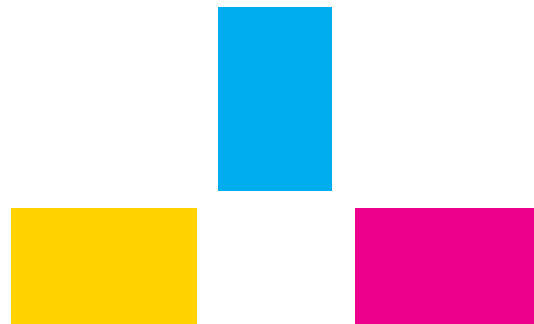




Increasing DR Through REPs

EEIP, 10/18/2022



The Potential

- There are approximately **7.2 million residential customers** in the Oncor, CenterPoint, AEP Texas, and TNMP service territories.
- With limited exception, these customers all have advanced meters (i.e., Smart Meters).
- However, **only about 12%** of these customers (less than 900K) **have a smart thermostat**.
- **Each customer with a smart thermostat could potentially yield 1 kW of demand response (DR) when engaged.**
 - Current smart thermostat saturation = 867 MW potential
 - With growth to 25% saturation (1.8M customers) = **1,806 MW potential**

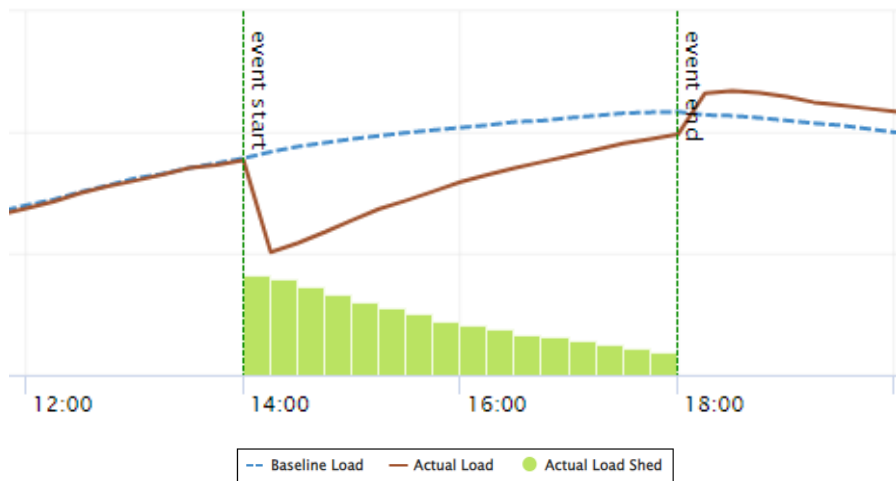
A Tale of Two Thermostats

- **Device DR**, where a device (such as a **smart thermostat**) is controlled and where a customer retains override capability.
 - Very effective but limited to customers who have that device.
 - Customers want to retain the option to control/override.
- **Behavioral DR**, where a customer is given an incentive to conserve or shift their electricity usage.
 - Depends on the customer to take action (e.g., dial down **non-programmable thermostat** in response to an email message).
 - Can be used by a wide range of customers.
 - Generally ineligible for participation in TDU EE/DR programs.

Device DR v. Behavioral DR

- Device DR = more “bang” for the buck.
 - Average 20-30% reduction in customer demand during the period thermostat is controlled.
- Behavioral DR = less impactful, but still helpful.
 - Customers who actively participate lower their demand by approximately 10-15%.
 - However, a relatively small percentage of program customers actively participate in any given event.
- With either Device or Behavioral DR, load reductions of participating customers averages about 1 kW per customer.
 - So, if 1,000 customers participated, there is the potential for ~1 MW total reduction in demand when deployed.

Smart Thermostat DR is a very effective resource for limited durations



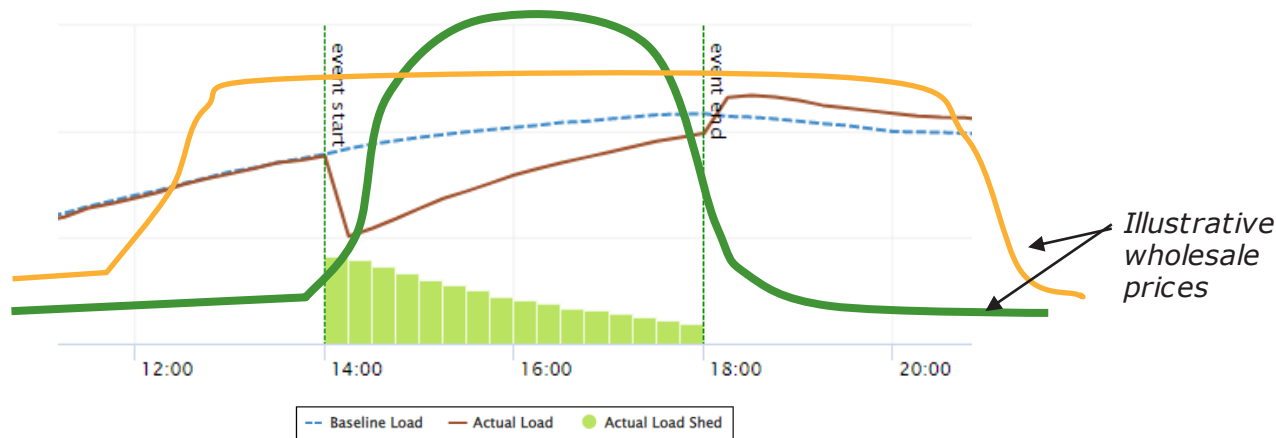
- Long DR events eventually lose participants to opt-outs
- Load shed of the last interval in a 4-hour event is 22% of the first interval

Typical load reduction for a Summer DR event in 2022

DR is most valuable if market price is predictably high for a window of a few hours

Market price signals that last longer than a few minutes but less than many hours is optimal for DR

Stretching high prices over several hours is not useful for most DR





Questions?

