

**Comments of the American Council for an Energy-Efficient Economy (ACEEE) on  
Pennsylvania Act 129 Energy Efficiency and Conservation Phase Two**

**Docket Number M-2012-2289411**

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**Introduction**

The American Council for an Energy Efficient Economy (ACEEE), a non-profit research organization based in Washington, D.C., appreciates the opportunity to provide comments to the Pennsylvania Public Utilities Commission (PUC) on the Commission's Tentative Order for Phase II of Act 129. We offer several comments, pulling from ACEEE's national perspective and research on best practices in energy efficiency programs and policy, on: (1) the proposed energy savings targets; (2) cost data from the Statewide Evaluator's (SWE) energy efficiency market potential study; (3) energy savings accounting procedures; and (4) utility performance incentives. First, we suggest that the proposed targets are low compared to recent success in Pennsylvania and compared to best practices from around the country. Next, while we do not comment in detail on the SWE market potential assessment, we do critique their assumed 25% mark-up of program costs, which is an arbitrary assumption that drives the efficiency potential results and is not supported by program data elsewhere. Thirdly, we offer some suggestions on the accounting procedure and suggest setting incremental annual or 18-month targets in addition to the 3-year target. And finally, we suggest that the Commission consider performance incentives for utilities that achieve or exceed the targets. Most importantly, the cost-effective energy efficiency resource in Pennsylvania is clearly large, and there is much opportunity for further energy savings benefits. The SWE study concludes that "continuing electric energy efficiency programs in a Phase 2 of Act 129 will continue to be very cost effective for Pennsylvania ratepayers." We hope our comments are useful in informing the Commission's decisions on the future of cost-effective energy efficiency programs in the state.

**Proposed Savings Target Levels are Low Compared to Recent Success in Pennsylvania and National Best Practice**

The Commission's proposed energy efficiency savings levels for Phase II of Act 129 – shown below – are lower than both recent program impacts in Pennsylvania and compared to impacts from other utilities in the region and throughout the U.S. The record of energy efficiency program achievement from utilities both in Pennsylvania and across the country is robust, and suggests that higher targets of about 1% incremental annual electricity savings per year are warranted.

**Act 129 Phase II Proposed three-year Energy Efficiency Reduction Targets**

EDC	3 Year % of 2009/10 Forecast Reductions	3 Year MWh Value of 2009/10 Forecast Reductions
Duquesne	2.0	276,722
Met-Ed	2.3	337,753
Penelec	2.2	318,813
Penn Power	2.0	95,502
PPL	2.1	821,072
PECO	2.9	1,125,851
West Penn	1.6	337,533
<b>TOTAL</b>	<b>2.3</b>	<b>3,313,246</b>

In Pennsylvania, all utilities combined recently achieved verified energy savings of 1,743,883 MWh over 2 years through 2011, which is equivalent to 1.2% total annual electricity savings (PY2 cumulative results).<sup>1</sup> And utilities achieved about 86% of the total 2-year savings in Program Year 2 alone,<sup>2</sup> which suggests that incremental annual savings in PY2 were 1% for all utilities combined. While the savings levels vary among utilities, the overall recent success of 1% per year suggests that 3-year cumulative targets of 3% on average are reasonable.<sup>3</sup> Moreover, it makes little sense for the utilities to ramp-up to this recent level of achievement, and then to scale back to more lenient targets.

In comparison, many states have energy efficiency resource standards (EERS) of 1% or more, as shown in the table below. A 2011 progress report by ACEEE examined states with an EERS and found that most states are achieving or exceeding their targets. Many utilities have already achieved savings of 1% per year or more in these states, also shown in the table.

**States with EERS Targets for Electricity of 1% per Year or More**

State	EERS Targets <sup>4</sup>	Recent Annual Achievements in Electricity Savings (% of Sales) <sup>5</sup>
Arizona	Annual savings started at 1.25% in 2011, ramping up annually to 22% cumulative savings by 2020;	2010: 1.1%
Colorado	Annual savings are 0.9% in 2011; 1.35% in 2015; and 1.66% in 2019 (targets apply to Xcel Energy)	2009: 0.8% 2010: 0.9%
Connecticut	Annual savings targets from 2008 through 2011 were ~1%; In 2010, the annual target was 1.2%	2010: 1.4%

<sup>1</sup> SWE Pennsylvania Energy Efficiency Potential Study, p. 30

<sup>2</sup> Table 3-1; [http://www.puc.state.pa.us/electric/Act129/Act129\\_SWE.aspx](http://www.puc.state.pa.us/electric/Act129/Act129_SWE.aspx)

<sup>3</sup> “Cumulative” targets sum the impacts of prior-year savings as they persist over the lifetime of efficiency measures. For example, achieving 1% in PY1 will persist over the average lifetime of measures, eventually accruing to 3% in PY3 if incremental savings keep pace at 1% per year.

<sup>4</sup> Information from ACEEE Policy brief on Energy Efficiency Resource Standards (EERS): <http://aceee.org/files/pdf/policy-brief/State%20EERS%20Summary%20October%202011.pdf>

<sup>5</sup> Savings data are for applicable utility sales under the state’s EERS, and are from various sources: ACEEE Progress Report on EERS (<http://aceee.org/research-report/u112>); Efficiency Vermont Savings Claim for 2011; ACEEE analysis of utility program filings;

State	EERS Targets <sup>6</sup>	Recent Annual Achievements in Electricity Savings (% of Sales) <sup>7</sup>
Illinois	Annual savings started at 0.2% in 2008, ramping up to 1% in 2012, 2% in 2015 and thereafter;	2010: 0.74%
Ohio	Annual savings started at 0.3% in 2009, ramping up to 1% in 2014, 2% in 2019 to 22% cumulative savings by 2025;	2010: 0.88%
Hawaii	Cumulative target of 30% by 2030; The PUC must establish interim goals by rule or order;	2010: n/a
Iowa	Annual targets vary by utility from 1 to 1.5% by 2013	2010: 1.2%
Indiana	Annual targets started at 0.3% in 2010, ramping up to 1.1% in 2014, and 2% in 2019;	2010: n/a
Maryland	15% per capita cumulative savings by 2015; utilities and state are responsible for portions of savings; utilities file plans with interim annual targets; In 2010, annual interim target was 0.91%. Maryland is now taking steps to catch up.	2010: 0.5%
Massachusetts	For 3-year targets, annual targets are 1.4% in 2010; 2% in 2011; and 2.4% in 2012;	2010: 1.37%
Michigan	Annual targets started at 0.3% in 2009, ramping up to 1% in 2012 and thereafter;	2010: 0.35%
Minnesota	Annual savings are 1.5% starting in 2010 and thereafter (1% from programs; 0.5% from codes, standards, and other)	2009: 0.95%
New York	Annual savings of just under 1% in 2010, ramping up to 15% cumulative by 2015. Took a long time to develop and approve programs; underspent budgets in 2010 but now ramping up.	2010: 0.45%
Oregon	Annual savings are 0.8% in 2010, ramping up to 1% in 2013 and 2014	2009: 0.6% 2010: n/a
Rhode Island	Annual targets 1.1% in 2009, 1.3% in 2010, 1.5% in 2011; 1.7% in 2012, 2.1% in 2013, and 2.5% in 2014;	2009: 1.20%
Vermont	~6.6% 3-year cumulative savings from 2012 to 2014; Average of 2.2% per year	2009: 1.60% 2010: 1.95% 2011: 1.91%
Washington	Annual savings targets based on Northwest Power Plan, which estimates 1.5% annual savings through 2030	2010: 1.5%

## Energy Efficiency Program Costs

The energy efficiency acquisition costs 25% adder used in the Statewide Evaluator's (SWE) study, which was added to the actual cost data from Phase I programs, is arbitrary and not supported by recent utility efficiency program data from across the country. The Pennsylvania utilities accrued energy efficiency savings during Phase I at an average program cost of \$0.14 per first-year kWh gross.<sup>8</sup>

<sup>6</sup> Information from ACEEE Policy brief on Energy Efficiency Resource Standards (EERS): <http://aceee.org/files/pdf/policy-brief/State%20EERS%20Summary%20October%202011.pdf>

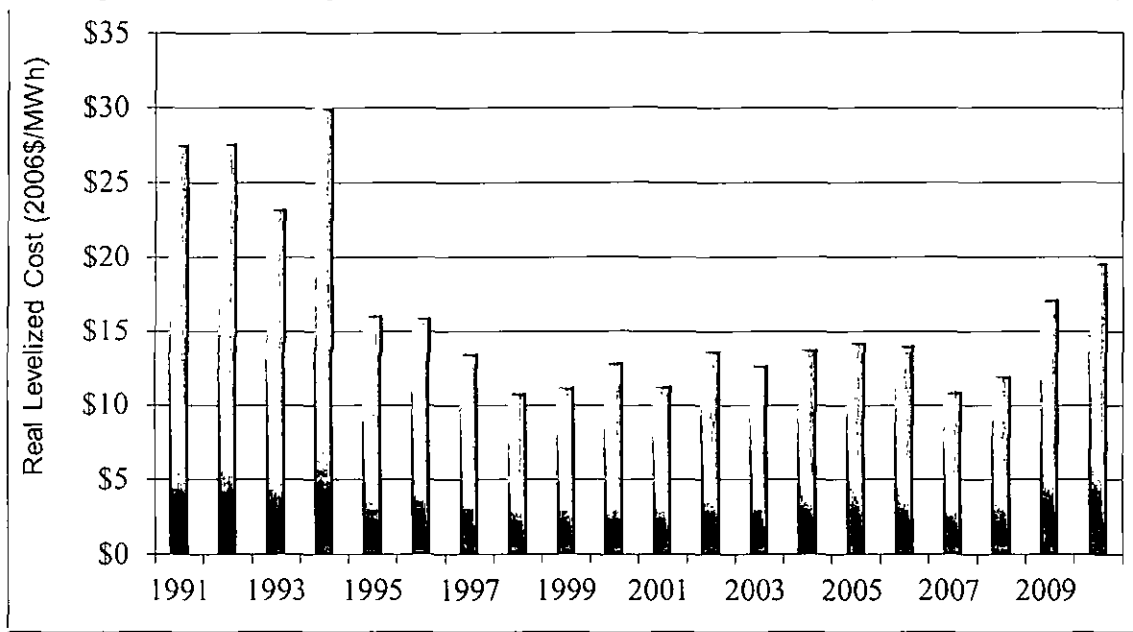
<sup>7</sup> Savings data are for applicable utility sales under the state's EERS, and are from various sources: ACEEE Progress Report on EERS (<http://aceee.org/research-report/ul12>); Efficiency Vermont Savings Claim for 2011; ACEEE analysis of utility program filings;

<sup>8</sup> Statewide Evaluator Market Potential Study, p. 100; This cost is per gross energy savings only. Assuming an 80% net-to-gross ratio, acquisition costs would be \$0.18/ first-year kWh net.

This is on par with other utilities around the country that have developed energy efficiency program portfolios over the past 5-6 years at similar costs. The SWE study program scenario, however, uses the 25% mark-up approach for incentive and non-incentive program costs, and assumes acquisition costs of \$0.22/kWh gross in the program scenario.<sup>9</sup> Assuming an average net-to-gross ratio of 80%, this cost is closer to \$0.27/kWh net and higher than national average costs. Here we offer several highlights from ACEEE's research on energy efficiency program costs from utilities around the country:

- In the Pacific Northwest, where utilities have been offering energy efficiency programs since the 1980s, levelized costs have consistently been \$0.015/kWh (\$0.15/MWh) or less per net kWh saved over a 20-year period. This is roughly equivalent to a first-year acquisition cost of \$0.14/kWh.<sup>10</sup> And those costs have not been rising, but in fact staying fairly consistent over time, as shown below.

**Energy Efficiency Acquisition Costs in the Pacific Northwest (Levelized \$/MWh)**



Source: Northwest Power Conservation Council (2011 Presentation)

- A 2009 ACEEE study found that in 14 states around the country, efficiency programs from 2002 – 2007 cost on average \$0.025 per net kWh levelized, ranging from \$0.019 to \$0.033 per kWh net. This is equivalent to an average of about \$0.23 per first-year kWh net, or in gross savings about \$0.18/kWh.<sup>11</sup> Many of these states have been running programs for a decade or more, and include states in the Northeast, Midwest, South, and West.
- Several states in the Southwest have developed new program portfolios over the past 5- 6 years, and therefore serve as a good benchmark for Pennsylvania's Phase II programs. Utilities there have recently (2009 – 2010) achieved program savings at average net costs ranging from \$0.16 -

<sup>9</sup> Statewide Evaluator Market Potential Study, p. 103;

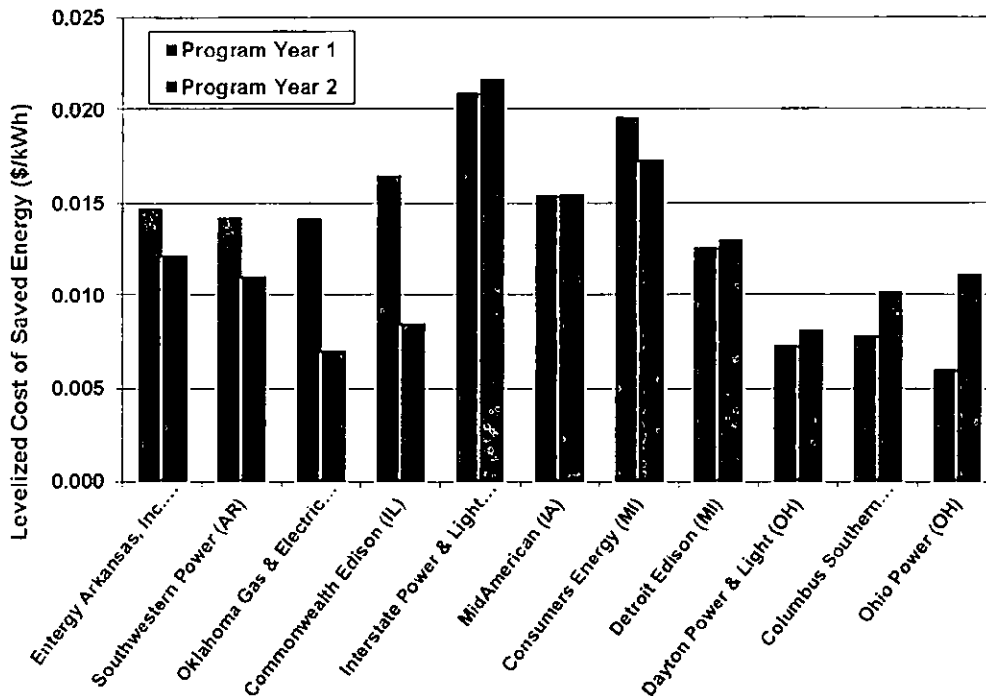
<sup>10</sup> Assuming a 5% discount rate and 13-year average measure life.

<sup>11</sup> <http://aceee.org/research-report/u092> *Saving Energy Cost-Effectively: A National Review of the Cost of Energy Saved through Utility-Sector Energy Efficiency Programs*. The states included: California, Connecticut, Iowa, Massachusetts, Minnesota, Nevada, New Jersey, New Mexico, Oregon, Rhode Island, Texas, Utah, Vermont, and Wisconsin. The estimate for \$/kWh-gross assumes an average NTG ratio of 80%.

\$0.19 per first-year kWh after several years of running programs (Xcel in Colorado = \$0.18/kWh; Rocky Mountain Power in Utah = \$0.19/kWh; and Arizona Public Service = \$0.16/kWh)

- A recent review by ACEEE of utility energy efficiency program costs in the Midwest region alone (Ohio, Michigan, Illinois, Iowa and Arkansas) found that programs have typically cost in the range of \$0.01 to \$0.02 per net kWh levelized as shown in the figure below.<sup>12</sup> In first-year cost terms, these are equivalent to an average of \$0.12 per first-year kWh. Many of these programs are newly developed portfolios, as in Pennsylvania, and serve as a good benchmark of costs.

**Energy Efficiency Acquisition Costs (2009 – 2010) in the Midwest (Levelized \$/kWh)**



Based on all of these data, ACEEE does not believe the 25% cost adder used in the SWE study is justified. While efficiency acquisition costs tend to fluctuate from year to year and there is some level of uncertainty, the argument that acquisition costs will necessarily increase over time is not supported by the data. In fact, some evidence suggests energy efficiency program costs may actually tend to decrease over time.<sup>13</sup>

The cost adder is directly driving the results of the achievable savings potential in the study, due to the upper bound of program spending from the cost cap. Without the adder, the total program costs estimate would be lower and more in line with recent first-year cost estimates from newly emerging efficiency portfolios as discussed above, and in that case the study would identify more cost-effective savings that could be achieved within the cost cap. ACEEE understands that there is some level of

<sup>12</sup> "An Assessment of Utility Program Portfolios." 2011. Prepared by ACEEE for the U.S. Department of Energy, Energy Efficiency and Renewable Energy, Technical Assistance Program

<sup>13</sup> "The Sustainability and Costs of Increasing Efficiency Impacts: Evidence from Experience to Date." 2008. Synapse Energy Economics. <http://aceee.org/proceedings-paper/ss08/panel08/paper30>

uncertainty in the cost data for energy efficiency programs, just as there is uncertainty in the costs of supply side resources, however adding a 25% cost mark-up for all program incentives and non-incentive administrative costs is very unusual and far from standard practice.

We also understand that federal efficiency standards for lighting and appliances are shifting the marketplace for energy efficiency opportunities. But even with the major changes in standards for *residential and commercial lighting*, for example, there is still a large amount of cost-effective lighting efficiency potential after accounting for the standards. Higher baselines for standard technologies (e.g. 72 W incandescent lamps as a baseline instead of 100 W lamps) will likely mean higher costs for some programs, but some program costs are likely to decline. Costs for LEDs, for example, are already starting to fall. And cost-effective programs in the large commercial and industrial sectors, for example, should be expanded to balance the portfolio of programs.

While we believe that the 25% markup cost assumption in the SWE study is inconsistent with program data elsewhere, we do not mean to suggest that costs are not subject to fluctuations and uncertainty. We agree that some program types will likely face rising costs. But there is still an abundant amount of *cost-effective* energy efficiency compared to supply side options. Going forward, the 2% cost cap will constrain the deployment and therefore customer benefits from the energy efficiency resource. First-year acquisition costs are only one way to evaluate the costs of energy efficiency programs. Levelized costs, which take into account the lifetime of energy efficiency measures, are a more complete way to evaluate the cost-effectiveness of energy efficiency resources. But by focusing only on first-year costs, the current 2% cost cap in Act 129 will constrain Pennsylvania's full energy efficiency resource potential going forward. Energy efficiency programs costing 2-3 cents per kWh saved are much less expensive than power from most other sources, so constraining use of energy efficiency increases energy bills relative to what bills would be if efficiency is not constrained. We suggest that stakeholders consider efforts to relax or remove that cost cap, and use other current practices of robust evaluation, measurement, and verification (EM&V) to ensure program cost-effectiveness.

### **Accounting Practices Should be Clarified**

ACEEE finds that the proposed accounting practices for savings -- setting 3-year targets only -- are inconsistent with national best practice and may create confusion for program implementers and other stakeholders. The other 24 states with an energy efficiency resource standard (EERS) establish either: (1) BOTH cumulative energy savings targets and incremental annual targets; or (2) incremental annual targets only. Cumulative and incremental annual targets both serve important purposes and complement one another. Cumulative targets count savings that persist from prior cycles, and importantly establish a long-term resource acquisition perspective in line with the practice of long-term planning for supply side resources. Cumulative targets are also important because they can hold utilities responsible for shortfalls in incremental annual savings in previous years. Incremental targets, on the other hand, lay out an implementation pathway for how utilities are expected to reach the cumulative targets.

Ohio, for example, has a 22% by 2025 cumulative target, and also establishes incremental annual targets of 0.3% in 2009, gradually ramping up to 1% in 2014 and 2% in 2019. But without incremental annual benchmarks, it is unclear to utilities how to account for the savings. Pennsylvania appears to be the only state to establish cumulative targets *without* establishing accompanying incremental annual


targets either through legislation or through commission order. Other states that set cumulative targets, e.g. Maryland and Hawaii, also must establish incremental annual targets.

As currently proposed, the 3-year savings targets, which range from 1.6% for West Penn to 2.9% for PECO, are confusing as to what is expected in the intervening years. For example with PPL's 3-year 2.1% savings target, the utility could achieve the target simply by administering programs in 2014 at a level of 1.05%, and again in 2015, then stopping programs all-together 2016. The 1.05% savings would continue to accrue over the lifetime of the measures, reaching cumulative savings of 2.1% by 2016 without running any programs in that year. Alternatively, the Commission is suggesting that the 2.1% 3-year target should be achieved by reaching on average 0.7% incremental savings *each year*. As currently written, however, this distinction is not clear. To avoid confusion, ACEEE recommends that the Commission establish *both* cumulative and incremental annual targets for each utility. If the Commission prefers to avoid annual targets, another option is to establish one check-in target at 18 months.

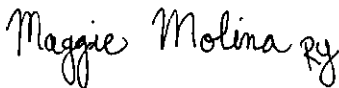
### Utility Performance Incentives for Achieving or Exceeding Targets

ACEEE's research shows that performance incentives are an effective way to encourage utilities to meet their energy efficiency program targets. A 2011 report by ACEEE concludes that energy efficiency performance incentives are working and that both consumers and utilities are benefiting from these energy efficiency shareholder incentive mechanisms.<sup>14</sup> Currently 25 states have shareholder incentives for electricity energy efficiency targets and another 11 states are considering incentives or have enabling legislation or regulation. ACEEE suggests that the Pennsylvania Public Utilities Commission should adopt performance incentives for the utilities to earn when they exceed the targets, particularly if the targets are 1% per year or more. If lower targets are set then targets will be easy to meet and therefore less of an incentive is needed.

Respectively submitted,



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<sup>14</sup> <http://aceee.org/research-report/u111> *Carrots for Utilities: Providing Financial Returns for Utility Investments in Energy Efficiency*.

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