

COMMENTS OF GOOGLE, LLC
IN THE MATTER OF THE PETITION OF PUBLIC SERVICE ELECTRIC AND GAS
COMPANY FOR APPROVAL OF ITS CLEAN ENERGY FUTURE – ENERGY CLOUD
("CEF-EC") PROGRAM ON A REGULATED BASIS
BPU Docket No.: EO18101115

Introduction to Google

Google, LLC is a multinational technology company and manufacturer of the Nest Learning Thermostat and the Nest Thermostat E, two of the leading smart thermostats offered in the United States. Nest thermostats incorporate numerous features that help customers reduce their energy consumption for residential heating and cooling.

Introduction to Smart Thermostats

Smart thermostats are a relatively new technology that helps residential and small commercial customers increase their energy efficiency, reduce their peak demand and participate in demand response programs. The Nest Learning Thermostat was the first thermostat to be certified an Energy Star Smart Thermostat by the U.S. Environmental Protection Agency (EPA).¹

The EPA defines smart thermostats as:

"...a Wi-Fi enabled device that automatically adjusts heating and cooling temperature settings in your home for optimal performance."²

Typical features of a smart thermostat are:

- Ability to control remotely via a smart phone
- Ability to automatically detect occupancy and reduce heating and cooling usage if no one is home
- Ability to automatically create a schedule for the occupants that tracks their lifestyle, while minimizing unnecessary energy consumption.

There are currently 38 EPA Energy Star certified smart thermostat models.³ Smart thermostats that are Energy Star certified have to reduce heating system run time, on average, by at least 8% and cooling system runtime by at least 10%.⁴

¹ <https://www.energystar.gov/productfinder/product/certified-connected-thermostats/results>

² https://www.energystar.gov/products/heating_cooling/smart_thermostats

³ <https://www.energystar.gov/productfinder/product/certified-connected-thermostats/results>

⁴ https://www.energystar.gov/products/heating_cooling/smart_thermostats/key_product_criteria

Traditional energy efficiency programs for the residential sector have improved the *building shell* (insulation, windows) and improved the *efficiency of the appliances* (HVAC, refrigerators). Smart thermostats add a third strategy: better *control of energy*. As a result, smart thermostats are complementary to traditional residential energy efficiency measures, not in conflict. The Home Performance Coalition makes a similar point in the recommendations contained in its recently released report, “[Redefining Home Performance in the 21st Century: How the Smart Home Could Revolutionize the Industry and Transform the Home-to-Grid Connection](#)”⁵

In addition, smart thermostats can also contribute to reducing peak demand by allowing residential customers to participate in demand response programs run by utilities or third-party aggregators, and have the potential to help customers reduce peak usage on future time-of-use rates. This is an important component of future-looking program additions that could be leveraged through the benefits of smart thermostats as residential air-conditioning is one of the prime drivers of peak electricity demand in the PJM region. In this way, in addition to the bill savings from energy efficiency, smart thermostats are a gateway device that can enable customers to earn payments for their participation in demand response programs, typically between \$25-\$85 per year.

AMI Grid Modernization Benefits

Google agrees with many of the key benefits that are outlined in PSEG’s Energy Cloud / AMI Program that an AMI meter and technology roll out can enable, as demonstrated through the many utility programs and partnerships we support. Customer expectations have shifted and are informed by the personalized experiences they receive from familiar brands like Netflix, Spotify, Amazon, etc. As a result, customers are comparing every other interaction they have with these technology-first brands that provide a tailored and personalized customer experience. This leads to a situation where customers not only expect companies to know them, but they also expect companies to know them individually, and to tailor experiences in real-time to suit their circumstances.

This is particularly relevant to PSE&G as it has aggressive goals outlined in its Clean Energy Future program. In order to achieve those targets, personalized customer engagement, enhanced energy efficiency programs and demand response programs, as well as foundational elements for modernizing the grid, will be key elements of a strategic plan.

Data Availability for Energy Efficiency Programs

⁵ http://www.homeperformance.org/sites/default/files/HPC_Smart-Home-Report_201810.pdf, p. 30.

We have extensive experience working with utilities and their partners via AMI meters and other robust technology to analyze and leverage customer meter data. Through this collaboration, utilities are able to enhance their energy efficiency programs to drive more engagement and better segmentation/messaging, including leveraging behavioral / Home Energy Report-type programs and load disaggregation to create additional customer touch points and channels to help connect customers to technologies that can help save them energy, like smart thermostats.

Data Availability for Demand Response Programs

AMI meters are not necessarily needed to run residential smart thermostat DR programs. However, the data captured through AMI meters and technology will enable PSE&G to perform more granular analysis for load forecasting and dispatch needs across the grid. In the future, with higher penetration of solar and EV's, AMI meters and technology will provide PSE&G with the ability to create a more targeted DR dispatch model in high-growth or constrained areas, or during critical peaks.

Grid Operations and TOU Rates

The grid will become more complex over time with the increase of DERs. It will require increasingly automated command- and control-systems to support grid operations, and to enhance system planning overall for reliability. AMI meters and supporting technology are foundational elements to support that vision. In addition, for PSE&G to be able to leverage more advanced rate structures to further help shape demand--such as Time of Use, Critical Peak Pricing, Real-Time-Pricing, etc.--AMI will be required.

Thank you for the opportunity to provide comments as a part of this process.



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