

## **SDG&E GRC Phase 2**

# **Dynamic Rates and Real Time Pricing**

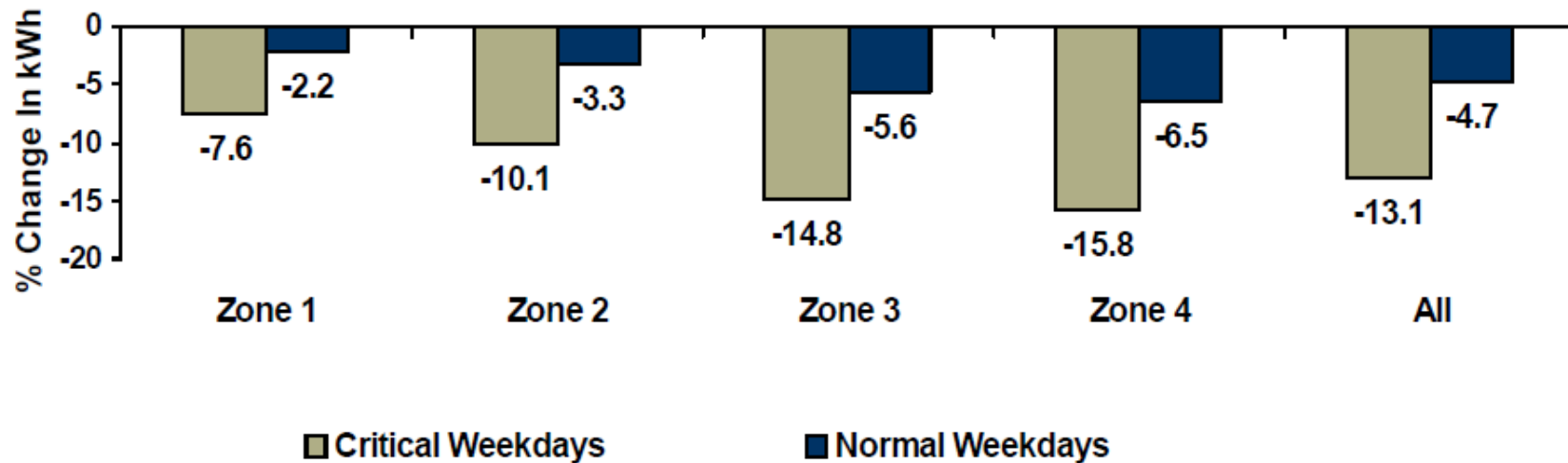
October 15, 2019

## Discussion Topics

- Historical overview of 2003 – 2005 Statewide Pricing Pilot (SPP).
  - Residential Critical Peak Pricing (CPP).
  - Small, Medium, and Large Commercial and Industrial (C&I) CPP.
- Overview of 2018 CPP results:
  - Residential.
  - Small, Medium, and Large C&I.
- SDG&E's HourX Residential Time-of-Use Pilot.
- Overview of SDG&Es Petition for Modification of CPP for small business customers.

# 2003 – 2005 Statewide Pricing Pilot Results For Residential Customers

## Percent Change In Residential Peak-Period Energy Use (Avg CPP-F Prices/Avg 2003/2004 Weather)

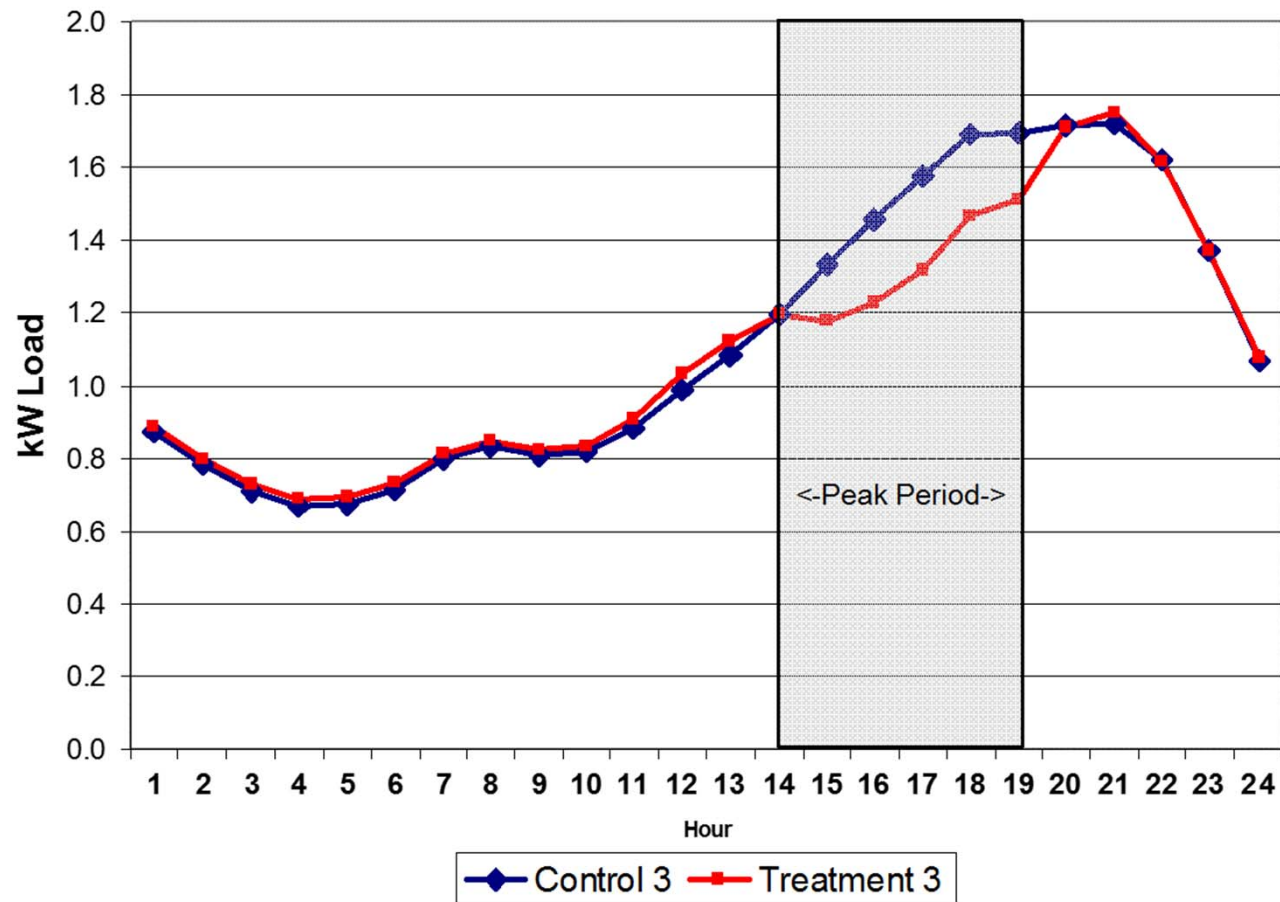


CPP-F has a fixed CPP time period from 2pm - 7pm.

Impact Evaluation of the California Statewide Pricing Pilot, CRA, March 16, 2005

# 2003 – 2005 Statewide Pricing Pilot Residential Hourly Load Impacts 2003 & 2004 CPP-F

Figure 10  
Hourly Load Shape - Complex Daily Share Model - Zone 3



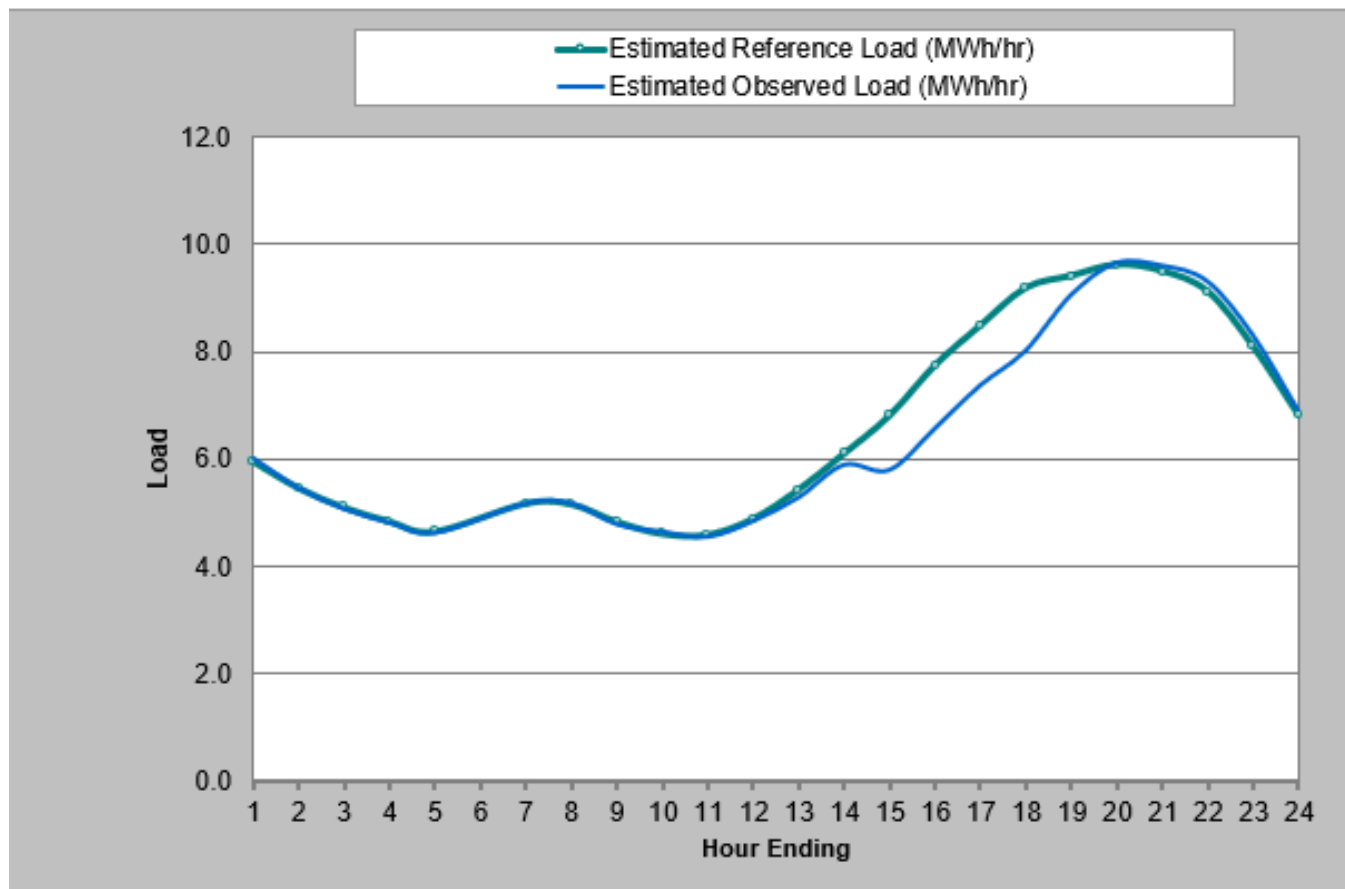
CPP-F has a fixed CPP time period from 2pm - 7pm.  
Residential Hourly Load Response to Critical Peak Pricing in the Statewide Pricing Pilot, CRAI, 5/18/2006.

## 2003 – 2005 Statewide Pricing Pilot Lessons Learned

- There is statistically significant variation in hourly impacts within pricing periods.
- Peak period impacts reach their maximum at 5 pm in all climate zones.
- There is variation in the size of the impacts across climate zones (warmer climates have larger impacts).
- However, the aggregate impacts at the period level did not differ appreciably from the impacts in the March 16<sup>th</sup> Impact Evaluation report.
- A similar approach can be used to assess hourly impacts for the CPP-V rate, both for residential and small C&I customers.
- Changes since early 2000s in technology, customer behavior, and change in TOU periods may result in different lessons learned today.

# Overview of CPP 2018 Ex Post Load Impacts for Residential Customers (6,796 Customers Evaluated)

<b>Load Impact Type:</b>	CPP Load Impact for CPP Customers Excluding TD
<b>Type of Results:</b>	Aggregate Impact
<b>Day Type:</b>	September System Peak Day
<b>Climate Zone:</b>	All
<b>Forecast Year:</b>	2018
<b>Weather Year:</b>	Utility 1-in-2
<b>Impact Level:</b>	Portfolio-level impacts



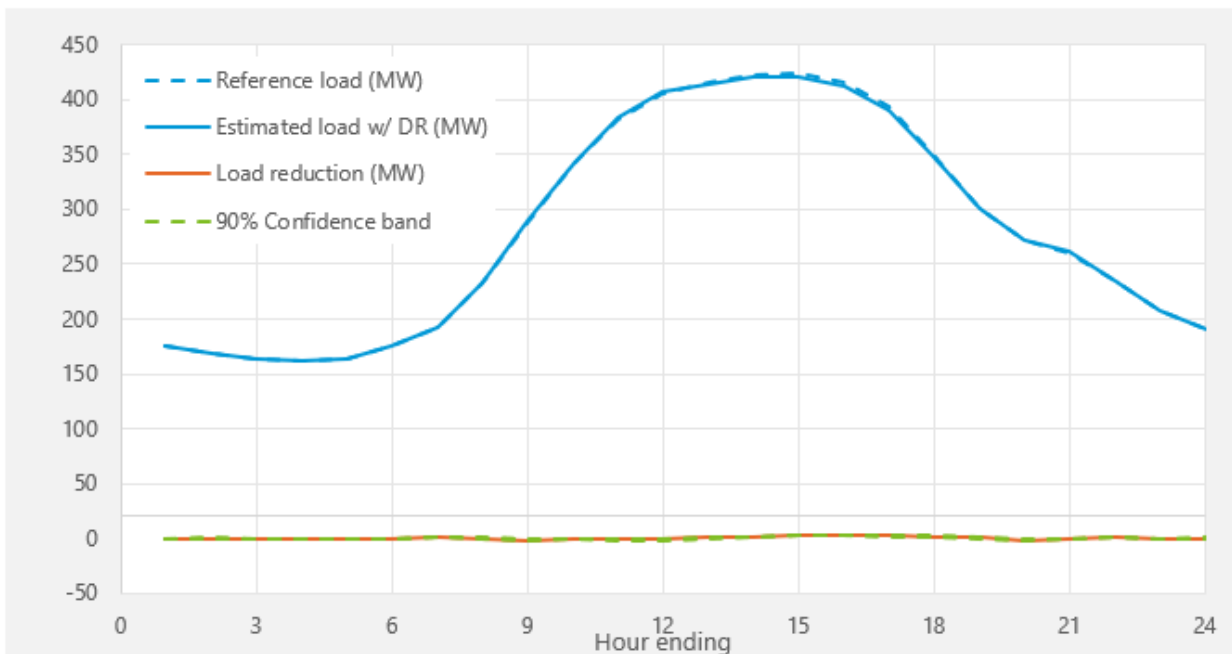
Source: 2018 Load Impact Evaluation of SDG&E's Voluntary Residential Critical Peak Pricing (CPP) and Time-of-Use (TOU) Rates, CAE, April 1, 2019.

# Overview of 2018 Ex Post CPP Results For Small C&I Average Weekday Event

Type of results	Aggregate
Category	Portfolio impacts
Subcategory	Portfolio (excludes dual enrolled)
Event date	Avg. Weekday Event 2018

Table 2: Event day information

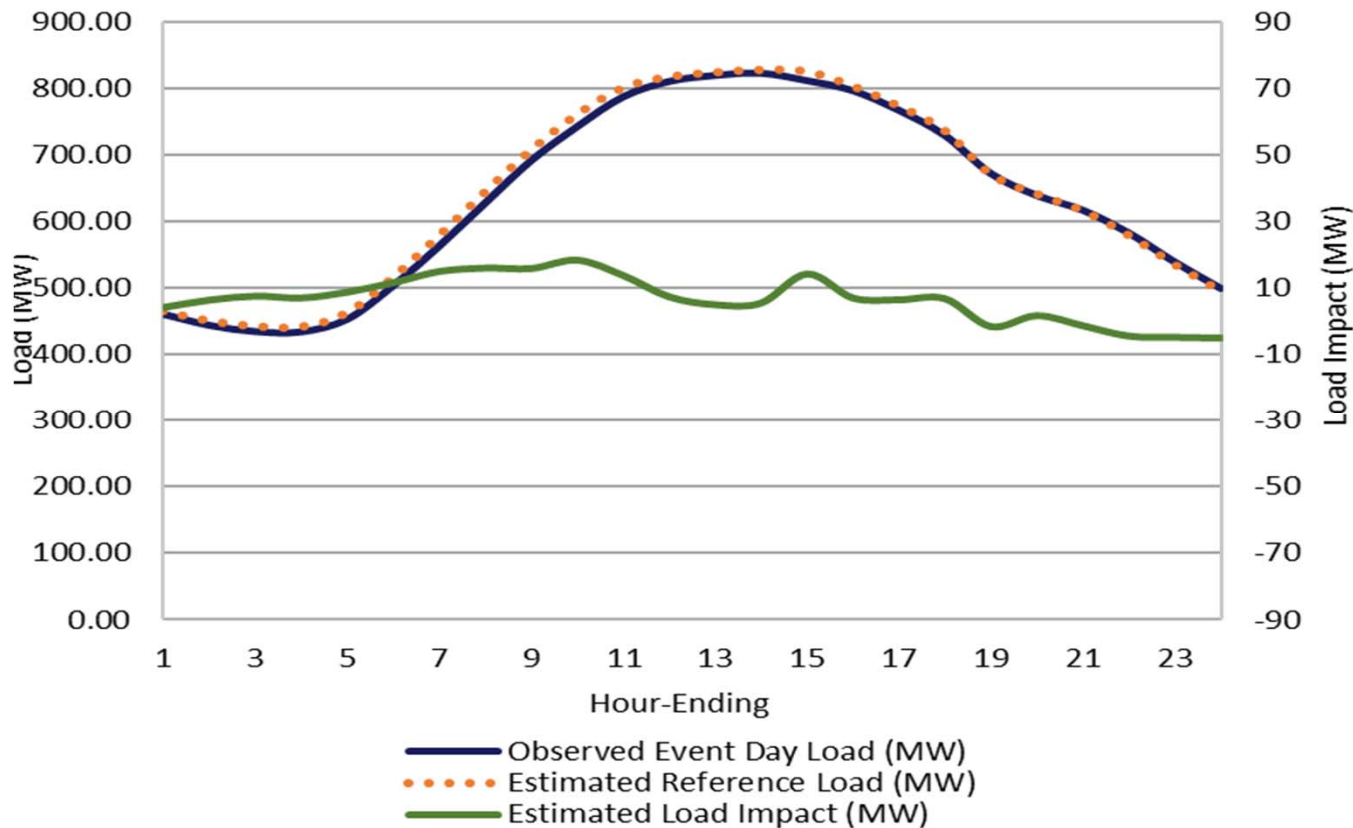
CPP Event start	2:00 PM
CPP Event end	6:00 PM
Total enrolled accounts	111,149
Avg load reduction 11AM-6PM	1.80
% Load reduction 11AM-6PM	0.4%
Avg load reduction 2PM-6PM	2.72
% Load reduction 2PM-6PM	0.7%



Source: SDG&E Small Commercial Time Varying Pricing and Technology Deployment Evaluation for Program Year 2018, DSA, April 1, 2019.

# Overview of 2018 CPP Results for Medium and Large C&I

## Ex Post M&L Load Impacts - Average Summer Event, Average Event Hour



- Large customers provide the majority of the impact.
- Small customers are not included in this evaluation.
- Coolest weather of the three IOUs.

Source: 2018 Statewide Load Impact Evaluation of California Non-Residential Critical Peak Pricing Programs Ex-Post and Ex-Ante Load Impacts, AEG April 1, 2019.

Utility	Size Group	# Enrolled	Ref. Load (MW)	Load Impact (MW)	% Load Impact	Event Temp
SDG&E	Large	1,211	348.1	6.9	2.0%	88.5
	Medium	12,854	437.5	1.9	0.4%	88.2
ALL SDG&E		14,065	785.6	8.8	1.1%	88.3



# SDG&E's HourX Residential Opt-In Time-Of-Use Pilot

## SDG&E Load Analysis

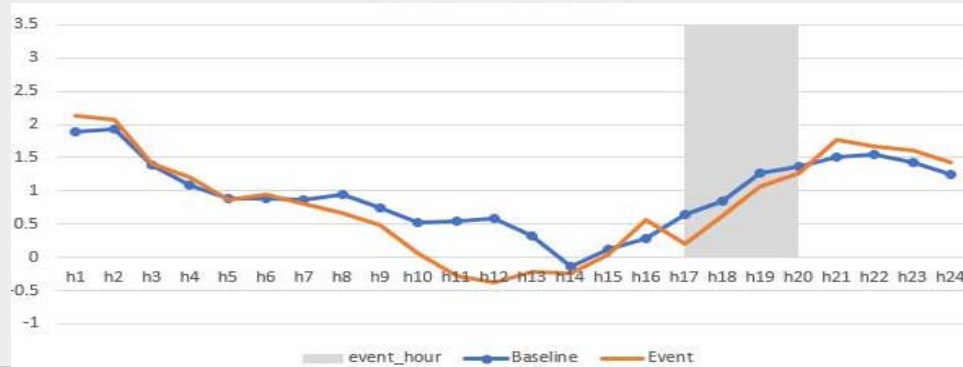
### 37 System Events 2017

- Apply to the entire system - adder is higher
- Benchmark is calling 150 events per year
- May or may not coincide with any circuit events

### 186 Circuit Events 2017

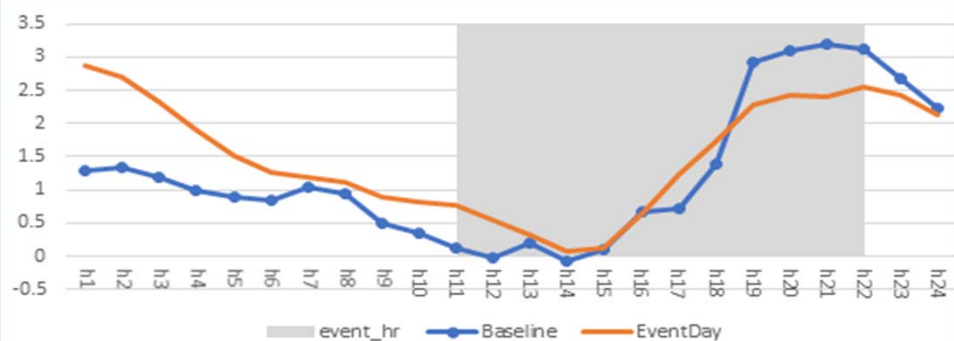
- Circuits are local or customer specific- adder is lower
- Benchmark is calling 200 events per year
- Events are based on the equipment necessary to bring power from the substation to the customer

### Example A



- Relatively short event duration (3 hours, between 5pm-8pm) enables customer to prepare and recover
- Distinct load reduction prior to event (hour 17)
- “Recovery” period after event occurs

### Example B



- Day of system peak (4,544 MW at 4pm on 09/01/17)
- Long event duration (11 hours, between 11am and 10pm), making it more difficult to reduce/shift load
- Customer managed to reduce relative to baseline

# SDG&E's HourX System Events

5 system events (June & July 2017).

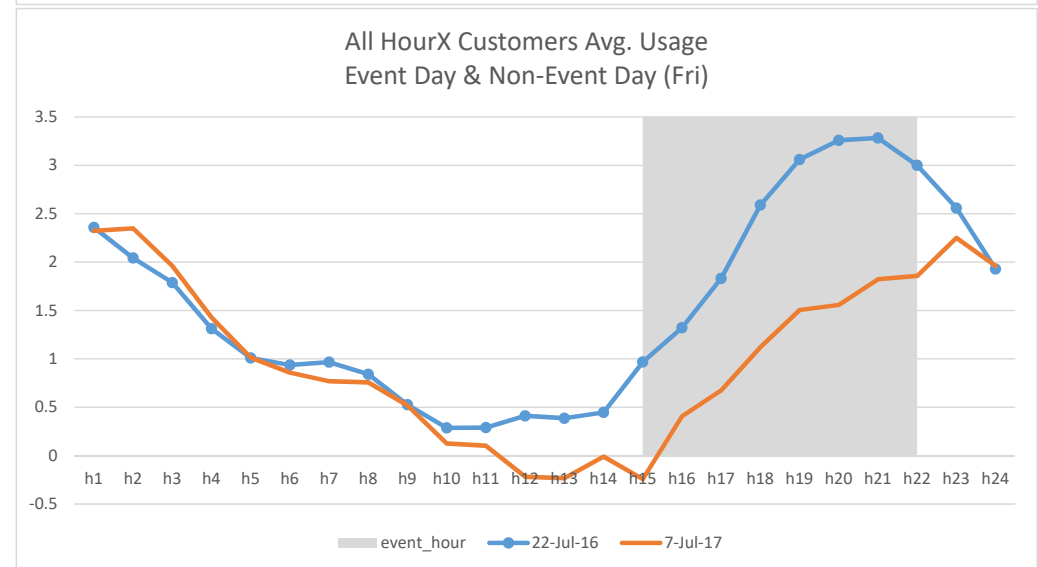
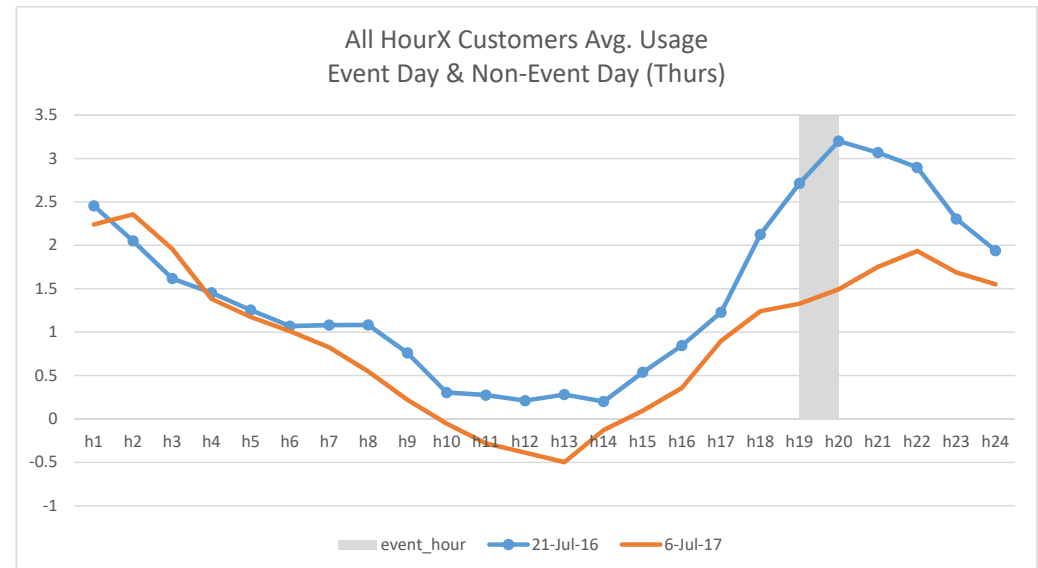
- June 19, 20 & 21.
- July 6 & 7 (Shown in Graphs).

Orange – event day.

Blue – baseline day (Baseline selected on similar weather pattern and day-of-week).

X-axis – Hour of Day.

Y-axis – kw.



# Critical Peak Pricing (CPP) Petition for Modification – Small Commercial Customers

## Background

- SDG&E seeks to place new small business customers on a TOU-only rate, and they can elect to participate in the TOU-CPP if they choose. Existing customers would be unaffected.
- SDG&E found the current approach of applying CPP as the “default rate” for small non-residential customers has led to increased bill volatility, a corresponding increase in customer complaints, and a relatively insignificant reduction in load.
- CPP rates are current default rates for Small Commercial, M/L C&I, and Agricultural customers.
- CPP is a dynamic rate intended to motivate customers to reduce their electricity use during periods of high system demand using price signals. In return for reducing their load during “event days,” these customers receive lower rates throughout the remainder of the year.

## Increased Bill Volatility

**Expected monthly bill increases on CPP event days when usage is not reduced<sup>5</sup>**

<b>Events per month</b>	<b>1 event</b>	<b>5 events</b>	<b>9 events</b>
<b>Monthly % Bill Increase</b>	<b>5%</b>	<b>26%</b>	<b>47%</b>

<sup>5</sup> On average, during an CPP event period, the price of electricity increases by over 320%. The total rate in summer on-peak goes from 36.6 cents per kWh to 153.6 cents per kWh.

# Critical Peak Pricing Petition for Modification – Small Commercial Customers



## Increase in High Bill Calls as More Events are Called

	2016			2017			2018		
	July	Aug	Sep	July	Aug	Sep	July	Aug	Sep
<b>Number of CPP events called</b>	0	0	1	0	1	2	3	3	0
<b>Number of high bill complaints</b>	56	97	62	86	93	338	355	616	280

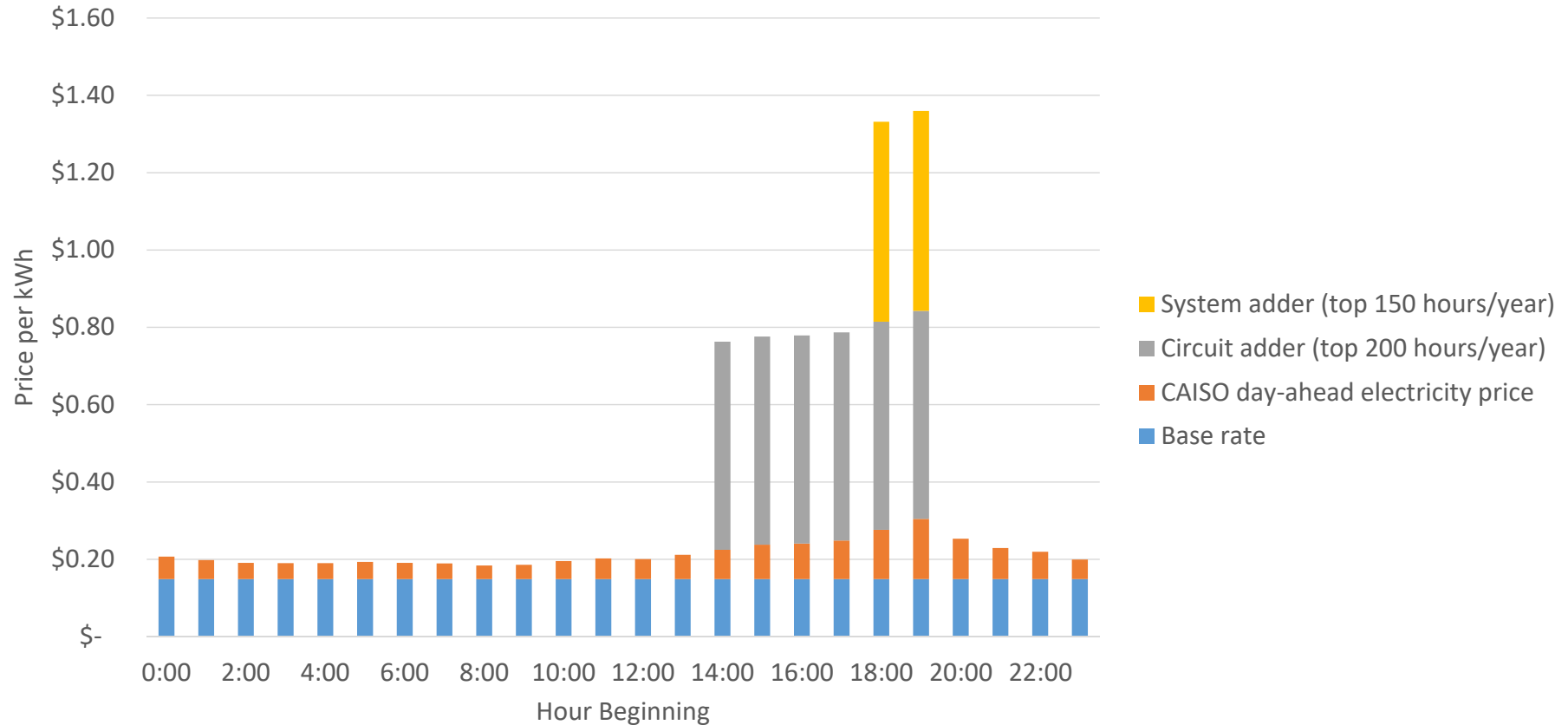
## Limited Load Reduction Achieved

- The isolated CPP portion of the rate provides less than 1% of MW load reductions during event days relative to available total load. This equates to .02 KW per customer per year, or 2.7 MW annual load reduction).
- The isolated TOU rate structure within SDG&E’s TOU/CPP rate provided a 2.6% or approximately 7 MW aggregate load reduction.

## Conclusions

- Customers' ability to reduce usage when critical peak pricing event days is important to their success on an event-based dynamic rate.
- Many small non-residential customers do not have the operational flexibility to reduce their energy use during critical peak pricing events while continuing to meet the basic energy needs required to operate their business.
- Customers who knowingly choose an event-based dynamic rate are more likely to respond by reducing their energy use.
- Structural winning on a dynamic rate means that customers may benefit annually on a dynamic rate even if they are unable to reduce electricity usage during a critical peak pricing event.
- It is reasonable to establish a time-variant rate (without an event-based critical peak pricing feature) as the standard rate option for small non-residential customers initiating SDG&E service.

## VGI Rate (Power Your Drive)



- The VGI rate used in the Power Your Drive (PYD) program changes to reflect real-time grid conditions. Customers can “set and forget” the maximum price they wish to pay using the smartphone app.