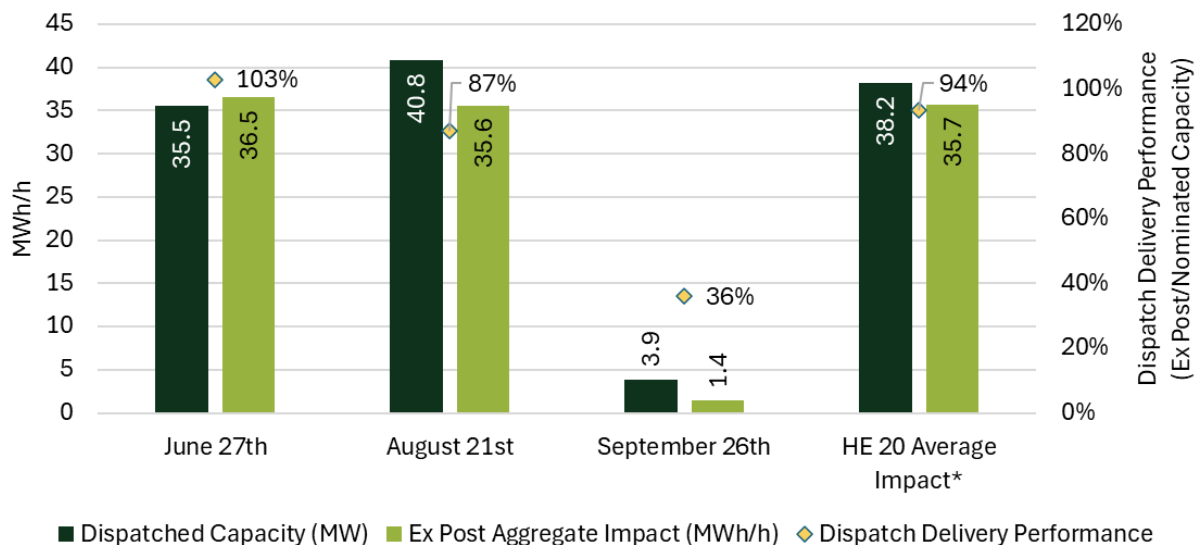
**TABLE 4-4: PG&E PY2025 CBP ELECT DA AVERAGE LOAD IMPACT BY EVENT DAY**

Event Date (2025)	Event Hours (HE)	Num. of Customers	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Dispatch Delivery Perf. (%)	Temp (F)
			Ref. Load	Load Impact	Ref. Load	Load Impact			
June 27 <sup>th</sup>	20	576	118.8	36.5	206.2	63.3	31%	103%	86
August 21 <sup>st</sup>	19-20	685	128.4	35.6	187.5	52.0	28%	87%	92
September 26 <sup>th</sup>	19	83	11.0	1.4	132.4	17.0	13%	36%	76
<b>HE20 Avg. Impact*</b>	<b>20</b>	<b>630</b>	<b>123.4</b>	<b>35.7</b>	<b>195.7</b>	<b>56.6</b>	<b>29%</b>	<b>94%</b>	<b>88</b>

\*No formal average event day was developed for PG&E's PY2025 ex post impact analysis. However, HE20 was a common event hour on June 27<sup>th</sup> and August 21<sup>st</sup> and is used to represent average event performance when making comparisons to prior years.

Figure 4-3 compares dispatched capacity (MW) and ex post aggregate impacts (MWh/h) across the June 27<sup>th</sup>, August 21<sup>st</sup>, and September 26<sup>th</sup> test events, as well as the HE20 average impact. Delivery performance exceeded 100% on June 27<sup>th</sup> (103%) and was slightly below expectations both for August 21<sup>st</sup> (87%) and for the HE20 average (94%). Conversely, due to the re-test nature of the September 26<sup>th</sup> event, delivery performance was substantially below expectations on that day (36%).

**FIGURE 4-3: PG&E PY2025 CBP ELECT DA AVERAGE EVENT HOUR DELIVERY PERFORMANCE BY EVENT DAY**



\*HE20 average nominated capacity represents the average dispatched capacity between the June 27<sup>th</sup> and August 21<sup>st</sup> events.

### PG&E Ex Post Impact Monthly Performance Summary

Table 4-5 presents the monthly performance summary by month. In PY2025, there were three events, each occurring in separate months. PY2025 monthly performance metrics therefore align with those of the corresponding event. There was no event where the entire nominated capacity was dispatched.

However, both the June 27<sup>th</sup> and August 21<sup>st</sup> event days dispatched over 96% of nominated customers and nominated capacity, so these events jointly illustrate the PY2025 CBP delivery performance. Due to the nature of the September 21<sup>st</sup> event as primarily a re-test for customers identified as poor performers, it achieved the lowest delivery performance between all three events at 36%.

**TABLE 4-5: PG&E PY2025 CBP ELECT DA MONTHLY PERFORMANCE SUMMARY**

Month	Number of Event Days in Month	Monthly Nominations		Monthly Dispatch		Ex Post Event Hour Impact	
		Number of Customers	Capacity (MW)	Number of Customers	Capacity (MW)	Capacity (MW)	Delivery Perf. (%)
May	0	546	31.4	--	--	--	--
June	1	591	36.7	576	35.5	36.5	103%
July	0	655	39.9	--	--	--	--
August	1	689	40.8	685	40.8	35.6	87%
September	1	690	38.8	83	3.9	1.4	36%
October	0	678	32.9	--	--	--	--

### PG&E Event Hour Impacts by Participant Subgroups

Table 4-6 through Table 4-11 present the event day reference loads, impacts, and percent load reductions for non-residential CBP Elect DA participants for each Industry Type, Local Capacity Area, and SubLAP for the June 27<sup>th</sup> and August 21<sup>st</sup> events. Tables are separated by subgroup and event day, wherein the reference loads, impact, load reductions, and temperature values represent the averages across all dispatched customers and all event hours. The September 26<sup>th</sup> event is excluded from this section, as it is not reflective of the broader Elect DA capabilities. Complete details on subgroup performance for each event day are available within the Ex Post Table Generator provided in Appendix A.

## PG&E EX POST RESULTS BY INDUSTRY TYPE

**TABLE 4-6: PG&E PY2025 CBP ELECT DA LOAD IMPACT BY INDUSTRY TYPE, JUNE 27<sup>TH</sup> EVENT**

Industry Type	Number of Customers in Event	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (°F)
		Ref. Load	Load Impact	Ref. Load	Load Impact		
Agriculture, Mining and Construction	226	18.5	13.9	81.7	61.7	76%	93.5
Institutional/Government	2					%	70.6
Manufacturing	19					%	80.1
Office, Hotels, Finance, Services	20					%	73.2
Retail Stores	236	44.1	3.8	186.8	15.9	9%	77.2
Schools	2					%	93.8
Wholesale, Transport and other Utilities	71	13.2	11.0	185.8	154.9	83%	95.6

**TABLE 4-7: PG&E PY2025 CBP ELECT DA LOAD IMPACT BY INDUSTRY TYPE, AUGUST 21<sup>ST</sup> EVENT**

Industry Type	Number of Customers in Event	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (°F)
		Ref. Load	Load Impact	Ref. Load	Load Impact		
Agriculture, Mining and Construction	258	20	13.7	77.4	53.2	69%	96.0
Institutional/Government	4					%	86.2
Manufacturing	19					%	87.6
Office, Hotels, Finance, Services	20					%	83.5
Retail Stores	293	56.2	6.5	191.8	22.3	12%	86.6
Schools	8					%	98.2
Wholesale, Transport and other Utilities	83	14.0	10.0	168.8	120.8	72%	97.4

## PG&E EX POST RESULTS BY LOCAL CAPACITY AREA

**TABLE 4-8: PG&E PY2025 CBP ELECT DA LOAD IMPACT BY LOCAL CAPACITY AREA, JUNE 27<sup>TH</sup> EVENT**

Local Capacity Area	Number of Customers in Event	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (°F)
		Ref. Load	Load Impact	Ref. Load	Load Impact		
Greater Bay Area	164					%	68.3
Greater Fresno Area	113					%	96.1
Kern	19					%	98.0
North Coast and North Bay	33	6.3	0.7	191.9	19.9	10%	78.5
Sierra	28					%	91.8
Stockton	6					%	87.0
Other	211	24.4	17.1	115.8	81.2	70%	93.4
Non-LCA	2					%	78.7

**TABLE 4-9: PG&E PY2025 CBP ELECT DA LOAD IMPACT BY LOCAL CAPACITY AREA, AUGUST 21<sup>ST</sup> EVENT**

Local Capacity Area	Number of Customers in Event	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (°F)
		Ref. Load	Load Impact	Ref. Load	Load Impact		
Greater Bay Area	187					%	79.4
Greater Fresno Area	108					%	99.8
Kern	31					%	98.5
North Coast and North Bay	39					%	84.2
Sierra	34	7.0	1.1	205.6	33.2	16%	97.3
Stockton	23					%	97.6
Other	251	27.8	16.2	110.9	64.6	58%	95.8
Non-LCA	12					%	94.5



## PG&E EX POST RESULTS BY SUBLAP

**TABLE 4-10: PG&E PY2025 CBP ELECT DA LOAD IMPACT BY SUBLAP, JUNE 27<sup>TH</sup> EVENT**

SubLAP	Number of Customers in Event	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
		Ref. Load	Load Impact	Ref. Load	Load Impact		
PGCC	28					%	57.6
PGEB	57					%	75.9
PGF1	157					%	96.3
PGFG	19					%	80.8
PGKN	19					%	98.0
PGNB	14					%	75.4
PGNP	48					%	87.2
PGP2	27					%	69.3
PGSB	33					%	69.7
PGSF	21					%	58.5
PGSI	28					%	91.8
PGST	2					%	93.8
PGZP	123	14.1	11.4	114.8	92.9	81%	94.4

**TABLE 4-11: PG&E PY2025 CBP ELECT DA LOAD IMPACT BY SUBLAP, AUGUST 21<sup>ST</sup> EVENT**

SubLAP	Number of Customers in Event	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
		Ref. Load	Load Impact	Ref. Load	Load Impact		
PGCC	33					%	68.8
PGEB	66					%	87.1
PGF1	148					%	99.8
PGFG	19					%	85.0
PGKN	29					%	98.5
PGNB	21					%	83.5
PGNP	95	11.2	3.3	117.8	34.3	29%	94.4
PGP2	31					%	80.4
PGSB	36					%	82.6
PGSF	23					%	66.0
PGSI	34	7.0	1.1	205.6	33.2	16%	97.3
PGST	23					%	99.3
PGZP	127	13.7	9.6	108.2	75.7	70%	95.5

## PG&E Comparison of Ex Post Impacts

This section discusses how the PY2025 ex post load impacts compared to previous years' impacts. Given that the residential CBP Elect DA was unsubscribed in PY2024 and PY2025, this section only presents information for the non-residential CBP Elect DA.

Table 4-12 presents average monthly nominations for the PG&E CBP Elect DA non-residential product from PY2021 through PY2025. As shown, PY2025 had the highest level of participation over the period, with average nominated capacity reaching 36.8 MW and average nominated customers reaching 642, substantially higher than prior program years on both fronts.

**TABLE 4-12: PG&E NON-RESIDENTIAL CBP ELECT DA AVERAGE NOMINATIONS – PY2021 THROUGH PY2024**

Program Year	Avg. Monthly Nominated Capacity (MW)	Avg. Nominated Customers
2021	13.5	365
2022	31.3	475
2023	23.8	430
2024	■	270
2025	36.8	642

Table 4-13 compares average event-day performance across program years since PY2021. Because the PY2025 evaluation did not develop a formal average event day, the impacts from HE20 during the June 27<sup>th</sup> and August 21<sup>st</sup> test events were averaged to facilitate comparison with prior years. The September 26<sup>th</sup> event is excluded from PY2025 ex post comparisons, as it primarily focused on a re-test of previously identified poor performers.

Overall, nomination delivery performances were higher in PY2024 than in PY2025 (■ % versus 93%). However, the customer mix in PY2025 differed from prior years, limiting the direct comparability of performance metrics across program years. On a per-capita basis, impacts in PY2025 (56.6 kWh/h) were lower than in PY2024 (■ kWh/h) and closely aligned with PY2022 levels (58.9 kWh/h). Despite lower per-capita impacts, the higher enrollment in PY2025 (averaging approximately 630 customers dispatched per event) resulted in the highest aggregate load impacts among years included in this comparison; with average delivered impacts reaching 35.7 MWh/h.

**TABLE 4-13: PG&E NON-RESIDENTIAL CBP ELECT DA CURRENT VS. PREVIOUS EX POST (AVERAGE EVENT DAY)**

Program Year	Avg. Monthly Nominated Customers	Aggregate (MWh/h)			Per Capita (kWh/h)			Temp (F)
		Dispatched Capacity	Load Impact	% Delivered	Reference Load	Load Impact	Percent Load (%)	
2021	365	13.5	13.0	96%	81.6	35.6	44%	87
2022	475	31.3	28.0	89%	150.9	58.9	39%	96
2023	430	23.8	20.5	86%	219.2	47.2	22%	91
2024*	270						%	92
<b>2025**</b>	<b>630</b>	<b>38.2</b>	<b>35.7</b>	<b>93%</b>	<b>195.7</b>	<b>56.6</b>	<b>29%</b>	<b>88</b>

\*The PY2024 customer counts differ from the PY2024 PG&E Ex Post Table Generator average event day customer counts (to represent the anticipated capabilities of a full system dispatch).<sup>10</sup>

\*\*The PY2025 values represent the average of HE20 during the June 27<sup>th</sup> and August 21<sup>st</sup> events.

Table 4-14 shows how the PY2025 ex post impacts for the June 27<sup>th</sup> and August 21<sup>st</sup> events compare to the PY2024 Ex Ante August system worst (peak) day impacts for 2025. The September 26<sup>th</sup> event is again omitted from this comparison. As shown in the table, the PY2025 non-residential CBP achieved higher enrollment than was forecasted in PY2024. However, both aggregate and per-capita impact estimates were lower in PY2025 than were projected in the PY2024 ex ante forecast. In addition, per-capita reference loads in PY2025 were below the PY2024 forecasted values.

These differences result from a shift in the composition of the customer base, with PY2025 including a relatively higher proportion of smaller-use customers compared to the PY2024 ex ante expectations for 2025. Despite these differences, the average percentage load reductions are broadly comparable. The PY2024 ex ante forecast projected a 33% load reduction, while the ex post results estimate realized percent load reduction reductions at 31% for the June 27<sup>th</sup> event and 28% for the August 21<sup>st</sup> event in 2025.

<sup>10</sup> Full system load events represent event dispatches where all program resources dispatched for an event. For purposes of this comparison, the PY2024 average monthly nominated customer counts and corresponding aggregate impacts are used as a proxy for what would have likely occurred given a full system dispatch.

**TABLE 4-14: PG&E NON-RESIDENTIAL CBP ELECT DA CURRENT EX POST VS. PREVIOUS YEAR EX ANTE (PG&E 1-IN-2 AUGUST SYSTEM WORST DAY)**

Estimate for 2025	Number of Customers	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
		Ref. Load	Load Impact	Ref. Load	Load Impact		
PY2024 Ex Ante	431	123.9	40.8	287.5	94.6	33%	96.8
PY2025 Ex Post (June 27 <sup>th</sup> )	576	118.8	36.5	206.2	63.3	31%	85.9
PY2025 Ex Post (August 21 <sup>st</sup> )	685	128.4	35.6	187.5	52.0	28%	91.5

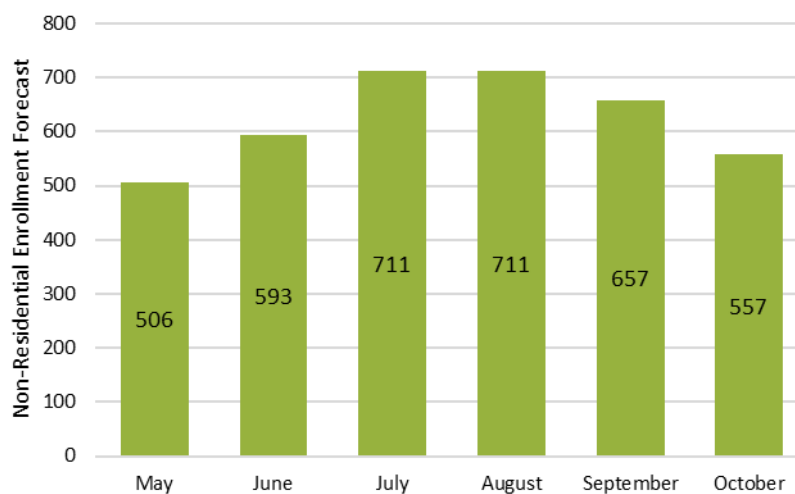
## 4.4 PG&E EX ANTE IMPACTS

This section presents the ex ante forecasts, results, and key assumptions used to develop ex ante forecasts.

### Enrollment Forecasts

PG&E provided Verdant with enrollment forecasts for years 2026 through 2036, as shown in Figure 4-4. PG&E is forecasting only non-residential participation in the CBP over this period and is not forecasting residential participation. Non-residential participation remains constant by month throughout the 11-year forecast. Participation forecasts for the non-residential customers range from a low of 506 customers in May to a high of 711 customers in both July and August. PG&E anticipates no residential participation in the CBP as of the publication of this report.

**FIGURE 4-4: PG&E NON-RESIDENTIAL CBP ELECT DA PARTICIPANT FORECAST BY MONTH – 2026 THROUGH 2036**



## PG&E Ex Ante Analysis Assumptions

Presented below are the key assumptions towards developing PG&E's ex ante analysis and forecasts.

- **Consistent Load Reductions.** A key assumption underlying PG&E's enrollment forecast is that load reductions (expressed as a percentage of reference load) will remain consistent between PY2025 and future program years. In other words, if customers curtailed an average of 50% of their load in PY2025, it is assumed that this level of performance will continue in subsequent years. Nomination delivery performance is not directly incorporated into this assumption. Instead, aggregators are expected to adjust their nominated capacity in future years based on demonstrated performance capabilities. Accordingly, the enrollment forecast was developed to target an approximate 100% delivery performance for current enrollment nominations (approximately 40 MW in August).
- **No Residential Participation.** There has not been any participation in the PG&E's Residential Elect DA program since PY2023. PG&E anticipates that the residential customer segment will continue to be unsubscribed. As a result, the ex ante forecast for the PG&E's CBP contains zero residential participation.
- **Program and Portfolio Ex Ante Impacts.** While there were dually enrolled CBP customers in PY2025, there were no dual-program event days for enrolled CBP customers. With collaboration from PG&E, it was decided that program and portfolio ex ante impacts would be identical and assume no dual-program event days for CBP customers. This approach was also adopted for the PY2024 analysis.
- **Four-hour Event Dispatch.** The Load Impact Protocol (LIP) 24-Hour Slice-of-Day requirements state that a four consecutive hour dispatch is required in ex ante within Availability Assessment Hours on the worst day of each month.<sup>11</sup> For PG&E, the first 4 hours of the RA window are reported for ex ante.
- **Weather Sensitive Load Reductions.** A key component of ex ante analysis is developing weather normalized impacts for various weather scenarios. The PY2025 event season only contained one or two events for most Elect DA customers. Given that the ex post and ex ante analysis rely on hourly customer-specific models, each customer only has one or two data points in each hour for a regression model to determine the relationship between impacts and temperature. Verdant determined that there was not enough information to reliably produce weather normalized load impacts through modeling. As a result, ex ante impacts were instead derived from ex post percent load reductions.
- **Load Impacts.** The ex ante analysis applied the percent load reductions from ex post results to estimate ex ante load impacts. Since reference loads vary by temperature for weather sensitive customers and impacts are derived from percent load reductions, the ex ante load impacts are implicitly weather sensitive and vary across weather scenarios. Percent load reductions were developed based on the average percent load reduction in each n<sup>th</sup> hour of events (i.e., first hour, second hour, etc.) by customer groups of LCA, SubLAP, and Industry type. If a percent load reduction

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<sup>11</sup> [LIP Filing Guide 6.1](#) at 11.

was not available for any given  $n^{\text{th}}$  hour of dispatch, the next closest percent load reduction was applied with an assumed degradation rate (discussed below).

- **Snapback.** The ex post analysis found no evidence of snapback after the end of events. Conversely, impacts appear to persist after the event dispatch in the hours following events. As a result, the ex ante analysis carried forward the observed first and second hour post event percent load reductions for the two hours after the presumed end of the four-hour event dispatch.
- **Degradation Rates.** Prior CBP evaluations developed degradation rates meant to capture how CBP participants maintain their load reductions through longer duration events. In PY2025, events lasted either one or two hours. As a result, there are no historic four-hour duration events that meaningfully represent the CBP Elect DA as it currently exists. To address this, Verdant applied degradation rates from the PY2023 ex ante analysis of 85% for the third hour of dispatch and 87% for the fourth hour. Verdant previously applied these same adjustments to the PY2024 CBP Elect DA ex ante for the same reasons.

### PG&E Ex Ante Load Impact Summary

Prior to discussing the ex ante impacts, it is worth presenting the aggregate ex ante load shape for the non-residential CBP Elect DA product, as it provides context for remainder of the ex ante discussion. Figure 4-5 presents the aggregate ex ante load shape under the PG&E 1-in-2 August system worst day (peak day) conditions for the non-residential Elect DA product in 2026. The figure includes the aggregate estimated baseline (or reference load), the estimated hourly observed load, and the estimated impacts (or load reductions) across a four-hour dispatch (HE17 to HE20). The yellow highlighted hours indicate the full five-hour resource adequacy (RA) window, and the vertical grey dashed lines denote the start and end of the dispatch window. As shown in Figure 4-5, the Elect DA impacts are predicted to persist beyond the four-hour dispatch as observed in the ex post analysis.

**FIGURE 4-5: PG&E NON-RESIDENTIAL CBP ELECT DA LOAD SHAPE (PG&E 1-IN-2 AUGUST SYSTEM WORST DAY) – 2026 THROUGH 2036**

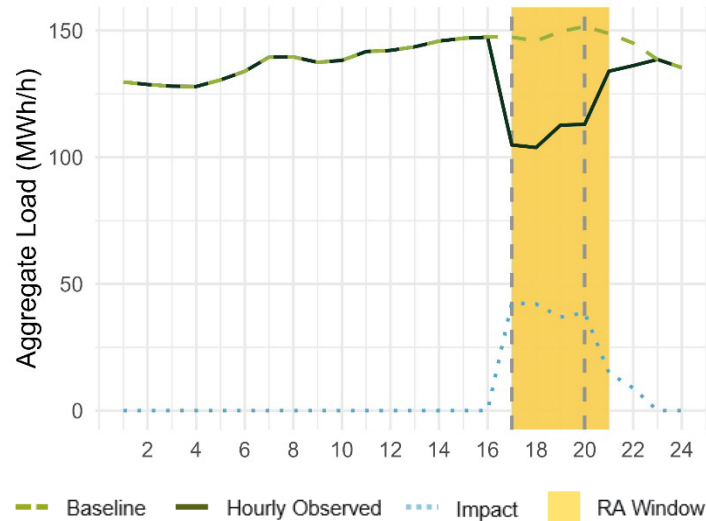


Table 4-15 presents the August system worst day average ex ante load impacts over the same four-hour dispatch (HE17 to HE20) for the Elect DA product. Given that the participant forecast is constant by month across years, this table represents the average impacts for all program years in the forecast (PY2026 through PY2036). The CBP Elect DA is forecasted to provide an average hourly load reduction of 40.0 MWh/h to 40.4 MWh/h during the four-hour dispatch, depending on the weather scenario.

**TABLE 4-15: PG&E CBP ELECT DA AUGUST SYSTEM WORST DAY AVERAGE EX ANTE LOAD IMPACT OVER A 4-HOUR DISPATCH (HE17 TO HE20) – 2026 THROUGH 2036**

Weather Year	Weather Source	Event Dispatch (HE)	Number of Customers	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
				Ref. Load	Load Impact	Ref. Load	Load Impact		
1-in-2	PG&E	17-20	711	148.6	40.0	209.1	56.3	27%	93.0
1-in-10	PG&E	17-20	711	150.4	40.4	211.6	56.8	27%	98.4
1-in-2	CAISO	17-20	711	149.3	40.2	210.0	56.5	27%	95.0
1-in-10	CAISO	17-20	711	149.7	40.2	210.5	56.6	27%	95.8

### PG&E Hourly Tables

Table 4-16 presents the hourly aggregate ex ante load impacts for PG&E 1-in-2 and 1-in-10 system worst day conditions for PG&E’s Elect DA operating months in 2026 through 2036. The highlighted yellow, green, and blue hours collectively represent the hours of the RA window for each month. The green and blue highlighted hours collectively represent the four-hour RA window PG&E uses for its ex ante forecast. Additionally, each blue hour represents the monthly peak hour as projected by the California Energy

Commission (for use in RA Year 2027).<sup>12</sup> The light red hours represent the estimated persistence of impacts beyond the RA window. These tables also represent the slice of day impacts given the assumptions in the ex ante analysis. There is some variation in forecasted load impacts from month to month for non-residential Elect DA, with the largest impacts occurring in July and the smallest impacts occurring in October, primarily driven by the differences in forecasted customers nominations between months.

**TABLE 4-16: PG&E CBP ELECT DA AUGUST SYSTEM WORST DAY EX ANTE HOURLY TABLES (HE16 TO HE24) – 2026 THROUGH 2036**

Hour Ending	PG&E 1-in-2 System Worst Day (MWh/h)						PG&E 1-in-10 System Worst Day (MWh/h)					
	May	June	July	Aug.	Sept.	Oct.	May	June	July	Aug.	Sept.	Oct.
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	35.7	43.1	42.6	35.1	23.8	0.0	35.7	43.1	42.8	35.5	24.1
18	28.7	36.2	43.6	42.1	34.7	23.6	29.0	36.3	43.7	42.4	35.3	24.2
19	29.5	31.4	38.1	36.9	30.1	20.5	29.7	31.5	38.2	37.3	30.6	21.0
20	25.7	33.1	40.1	38.6	30.7	20.7	25.9	33.2	40.2	39.1	31.3	21.2
21	25.9	13.2	16.1	14.9	11.3	7.5	25.9	13.2	16.2	15.0	11.4	7.6
22	10.3	7.9	9.5	8.9	7.1	4.9	10.4	7.9	9.5	9.0	7.3	5.0
23	6.0	0.0	0.0	0.0	0.0	0.0	6.1	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

### PG&E Ex Ante Comparisons to Prior Years

Table 4-17 presents a comparison of the current ex ante “backcast” for PY2025 (PG&E 1-in-2 August system worst day) with the two largest PY2025 ex post event days for non-residential customers. There was no residential Elect DA participation in PY2025, and the segment is therefore not discussed.

The comparison shows how the non-residential Elect DA customers would likely have performed given a four-hour dispatch under the ex ante assumptions discussed prior. Overall, aggregate reference loads are very similar between the ex ante “backcast” and the current ex post (124.1 MWh/h in the ex ante versus 118.8 MWh/h and 128.4 MWh/h between each ex post event day). The aggregate load impacts are also of similar scale across the two scenarios, but the ex ante total impact of 32.4 MWh/h is still notably smaller than both ex post event days’ impacts. This results from the inclusion of degradation rates applied to the

<sup>12</sup> [Demand Response Load Impact Protocols](#)



last two hours of the event dispatch, which is intended to capture event fatigue from longer four hour events. In PY2025, no event lasted longer than the maximum test event duration of two hours.

**TABLE 4-17: PG&E CBP ELECT DA CURRENT EX ANTE (PG&E 1-IN-2 AUGUST SYSTEM WORST DAY) VS. EX POST**

PY2025 Estimate	Number of Customers	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
		Ref. Load	Load Impact	Ref. Load	Load Impact		
Current Ex Ante Backcast	692	124.1	32.4	179.4	46.8	26%	92.5
June 27 <sup>th</sup> Ex Post	576	118.8	36.5	206.2	63.3	31%	85.9
August 21 <sup>st</sup> Ex Post	685	128.4	35.6	187.5	52.0	28%	91.5

Table 4-18 presents the current year and prior year ex ante forecasts for 2026 for non-residential Elect DA customers under PG&E 1-in-2 August system worst day weather conditions. The non-residential aggregate ex ante MW forecasts for 2026 are very similar (both equaling roughly 40 to 41 MWh/h) during the reporting window. The per capita load impacts are estimated to be substantially smaller in the current PY2025 forecasts than in PY2024 (56.3 kWh/h compared with 94.6 kWh/h).

**TABLE 4-18: PG&E CBP ELECT DA PRIOR VS. CURRENT EX ANTE (PG&E 1-IN-2 AUGUST SYSTEM WORST DAY) – 2026**

Program	Ex Ante Estimate for 2026	Number of Customers	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
			Ref. Load	Load Impact	Ref. Load	Load Impact		
Non-Res Elect DA	PY2024 Forecast	431	123.9	40.8	287.5	94.6	33%	96.8
	PY2025 Forecast	711	148.6	40.0	209.1	56.3	27%	93.0

## 4.5 PG&E FINDINGS

The PY2025 Load Impact analysis key findings for the PG&E CBP Elect DA products are as follows:

- PY2025 non-residential Elect DA delivery performance decreased relative to PY2024 but was comparable to other previous program years outside of PY2024. The June 27<sup>th</sup> test event's dispatched delivery performance exceeded dispatched capacity, with a 103% delivery performance. The August 21<sup>st</sup> test event had an 87% dispatch delivery performance. The September 26<sup>th</sup> test event, primarily a re-test event for poor performers, had a dispatch delivery performance of 36%. On average across June 27<sup>th</sup> and August 21<sup>st</sup> event hours, dispatch delivery performance was 94%.

- Average aggregate impacts for the three PY2025 test events are as follows; 36.5 MWh/h on June 27<sup>th</sup>, 35.6 MWh/h on August 21<sup>st</sup>, and 1.4 MWh/h on September 26<sup>th</sup>.
- HE20 was the most common event hour in PY2025, comprising 62% of participant event hours. On average, non-residential Elect DA customers provided 56.6 kWh/h of load reductions during this hour.
- The non-residential Elect DA ex ante analysis finds that the non-residential customer segment is anticipated to provide an average hourly load reduction between 40.0 MWh/h and 40.4 MWh/h during a four-hour dispatch in 2026 depending on the weather scenario in the month of August.
- The residential Elect DA had no participation in PY2025. As of the publication of this report, PG&E is expecting that the residential customer segment will remain unsubscribed in future program years.

## 5 SOUTHERN CALIFORNIA EDISON

This section presents SCE’s CBP participation, event days, and ex post and ex ante load impact summaries. As discussed previously, SCE offered one CBP product in PY2025, *CBP Elect (CBP-E)*, which replaced the CBP DA. PY2025 represents the first year of CBP-E, although Verdant previously developed ex ante forecasts for SCE’s CBP-E program in PY2024.

The CBP-E product offers three event price trigger options: \$200/MWh, \$400/MWh and \$600/MWh. CBP-E operates from May through October and can be dispatched between 5 p.m. and 10 p.m. in May and between 4 p.m. and 9 p.m. in the months of June through October. Events are called Monday through Saturday (excluding holidays) in the months of May through September, and Monday through Friday (excluding holidays) in October. Aggregators provide separate nominations for weekday and Saturday events. SCE’s CBP is open to both residential and non-residential participation. However, there was no residential participation in PY2025.

### 5.1 SCE CBP-E PARTICIPATION

Table 5-1 below presents the monthly distribution of enrolled customers and nominations for the SCE CBP-E by its three trigger options (\$/MW). In PY2025, only the \$600/MW option was subscribed, with no enrollment in the \$200/MW and \$400/MW option.

On average, the PY2025 non-residential CBP-E DA had approximately 506 enrolled customers and 12.3 MW nominated capacity from May through October. Participation and nominated capacity for CBP DA increased each month, from 461 customers and 10.6 MW in May to 530 customers and 13.7 MW in October.

**TABLE 5-1: SCE PY2025 CBP-E MONTHLY NOMINATIONS**

Month	Number of Aggregators	Option 1 CBP-E \$200/MW		Option 2 CBP-E \$400/MW		Option 3 CBP-E \$600/MW	
		Enrolled Customers	Nominated Capacity (MW)	Enrolled Customers	Nominated Capacity (MW)	Enrolled Customers	Nominated Capacity (MW)
May	2	--	--	--	--	461	10.6
June	2	--	--	--	--	497	11.7
July	2	--	--	--	--	500	12.4
August	4	--	--	--	--	518	12.7
September	4	--	--	--	--	527	12.9
October	4	--	--	--	--	530	13.7

Table 5-2 describes the distribution of enrolled customers by industry type and customer size. Across all months, there were 530 unique customers enrolled in the CBP-E in PY2025 at any point during the program year. Consistent with the last three program years, the majority of participants are in the Retail Stores industry segment at 386 customers (71% of total CBP-E enrollment). Additionally, there was sizable participation from customers in the Utilities industry segment at 143 customers (26% of total CBP-E enrollment), comprised primarily of water supply and irrigation customers.

**TABLE 5-2: SCE PY2025 CBP-E CUSTOMER ENROLLMENT BY INDUSTRY TYPE AND CUSTOMER SIZE**

Industry Type	50 kW or Under (Small)	51kW to 250 kW (Medium)	250kW or Greater (Large)	Total
Retail Stores	19	187	180	386
Utilities	25	91	27	143
Other/Unknown*	5	3	9	17
<b>Total</b>	<b>49</b>	<b>281</b>	<b>216</b>	<b>546</b>

\* Other/Unknown includes various service industries, institutional businesses, schools, and customers with no provided NAICS classification data.

## 5.2 SCE EVENT SUMMARY

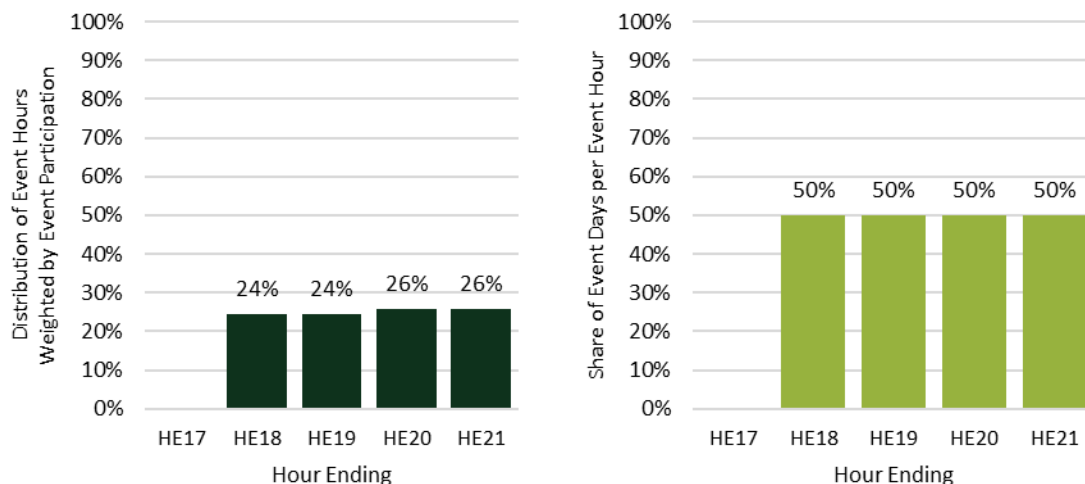
Table 5-3 presents the event details for the PY2025 events. SCE’s CBP-E program had two test events and no market award nor emergency events in PY2025. The two test events occurred in August and September and were called for two hours, although the events did not share a common hour. For each test event, all nominated resources were dispatched.

**TABLE 5-3: SCE PY2025 CBP-E EVENT DETAILS**

Event Date (2025)	Event Type	Event Start (Prevailing Time)	Event End (Prevailing Time)	Event Duration (Hours)	Dispatched Customers	Dispatched Capacity (MW)
July 30 <sup>th</sup>	Test	5:00 PM	7:00 PM	2	500	12.4
September 24 <sup>th</sup>	Test	7:00 PM	9:00 PM	2	527	12.9

Figure 5-1 presents the distribution of event hours weighted by event participation in each PY2025 event hour (left) and the share of events that contained each hour of the program event window (right). As shown, there is an even distribution of event hours called for all HE18 to HE21, with one dispatch for each of those four hours in PY2025. The number of dispatched customers is slightly higher during the September event, resulting in a slightly higher weighted event hour distribution for HE20 and HE21.

**FIGURE 5-1: SCE PY2025 CBP-E DISTRIBUTION OF EVENT HOURS BY HOUR (LEFT) AND SHARE OF EVENTS WITH A GIVEN HOUR (RIGHT)**



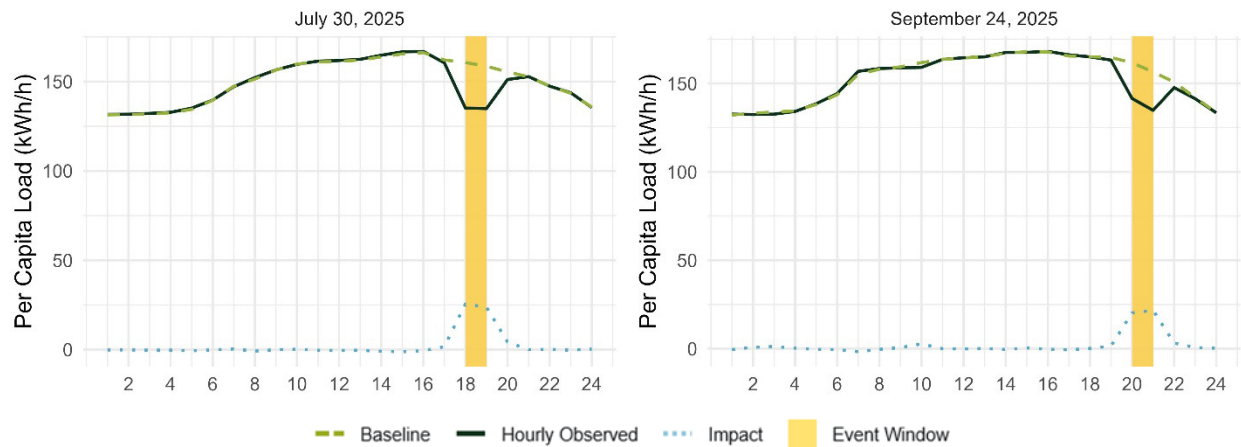
### Definition of the Average Event Day

In collaboration with SCE, it was decided not to produce an average event day. Between the two events, there is no common event hour. As a result, the average event day format within the hourly ex post table generators produces diluted impacts (an average of event and non-event hours) across hours HE18 through HE21 that does not allow for meaningful interpretation. For making comparisons of ex post results with prior years and ex ante impacts, the average of all event hours are presented instead.

## 5.3 SCE EX POST IMPACT RESULTS

Prior to discussing the ex post impacts, it is worth presenting the event day load shapes for the PY2025 events as it provides context for the remainder of the ex post discussion. Figure 5-2 presents the per capita load shapes for the two CBP-E test events. July 30<sup>th</sup> is presented to the left, while September 24<sup>th</sup> is presented to the right. The figure presents the per capita estimated baseline (reference load), the actual hourly observed load, and the estimated impacts (load reductions) for each event day. The highlighted yellow hours indicate the event hours where one or more customers were dispatched for an event.

**FIGURE 5-2: SCE PY2025 CBP-E EVENT DAY LOAD SHAPES – JULY 30<sup>TH</sup> (LEFT) AND SEPTEMBER 24<sup>TH</sup> (RIGHT)**



As depicted, there are visually identifiable load impacts in each event hour that range from 20.2 kWh/h (HE 20 on September 24<sup>th</sup>) to 25.5 kWh/h (HE18 on July 30<sup>th</sup>), with little to no persistence in the hour immediately following each event (HE20 on July 30<sup>th</sup> and HE22 on September 24<sup>th</sup>)

### SCE Ex Post Impact Results by Event Day

Table 5-4 presents the average event hour load impacts for each event dispatched. In PY2025, all customers were included in the same dispatch (i.e., participants had the same event hours for a given event). The table below presents the number of nominated customers called for each event, the hours in which each event occurred, as well as the aggregate and per capita reference loads and load impacts.

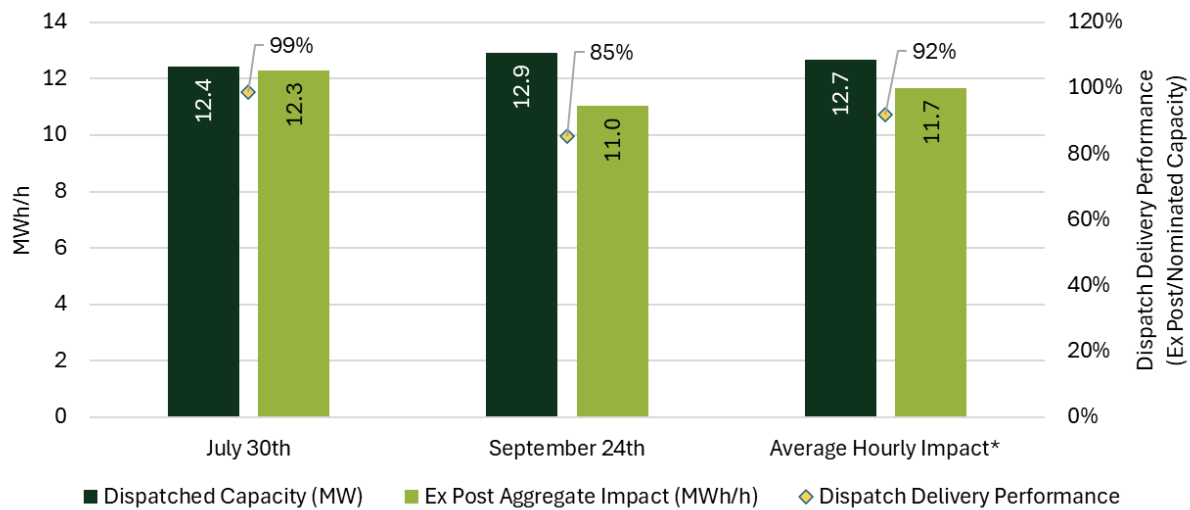
**TABLE 5-4: SCE PY2025 CBP-E AVERAGE LOAD IMPACT BY EVENT DAY**

Event Date (2025)	Event Hours (HE)	Num. of Customers	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Dispatch Delivery Perf. (%)	Temp (F)
			Ref. Load	Load Impact	Ref. Load	Load Impact			
July 30 <sup>th</sup>	18-19	500	79.8	12.3	159.6	24.6	15%	99%	86
September 24 <sup>th</sup>	20-21	527	83.8	11.0	159.1	21.0	13%	85%	79
<b>Avg. Impact*</b>	<b>18-21</b>	<b>514</b>	<b>81.9</b>	<b>11.7</b>	<b>159.4</b>	<b>22.7</b>	<b>14%</b>	<b>92%</b>	<b>82</b>

\*No formal average event day was developed for SCE's PY2025 CBP-E ex post impact analysis. The average impact represents the average hourly impact across all PY2025 event hours

Figure 5-3 compares dispatched capacity (MW) and ex post aggregate impacts (MWh/h) for the July 30<sup>th</sup> and September 24<sup>th</sup> events, as well as for the average impact across all event hours. Delivery performance nearly met anticipated capacity on July 30<sup>th</sup> (99%) but was below expectations on September 24<sup>th</sup> (85%). The average dispatch delivery performance was 92% across all PY2025 event hours.

**FIGURE 5-3: SCE PY2025 CBP-E EVENT HOUR DELIVERY PERFORMANCE AVERAGES BY EVENT DAY**



\*Average hourly impact nominated capacity represents the average dispatched capacity of SCE CBP-E events.

### SCE Ex Post Impact Monthly Performance Summary

As previously stated, all nominated resources were dispatched for each event day in PY2025. As a result, the monthly average load reductions indicate how well SCE CBP-E resources performed in each month. Table 5-5 below presents the monthly nomination, event day dispatched resources, and the average of full dispatch event hours from the ex post analysis. CBP-E customers delivered 12.3 MWh/h and 11.0 MWh/h during July and September events respectively, with a dispatch delivery performance of 99% and 85% respectively. Because there was a maximum of one event per month, monthly averages are equivalent to the corresponding event day averages.

**TABLE 5-5: SCE PY2025 CBP-E AVERAGE MONTHLY SUMMARY**

Month	Number of Event Days in Month	Monthly Nominations		Average Monthly Dispatch		Ex Post Full Event Hour Average Impact	
		Number of Customers	Capacity (MW)	Number of Customers	Capacity (MW)	Capacity (MW)	Delivery Perf. (%)
May	0	457	10.6	--	--	--	--
June	0	494	11.6	--	--	--	--
July	1	500	12.4	500	12.4	12.3	99%
August	0	517	12.7	--	--	--	--
September	1	527	12.9	527	12.9	11.0	85%
October	0	530	13.7	--	--	--	--

## SCE Event Hour Impacts by Participant Subgroups

Table 5-6 through Table 5-11 present the average event day reference loads, impacts and percent load impacts for CBP-E DA participants by industry type, local capacity area, and SubLAP. Tables are separated by subgroup and event day, wherein the reference loads, load reductions, and temperature values represent the averages across all dispatched customers and all event hours. Complete details on subgroup performance for each event day are available within the SCE Ex Post Table Generator provided in Appendix A.

### SCE EX POST RESULTS BY INDUSTRY TYPE

**TABLE 5-6: SCE PY2025 CBP-E LOAD IMPACT BY INDUSTRY TYPE, JULY 30<sup>TH</sup> EVENT**

Industry Type	Avg. Number of Customers in Events	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
		Ref. Load	Load Impact	Ref. Load	Load Impact		
Retail Stores	344	56.9	4.0	165.3	11.8	7%	83.2
Utilities	141					%	91.7
Other/Unknown	15					%	84.3

**TABLE 5-7: SCE PY2025 CBP-E LOAD IMPACT BY INDUSTRY TYPE, SEPTEMBER 24<sup>TH</sup> EVENT**

Industry Type	Avg. Number of Customers in Events	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
		Ref. Load	Load Impact	Ref. Load	Load Impact		
Retail Stores	369	60.4	6.0	163.6	16.3	10%	77.2
Utilities	142					%	83.5
Other/Unknown	16					%	78.1



## SCE EX POST RESULTS BY LOCAL CAPACITY AREA

**TABLE 5-8: SCE PY2025 CBP-E LOAD IMPACT BY LOCAL CAPACITY AREA, JULY 30<sup>TH</sup> EVENT**

Local Capacity Area	Avg. Number of Customers in Events	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
		Ref. Load	Load Impact	Ref. Load	Load Impact		
LA Basin	387	57.8	10.4	149.3	26.9	18%	86.3
Ventura	53					%	77.6
Outside	60					%	88.3

**TABLE 5-9: SCE PY2025 CBP-E LOAD IMPACT BY LOCAL CAPACITY AREA, SEPTEMBER 24<sup>TH</sup> EVENT**

Local Capacity Area	Avg. Number of Customers in Events	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
		Ref. Load	Load Impact	Ref. Load	Load Impact		
LA Basin	409	58.3	8.9	142.5	21.9	15	79.7
Ventura	58					%	72.1
Outside	60					%	80.1

## SCE EX POST RESULTS BY SUBLAP

**TABLE 5-10: SCE PY2025 CBP-E LOAD IMPACT BY SUBLAP, JULY 30<sup>TH</sup> EVENT**

SubLAP	Avg. Number of Customers in Events	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
		Ref. Load	Load Impact	Ref. Load	Load Impact		
SCEC	261	37.5	9.0	143.6	34.7	24%	91.6
SCEN	24					%	87.8
SCEW	116	18.8	1.2	161.7	10.7	7%	74.4
SCHD	62					%	88.2
SCNW	37					%	73.1

**TABLE 5-11: SCE PY2025 CBP-E LOAD IMPACT BY SUBLAP, SEPTEMBER 24<sup>TH</sup> EVENT**

SubLAP	Avg. Number of Customers in Events	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
		Ref. Load	Load Impact	Ref. Load	Load Impact		
SCEC	277	36.9	7.0	133.3	25.4	19%	83.1
SCEN	30	4.6	0.7	152.0	24.3	16%	79.0
SCEW	120	19.6	1.7	163.5	14.6	9%	72.0
SCHD	62					%	80.0
SCNW	38					%	68.2

### SCE Comparison of Ex Post Impacts

This section discusses how the PY2025 ex post load impacts compared to previous years. Given that this is the first year of the SCE CBP-E, ex post comparisons to prior years compare against SCE’s prior CBP product, CBP DA.

As seen in Table 5-12, PY2025 CBP-E participation was significantly larger than the CBP DA participation in 2024. Average monthly nominations increased from 1.1 MW in PY2024 to 12.3 MW in PY2025. The number of enrolled customers also increased substantially from 38 on average in PY2024 to 506 in PY2025. This represents the largest SCE CBP participation from 2021 to 2025.

**TABLE 5-12: SCE CBP DA & CBP-E AVERAGE SUMMER NOMINATIONS – PY2021 THROUGH PY2025**

Program Year	CBP Product	Avg. Monthly Nominations	Avg. Nominated Customers
2021	CBP DA	7.6	312
2022		0.9	83
2023			1
2024		1.1	38
2025	CBP-E	12.3	506

Table 5-13 presents the average event day performance across program years since 2021. As a reminder PY2025 average ex post impacts represent the average impact across all PY2025 events. Overall, the PY2025 CBP-E performed better than the PY2024 SCE CBP DA on every metric included in Table 5-13. Delivery performance increased from 69% in PY2024 to 92% in PY2025, with percent load reductions also increasing (5% in PY2024 compared to 14% in PY2025). However, it should be noted that the customer

compositions between the PY2024 and PY2025 products are different, with the former’s participants having larger load than PY2025 participants on average.

**TABLE 5-13: SCE CBP-E CURRENT VS. CBP DA PREVIOUS EX POST (AVERAGE EVENT DAY)**

Program Year	Avg. Number of Customers in Events	Aggregate (MWh/h)			Per Capita (kWh/h)			Temp (F)
		Dispatched Capacity	Load Impact	% Delivered	Reference Load	Load Impact	Percent Load Reduction (%)	
2021 (Summer)	312	7.6	4.0	53%	81.1	12.8	16%	82
2022 (Summer)	83	0.9	1.1	117%	78.8	12.8	16%	84
2023 (Summer)	1						%	95
2024	34	1.1	0.8	69%	423.9	22.3	5%	86
<b>2025*</b>	<b>514</b>	<b>12.7</b>	<b>11.7</b>	<b>92%</b>	<b>159.4</b>	<b>22.7</b>	<b>14%</b>	<b>82</b>

\*No formal average event day was developed for SCE’s PY2025 CBP-E ex post impact analysis. The average impact represents the average hourly impact across all PY2025 event hours

Table 5-14 shows how the PY2025 ex post impacts for the July 30<sup>th</sup>, September 24<sup>th</sup>, and the average hourly impact compares to the PY2024 ex ante August 1-in-2 system worst day (peak day) impacts for 2025. Given the absence of reliable PY2024 ex post information to inform the PY2024 ex ante impacts, the prior year’s ex ante impacts represented May 2025 CBP-E nominations.

As shown, the PY2025 non-residential program achieved similar enrollment relative to what was forecasted in PY2024. Aggregate load impacts are slightly higher than forecasted for both PY2025 events, at 12.3 MW and 11.0 MW between the PY2025 events compared to 10.9 MW for the forecast. This slight increase in MWs delivered is largely driven by increased enrollment in the program as ex ante impacts and per capita load reductions are similar to ex post results (22.0 kWh/h in the ex ante compared to average load reduction of 22.8 kWh/h across all event hours).

**TABLE 5-14: SCE CBP-E CURRENT EX POST (EVENT DAY AND AVERAGE IMPACT) VS. PREVIOUS YEAR EX ANTE (SCE 1-IN-2 AUGUST SYSTEM WORST DAY)**

Estimate for 2025	Number of Customers	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
		Ref. Load	Load Impact	Ref. Load	Load Impact		
PY2024 Ex Ante	495	86.8	10.9	175.3	22.0	13%	86
Current Ex Post (July 30 <sup>th</sup> )	500	79.8	12.3	159.6	24.6	15%	86
Current Ex Post (Sept 24 <sup>th</sup> )	527	83.8	11.0	159.1	21.0	13%	85
Current Ex Post (Avg. Impact)	514	81.8	11.7	159.4	22.8	14%	86

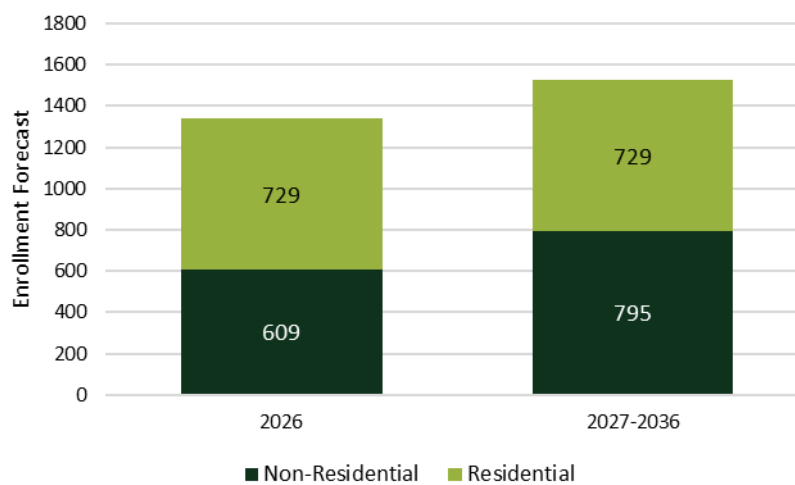
## 5.4 SCE EX ANTE IMPACTS

This section presents the SCE CBP-E ex ante forecasts, results, and key assumptions used to develop ex ante forecasts.

### Enrollment Forecasts

SCE provided Verdant with enrollment forecasts for years 2026 through 2036, as shown in Figure 5-4. SCE is forecasting both residential and non-residential participation in the CBP-E over the 11-year forecast horizon. The forecast provided to Verdant represents anticipated August enrollment (residential and non-residential) for each year. SCE is forecasting 609 non-residential and 729 residential customers to participate in CBP Elect DA in 2026. For 2027 through 2036, SCE is forecasting 795 non-residential and 729 residential customers. Verdant allocated these customer counts to SCE LCAs, SubLAPs, and customer types based on the distribution of PY2025 participation.

**FIGURE 5-4: SCE CBP-E PARTICIPANT FORECASTS – 2026 THROUGH 2036**



## SCE Ex Ante Analysis Assumptions

Assumptions used to develop the SCE CBP-E residential and non-residential ex ante impacts are presented below.

- **Non-Residential Customer Type Distribution.** SCE's participant forecast includes 609 customers for 2026 and 795 for 2027 through 2036. However, the enrollment forecasts did not include the number or distribution of customers by non-residential customer types. As a result, Verdant assumes that the future program enrollment will maintain the same distribution of customers as PY2025 program. The only exception to this is the assumption that none of the newly enrolled customers will be a large university customer and that SCE will maintain only one customer of this size and type in future program years.
- **Non-Residential Hourly Impacts.** The PY2025 CBP-E had two events, each with distinct event hours. As a result, impacts from HE 18, 19, 20 and 21 are used to estimate ex ante impacts in their respective hours. For example, HE18 ex ante impacts was derived from HE18 ex post impacts. We also assume no additional degradation of impacts associated with longer duration events; there is no historical degradation rate to apply to these customers, and it is observed that the impacts in each of these hours naturally degraded over time (i.e., impacts are smaller in the last two hours than in the first two hours within four hour dispatch). As a result, Verdant has no evidence that additional impact degradation is needed for the CBP-E non-residential ex ante forecast. This assumption should be revisited once the program has an event with a duration of longer than two hours.
- **Residential Ex Ante Impacts.** There was no residential participation in SCE's PY2025 CBP-E to inform an ex ante estimate of residential customers. To estimate ex ante impacts for residential customers Verdant relied instead on ex post impacts from residential SGIP customers enrolled in CPP. SCE anticipates that the future residential participant population will be comprised of SGIP battery storage participants. As a result, the residential CPP ex post results provide a good source for the development of CBP-E ex ante impacts.

The residential SGIP CPP ex post analysis uses net load. As a result, Verdant carried forward the ex ante reference loads developed in the PY2024 evaluation of CBP. These reference loads are based on delivered load of SCE SGIP participants that are likely to enroll in DR.

- **Program and Portfolio Ex Ante Impacts.** The ex ante impact analysis assumes no dual program days for enrolled CBP Elect DA customers. No dual enrollment occurred in PY2025. With collaboration from SCE, Verdant assumed no dual enrollment in subsequent program years, resulting in identical ex ante program and portfolio impact forecasts.
- **Four-hour Event Dispatch.** The Load Impact Protocol (LIP) 24-Hour Slice-of-Day requirements state that a four consecutive hour dispatch is required in ex ante within Availability Assessment Hours on the worst day of each month.<sup>13</sup> For SCE, the last 4 hours of the RA window are reported for ex ante.

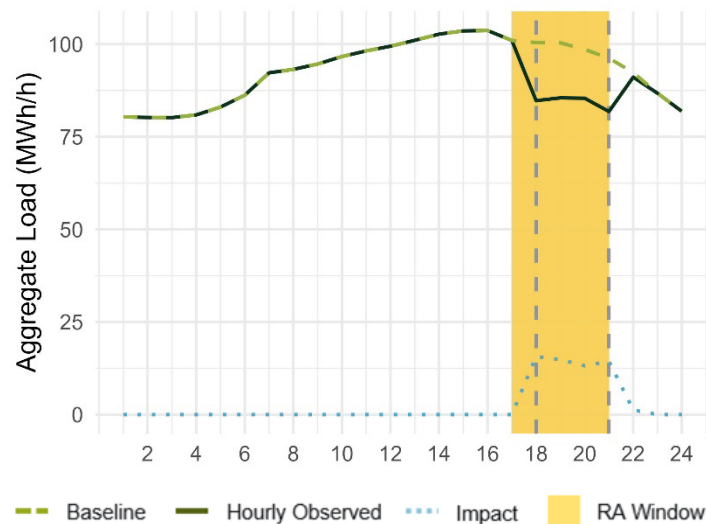
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<sup>13</sup> [LIP Filing Guide 6.1](#) at 11.

## SCE Ex Ante Load Impact Summary

Prior to discussing the ex ante impacts, it is worth presenting the aggregate ex ante load shapes for the non-residential and residential CBP-E products, as they provide context for the remainder of the ex ante discussion for each segment. Figure 5-5 and Figure 5-6 present the aggregate ex ante load shape under the SCE 1-in-2 August system worst day conditions for the non-residential and residential sectors, respectively. The figures present the aggregate estimated baseline (reference load), the estimated hourly observed load, and the estimated impacts (load reductions) for a four-hour dispatch. The highlighted yellow hours indicate the full five-hour resource adequacy (RA) window. The grey dashed lines denote the start and end of the four-hour dispatch. As seen in Figure 5-6, anticipated residential participants (or at least a relevant portion of participants) are expected to be use their batteries for daily TOU arbitrage (as the reference load already includes apparent load reductions during the 4pm to 9pm window). However, it should be noted that the reference loads were developed using likely participants from SGIP, rather than actual participants. Conversely, non-residential reference loads (seen in Figure 5-5) represent enrolled CBP-E participants.

**FIGURE 5-5: SCE NON-RESIDENTIAL CBP-E LOAD SHAPE (SCE 1-IN-2 AUGUST SYSTEM WORST DAY) – 2026**



**FIGURE 5-6: SCE RESIDENTIAL CBP-E LOAD SHAPE (SCE 1-IN-2 AUGUST SYSTEM WORST DAY) – 2026**

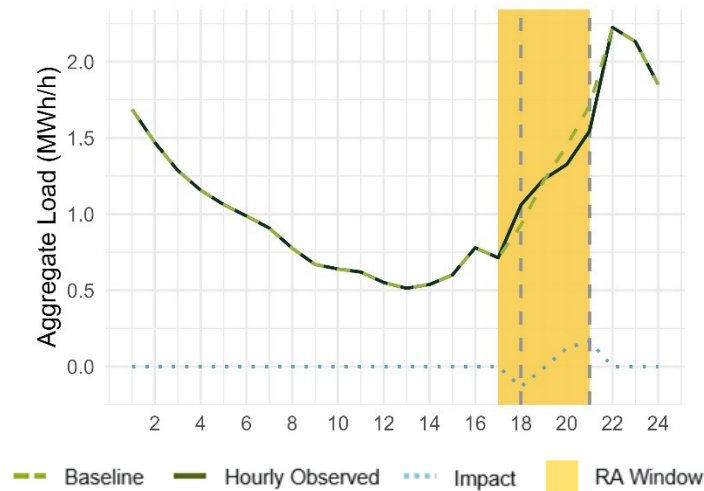


Table 5-15 and Table 5-16 present the August system worst day (peak day) average ex ante load impacts over the four-hour dispatch (HE18 – HE21) for the non-residential CBP Elect DA and residential CBP Elect DA for 2026. The non-residential CBP Elect DA is forecast to provide an average hourly load reduction of between 14.4 MWh/h and 14.6 MWh/h (or a 15% load reduction) during the four-hour dispatch, depending on the weather scenario. The residential CBP Elect DA is forecast to provide an average hourly load reduction of 0.04 MWh/h (or a 3% load reduction) across all scenarios for a four-hour dispatch.

**TABLE 5-15: SCE NON-RESIDENTIAL CBP-E AUGUST SYSTEM WORST DAY AVERAGE EX ANTE LOAD IMPACT OVER A FOUR-HOUR DISPATCH (HE18 TO HE21) – 2026**

Weather Year	Weather Source	Event Dispatch (HE)	Number of Customers	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
				Ref. Load	Load Impact	Ref. Load	Load Impact		
1-in-2	SCE	18-21	609	98.9	14.5	162.4	23.8	15%	90.1
1-in-10	SCE	18-21	609	99.5	14.6	163.4	24.1	15%	93.3
1-in-2	CAISO	18-21	609	98.4	14.4	161.5	23.7	15%	87.7
1-in-10	CAISO	18-21	609	99.4	14.6	163.2	24.0	15%	92.3

**TABLE 5-16: SCE RESIDENTIAL CBP-E AUGUST SYSTEM WORST DAY AVERAGE EX ANTE LOAD IMPACT OVER A FOUR-HOUR DISPATCH (HE18 TO HE21) – 2026**

Weather Year	Weather Source	Event Dispatch (HE)	Number of Customers	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
				Ref. Load	Load Impact	Ref. Load	Load Impact		
1-in-2	SCE	18-21	729	1.33	0.04	1.82	0.05	3%	87.7
1-in-10	SCE	18-21	729	1.47	0.04	2.01	0.05	3%	90.8
1-in-2	CAISO	18-21	729	1.20	0.04	1.65	0.05	3%	85.2
1-in-10	CAISO	18-21	729	1.42	0.04	1.95	0.05	3%	90.0

### SCE Hourly Tables

Table 5-17 and Table 5-18 present the hourly aggregate ex ante load impacts for SCE 1-in-2 and 1-in-10 system worst day conditions for non-residential and residential CBP-E operating months. The highlighted yellow, blue, and green hours represent the hours of the RA window for each month. Green and blue highlighted hours collectively represent the hours of the four-hour event window used for the SCE ex ante forecast, while blue highlighted hours specifically represent the 2027 CEC forecasted peak hour for each month. Red highlighted hours indicate the estimated persistence of impacts following each four-hour dispatch. These tables also represent the slice of day impacts given the assumptions in the ex ante analysis.

**TABLE 5-17: SCE NON-RESIDENTIAL CBP-E HOURLY IMPACTS (HE16 TO HE24) – 2026**

Hour Ending	SCE 1-in-2 System Worst Day (MWh/h)						SCE 1-in-10 System Worst Day (MWh/h)					
	May	June	July	Aug.	Sept.	Oct.	May	June	July	Aug.	Sept.	Oct.
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	14.3	15.3	15.7	15.5	15.5	0.0	14.7	15.6	15.8	15.9	15.8
19	12.8	13.6	14.5	14.8	14.6	14.7	13.2	14.0	14.9	15.0	15.0	14.8
20	11.8	12.2	12.9	13.2	13.0	13.0	12.2	12.4	13.2	13.3	13.2	13.1
21	10.7	13.2	14.0	14.4	13.9	13.8	11.0	13.4	14.3	14.5	14.1	13.9
22	11.3	1.1	1.2	1.2	1.2	1.1	11.4	1.1	1.2	1.2	1.2	1.1
23	0.9	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0
24	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0



**TABLE 5-18: SCE RESIDENTIAL CBP-E HOURLY IMPACTS (HE16 TO HE24) – 2026 THROUGH 2036**

Hour Ending	SCE 1-in-2 System Worst Day (MWh/h)						SCE 1-in-10 System Worst Day (MWh/h)					
	May	June	July	Aug.	Sept.	Oct.	May	June	July	Aug.	Sept.	Oct.
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	-0.13	-0.13	-0.13	-0.13	-0.13	0.00	-0.13	-0.13	-0.13	-0.13	-0.13
19	-0.13	-0.01	-0.01	-0.01	-0.01	-0.01	-0.13	-0.01	-0.01	-0.01	-0.01	-0.01
20	-0.01	0.12	0.12	0.12	0.12	0.12	-0.01	0.12	0.12	0.12	0.12	0.12
21	0.12	0.17	0.17	0.17	0.17	0.17	0.12	0.17	0.17	0.17	0.17	0.17
22	0.17	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### SCE Ex Ante Comparisons to Prior Years

Table 5-19 presents a comparison of the current ex ante “backcast” for PY2025 (SCE 1-in-2 August system worst day) with the two largest PY2025 ex post event days for non-residential customers.

The comparison shows how the non-residential Elect DA customers would likely have performed given a four-hour dispatch under the ex ante assumptions discussed prior. Overall, aggregate reference loads are very similar between the ex ante “backcast” and the current ex post, with 84.9 MWh/h in the ex ante versus 79.8 MWh/h and 83.8 MWh/h between each ex post event day. The aggregate load impacts are also of similar scale across the two scenarios, with an ex ante total impact of 12.4 MWh/h and the two ex post event day impacts of 12.3 MWh/h and 11.0 MWh/h. In PY2025, both test events lasted exactly two hours and did not share any common hours.

**TABLE 5-19: SCE CBP-E CURRENT EX ANTE (SCE 1-IN-2 AUGUST SYSTEM WORST DAY) VS. CURRENT EX POST**

PY2025 Estimate	Number of Customers	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
		Ref. Load	Load Impact	Ref. Load	Load Impact		
Current Ex Ante Backcast	518	84.9	12.4	163.8	23.9	15%	90
Current Ex Post (July 30 <sup>th</sup> )	500	79.8	12.3	159.6	24.6	15%	86
Current Ex Post (Sept. 24 <sup>th</sup> )	527	83.8	11.0	159.1	21.0	13%	85
Current Ex Post (Avg. Impact)	514	81.8	11.7	159.4	22.8	14%	86

Table 5-20 presents the current year and prior year ex ante forecasts for 2026 for both residential and non-residential CBP-EDA customers under SCE 1-in-2 weather conditions. The non-residential aggregate ex ante MW forecasts for 2026 have increased from PY2024 estimates (12.4 MWh/h in PY2024 to 14.5 MWh/h in PY2025). This is largely driven by an increase in expected program enrollment and slightly greater per capita impacts.

The PY2025 residential ex ante forecast is a function of updated assumptions associated with anticipated residential participation. The PY2024 forecast was based on ex post impacts from a subset of Emergency Load Reduction Program (ELRP) A.4 customers. For PY2025, ex ante impacts were instead based on PY2025 ex post impacts from SGIP customers participating in CPP. SCE anticipates that the residential customers that will participate in CBP-E will be SGIP customers. Due to these changes, impacts are lower than forecasted in previous years.

**TABLE 5-20: SCE CBP-E CURRENT VS. PRIOR YEAR EX ANTE (SCE 1-IN-2 AUGUST SYSTEM WORST DAY) – 2026**

Program	Ex Ante Estimate for 2026	Number of Customers	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
			Ref. Load	Load Impact	Ref. Load	Load Impact		
Non-Res CBP-E DA	PY2024 Forecast	561	98.5	12.4	175.5	22.0	13%	89.5
	PY2025 Forecast	609	98.9	14.5	162.4	23.8	15%	90.1
Residential CBP-E DA	PY2024 Forecast	363	0.67	0.08	1.84	0.22	12%	87.6
	PY2025 Forecast	729	1.33	0.04	1.82	0.05	2%	87.7

## 5.5 SCE FINDINGS

The PY2025 Load Impact analysis key findings for the SCE CBP-E DA product are as follows:

- PY2025 was the first year of operation for CBP-E. Program enrollment in CBP-E increased substantially from the prior PY2024 CBP DA program. Average monthly nominations increased from 1.1 MW in PY2024 to 12.4 MW in PY2025. The number of enrolled customers also increased substantially from 38 on average to 506 in PY2025.
- The CBP-E had two test events in PY2025. CBP-E customers delivered 12.3 MWh/h and 11.0 MWh/h during July and September events respectively, with a dispatch delivery performance of 99% and 85% respectively. On average across all event hours in PY2025, delivery performance was 92%.
- The SCE CBP-E non-residential ex ante analysis estimates 14.4 to 14.6 MWh/h of dispatchable capacity in August of 2026, depending on the weather scenario. Additionally, SCE CBP-E residential ex ante analysis forecasts an additional 0.04 MWh/h for 2026 for all weather scenarios.

## 6 SAN DIEGO GAS AND ELECTRIC

This section presents SDG&E’s CBP participation, event days, and ex post and ex ante load Impact summaries. As discussed previously, SDG&E offers two CBP products that are open to non-residential customers: the *Elect DA 1-9 Hour* and the *Elect DO 1-9 Hour*. The *Elect DA 1-9 Hour* operates as the day-ahead product and the *Elect DO 1-9 Hour* as the day-of product. Both products operate from 1 p.m. to 9 p.m., have the same three price triggers (\$200/MWh, \$400/MWh, and \$600/MWh), and operate Monday through Saturday during the months of May through October. In PY2025, SDG&E’s CBP only had participation in the *Elect DA 1-9 Hour* product with a \$600/MWh option.

### 6.1 SDG&E CBP PARTICIPATION

Table 6-1 and Table 6-2 below present the monthly distribution of enrolled customers and nominations for the SDG&E’s Elect DA and Elect DO product by price trigger option. Elect DA had limited participation throughout the PY2025 season, with ■ unique customers enrolling from May through August, peaking at 28 customers in September, and had 25 customers enrolled in October. For the Elect DO product, there were no CBP nominations and no events called during the PY2025 season.

**TABLE 6-1: SDG&E PY2025 CBP ELECT DA MONTHLY NOMINATIONS**

Month	Number of Aggregators	DA 1pm-9pm-\$200 MW		DA 1pm-9pm-\$400 MW		DA 1pm-9pm-\$600 MW	
		Enrolled Customers	Nominated Capacity (MW)	Enrolled Customers	Nominated Capacity (MW)	Enrolled Customers	Nominated Capacity (MW)
May	1	0	--	0	--	■	■
June	2	0	--	0	--	■	■
July	2	0	--	0	--	■	■
August	2	0	--	0	--	■	■
September	2	0	--	0	--	28	■
October	2	0	--	0	--	25	■

**TABLE 6-2: SDG&E PY2025 CBP ELECT DO MONTHLY NOMINATIONS**

Month	Number of Aggregators	DO 1pm-9pm-\$200 MW		DO 1pm-9pm-\$400 MW		DO 1pm-9pm-\$600 MW	
		Enrolled Customers	Nominated Capacity (MW)	Enrolled Customers	Nominated Capacity (MW)	Enrolled Customers	Nominated Capacity (MW)
May	0	0	--	0	--	0	--
June	0	0	--	0	--	0	--
July	0	0	--	0	--	0	--
August	0	0	--	0	--	0	--
September	0	0	--	0	--	0	--
October	0	0	--	0	--	0	--

Table 6-3 describes the distribution of enrolled customers by industry type and customer size for SDG&E Elect DA products. The most common was the Agriculture, Mining & Construction industry with [REDACTED] customers ([REDACTED] % of all CBP customers). Other industries each represent less than five percent of the total number of CBP customers. The industry with the next largest representation is [REDACTED] at [REDACTED] customers ([REDACTED] % of all CBP customers). The remaining industry types include only up to [REDACTED] participating customers each. No CBP Elect DA customers in PY2025 were described as small customers (under 20 kW).

**TABLE 6-3: SDG&E PY2025 CBP ELECT DA CUSTOMER ENROLLMENT BY INDUSTRY TYPE AND CUSTOMER SIZE**

Industry Type	20 kW or Under (Small)	20kW to 200kW (Medium)	Greater than 200kW (Large)	Total
Agriculture, Mining & Construction	--	17	[REDACTED]	[REDACTED]
Manufacturing	--	[REDACTED]	[REDACTED]	[REDACTED]
Retail Stores	--	[REDACTED]	[REDACTED]	[REDACTED]
Schools	--	--	[REDACTED]	[REDACTED]
Water, Wholesale, Transport and Other Utilities	--	--	[REDACTED]	[REDACTED]
Other	--	--	[REDACTED]	[REDACTED]
<b>Total</b>	--	[REDACTED]	[REDACTED]	<b>28</b>

## 6.2 SDG&E EVENT SUMMARY

Table 6-4 presents the PY2025 SDG&E CBP event details. The CBP Elect DA product had two events in PY2025. Each event lasted two hours, beginning at 6 pm and ending at 8pm. One event occurred in August while the other occurred in September. Both events were test events with [REDACTED] dispatched customers in the first event and 28 in the second. Despite the difference in the number of participating customers, both events had similar dispatched capacities ([REDACTED] MW in August and [REDACTED] MW in September). All nominated

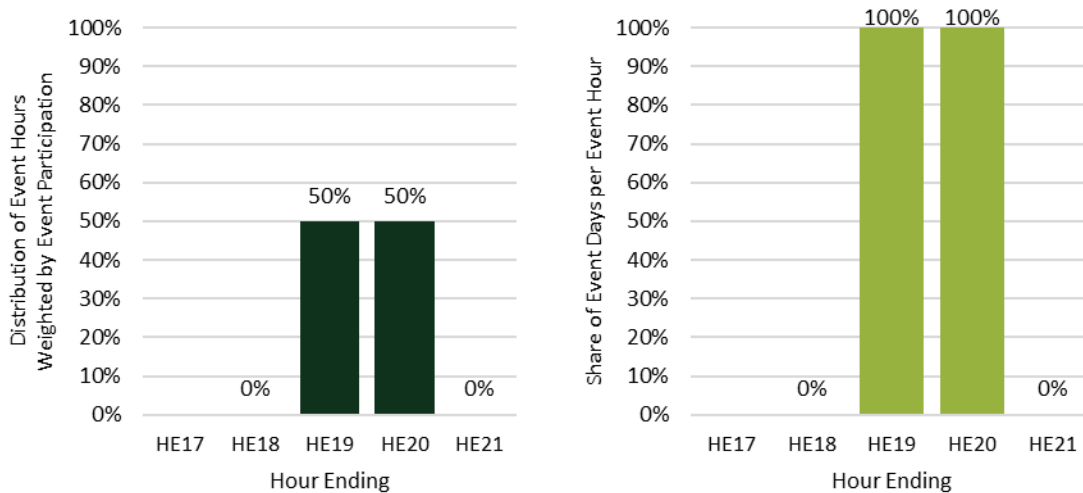
resources were dispatched during the two events. No CBP Elect DO events occurred in PY2025, thus the ex post analysis does not cover CBP Elect DO.

**TABLE 6-4: SDG&E PY2025 CBP ELECT DA EVENT DETAILS**

Event Date (2025)	Event Type	Event Start (Prevailing Time)	Event End (Prevailing Time)	Event Duration	Dispatched Customers	Dispatched Capacity (MW)
August 22 <sup>nd</sup>	Test	6:00 PM	8:00 PM	2	■	■
September 23 <sup>rd</sup>	Test	6:00 PM	8:00 PM	2	28	■

Figure 6-1 presents the distribution of Elect DA event hours weighted by participation in each event hour (left) and the share of events that contained each hour of the program event window (right). Both events started at the beginning of hour ending (HE) 19 and lasted two hours.

**FIGURE 6-1: SDG&E PY2025 CBP ELECT DA DISTRIBUTION OF EVENT HOURS BY HOUR (LEFT) AND SHARE OF EVENTS WITH A GIVEN HOUR (RIGHT)**



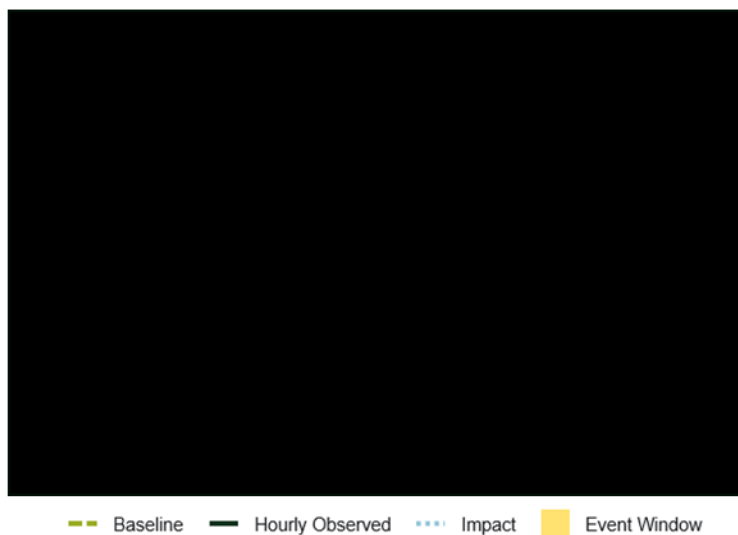
### Definition of the Average Event Day

For SDGE, the average event day is inclusive of all event days, and all customers who were dispatched for an event in PY2025 are represented in the load. Because the two event days cover the exact same dispatch window, the average event day is the true average of SDG&E event days.

### 6.3 SDG&E EX POST IMPACTS

Prior to discussing the ex post impacts, it is worth presenting the average event day load shape to provide context for the remainder of the ex post discussion. Figure 6-2 presents the average event day load shape for the average non-residential Elect DA customer. The figure contains the estimated baseline (or reference load), the actual hourly observed load, and the estimated impacts (or load reductions) per capita for the average event day. The highlighted yellow hours indicate event hours where one or more customers were dispatched for an event.

**FIGURE 6-2: SDG&E PY2025 CBP ELECT DA AVERAGE EVENT DAY LOAD SHAPE**



Participation	

#### SDG&E Ex Post Impact Results by Event Day

Table 6-5 presents the average event hour load impacts for each event dispatched. In PY2025, all customers were included in the same dispatch (same event hours). The table below presents the number of nominated customers called for each event, the hours in which the events occurred, and the aggregate

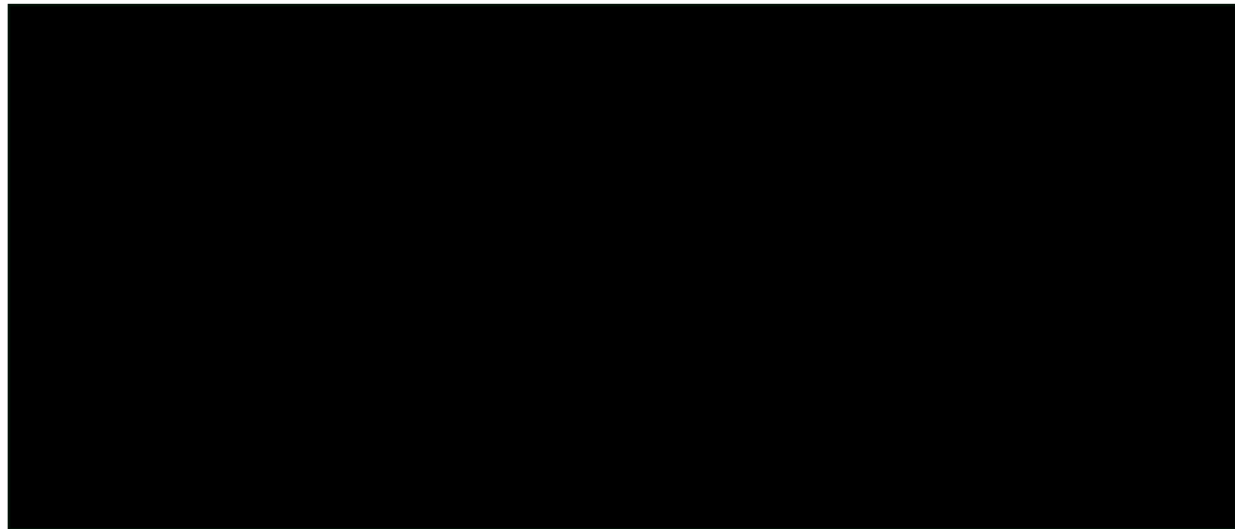
and per capita reference loads and load impacts. Across all event hours, the Elect DA customers provided an average load reduction of █ kWh/h (or █ % of the estimated baseline). Dispatch delivery performance was poor in PY2025, ranging from █ % to █ % between both events. This performance was █.

**TABLE 6-5: SDG&E PY2025 CBP ELECT DA AVERAGE LOAD IMPACT BY EVENT DAY**

Event Date (2025)	Event Hours (HE)	Num. of Customers	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Dispatch Delivery Perf. (%)	Temp (F)
			Ref. Load	Load Impact	Ref. Load	Load Impact			
August 22 <sup>nd</sup>	19-20	█	█	█	█	█	█%	█%	75
September 23 <sup>rd</sup>	19-20	28	█	█	█	█	█%	█%	72
<b>Avg. Event</b>	<b>19-20</b>	█	█	█	█	█	█%	█%	<b>73</b>

Figure 6-3 compares dispatched capacity (MW) and ex post aggregate impacts (MWh/h) across the August 22<sup>nd</sup> and September 23<sup>rd</sup> test events, as well as for the average event day. Delivery performance trended low, with less than a █ of nominated capacity realized during either test event.

**FIGURE 6-3: SDG&E PY2025 CBP ELECT DA AVERAGE EVENT HOUR DELIVERY PERFORMANCE BY EVENT DAY**



### SDG&E Ex Post Impact and Monthly Performance Summary

Table 6-6 presents the monthly performance summary. Given that only one event occurred in each month, the delivery performance metrics for each August and September event also represent the average

monthly delivery performance in those months for the CBP Elect DA. As stated previously, there were no CBP Elect DO nominations or events in PY2025..

**TABLE 6-6: SDG&E CBP ELECT DA PY2025 MONTHLY SUMMARY**

Month	Number of Event Days in Month	Monthly Nominations		Average Monthly Dispatch		Ex Post Event Hour Average Impact	
		Number of Customers	Capacity (MW)	Number of Customers	Capacity (MW)	Capacity (MW)	Delivery Perf (%)
May	0	█	█	--	--	--	--
June	0	█	█	--	--	--	--
July	0	█	█	--	--	--	--
August	1	█	█	█	█	█	█%
September	1	28	█	█	█	█	█%
October	0	25	█	--	--	--	--
Average Event Day	--	█	█	█	█	█	█%

### SDG&E Average Event Hour Impacts by Industry Type

Table 6-7 presents the average load impacts by industry type. As shown, the majority of PY2025 load impacts come from two industry types: █ as well as █. Collectively, these two industry types represent █ customers that provided █% of the average aggregate impacts (█ MW of █MW) in PY2025. However, these two industry types provided distinct percent load reductions of █% and █%, respectively, due to the differences in average reference load.

**TABLE 6-7: SDG&E CBP ELECT DA PY2025 AVERAGE LOAD IMPACT BY INDUSTRY TYPE**

Industry Type	Avg. Number of Customers in Events	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
		Ref. Load	Load Impact	Ref. Load	Load Impact		
Institutional/Government	█	█	█	█	█	█%	72
Manufacturing	█	█	█	█	█	█%	72
Offices, Hotels, Finance, Services	█	█	█	█	█	█%	72
Retail Stores	█	█	█	█	█	█%	75
Schools	█	█	█	█	█	█%	78
Water, Wholesale, Transport, Other Utilities	█	█	█	█	█	█%	72



## SDG&E Comparison of Ex Post Impacts

This section discusses how the PY2025 ex post load impacts compared to previous years' impacts. Table 6-8 presents the average monthly Nominations (in MW) and the average number of nominated customers for both CBP Elect DA and CBP Elect DO programs. Relative to PY2024, the CBP Elect DA program had decreased participation both in terms of average monthly nominated capacity and average monthly nominated customers. As of October 2025, 25 customers represent [REDACTED] MW of capacity remaining in the CBP DA. For CBP Elect DO, there had been steadily decreasing participation since 2021. As of July 2024, the CBP Elect DO program has had zero participation. As a result, the Elect DO product is not discussed further in the comparison of ex post results with prior years

**TABLE 6-8: SDG&E CBP ELECT DA AND DO AVERAGE SUMMER NOMINATIONS – PY2021 THROUGH PY2025**

Program Year	CBP Elect DA		CBP Elect DO	
	Avg. Monthly Nominations	Avg. Nominated Customers	Avg. Monthly Nominations	Avg. Nominated Customers
2021	1.1	46	3.4	133
2022	[REDACTED]	3	2.1	63
2023	2.0	84	1.8	51
2024	[REDACTED]	22	[REDACTED]	10
2025	[REDACTED]	13	--	--

Table 6-9 presents the average event day performance across program years since 2021. The PY2025 per capita load impact and percent load reductions are smaller than in PY2024, but the CBP Elect DA had comparable delivery performance in PY2025 and in PY2024 ([REDACTED]% and [REDACTED]%, respectively). In these years, aggregate impacts and performance were both largely driven by one customer, [REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED] is no longer enrolled in CBP as of October 2025. As a direct result, it is anticipated that average performance will improve in 2026.

**TABLE 6-9: SDG&E CBP ELECT DA CURRENT YEAR VS. PREVIOUS YEARS EX POST (AVERAGE EVENT DAY)**

Program Year	Avg. Number of Customers in Events	Aggregate (MWh/h)			Per Capita (kWh/h)			Temp (F)
		Dispatched Capacity	Load Impact	% Delivered	Reference Load	Load Impact	Percent Load (%)	
2021	46	1.1	0.3	25%	110.9	5.8	5%	75
2022							%	83
2023	84	2.0	0.8	42%	97.7	10	10%	73
2024							%	75
2025							%	73

Table 6-10 shows the PY2025 ex post average event day impacts compared to the PY2024 August System Worst Day (peak day) forecast for 2025. As shown, the PY2025 Elect DA had higher program enrollment than previously anticipated in the PY2024 ex ante forecasts but with substantially lower per capita impacts. As a result, the PY2025 enrolled CBP Elect DA customers provided fewer total average MW of load reductions ( MW) than what was forecasted for 2025 in the prior year ( MW).

**TABLE 6-10: SDG&E CBP ELECT DA CURRENT EX POST (AVERAGE EVENT DAY) VS. PREVIOUS YEAR EX ANTE (SDG&E 1-IN-2 AUGUST SYSTEM WORST DAY)**

Estimate for 2025	Avg. Number of Customers in Events	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
		Ref. Load	Load Impact	Ref. Load	Load Impact		
PY2024 Ex Ante						%	78
Current Ex Post						%	73

## 6.4 SDG&E EX ANTE IMPACTS

This section presents the ex ante participant forecasts, results, and key assumptions used to develop the complete ex ante load forecasts.

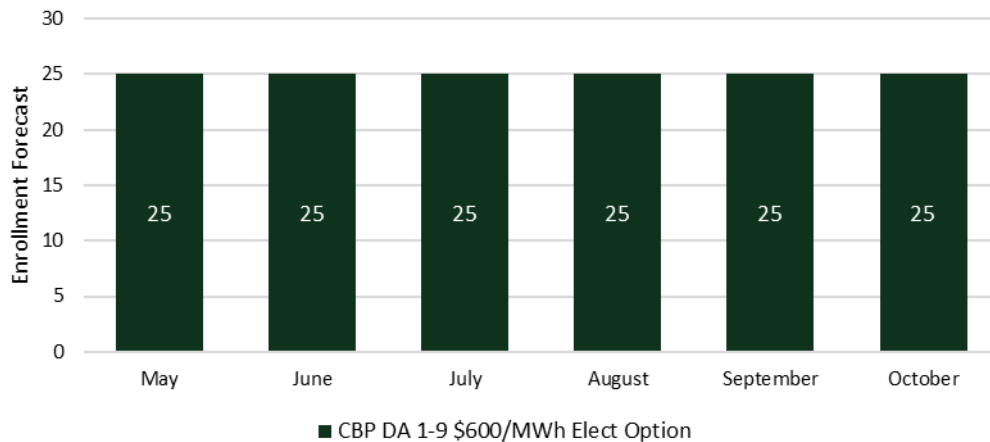
### Enrollment Forecasts

SDG&E will continue to offer the Elect DA and Elect DO programs for the three price trigger options (\$200/MWh, \$400/MWh, or \$600/MWh).<sup>14</sup> However, as of the end of PY2024, only the CBP Elect DA \$600/MWh option had any participation from aggregators, and this continued into PY2025. SDG&E's ex ante participant forecasts reflect how the CBP products are subscribed as of the end of PY2025, wherein there were 25 customers enrolled in the CBP DA. SDG&E is assuming zero change in participation from

<sup>14</sup> SDG&E also has a residential CBP pilot not covered by this evaluation.

October 2025 enrollments, and forecasted participation will remain static for all months and years across the ex ante forecast period. This results in a participant forecast of 25 across all years and months for the Elect DA product \$600/MWh option, as presented in Figure 6-4. SDG&E is forecasting zero enrollment in all other CBP DA and DO options.

**FIGURE 6-4: SDG&E CBP ELECT DA EX ANTE PARTICIPANT FORECASTS BY MONTH – 2026 THROUGH 2036**



### SDG&E Ex Ante Assumptions

The following assumptions were used to develop ex ante load impact estimates.

- Weather Sensitive Impacts.** A key component of ex ante analysis is developing weather normalized impacts for various weather scenarios. The PY2025 event season only contained two events for Elect DA customers. Most customers included in the ex ante analysis were only dispatched for one event. Given that the ex post and ex ante analysis rely on hourly customer-specific models, each customer only has one or two data points in each hour for a regression model to determine the relationship between impacts and temperature. Verdant determined that there was not enough information to reliably produce weather normalized load impacts.

As a result, the ex ante analysis applied customer-specific percent load reductions from ex post results to estimate ex ante load impacts. Since reference loads are in part based on temperature for weather sensitive customers and impacts are derived from a percent load reductions, the ex ante load impacts are implicitly weather sensitive and vary by weather scenario.

-

- **No Customer Growth.** SDG&E ex ante participant forecasts contain 25 customers for all months and program years in the 11-year forecast horizon, in alignment with October 2025 customer nominations. As a result, it is assumed that these customers will continue to participate in CBP (with their aggregator) and therefore act as the basis for the ex ante MW forecasts. All customers that de-enrolled prior to October 2025 were excluded from the ex ante forecast and do not inform CBP impacts for future program years. However, these customer are still included in the ex ante backcast for months in which they had nominations.
- **Delivery Performance.** The overall nomination delivery performance seen in PY2025 was █% across the average day hours. However, this delivery performance was primarily attributed to █, who de-enrolled from the program in October 2025. Nominated capacity for █ comprised █ MW of the █ MW nominated in August of PY2025 (█% of nominated capacity). As a result, Verdant did not cap load impacts based on historic dispatch delivery performance as done for prior evaluations. However, Verdant did validate that load impacts did not exceed October 2025 CBP Elect DA nominations, as these customers make up the basis for ex ante impacts.
- **Four-hour Event Dispatch.** The Load Impact Protocol (LIP) 24-Hour Slice-of-Day requirements state that a four consecutive hour dispatch is required in ex ante within Availability Assessment Hours on the worst day of each month<sup>15</sup>. As a result, the ex ante analysis uses a four-hour dispatch in the last four-hours of the RA window. The last four-hours were selected because there have only been Elect DA program event dispatches in the last four-hours of RA window within the last four program years (PY2022-PY2025).
- **Snapback.** The ex post analysis found no evidence of snapback for the majority of the dispatched MWs after the end of the events. As a result, no snapback is included in the ex ante load shape for Elect DA participants. However, Verdant does acknowledge that there is observed snapback for some smaller customers observed in PY2025.
- **Degradation Rates.** Prior CBP evaluations developed degradation rates intended to capture how CBP participants maintain their load reductions through longer duration events. However, more than half of the customers included in the ex ante analysis were new to the program in PY2025. As a result, there are no historic four-hour duration events that meaningfully represent the current CBP Elect DA customer base.
- **Program and Portfolio Ex Ante Impacts.** While there were dually enrolled CBP customers in PY2025, there were no dual-program event days for enrolled CBP customers. With collaboration from SDG&E, it was decided that program and portfolio ex ante impact forecasts would be the same.

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<sup>15</sup> [LIP Filing Guide 6.1](#) at 11.

## SDG&E Ex Ante Load Impact Summary

Prior to discussing the ex ante impacts, it is worth presenting the aggregate ex ante load shape for Elect DA as it provides context for the remainder of the ex ante discussion. Figure 6-5 presents the aggregate ex ante load shape under the SDG&E 1-in-2 August system worst day conditions. The figure presents the aggregate estimated baseline (reference load), the estimated hourly observed load, and the estimated impacts (load reductions) for a four-hour dispatch. The highlighted yellow hours indicate the full five-hour resource adequacy (RA) window. The grey dashed lines denote the start and end of the four-hour dispatch.

**FIGURE 6-5: SDG&E CBP ELECT DA EX ANTE LOAD SHAPE (SDG&E 1-IN-2 AUGUST SYSTEM WORST DAY) – 2026 THROUGH 2036**



Table 6-11 presents the August system worst day (peak day) average ex ante load impacts over the four-hour dispatch (HE18 to HE21) for 2026 through 2036. Across all dispatch hours, the ex ante analysis estimates that the program provides █ MW of load impact per hour across all weather scenarios.

**TABLE 6-11: SDG&E PY2025 CBP ELECT DA AUGUST SYSTEM WORST DAY EX ANTE LOAD IMPACT OVER A FOUR-HOUR DISPATCH (HE18 TO HE21) – 2026 THROUGH 2036**

Weather Year	Weather Source	Event Dispatch (HE)	Number of Customers	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
				Ref. Load	Load Impact	Ref. Load	Load Impact		
1-in-2	SDG&E	18-21	25	█	█	█	█	█%	80.2
1-in-10	SDG&E	18-21	25	█	█	█	█	█%	84.3
1-in-2	CAISO	18-21	25	█	█	█	█	█%	82.4
1-in-10	CAISO	18-21	25	█	█	█	█	█%	86.7

## SDG&E Hourly Tables

Table 6-12 presents the hourly aggregate ex ante load impacts for SDG&E 1-in-2 and 1-in-10 system worst day conditions for program operating months. Because the ex ante enrollment is static at 25 customers from 2026 through 2036, these hourly tables present the hourly ex ante load reductions by month across all years in the ex ante forecast (2026 through 2036). The highlighted hours represent the hours of the RA window for each month (yellow, blue, and green), with the blue and green highlighted hours representing the four-hour RA window used for SDG&E’s four hour dispatch. The blue hours alone represent the 2027 forecasted CEC peak hour in each month. These tables also represent the slice of day impacts given the assumptions in the ex ante analysis. As seen, there is little variation in forecasted load impacts from month to month, with slightly larger impacts in the second hour of the event (i.e., the third hour of the RA window) in all months.

**TABLE 6-12: SDG&E CBP ELECT DA HOURLY TABLES (HE16 TO HE24) – 2026 THROUGH 2036**

Hour Ending	SDG&E 1-in-2 System Worst Day						SDG&E 1-in-10 System Worst Day					
	May	June	July	Aug.	Sept.	Oct.	May	June	July	Aug.	Sept.	Oct.
16	■	■	■	■	■	■	■	■	■	■	■	■
17	■	■	■	■	■	■	■	■	■	■	■	■
18	■	■	■	■	■	■	■	■	■	■	■	■
19	■	■	■	■	■	■	■	■	■	■	■	■
20	■	■	■	■	■	■	■	■	■	■	■	■
21	■	■	■	■	■	■	■	■	■	■	■	■
22	■	■	■	■	■	■	■	■	■	■	■	■
23	■	■	■	■	■	■	■	■	■	■	■	■
24	■	■	■	■	■	■	■	■	■	■	■	■

## SDG&E Ex Ante Comparisons to Prior Years

Table 6-13 presents a comparison of the current ex ante “backcast” for PY2025 (SDG&E 1-in-2 August system worst day) with the PY2025 August 22<sup>nd</sup> event day. The comparison shows how the ■ Elect DA customers would have performed given a four-hour dispatch, under the assumptions discussed previously. The aggregate reference loads are smaller in the ex ante “backcast” (■ MW in the ex ante versus ■ MW on the August 22<sup>nd</sup> event day). This is primarily due to the estimated reference load for ■. Additionally, the aggregate load impact is larger in the ex ante estimate for PY2025 due to ■ during the August 22<sup>nd</sup> event.

**TABLE 6-13: SDG&E CURRENT EX ANTE (SDG&E 1-IN-2 AUGUST SYSTEM WORST DAY) VS. CURRENT EX POST (AUGUST 22<sup>ND</sup> EVENT)**

PY2025 Estimate	Number of Customers	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
		Ref. Load	Load Impact	Ref. Load	Load Impact		
Current Ex Ante Backcast	█	█	█	█	█	█%	79
Current Ex Post	█	█	█	█	█	█%	74

Table 6-14 presents the current year and prior year ex ante forecasts for the year 2026. Differences in the ex ante forecasts for 2025 are primarily driven by the change in the participating customer base from PY2024 to PY2025. Unlike PY2024, the forecasted 25 customers for PY2025 does not include █. However, percent load reductions from the PY2025 ex ante forecast are similar to those from the PY2024 ex ante forecast for 2026.

**TABLE 6-14: SDG&E CURRENT VS. PRIOR YEAR EX ANTE (SDG&E 1-IN-2 AUGUST SYSTEM WORST DAY) – 2026**

Estimate for 2026	Number of Customers	Aggregate (MWh/h)		Per Capita (kWh/h)		Percent Load Reduction (%)	Temp (F)
		Ref. Load	Load Impact	Ref. Load	Load Impact		
PY2024 Forecast	█	█	█	█	█	█%	78
PY2025 Forecast	25	█	█	█	█	█%	80

## 6.5 SDG&E FINDINGS

The PY2025 evaluation identified the following key findings for SDG&E’s CBP:

- SDG&E CBP Elect DA dispatch delivery performance was poor in PY2025. However, this results from one customer, █.
- On average, the CBP Elect DA provided █ MWh/h of load reductions representing a █% load reduction during event hours. Per capita load impacts were █ kWh/h.

- The SDG&E Elect DA ex ante analysis finds that the non-residential customer segment is anticipated to provide an average hourly load reduction of [REDACTED] MWh/h during a four-hour dispatch in 2026 regardless of weather scenario.
- Verdant anticipates dispatch delivery performance to improve for 2026 after the de-enrollment of [REDACTED]. SDG&E is forecasting 25 customers in the ex ante forecast, which represent the enrolled customers as of October 2025. These customers' ex post results serve the basis of the ex ante MW forecasts, which closely align with October nominated capacity. Based on these observations, overall delivery performance should improve significantly in PY2026.



## APPENDIX A TABLE GENERATORS

Verdant produced ex post and ex ante table generators for each IOU, which are Excel files that allow interested stakeholders to observe the impacts of various key domains, including industry type, size, aggregator and SubLAP. These are provided in the following separate files:

- Appendix A-1: *PY2025\_PG&E\_CBP\_ExPost\_Load\_Impacts\_NonRes\_FINAL\_PUBLIC.xlsx*
- Appendix A-2: *PY2025\_PG&E\_CBP\_ExAnte\_Load\_Impacts\_NonRes\_FINAL\_PUBLIC.xlsx*
- Appendix A-3: *PY2025\_SCE\_CBP-E\_ExPost\_Load\_Impacts\_NonRes\_FINAL\_PUBLIC.xlsx*
- Appendix A-4: *PY2025\_SCE\_CBP-E\_ExAnte\_Load\_Impacts\_NonRes\_FINAL\_PUBLIC.xlsx*
- Appendix A-5: *PY2025\_SCE\_CBP-E\_ExAnte\_Load\_Impacts\_Residential\_FINAL\_PUBLIC.xlsx*
- Appendix A-6: *PY2025\_SDG&E\_CBP\_ExPost\_Load\_Impacts\_NonRes\_FINAL\_PUBLIC.xlsx*
- Appendix A-7: *PY2025\_SDG&E\_CBP\_ExAnte\_Load\_Impacts\_NonRes\_FINAL\_PUBLIC.xlsx*

## APPENDIX B WEATHER SENSITIVITY ANALYSIS

The library of model specifications chosen for each participant for testing proxy event days are based on the determination of weather sensitivity across the season by customer. Equation B-1 presents the general model specification Verdant used for estimating the effect of temperature on daily average load. For this exercise, the input data was limited to weekdays between 11 AM to 9 PM for the months of April through October.

### EQUATION B-1: WEATHER SENSITIVITY GENERAL MODEL SPECIFICATION

$$AvgLoad_d = \beta_0 + \beta_1 CDD_d + \sum_w \beta_{2w} DayType_{w,d} + \sum_m \beta_{3m} Month_{m,d} + \varepsilon_d$$

Where:

$AvgLoad_d$	The average hourly kWh load on day $d$ .
$\beta_0$	The intercept of the regression model
$\beta_1$	The coefficient for the effect on cooling degree days on load.
$CDD_d$	The total Cooling Degree Days on day $d$ .
$\beta_{2w}$	The set of coefficients for effect on load by day of the week $w$ (Monday through Friday).
$DayType_{w,d}$	A dummy variable for day of the week $w$ for day $d$ .
$\beta_{3t}$	The set of coefficients for effect on load by month of the year (April through October).
$Month_{m,d}$	A dummy variable for the month of the year $m$ for day $d$ .
$\varepsilon_d$	The error term.

The weather sensitivity regression model is run three times for each participant, once each for Cooling Degree Day (CDD) values calculated with bases 60, 65, and 70 degrees. If the estimate for the coefficient on CDD  $\beta_1$  is positive and statistically significant at the 95% level for any of the three CDD model variants, the participant is considered weather sensitive. Table B-1 through Table B-3 display the total counts of ex post customers by weather sensitivity designation.

**TABLE B-1: WEATHER SENSITIVITY REGRESSION RESULTS – PG&E**

Industry Type	Num. of Customers	Num. of Customers Weather Sensitive	Num. of Customers Non-Weather Sensitive
Agriculture, Mining & Construction	297	109	188
Institutional/Government	4	1	3
Manufacturing	21	13	8
Offices, Hotels, Finance, Services	24	20	4
Retail Stores	306	287	19
Schools	20	17	3
Water, Wholesale, Transport, Other Utilities	99	29	70
<b>Total</b>	<b>771</b>	<b>476</b>	<b>295</b>

**TABLE B-2: WEATHER SENSITIVITY REGRESSION RESULTS – SCE**

Industry Type	Num. of Customers	Num. of Customers Weather Sensitive	Num. of Customers Non-Weather Sensitive
Retail Stores	369	337	32
Utilities	142	48	94
Other/Unknown	16	13	3
<b>Total</b>	<b>527</b>	<b>398</b>	<b>129</b>

**TABLE B-3: WEATHER SENSITIVITY REGRESSION RESULTS – SDG&E**

Industry Type	Num. of Customers	Num. of Customers Weather Sensitive	Num. of Customers Non-Weather Sensitive
Institutional/Government			
Manufacturing			
Offices, Hotels, Finance, Services			
Retail Stores			
Schools			
Water, Wholesale, Transport, Other Utilities			
<b>Total</b>			

## APPENDIX C PROXY DAY & MODEL SELECTION

### C.1 PROXY DAY SELECTION

The model selection for each participant is based on assessing performance on a set of proxy event days, which are non-event, non-holiday days with event-like weather conditions. Proxy days were selected based on how temperature profiles for each non-event day compare to that of the average event day for each customer. Table C-1 through Table C-3 present the five most frequently selected weekday proxy days for each weather station by IOU. Note that customers assigned to the same station could each be assigned separate sets of proxy days, depending on AMI data availability, participating events, and dual program enrollment, as applicable. Proxy event days were selected at the participant level to account for these differences in event participation and data availability. Additionally, the following tables depict the most frequent proxy days, regardless of the number of participants assigned to each weather station.

**TABLE C-1: SELECTED EX POST PROXY DAYS, PG&E**

Station Name	Dates Selected
Angels Camp	2025-07-10, 2025-07-15, 2025-08-07, 2025-09-03, 2025-09-17
Auburn	2025-07-02, 2025-08-07, 2025-08-12, 2025-09-17, 2025-09-23
Bakersfield	2025-06-09, 2025-07-10, 2025-07-18, 2025-08-01, 2025-09-03
Belmont	2025-05-05, 2025-08-08, 2025-09-22, 2025-09-26, 2025-10-06
Chico	2025-05-30, 2025-06-18, 2025-07-10, 2025-08-07, 2025-09-03
Colma	2025-06-03, 2025-06-06, 2025-08-05, 2025-08-11, 2025-08-14
Concord	2025-05-30, 2025-07-10, 2025-07-11, 2025-08-22, 2025-09-17
Cupertino	2025-05-09, 2025-07-11, 2025-08-06, 2025-08-07, 2025-10-06
Fresno	2025-06-30, 2025-07-15, 2025-08-13, 2025-08-26, 2025-09-03
Marysville	2025-07-02, 2025-07-10, 2025-07-14, 2025-08-11, 2025-08-22
Milpitas	2025-05-09, 2025-08-08, 2025-09-26, 2025-10-06, 2025-10-07
Oakland	2025-08-07, 2025-08-28, 2025-09-02, 2025-09-08, 2025-09-26
Paso Robles	2025-08-06, 2025-08-12, 2025-08-20, 2025-08-22, 2025-09-15
Potrero	2025-08-26, 2025-08-29, 2025-09-19, 2025-10-03, 2025-10-10
Red Bluff	2025-07-10, 2025-08-08, 2025-08-11, 2025-08-22, 2025-08-25
Sacramento	2025-05-30, 2025-07-10, 2025-08-20, 2025-09-17, 2025-09-23
Salinas	2025-07-22, 2025-07-23, 2025-07-29, 2025-08-11, 2025-08-13
San Rafael	2025-05-05, 2025-07-10, 2025-08-08, 2025-09-22, 2025-10-06
San Ramon	2025-08-06, 2025-08-20, 2025-08-22, 2025-09-15, 2025-09-22
Santa Cruz	2025-07-21, 2025-07-31, 2025-08-01, 2025-08-06, 2025-10-10
Santa Maria	2025-08-19, 2025-08-20, 2025-08-26, 2025-09-15, 2025-10-08
Santa Rosa	2025-08-06, 2025-08-08, 2025-08-15, 2025-08-20, 2025-09-15
Stockton	2025-05-30, 2025-07-10, 2025-08-08, 2025-08-22, 2025-09-17

**TABLE C-2: SELECTED EX POST PROXY DAYS, SCE**

Station Name	Dates Selected
Barstow	2025-07-21, 2025-08-15, 2025-08-18, 2025-09-05, 2025-09-16
Bishop	2025-06-03, 2025-07-22, 2025-07-23, 2025-09-03, 2025-09-05
Cathedral City	2025-06-09, 2025-06-27, 2025-07-02, 2025-07-15, 2025-08-18
El Segundo	2025-08-12, 2025-09-30, 2025-10-01, 2025-10-02, 2025-10-03
Goleta	2025-09-05, 2025-09-12, 2025-09-15, 2025-09-30, 2025-10-02
Lancaster	2025-06-12, 2025-06-13, 2025-07-29, 2025-08-15, 2025-08-26
Long Beach	2025-07-09, 2025-07-10, 2025-08-05, 2025-09-22, 2025-10-30
Mammoth Lakes	2025-06-03, 2025-07-03, 2025-08-29, 2025-09-03, 2025-09-15
Moorpark	2025-05-21, 2025-08-11, 2025-08-12, 2025-08-26, 2025-09-22
Rialto	2025-05-20, 2025-05-21, 2025-07-11, 2025-08-04, 2025-09-22
Ridgecrest	2025-05-29, 2025-06-06, 2025-06-25, 2025-08-15, 2025-09-03
Rimforest	2025-06-06, 2025-06-27, 2025-07-16, 2025-07-29, 2025-09-08
Romoland	2025-06-27, 2025-07-01, 2025-08-04, 2025-09-08, 2025-09-15
Rosemead	2025-06-27, 2025-07-31, 2025-08-12, 2025-08-18, 2025-09-22
San Dimas	2025-07-17, 2025-08-04, 2025-09-19, 2025-09-22, 2025-10-10
Santa Ana	2025-06-17, 2025-07-09, 2025-07-10, 2025-08-18, 2025-10-10
Tulare	2025-05-20, 2025-06-03, 2025-07-22, 2025-09-25, 2025-09-26
Valencia	2025-05-21, 2025-07-11, 2025-08-01, 2025-08-04, 2025-08-28
Ventura	2025-05-21, 2025-08-05, 2025-08-06, 2025-09-05, 2025-09-09
Victorville	2025-06-12, 2025-06-27, 2025-07-16, 2025-08-15, 2025-09-08
Westminster	2025-06-17, 2025-08-18, 2025-08-26, 2025-09-05, 2025-09-22
Yucca Valley	2025-06-20, 2025-08-15, 2025-08-18, 2025-08-27, 2025-09-17

**TABLE C-3: SELECTED EX POST PROXY DAYS, SDG&E**

Station Name	Dates Selected
Gillespie Field	2025-08-25, 2025-08-26, 2025-09-08, 2025-09-22, 2025-09-24
Lindbergh Field	2025-08-22, 2025-08-25, 2025-09-04, 2025-09-08, 2025-09-19
Miramar	2025-08-08, 2025-08-25, 2025-08-28, 2025-09-04, 2025-09-18

## C.2 MODEL SELECTION & PERFORMANCE METRICS

The model selection for each participant is based on assessing performance on a set of proxy event days, the non-event days with event-like weather conditions, and wherein the assessment is primarily concerned with accuracy and precision. Accuracy represents how closely on average the calculated baseline matches the observed load. Bias is a component of measuring accuracy, which indicates the extent to which the calculated baseline over- or under-estimates the load. In contrast, precision indicates how reliably a baseline is close to the observed load. It is possible to have a model that on average is highly

accurate but with poor precision, such as when a method both under- and over-predicts load by substantial amounts with regularity. Likewise, it is possible to have a method that is very precise but inaccurate, such as when a model consistently over- or under-estimates load. Furthermore, a baseline can also be neither accurate nor precise.

The primary metrics for accuracy and precision in the analysis are Normalized Mean Bias Error (NMBE) and Normalized Mean Absolute Error (NMAE), respectively. Other assessments of baselines have often used the Mean Percent Error (MPE) as the metric to assess accuracy and the Mean Absolute Percent Error (MAPE) and Coefficient of Variation of the Root Mean Square Error (CVRMSE) as the metrics for precision. Table C-4 presents the description and mathematical formula for each relevant metric, wherein  $y_i$  denotes the actual value and  $\hat{y}_i$  represents the predicted value.

A preference for NMBE and NMAE is based on a shortcoming of the MPE and MAPE when working with observed values of zero, which result in a division-by-zero error and the loss of the corresponding data point. Notably, the formulas for the NMBE and NMAE go against a convention seen elsewhere (e.g., ASHRAE), where the error is calculated as the baseline minus the observed. This runs contrary to the more typical conventions of calculating MPE and MAPE. For the sake of consistent interpretation of the NMBE and MPE, where negative values indicate overestimation of the baseline, Verdant has calculated the error as the observed load minus the calculated baseline for all metrics.

**TABLE C-4: DESCRIPTIONS AND EQUATIONS FOR PERFORMANCE METRICS**

Metric Type	Metric	Description	Formula
Accuracy/Bias	Mean Percent Error (MPE)	Represents the average of the errors in the calculated baselines as a percentage of the observed load.	$MPE = \frac{1}{n} \sum_{i=1}^n \frac{y_i - \hat{y}_i}{y_i}$
	Normalized Mean Bias Error (NMBE)	Represents the normalized average bias in the calculated baselines.	$NMBE = \frac{\frac{1}{n} \sum_{i=1}^n (y_i - \hat{y}_i)}{\bar{y}}$
	Root Mean Squared Errors (RMSE)	Represents the average distance between the observed load and the calculated baselines.	$RMSE = \sqrt{\frac{1}{n} \sum_{i=1}^n (y_i - \hat{y}_i)^2}$
Precision	Mean Absolute Percent Error (MAPE)	Represents the average of the absolute errors in the calculated baselines as a percentage of the observed load.	$MAPE = \frac{1}{n} \sum_{i=1}^n \left  \frac{y_i - \hat{y}_i}{y_i} \right $
	Normalized Mean Absolute Error (NMAE)	Represents the average of the normalized absolute error in the calculated baselines.	$NMAE = \frac{\frac{1}{n} \sum_{i=1}^n  y_i - \hat{y}_i }{\bar{y}}$
	Coefficient of Variation of the Root Mean Squared Errors (CV[RMSE])	Represents the normalized average of the squared errors between the observed load and calculated baselines.	$CV[RMSE] = \frac{\sqrt{\frac{1}{n} \sum_{i=1}^n (y_i - \hat{y}_i)^2}}{\bar{y}}$

Table C-5 through Table C-7 present summaries of model performance metric averages across proxy event days by IOU. For non-residential subgroups, these metrics are broken down by industry based on NAICS codes, where model performance varies by industry type. Overall, the models demonstrate solid performance with variability based on industry type (per expectations). Namely, the Agriculture, Mining and Construction industry customers have on average the highest values for CV-RMSE and NMAE/NMBE, indicative of predictive difficulties, such as those that result from long stretches of zero load interjected by shorter usage peaks for agricultural pumping. To a lesser extent, this pattern applies to Utilities customers as well. In contrast, both the Manufacturing and Retail customer industries (which have more consistent occupancy and operations) see excellent performance metrics across both bias and precision.

**TABLE C-5: SPECIFICATION TEST RESULTS FOR PROXY DAY TESTING – PG&E**

Industry Type	# of Customers	CV-RSME	NMBE	NMAE	Adjusted R <sup>2</sup>
Agriculture, Mining & Construction	297	47.061	28.351	47.061	0.781
Institutional/Government	4	0.923	0.659	0.923	0.501
Manufacturing	21	0.254	0.144	0.254	0.739
Offices, Hotels, Finance, Services	24	0.116	0.021	0.116	0.732
Retail Stores	306	0.117	0.017	0.117	0.720
Schools	20	0.873	0.431	0.873	0.673
Water, Wholesale, Transport, Other Utilities	99	21.040	7.655	21.040	0.842

**TABLE C-6: SPECIFICATION TEST RESULTS FOR PROXY DAY TESTING – SCE**

Industry Type	# of Customers	CV RMSE	NMBE	NMAE	Adjusted R <sup>2</sup>
Retail Stores	369	0.129	0.034	0.129	0.804
Utilities	142	7.757	4.477	7.757	0.578
Other/Unknown	16	0.096	0.028	0.096	0.777

**TABLE C-7: SPECIFICATION TEST RESULTS FOR PROXY DAY TESTING – SDG&E**

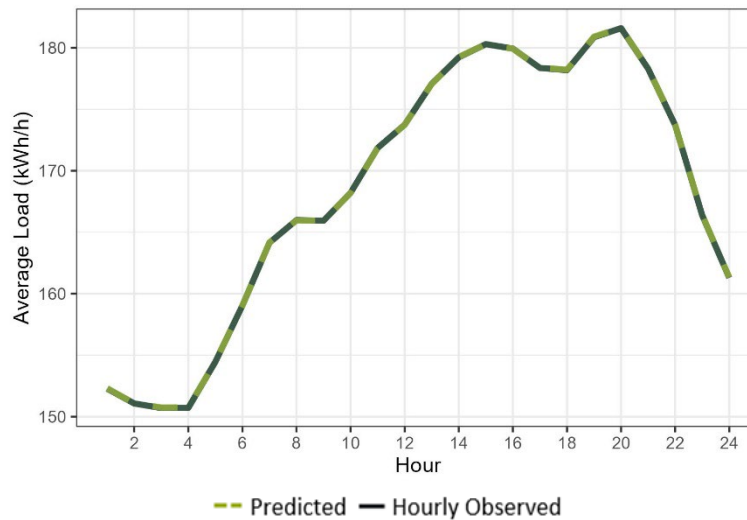
Industry Type	# of Customers	CV RMSE	NMBE	NMAE	Adjusted R <sup>2</sup>
Institutional/Government		0.054	0.007	0.054	0.760
Manufacturing		0.317	0.155	0.317	0.767
Offices, Hotels, Finance, Services		0.070	0.007	0.070	0.658
Retail Stores		0.851	0.421	0.851	0.598
Schools		1.490	0.477	1.490	0.309
Water, Wholesale, Transport, Other Utilities		0.839	0.437	0.839	0.801

### C.3 ACTUAL VS PREDICTED PROXY DAY LOAD SHAPES

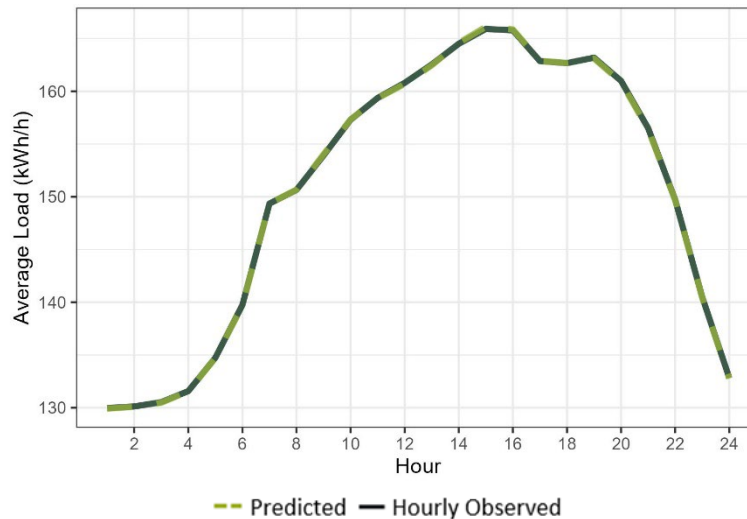
As a means of visually assessing how well the collection of selected regression models predicts average load, Figure C-1 through Figure C-3 present the average observed and predicted load during proxy event

days by IOU. In general, these figures demonstrate excellent model fits on average, with any slight deviations attributable to outliers and/or a small sample size of customers.

**FIGURE C-1: PG&E PROXY DAY ACTUAL VS. PREDICTED LOAD**



**FIGURE C-2: SCE PROXY DAY ACTUAL VS. PREDICTED LOAD**





**FIGURE C-3: SDG&E PROXY DAY ACTUAL VS. PREDICTED LOAD**

