

February 8, 2022

**VIA ELECTRONIC FILING**

Aida Camacho-Welch, Secretary  
New Jersey Board of Public Utilities  
44 South Clinton Avenue, 9th Floor  
P.O. Box 350  
Trenton, New Jersey 08625-0350

**RE: I/M/O Natural Gas Commodity and Delivery Capacities in the State Of New Jersey – Investigation of the Current and Mid-Term Future Supply and Demand (BPU Docket No. GO20010033)**

Dear Secretary Camacho-Welch,

On behalf of our client Google LLC, we submit these comments in response to findings and recommendations presented by London Economics International, LLC (“LEI”) in its final gas capacity report entitled “Final Report: Analysis of Natural Gas Capacity to Serve New Jersey Firm Customers.” Google LLC, an Alphabet Inc. company, is the maker of Nest devices, including Nest thermostats, sold under the Google Nest brand. Nest thermostats incorporate numerous features that help customers reduce their energy consumption for residential heating and cooling, which can consequently assist utilities and the state of New Jersey with achieving core energy efficiency and peak demand reduction goals.

**INTRODUCTION AND DESCRIPTION OF GOOGLE NEST**

Google Nest is dedicated to making the smart home less complicated and more helpful, where products work together to provide customers safety, security, comfort, and connection with their friends and family. The Nest energy devices include the Google Nest Learning Thermostat, the Google Nest Thermostat E, and the new Google Nest Thermostat, which are equipped with sensors, Wi-Fi capability, and smart-phone grade processing, to help customers consume less energy. Google Nest thermostats learn occupant preferences, turn the temperature down when the house is empty, and automatically lower heating and air conditioning (“A/C”) runtime when humidity conditions permit, thereby helping people lower their energy use without sacrificing comfort.

Google Nest thermostats also contribute to reducing peak demand by allowing residential customers to participate in demand response programs, including Rush Hour Reward events, run by utilities or third-party aggregators. Nest thermostat owners can participate in Winter Rush Hour Rewards and Summer Rush Hour Rewards to earn rewards from their energy

company year-round. Rush Hour Rewards helps customers earn rewards for saving energy during peak demand periods, while still keeping the customers comfortable. Each customer's Nest thermostat will automatically tune temperatures before and during a Rush Hour to reduce energy use and lower grid costs. Customers do not have to worry about when the next Rush Hour is coming or remember to adjust the temperature. Rush Hour Rewards does it for them. And if the customer ever gets uncomfortable, they can simply change the temperature on their thermostat.

### **SUMMARY OF GOOGLE NEST'S RECOMMENDATIONS:**

LEI's Gas Capacity Report identifies potential non-pipeline alternatives ("NPAs") that could be utilized by the State to reduce demand as well as best practices and a playbook to be utilized in the event of a gas capacity shortfall. As LEI notes, "Residential consumption for heating during the coldest months of the year, usually January or February, drives the winter peak in total demand."<sup>1</sup> Smart connected thermostats ("SCTs"), such as the ones manufactured by Google Nest, reduce residential heating and cooling consumption and enable meaningful load reductions during periods of peak demand. SCTs are also among the most scalable grid-connected technologies available for residential households. Additionally, Google Nest has significant market experience in deploying SCTs across the country in close coordination with utilities and state agencies.

Google Nest strongly supports the increased adoption of NPAs and provides the following observations and recommendations:

**1. SCTs meet all NPA goals developed by LEI and BPU:**

- a. SCTs provide demonstrated efficiency and demand response benefits and are the one of the most widely available residential DR solutions with significant potential to scale in New Jersey.
- b. The BPU has the ability to cost-effectively scale SCTs and can do so by building upon existing investments and capabilities.

**2. To utilize SCTs to the fullest in event of a gas capacity shortfall, the BPU should adopt LEI's best practices:**

- a. The BPU should develop enforceable rules and evaluate the creation of demand response incentives for SCTs following best practices from other states.
- b. The BPU should build upon existing platforms and customer engagement channels to accelerate deployment and communicate with customers in the event of an emergency.

### **SMART CONNECTED THERMOSTATS MEET ALL NPA GOALS DEVELOPED BY LEI AND THE BPU**

In recommending the evaluation of NPAs to reliably meet natural gas demand, LEI provides the following list against which NPAs could be scored:<sup>2</sup>

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<sup>1</sup> LEI Gas Capacity Report, at p. 9

<sup>2</sup> LEI Gas Capacity Report, at p 13

- improve reliability and resiliency;
- within the Board’s control;
- build upon current capabilities;
- consistent with state goals and policies;
- cost-effective;
- enable social equity;
- technically feasible; and
- implement within a suitable timeframe.

Google Nest supports this scoring criteria and provides the below comments on how SCTs, such as the ones manufactured by Google Nest, meet the above criteria.

**A. SCTs provide demonstrated efficiency and demand response benefits and are one of the most widely available residential DR solution with significant potential to scale in New Jersey**

Studies of SCTs across the country have affirmed their ability to reduce heating and cooling demand. On average the Nest Learning Thermostat saves 10% to 12% on heating and 15%<sup>3</sup> 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.<sup>4</sup>

SCTs have an ability to drive immediate residential load reductions, along with a complementary benefit of informing customers of emergency grid conditions. Take California, for example. On August 14th and 15th, 2020 – the two days when a Stage 3 system emergency triggered rolling blackouts in the state – Google Nest’s utility and third-party partners called seven demand response events. Nest customers enrolled in these utility programs shifted approximately 60 MW of load during this two-day grid emergency. Further study has shown how smart thermostats are an effective tool to augment household demand response potential. For example, the residential third-party demand response provider OhmConnect has found that customers see a two to three times improvement in demand response reductions with a smart thermostat compared to a household without one.<sup>5</sup>

In a recent evaluation to address reliability challenges in Texas, the American Council for an Energy Efficient Economy (“ACEEE”) evaluated seven residential energy efficiency and demand response retrofit measures for their efficiency and demand response potential. ACEEE

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<sup>3</sup>“Energy Savings from the Nest Learning Thermostat: Energy Bill Analysis Results.” Nest Labs, February 2015. <https://storage.googleapis.com/nest-public-downloads/press/documents/energy-savings-white-paper.pdf>

<sup>4</sup> More information available on Nest’s website at <https://nest.com/thermostats/real-savings/>

<sup>5</sup> See November 30, 2020 “Comments of OhmConnect, Inc. on Order Instituting Rulemaking” in R.20-11-003, at p. 2 and p. 10, available at <https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M353/K094/353094595.PDF>.

found that SCTs were the most cost-effective measure, with a 12.8 benefit cost ratio, and that they provide efficiency benefits as well as large winter and summer peak benefits.<sup>6</sup>

There is enormous market potential in New Jersey to scale smart thermostats and enroll them in effective demand response programs. Energy Information Agency data shows that roughly 85% of all housing units in the United States have a thermostat connected to their main heating system,<sup>7</sup> though many of them are not programmable or grid connected. Based on census data, this means there are likely up to 2.8 million homes in New Jersey with central heating and a controllable thermostat where installing a SCT could enable meaningful load reductions during periods of peak demand.<sup>8</sup> Based on market data, around 420,00 households are already estimated to have a smart thermostat installed today in New Jersey.<sup>9</sup> However, none of these homes are actively engaging in demand response today through programs like Nest’s “Rush Hour Rewards.” In sum, there is significant market potential in New Jersey both to install new SCTs in homes and to enroll existing SCTs in demand response programs.

**B. The BPU has the ability to cost-effectively scale SCTs and can do so by building upon existing investments and capabilities**

Smart thermostats are an incredibly affordable solution for millions of households that otherwise would not have the means to finance and install expensive DER technology. 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. With proper energy efficiency and demand response incentives in place, these thermostats can be offered to customers at little or no cost. And, at this low cost, smart thermostats can serve as a crucial gateway technology for low-to-moderate income (“LMI”) residential households that would otherwise lack the means to interact with the grid. As compared to other solutions, the affordability and scalability of SCTs makes them an attractive solution for widespread investment. As LEI points out, comparing the cost of deploying SCTs against traditional pipeline options provide a useful benchmark for cost comparison:

“If the NJ GDCs offered a \$100 rebate per thermostat, the cost would be \$313 million if every customer took up the offer... This would be less expensive than LEI’s estimate what PennEast would have cost GDC customers (about \$365.8 - \$ 603.6 million)”.<sup>10</sup>

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<sup>6</sup> Energy Efficiency and Demand Response: Tools to Address Texas’ Reliability Challenges, ACEEE, October 2021, [https://www.aceee.org/sites/default/files/pdfs/energy\\_efficiency\\_and\\_demand\\_response\\_for\\_texas\\_10-13-21\\_final\\_0.pdf](https://www.aceee.org/sites/default/files/pdfs/energy_efficiency_and_demand_response_for_texas_10-13-21_final_0.pdf)

<sup>7</sup> See US Energy Information Administration, Space heating in U.S. homes by climate region, 2015: <https://www.eia.gov/consumption/residential/data/2015/hc/php/hc6.6.php>.

<sup>8</sup> See US Energy Information Administration, House Heating Fuel information, 2019, <https://data.census.gov/cedsci/table?q=B25040%3A%20HOUSE%20HEATING%20FUEL&g=0400000US34>

<sup>9</sup> Based on Park Associates estimates of 13% smart thermostat penetration in January 2018: See <http://www.parksassociates.com/blog/article/pr-06142017#:~:text=New%20Parks%20Associates%20research%20shows,by%20the%20end%20of%202017>

<sup>10</sup> LEI Gas Capacity Report, pp. 110-111

Critically, as LEI also notes, the BPU has the ability to allow for cost recovery and tariffs to support the deployment of equipment including thermostats.<sup>11</sup> Other states have already taken action to rapidly deploy thermostats to help address winter peak demand. For example, in Michigan, Consumers Energy recently partnered with Google Nest to offer up to 100,000 customers a free thermostat for enrolling in its Peak Power Savers Smart Thermostat Program.<sup>12</sup> In June 2020 New Jersey Natural Gas (NJNG) partnered with Google Nest and Energy Federation Inc. (EFI) to provide free Google Nest Thermostats to nearly half a million NJNG residential customers.<sup>13</sup>

As the BPU evaluates opportunities to accelerate deployment of thermostats in New Jersey, it can and should leverage existing distribution channels and platforms. These include:

1. Utility online marketplaces, such as those already built by New Jersey utilities as part of their recent energy efficiency plans;<sup>14</sup>
2. Direct Install programs, including Income-Qualified or LMI programs;
3. Utility owned and operated digital properties, including websites and program landing pages; and
4. Utility paper and digital communications, including Home Energy Reports and social media.

The utility online marketplaces are particularly powerful tools for increased customer engagement. As we will expand upon below, adding demand response pre-enrollment to existing online marketplaces is a straightforward, incremental step that can be implemented in a matter of weeks. Demand response pre-enrollment is now an industry-standard feature of online marketplaces in other states, and can easily be established in New Jersey. In this way, utilities can leverage investments already made for energy efficiency savings to quickly scale demand response programs.

### **TO UTILIZE SCTs TO THE FULLEST IN THE EVENT OF A GAS CAPACITY SHORTFALL, THE BPU SHOULD ADOPT LEI's BEST PRACTICES**

LEI identifies four best practices learned from other jurisdictions faced with energy emergencies:<sup>15</sup>

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<sup>11</sup> Ibid. at p. 119

<sup>12</sup> Press Release, Consumers Energy, 5/19/2020, <https://www.consumersenergy.com/news-releases/news-release-details/2020/05/19/consumers-energy-providing-100k-google-nest-thermostats-to-michigan-households-during-pandemic>

<sup>13</sup> <https://www.njresources.com/news/releases/2020/njng/20-21njnggooglethermostat.aspx>

<sup>14</sup> For example, see Google Nest Thermostat rebates on NJNG's marketplace website: <https://www.poweredbyefi.org/njng/featured-products/smart-thermostats/google-nest.html>

<sup>15</sup> LEI Gas Capacity Report, pp. 17-18

1. Develop rules, as they are more reliable than recommendations;
2. Focus on strategies under the BPU's control;
3. Build on existing platforms; and
4. Begin now.

Google Nest strongly agrees with these recommendations and provides additional thoughts on best practices to fully utilize SCTs during emergency events.

**A. The BPU should develop enforceable rules and evaluate creation of demand response incentives for SCTs following best practices from other states**

Google Nest supports LEI's assertion that "without formalization [of enforceable rules], New Jersey risks finding itself in a situation whereby significant disruption occurs despite policymakers and first responders having the knowledge and expertise to prevent them."<sup>16</sup> In Google Nest's experience, smart thermostat demand response programs are more powerful and achieve more consistent performance when clear, consistent, enforceable guidelines are developed.

A significant benefit of SCTs and other grid-connected devices is their ability to respond, in an automated fashion, to particular triggers or grid conditions. Automated demand response capabilities tailored to the individual conditions of each homeowner are a key part of delivering Nest's Rush Hour Rewards ("RHR") demand response programs. Google Nest currently works with more than 70 energy partners across the country to run RHR events in response to specific conditions triggered by utilities, third-party providers, and grid operators. Based on its experience across the country, Google Nest offers the following recommendations in designing a successful thermostat demand response program:

1. Offer a combination of upfront and recurring demand response incentives to customers to encourage enrollment and retention: The most successful programs offer a one-time enrollment payment to customers as well as a smaller, recurring payment for customer retention, typically at the end of the season. The combination of these two incentives drives adoption and rewards continued participation in demand response events.
2. Encourage pre-enrollment in demand response programs at point of sale where possible: Online marketplaces, such as the ones offered by Consumers Energy, Arizona Public Service, and Ameren Missouri<sup>17</sup>, have emerged as a powerful channel for utilities to offer energy efficiency and demand reduction products to their customers. Through these marketplaces, it is possible to pre-enroll a customer in a demand response program as a condition of receiving demand response incentives. This practice is widespread among utilities in California and was a central strategy of Consumers Energy's recent 100,000

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<sup>16</sup> *Id.* at p. 17

<sup>17</sup> <https://consumersenergystore.com/>, <https://marketplace.aps.com/>, and <https://amerenmissouristore.com/>

thermostat push. Pre-enrollment is an opt-in strategy that ensures that the full efficiency and demand response benefits of thermostats are realized from the outset.

3. Eliminate barriers to stacking of energy efficiency and demand response incentives: As previously noted, smart thermostats provide both measurable efficiency and demand response benefits. In many states, separate incentives exist to reward both the efficiency and demand response benefits of smart thermostats. These incentive amounts, when added together, can often cover the full cost of a thermostat, allowing states and utilities to provide low- or no-cost thermostats to customers. However, there are often practical barriers to stacking these incentives due to administrative or other internal barriers. Where possible, Google Nest encourages the BPU, in coordination with the utilities, to develop incentive programs that allow for the stacking of efficiency and demand response incentives to lower upfront costs for customers and drive adoption.
4. Create a working group that includes utilities, original equipment manufacturers, and distributed energy resource management system providers: While the above recommendations by Google Nest serve as a general rule, we believe that program delivery will be most effective when the exact details are mutually agreed upon by a working group that includes all of the stakeholders and technology providers responsible for delivering a successful demand response event.

**B. The BPU should build upon existing platforms and customer engagement channels to accelerate deployment and communicate with customers in the event of an emergency**

As previously mentioned, there are existing platforms and communication channels in New Jersey that can be utilized today to both accelerate SCT deployment and communicate with customers in the event of an emergency. Channels to accelerate deployment include: utility online marketplaces, such as those already built by New Jersey utilities as part of their recent EE plans; Direct Install programs, including Income-Qualified or LMI programs; utility owned and operated digital properties, including website and program landing pages; and utility paper and digital communications, including Home Energy Reports and social media. In Google Nest's experience, effectively using all of the above platforms and channels is critical to accelerating thermostat deployment. Google Nest has significant experience partnering with state agencies and utilities to coordinate on marketing and outreach regarding customer enrollment in demand response programs.

Once a customer is enrolled in a smart thermostat demand response program, such as Nest's RHR, the thermostat itself becomes a communication channel for customers before and during demand response events. Through RHR, enrolled customers receive a message on their Nest thermostat and via the Nest app letting them know when the upcoming RHR event will start and end. During an event, the thermostat displays a gold gear with a Nest Leaf inside and the words "ENERGY RUSH HOUR" appears on the Nest thermostats display and in the Nest app. Customers

may opt-out of specific event participation by simply adjusting their thermostat's temperature during an event.

In this way, not only does the smart thermostat become a new communication channel for utilities to their customers, it also enables customers to earn payments for their participation in DR programs. This drives higher engagement, improves customer satisfaction (CSAT) scores, and equips customers with enabling technology to participate in the grid of the future, including time of use (TOU) rates, when they become available.

## **CONCLUSION**

Thank you for the opportunity to provide these comments. Google Nest is encouraged that LEI and the BPU are seriously evaluating opportunities to accelerate the deployment of demand-side NPAs such as SCTs. We believe SCTs can play a significant role in meeting state reliability needs with significant potential to grow in the state of New Jersey. Google Nest looks forward to participating in future stakeholder proceedings and working groups to develop the programs discussed in these comments.

Respectfully submitted,



Murray E. Bevan