Pacific Gas and Electric Company's
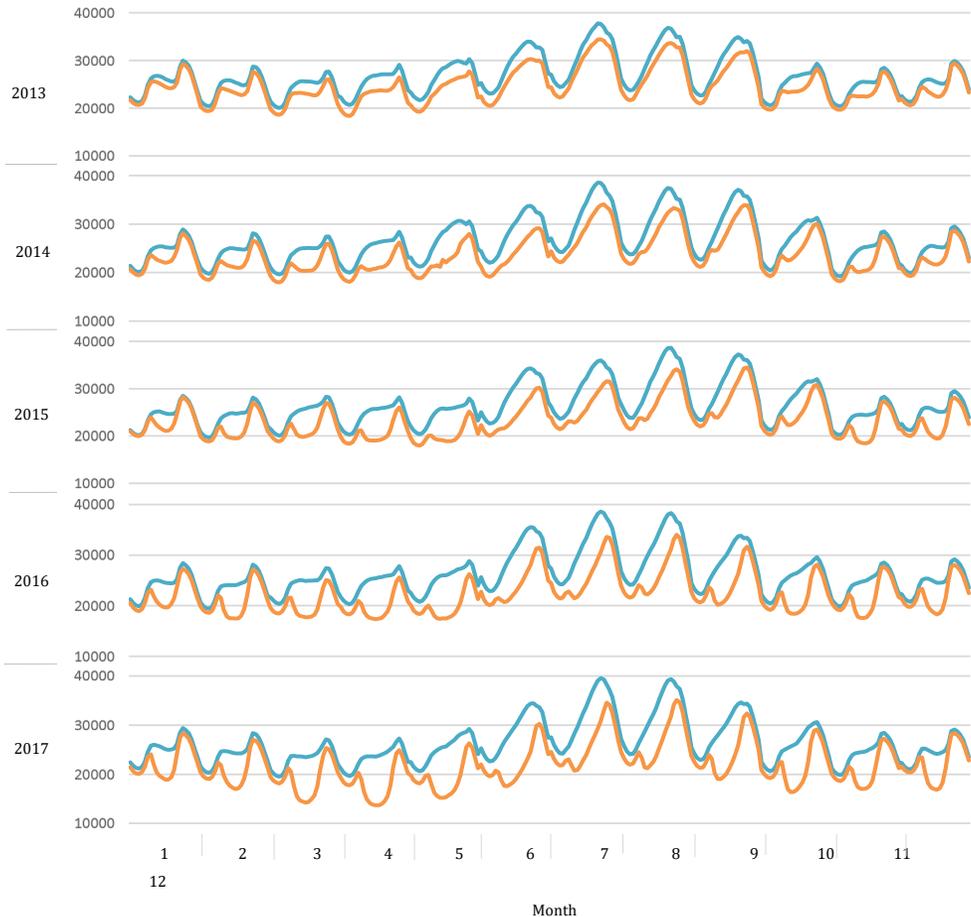Excess Supply DR Pilot (XSP)

June 12, 2019

Where are we Going?

- CA utilities have a long history of offering load management programs,
- Most of the existing programs are designed for summer peaking and emergency conditions.
- The development and growth of intermittent resources as well as the retirement of conventional power plants are presenting new operational challenges for the grid.
- In addition to traditional Demand Response (DR) that address grid emergencies and summer peak, new DR offerings must be constructed in order to meet future grid needs and, more importantly, customer needs.
- New DR programs to allow customers to bid directly into the wholesale energy market.
  - Allow customers to elect their own hours of availability and opportunity costs.
  - Give participants additional revenue opportunities.
  - Give participants the opportunity to help address "excess supply" conditions by shifting load to times of the day when energy is abundant.

Net Loads are Dynamic

Average CAISO Gross vs. Net System Load

- Not only have the net load profiles changed in recent years, they fluctuate substantially over the course of a year.

- Solutions must be flexible and able to adapt to fit the ever-changing load profiles.

- Load increase/shift DR may be one tool to deal with the "duck curve."

- DR needs to be bi-directional rather than just load decrease.

Excess Supply DR Pilot (XSP) Design

Objective: Test the capabilities of price-responsive demand side resources to increase load as a service to the grid during times of excess supply.

- Participants nominate block of hours between 8 am and 4 pm when they are available to shift energy when needed to balance the grid.

- Events called out-of-market day ahead based on forecasts of probability of excess generation in real-time wholesale market.

- Technology neutral: Includes energy storage, thermal storage, process shifting, PV, disabling backup generation, and EVSE.

- Notification of events using OpenADR 2.0b supported but not required in most cases.

Excess Supply DR Pilot (XSP)

Customer Lessons Learned

- Most customers can readily provide load shift/reverse demand response

- Valuable vehicle to test opportunities for integration of various aggregations and technologies

- Growth in negative pricing (14.42% of 5 min intervals in May 2019)

- Use and understanding of OpenADR 2.0b varies widely

Thank You!

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