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Dear Abigail,

The Connected Home group at Schneider Electric is excited to see consideration for a new Energy Star Climate Controls specification. Technology has advanced rapidly since the 2009 sunset of the programmable thermostat program, as has user interaction with smart devices. The decision to exclude usability testing as a metric, which has proven difficult to quantify, seems equally appropriate. We at Schneider Electric see a focus on 3rd party verifiable energy savings as the right direction.

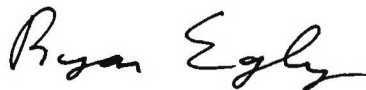
The proposal to use HVAC run time, set temperatures, and measured temperatures as the sole criteria to evaluate Residential Climate Control Systems raises a few concerns. There is wide variance in HVAC systems, home efficiency, occupant behavior, and ambient conditions. In any experimental design, only when confounding variables are held as constant as possible while a treatment variable is introduced can the conclusion be made that changes are most likely associated with the inclusion of that treatment variable. As such, some form of baseline data must be referenced in which the conditions are present before and after the introduction of the treatment variable. This baseline can be determined by industry standards based on average or median usage, but because people and houses change, it also requires statistically controlling for demographic information that could influence usage such as age and size of home, age of HVAC systems, remodels, geography, presence of children, age of residents, income and other detailed demographic data. The resulting combination of attributes can lead to the development of profiles and propensity scoring that will define the "average" based on very complex interactions of these attributes within the sample.

Although the proposed method of propensity models appears to simplify the process, the utility may or may not have access to the level of demographic information that would be required for a reliable and valid comparison. Even if we assume that such information is "easier" to obtain than meter data, the difference between capturing observable and objective data over subjective demographic data still has to be considered: Objective machine sensor data is not influenced by or dependent on complicated attributes of place and person, making the results more easily generalizable to the broader population with lower margins of error.

The most credible way to verify true energy savings in this context remains at the meter level, either in the form of utility data or a non-utility meter that meets sufficient tolerance criteria. This data can then be compared with thermostat data for validation and testing. Relying solely on manufacturer temperature data introduces doubt and may still require detailed data from the utility, which is the very entity trying to be avoided by excluding meter data. There are certainly challenges inherent in multi-party projects, such as collaboration between thermostat manufacturers, meter manufacturers, and 3rd party verifiers. These challenges are however not insurmountable, and are in our view critical to the credibility of the proposed specification.

As an additional item for consideration, we would like to bring the topic of a common wire into the discussion. Mandating the absence of battery terminals as a prerequisite for Energy Star certification of climate control systems would eliminate the environmental burden associated with both the manufacturing and end-of-life disposal of household batteries. The majority of new homes constructed in North America include HVAC systems with a common wire. The primary benefit of excluding a common wire relates to DIY retrofit installations. Although there will certainly be some cases of increased complexity for retrofit installations that will require an HVAC technician, this should be weighed against both the environmental impact of batteries as well as the potential for smart thermostats to drain the battery during extended periods of use. According to a study conducted by MIT for the National Electrical Manufacturer's Association, "approximately 80% of portable batteries manufactured in the US are so-called alkaline dry cells with a global annual production exceeding 10 billion units. Today, the majority of these batteries go to landfills at end-of-life". Although not directly within the scope of the energy and carbon reduction goals stated in the Energy Star mission statement, an effort to reduce the harmful effects of heavy metals such as mercury, lead, cadmium, and nickel that would result from battery replacements in millions of Energy Star devices would complement the proposed specification.

Sincerely,



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