September 25, 2018

Re: New Jersey 2019 Energy Master Plan (EMP) Reducing Energy Consumption Stakeholder Meeting Discussion Points Responses

Dear BPU staff:

ThinkEco appreciates the opportunity to respond to the NJ BPU's request for comments on their 2019 Energy Master Plan Reducing Energy Consumption Discussion Points.

ThinkEco is an Internet of Things (IoT) tech firm that provides utilities, enterprises and stakeholders with solutions for controlling energy waste from smart connected appliances, such as window AC units, dehumidifiers, water heaters, and other connected appliances. We were founded in 2008. ThinkEco is also a turnkey utility program administrator, having worked with numerous utilities around the country on residential, multifamily and low- income customer segment appliance energy savings programs. We assist utilities and other program administrators to reduce peak load demand and kWh by enabling customers to control their appliances with our software, through their home WiFi.

The northeast is the largest US market for room air conditioning, and thus New Jersey with its many single-family homes and multifamily dwellings using window ACs is a primary market for connected air conditioner and appliance technology. We value the opportunity to collaborate on expanding the understanding of the energy savings that can occur from this important technology and market segment. The BPU EMP Reducing Energy Consumption initiative will ultimately help drive more people to become sustainable, save energy and reduce peak demand.

We look forward to continuing to contribute to your effort to ensure that connected smart appliance customers gain the ability to participate in NJ programs that will reduce energy consumption. Please find our answers below to your Discussion Points.

Sincerely,

Jun Shimada
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Discussion Points Responses

1. Energy affordability for all customer classes is an important goal. New energy saving technologies, like enabling control of connected appliances such as window AC units, dehumidifiers, water heaters and heat pumps (among others) help to reduce a customer's energy consumption, and thus overall State energy consumption. ThinkEco has been focused since 2008 on controlling wasted energy from appliances, including all plug loads in homes and offices. This includes work for utility peak demand reduction and demand response (DR) programs.

We make a device that plugs into a customer's appliance and the wall socket. It records the appliance wattage usage and sends that data in 1-minute increments to the cloud database, through the customer's secure home internet. When these connected appliances are scaled in a utility-scale demand response program, peak load reductions can be realized by the utility or local buyer. With the prevalence today of WiFi connected appliances, like smart thermostats and window air conditioners, it becomes easy for a utility to design a program that recruits and enrolls customers who purchase or own these smart appliances.

The time horizon for these programs and technologies is now. ThinkEco is actively managing demand response and peak load reduction programs across the country by initiating load reduction on these enrolled appliances at key times of distribution grid stress or high costs of power. As the penetration of WiFi enabled appliances increases, load control opportunities and scale will occur. For example, in our SmartAC residential and small business DR program managed for Con Edison in New York, we have enrolled over 45,000 window AC customers, with program growth occurring each year. The program details can be found here: https://conedsmartac.com/.

ThinkEco's solution works for many customer segments: basically, anyone that owns a window AC, dehumidifier, or other connected appliance. Customer segments we enroll include single family, multifamily, low income, small business and any commercial property that has large numbers of these appliances: universities, government offices, etc. All benefit from energy (kWh) and peak demand charge (kW) savings generated by our solution. We view our solution as one big way for the State and BPU to broaden the reach of energy efficiency and DR to customer segments that have not had the ability before to participate in such programs.

2. N/A

3. The key non- energy benefits associated with energy efficiency and our solution, are: reduction in local peak generation due to decreased peak demand. This saving reduces the need for costly and polluting local generation often needed to run at times of peak demand. Other benefits are local (marginal) and system-wide peak supply cost reductions, CO2 reductions, and reductions in utility transmission and distribution maintenance and upgrades costs, due to lower peak demand stress. Some jurisdictions go so far as to value an option benefit for peak demand reductions, even if they are never used, as can occur during milder summers.

4. Utility ratepayer funded programs have been the traditional way that residential efficiency and DR programs have been delivered. This role should be continued for New Jersey, as new programs need to be designed, introduced, and brought to scale. At that time, ratepayer funding can decline,

as programs become cheaper to run through scale. Oversight is required for measurement and verification of reductions and cost effectiveness. Especially in the smart appliance and smart home world, where growth of the market for new appliance purchases will drive enrollment in such energy savings programs, the role of the State or utility can diminish over time.
The main role ThinkEco's program sponsors have undertaken over the years is as chief marketer, and for customer education, through website pages and direct email messaging to customers. Also, organizations like NYSERDA in NY State have funded programs with ThinkEco and many other vendors to design solutions to stimulate a market segment or to understand the viability of a new technology. For example, NYSERDA hired ThinkEco to manage a pilot for 2500 master-metered multifamily window AC customers, to learn their interest (and the building's owner) in using control technology offered by ThinkEco to generate energy savings from their window ACs. Also, the original equipment manufacturers (OEMs) have a role to play by marketing their smart connected appliances and their energy saving benefits for customers.

5. Educational outreach on energy efficiency in general should be promoted by the State. The State has a good head start with the marketing effort for the Clean Energy Program, and the utility programs, but more needs to be done to reach all customer segments and use cases.

6. The main technology advances that impact the residential customer in helping to reduce energy consumption from our perspective is the smart home and connected appliances. The Internet of Things is a real thing in the home now. Smart thermostats, smart appliances and voice control are real and growing measures making homes and apartments more energy efficient, and available for peak load reductions through DR programs. Amazon, Google, Samsung, Honeywell, NEST and many others are actively selling products, devices and phone apps to the homeowner that increase energy efficiency capability. This trend will continue to grow.

7. The timeframe is now for implementation of these connected appliances and smart home capabilities. ThinkEco is recruiting, enrolling and incentivizing customers to purchase WiFi connected appliances for EE savings and DR potential in the utility programs we manage. Smart t-stat aggregators are doing the same for those devices.

8. For ThinkEco, our appliance usage data is robust: we record 1-minute interval data for each appliance attached to our software, whether a window AC unit, a dehumidifier, water cooler or power strip. This data can then be viewed by the customer, to see their energy usage and savings over any time interval. The appliance usage data provides valuable information to the utility on appliance load shapes, run times and coincident peak loads. Overall, the EE industry is utilizing residential customer usage data to better define target customers and segments for measures or groups of measures. Coordination with peak time rebate structures, or variable pricing, will enhance customer savings. Accurate usage and savings data are also important for accurate M&V calculations.

9. See answer # 8.

11. The State should promote strategies at this point that move beyond the measures and approaches that have been in use for years by the NJ CEP and the utility programs. We have pointed out above that smart appliance OEMs and home energy management software companies are very active in the residential EE market. The State should foster increased sales of smart appliances and

do demonstrations with its real estate properties to show the kind of savings that can be realized from incorporating new measures and controls.

13. Yes. Many of the more progressive States regarding EE have structured pilots and vehicles for research and development and incorporation of new measures, EV charging, batteries and connected appliances and homes. NY State under their REV (Reforming the Energy Vision) initiative has funded and required utility demonstration projects focused on new technologies and pricing scenarios, for example.

15. ThinkEco views appliance standards as one critical way to improve energy efficiency. Window AC units have recently undergone an upgrade to their Energy Star efficiency rating requirements. More than 7 million window AC units are purchased in the country each year (2015 data from Best Buy). When appliance efficiency can be improved incrementally at purchase, that is a great benefit for all.

20. EE and peak demand reduction strategies enhance energy security, reliability and resiliency in energy markets by reducing peak demand costs and stress on the T&D system. Ratepayers and the utility benefit through reduced peak power purchase costs and capital expenditures that add to the rate base. The utility T&D system benefits through reduced stress on grid equipment during peak times, and thus reduced cap ex for their system maintenance and expansion. Also, society benefits from lower CO2 emissions and less power plant pollution from other chemicals and particulates. Local energy security, reliability and resiliency results. At a macro level, if State wide efforts are made, the same enhancements will occur.

26. ThinkEco is active in our utility programs promoting our solutions to low and moderate income (LMI) segments, many of whow own window AC units and dehumidifiers. Also, this customer segment often does not have a pathway to participate in utility or State sponsored EE and DR programs. We make that happen. In our Con Edison SmartAC program in New York, over 50% of our participants self-identified themselves as LMI. The State can set up LMI stakeholder working groups and neighborhood outreach to inform multifamily building owners and community associations that new programs and measures will be available to LMI customers. Hiring marketing firms and implementation contractors to do outreach and recruiting to this segment will help the process to incorporate these underserved market segments.