



Excellence in Energy Resourcefulness

Grid Intelligence

NORTH AMERICA

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Background and Company Performance

Industry Challenges

Frost & Sullivan estimates that globally approximately \$60 billion is annually invested on grid modernization efforts. To justify these investments and avoid industry and regulatory scrutiny, utilities need to guarantee and demonstrate clear customer value. Clear value is shown by a utility achieving state-level energy policy targets and improved customer satisfaction in terms of energy savings and billing. This value can also be seen in a utility's flexibility to integrate distributed energy resources and smart home appliances while ensuring maximum grid reliability.

Areas of particular focus include customer engagement and demand side management, which are among the fastest growing segments for data analytics related to smart grids. For these segments, utilities are looking to leverage existing infrastructure and newly deployed smart control home devices to roll out customer-centric services. Smart control devices consist of smart thermostats, AC switches, and smart plug-ins.

Historically, utilities marketed the vast majority of smart thermostats; however, the industry is seeing a growing trend of customers selecting the type of devices they want to deploy themselves. Smart thermostats are devices can monitor and adjust temperatures according to customer behavior and preferences. They can also monitor humidity levels, monitor outdoor weather conditions, and remotely turn heating or cooling systems on or off. North America represents the largest region for smart thermostats and currently ships approximately 5 million units annually. While their 2018 penetration rate is 11.7%, Frost & Sullivan¹ anticipates smart thermostats to reach 63.7% by the end of 2025. Unit shipments are projected to grow at compound annual growth rate (CAGR) of 19.1% between 2018 and 2025.

To capitalize on this trend, some progressive utilities are choosing to expand their demand side management program to accommodate bring your own device (BYOD). This will further improve the utility's ability to reach their resourcefulness goals and to better control loads available at home. The majority of demand side management and energy efficiency programs depend on how successful customer participation is. As of 2017, approximately 28 utilities across the United States have close to a combined 1 million customers enrolled in smart thermostat programs, which is equivalent to 2.38 GW in total available capacity. Grid intelligence at the edge will only grow in importance as the industry will have to deal with the challenges of integrating distributed energy resources as well as electric vehicles.

This Excellence in Resourcefulness award recognizes the ability of either an investor-owned utility (IOU) or municipal utility to successfully implement technology and behavioral changes to significantly reduce electricity waste.

¹Global Smart Thermostat Market, Forecast to 2025

Focus on the Future and Best Practices Implementation

This award recognizes Pepco Holding’s (PHI) second year in a row of making tremendous improvements to its customer service-oriented programs aimed at improving energy efficiency, improving customer engagement, and improving demand response program retention.

PHI is one of the largest energy delivery companies in the Mid-Atlantic and serves nearly 2 million customers spread across Maryland, New Jersey, Delaware, and the District of Columbia.

Recently, the company increased its demand side management program to include a BYOD participation option. A total of 26 different smart thermostat brands can join Energy Wise cycling option. This has allowed PHI to roll out two key programs and bridge the gap between energy efficiency programs and demand response initiatives by allowing customers to enroll in the following:

- **Energy Wise Rewards (EWR) with BYOD**—EWR is a direct load control program that allows a utility to reduce air conditioning run times on peak demand days. It has since been rolled out to all PHI territories. Now, BYOD-included customers can receive up to \$40 in annual bill credits.
- **Thermostat Optimization Program**—This program allows the utility to adjust temperature set points throughout the year with the intent of generating savings for customers. Through this program, customers also receive a customized Virtual Energy Assessment that provides a suggestion on what type of energy efficiency program would be most beneficial to the customer. The assessment is developed based on data on energy consumption, weather, and thermostat data.

The following table lists the key criteria used to measure PHI’s success in achieving Energy Resourcefulness Excellence Best Practices.

Societal Impact	1-3 Poor	4-6 Fair	7-8 Good	9-10 Excellent
Improving customer awareness and participation				X
Enabling behavioral change for reducing waste through customer engagement and technology-driven programs				X
Yielding impressive waste reduction that benefits the overall served community				X
Business Impact	1-3 Poor	4-6 Fair	7-8 Good	9-10 Excellent
Drafting a clear vision to address excessive waste through technology implementation				X
Achieving operational efficiency as a result of a successful strategy for sustainability				X
Strengthening a utility’s brand image as a leader for sustainability				X

Societal Impact

Improving Customer Awareness and Participation

Building upon the already successful Energy Wise Rewards program, PHI partnered with top smart thermostat manufacturers to ensure that their smart thermostats could become eligible for its BYOD demand response program and Thermostat Optimization Program.

The top of PHI's priority list was to make sure that customers could easily sign up. Currently, PHI has a repository of 26 different thermostat brands eligible for its energy efficiency and demand response program including Emerson, Honeywell, and Ecobee. To ensure easy sign-up, each manufacturer provides links to PHI programs via email.

Currently, PHI has over 400,000 devices in the field across all jurisdictions. These devices, along with BYOD thermostats, have since been mapped to their demand response platform IntelliSource, provided by their technology provider Itron. PHI has since been able to get approximately 100 kWh per customer.

Enabling Behavioral Change for Reducing Waste through Customer Engagement and Technology-driven Programs

The utility has taken a long-term view regarding managing these edge devices and improving energy efficiency customer programs with an emphasis on customization. Virtual Energy Assistant provides PHI with more customer-specific advice with more specific advice to achieving further energy savings. In addition to these programs, the utility launched smart home programs consisting of pool pump cycles, smart switches, and smart plug-ins. It is in the midst of evaluating technology that will help control these devices. In the future, PHI hopes to target lighting and tap into distributed energy resources and electric vehicles in order to improve hourly load control.

Yielding Impressive Waste Reduction that Benefits the Overall Served Community

Through these programs, PHI has successfully supported initiatives aimed at achieving annual goals for energy efficiency and energy savings. As of 2018, for example, EmPower Maryland has provided \$4 billion in energy efficiency savings to the state of Maryland. This would not be possible without the involvement of utilities such as PHI.

Business Impact

Drafting a Clear Vision to Address Excessive Waste through Technology Implementation

PHI is at the forefront of adopting technologies that support its energy efficiency and demand response strategy. Additionally, the company has formed a long-term relationship with key technology partners. Itron's turnkey demand response management system (DRMS) IntelliSource features software, hardware, and installation services to operate and map smart thermostats. Through this initiative, the utility is able to reduce more than 300 MW annually.

Achieving Operational Efficiency as a Result of a Successful Sustainability Strategy

To ensure the success of these programs, PHI reviewed its internal communication between its demand response and energy efficiency teams. The demand response team created a report to educate the energy efficiency team regarding demand response programs.

Strengthen the Utility's Brand Image as a Leader for Sustainability

PHI continues exhibit impressive penetration rates and customer participation. The ability to bridge energy efficiency with demand response resonates with customers. Since the initial launch in December 2018, PHI has seen over 90% of its new customers opt into using both BYOD Energy Wise and Thermostat Optimization Program.

Conclusion

PHI is reaping the benefits of being an early adopter of smart grid-enabled technology. Not only has it been a successful contributor to achieving state level energy efficiency goals, but it has also successfully earned customer trust inside the home with its EnergyWise and Thermostat Optimization Programs. PHI's ability to continue growing and evolving its program is a testament to its dedication and resourcefulness. With its overall strong performance, PHI has earned Frost & Sullivan's Excellence Award for Energy.

Frost & Sullivan

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