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**Google Nest Comments on the Equitable Building Decarbonization
Direct Install Program - Draft Guidelines (22-DECARB-03)**

Additional submitted attachment is included below.



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June 30, 2023

California Energy Commission
Docket Unit, MS-4
Docket No. 22-DECARB-03
715 P Street
Sacramento, CA 95814

RE: Comments of Google LLC to the California Energy Commission’s Equitable Building Decarbonization Direct Install Program - Draft Guidelines Issued in the Equitable Building Decarbonization Program, Docket 22-DECARB-03

Dear Commission Staff:

Google LLC, on behalf of its Google Nest thermostat division, hereinafter “Google Nest,” appreciates the opportunity to provide the Energy Commission comments on the Equitable Building Decarbonization Direct Install Program (“Direct Install Program” or “Program”) - Draft Guidelines (“Draft Guidelines”) in the Equitable Building Decarbonization Program proceeding.

Google Nest’s devices include the Google Nest Learning Thermostat, the Google Nest Thermostat E, and the new Google Nest Thermostat. These products are each equipped with occupancy sensors, Wi-Fi capability, and smartphone grade processing, which together help our customers consume less energy. Google Nest thermostats learn occupant preferences, adjust temperatures to reduce energy consumption when the house is empty, and automatically lower air conditioning runtime when humidity conditions permit. All Google Nest thermostats currently on the market allow residential customers to participate in demand response (“DR”) programs and future load flexibility programs administered by utilities or third-party aggregators.

Google Nest’s sole focus in these comments are on the eligibility of smart thermostats for the Program. We strongly support the inclusion of “occupant controlled smart thermostats” (“OCST”) and recommend the CEC retain all thermostat-related guidance for the Final Guidelines. In response to the Draft Guidelines, and specifically question 8, “Would you suggest changes or additions to the lists of required, eligible, and ineligible measures?”, posed in the May 4, 2023 “Questions on Draft Guidelines”, Google Nest provides the following recommendations:

1. The Energy Commission should continue to include “occupant controlled smart thermostats” as an eligible measure.
2. The Energy Commission should maintain the requirement for certification compliant with Joint Appendix 5 (JA5).
3. The Energy Commission should retain the metric of “Number of smart thermostats installed” as a measure of the goal for the program to “Support grid reliability”.



We expand on these recommendations below:

1. The Energy Commission should continue to include “occupant controlled smart thermostats” as an eligible measure.

Google Nest fully supports the Energy Commission’s inclusion of occupant controlled smart thermostats in the Draft Guidelines, because smart thermostats are a proven technology to reduce building energy use. Thermostats that have received the ENERGY STAR® label, including the product line manufactured by Google Nest, have been demonstrated to save at least 8% of heating and cooling bills on average according to the US EPA.¹ Nest thermostats have helped automate energy savings and guided consumers toward more informed and efficient energy use – leading to cumulative savings of over 124 billion kWh. Studies have shown that the Nest Learning Thermostat can, on average, save 10% to 12% on heating and 15%² on cooling by adjusting heating and cooling to occupant activity. Based on typical energy costs, we estimate this provides an average savings of between \$131 to \$145 a year for each residential customer.³

The deployment of smart thermostats through this Program will also create additional benefits by enabling each home to participate in demand flexibility that will in turn support grid reliability. In addition to providing energy efficiency (“EE”) benefits, smart thermostats, like the ones that Nest manufactures, are effective and affordable tools for utilities to manage peak demand. Google Nest works with over 100 partners across the country to run residential thermostat demand response programs. Third-party evaluations have repeatedly found between 0.59 kW and 1.2 kW in energy reduction per device during summer thermostat DR events.⁴

This valuable demand flexibility characteristic of smart thermostats has been considered in other efforts at the Energy Commission. For example, the Flexible Demand Appliance Standards project, in response to Senate Bill 49, has proposed rules related to flexible demand technologies like smart thermostats. And the development of CalFUSE, the 2022 Load Management Rulemaking which set requirements for dynamic rates in California, and the ongoing procurement for the Demand Side Grid Support (“DSGS”) Program underscore the demand for devices like smart thermostats that can enable flexible loads at the home.

¹ For more information, please see the FAQ page on ENERGY STAR’s website for Smart Thermostats: [https://www.energystar.gov/products/heating_cooling/smart_thermostats/smart_thermostat_faq#:~:text=How%20much%20will%20the%20average,%2Fcooling%20\(HVAC\)%20equipment](https://www.energystar.gov/products/heating_cooling/smart_thermostats/smart_thermostat_faq#:~:text=How%20much%20will%20the%20average,%2Fcooling%20(HVAC)%20equipment).

² “Energy Savings from the Nest Learning Thermostat: Energy Bill Analysis Results.” Nest Labs, February 2015.

³ For more information, please visit Nest’s website at <https://nest.com/thermostats/real-savings/>.

⁴ “2019 Residential Wi-fi Thermostat Direct Load Control Offering Evaluation,” Prepared for: Eversource, MA, Eversource CT, National Grid MA, and Unitil MA by Navigant. Accessed June 30th, 2023 at: <https://ma-eeac.org/wp-content/uploads/2019-Residential-Wi-Fi-Thermostat-DLC-Evaluation-Report-2020-04-01-wifh-Infographic.pdf>. and “Submission of DSM Evaluation Report Volume 1,” Filed June 25, 2021 accessed June 30th, 2023 at <https://iurc.portal.in.gov/entity/sharepointdocumentlocation/5486335b-d2d5-eb11-bacc-001dd802d877/bb9c6bba-fd52-45ad-8e64-a444aef13c39?file=45370%20AES%20IN%20Submission%20of%20Compliance%20Filing%20Annual%202020%20Report%20Vol%201.pdf>.



2. The Energy Commission should maintain the requirement for certification compliant with Joint Appendix 5 (“JA5”).

Google Nest supports requiring JA5 compliance for smart thermostats because this will help ensure that the thermostats deployed through the Program will also prepare the home for participating in future demand flexibility programs.

Joint Appendix 5 to the Building Standards provides the OCST technical specifications. To be considered an OCST, manufacturers must self-certify to the Energy Commission that their device meets the JA5 requirements. JA5 specifications require that OCSTs be capable of controlling temperature by following scheduled temperature setpoints and automatically responding to a demand response signal. The demand responsive control requirements also provide that such a device be capable of communicating with a Virtual End Node using either a wired or wireless bi-directional communication pathway. Taken all together, a JA5-compliant OCST would be able to participate in the DSGS, a future dynamic rate, or any other demand flexibility program. Conversely, an OCST that was not JA5-compliant would have limited functionality, and would be unlikely to enable demand flexibility. To support the goals of California and of the Energy Commission, we strongly recommend that the Energy Commission include a requirement for JA5 compliance.

3. The Energy Commission should retain the metric of “Number of smart thermostats installed” as a measure of the goal for the program to “Support grid reliability”

As we have discussed previously, smart thermostats are directly able to support grid reliability. It is also a near-term (via the DSGS and other demand response programs in California) and long-term aspiration (via the Load Management Standards requirements for dynamic rates) to enable customers’ contribution to reliability through demand flexibility. The deployment of smart thermostats should provide the Energy Commission with a highly-informed view of how customer engagement in demand flexibility is growing.

In addition, smart thermostats are a unique proxy of demand flexibility uptake because of their affordability. Google Nest recently introduced a \$129 thermostat, a price point \$40 lower than the previous version of the model, and nearly half the price of the top-of-the-line model. Smart thermostats are an affordable solution for millions of Californians that otherwise would not have the means to finance and install other distributed energy resources, such as rooftop solar, home battery storage, or electric vehicles with charging control. With the right incentives in place, including through this program, smart thermostats can be offered to households at low or even no cost. Trends related to the deployment of smart thermostats will have a greater degree of statistical significance based on the expected uptake due to the comparatively low price point.



Conclusion

Google Nest thanks the Energy Commission for this opportunity to respond to these initial questions. We look forward to working with the Energy Commission and Staff as this Program is developed and deployed.

Sincerely,

/s/ Will Baker

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