



900 Hansen Way
Palo Alto, Ca 94304

info@nest.com
(650) 331-1127
nest.com

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Abigail Dakin
Energy Star Climate Control Team

Abigail,

Nest Labs applauds EPA's Climate Control Draft 3 and its usability track. We have learned from the Climate Control process and ideas since we began to develop the Nest Learning Thermostat. We are pleased to see that many of our previous comments have been incorporated. We think this process will continue to be fruitful beyond the launch of the first specification, as a growing number of industries converge in the data-rich and research-based future of building energy efficiency. To that end, we are pleased to continue discussing how to make the Climate Control as effective as possible.

We state our Draft 3 concerns below. More generally, we affirm our belief that large-scale energy efficiency savings requires great consumer experiences. We see, as EPA sees, the many major shifts on the horizon. But to anticipate such shifts by writing premature requirements that threaten to scramble consumer experiences is self-defeating.

We are open to further discussing our specific comments with EPA on a call.

Respectfully,

David Sloo
User Experience
Nest Labs

Scott McGarahan
Business Development
Nest Labs

Line 257-265:

“Shall be equipped with installer selectable recovery algorithms. Configured for non Heat Pump installations, the default recovery algorithm shall comply with the definition for Recovery, Adaptive. Exception – When a Climate Control is interconnected with a system capable of remotely managing recovery, it is permissible for recovery to be controlled by the remote system.” A related note (lines 266-270) defines the exception as for “advanced energy management systems that are capable of varying recovery times over remote control.”

In January, we asked that “installer selection not be required for systems that automatically determine if a heat pump or electric resistance auxiliary heat is installed.” Draft 3 maintains the original language. Nest believes that the EPA errs in directly equating an “advanced

energy management system” with remote control operation. The controller may, as in our case, be local as well.

We strongly request that line 257 be edited to: “Shall be equipped with recovery algorithms that are selected according to system type (either automatically or by the installer).”

Lines 295-298

“Suitable documentation such as an API or Interface Specification shall be available to 3rd party developers to enable access to the product’s data reporting and remote management capabilities.”

Lines 314-319

Stakeholders have informed EPA that they are interested in protecting the user experience from poorly designed 3rd party apps or interfaces. EPA supports a market solution to this concern, and considers current examples of app qualification programs for smart phones such as the Android Market and iPhone App store to be acceptable models for manufacturer control of Residential Climate Control RIs. EPA has also clarified that the API or similar documentation may be limited to exposing only Data Reporting and Remote Management functionality as defined below.

In January, we said that, while we supported interoperability, we thought an SDK was unnecessary and were opposed to building one. Draft 3 retains this requirement.

We still oppose including an API requirement in the first Climate Control specification. For many devices, an open API will threaten system stability (security, power management, connectivity), user experience, and customer privacy expectations.

In addition, the correct parameters for APIs have not been fully thought through by the industry as a whole, and premature standardization will disrupt continued innovation in the space. We think an API requirement raises many complex questions that have not been addressed broadly, making an API requirement premature now.

We would consider an interoperability feature that has us make an XML schema available only to screened and secure Nest partners. We would like to discuss this idea with EPA.

Lines 336-340

“Must be able to record data at least once every 60 seconds and transmit data at least once every 5 minutes.

In January we ask that the requirement to record data every 60 seconds be deleted as it is too frequent and wastes power. We maintain this position. We think EPA wrote this requirement seeking to ensure that products can't claim yet fail to deliver remote control capabilities. But this frequency rate will impose a communications power drain that will degrade the Nest battery life and thus our installation and overall consumer experience. As our learning thermostat improves this problem will become even worse.

We believe a Climate Control should be able to deliver near real time (e.g., within 60 seconds) functionality that includes customer feedback. We believe a recording rate of every six hours is sufficient and request that this be written into the spec.

If EPA disagrees, we ask it to state its goals for a 60 second recording rate that our proposed recording rate won't achieve. If, for example, EPA wants a remote control unit to be no more than five minutes out of date, say this, and give us the flexibility to choose our own way to comply.

Lines 430-433

Energy Saving Mode – The Heat setback setpoint may be user configurable but not to a value greater than 65°F. Similarly, the Cool setback setpoint may be user configurable but not to a value less than 80°F.

We don't believe the “Energy Savings Mode” will be effective as the only or primary energy saving mode available on a thermostat. We don't believe that most consumers will use it, or even buy a device that makes them use it. We believe that they will, though, consent to a range of other energy savings features that are not rigidly tied to boundary conditions.

We therefore view the “Energy Savings Mode” as a discrete energy-saving feature, usable in addition to or instead of other energy-saving features. Users would have an option to put the thermostat into “Energy Savings Mode,” thereby enacting the 65/80 constraints.

For these reasons, we also ask EPA to rename the mode “Energy Star Mode.”

Lines 445-449

Energy Saving Mode... shall be activated and canceled by single user operations. This mode shall simultaneously activate the setback setpoint and place the Residential Climate Control in Long Term Hold. The mode shall be given a descriptive label; EPA recommends use of the term “Away.”

We view “Energy Saving Mode” and “Away Mode” as distinct states and asks EPA to not conflate them. We believe that this issue should be resolved before the usability test.

We again ask EPA to change “single user interaction” to “simple user interaction.” This will make clear that the goal is simplicity and usability, not any specific switching mechanism.