

**COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

**ACT 129 ENERGY EFFICIENCY AND
CONSERVATION PROGRAM PHASE TWO**

Docket No. M-2012-2289411

**COMMENTS ON BEHALF OF OPOWER, INC. IN RESPONSE TO THE ACT 129 ENERGY EFFICIENCY
AND CONSERVATION PROGRAM PHASE TWO TENTATIVE IMPLEMENTATION ORDER**

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COMMENTS TO THE ACT 129 ENERGY EFFICIENCY & CONSERVATION PROGRAM PHASE TWO SECRETARIAL LETTER

Opower, Inc. (“Opower”) respectfully submits the following comments with respect to this proceeding before the Commonwealth of Pennsylvania Public Utility Commission (“PUC” or the “Commission”) pursuant to 52 Pa. Code §§ 5.71-5.74. Opower is a behavioral energy efficiency and smart grid software company. Opower currently works with over 70 utilities in 24 states, including Pennsylvania, to deliver energy- and bill-saving information to more than 10 million households across the United States and United Kingdom. By providing customers with better information on their energy use and personalized energy saving advice, Opower motivates customers to use less energy and save money on their bills.

Opower operates in the Commonwealth of Pennsylvania as a Conservation Services Provider providing residential households with behavioral energy efficiency services. Opower’s Home Energy Reports program already reaches 100,000 PPL customers and will reach more than 500,000 additional customers at First Energy and other EDCs later this year. In 2010, GDS Associates approved a custom protocol for evaluation, measurement, and verification of behavior-based programs administered by PPL Electric Utilities¹.

Opower submitted comments on April 17, 2012 on the Act 129 Phase 2 Secretarial Letter, and after review of the Tentative Implementation Order, offers these supplementary comments. Opower is a member of the Keystone Energy Efficiency Alliance (KEEA) and generally supports their comments, as well as the comments of the American Council for an Energy Efficient Economy (“ACEEE”), but offers additional and more detailed comments here to supplement the record.

Opower has three key concerns:

1. **Lack of Annual Goals Puts Pennsylvania Out of Step with Best Practice in Other States, is Inconsistent with the Legislative Intent of Act 129, and Puts Savings at Risk in Phase 2:** As ACEEE observed in its comments, the Commission’s proposed accounting methodology would make Pennsylvania the only state that does not require interim-year savings goals to be met, either through annual goals, or a cumulative goal for the entire compliance period. In addition to being out of step with established best practice, the proposed approach is inconsistent with Act 129 itself, which clearly requires interim benchmarking. As a result, the Tentative Order could also lead to significant lost energy savings because it creates a perverse incentive for EDCs to “turn on” programs with short measure lives, such as behavioral programs, in the final compliance year, but not run such programs in years 5 and 6. In short, the absence of any interim goals will likely lead to lower total MWh’s saved

¹ Custom Measure M&V Protocol: PPL Electric’s Opower Energy Education Program.

over the compliance period than otherwise might have been achieved.

2. **Phase 1 Savings Could Be Lost and/or Double-Counted in Phase 2:** Unless clarified, the Order could lead EDCs to discontinue Phase 1 programs with shorter measure lives that are already delivering customer benefits. If such programs were turned off, as much as 500,000 MWh in customer energy savings achieved in Phase 1 would be at risk of disappearing in the three years of Phase 2. Further, without clarification, it is possible that an EDC might be permitted to turn off a program that delivered savings in Phase 1 only to turn it back on at the end of Phase 2, which would lead to double-counting of savings across the two Phases.
3. **Goals Significantly Underestimate Potential of Behavioral Efficiency:** The goals in the Tentative Order were set based on a Potential Study that significantly underestimated the potential of behavioral efficiency. As a result, Opower believes that the goals in the Order underestimate the achievable potential of efficiency during Phase 2.

Given these concerns, Opower offers the following suggested modifications to the Order:

1. **Clarify cumulative goals, add interim annual targets, and give EDCs flexibility to achieve them over the compliance period:** The Commission should clarify the Tentative Order to require EDCs to demonstrate savings in each year of the three-year cycle as consistent with best practice in other states and the intent of Act 129. Opower recommends that the Commission achieve this by setting an overall cumulative savings goal with annual targets articulated in both percentage terms and MWh. To clarify its intent, the Commission should also add a third a column to Table 1 on p. 13 of the Tentative Order to clarify what it expects to be the total cumulative MWh achieved for each EDC across the three years of Phase 2. For example, if the Commission expects EDCs to achieve one-third of the 2013 goal in each of the compliance years and maintain those savings in each following year, the total cumulative MWh savings should be equivalent to 6,626,994 MWh (i.e. roughly 1,100,000 MWh in year 5 + 2,200,000 MWh in year 6 + 3,300,000 MWh in year 7).

Further, Opower recommends that the Commission clarify the Tentative Implementation Order goals by adding the phrase, **“These total energy savings should be equivalent to the sum of incremental savings achieved and maintained in each year of the compliance period,”** after the sentence on p. 56 in Section I., paragraph 2 which begins, *“To be in compliance with the Act, an EDC must demonstrate that during the June 1, 2013 to May 31, 2016 period its plan produced total energy savings equal to the consumption reduction targets established in Section A of this order in a cost-effective manner.”*

Finally, Opower recommends that the Commission consider permitting the EDCs to comply with the annual goals through a banking of MWh. Thus, if an EDC misses a goal in year 5, it should be allowed to comply by exceeding its goal in year 6. Similarly, EDCs who exceed their goal in year 5 should be able to bank the savings to meet a portion of their goal in year 6. This approach will ensure that EDCs achieve the total cumulative MWh goal for the compliance period, but give them ample flexibility to do so as cost-effectively as possible.

1i. **Clarify expectations for use of short measure-life programs:** If the Commission decides against putting in place annual goals and maintains the approach articulated in the draft Order, Opower recommends that the Commission at least clarify that it does not intend for EDCs to meet their goals by turning on and off measures with shorter measure lives, such as behavioral and other programs. In contrast to installed measures which are installed one year and assumed to continue saving energy for a specific number of years, behavioral programs must keep running to maintain and increase their energy savings. To this end, Opower recommends that the Commission add the following section on the goals in Section I:

Efficiency measures or programs, such as behavioral feedback programs, with measure lives shorter than the compliance period shall be run for at least three years, and all savings measured in the third year shall be counted towards the EDC's goal. To prevent the loss of previously achieved energy savings, such programs either need to be reinstalled or replaced by other programs or measures with equal or greater savings at the end of the three-year compliance period.

2. **Clarify that phase 1 savings should be maintained in Phase 2:** Opower recommends that the Commission clarify that Phase 1 savings from programs with short measure lives should be maintained into Phase 2 by adding the phrase “**provided that savings from Phase 1 are maintained in Phase 2**” to Section 6, paragraph 2, sentence three, which states “Therefore, the Commission proposes to allow the EDCs to accrue savings beyond their three percent (3%) target during Phase 1 and to use those savings towards any Phase 2 consumption reduction targets.”

Similarly, to be in compliance with the Phase 2 goal, EDCs who have run measures or programs in Phase 1 whose measure life expires in Phase 2 must either reinstall them or replace with other programs or measures with equal or greater savings.

Without such a clarification, it is possible that EDCs could interpret the Order as allowing Phase 1 programs with short measures lives to “go dark” for part of Phase 2, only to be introduced and double-counted in the final year of the compliance period.

3. **Revise upward the goals established in the Potential Study based on analysis from KEEA, ACEEE, and other expert parties.**

Discussion of Recommendations:

Recommendation #1: Clarify cumulative goals, add interim annual targets, and give EDCs flexibility to achieve them over the compliance period

- A. *The lack of annual goals in the tentative order is inconsistent with best practices for energy efficiency goal-setting in other states.*

The proposed savings accounting system in the Tentative Implementation Order sets Pennsylvania apart as the only state that does not require interim-year savings goals to be met, either through annual goals, or a cumulative goal for the entire compliance period. Nearly half of the states in the U.S. have a mandatory energy efficiency resource standard (EERS) requiring utilities to achieve reductions in energy consumption. Many have similar standards to the one enacted in Pennsylvania, which count total savings over a particular compliance period. These states have targets in incremental years, but still require a total volume of savings, or “cumulative savings”, by a target date (for examples, see Table 1 below).

Table 1. States Which Count Savings Cumulatively, and have Incremental Program Year Accounting²

State		Authority
Illinois	Electric: 0.2% savings in 2008, ramping up to 1% in 2012, 2% in 2015 and thereafter Natural Gas: 8.5% cumulative savings by 2020 (0.2% annual savings in 2011, ramping up to 1.5% in 2019).	Public Act 96-0033
Indiana	0.3% annual savings in 2010, increasing to 1.1% in 2014 and leveling at 2% in 2016	Cause No. 42693, Phase 2 Order
Maryland	15% per-capita electricity use reduction by 2015, calculated against a 2007 baseline (10% by utilities)	MD PUC Code 7-211
Missouri	(Note: not included in ACEEE report)	4 CSR 240-20.094 Demand-Side Programs
New York	Electric: 15% cumulative savings by 2015 Natural Gas; ~14.7% cumulative savings by 2020	NY PSC Order, Case 07-M-0548
North Carolina	Renewable Standard of 12.5% by 2021 for IOUs, with energy efficiency capped at 25% of 2012-2018 targets and 40% of 2021 target.	N.C. Gen Stat. 62-133.8

² Sciortino, Michael, Seth Nowak, Patti Witte, Dan York, and Martin Kushler. 2011. Energy Efficiency Resource Standards: A Progress Report on State Experience. American Council for an Energy-Efficient Economy. Available at: <http://aceee.org/research-report/u112>

Illinois provides model implementation order language that combines cumulative goals with annual program year targets. Illinois law establishes incremental annual electric goals of 0.2% annual savings in 2008, ramping up to 1% in 2012, 2% in 2015 and thereafter, and natural gas goals of 8.5% cumulative savings by 2020 (0.2% annual savings in 2011, ramping up to 1.5% in 2019).³ The implementation order clarifies these goals, making it clear that they are to be counted cumulatively and stating that, “each year’s energy efficiency and demand response goals are in addition to achievement of the previous year’s goals.” However, the statutory language that insists on achievement of new energy savings each year ensures that new energy efficiency savings occur in each year.

Missouri also provides a good example of a rule that combines annual energy savings targets with cumulative goals to review progress towards achievement of all cost-effective energy efficiency. The order specifically lays out targets as a percentage of total annual energy use for each year between 2012-2019 in Section 2, (A), (1-9), and cumulative realistic achievable energy savings goals for each year between 2012-2019 in Section 2,(B),(1-9).⁴

Although the EERS language authorizing energy efficiency goals in each of the above states is different, all focus on counting total savings in each year from a baseline compliance year. Counting savings cumulatively from a set baseline helps guarantee that the full volume of energy efficiency savings is achieved over the life of the program. Identifying incremental goals without cumulative targets creates risk that a new program cycle will ignore savings that decay after the useful measure life from previous cycles. When measures installed in previous program cycles are no longer installed or operating, the savings from those measures are no longer available on the grid, creating “savings decay.” In some cases, the programs will have induced behavioral change or market transformation such that the equipment will be replaced by another efficient unit, but in some cases the customer may revert to the original, “pre-measure” level of efficiency.

B. The legislative intent of Act 129 was to create “total annual” goals.

Pennsylvania legislators clearly intended for customers to receive the benefits of energy efficiency programs throughout the Act 129 compliance cycle. The bill that became Act 129 was originally introduced and passed out of the House Consumer Affairs Committee with a single, cumulative 2.5% goal that had to be reached by May 13, 2013. However, on the floor of the House, the bill was amended by Representative Freeman to include an interim benchmark goal that was included in all subsequent versions of the bill to pass the House and Senate.

³ Public Act 095-0481; Implementation Order February 6, 2008. Docket 07-0540

⁴ 4 CSR 240-20.094 Demand-Side Programs (Available at: <http://www.sos.mo.gov/adrules/csr/current/4csr/4c240-20.pdf>)

In support of the Freeman amendment, Mr. McCall noted:

“Mr. Speaker, I would also ask for an affirmative vote on the Freeman amendment. It does a number of things, but more importantly, it accelerates the energy efficiency goal as set in HB 2200 and implements that 1-percent reduction by 2011, and I think what that does, it ensures that the implementation of the 2.5 goal, that they can in fact meet that goal and we could benchmark that early on in 2011 to see that they are well on their way to implementation of the 2 ½-percent conservation goal as set in HB 2200.

But I think, more importantly, that it can in fact help customers mitigate rate increases as they come off in 2010 by having the conservation measure of 1 percent implemented before those caps come off, and I would ask for an affirmative vote on the Freeman amendment.”⁵

Rep. George, the prime sponsor of Act 129 in the House, issued a press release, which “...praised amendments to his bill offered by Rep. Freeman, D-136 of Northampton County, that would provide interim output and peak reductions before the full benchmarks take effect on May 31, 2013.”

The House passed the amendment with 198 Yea votes and 3 Nay votes, a clear endorsement of the need for interim goals rather than just one target year at the end of the compliance period.

C. Lack of Annual Goals Puts Savings at Risk in Phase 2

Section I of the Tentative Implementation Order directs EDCs to file “information documenting their consumption reductions for June 1, 2013, through May 31, 2016. “ It notes that, “To be in compliance with the Act, an EDC must demonstrate that during the June 1, 2013 to May 31, 2016 period its plan produced total energy savings equal to the consumption reduction targets established in Section A of this order in a cost-effective manner.” However, the Order does not set clear expectations for what level of energy savings it expects from EDCs in years 5 and 6, or what total MWh’s it expects EDCs to save across the entire compliance period. As drafted, the only clear requirement on the EDCs is to have reached a reduction of 3,313,247 MWh by 2016 compared to 2010 baseline MWh sales.⁶

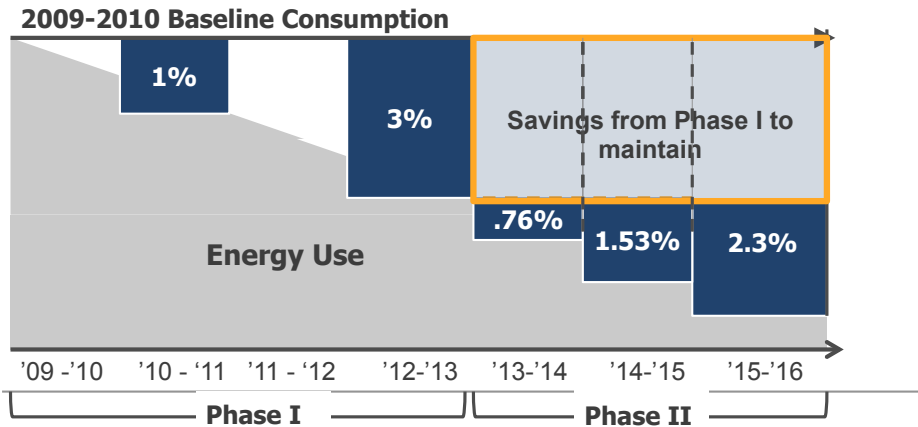
If the Commission expects EDCs to make consistent progress to the 2016 goal, then the cumulative MWh goal for the compliance period should be 6,626,994 MWh. This would be equal to EDCs achieving one-third of the 2.3% goal in each of the three years of the compliance period. The Commission should consider adding a third a column to Table 1 on p. 13 of the Tentative Order to clarify what it expects to be the total cumulative MWh achieved for each EDC across the three years of Phase 2.

⁵ Pennsylvania House Floor debate on HB 2200, February 11, 2008.

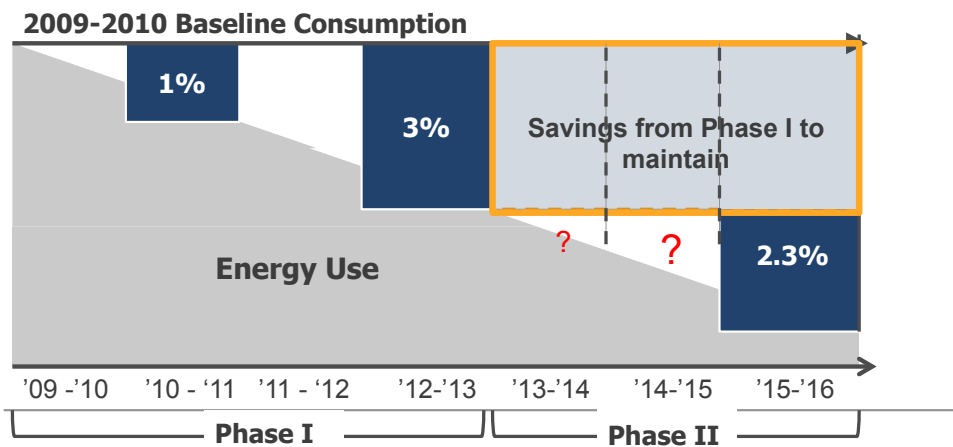
⁶ GDS Associates and Nexant. Electric Energy Efficiency Potential for Pennsylvania. Section 1-1.

The charts below illustrate the difference between having a single, final year compliance goal of 2.3% and having a cumulative 2.3% goal with annual targets, as Opower proposes. In Option 1, utilities are responsible for achieving a certain percentage of savings per year (option 1 below), while in Option 2 they are only responsible for achieving a certain percentage of savings in the last year of the compliance period.

Option #1: Annual Targets



Option #2: Savings in the Last Compliance Period Year



As demonstrated in option 2 above, the Commission's expectations for savings in years 5 (2013-2014) and 6 (2014-2015) are unclear in the Tentative Order. Without clear expectations, EDCs may not meet savings goals in years where they do not have explicit requirements.

To provide clarity to the market and maximize achievable savings, Opower recommends that the Commission provide savings goals articulated in both annual and cumulative terms so that expectations on market participants are clear throughout the compliance period.

Recommendation 1i: Clarify expectations for use of short measure life programs

If the Commission decides against putting in place annual goals, Opower strongly urges that the Commission at least clarify that it does not intend for EDCs to meet its cumulative annual goal in 2016 by turning on and off measures with shorter measure lives, such as behavioral and other programs, in 2014 and 2015, or back-loading behavioral programs in the final year of the compliance period. In contrast to installed measures which are installed in one year and assumed to continue saving energy for a specific number of years, behavioral programs must keep running to maintain and increase their energy savings.

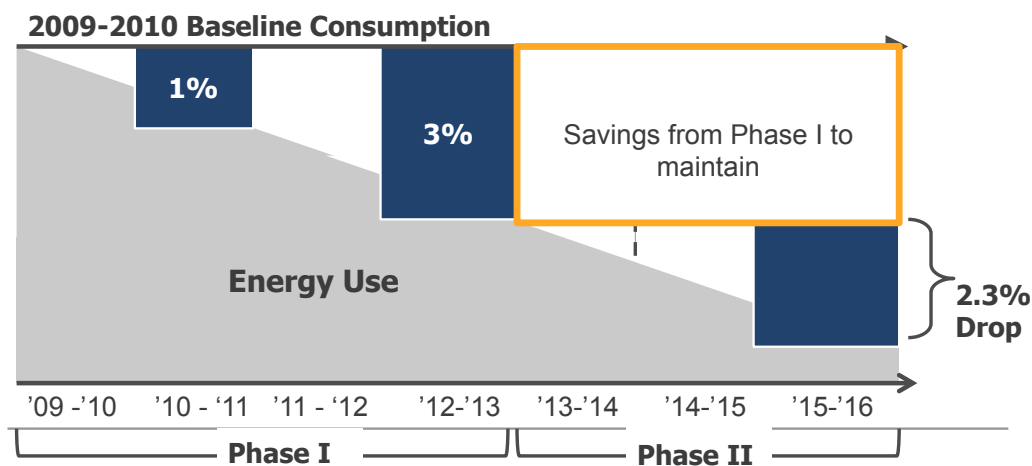
If the Tentative Order is not revised to clarify these expectations and include annual goals, it could lead EDCs to under invest in efficiency in 2014 and 2015. Specifically, it could permit programs with short measure lives “to go dark” in years 5 and 6, which would frustrate consumers by reducing services that they are now used to getting and lead to lost savings, and then be turned on again in advance of the compliance year in order to reach the 2016 goal. Opower believes that this was not the intent of the order, and that the cumulative annual goals should reflect the full value of savings achieved and maintained through the compliance period.

For example, if an energy efficiency measure with a 1-year measure life is put in place in 2013-2014, the EDC should be able to count 3 years worth of savings from the measure if it continues to run and generate savings for program years 2013-2016. If the final goal does not reflect the value of those savings, then the current goals set up an incentive for EDCs to ramp down or let programs with short measure lives “go dark” in the first two years of Phase 2, and then re-start them for the final year (2015-2016). This would not be consistent with the intent of Act 129. Just as the Commission does not intend for efficient refrigerators installed in 2013 to be uninstalled in 2014, nor should it want behavioral programs to be run in 2013 and turned off in 2014. To this end, Opower recommends that the Commission add the following section on the goals in Section I:

Efficiency measures or programs, such as behavioral feedback programs, with measure lives shorter than the compliance period shall be run for at least three years, and all savings measured in the third year shall be counted towards the EDC’s goal. To prevent the loss of previously achieved energy savings, such programs either need to be reinstalled or replaced by other programs or measures with equal or greater savings at the end of the three-year compliance period.

Recommendation #2: The Commission should ensure that there are no lost savings from Phase 1 into Phase 2.

The Final Order should clarify that the Commission expects savings from Phase 1 to be maintained throughout Phase 2. In Section 6, the Tentative Implementation Order proposes that utilities be allowed to exceed Phase 1 targets, with any excess savings being applied to the Phase 2 consumption reduction targets. However, the Order is silent on whether it expects EDCs to maintain savings achieved in Phase 1 during Phase 2. The final Order should clarify that EDCs should continue to ensure that Phase 1 savings from measures whose useful measure life has ended are replenished as reflected in the illustrative chart below. For example, if a given measure that was installed in 2009-2010 had a 5-year measure life, an EDC should ensure that those savings are replaced in the 2014-2015 program year. Otherwise, savings achieved relative to the 2009-2010 baseline would be lost.



This is particularly important for the behavioral programs in place at multiple EDCs in the state, where significant savings have already been achieved. Since these programs have a single year measure life, they must continue to run in order to maintain savings. Otherwise, the full value of savings already achieved could be at risk. Opower estimates that nearly 500,000 MWh over the three years of Phase 2 could be lost if the programs that will be in place in 2013 are not continued in 2014 (i.e. the first year of Phase 2).

Given the lack of clarity on this issue in the Tentative Implementation Order, Opower recommends that the Final Order include the following change:

Adding the phrase “**provided that savings from Phase 1 are maintained in Phase 2**” to Section 6, paragraph 2, sentence three, which states “Therefore, the Commission proposes to allow the EDCs

to accrue savings beyond their three percent (3%) target during Phase 1 and to use those savings towards any Phase 2 consumption reduction targets.”

Recommendation #3: Revise goals upwards by taking into consideration more accurate market potential information

As detailed in the KEEA and ACEEE comments, there are significant issues with the Potential study. Opower concurs that there are enough uncertainties in the current potential analysis to question the recommended saving goals. In particular, Opower was concerned by the lack of transparency around key assumptions throughout the study, and by the analysis of behavioral potential in particular.

Two areas in particular stand out from the KEEA analysis of the Potential study. The study assumes a 25% increase in costs in Phase 2 relative to Phase 1 without supporting documentation⁷. In addition, the program potential constrained achievable potential based on the available 2% of gross revenues from each utility on a uniform basis. This assumes when making portfolio decisions, the EDCs would not choose the lowest cost resources, and this choice artificially deflates the goals.

Although Opower cannot speak to the other measures in the potential study, we carefully reviewed the assumptions for behavioral potential and found both a lack of transparency and significant underestimation. There are three major areas of concern with respect to the behavioral potential estimates, which are exacerbated by the opaqueness of the report.

The first is the translation from economic to achievable potential, which according to the study involved calculation of two scenarios in which “incentives set are 100% of measure incremental cost,” and another in which “Incentives set at 56% of measure incremental cost.”⁸ It is unclear why there would be such a significant difference between the economic potential estimates and the achievable potential estimates (619,268 MWh for economic potential and 139,976 MWh for achievable potential). Indirect feedback programs use information rather than incentives to motivate energy savings, so the incremental measure cost for the consumer would not change between different scenarios. Generally, the only restrictions on the achievable vs. economic potential of an Opower-like indirect feedback program are the need for a control group and the fact that a small percentage of the population (less than 1%) will opt-out.

In addition, although it is clear that the two programs that make up the “Whole House” category under Residential Potential are an Opower-like Indirect Feedback program and a Direct Feedback program, a variety of key assumptions are not transparent, like the relative breakdown of those programs, and how

⁷ Electric Energy Efficiency Potential for Pennsylvania. Pg. 29.

⁸ GDS Associates and Nexant. Electric Energy Efficiency Potential for Pennsylvania. Pg. 62.

per household savings assumptions detailed in Appendix 2 translate into the potential estimates in the main body of the report.

Finally, the Potential Study wrongly suggests that the measure life for behavioral programs is two years in Pennsylvania's TRM when, in fact, the measure life for the program has always been one year. It is unclear what impact this error may have had on the Potential Study's calculations, but since the report is final there is no opportunity to fix the record.

The fact that most parties were not able to provide input to the Potential Study is concerning given the importance of the Study in determining the goals. Consequently, Opower feels that the Commission should consider revising the goals in the draft Order based on the input from stakeholders and experts, such as the ACEEE, who have identified multiple shortcomings in the analysis that lead to an under estimation of the achievable potential in Phase 2.

Conclusion

Opower thanks the Commission and staff for consideration of these comments, and looks forward to engaging on these issues throughout the stakeholder process. Opower strongly urges the Commission to clarify what it means by cumulative goals, to add clear annual targets, and to ensure continuity of savings across and within phases of Act 129 by clarifying expectations regarding programs with shorter measure lives. Without these clarifications, the Order would inadvertently permit EDCs to turn programs off only to ramp them back up in the final compliance year, which would not be consistent with the intent of Act 129 or with best practice in other states. Fundamentally, this could result in missed savings for Pennsylvania ratepayers at a time when reduction in energy costs could mean important bill savings for ratepayers.

Thank you for your consideration of these views.

Sincerely,

A handwritten signature in blue ink, appearing to be the initials 'JK' or similar, written in a cursive style.

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