



A  Sempra Energy utility®

CPUC ZEV Rate Forum

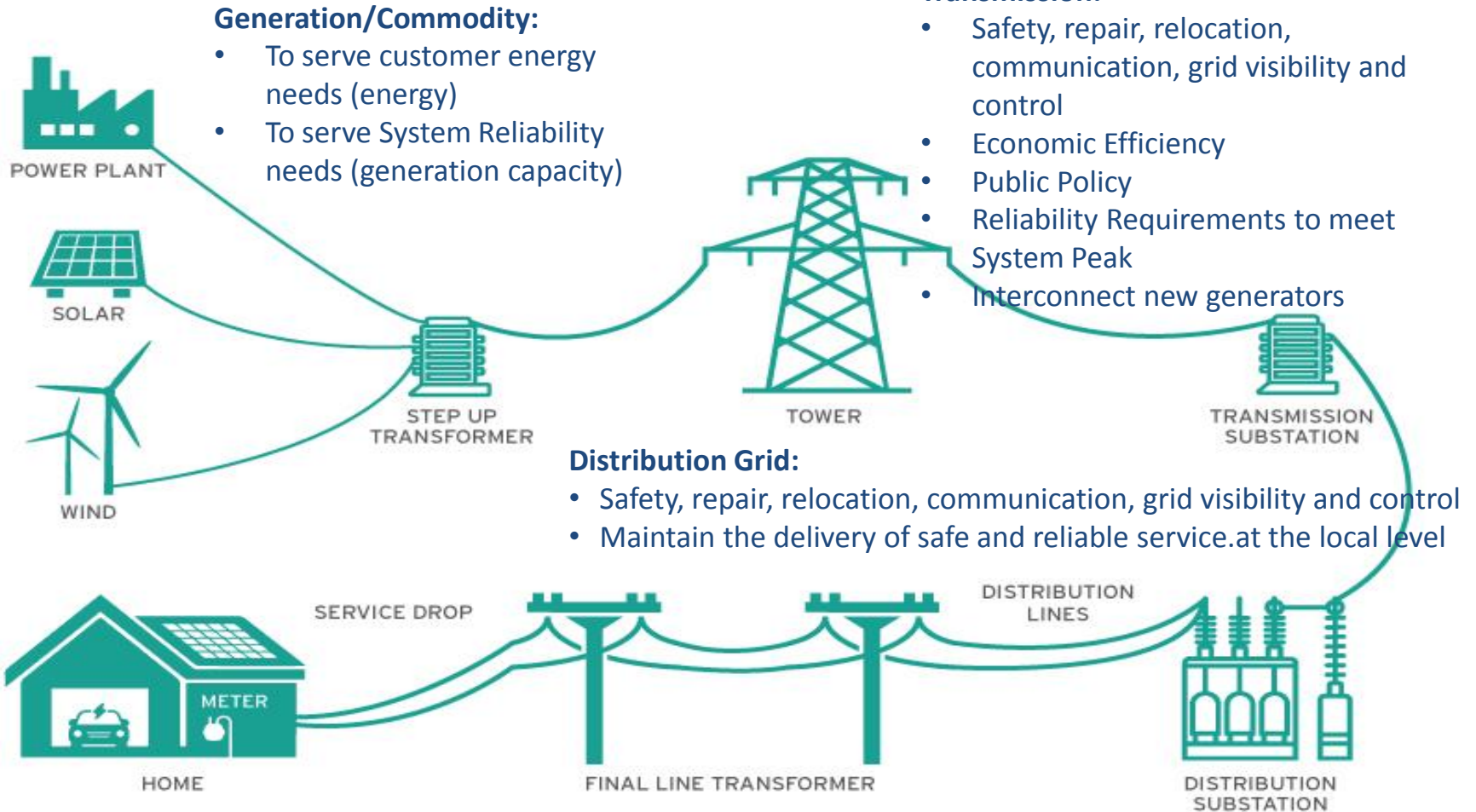
SDG&E's Design of Grid Integrated Rates

Cyndee Fang

Manager of Customer Pricing

June 7, 2018

The Utility System

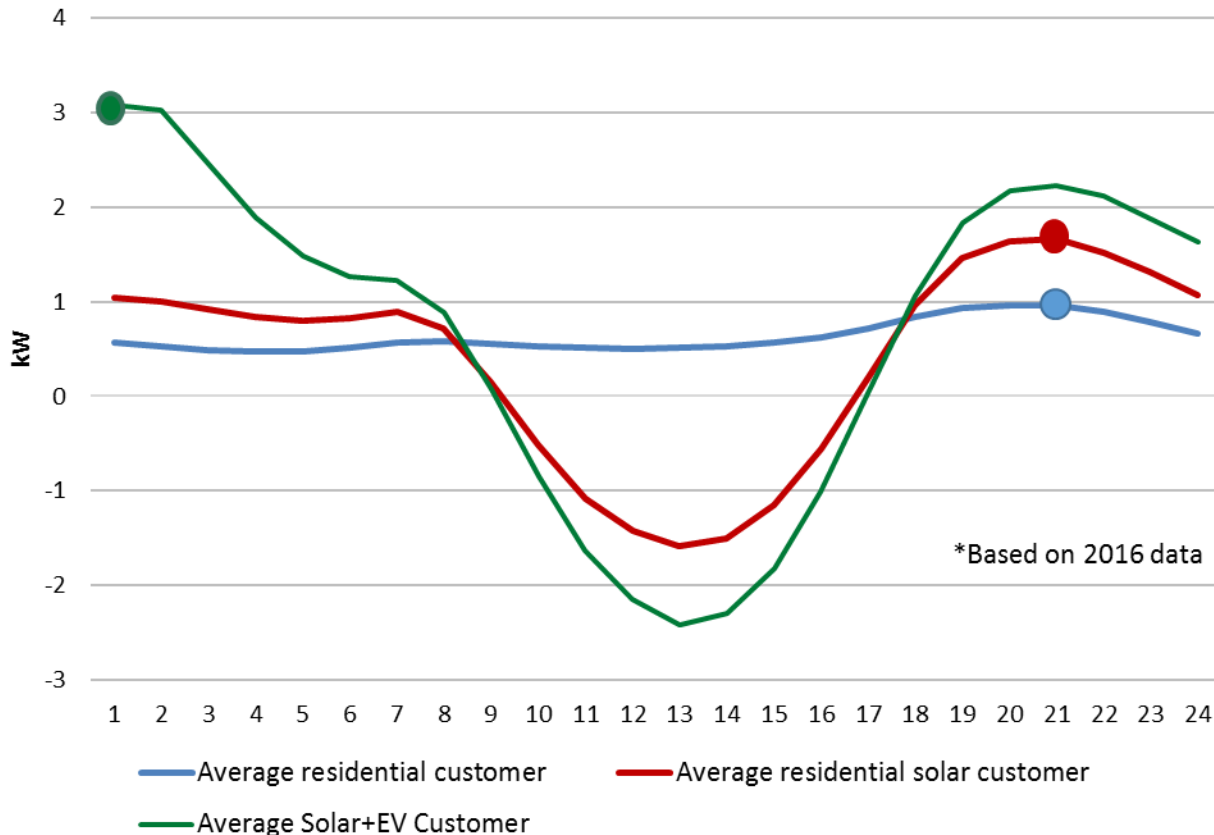


Customer Set-up:

- To ensure customers are ready to receive energy services

Potential Need for More Flexible Price Signals to Meet Future Goals

Average Residential Customer, Residential Solar Customer, & Residential Solar + EV Customer



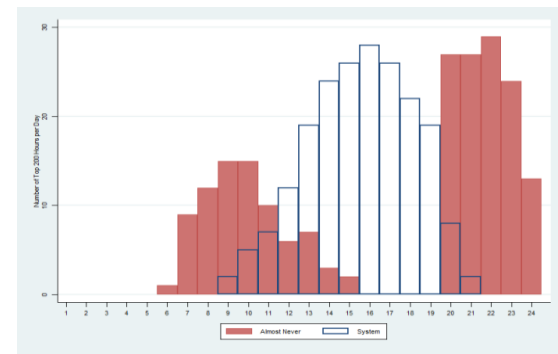
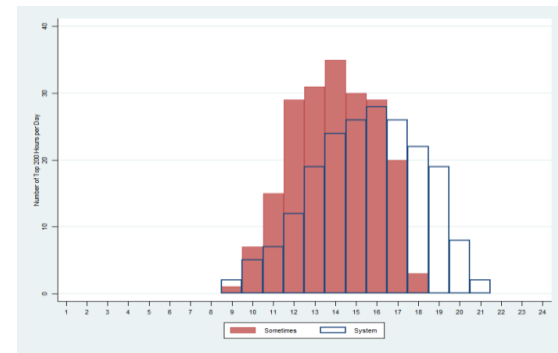
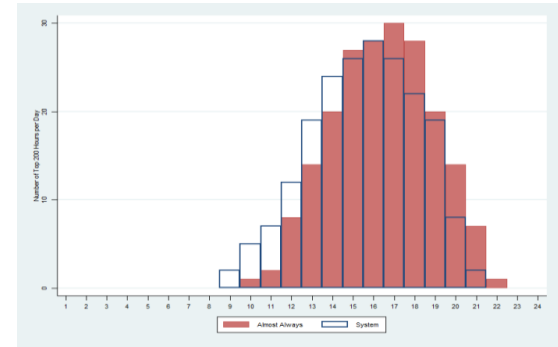
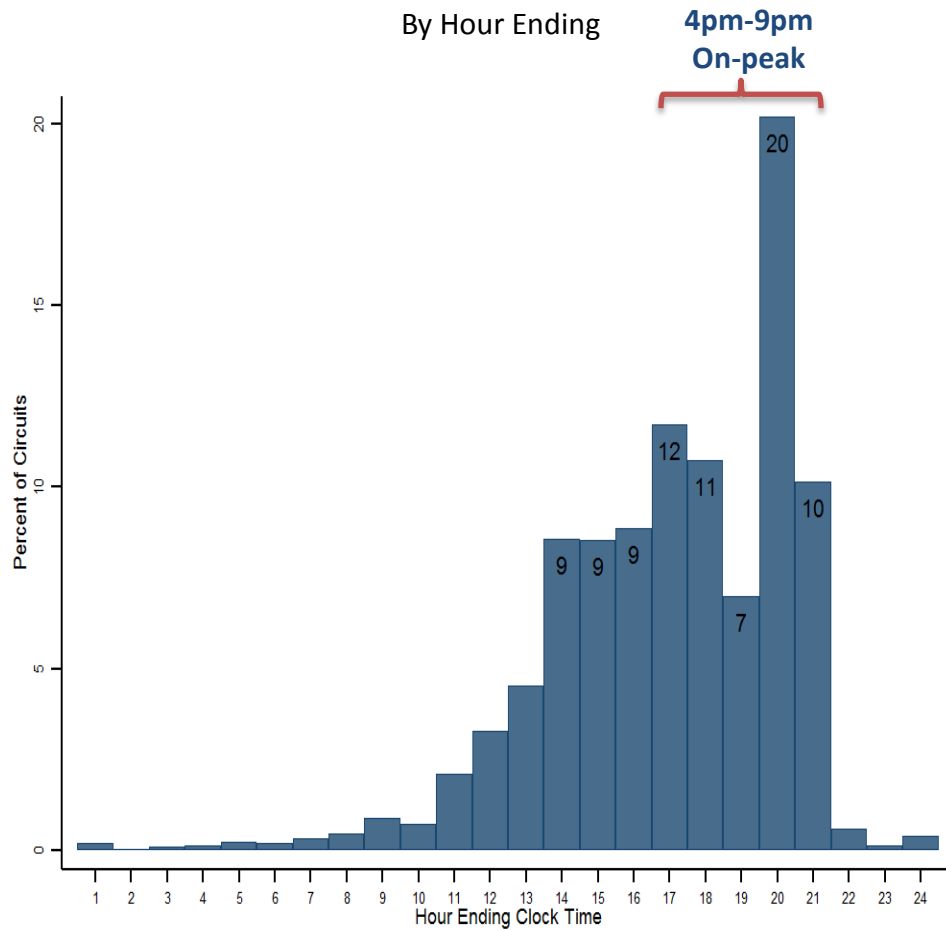
- TOU periods should continue for a minimum of 5 years.
- Residential EV charging can result in a demand many times greater than a typical residential household load.
- The charging of commercial fleet vehicles can have a demand of 10kW to over 100kW *per vehicle*.

Diversity of Peak of Distribution Circuits

Distribution of SDG&E's Circuit Peaks

2014-2016

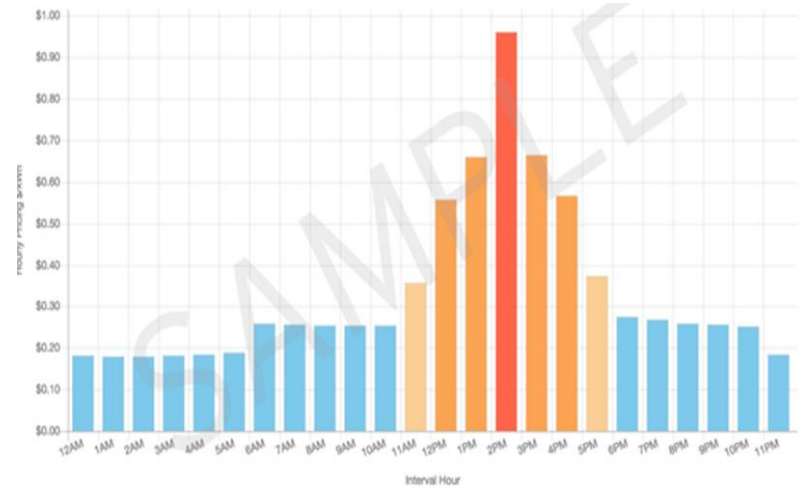
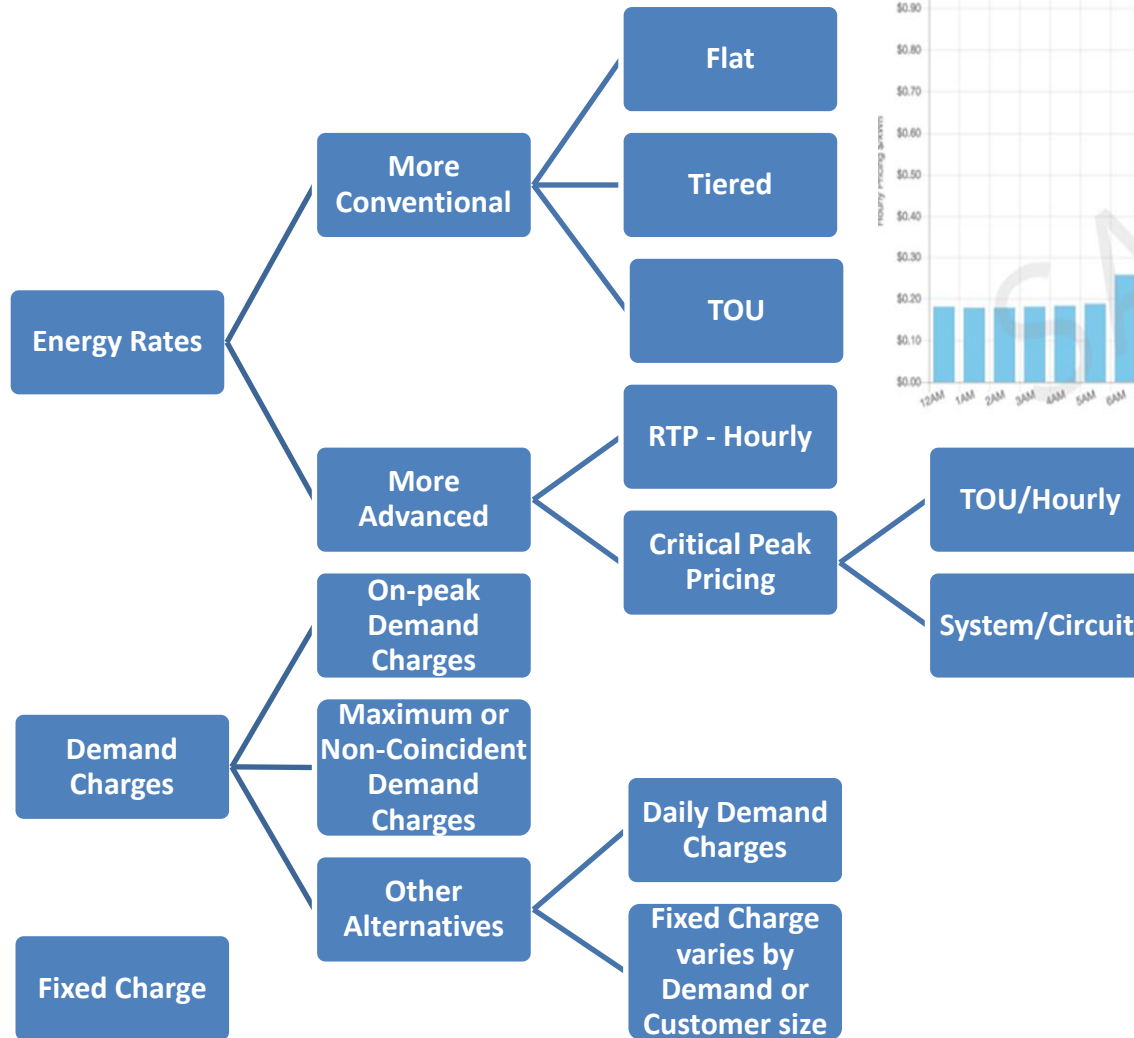
By Hour Ending



Rate Design Tools – Current and Future

Price Signal and Cost Recovery

Cost Recovery



CPP is an energy option that provides a “capacity” price signal

Circuit-level CPP provides a locational price signal while still charging all customers the same price

SDG&E's HourX Residential Pilot

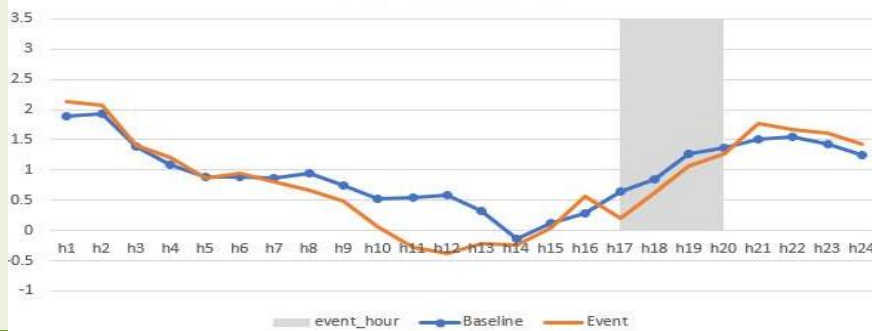
37 System Events 2017

- 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

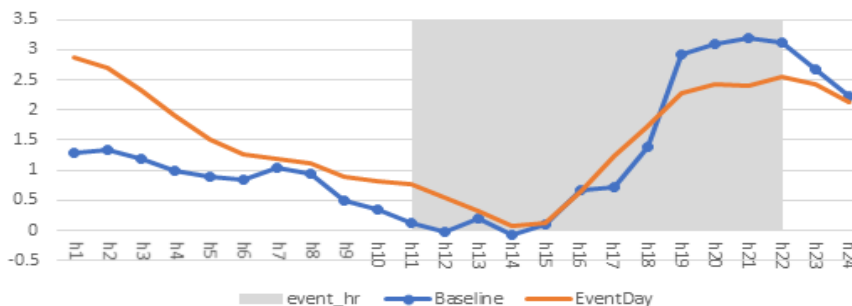
- Circuits are local or customer specific- adder is lower
- Benchmark is calling 200 events per year
- Events are based on the equipment necessary to bring power from the substation to the customer

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



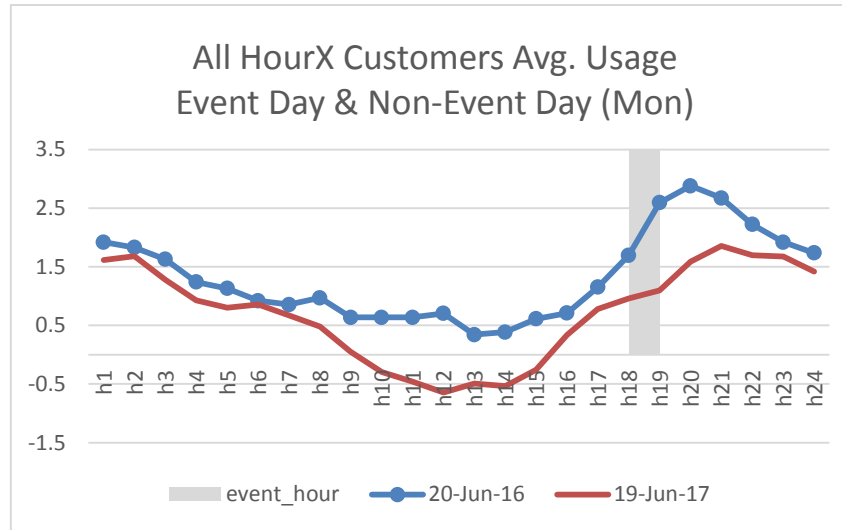
- Day of system peak (4,544 MW at 4pm on 09/01/17)
- Long event duration (11 hours, between 11am and 10pm), making it more difficult to reduce/shifted load
- Customer managed to reduce relative to baseline

SDG&E's HourX System Events - June

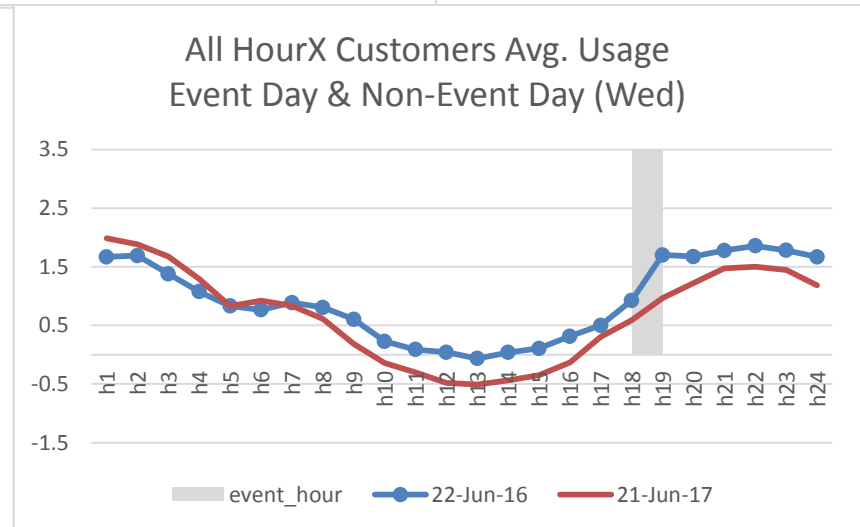
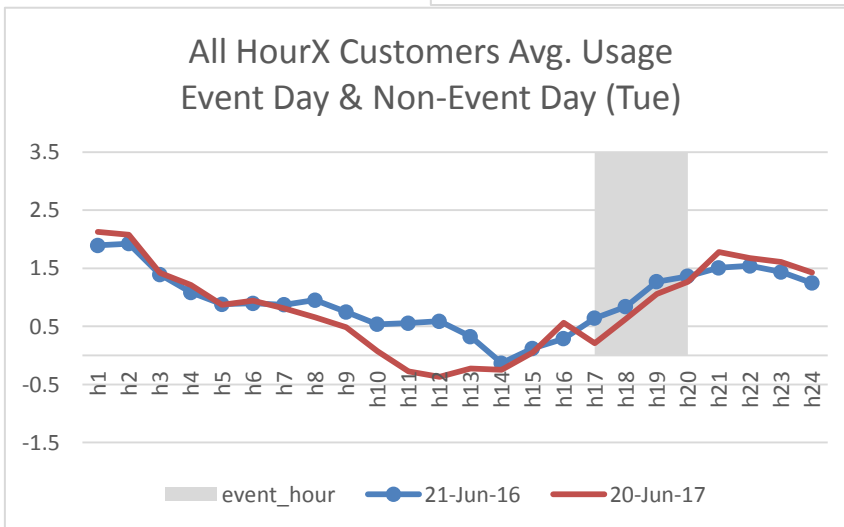
5 system events (Jun/Jul 2017):

- Jun (6/19, 6/20, 6/21)
- Jul (7/6, 7/7)

X-axis: hour
Y-axis: kw



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



SDG&E's HourX System Events - July

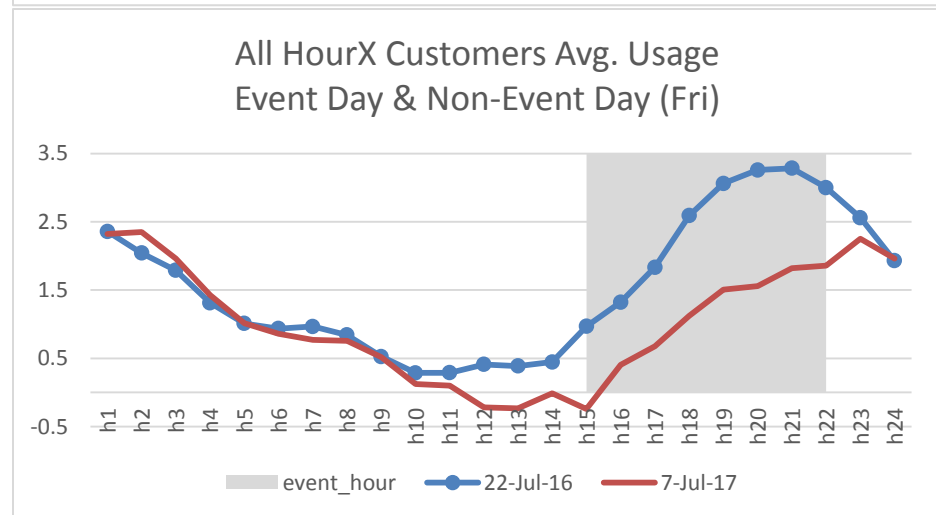
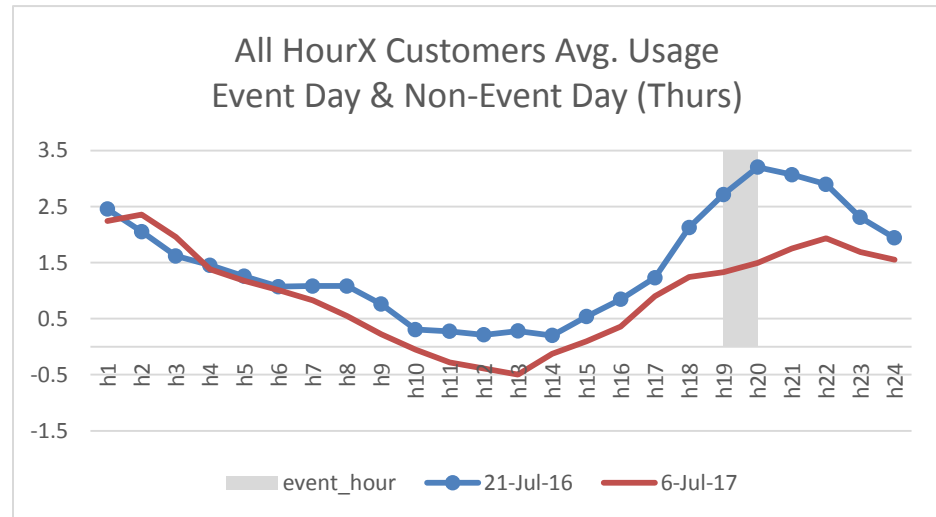
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Cost of Service Rate Design Principles

2

Rates should be based on marginal cost

3

Rates should be based on cost-causation principles

7

Rates should generally avoid cross-subsidies, unless the cross-subsidies appropriately support explicit state policy goals

8

Incentives should be explicit and transparent

9

Rates should encourage economically efficient decision-making.