



## I. INTRODUCTION

On June 19, 2015, the Pennsylvania Public Utility Commission (“Commission”) issued its *Energy Efficiency and Conservation Program* Implementation Order (“Order”) at Docket No. M-2014-2424864. In its Order, the Commission established the third phase of the Energy Efficiency and Conservation Program (“EE&C Program”) that was created by Act 129 of 2008. The Commission adopted specific consumption reduction targets and peak demand reduction targets for each electric distribution company for the period of 2016 through 2021. To reach those targets, the following electric distribution companies filed Energy Efficiency and Conservation Plans (“EE&C Plans”) with the Commission on November 30, 2015:

Duquesne Light Company at Docket No. M-2015-2515375  
Metropolitan Edison Company at Docket No. M-2015-2514767  
PECO Energy Company at Docket No. M-2015-2515691  
Pennsylvania Electric Company at Docket No. M-2015-2514768  
Pennsylvania Power Company at Docket No. M-2015-2514769  
PPL Electric Utilities Corporation at Docket No. M-2015-2515642  
West Penn Power Company at Docket No. M-2015-2514772

Since the first implementation of Act 129’s EE&C Programs, Pennsylvanians have saved approximately 7,000,000 MWh of electricity.<sup>1</sup> By ensuring that the above-referenced EE&C plans are properly structured, the Commission will continue to achieve the public policy objectives of Act 129 by allowing energy customers to have options to control their energy usage.

EnergyHub, a leading provider of mass-market demand response (“DR”) and energy efficiency (“EE”) products and services, respectfully submits these comments to the Commission on Penelec’s EE&C Plan. As an active partner in both utility and consumer market channels, EnergyHub brings a breadth of experience that can help

---

<sup>1</sup> Statement of Commissioner Powelson, June 11, 2015 Docket No. M-2014-2424864

inform the discussions in this proceeding and bring benefits to energy customers in the Commonwealth of Pennsylvania. Our comments are aimed at providing further insight into how consumer technology and home energy management solutions represent a valuable resource and are critical to EE and DR markets. Our key recommendations include:

- Expanding “bring-your-own-thermostat” (“BYOT”) models that incorporate consumer technologies within proposed and/or existing energy efficiency and demand response programs to increase participation and satisfaction of residential customers
- Allowing “connected”<sup>2</sup> thermostats to be eligible for energy efficiency program funding because they can provide both demand response and energy efficiency benefits
- Introducing performance-based incentives for peak demand reduction
- Ensuring consistency between utilities’ programs to increase benefits of scale and standardization
- Adopting proper consumer education and marketing efforts to reduce transaction costs, animate markets, and increase customer participation

We believe implementing these recommendations will expand the capabilities of utilities within Pennsylvania to leverage advanced technologies and consumer-owned devices to achieve greater energy efficiency and peak load management at a lower cost and with greater customer satisfaction than some of Penelec’s proposed programs. In line with Pennsylvania’s long-standing commitment to consumer choice, these recommendations will further empower consumers with the information to make choices that achieve all available energy savings. Implementing these changes now is particularly important

---

<sup>2</sup> We distinguish “smart” or “internet-connected” thermostats from programmable thermostats due to their ability to be managed without direct, manual intervention from consumers. The ability to take advantage of cloud data services and increased convenience for consumers vastly improves the effectiveness of energy efficiency (by customizing and adjusting thermostat settings) and load management (by controlling thermostat settings during periods of peak demand).

given the rapid growth of these consumer technologies so that utilities can benefit from their capabilities and data, rather than be overwhelmed by them.

## **II. ENERGYHUB'S EXPERIENCE**

EnergyHub, an independent subsidiary of Alarm.com, provides a cloud-based platform for managing energy use in homes and small businesses. EnergyHub is a longtime leader in enabling rapid deployment of DR and EE programs. EnergyHub's hardware-agnostic platform and multiple delivery models (i.e. direct install, Bring Your Own Thermostat, and capacity contracts) provide utilities maximum flexibility to design a connected device program fully aligned to each utility's business objectives. Together, EnergyHub and Alarm.com have nearly three million subscribers and connected homes, many with connected thermostats installed. These connected thermostats complement other potentially connected, high-energy usage devices, such as pool pumps, window air conditioners, behind-the-meter energy storage, dehumidifiers, and water heaters. Thermostat manufacturers and other service providers use EnergyHub's software to give their customers a simple and convenient way to control connected thermostats. Utilities use EnergyHub to enable multi-device, direct load control DR, manage energy usage, power the connected home, and keep the power grid stable.

## **III. COMMENTS**

The Commission's approval of Phase III EE&C Plans will provide a roadmap for spending hundreds of millions of dollars to achieve the policy objectives outlined by the General Assembly in Act 129. But by the time Phase III is completed, Act 129 will be outdated by thirteen years. As Commissioner Powelson noted in his June 11, 2015

Statement regarding the Phase III Implementation Order, “that day will come when the Commonwealth will need to look beyond the current framework of Act 129 to continue to achieve all available energy savings.... and start thinking about ‘what’s next’... for moving Pennsylvania’s energy future forward.”<sup>3</sup>

EnergyHub could not agree more. The last decade has been marked by rapidly evolving technologies and opportunities that have expanded the role of the residential sector and consumer-owned technologies beyond what could have been predicted in 2008 when Act 129 was passed. Over 40% of new thermostats sold are now connected to the internet, and as a result it is increasingly common that consumer technologies are providing multiple value streams that can drive both energy efficiency and load management services.<sup>4</sup> The Commission should utilize these trends to capture the greatest value for Pennsylvania’s electric customers.

Given these changes, there are several opportunities to improve the proposed Phase III programs and account for “what’s next” for Pennsylvania’s energy future. As the Commission considers those programs, we believe that there are opportunities to (1) grow the market for innovative new technologies solutions, (2) increase the effectiveness of existing programs, and (3) increase customer participation and satisfaction. The following suggestions are made with those goals in mind:

- A. *Expanding “bring-your-own-thermostat” models that incorporate consumer technologies within proposed and existing demand response and energy efficiency programs can increase residential customer participation and satisfaction*

---

<sup>3</sup> Statement of Commissioner Powelson, June 11, 2015, Docket No. M-2014-2424864.

<sup>4</sup> Parks Associates, “Winning Smart Home Strategies for Energy Management” Report. Authored by Tom Kerber - Director, Research, Home Controls & Energy, Q3 2015.

Electricity customers today face a broad range of new technologies, devices, and service offerings. These products, such as connected thermostats or home automation and security systems, have embedded capabilities to support load management, demand response, and energy efficiency. Many of these device sales are associated with purchases of other, non-energy related services, such as home security. In the “Reforming the Energy Vision” proceeding currently underway in New York, the Consumer Engagement Working Group described this trend by noting that, “Consumers may not be particularly interested in their energy use *per se* ... but they currently are purchasing energy efficiency and load control capabilities embedded within home security, entertainment and connected lifestyle solutions.” In this sense, this consumer-chosen, connected technology base represents a latent capacity for energy services that is distinct from services (such as traditional utility demand response programs) where the primary motivation is related to energy management.

Over the last decade, the Commission has been empowering and encouraging consumers to make choices regarding their electricity use. Increasingly, those customers are choosing to purchase connected technology products. Over 40% of new thermostats sold are now internet-connected. Customers can and will continue to purchase these systems through retail, e-tail and service-provider channels because of their design-appeal, convenience, and/or perceived comfort level. Yet most utilities have failed to recognize those market opportunities in their EE&C Plans.

Pennsylvanians have experienced the benefits of choice in other contexts, and the Phase III programs should be no different. Every household is unique, and allowing each

customer to choose their own hardware tailored to their individual needs—as opposed to being forced into a cookie-cutter utility program—will lead to increased customer satisfaction. Beyond benefiting the customer, a BYOT model also lowers costs for the utility. Unlike hardware owned by the utility, which requires costly installation and ongoing service obligations, consumer-owned technologies are installed and maintained by the customer to fit their individual needs. Those consumer channels (e.g. retail)—and their marketing expertise—can help Penelec “reach prospective customers at the right time, through the right channel, with the right message.”<sup>5</sup>

Therefore, given that every EE&C Plan listed “customer participation” as a key risk<sup>6</sup>, it is critical that any EE and DR programs consider the increasing base of intelligent consumer technology and design programs that allow participation by customer-owned devices. In other states, this approach has been termed a “bring-your-own-thermostat” (“BYOT”) or “bring-your-own-device” (“BYOD”) program design.

Under a BYOD program, connected thermostats and other devices are able to participate in EE and DR programs, facilitated by third-party aggregators, and benefit from proposed or existing rates and incentives. These initiatives are active or being considered in 15+ BYOT programs across the US including in RTO markets. This is only one example of how consumer technology can be leveraged to support the Act 129 public policy objectives, but as a proven, currently active model, we believe it should be included in every utility’s Phase III EE&C Plan.

Duquesne and PECO are the only electric distribution companies that explicitly

---

<sup>5</sup> PECO Phase III EE&C Plan at 78.

<sup>6</sup> PECO at 78; Duquesne at 81; MetEd at 100; Penelec at 48; PennPower at 50; PPL at 37

mention connected devices in their EE&C Plans, with only Duquesne explicitly mentioning a BYOT model. Duquesne’s plan noted that such a program would “engage directly key technology partners” and “will be explored as an additional source of potential participation.”<sup>7</sup> PECO included a Smart Thermostat DR program that utilizes internet-connected thermostats in customer’s homes to manage peak demand. However, it is unclear whether PECO’s program allows customers to bring their own thermostat. We commend Duquesne and PECO for their recognition of this forward-thinking opportunity and urge the Commission to require other electric distributing companies to fully consider these types of programs.

Every other utility’s EE&C Plan misses this opportunity. PPL does not have a residential DR program included in its EE&C Plan at all. Yet, even PPL recognizes the role that new consumer-owned technologies will play in Pennsylvania’s energy future. In its EE&C Plan, PPL reserved \$3 million in funding for residential pilots and new technologies, which include home energy management systems and integration of smart thermostats.

While this reservation is a step in the right direction, its fundamental premise is incorrect. With over 40% of new thermostats being internet-connected, and 15+ BYOT programs active across the US including in RTO markets, the technology that PPL is waiting for is currently available, being purchased through non-utility retail avenues, and can be leveraged for significant load reductions. We urge the Commission to seize this opportunity now, as opposed to at some later undefined date.

---

<sup>7</sup> Duquesne Phase III EE&C Plan at 76



We believe that there are tremendous opportunities to leverage consumer-owned technologies to achieve the public policy objectives of Act 129. The Commission acknowledged this opportunity in the Technical Reference Manual (“TRM”) where it committed to “continue to encourage new technology as a growing part of the TRM.” To further this goal, the Commission directed the SWE to investigate applicability of all smart, wifi-enabled or internet-connected thermostats for future modifications to the TRM.

With regard to these opportunities as they relate to the current proposals, we highlight (1) areas that can be strengthened, and (2) areas where the Commission should urge the utility to expand its scope in order to capture more value for Pennsylvania consumers.

To strengthen current proposals that include a BYOT program design, we encourage the Commission to affirmatively address opportunities to leverage consumer market channels *before* and *in preference to* models that involve utility ownership of distributed energy resources. To the extent that utility ownership is promoted, we encourage the Commission to ensure that such ownership or market participation does not create an undue competitive advantage that diminishes the opportunity to foster innovation in consumer markets.

Pennsylvania has long encouraged customer choice and innovation. In order to ensure high levels of customer satisfaction and participation, the Commission should continue empowering customers with choices. At the very least, consumer market channels should be leveraged *in conjunction with* the utility to prioritize BYOT models.

But narrowing that “choice” to utility-owned switches or non-smart thermostats runs counter to current market trends, customer preferences, and Act 129’s objective to “explore the feasibility of new sources of alternative energy...”<sup>8</sup> Consumer-owned BYOT programs are new sources of alternative energy. As Commissioner Witmer stated, “the cheapest, most efficient kilowatt hour is the one you never have to use.”<sup>9</sup>

With regards to those EE&C Plans that neglected to include a BYOT or any connected thermostat option, we urge the Commission to require those utilities explore those program designs in further detail in order to capture the full value of those resources for Pennsylvania’s consumers.

Internet-connected thermostats, among other consumer-owned devices, are “what’s next” for Pennsylvania’s energy future. By leveraging this technology under a BYOT program, Pennsylvania’s electric distribution companies can increase customer participation and satisfaction while flowing with current market trends. By ignoring it, Penelec is leaving value on the table and subjecting the program to an increased risk of not “reaching prospective customers at the right time, through the right channel, with the right message.”<sup>10</sup>

*B. Because connected thermostats can be used to provide energy efficiency during periods outside of demand response events, they should also be eligible for energy efficiency projects and funding.*

In addition to providing demand response benefits, connected thermostats and other home devices can be actively managed by consumers and service providers to offer

---

<sup>8</sup> HB 2200, lines 12-14

<sup>9</sup> Statement of Commissioner Pamela A. Witmer, March 11, 2015, Docket No. M-2014-2424864

<sup>10</sup> PECO Phase III EE&C Plan at 78.

dynamic energy efficiency savings. These energy savings are in addition to the generally passive savings that accompany manually programmable thermostats.

We believe that specific mechanisms should be established that allow such dual-purpose devices to be properly recognized, valued and their benefits monetized.

*C. Performance-based incentives for peak demand reduction should be established*

As Commissioner Powelson noted in his June 11, 2015 Statement regarding the Phase III Implementation Order, “the legislature had two options for ensuring utility compliance with the stated reduction goals: a stick approach (fines for non-attainment) or a carrot approach (incentive payments for reaching goals).” While the legislature chose the stick approach, Commissioner Powelson pointed out that “that day will come when the Commonwealth will need to look beyond the current framework of Act 129 to continue to achieve all available energy savings...and start thinking about ‘what’s next’... for moving Pennsylvania’s energy future forward.”

That day has come. We echo Commissioner Powelson’s statement that, “Pennsylvania should strongly consider giving utilities the ability to institute decoupling so as to remove any financial disincentive for utilities to partner with their customers in reducing demand for electricity.”<sup>11</sup> In EnergyHub’s experience, our most effective DR implementations have been executed as some version of a performance contract, wherein the vendor, in this case EnergyHub, is able to structure the program (e.g. marketing, incentives) according to best practices and customers are provided with maximum choice. Utilities that implement DR in response to simple regulatory mandates with only the

---

<sup>11</sup> Statement of Commissioner Powelson, June 11, 2015 Docket No. M-2014-2424864

threat of penalties for non-compliance tend to end up with more lackluster programs that meet the letter of the law but lack innovative approaches to drive down cost or increase benefits.

While instituting broad decoupling measures may be beyond the scope of the Phase III proceedings, the Commission can and should take small steps in this docket to properly align financial incentives. One way of doing this is to establish pay-for-performance contracting, which specifically defines the cost per kilowatt and allows the CSP to best design and tailor its program for optimum results. By providing specific monetary targets, this structure places all program risk on the CSP and incentivizes the CSP to learn from its experience in other markets to most effectively design and market its programs to customers. Not only will this naturally lead to increased customer satisfaction and participation, but it also reduces administrative costs for the utility. With the CSP being held accountable for customer acquisition, performance, and financing, the utility will only pay for what it receives.

Pay-for-performance contracting benefits both the utility and consumer by driving down costs and spurring innovative solutions. We urge the Commission to mend this market's structural defects and properly align incentives for utilities to drive effective EE and DR outcomes.

*D. Ensuring consistency between utilities' programs will increase benefits of scale and standardization and reduce customer fatigue*

As we have experienced in other markets, standardization is valuable. We encourage the Commission to urge utilities to work together to adopt similar programs. Not only does this reduce costs for utilities and vendors, but it eases the burden on consumers. Careful thought should be put into how to coordinate these efforts and

minimize customer fatigue. As this Commission is well aware from its 2011 Retail Markets Investigation, customers will tune out and chose not to participate in programs that are overly complicated and inconsistent.<sup>12</sup> After instituting a statewide consumer education campaign and exploring changes to allow customers to more fully realize the benefits of competition, the Commission was able to remove barriers to a more robust and sustainable competitive electric supply market. Similarly, in the current Act 129 Phase III context, we urge the Commission to take a proactive approach to ensure consistency so that customers, vendors, and technology providers can make informed, streamlined decisions.

*E. Adopting proper consumer education and marketing efforts will reduce transaction costs, animate markets, and increase customer participation*

PECO's EE&C Plan states that its marketing strategy "will provide a customer-centric experience and approach with a deliberate management focus on making participation easy, convenient and a smart choice for customers to take advantage of the residential DR program..." and to "reach prospective customers at the right time, through the right channel, with the right message."<sup>13</sup> EnergyHub praises PECO's overarching strategy, and proposes two recommendations that will further enable Penelec and other utilities to achieve those goals:

1. Utilities should recognize evolving consumer marketing channels

PECO stated that it will coordinate its marketing strategies through a collection of "Pathways," which are designed to address specific needs of each market. For its DR programs, PECO chose to limit its marketing to a direct-action pathway "where

---

<sup>12</sup> See Retail Markets Investigation, Docket I-2011-2237952

<sup>13</sup> PECO EEE&C Plan at 78.

customers work directly with PECO for coordinated and delivered solutions through CSPs.” EnergyHub believes that PECO and other utilities should expand this to include its retail pathway, which offers “a wide array of discounted efficient products available for customer purchase at retail stores or distributors when customers are shopping for new energy consuming products.”<sup>14</sup>

Expecting distributed energy resources (“DERs”) to be compensated by enabling customers to lower their energy bills implies that DERs will be selling their services or products directly to customers, as a tool for those customers to manage their energy bill. Unfortunately, the costs involved in marketing to and recruiting customers into DR programs for vendors with no existing channels of contact with consumers or consumer brand recognition can be prohibitive.

We urge the Commission to recognize evolving consumer marketing channels to reach prospective customers. The increase in popularity of internet-enabled thermostats sold at retail, e-tail and through other service providers, opens up opportunities to reach more consumers and minimize transaction costs by enabling a channel of communication to customers who already own thermostats or want to purchase connected thermostats themselves. It also allows customers to choose hardware that can be tailored to their individual preferences.

PECO and Penelec’s focus on direct marketing does not recognize those evolving consumer marketing opportunities. Given the nature of the consumer shopping landscape, direct marketing by the utility through websites, mail, email, and outbound calling may be less effective than targeting consumers at the retail level as they purchase home

---

<sup>14</sup> PECO EE&C Plan at 6

security, entertainment, and connected lifestyle products that have secondary energy efficiency and load control capabilities embedded within them.

2. Tariffs should be highly granular and enable payment directly to third-party providers

In its EE&C Plan, Penelec and other utilities incentivize customers to participate in its DR program by offering monthly credits on their bill that range from \$0 to \$40 per controlled unit per season. While these tariffs provide useful compensation to DR participants, EnergyHub issues two general cautions.

First, to effectively reward DR for its full range of capabilities, tariffs must be highly granular—i.e., they should tie compensation to particular performance in particular locations at particular times. This highly granular tariff structure would properly compensate customers for the localized value of load reduction and align market incentives to achieve more efficient outcomes. This does not suggest we pay individual customers for their specific load drop, but that we consider using this granular compensation to drive CSPs to most effectively deliver the load reductions needed. The tariffs currently adopted in Pennsylvania will short of full granularity for residential direct load control.

Second, if customers and DER providers are only compensated via bill credits, this may limit the extent to which third-party DER providers (i.e., DER providers who are not a customer's utility or LSE) can successfully participate in the market. If credits are issued directly to the customer and the DER provider must collect its share from the customer, this introduces new complexity and business risk into the transaction. We would suggest that any DER tariffs enable payment directly to third-party DER providers who can then determine how the incentives for their products will be delivered to

customers. Enabling this structure will enhance competition by facilitating third-party DER provider participation.

#### **IV. CONCLUSION**

Like Commissioner Powelson, we want to empower consumers with choices to achieve all available energy savings. By adopting a forward-thinking “what’s next” approach that acknowledges the value of consumer-owned technology and home energy management solutions, this Commission can (1) grow the market for innovative new technologies solutions, (2) increase the effectiveness of proposed and existing programs, and (3) increase customer participation and satisfaction. Together, utilities, service providers, and consumers can move Pennsylvania’s energy future forward.