Honeywell

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COMMENTS BY HONEYWELL INTERNATIONAL INC.
EB-2014-0134

Honeywell appreciates the opportunity to provide comments with respect to EB- 2014-0134 and the new Demand Side Management Framework (DSM) for Natural Gas Distributors.

Background

Honeywell has over 100 years of experience in providing energy management solutions. You will find Honeywell systems in more than 150 million homes and five million buildings around the world. Nearly 50% of our product portfolio delivers energy efficiency benefits.

In addition, two million homeowners across North America are using Honeywell thermostats, along with load-control switches we've installed, to help more than 100 utilities reduce the potential for outages and decrease the need for new power plants. With assistance from our technology and services, utilities now have the combined ability to temporarily trim the demand for energy by 2.1 gigawatts, the same amount of electricity it takes almost 30 small power plants to generate.

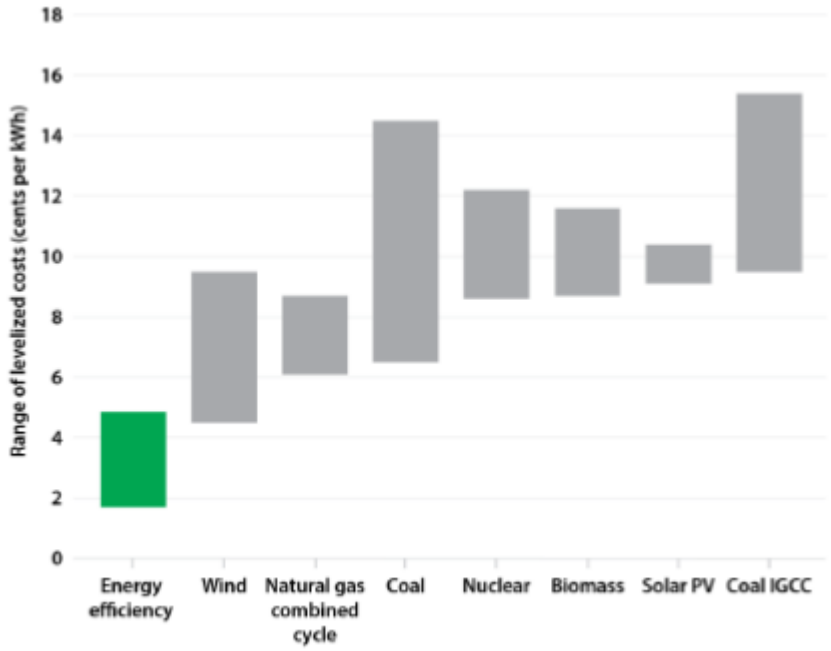
Honeywell has also completed more than 5,000 energy-efficiency improvement projects for schools, cities, military bases and other government entities; these projects are expected to deliver more than $5 billion in guaranteed energy and operational savings.

By applying our expertise in sensing and controls, we are creating energy efficient, more comfortable, safer, more secure and productive environments for our customers. As a turnkey demand side management provider, Honeywell has been at the center of delivering conservation in Ontario. In partnership with Local Distribution Companies we have supplied and installed more than 120,000 thermostats and 80,000 in-home displays on the PeakSaverPLUS program. Additionally, Honeywell is involved in the delivery of the Home Assistance Project for numerous utilities.

Position

Ontario has made signification progress in moving the electricity system to include a broader mix of energy sources while steadily building on investments made in conservation. In the Long-Term Energy Plan released by the Minister of Energy, "Conservation First" is a focal point. In particular, the long-term conservation target of 30 terawatt-hours (TWh) in 2032 and approximately 2,400 megawatts (MW) of Demand Response by 2032[1]. Additionally, the Government of Ontario states they are committed to promoting a co-ordinated approach to conservation efforts among electricity and gas utilities. We support the Government in their plans and the role of conservation to deliver energy savings to Ontarians.

Conservation is often found to be the most cost effective source of new generation as illustrated in a recent American Council for an Energy Efficiency Economy (ACEEE) report [2] while demand response helps to shape load, avoiding peaks on those hot summer days. The PeakSaverPLUS program involving thermostats is an excellent example of technology that can help lower summer peaks that are often driven by air conditioning load.



In particular, we support the Minister's Directive to the Board to establish a DSM policy that satisfies key objectives, including[3]:

- **All Cost Effective Conservation** – As part of this process we encourage a comprehensive look at the cost effective screenings to ensure symmetry on inputs to the evaluation process as they relate to both benefits and costs.

[1] Ontario Long-Term Energy Plan. 2013
[2] ACEEE, March 2014, Report U1402
[3] Minister's Directive to the OEB, March 26, 2014

- **Longer term view** – Long term regulatory stability, funding and appropriate incentives are important for the market. It allows for utilities to plan for multiple years and for solution providers to innovate with six years in mind versus just a few. A market that has uncertainty or is disrupted through "pauses" creates inefficiencies and challenges to meet conservation goals. We encourage regulatory stability and Ontario's continuing long-term message and actions in support of conservation.

We support the Ontario Energy Board's Guiding Principles, in particular:[4]

- **#3 Coordinate and integrate DSM and electricity CDM efforts to achieve efficiencies** – With the directive to leverage both electric and gas utility DSM programs to increase overall efficiency, reduce delivery costs and maximize program it is a natural role for technology innovation. Statscan reports for heating that forced air furnaces are used 76%[5] of the time in Ontario. Connected thermostats using wifi and OpenADR[6] are an excellent example of combining long-lived technology with the ability to deliver a triple play of savings: kWh, CCM and kW. Policies and mechanisms for integrated programs should be encouraged, thereby enabling greater energy savings and synergies among utilities.

- **#5 Design programs so that they achieve high customer participation levels -** Connected thermostats with mobile apps provide convenience, comfort and control. With two way communication capabilities the benefits are stronger for not only the utilities but also consumers.

  Honeywell's TCC app, which has been available in the marketplace since September 2011, has the highest rating and largest number of customer reviews among leading competitors across both the Apple and Google platforms. It has garnered more than 14,000 reviews to date and has maintained a consistently high rating of over 4.5 stars (out of a possible 5 stars).

  Baltimore Gas and Electric achieved over 35%[7] penetration of eligible customers and 400MW of control with their demand response program; and this was without the added benefits of a two-way demand response solution.

- **#8 Programs should be designed to pursue long-term energy savings**- We support and encourage the prioritization of programs that deliver multi-year results and DSM options with long lives that produce long-term energy savings. Direct install and end use efficiency

[4] Draft Report of the Board, OEB, September 15, 2014
[5] Statscan http://www.statcan.gc.ca/pub/11-526-s/2010001/part-partie1-eng.htm
[6] With dozens of members OpenADR provides the ability to standardize, automate and simplify demand response http://www.openadr.org/
[7] Achieving 38% of eligible customers. http://www.demandresponsetownmeeting.com/wp-content/uploads/2012/03/Kiselewich-Ruth-5-DR.pdf

measures such as connected thermostats are an example of solutions that deliver long-term savings.

Connected thermostats can help achieve Guiding Principles 3, 5 and 8.

Recommendations

Below are some recommendations for the Board's review and consideration to further enhance the guidelines.

- **In response to an OEB question- What information, other than what is listed above, should the utilities/Board consider when developing the long-term targets?**

  Multi-Year Targets- Honeywell supports the goal of having multi-year energy targets and encouraging end use efficiency that is long-lived. However, the measurement of savings after only 6 years irrespective of measurement life is not consistent with the thrust for long-lived energy savings.

  Controls and automation routinely have useful lives that exceed 10 years. We suggest multi-year targets that focus on lifetime savings achieved. The Draft Board Guidelines suggest that the ultimate goal will focus on the amount of annual gas savings persisting by the end of the 6th year (i.e. by 2020). However, under that approach a measure with a 6 year life will have as much value as a measure with a 10, 20 or 30 year life. There are a few suggested options for addressing this:

  a. The 2020 target is expressed as the total annual savings produced by 2015-2020 programs that are still persisting in that year, provided that the average measure life of all the savings generated over the 6 year period had a life exceeding such. This will have to be calculated as part of the process. If the average life is less than that then, for the purpose of determining whether the utilities met their goal, the still persisting annual savings are "de-rated" by the ratio of the actual average measure life and the target average measure life; if the average life is more that, then the still persisting annual savings would be "up-rated" by the ratio of actual vs. target life.
  b. The 2020 target is expressed as the cumulative, lifetime savings achieved over the 2015-2020 period. In other words, the lifetime savings achieved for measures installed over the 2015-2020 period should be recognized.

- **Coordination and integration of gas DSM and electricity CDM programs**

  Both the OPA and OEB are encouraging coordination in the achievement of gas and electricity savings. Connected thermostats provide an ideal opportunity to capture a triple play of savings, kWh, CCM and kW through comprehensive cost effectiveness screening.

  A combined TRM for CCM, kWh and kW supports the business case for collaboration.

Some benefits of connected thermostats, include:

- Intuitive and ease of creating schedules, increasing programming compliance significantly
- Mobile access and control of home settings from the web or app
- Remote upgradeability
- Ability to have maintenance alerts
- Awareness for utilities of load availability for demand response events

A recent Cadmus research study[8] (2013) of gas savings from the installation of Wi-Fi thermostats in Salem, New Hampshire shows an average of 8% energy savings which even includes "take-back" effects. Other findings included:

- 88% of the participants found the installation of the thermostat to be either "very easy", "easy", or "neutral."
- No participants reported difficulty in programming their thermostat and the number of participants who program their thermostats increased. Many commented that the thermostat was "user-friendly."
- The majority of participants were willing to pay $50-$125 for a Wi-Fi thermostat both before and after the study. When participants were asked how much money they would recommend be offered in a rebate to encourage customers to purchase a $200 Wi-Fi thermostat, 78% of participants recommended a rebate between $50 and $100.

In a recently completed study by Cadmus of Honeywell TCC enabled wifi thermostats, is was demonstrated an average reduction of 6.6% of homeowner energy use for cooling and heating.

- **Transition plan on PeakSaverPLUS**

  Consistent with the desire to provide broad collaboration among electric and gas utilities the current pause on the successful PeakSaverPLUS program will rollback achievements to date and has the potential to lead to additional long term costs. Just as conservation requires continued commitment to education so do demand response programs.

  - There should be an appropriate maintenance budget and LDC prioritization so that Ontarians can count on these existing assets when peak reduction is required.
  - Presently, there are no demand response goals for PeakSaverPLUS. This is not consistent with the goal of growing demand response in the Province and providing opportunity for all customer classes to participate. We recommend acceleration and clarity in the role of a new PeakSaverPLUS in 2015 so that

[8] Cadmus Research Study, WI-FI PROGRAMMABLE THERMOSTAT PILOT PROGRAM EVALUATION, July 2013, Prepared for Liberty Utilities, Salem, New Hampshire 03079 http://www.puc.nh.gov/Regulatory/Docketbk/2012/12-262/LETTERS-MEMOS-TARIFFS/12-262%202013-08-22%20ENGI%20DBA%20LIBERTY%20FILING%20ITS%20PROGRAM%20EVALUATION%20STUDY.PDF

utilities who are seeking innovative and cost effective programs have the opportunity to select wifi connected thermostats to drive additional savings and a stronger customer value proposition. This program can include new technology, new channels of delivery (direct, trade and retail) and positive cost impacts.

We support the essence of the Minister's Directive and long-term plan that include a "Conservation First" focus. Honeywell appreciates the opportunity to provide comments to the Ontario Energy Board as they construct guidelines that offer stability, appropriate incentives and encourage cost effective solutions to provide Ontarians long-term savings.

Respectfully,

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Appendix A

Most of the residential energy use and energy savings opportunity is in the HVAC system

The heating and cooling appliances in a home consume 40% of all the energy that is used in the home. Controlling these heating and cooling appliances to provide customer comfort while lowering the energy use at night or when the customers away has substantial potential for saving energy.

Wi-Fi thermostats can provide an electric utility bonus benefits

Besides the use of energy by these appliances, their highest usage also coincides with the utility's peak usage for electric and gas. With Wi-Fi connected thermostats, utilities have seen an opportunity to lower their peak demands by controlling these large energy loads for only a few hours a year. Communicating thermostats have become an important utility tool for system load control.

The thermostats of today give the energy utility industry an opportunity for a triple play. Without sacrificing any customer comfort, it can be used to reduce energy used for heating (gas and electric), it can be used to reduce energy used for cooling and it can be used to reduce energy during high cost/peak energy use times to improve utility reliability and asset management.

Wi-Fi thermostat are more user friendly

Although ENERGY STAR removed label from programmable thermostats in 2009, California continued to study thermostats and thermostat features that would provide substantial energy savings. The California Energy Commission (CEC) recognized that no matter what features the thermostat might have, if the consumer did not effectively use the thermostat's features, there would be no energy savings. To determine the usability of thermostats, CEC conducted research in the Sacramento area to determine the usability of various thermostat brands and features.[9] The study tested 12 different thermostats and found significant differences in their usability. It is interesting to note that the long-term thermostat manufacturer industry leaders at among the highest rankings on the usability scale.

Wi-Fi Thermostats will continue to drive future thermostat market

In the past several years, smart thermostats have become a growing trend among homeowners and small business owners. Smart thermostats have the ability to sync devices including smartphones and tablets to the thermostats, allowing consumers a different way to control energy use.

Data from the study concluded that the global smart thermostat market is expected to grow from 1.3 million units in 2013 to 8 million units in 2018 (an increase of over 500%). Worldwide revenue growth from Wi-Fi-enabled smart thermostats is expected to reach $600 million by 2018. North America is

[9] SMUD's Communicating Thermostat Usability Study, February 2014, Herter Energy Research Solutions, Inc http://www.herterenergy.com/pdfs/Publications/2014_Herter_CommunicatingThermostatUsability.pdf

responsible for about half of all sales of smart thermostats. The study credits tech-savvy consumers using smart mobile devices hungry for more technology for the high volume sales.

Xcel calls for the installation of Wi-Fi thermostats in Colorado

Public Service Company of Colorado (PSCo) is providing a 60-Day Notice to add a Smart Thermostat Pilot to the 2014 DSM Plan. The pilot will provide customers with rebates to purchase and install qualifying Wi-Fi connected thermostats to study the energy efficiency benefits, as well as test demand response benefits associated with those devices.

PSCo anticipates the pilot will result in 1.07 GWh of electric savings and 8,558 Dth of natural gas savings by 2016 under a total pilot budget of $963,769 for electric and $194,731 for natural gas.

Wi-Fi provides integrated connectivity and control and supports the Wi-Fi thermostat

Report: Las Vegas, Nevada, January 7, 2014[10] – Consumers' expectations for a connected life are expanding beyond the world of PCs and mobile gadgets to include a wide range of smart home and smart automotive devices. New research conducted on behalf of Wi-Fi Alliance® demonstrates that consumers are ready to embrace a range of connected applications such as home security, smart energy, and in-vehicle infotainment. However, ease of use and integration with existing home networks top the list of concerns as consumers gradually step into the "Internet of Everything" era.

Smart devices - electronics that connect to other devices or networks, operating interactively and somewhat autonomously – are seeing a surge in consumer interest. Among the survey respondents, 75 percent believe all homes will eventually be equipped with smart technology. Ninety-three percent of the respondents agreed that controlling the home remotely will have a positive impact on the quality of their daily lives. Home security systems, lighting, thermostats, cars, irrigation systems, personal health devices and appliances topped the list of areas for which 25 percent or more of respondents stated that Wi-Fi connectivity would be a useful feature.

This growing interest comes with a few caveats. Eighty-four percent of consumers cite concerns about integrating smart technologies into their homes - ease of use and compatibility chief among them. A key finding of the study is that consumers want to integrate all their smart devices and appliances in a single home network. Ninety-one percent of consumers are more likely to purchase smart products if they are able to synchronize everything with their existing Wi-Fi network. More than half of respondents already have Wi-Fi enabled household items such as appliances, thermostats or lighting systems.

[10] http://www.wi-fi.org/news-events/newsroom/wi-fi-connectivity-increases-purchase-likelihood-for-smart-home-devices#sthash.0kJ6Dabb.dpuf

Wi-Fi's massive installed base enables consumers to leverage smartphones and tablets to gradually integrate, interact with, and control smart devices at home and when away. Wi-Fi can elegantly handle intermittent transmission of very small amounts of data to high-definition multimedia, enabling a range of connectivity for home automation, wearable technologies, personal health devices and telematics.

Seventy-seven percent of survey respondents stated that Wi-Fi connectivity will be an important purchase consideration when they next replace major household items including televisions, home security systems, thermostats, lighting and cars. Sixty-three percent of respondents stated that within ten years the majority of devices or appliances they purchase will include smart technology. Seventy-three percent of respondents predict they will buy Wi-Fi enabled devices in 2014.