

**PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA**

ENERGY DIVISION

RESOLUTION E-4819

May 25, 2017

**R E S O L U T I O N**

Resolution E-4819. Southern California Edison Company, Pacific Gas and Electric Company, and San Diego Gas & Electric Company request approval of the Opportunity Cost Analysis Methodology to determine and insert a price trigger for the Capacity Bidding Program (CBP).

PROPOSED OUTCOME:

- Approves the proposed price triggers to be added to the Capacity Bidding Program.
- Requires additional analysis of the price trigger methodologies in a December 2017 advice letter.

SAFETY CONSIDERATIONS:

- There is no new safety risk associated with adding a price trigger for the Capacity Bidding Program.

ESTIMATED COST:

- There is no cost to ratepayers with adding a price trigger for the Capacity Bidding Program.

By Pacific Gas and Electric Company (PG&E) Advice Letter (AL) 4887-E, Southern California Edison (SCE) AL 3444-E, and San Diego Gas & Electric (SDG&E) AL 2936-E, Filed on August 1, 2016.

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**SUMMARY**

This Resolution approves the request of Southern California Edison Company (SCE), Pacific Gas and Electric Company (PG&E), and San Diego Gas & Electric Company (SDG&E) (collectively the Utilities) to use the proposed Opportunity

Cost Analysis Methodology, which relies on a maximum of 5 events per month, to determine the price trigger to be added to the Capacity Bidding Program (CBP). This resolution approves the specific price triggers proposed in the advice letter filing for 2017.

The Utilities are also directed by this resolution to file an advice letter by December 1, 2017 which provides an update to the price trigger and further analyses on various aspects of the proposed price trigger or justifies why the 2017 price trigger should continue.

## **BACKGROUND**

**The Capacity Bidding Program provides monthly capacity payments (\$/kW) and energy payments (\$/kWh) to Aggregators<sup>1</sup> in exchange for load reduction electricity usage during the peak hours when requested by the Utilities.**

The monthly capacity payments (\$/kW) are based on the nominated kW load, the specific operating month, and the program notice option day-ahead (DA) or day-of (DO). Energy payments are made to aggregators based on the measured kWh reductions that are achieved when an event is called. If no events are called, aggregators will not receive energy payments, but they will receive the full monthly capacity payment in accordance with their nominations. CBP events can be triggered when the Utility expects the dispatch of electric supply resource with implied heat rates of 15,000 Btu/kWh or greater; the Utility receives a market award of dispatch instruction from the California Independent System Operator (CAISO); or when the Utility in its sole opinion, forecasts that generation or electric system capacity may not be adequate<sup>2</sup>.

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<sup>1</sup> Aggregators are defined as an entity that aggregates one or more service accounts served under a non-residential rate schedule. Aggregator may be individual customer that may self-aggregate, acting as its own aggregator.

<sup>2</sup> PG&E's CBP can also be triggered when the forecasted temperature for a Load Zone exceeds the temperature threshold for the Load Zone.

**The Commission ordered the Utilities to create a methodology to determine a price trigger for CBP and to propose a price trigger to be added to the CBP.** On February 1, 2016, SCE filed a proposal to add a price trigger to its CBP as part of the 2017 Demand Response Program and Bridge Funding Authorization<sup>3</sup>. SCE argued that the CBP event trigger should be modified to ensure the product is priced properly for the relevant market (i.e., CBP DA for day-ahead market and CBP DO for real-time market) and recommended adding a price component in conjunction with the 15,000 Btu/kWh heat rate.

In Decision (D.) 16-06-029, the Commission supported SCE’s proposal of an additional price trigger and ordered PG&E, SCE and SDG&E (collectively the Utilities) to work together to create a methodology to determine a price trigger to be added to the CBP. The Utilities were ordered to file Tier 3 ALs no later than 45 days from the issuance of the Decision.<sup>4</sup> In compliance with the Decision, the Utilities filed the ALs (PG&E AL 4887-E, SCE AL 3444-E, and SDG&E AL 2936-E) on August 1, 2016.

**The Utilities proposed the use of an Opportunity Cost Analysis Methodology, which relies on a maximum of 5 events per month, to determine CBP trigger prices for each market.** The Utilities proposed the following values for both the day-ahead and day-of price triggers:

**Table 1**

	<b>PG&amp;E</b>	<b>SCE</b>	<b>SDG&amp;E</b>
CBP DA for DAM <sup>5</sup>	\$70 MWh	\$65 MWh	\$75 MWh
CBP DO for RTM <sup>6</sup>	\$70 MWh	\$160 MWh	\$140 MWh

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<sup>3</sup> R.13-09-011, pg. 14

<sup>4</sup> D.16-06-029, Ordering Paragraph 29.

<sup>5</sup> CBP DA for day-ahead market

<sup>6</sup> CBP DO for real-time market

The proposed dispatch trigger condition would result in the dispatch of CBP in a given Sub-Load Aggregation Point (Sub-LAP) area only if the settled Locational Marginal Price (LMP) for that Sub-LAP exceeds both the proposed trigger price and the price at which a 15,000 BTU/kWh thermal resource would be dispatched. The proposed trigger prices would apply to every single month the program is in operation and to all Sub-LAPs in the Utilities' territories.

If it appears during the program season that the price trigger set by the methodology will result in more than the maximum 5 events per month, then SDG&E and PG&E proposed to utilize a short-term opportunity cost model to determine what the highest value events would be in the month, such that they will not exceed the maximum number of events. SCE, on the other hand, proposed to halt bidding CBP resource into the market and to reserve the use of CBP for reliability events should they be needed.

In general, the Utilities were in alignment on the following approach to the proposed Opportunity Cost Analysis Methodology:

1. An Opportunity Cost Price Trigger Methodology, which relies on a maximum 5 events per month. The Utilities agreed that it would be best to start out by estimating the number of event hours that would result from a given trigger and select a trigger that keeps the expected number of economic events at or below 5 events per month.
2. Historical price data used from recent years to estimate how many events are likely to occur for a given trigger.
3. Both the price trigger and the heat rate trigger must be met for a dispatch to occur.
4. The price methodology shall set a minimum price of the Net Benefits Test (NBT)<sup>7</sup>, pursuant to D.12-11-025, OP 1.

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<sup>7</sup> FERC Order No. 745 requires the CAISO to implement a net benefits test that establishes a price threshold above which demand response resource bids are deemed cost effective.

PG&E differs from the other IOUs in that it is using its DA price trigger (\$70 MWh) for both its DA and DO options of the program (see Table 1). PG&E does not expect to bid its CBP into the real-time market until 2018, and had not determined how to model a DO price trigger for the AL filing. PG&E reserves the right to develop a DO price trigger for the 2018 season.

More details on how the Utilities generated the proposed price triggers in Table 1 are provided in the Discussion Section.

## **NOTICE**

Notice of PG&E AL 4887-E, SCE AL 3444-E, and SDG&E AL 2936-E were made by publication in the Commission's Daily Calendar. PG&E, SCE, and SDG&E stated that a copy of the Advice Letter was mailed and distributed in accordance with Section 4 of General Order 96-B.

## **PROTESTS**

PG&E AL 4887-E, SCE AL 3444-E, and SDG&E AL 2936-E were not protested.

## **DISCUSSION**

In compliance with D.16-06-029, the Utilities have developed a methodology to determine a price trigger for CBP and are proposing to add that price trigger to the CBP. Energy Division evaluated the Utilities' proposal to determine whether the methodology and the proposed price trigger are reasonable.

**The Utilities' Opportunity Cost Analysis Methodology is reasonable because it captures the highest-priced value.** Opportunity Cost Analysis Methodology is defined as a way to identify a minimum price trigger that relies on targeting a pre-specified number of economic event hours within the respective program maximums, such that events would remain available for reliability purposes.

Each utility implemented the methodology in a slightly different way to develop a price trigger. Because the detailed data is protected as confidential under

Section 583 of the Public Utilities Code, Energy Division summarizes the information as follows:

- PG&E provided an Excel spreadsheet calculation approach that is simple and transparent. PG&E first identified the hourly price each day<sup>8</sup> in the month and ranked it from the highest to the lowest. For each month, PG&E selected the 5<sup>th</sup> highest value from that list, and picked the 5<sup>th</sup> highest value across the operating months (May-Oct). PG&E ran this analysis based on historical energy price data, averaged the price over 3 years, and rounded it to the nearest \$5 for simplicity.
- SDG&E's implemented the methodology by using a Statistical Analysis System (SAS) software. SDG&E imported the historical raw energy prices and ran several price trigger scenarios with the 15,000 heat rate. Based on the output, SDG&E selected a trigger that is expected to result in 5 or fewer economic events per month.
- SCE's approach was to maximize the net energy benefit, while satisfying other constraints such as the 5 economic events per month. The net energy benefit is defined as the difference between what SCE pays for the CBP resource and the settled LMP for the CAISO market in which SCE bids the resource. Similar to SDG&E's approach, SCE ran several price trigger scenarios with the dates, lengths and total net energy benefit. SCE selected a trigger price that resulted in the maximum net energy benefit while keeping the number of events at 5 or fewer per month.

Although there were differences in how each Utility implemented the methodology, the concept is basically the same. In essence, the Utilities identified a range of trigger prices that would result in a number of events allowed under the tariff, while still capturing the highest-priced events. We find this methodology to be acceptable.

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<sup>8</sup> PG&E - DLA<sub>p</sub> Price

### Assessment of Utilities' Proposed Price Trigger

Based on the Opportunity Cost Analysis Methodology, the Utilities calculated the following price triggers to be added to the heat rate trigger for CBP.

	PG&E	SCE	SDG&E
CBP DA for DAM <sup>9</sup>	\$70 MWh	\$65 MWh	\$75 MWh
CBP DO for RTM <sup>10</sup>	\$70 MWh	\$160 MWh	\$140 MWh

Energy Division further assessed the Utilities' proposed price triggers using the following primary factors:

- 1) Targeting a maximum of 5 events per month
- 2) Single price trigger that applies for the entire year
- 3) Historical price data
- 4) If price is greater than 5 events
- 5) PG&E's use of the same price trigger (\$70 MWh) for its DO and DA options in the program

#### **1) Opportunity Cost Analysis Methodology targets a maximum of 5 economic events per month**

Opportunity Cost Analysis Methodology is defined as a way to identify a minimum price trigger that relies on targeting a pre-specified number of economic event or hours. The Utilities have similar monthly maximum number of hours per month for CBP:

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<sup>9</sup> CBP DA for day-ahead market

<sup>10</sup> CBP DO for real-time market

PG&E	SCE	SDG&E
30 hours/month	30 hours/month and a maximum of 5 events per month	30 hours/ month <sup>11</sup>

In D.16-06-029, the Commission approved SCE’s CBP modification, which includes limiting economic events to no more than five per month. In order to ensure consistency in the statewide trigger design, all three Utilities targeted 5 or fewer economic events per month. Given that CBP events may be 4 to 6 hours in duration, SDG&E and PG&E believe selecting 5 economic events per month allows for an expected range of 20 to 30 hours of dispatch in the peak month. The Utilities’ approach to using 5 events per month is reasonable at this time but we are interested in seeing how often the program is operated with the new price triggers in place in comparison to their monthly hours of maximum operation. By December 1, 2017, the Utilities shall file an advice letter that provides an analysis of the new price triggers in terms of hours of dispatch per month.

**2) The proposed CBP price trigger does not reflect peak season and non-peak season**

The Utilities proposed set price triggers for CBP-DA and CBP-DO that would apply for each SubLAP area<sup>12</sup> for each month of operation. PG&E and SDG&E operate the program from May through October while SCE operates its CBP year round from January through December. In response to an Energy Division data request, it appears that prices are typically higher during the peak season which is between May and October compared to the non-peak season which is between December and April.

Given that SCE calculated its price trigger using historical data *across all months*, SCE’s proposed price trigger could result in some months in which all five economic events would take place during the peak season while other months

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<sup>11</sup> SDG&E has a maximum number of event hours that differs by month but is 30 hours per month on average.

<sup>12</sup> SubLAPs: PG&E has 16, SCE 6, SDG&E 1.

could have zero events during the non-peak season. The main point of a price trigger is to *use* the CBP resource when it has the highest value. We have concern if the trigger price is set too high during the non-peak season. This may result in no events even when there may be economic value in the CAISO market from dispatching the program. Under the current CBP tariff, Utilities are required to pay aggregators a capacity payment even if there are no events called in a month. While we are cognizant of concerns about potential customer fatigue from excessive dispatch, we must strike a balance, to ensure that ratepayer value of the program is preserved.

At this juncture we will not require SCE to modify its proposed price trigger since it has yet to be implemented. More analysis on this issue is needed before we require separate price triggers for peak and non-peak seasons. Therefore in the advice letter that is due in December 2017, SCE shall include an analysis in which it will calculate separate price triggers for a peak and non-peak seasons for CBP-DA and CBP-DO and a recommendation justifying whether to modify or maintain its approach.

**3) In future years, the historical energy price data timeframe should be the same among Utilities**

When each Utility ran its opportunity cost analysis based on historical energy prices, the timeframes for the data were different among the Utilities. PG&E's opportunity cost model utilizes public historical data through CAISO Open Access Same-time Information System (OASIS) of hourly prices for the day-ahead market at PG&E Default Load Aggregation Point (DLAP) from May 1, 2014 through July 28, 2016. SCE used historical settled price data at the Sub-LAP level for the periods January 2014 - June 2016 for the Day-Ahead Market and January 2014 - May 2016 for the Real Time Market. SDG&E used price data from 2013 to 2015.

For consistency purposes, we direct each utility to use the same timeframe - the past two calendar years for updates to the price trigger. Hence the December 2017 advice letter filing shall update the price triggers for the program by relying on data from January 1, 2015 through December 31, 2016.

**4) Price trigger that leads to more than monthly maximum 5 events**

If it appears during the program season that the proposed price trigger will result in more than the maximum 5 events per month, then both SDG&E and PG&E proposed to utilize a short-term opportunity cost model to determine what the highest value events would be in the month, such that they will not exceed the maximum number of events. The short-term opportunity cost model starts with the historical SubLAP-specific analysis that is continually informed by market data to adjust to the current conditions and maximize local benefits. The current conditions will reflect transmission congestion risk that can drive up prices resulting in a higher number of events. In essence, SDG&E and PG&E will adjust their bid price higher to avoid dispatching the CBP more than 5 events per month.

SCE, on the other hand, will halt bidding CBP resource into the market after 5 economic events have occurred in a given month. SCE will reserve the use of CBP for reliability events should they be needed.

Given that a price trigger is added to the heat rate trigger for CBP for the first time, it would be interesting to see how the two approaches affect the program. We find the two different approaches to be reasonable at this time. The Utilities shall include in the December 2017 advice letter an analysis of the two approaches and make recommendations as to whether one approach is more effective than the other.

**5) PG&E's use of the DA price trigger (\$70 MWh) for both DO and DA options in the program**

As noted earlier in this resolution, PG&E proposes to use its DA price trigger (\$70 MWh) for the DO option of the program in 2017. PG&E noted that it does not plan to bid CBP into the real-time market in 2017 and had not developed a methodology to model the DO price trigger for the AL filing. We accept PG&E's proposal for the 2017 year but it should develop a separate price trigger for its

DO option for the 2018 season only if the Commission determines that the DO option should continue in 2018<sup>13</sup>.

## **COMMENTS**

Public Utilities Code section 311(g)(1) provides that this resolution must be served on all parties and subject to at least 30 days public review and comment prior to a vote of the Commission. Section 311(g)(2) provides that this 30-day period may be reduced or waived upon the stipulation of all parties in the proceeding.

All parties in the proceeding have stipulated to reduce the 30-day waiting period required by PU Code section 311(g)(1) to 21 days. Accordingly, this matter will be placed on the first Commission's agenda 21 days following the mailing of this draft resolution. By stipulation of all parties, comments shall be filed no later than 11 days following the mailing of this draft resolution of this draft resolution.

PG&E and SCE submitted comments on the draft resolution on May 15, 2017. Both objected to the draft resolution's statement that CBP is 'underutilized' if it is dispatched less than half of its available hours per month. PG&E and SCE state that the Commission had not previously defined 'underutilized' nor is there any evidence in a formal proceeding that demonstrates a need for a minimum number of hours of dispatch. SCE also notes that there will be structural complications with implementing a 50% minimum dispatch every month. PG&E suggests an analysis be performed on multiple factors to better inform a policy on dispatches for the program.

We have a strong interest in ensuring that demand response programs are properly utilized by the utilities, but we acknowledge that more information is needed to establish a policy concerning the CBP. Therefore, we will not require the utilities to recommend changes to the Opportunity Cost Analysis

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<sup>13</sup> PG&E is proposing to discontinue the DO option in its 2018-22 demand response portfolio application (A.17-01-012).

Methodology for revised price triggers if the program is dispatched less than half of its available hours per month. The utilities should analyze the new price triggers in terms of hours of dispatch per month as well as other factors that influence frequency of dispatch. This analysis should be included in their December 1, 2017 advice letters.

PG&E also stated that it is proposing to eliminate its Day-Of option for CBP in A.17-01-012, and therefore requests that it not be required to calculate a separate price trigger for that option, assuming the Commission approves its proposal. PG&E's request is reasonable. PG&E shall not be required to calculate a separate price trigger for its DO option if the Commission authorizes a discontinuation of the DO option in A.17-01-012.

PG&E also provided miscellaneous clarifications.

## **FINDINGS**

1. D.16-06-029 directed the Utilities to work together to create a methodology to determine a price trigger for CBP and to propose a price trigger to be added to the CBP dispatch trigger.
2. Both the price trigger and the heat rate trigger must be met for a CBP dispatch to occur.
3. Opportunity Cost Analysis Methodology is defined as a way to identify a minimum price trigger that relies on targeting a pre-specified number of economic event hours within the respective program maximums, such that events would remain available for reliability purposes.
4. The Opportunity Cost Analysis Methodology is reasonable because it captures the highest-priced events.
5. While the Utilities implemented the Opportunity Cost Analysis Methodology in different ways, the concept is the same.
6. In D.16-06-029, the Commission approved SCE's CBP modification, which includes limiting economic events to no more than five per month.

7. We accept at this time the maximum of five events per month as a target in the Opportunity Cost Analysis to maintain consistency among the Utilities' trigger design.
8. It is reasonable for SCE to provide more analysis of separate price triggers for the peak and non-peak seasons.
9. It is reasonable for the Utilities to update the price triggers for the program by relying on data from January 1, 2015 through December 31, 2016.
10. It is reasonable, at this time, for the Utilities to have different approaches to situations when the program could be triggered more than 5 events per month, but such approaches should be further analyzed in a subsequent advice letter filing.
11. PG&E should develop a price trigger for its DO option of the program for the 2018 season if the Commission continues the DO option in A.17-01-012.

**THEREFORE IT IS ORDERED THAT:**

1. The Capacity Bidding Program price triggers proposed in Pacific Gas and Electric (PG&E) Advice Letter (AL) 4887-E, Southern California Edison (SCE) AL 3444-E, and San Diego Gas & Electric (SDG&E) AL 2936-E are approved.
2. PG&E, SCE and SDG&E (the Utilities) shall file Tier 2 advice letters on December 1, 2017 that does the following:
  - a) Updates the Utilities' CBP price triggers using data from January 1, 2015 through December 31, 2016.
  - b) Analyzes the two approaches used for situations where the 5 monthly events could be exceeded in 2017 and recommend the approach that is most effective.
  - c) Analyzes the operation of the program's price triggers in terms of hours of dispatch in comparison to the program's monthly hours of maximum operation as well as other factors that influence frequency of dispatch.
3. SCE shall include in the December 1, 2017 advice letter an analysis of separate price triggers for the peak and non-peak seasons for the program, and a recommendation justifying whether to modify or maintain its approach.

4. If the Commission retains the DO option of the program in A.17-01-012, PG&E shall calculate a price trigger for it and include it in the December 1, 2017 advice letter. It shall also include its methodology for the DO price trigger.

This Resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed and adopted at a conference of the Public Utilities Commission of the State of California held on May 25, 2017; the following Commissioners voting favorably thereon:

/s/TIMOTHY J. SULLIVAN  
TIMOTHY J. SULLIVAN  
Executive Director

MICHAEL PICKER  
President  
CARLA J. PETERMAN  
LIANE M. RANDOLPH  
MARTHA GUZMAN ACEVES  
CLIFFORD RECHTSCHAFFEN  
Commissioners