



August 6, 2015

Abigail Daken
US Environmental Protection Agency
Climate Protection Partnerships Division
Washington DC 20460

Subject: Draft ENERGY STAR® Connected Thermostats Specification – V1.0

Dear Ms. Daken:

This letter comprises the comments of the Pacific Gas and Electric Company (PG&E), Southern California Gas Company (SCGC), San Diego Gas and Electric (SDG&E), and Southern California Edison (SCE) in response to the US Environmental Protection Agency (US EPA) request for comments on the draft ENERGY STAR Connected Thermostats Specification – V1.0.

The signatories of this letter, collectively referred to herein as the California Investor Owned Utilities (CA IOUs), represent some of the largest utility companies in the Western United States, serving over 35 million customers. As energy companies, we understand the potential of appliance efficiency standards to cut costs and reduce consumption while maintaining or increasing consumer utility of the products. We have a responsibility to our customers to advocate for standards that accurately reflect the climate and conditions of our respective service areas, so as to maximize these positive effects.

We appreciate this opportunity to provide the following comments on the draft ENERGY STAR specification. We believe that an ENERGY STAR specification could potentially be helpful for utility demand response and energy efficiency efforts. We have provided a number of comments below to encourage harmonization of the ENERGY STAR specification with utility program requirements. We will continue to work with US EPA to address these concerns and improve our understanding of the proposed specification.

Connected Thermostat Device Specifications

Demand Response

CA IOUs offer incentive programs for customers that use connected thermostats to respond to demand response (DR) events. The CA IOUs often use ENERGY STAR specifications to help define program requirements for other products, and we would like to see the ENERGY STAR Connected Thermostat Specification dovetail with California incentive programs. As the specification is written, the requirements for DR capability are too vague to determine whether ENERGY STAR thermostats would be capable of receiving and responding to DR events and price signals. Joint Appendix 5 (JA4) to California's Building Energy Efficiency Standards (Title

24) includes Technical Specifications for Occupant Controlled Setback Thermostats.¹ US EPA should review the demand response requirements in JA5 and consider using the JA5 requirements as a starting point for demand response requirements for this specification. We understand that US EPA will be developing DR specifications in the near future, and we look forward to continuing to work with US EPA to support those efforts.

Stand-by power losses

In May 2015 Natural Resources Defense Council published the results of a survey on idle (stand-by) loads in Bay Area homes. Researchers found that 37 percent of the annual electricity use of the homes included in the study was attributed to stand-by energy use, and that stand-by energy use is likely trending upwards.² Devices that are connected to the internet and have the capability to communicate with the internet at all times, such as connected thermostats, have the potential to have relatively high stand-by energy use. It is important that US EPA carefully evaluate stand-by energy use from connected thermostats and ensure that the Connected Thermostat Specification is promoting the use of devices and services that result in a net energy savings, even after considering the devices' stand-by energy use.

The CA IOUs recommend limiting how long the connected thermostat device will remain in active mode after the last registered network activity. Even the most active connected thermostats are most often idle. They are only active when they are sending or receiving network signals such as transmitting or receiving temperature and set-point data or pulling data such as demand response events (or if a customer is directly interacting with the device). The Connected Thermostats Specification should ensure that the device enters stand-by or off mode quickly, perhaps one to two minutes after the last network activity. The specifications should similarly contain a requirement for entering stand-by mode promptly, similar to computers screens and other products, after a customer directly accesses the device.

We recommend that the US EPA review existing federal and international requirement for standby power use to help inform the stand-by power requirements for connected thermostats. For example, the European Union's Ecodesign Requirements for Standby and Off-mode Electric Power Consumption of Electrical and Electronic Household and Office Equipment limits device stand-by power use to 0.5 watts or 1.0 watts, depending on the functions that are in use when the device is in standby mode.³ Existing ENERGY STAR specifications allow stand-by power to exceed base levels for devices that include a remote activation feature. For instance, the ENERGY STAR Computers Specification V6.1 allows a 0.4 watt adder for small routers with the capability for remote activation (defined as "Wake-Up On LAN").

¹ California Energy Commission. "Proposed Revisions to the California Building Energy Efficiency Standards: California Code of Regulations, Title 24, Part 6 – Joint Appendices to Part 6, 15-day Language."

http://www.energy.ca.gov/title24/2016standards/rulemaking/documents/15-day_language/revised_express_terms/2016_Joint_Appendix_15-Day_Language.pdf.

² National Resources Defense Council. "Home Idle Load: Devices Wasting Huge Amounts of Electricity When Not in Active Use." NRDC Issue Paper. May 2015. IP:15-03-A. <http://www.nrdc.org/energy/files/home-idle-load-IP.pdf>.

³ Commission Regulation (EC) No 1275/2008 of 17 December 2008 implementing Directive 2005/32/EC of the European Parliament and the Council with regard to ecodesign requirements for standby and off mode electric power consumption of electrical and electronic household and office equipment.

http://www.eceee.org/ecodesign/products/standby/1_33920081218en00450052.pdf.

Interoperability

As thermostat manufacturers and service providers come and go in the industry, thermostats that are installed in buildings should continue to function and customers should continue to have the ability to use their thermostats to manage heating and cooling loads even if device manufacturer or original service provider goes out of business or the building occupant wishes to switch service providers. To minimize the risk of stranded assets (that is, devices and systems that are rendered useless if contracts with the manufacturer or service provider are not maintained), it is important that thermostats and their control strategies are not dependent on a specific manufacturer or service provider's proprietary protocols. The CA IOUs support efforts to establish communication requirements that are based on open, non-proprietary, technologies. Achieving energy savings from control strategies, such as controls enabled by thermostat features, requires communication between the customer, the utility, third-party signalers, and/or DR aggregators. Using open, non-proprietary, technology and communications protocols will improve interoperability and can simplify the process of information and data exchanges that must occur for energy savings measures to be successful. We encourage US EPA to review the communications requirements in Title 24 JA5 and use the JA5 requirements as a starting point to developing requirements for the Connected Thermostats Specification that will provide customers with assurance that they will continue to realize energy savings even if they switch service providers.

Connected Thermostat Service Specification

Metrics and Energy Savings Estimates

The Connected Thermostats Specification is different from existing ENERGY STAR specifications because it encompasses requirements for both a device and a service. To evaluate the service, US EPA will require that service providers submit data on the heating and cooling run times in buildings they serve. US EPA is planning to use data on avoided run time to estimate energy savings. Avoided run time does impact energy savings, but there are many other variables that have bearing on energy savings that can be achieved when using connected thermostat. Many of the additional variables such as building orientation, insulation levels, number of occupants, and occupancy hours are unique for each building. The CA IOUs urge US EPA to be careful when developing a methodology that uses avoided run time data to estimate energy savings and ensure that other factors that influence energy savings in each unique building are also taken into consideration. US EPA should use measured energy data to verify that the methodology US EPA is developing to evaluate connected thermostat services results in accurate estimates of energy savings.

We will continue to coordinate with US EPA regarding data that is available from CA IOU activities and programs and may be useful for evaluating the usefulness of this metric. We will also continue to coordinate with US EPA to review any additional information that is available regarding the correlation between avoided run time and heating/cooling energy savings to ensure that the avoided run time metric will ensure energy savings.

Data Quality Assurance and Verification

We understand that US EPA is developing guidelines, in parallel to developing the Connected Thermostat Specification, for collecting data from service providers and analyzing data to estimate energy savings. We recognize the benefit of using data from installed thermostats to

verify that a service provider has helped building occupants manage their heating and cooling load, and reduce energy use. We understand that this approach may be more practical than requiring a specific set of energy savings features, especially given different strategies in the market. However, it is important that the data collection requirements are developed carefully so that data collected from service providers is complete, accurate, and representative of energy savings that are achieved in all buildings. For example, the method to evaluate service providers should not allow data that is collected from one climate zone to be used to certify that provider for the entire country.

We also note that independent verification is an important value provided to customers and utilities by the ENERGY STAR program. US EPA should include requirements for independent verification of data collected by service providers and used to determine avoided run time. Objectives include ensuring representative sampling, data accuracy and data integrity, and ideally also field measurement of energy usage at a sub-set of customer facilities for verification purposes.

In conclusion, we would like to reiterate our support for US EPA's goal of improving energy efficiency. We thank US EPA for the opportunity to be involved in this process and encourage US EPA to carefully consider the recommendations outlined in this letter.

Sincerely,



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