

Water Heater DR Program Development: Every Gallon Counts

Developing a Residential Water
Heater Program
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Overview

- PGE water heater demand response pilot
 - It's the right time
- Three value streams
- Program design considerations
- Technology considerations
- Scalability, pricing, timelines



PGE water heater demand response pilot

It's the right time

- 800MW capacity shortfall by 2020
- Integrated Resource Plan calls for 77MW by 2021
- Water heating second largest opportunity after thermostats among residential customers
- Learn from pilot and build a recipe for water heater DR growth
- PGE water heater DR opportunity: 25-50MW



Three value streams:

Load shedding

Load shifting

Load balancing



Building strength in numbers is crucial for the success in residential water heater demand response programs

Program considerations

- Few consumers are interested or knowledgeable about water heating
- Ways to drive residential market adoption
 - Rebates, incentives, ongoing payments
 - Sales channels (retail, wholesale, plumbers)
- Speed of adoption: considerations
 - Signing up one customer at a time
 - Single family versus multifamily
- Not readily available proven technology
 - Different standards
 - Difficult to integrate
 - Not consumer friendly and easy to adopt

The lack of standards, low production volumes, and resulting high differential equipment costs are negatively impacting utility rollout of water heater demand response.

Technology considerations

- Invest in retrofitting existing water heaters
 - Low production numbers for switches
 - Switches with or without sensors
 - Different communication standards
- Invest in new smart water heaters
 - Lack of standards, sockets, etc.
 - Standards aimed at consumers not utilities
 - High incremental costs between standard and smart water heaters
- Communications modules
- Reliable communication standards
 - WiFi, Powerline, FM, 700MHZ, 3G/4G LTE

PGE Pilot Plans 2017-2019

The pilot goal is to identify viable technologies with reliable coms & dispatch while offering a product that is cost effective and embraced by the target market.

- Initial focus on multifamily residential market
- Need for speed, scale, and reliability
- Economies of scale, standards, drive down costs
- For long-term success let's fail small and fail fast
- 3-phase implementation plan
 - 100-150 units
 - 1,000-1,500 units
 - 5,000+ units