

**Stakeholder Comments - ENERGY STAR Connected Thermostats, Version 1.0 - Draft 1 Specification (pg. 1 of 3)**

Topic	Comment	EPA Response (old)
<b>Metric &amp; Energy Savings Methodology</b>		
Data Validation	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.	EPA agrees that the test method will need to include requirements on the sample of homes used to calculate the metric. This will likely include the size or statistical relevancy of the data set and its geographic variety, as a minimum. EPA notes further, that EPA will "collect" only aggregated data and associated statistics from service providers. Providers will input representative data into a software tool that will calculate aggregate savings.
Savings claims	The actual benefits of obtaining ENERGY STAR certification are unclear. Historically, the ENERGY STAR mark and associated certification is a benefit to manufacturers who display it on products to influence purchasing decisions by consumers. Correspondingly, the implied benefit to consumers is energy savings from having bought a "better" product than other available choices. The significant costs embedded in the data gathering and certification requirements implied in the draft specification are not offset by implied sales benefits. This program is therefore untenable as proposed.	EPA believes the ENERGY STAR mark on thermostats sold at retail will be influential for purchasers as it was in the past. We remain conscious of the testing burden on providers and will work with stakeholders to make it as light as we can while maintaining good assurance of savings. The ENERGY STAR will give consumers confidence that the product they purchase will save them energy.
	The federal government is likely well positioned to credibly assess the savings potential of connected thermostats and to determine if a viable test procedure is possible. However, we question whether it is premature to propose an ENERGY STAR label given the need to define a credible metric for characterizing performance. With the absence of foundational elements to provide credible consumer guidance, we cannot support the use of ENERGY STAR for this category of products.	EPA is currently collaborating with a focused group of building and data scientists and other interested Connected Thermostat stakeholders to develop and refine metrics and methods to demonstrate energy savings from the installed base of Connected Thermostats. We understand the challenge of this effort and strive to develop a method that will identify CT models that enable robust savings through reduction of HVAC run times. In the short term, EPA will be conservative about assuming the metric indicates absolute savings. EPA envisions that launching the program will drive wide scale analysis of CT data which will in-turn facilitate improvements to savings methods over time.
	This stakeholder urges EPA to be careful when developing a methodology that uses avoided run time data to estimate energy savings and to 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.	EPA notes that CT service providers typically do not have access to meter data and has accordingly developed hybrid temperature - run time savings methodology. However, EPA looks forward to working with stakeholders over time to determine if and how the metric score and metered energy savings can be correlated. EPA welcomes input about other factors affecting energy savings.
	This draft specification is incomplete with regards to the metric section focused on savings calculations and thresholds. It is thus not possible to fully support this as a specification that will provide significant energy savings to the Northeast and Mid-Atlantic region. We are hopeful, however, that metric information will be developed and available for comment in subsequent versions.	Thank you for your continued engagement. EPA's purpose in releasing the draft specification in parallel with metric development is to engage stakeholders in discussing the structure of the specification.
Baseline	The difficulty in selecting a baseline approach that is both reasonable and which does not allow itself to be manipulated by selective data sampling is apparent. A possible solution would be the selection of setpoints that seasonally are reflective of the accepted literature on comfort, such as ASHRAE Comfort Standard 55-2010 (see page 6, Fig 5.2.1.1), and which could be used to compare individual savings to those in an area. An alternative solution would be the development of regionally defined comfort baselines which, with enough participation, could provide more representative savings nationally.	EPA will continue to work with stakeholders to improve our baseline approach and/or address solutions with verifiable savings which are not captured in the draft metric. As with any other single baseline temperature, using the ASHRAE standard temperature as a baseline is likely to introduce biases between vendors based on who their customers are and where they live.
	These stakeholders urge EPA to develop systems to share data about Connected Thermostat products to ensure efficiency programs are able to establish cost-effective savings for these products.	EPA is aiming to develop a metric and methodology that may ultimately be leveraged by EEPS to inform CT energy efficiency programs. EPA encourages stakeholders to continue their engagement in the open iterative stakeholder process that is working towards such goals. At this time, however, EPA discourages use of the early draft metric to inform program savings.
Submitting data	This stakeholder requests some clarity around the data submission process for a connected thermostat, realizing that this may be forthcoming with more metric information. In principal, we consider EPA's proposal of receiving submitted heating/cooling season data every 6-months to be satisfactory in ensuring regularly updated information. We would ask for clarity if smart thermostat manufacturers would need to submit data every 6 months for the duration of a product being covered by the specification, or if this data would be submitted for a set period of time (i.e. 2 years) once the product qualifies.	The intention of the specification is to require semi-annual submission of aggregate savings data and related statistics as long as the product is on the market. This on-going reporting will also serve to ensure that ENERGY STAR CTs continue to deliver savings, serving some of the purpose of verification testing.

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Topic	Comment	EPA Response
<b>Labeling</b>		
General	The laid out guidelines for use of the ENERGY STAR Name and Marks are very explicit in their description of sizing, colors and frequency not just on packaging and product literature but also the applications, web interfaces and actual CT device. These guidelines could prove to be hindering to efforts in applying for ENERGY STAR certification because of their direct degradation of the user experience both visually and functionally as users attempt to access their CT by multiple means.	EPA has found in the past that very explicit requirements provide certainty to our partners, but we appreciate your comments and intend to develop revised labeling criteria in the next draft that serve to address stakeholder concerns. As such, EPA will reach out for additional stakeholder input to inform the next draft.
	A physical ENERGY STAR label on a products may not be feasible. This stakeholder suggests EPA set standard expectations for labeling in any online apps or interfaces for the thermostats rather than set a physical requirement. This would help ensure a quicker and easier delisting of products, as well.	
<b>General</b>		
General	There will be no significant benefit to manufacturers or consumers. More importantly, this stakeholder believes that climate control system manufacturers should have the freedom to innovate and deliver solutions to their customers that aid in understanding system HVAC usage, estimated energy usage, and deliver tools to help save money. Manufacturers should continue to play a role to help educate their customers on energy usage. Ultimately, this stakeholder believes that the 'choice' of taking action to save money and to manage a specific level of energy savings should be in the hands of the consumer, not the result of government pressures.	With this effort, EPA is introducing a method of determining which control products save energy while allowing manufacturers unprecedented flexibility to innovate in design, consumer relationships and business models. The priorities of EPA, consumers and product providers align in making the energy consequences of consumers' choices more visible to them.
<b>Third Party Certification</b>		
Validation	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.	In the short term, as utilities and other energy efficiency program sponsors continue to run pilots and carefully examine savings, separate verification will not be needed. In the long term, if it is needed, EPA could establish an auditing process for the submitted metric data. With this in mind, we are designing the metric to be auditable.
<b>Privacy</b>		
General	This stakeholder has expressed strong concerns regarding data gathering feasibility and data privacy, but ENERGY STAR has not succinctly addressed these concerns to date. [EPA's statement on privacy] does not guarantee that privacy is assured, only that attempts will be made, and there is no implied protection from FOIA request or other legal requests for information. This is a fundamental obstacle for CT manufacturers, service providers and users of CTs.	EPA is proposing that partners supply only aggregate savings data. Such data has no personally identifiable information, and none could be derived from it.
<b>Specification Requirements</b>		
Occupancy Sensors	We are a bit surprised that occupancy sensors are required, as it has not been discussed previously. In our opinion a service should be evaluated based on the amount of energy it can save and therefore this requirement may not be useful.	While EPA recognizes occupancy sensing as a viable method for CTs to save energy, potential CT stakeholders are achieving credible savings using other strategies. As such, EPA has removed occupancy sensing criteria from the Draft 2 specification.
Droop	The droop parameter most likely is corrected by software processing by any vendors who found this to be an issue. It may then be difficult to gauge properly and may be best omitted as a part of the criteria.	Droop criteria has been removed from the Draft 2 specification as stakeholders have informed EPA that is not an issue with today's low-voltage thermostats. EPA is, however, seeking stakeholder input as to whether this assertion is equally true for modern CTs that control Line-voltage sources.
Static Temperature accuracy	The eligibility criteria for "Static temperature accuracy" needs to meet a performance requirement of $\pm 0.5$ °F. The most commonly available temperature sensors for thermostat applications come with a $\pm 1$ °F accuracy (which is in line with the NEMA guideline). Since accuracy is consistent over the life of the sensor it seems unlikely that many manufacturers would have incurred the costs of a higher accuracy device.	In the Draft 2 specification, EPA has changed the static temperature accuracy criteria to $\pm 1$ °F. While the metric will auto-correct for deviations in reported temperatures, EPA recognizes that temperature accuracy is important to consumers.
<b>Test Methods</b>		
Versions	Regarding software updates and testing, this stakeholder suggests requiring re-submission of information when major software updates take place (moving from version 4.0 to version 5.0, but not from version 4.0 to 4.1, for example) or if no major update occurs, every 6 months.	Thank you for your input.

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Topic	Comment	EPA Response
<b>Demand Response</b>		
General	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. US EPA should review the demand response requirements in JA5 (CEC Title 24) and consider using the JA5 requirements as a starting point for demand response requirements for this specification.	In developing the recently released grid responsiveness proposal, EPA worked closely with stakeholders to ensure the proposed criteria are compatible with the CEC Title 24, JA5 requirements.
<b>Standby energy use</b>		
General	It is important that US EPA carefully evaluate standby energy use from CTs and ensure that the specification results in a net energy savings. The EU Ecodesign requirements for electrical and electronic household equipment limits device stand-by power use to 0.5 watts or 1.0 watts, depending on the functions that are in use when is in standby. 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.	EPA recognizes the importance of limiting CT standby power consumption. In the Draft 2 specification, EPA has maintained the 2 watt limit and has added 5m time to standby criterion. While EPA recognizes that CTs may, over time be able to maintain a lower standby energy consumption, EPA believes a 2 watt limit is appropriate for the Version 1 specification. EPA welcomes additional stakeholder feedback on this topic.
<b>Interoperability</b>		
General	These stakeholders support efforts to establish communication requirements that are based on open, non-proprietary, technologies.	Thank you for your input.
<b>Installed Base</b>		
Climate Favoritism	We can envision a scenario where one manufacturer is especially successful in selling products in warm-weather climates, in which case their heating/cooling seasons might be different from other manufacturers who have a product that is installed throughout the US. Additionally, if there aren't sub-climates of the United States established, we can envision a product that has great savings throughout an installed base, but within a more temperate climate has very marginal savings. In this case, a utility in a temperate climate may be able to offer an incentive based off the national estimated savings and not see those savings realized.	Thank you for your input. EPA will keep these concerns in mind as we continue to develop the metric and specification.
Threshold Limits	As with other ENERGY STAR specifications, we would also encourage the EPA to set threshold limits for the percentage of an installed base that meets the ENERGY STAR criteria. As there will be a significant range of actual savings achieved by these products, we would want to ensure that a small number of homes with huge savings don't shift the scales and allow an undeserving product to be covered by the specification. We would ask EPA to consider a threshold such that at least 80% (or more) of installed base meet within at least 1% the ENERGY STAR threshold.	