



November 14, 2016

Abigail Daken
United States Environmental Protection Agency
Climate Protection Partnerships Division
Washington DC 20460

Subject: ENERGY STAR® Program Requirements: Specification for Connected Thermostats Products Draft 3 Eligibility Criteria – Version 1.0

Dear Ms. Daken:

This letter comprises the comments of the Pacific Gas and Electric Company, San Diego Gas and Electric Company, Southern California Edison and Southern California Gas Company in response to the United States Environmental Protection Agency (U.S. EPA) request for comments on the Draft 3 Eligibility Criteria V1.0. The signatories of this letter, collectively referred to herein as the California Investor Owned Utilities (CA IOUs), appreciate the opportunity to provide feedback on this draft.

The 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 energy conservation and energy efficiency programs to cut costs and reduce consumption while maintaining or increasing consumer utility of products. We have a responsibility to our customers to advocate for voluntary program requirements that accurately reflect the climate and conditions of our respective service areas, so as to maximize their positive effects.

The CA IOUs appreciate that U.S. EPA has undertaken a significant challenge to develop an effective ENERGY STAR specification for connected thermostats. We are supportive of U.S. EPA's efforts to create an innovative new data-driven methodology to verify that using control systems such as connected thermostat (CT) products can result in real-world energy benefits. Since the main benefits of these devices are highly dependent on real-world usage, collecting field data offers significant potential benefits.

While we are encouraged to see U.S. EPA exploring a new data-driven ENERGY STAR specification, we recommend that U.S. EPA address a number of issues with Draft 3 of the Eligibility Criteria V1.0. This new data-driven framework could set a new precedent for appliance specifications, which underscores the importance of resolving the outstanding issues so this specification can become an appropriate model for future specifications. The CA IOUs recommend that U.S. EPA address as many of the issues listed below as possible prior to approving the final Eligibility Criteria Version 1.0. Any issues that U.S. EPA cannot address before approval should be addressed in the next update to the specification. The CA IOUs

appreciate U.S. EPA's efforts to address CA IOU concerns and will continue to work with U.S. EPA.

1) Provide Additional Information on Proposed Benchmarks

U.S. EPA is proposing to compare performance benchmarks in Table 2 of the draft 3 v1.0 Eligibility Criteria to a modeled value for each CT Product based on annual percent run time reduction of heating and cooling systems. This avoided run time score would be determined based on data that is collected by each CT Service Provider for individual homes and then compared against hypothetical homes with constant temperature set points.

However, the proposed performance benchmarks do not compare CT Products against current conditions including homes that already set-back thermostats manually or through programmable thermostats. Therefore, U.S. EPA's proposal does not provide sufficient information for CA IOUs and other interested parties to assess the expected energy benefits of ENERGY STAR CT Products. We request that U.S. EPA model data representing actual current conditions for an average homes without CT Products to show the level of savings predicted by the model for homes without CT Products. This information will help stakeholders judge how much incremental savings CT Products would need to achieve over current conditions to achieve ENERGY STAR certification.

We also recommend that U.S. EPA provide information as part of the qualified product list regarding the estimated heating and cooling savings for each CT Product in each major climate zone. This information will benefit utilities and knowledgeable consumers. We understand that U.S. EPA does not intend to release individual CT Product avoided run-time scores right away due to questions about the precision of the model. We encourage US EPA to continue working to validate whether the modeled results are sufficiently accurate for public release of actual scores. In the meanwhile, we would like to work with U.S. EPA to determine a method to designate which products are expected to provide significant energy savings in individual major climate zones.

2) Clarify Definition of Product Families

During the webinar that U.S. EPA hosted on November 3, 2016, U.S. EPA staff clarified that the program intends to consider whether products from the same manufacturer and service provider with different features will be considered part of the same product family on a case-by-case basis. We recommend that U.S. EPA provide guidance that would, at a minimum, identify examples where differences in software or hardware product features would result in products falling into different product categories. For instance, products with and without an occupancy sensor should fall into separate product categories and should be tested separately.

In addition, the draft contains a definition of "product family" that includes certain substantive requirements. We recommend moving the second and third sentences of the definition, which define substantive requirements related to whether products fall into the same product family, from the definitions section to section 4(A). This change will improve clarity.

3) Reduce Standby Power Use

U.S. EPA intends to establish a stand-by power limit of 3 watts (W) in V1.0 despite recognizing that 3 W of stand-by power use is not industry best practice as explained during the November 3, 2016 webinar. U.S. EPA's justification for not requiring best practices in V1.0 is to avoid excluding products that otherwise may provide overall energy benefits even if they do not yet meet stand-by power best practices.

The CA IOUs understand U.S. EPA's plan to phase in a stricter requirement and we recommend including a limit that represents best practices such as 1.0 – 1.4 W in V1.0 with a compliance date of one year after the specification's effective date or as soon as practical (see the California IOU's December 2015 comment letter). During the November 3, 2016 webinar, U.S. EPA indicated it is not intending to consider a limit below 3 W prior to the next major revision to the specification in two or three years. We are concerned that this delay would result in a missed opportunity to encourage partners to meet best practices for stand-by power loss sooner.

In addition, the CA IOUs agree with a stakeholder suggestion during the November 3, 2016 webinar that U.S. EPA publish stand-by power loss data for each product on the Qualified Products List.

4) Clarify Demand Response Requirements

We agree with U.S. EPA that connected thermostats can enable an important demand response (DR) resource and appreciate U.S. EPA's desire to promote DR. However, some aspects of U.S. EPA's proposal to establish DR criteria are premature, resulting in some unclear and contradictory requirements. If U.S. EPA wishes to set criteria for "connected functionality" to facilitate DR, we recommend replacing proposed Section 3(B)(5) with the content provided below.

Section 3(B)(5) Demand Response

"This section specifies functionalities to support demand response (DR). CT Products shall have two-way communication capability and control functions to receive DR requests, and ability to respond automatically to DR requests by modifying the CT Product's operations to reduce or shift energy demand from equipment controlled by the CT Products as specified below.

a. **Grid Communications:** CT Products shall include a communications link capable of:

- Accepting messages requesting modifications in operation, including messages requesting DR;
- Transmitting information about the CT Product's operation to the entity or entities that request a change in the CT Product's operation, including but not limited to information about the CT Product's control strategy after receiving a request for DR; and
- Transmitting information to the entity or entities that requested a change in the CT Product's operation once the CT Product has transitioned back to normal operating mode.

b. **Control Function:** The CT Product shall be capable of:

- Adjusting temperature set-points automatically for a specific time period after receiving a request for DR;
- Disengaging customer equipment or automatically adjusting set-points for a specific time period automatically after receiving a request for DR;
- Returning to normal operation upon receipt of message to do so, or a predetermined time after receiving a request for DR;
- Allowing the end-user to override (e.g., opt-out of) any control strategy that is automatically deployed after receiving a request for DR.

c. **DR Capabilities Summary** - The ENERGY STAR partner shall submit to ENERGY STAR a written description of the CT Product's DR capabilities. The summary shall provide the following information:

- Whether the CT Device is certified to an open standard communication protocol(s) (e.g., Open Automated Demand Response);
- If the CT Device is certified to an open standard communication protocol(s), the partner shall list all open standards to which the CT Device is certified;
- Whether the CT Service Provider is certified to an open standard communication protocol(s);
- If the CT Service Provider is certified to open standard communication protocol(s), the partner shall list all open standards to which the CT Service Provider is certified;
- Whether the CT Device can be directly accessed via an interface specification, API or similar documentation that is intended to enable DR functionality;
- DR services that the CT Product has the capability to participate in such as load dispatch, ancillary services, price notification and price response;
- Ability of consumers, CT Service Providers or another party to configure DR responses; and
- Measures to limit consumer comfort impacts, if any.”

We note that these changes will also streamline the specification by avoiding the need to define the DR system architecture down to the CT Product using the terms “Demand Response Management System (DRMS)” and “Load Management Entity” in subsection 3(B)(5)(c). We recommend this more streamlined approach because DR system architecture continues to evolve and the current definitions do not capture all potential pathways for DR implementation. Therefore, we recommend deleting the definition of “Demand Response Management System (DRMS)” and “Load Management Entity” from the specification.

5) Enhance Transparency of Alternate Test Methods

Transparency is an important principle in the ENERGY STAR program. We recommend that any proposed alternative test methods (i.e., an A/B study under proposed Section 3(C)(2)(b)) be provided for stakeholder review prior to approval by U.S. EPA; and that U.S. EPA provide any approved A/B Study methodology as an appendix or addendum to the specification. These changes will improve transparency.

U.S. EPA staff raised a concern regarding the possibility that confidential business information (CBI) could be included in the A/B study methodology. We are not aware of any existing CT Product studies where the methodology relied on CBI, and believe that any study proponent should be able to release a public version that explains the proposed methodology without disclosing CBI.

6) Clarifications to Definitions

We recommend the following editorial clarifications to the definitions section of the connected thermostat eligibility criteria:

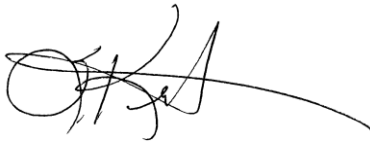
- Lines 13, 43, and 361: Clarify whether “CT” means “CT Device”, “CT Product”, or “CT Service Provider”.
- Lines 25 through 27: Clarify the description of the diagram, which indicates where features are located, as follows, “Functions in the left-most group must be physically located in the home. Functions in the middle group commonly operate using a combination of hardware that is physically located within the house in conjunction with services that rely, fully or partially, on communication with the cloud. The functions on the right typically reside in the cloud.”
- Lines 37 through 40: The definition of “demand response” is different from the definition included in Federal Code of Regulations 18 CFR 38.28(b)(4). The definition in 18 CFR 38.28(b)(4) reads as follows, “Demand response means a reduction in the consumption of electric energy by customers from their expected consumption in response to an increase in the price of electric energy or to incentive payments designed to induce lower consumption of electric energy.” FERC has used it in recent rulings including Order 745 and Order 676-G and we recommend that U.S. EPA use this definition for consistency with FERC. (We also note that the URL in the footnote to the ENERGY STAR proposed definition of “demand response” is not correct.)
- Lines 41 through 43: Delete the definition of “Demand Response Management System”. See rationale in comment number 4 above.
- Line 47: Delete the definition of “Load Management Entity”. See rationale in comment number 4 above.
- Line 67: Clarify the relevance of the footnote referring to a National Electrical Manufacturers Association (NEMA) specification, such as stating “The static temperature accuracy definition is based on requirements in National Electrical Manufacturers

Association (NEMA) DC 3, Annex A-2013 *Energy-Efficiency Requirements for Programmable Thermostats.*”

- Line 162: Move the definition of API, which is currently embedded in the Demand Response section 3.b.5 requirements, to the definitions since it is used in several sections of the eligibility criteria.
- Add a definition of “Line Voltage Thermostat”.

In conclusion, the CA IOUs appreciate U.S. EPA efforts to develop ENERGY STAR Connected Thermostat Eligibility Criteria. We thank U.S. EPA for the opportunity to be involved in this process and encourage U.S. EPA to consider the recommendations outlined in this letter carefully and to take steps to address the remaining issues with the draft Eligibility Criteria.

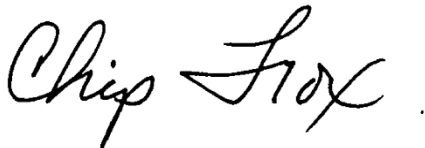
Sincerely,



Sue Kristjansson
Codes and Standards and ZNE Manager
Southern California Gas Company



Patrick Eilert
Manager, Codes and Standards
Pacific Gas and Electric Company



Chip Fox
Codes and Standards and ZNE Planning Manager
San Diego Gas and Electric Company



Michelle Thomas
Manager, Energy Codes & Standards
Engineering Services
Southern California Edison