



Residential BYOT Demand Response

Background

CenterPoint Energy serves more than 2 million residential customers throughout Houston and the surrounding areas. To improve the efficiency of its residential Demand Response (DR) program, CenterPoint Energy enlisted the help of Whisker Labs' Connected SavingsSM solution, which integrates weather 'big data' with connected thermostats and utility meter data to develop a unique thermodynamic model for **each home – which enables customized control strategies for demand response and energy efficiency gains.**

Combining all of this data, Connected Savings more precisely forecasts the amount of energy needed to heat or cool each residence on any given day, benefiting CenterPoint Energy's grid operations by reducing demand during hours of peak usage and benefitting consumers by saving them money without much effort.

The Evolution of Bring Your Own Thermostat (BYOT)

A **pay-for-performance** BYOT program was appealing to CenterPoint Energy as it was efficient and cost effective to leverage assets (Wi-Fi thermostats) already in the field, eliminating much of the administrative costs traditionally involved in managing residential DR programs.

When WeatherBug Home first launched their BYOT program in 2012, they were able to deliver .6 megawatts (MW) of estimated DR capacity to CenterPoint Energy, which grew to 2.83 MW of estimated DR capacity by the end of 2013. In 2014, WeatherBug Home & CenterPoint Energy expanded the existing program by bringing in additional energy retailers and security companies who also managed bases of customers with Wi-Fi thermostats, delivering an impressive 16.7MW of estimated capacity.

By 2015, the results showed the BYOT model was proving to be one of the most cost effective mechanisms for delivering residential DR. In that same year, Honeywell and Emerson joined the CenterPoint Energy program, which enabled Whisker Labs to aggregate over **8.9 MW of residential air conditioning load.** On an individual home load basis for CenterPoint Energy, WeatherBug Home delivered 1.76kW of capacity, 13% higher than traditional programs that do not use advanced weather modeling. **Working with 6 different thermostat models, CenterPoint Energy, Oncor and ERCOT, Whisker Labs was able to reduce 37 MW of peak demand across Texas that summer – making this the single largest BYOD program in the US today.**

CONNECTED SAVINGS AT A GLANCE

Integrating its forecasting and modeling capabilities, Whisker Lab's Connected Savings develops unique energy profiles for individual homes and utilizes Wi-Fi connected smart thermostats to sell demand response capacity to CenterPoint Energy.

PROGRAM STATISTICS

- CenterPoint Energy is able to call demand response events June 1–September 30.
- 2016 expects to have approximately 10,800 homes participate in the program.
- On average, each home participating in the Connected Savings BYOT demand response program reduced their demand by 1.76 kilowatts, an estimated 13% efficiency improvement over a standard demand response program.

Demand Response Savings (kW/home)



Consumer Engagement

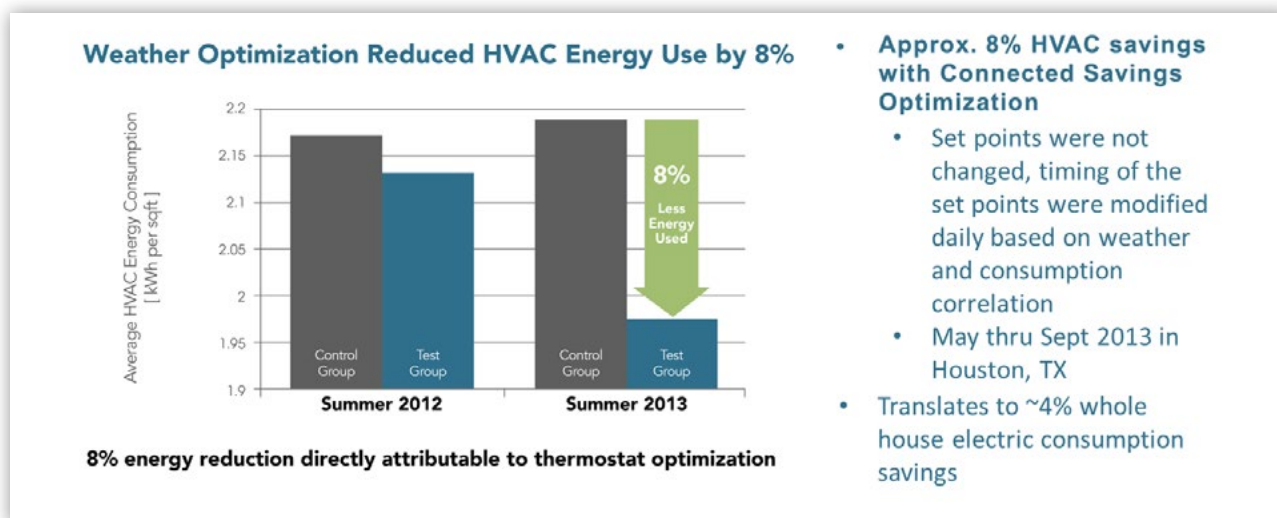
What makes this program particularly unique is that there is no direct financial incentive to the homeowner for program enrollment. Instead, Whisker Labs provides the thermostat owner with two “free” services, which are accessible through the popular WeatherBug mobile app:

- 1) **Weather-Based Thermostat Optimization:** Connected Savings will fine tune the homeowner’s thermostat schedule every morning based on the home’s thermodynamic model and the forward-looking 24-hour weather forecast. By adding this cloud-based intelligence layer to any Wi-Fi thermostat, Connected Savings has demonstrated anywhere from 8% to 11.4% incremental HVAC savings — in Texas this equates to an average annual savings per customer of roughly \$100.
- 2) **Home Energy Score Cards:** Whisker Labs also provides homeowners a monthly report assessing the thermodynamic, model-driven efficiencies of their home and HVAC system along with targeted tips to make energy saving improvements.



Success and Recognition

Because of the success of the Connected Savings residential demand response program in Texas, CenterPoint Energy has now made the **pay-for-performance** BYOT model a standard offering in Texas that any vendor can bid into and other utilities are starting to pilot similar programs as well.



In February 2016, CenterPoint Energy’s residential demand response program received the 2016 award for outstanding achievement in pricing and demand response from the Association of Energy Services Professionals. The award honors individuals, teams or organizations that represent excellence in designing and implementing an energy services program.

Innovative programs such as this are making it easier for energy providers to reduce peak demand, and take advantage of the next-generation features made possible by the smart grid. More importantly, consumers benefit by using technology to automate savings and reduce household energy usage with little effort on their part, an exciting and hoped for development of the smart grid. Such efforts put downward pressure on rates for long-term industry and consumer savings.