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

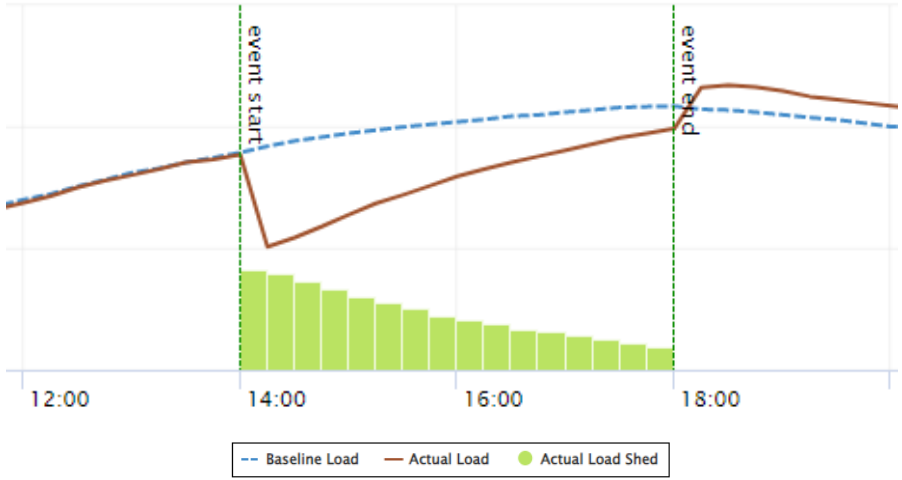
A Tale of Two Thermostats

- 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



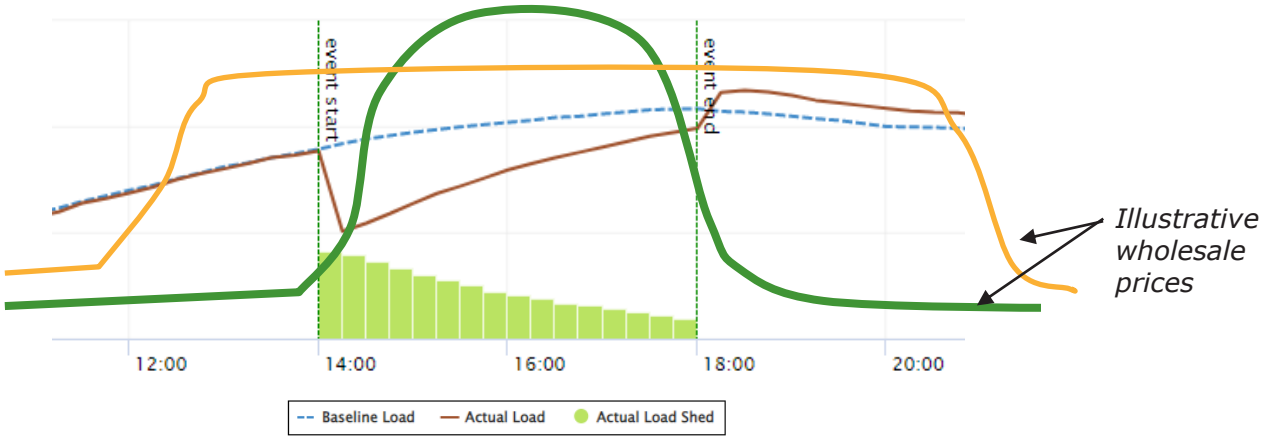
Typical load reduction for a Summer DR event in 2022

- 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

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



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Questions?