Via Electronic Mail and Electronic Filing

June 25, 2012

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Re: Comments on Act 129 Phase Two Tentative Implementation Order and Market Potential Study, Docket No. M-2012-2289411

Dear Megan Good and Kriss Brown,

The Sierra Club on behalf of its membership, the Pennsylvania Chapter of the Sierra Club, Clean Air Council, PennEnvironment, Physicians for Social Responsibility, Philadelphia Chapter, and the Natural Resources Defense Council ("NRDC") (collectively, "the Citizen Groups") respectfully submit the following comments concerning Pennsylvania's Act 129 in response to the Pennsylvania Public Utility Commission's ("PUC" or "Commission") May 10, 2012 Act 129 EE&C Phase 2 Tentative Implementation Order (Tentative Order). Thank you for your consideration.

I. INTRODUCTION AND BACKGROUND ON ACT 129

Act 129 was designed to be the Commonwealth's Energy Saving Law. The more energy efficiency measures are deployed in Pennsylvania, the more businesses and residential ratepayers will save on their electricity costs. This is because throughout the United States, the cost of saving a kilowatt-hour (kWh) of electric energy has proven far lower than the cost of generating that same kWh. Most utilities and states are finding that the levelized cost of saving energy, defined as the total cost of a program divided by the lifetime energy savings associated with the program, is in the range of 3 cents/kWh or less. By comparison, a recent survey of 2010 levelized costs showed 7-9 cents per kWh for energy from a new gas combined cycle plant, and 11-14 cents per kWh for a new technology coal plant, according to a report commissioned by PennFuture.[1] Plainly, energy efficiency is among the cheapest sources of energy capacity available; this reality is borne out by Pennsylvania's experience with Act 129.

Phase I of Act 129 expires May 31, 2013, and has been a resounding success. Under the program, utilities have surpassed targets, with efficiency efforts reducing electrical consumption by 41% more than required. This increased efficiency has an estimated lifetime impact of $2.3 billion in savings for ratepayers, or roughly $8 in savings for every $1 spent on the program, according to the PennFuture report.

It is critical that the second phase of Act 129 continues to build on the successes of Phase I. Many states are implementing programs with energy consumption reduction targets of 1% or more of annual electricity sales, and Massachusetts, Vermont, Rhode Island, and New York, are among the states achieving a 2% or more reduction of sales annually on top of years' worth of efficiency gains already achieved.[2] We believe that similar opportunities exist in Pennsylvania, in spite of the Statewide Evaluator (SWE) recommendation that energy efficiency targets be scaled back over the next Phase of the program.

The Citizen Groups argue herein that the recommendations in the Tentative Order are based on flawed and poorly supported assumptions, and that reasonable changes to the assumptions would result in a finding of energy efficiency potential of 1% per year or more. We therefore recommend that Phase II targets continue to be set at 1% per year.

The cumulative effect of efficiency investments reduces the amount of money that utilities need to invest in power production and transmission. This has the effect of lowering electric rates and

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[1] Optimal Energy Integrated Energy Resources "Pennsylvania 2012-2018 Energy Efficiency Goals" (December 19, 2011), at 2, available at http://www.pennfuture.org/UserFiles/File/FactSheets/Report_Act129goals_20111220.pdf, hereinafter "PennFuture Report".

[2] American Council for an Energy Efficient Economy "State Energy Efficiency Policy Database" available at: http://aceee.org/sector/state-policy, accessed 6/22/12.

benefitting even those who don't directly participate in utility efficiency programs. Energy efficiency investments generally have a higher economic multiplier and more jobs per unit of investment than expenditures on energy production.

These efficiency opportunities mean more than just economic benefits and savings for ratepayers. There are also enormous environmental and public health benefits flowing from efficiency. A continuation of 1% per year reduction targets in Phase II of Act 129 could result in a carbon dioxide emissions reduction of 80 million tons over 5 years. This is in addition to the significant reductions in other harmful air pollutants like mercury, sulfur dioxide, and nitrous oxides that could be had by investing in energy efficiency and reducing the need for coal-fired electricity. There are many areas of Pennsylvania currently in non-attainment for air quality standards, and these reductions in air pollutants could go a long way in helping them meet the National Ambient Air Quality Standards.

Given these and other benefits, there is strong public support for continuing with a robust energy efficiency program in Pennsylvania. We would like to call attention to the 1780 signatures to the petition submitted to the PUC calling for a 3% reduction of energy consumption over the next three years of the program.

As such, the Citizen Groups strongly urge the Commission to revise the Tentative Order and implement a strong Phase II Energy Efficiency and Conservation (EE&C) program under Act 129, as described more fully below, which preserves both the consumption and demand reduction targets from Phase I, and sets clear parameters for assessment of penalties. As currently proposed, the Tentative Order fails to do these things and would result in unnecessary utility cost burdens to Pennsylvania residents and businesses.

II. RESULTS FROM PROGRAM POTENTIAL SCENARIO 1 (PPS1) INCLUDE OVERLY CONSERVATIVE ASSUMPTIONS THAT UNDERESTIMATE EFFICIENCY POTENTIAL OVER THE PROGRAM PERIOD.

A. The 40% market penetration rate assumed for the Achievable Potential Scenario 2 (APS2) is overly conservative and the basis for the assumption is not documented.

The results in PPS1, which are the basis for the efficiency targets in the Tentative Order, are themselves based on the results of Achievable Potential Scenario 2 (APS2). The most significant difference between APS1 and APS2 is the assumed market penetration of the efficiency measures. In APS1, a 10-year penetration rate of 85% is assumed (which is plausibly described as a theoretical maximum), while a penetration rate of less than half that figure, 40%, is assumed in APS2.

The basis for this 40% assumption is not explained in the report, and so the validity of that assumption cannot be evaluated. There is no indication that sensitivity analyses were done to determine the impact of changes to this assumption on the final result. However, it seems clear from the model description that this is the single most important input driving the scenario result. Furthermore, the ratios between

the 10 year results in APS1 and APS2 are nearly identical to the ratios of the two 10-year penetration rates, providing further evidence that this is the major driving factor in the results.

Thus, any increase in the 10-year penetration rate would yield corresponding increases in the 3, 5, and 10 year achievable potentials, and ultimately, corresponding increases in program potential. The lack of supporting evidence for such a fundamental model assumption casts serious doubt on the accuracy of the final result. It is reasonable to assume that higher 10-year penetration rates are probable, and could have the impact of raising the program potential to levels comparable to those already achieved in Phase I of the program, and consistent with our recommended 1% per year reduction target. Since penetration rates are correlated with and driven by program incentive levels, the SWE study should have performed sensitivity analyses to determine the maximum efficiency gains possible under the statutory spending cap given different incentive levels. Since such sensitivity analyses are absent in this study, the report cannot claim to have a definitive result with respect to Program Potential.

B. <u>APS2 assumes incentive levels equal to those in Phase I plus a 25% increase, yet there is no justification for this extra 25%.</u>

The Market Potential Study states that in APS2, the EDCs pay incentives equal to the incentive levels in place in Phase I programs "plus a 25% safety margin."[3] When questioned about this at the Stakeholder meeting on June 5, the SWE stated that in the future it would be more costly to obtain the same amount of energy savings due to updated baselines (such as EISA), exhaustion of all low-hanging fruit, and inflation.

The Citizen Groups disagree with the assumption that the cost of procuring a kWh of energy savings will rise over time. It is true that more cost-effective measures will be deployed first, but there are other temporal factors at play. As energy efficient technologies advance and these devices and appliances become more commonplace, prices will likely come down. Moreover, after only three years, significant low-hanging fruit still exists. For example, only 17% of residential sockets currently house CFLs. Program costs are expected to decrease as well. As word of these cost savings programs spreads across Pennsylvania, EDCs will have to spend less on marketing and outreach. And with the experience of Phase I under their belts, EDCs will be able to refine their programs and reduce administrative costs. Together, these reductions in cost will counteract the aforementioned cost increases over a period of years.

Furthermore, the number 25% seems to come out of nowhere. There is no explanation for this number anywhere in the Market Potential Study, suggesting that there was no analysis of future costs associated with implementation, but rather a number agreed upon as a catchall. The fact that it is referred to as a "safety margin" further suggests that 25% was selected just to cover any and all unforeseen costs.

[3] Electric Energy Efficiency Potential for Pennsylvania, p. 12.

The Citizen Groups acknowledge that costs may increase over time, as shown by states with longstanding EE&C programs (e.g., VT, NY, MA), but Act 129 programs have simply not yet matured to that point. Vermont's experience indicates that costs do not rise so quickly during the early years of a program. In that state, the average annual acquisition cost rose only 6.3% in the second three-year period (2003-2005) compared to the first three program years (2000-2002). In fact, out of the first seven program years, the highest costs per MWh were in year 3, and annual costs declined slightly after that.[4] The assumption that Pennsylvania EDCs will have to spend 25% more in Phase II to get the same amount of energy savings is unfounded and ultimately leads to a lower estimate of program potential.

C. Scale down from APS2 to PPS1 improperly assumes linear relationship between program expenditures and energy savings. This is unrealistic and inconsistent with other assumptions in the analysis, and leads to lower estimate of program potential.

Sections 8.1.2 and 8.1.3 discuss the relationship between the results of APS2 (2.7% savings over 3 years) and PPS1 (2.3% savings over 3 years). The latter is the basis for the energy efficiency targets identified in the Tentative Order. This figure is based on inconsistent and improper assumptions, and should be higher.

Six of the seven EDCs have costs in APS2 that exceed the spending cap specified in the statute. For these EDCs, a linear relationship between dollars spent and energy units saved is assumed. In reality, the relationship is not linear. As program budgets are scaled back, the first programs to be excluded will not be the ones that save an average amount of energy per dollar spent (as implied by a linear model) but rather the ones that save the least amount of energy per dollar spent. The proper model would therefore be an increasing exponential decay model. The general effect of using this model would be to reduce the difference between the APS2 and PPS1. The magnitude of the difference would depend on the degree of the curve, and would require further modeling to determine. But the result would likely be substantial reduction in the difference between the results of the two scenarios in terms of energy savings potential (Figure 1).

[4] Amy Rubin, Vermont Energy Investment Corporation, personal communication with Tom Schuster (Sierra Club).

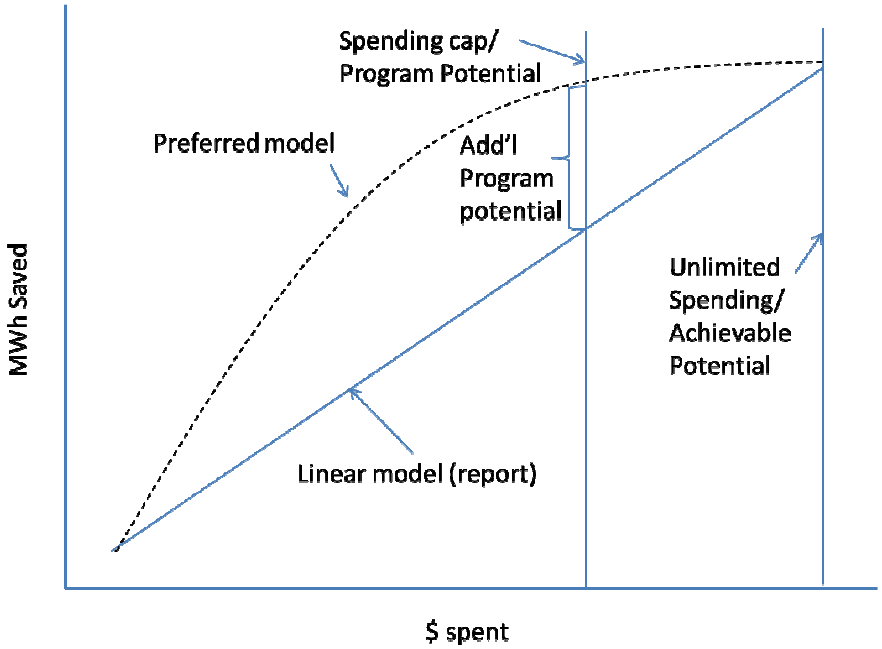

Figure 1. Impact of assuming an increasing exponential decay model, rather than a linear one.

The validity of the increasing exponential decay model is actually supported within the report itself. One utility (PECO) did not exceed its cost cap in APS2, and its program potential spending was scaled up. However, in this scale-up, the report authors state that higher incentives will be needed to achieve additional energy savings, and so the slope of the linear model used to scale up PECO results is lower than the slope of the linear model used to scale down the results for other EDCs. Taken together, the slopes of these two different linear models imply that as more money is spent on efficiency measures within a given program year, each marginal expenditure will yield lower marginal energy savings. This concept is better represented by an increasing exponential decay model not a linear one or multiple linear ones (Figure 2).

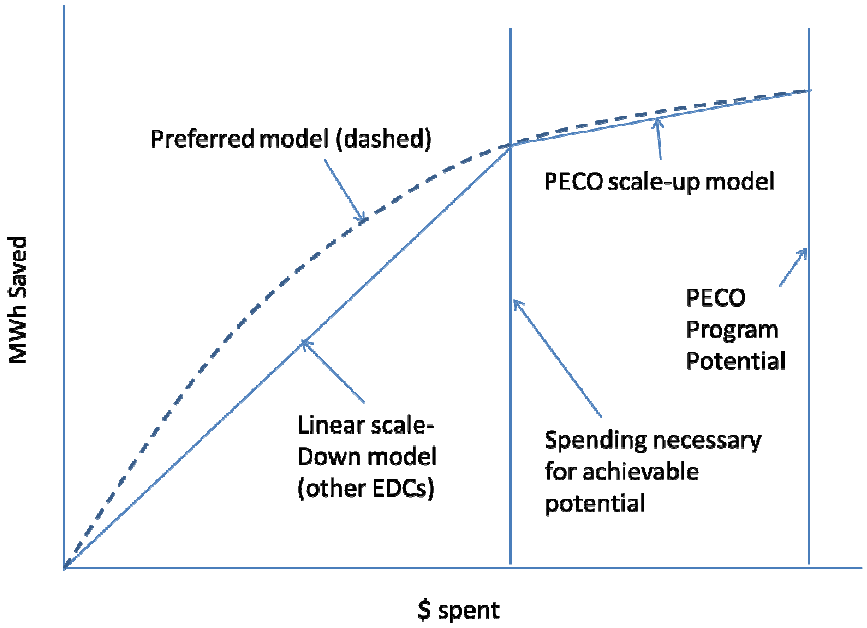

Figure 2. Use of linear models with two different slopes is actually a simplistic and overly conservative substitute for an increasing exponential decay model.

The Citizen Groups raised this issue with PUC staff and the SWE at the stakeholder meeting and were told that a linear model was employed largely because the SWE did not want to prescriptively remove any specific measures from the menu of choices for EDCs. The Citizen Groups disagree that a non-linear model would a priori remove specific measures. It would simply cause the utilities to more carefully choose the most cost-effective measures from the menu of options, and thus ensure that the ratepayer return on investment is maximized. The cost-effectiveness of each measure will vary by EDC territory, and so some measures will be used in some areas and not in others.

D. Recommendations regarding efficiency targets

Above we have outlined three key assumptions that are both overly conservative and unsupported in the report, thus lowering the program potential result. The SWE report itself acknowledges on page 4 and elsewhere the limitations of modeling, as many different reasonable assumptions can be employed that would yield differing results. Furthermore, every model is a simplification of reality, and by definition ignores some factors (examples in this case include constantly evolving technology and changing perceptions of efficiency measures) that clearly exist in real life. Therefore, while modeling can be a useful tool, the results of a model should not be solely relied upon to formulate policy.

Instead, recent performance under Phase I programs should be taken into account as well. On average, EDCs are on pace to exceed the 3% target imposed in Phase I. We recommend that the next three years of the program contain a 1% per year target for energy consumption reduction (3% cumulative). We do not object to individual utilities having higher or lower targets, provided that the weighted average is 1% per year. Interim annual goals are important to ensure that each EDC is on track to meet the cumulative

target. Given the fact that EDCs are on track to exceed Phase I targets, this recommendation still allows Phase II to realize somewhat more modest savings than Phase I is expected to yield. This goal is also more conservative than goals in other states in the region (identified in the introduction) with mature programs that have already exhausted their low-hanging fruit.

III. THERE ARE MAJOR DISCREPANCIES IN LEVELIZED COST FIGURES THAT CAST DOUBT ON THE PROGRAM POTENTIAL RESULT.

Appendix 2.3 presents the levelized cost per unit of energy saved for each measure analyzed, broken down by EDC. While some variation by EDC is expected given existing penetration rates, regional differences in procurement costs, and differing avoided costs, the magnitude of some of the discrepancies defies explanation. For example, the levelized cost of measure 416 approaches zero for all EDCs except for Penn Power, for which it is $493.54. There is no explanation for this difference of five orders of magnitude, and it seems likely to be an error. There are numerous less extreme examples where levelized costs for one or more EDCs are out of step with the others. The Citizen Groups are concerned that this has resulted in the disqualification of some cost-effective measures in some EDC territories, which lowers the overall energy savings potential findings of the study.

IV. FULL CARRYOVER OF PHASE I EXCESS UNDERMINES ALREADY CONSERVATIVE PHASE II TARGETS.

The Tentative Order allows 100% carryover of credits for EDCs that exceed Phase I energy reduction targets. There is no mention of the effect of such a carryover on Phase II targets in the study, and at the June 5th stakeholder meeting the SWE acknowledged that this was not considered during the modeling process. The SWE also stated that it was unlikely that any substantial portion of the efficiency potential projected to be available in Phase II would be realized early as a result of overachievement in Phase I. In fact, Phase I targets will likely be surpassed, and the policy of 100% carryover of Phase I credits could result in some of the already modest Phase II Program Potential going unrealized during this next phase.

To illustrate this point, suppose Utility X had a Phase I target of 1,000,000 MWh and a Phase II target of 800,000 MWh. Actual Phase I savings are 1,200,000 MWh in phase I, and Utility X is credited with a 200,000 MWh credit toward its already lower Phase II goal. It could then meet its Phase II goal by reducing consumption by only 600,000 additional MWh (half of what it achieved in Phase I), rather than the 800,000 MWh potential found by the SWE. The other 200,000 MWh savings is not realized, but still very much available and cost-effective.

In his dissenting letter, Commissioner Gardner recognized this issue, noting that:

> "…it does not seem appropriate to allow transfer of excess efficiency credits from Phase 1, unless the cumulative energy efficiency targets for Phase 2 are raised to the extent of the excess credits. To do otherwise may encourage inefficient use of ratepayer funds, including an incentive for elevated incentive costs or other administrative spending."

The Citizen Groups recognize that the carryover policy is an attempt to incentivize EDCs to continue with Phase I programs even after program targets are met, and that EDCs have no market-based incentives to do so. However, the Citizen Groups feel that this particular incentive program unnecessarily sacrifices results in Phase II.

In previous comments, the Citizen Groups advocated for a partial carryover of credits, and such a mechanism would still be a better solution. Given the realities of how cost-effective efficiency is, it is important to ensure that EDCs are continually incentivized to ambitiously pursue and exceed their reduction targets. An EDC should not be "punished" for exceeding targets early by having those reductions ignored in the next phase of planning. However, allowing all extra reductions to be applied to the second phase could potentially bring EE&C programs to a standstill for some utilities and stall continual progress. The Citizen Groups thus advocate that EDCs be allowed to carry over 50% credits to the second phase of programs; this best serves the twin goals of signaling to EDCs that they will be rewarded for surpassing their reduction goals, while maintaining pressure for continued reductions.

V. EXCLUSION OF PEAK DEMAND REDUCTION OBLIGATIONS FOR PHASE II

The Commission's proposal to eliminate the peak demand reduction targets for Phase II is a serious misstep and a lost opportunity for substantial demand response measures to meet their full potential. Peak demand reduction is vital to an effective EE&C program, helping to reduce energy bills for all ratepayers, avoid the need for additional generating capacity, and improve grid security and reliability. Act 129 is clear in allowing the Commission to set demand reduction targets in the absence of a SWE study, and the Citizen Groups believe that the Commission should do so in light of the many benefits to be accrued by ratepayers and EDCs. Failing to set demand reduction targets in Phase II will lead to loss of value of installed measures, higher administrative costs in the future, uncertainty for program participants, and a mad rush to quickly reduce peak demand by 2017 in Phase III of EE&C programs.

The Citizen Groups have signed onto the comments submitted by the Joint Demand Response Commenters and ask that you please refer to those comments regarding our exact views on peak demand reduction.

VI. A WIDE RANGE OF PENALTIES ARE AUTHORIZED IN THE ACT, BUT THE TENTATIVE ORDER CONTAINS NO POLICY DIRECTION ON METHODS FOR ASSESSING THE NEED FOR OR AMOUNT OF PENALTIES.

The Public Utility Commission is given broad discretion over the assessment of penalties for EDCs that fail to meet their Act 129 targets. According to 66 Pa.C.S. §2806.1(f)(2)(i), penalties may be assessed in the range of $1 million to $20 million. The incentive for an EDC to comply will vary greatly depending on whether penalties are assessed at the upper or lower end of this range.

Proper enforcement of penalty provisions is the only way to ensure compliance with Act 129. However, the legislation gives no guidance on how penalties are to be assessed, or the magnitude of those

penalties. The Tentative Order is also silent on this issue. The Citizen Groups strongly believe that the Commission should adopt clear rules for a process by which EDCs will be assessed penalties for failure to meet overall goals, interim goals, and carveouts, as part of a final order. Such rules should contain a schedule of penalties, such that the magnitude of the penalty is commensurate with the magnitude of the efficiency shortfall. They should also specify a compliance period, such that an EDC's failure to take timely corrective action would trigger additional penalties.

VII. STUDY OF ON-BILL FINANCING SHOULD BE EXPEDITED.

The Tentative Order acknowledges that on-bill financing has the potential to reduce market barriers to implementation of EE measures, but states that it does not have enough information to prescribe it in Phase II. Instead, it recommends that a working group be convened do determine its feasibility. The Citizen Groups believe that the tentative order should include a date for convening that working group and a target date for completion of the feasibility study. This completion date should be early enough to ensure that the Commission has the necessary information to fully consider on-bill financing for Phase III of the program. The Citizen Groups would like to participate in this working group.

VIII. CONCLUSION

With these comments, the Citizen Groups have outlined the ways in which the SWE Market Potential Study underestimates the potential for Phase II energy efficiency programs. First, it seems likely that certain otherwise cost effective measures may have been excluded in certain EDC territories from the economic potential due to possible formula errors. Second, critical yet overly conservative and poorly justified assumptions for acquisition costs, necessary incentives and measure penetration have resulted in an underestimate of achievable potential. Third, an improper assumption of a linear relationship between expenditures and efficiency results has led to an overestimate of the constraint posed by the spending cap in the program potential scenario.

These flaws in the study combine to produce the unlikely recommendation that a program which has so far significantly exceeded Phase I goals should be scaled back, and that Phase II should have more modest goals. These modest goals are further undermined by allowing 100% of Phase I credits to be carried forward to Phase II.

The Citizen Groups understand the need to attempt to model the market potential for future efficiency programs. The Citizen Groups also understand the concept of diminishing returns as outlined in the SWE market study; the idea that the most cost-effective measures will be deployed first, leaving more expensive measures to address in the future. However, the market study assumptions overstate the short-term importance of this phenomenon and ignore certain forces that work counter to it, such as the decreasing cost of some efficiency measures, decreasing administrative costs over time, and the decreasing cost of marketing and outreach as programs become more visible.

For these reasons, the Citizen Groups feel that the SWE's model alone is an insufficient basis for determination of Phase II targets. Modeling can inform the decision, but past performance must also be considered. In many ways, recent past performance is a better indicator of near-term program performance in a system such as this, as it accurately reflects all system inputs, many of which were guessed at or simply left out of the modeling effort.

That said, if the model deficiencies highlighted herein were corrected, the Citizen Groups believe a revised SWE market study would find Phase II program potential to be at least 1% per year, as recommended in our previous comments. Therefore the Citizen Groups continue to advocate for a 1% per year energy reduction target (weighted average for all EDCs) for Phase II on behalf of the residents, businesses, and environment of Pennsylvania.

Sincerely,

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