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December 8, 2008

HAND DELIVERED

James J. McNulty, Secretary
Pennsylvania Public Utility
Commonwealth Keystone Building
400 North Street
Harrisburg, PA 17120

Re: Energy Efficiency and Conservation Program and EDC Plans
Docket No. M-2008-2069887.

Dear Secretary McNulty:

Enclosed please find an original and fifteen copies of PennFuture's Comments in the above-referenced proceeding.

Please do not hesitate to contact me should you have any questions.

Sincerely,

Courtney Lane
Policy Analyst
Citizens for Pennsylvania's Future (PennFuture)
Center for Energy, Enterprise and the Environment

Enclosures

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION:**

Energy Efficiency and Conservation : Docket No. M-2008-2069887
Program and EDC Plans :

**COMMENTS OF
CITIZENS FOR PENNSYLVANIA’S FUTURE (PENNFUTURE)**

I Introduction

PennFuture is a statewide public interest membership organization, working to enhance Pennsylvania’s environment and economy, with offices in Harrisburg, West Chester, Philadelphia and Pittsburgh. We appreciate the opportunity to provide comments on Energy Efficiency and Conservation Program and EDC Plans, Docket No. M-2008-2069887.

We commend the Commission for working to implement Act 129 quickly to ensure that Pennsylvania ratepayers start to receive the benefits of energy efficiency and conservation. Energy efficiency is the most cost-effective and quickest means to reduce electric prices for all customer classes across the state. The states commitment to energy efficiency and conservation will help lower system-wide electricity costs, reduce customers’ electricity bills, reduce risk, improve electric system reliability, reduce peak demand, mitigate environmental impacts, and promote economic development all while costing less than generating, transmitting and distributing electricity.

Our comments below provide answers to the questions posed by the Commission and general comments on the Working Group Draft Implementation Order to ensure that the full potential of Act 129 is realized.

II Comments in Answer to Specific Questions Posed By the Commission:

1. EFFICIENCY TARGETS/GOALS:

The proper interpretation of the efficiency targets and goals set forth in Act 129 is to require a fixed amount of decrease in electricity. As the Commission states on page 14 of the Working Group Draft Implementation Order, “if an EDC’s forecasted load for June 1, 2009, through May 31, 2010, is 100 MWh, by May 31, 2011, that EDC must demonstrate that its plan conserved 1 MWh of electricity”.

Requiring a fixed amount of MWh and MW decrease will also make it easier to determine that reductions are occurring due to energy efficiency and conservation programs and not extraneous factors such as economic or weather conditions. For instance, if the EDC is required to conserve 1 MWh of electricity and the measures included in their plan after proper evaluation, measurement and verification techniques are proven to have saved 1 MWh, then the EDC has achieved its goal. Whereas, if the EDC was required to simply reach a reduction down to a fixed level, there are outside

factors such as economics, weather and independent consumer conservation that could allow an EDC to reach these goals without the implementation of energy efficiency and conservation measures.

Therefore it is important that the Commission calculate the required fixed MWh reductions for 2011 and 2013 and MW reductions for 2013.

2. PROGRAM DESIGN:

a) Statewide vs. EDC Specific: Should the Commission encourage, by policy, a statewide approach to some programs that are likely to be effective across Pennsylvania?

The Commission should encourage by policy a statewide approach to certain programs. As mentioned in PennFuture's November 19 testimony, experience has shown that energy efficiency and conservation initiatives benefit from consistency across EDC programs. Collaboration between EDCs in developing programs is beneficial in that it reduces program costs for energy efficiency through economies of scale, avoids unnecessary program overlap that may cause confusion among customers and contractors, improves transparency, and increases the effectiveness of marketing and branding.

PennFuture is aware that due to differences in building stock between certain EDCs, the same set of programs may not be appropriate in every service territory. However, where there are common programs between EDCs it is important that these programs share standardized eligibility thresholds (e.g. SEER 15 for AC) and incentive levels statewide. This type of standardization makes it easier for equipment providers and retailers to work with their distribution chains to supply energy efficiency equipment used in programs if there is one statewide program and one set of requirements.

Additionally, programs that provide rebates upstream to manufacturers or wholesale retailers in return for offering discounted prices to consumers will require statewide collaboration. Targeted manufacturers or wholesale retailers will most likely serve customers in a variety of EDC service territories and therefore in order to avoid confusion it is important to encourage EDCs to collaborate statewide.

Likewise, education and training programs that target retailers, architects, contractors, and building inspectors to properly identify energy efficiency opportunities, install energy savings measures and maintain equipment will benefit from EDC collaboration. These groups also tend to work in multiple service territories and are therefore in need of consistency across the state.

Prior to the EDCs developing their energy efficiency and conservation plans, we encourage the Commission to coordinate statewide programs and facilitate a meeting between the various EDCs to determine which programs will be developed jointly. Northeast Energy Efficiency Partnerships stated in their submitted written testimony for the November 19 En Banc hearing, "In the State of Connecticut, the utilities have agreed upon the collective programs that they will implement as a group. This provides clear and consistent structure and branding for the programs. The utilities, however, maintain flexibility in determining how much they will fund each program..." We believe the same type of collaboration would be beneficial in Pennsylvania.

Recommended Statewide Programs:

While we recommend that where feasible programs should share standardized incentive levels and equipment eligibility levels, there are several programs that benefit from statewide branding and implementation.

Two programs that have shown to benefit from statewide implementation are residential new construction and residential retrofit programs. These programs engage builders, developers, architects, contractors, and trade allies that work in multiple service territories and even in multiple states. Marketing these programs occurs at the national, state, local, and individual levels. When delivering these programs, it is important that they have consistent standards and consumer information. Marketing to the building community tends to occur at home/trade shows and builder conferences that are often attended by multiple regions of the state. Consumer marketing is by market regions that transcend utility service regions. Having inconsistent or multiple new construction and residential retrofit programs across the state would prove ineffective and confuse the marketplace. A single primary program contractor greatly eases coordination and delivery of services and facilitates development of strong relationships with builders.

Other programs that should be implemented statewide are those that target the proper installation of high-efficiency air conditioning and air-source heat pumps such as the CoolAdvantage program in New Jersey. CoolAdvantage works to transform the residential HVAC market by making installations of high-efficiency cooling equipment more commonplace by combining rebates with the promotion of proper sizing and installation by contractors. Such programs target HVAC technicians and manufacturers that most likely serve in multiple service territories and would benefit from statewide consistency.

c) Should the Commission seek to harmonize Act 129 programs with other Federal, State, local, RTP or other group programs?

PennFuture recommends that the PA Home Energy program currently being offered in the West Penn Power service territory serve as the brand for Pennsylvania's statewide residential new construction program and residential retrofit program. PA Home Energy is an established program currently serving the new homes market through ENERGY STAR Qualified New Homes and the existing homes market through Home Performance with ENERGY STAR program. PA Home Energy is building the necessary infrastructure throughout the state to enable the program to be delivered in a cost-effective manner. Over the last 18 months, PA Home Energy has worked closely with the national ENERGY STAR program to ensure that consistent standards and marketing themes would meet or exceed similar programs across the nation.

Instead of creating overlap or taking time to establish separate programs in the other service territories, it makes sense for both economic and marketing reasons for EDCs to work with one another to become partners in this program.

PA Home Energy is already providing training and incentives to encourage contactors and consultants to obtain RESNET and BPI certification. These trainings are occurring throughout the state. It is important to recognize that PA Home Energy is a fully integrated program that includes training, field

support, and marketing to deliver the program to ratepayers and also the necessary quality assurance and energy saving reporting to maintain program integrity. PA Home Energy is the only program in the state that delivers these integrated services.

3. TOTAL RESOURCE COST TEST:

b) The Act defines "Total Resource Cost Test" (TRC test) as "a standard test that is met if, over the effective life of each plan not to exceed 15 years, the net present value of avoided monetary cost of supplying electricity is greater than the net present value of the monetary cost of energy efficiency conservation measures." Under this definition, may the Commission limit consideration of monetary costs to the costs incurred by the EDC?

No. The Commission should not limit monetary costs to the costs incurred by the EDC. The Commission must also take into account monetary costs born by the participant. For example, the amount of money a program participant pays for an energy efficient measure minus the rebate or tax incentive paid by the EDC or other entity. This is common practice for those states that use the Total Resource Cost Test.

For example, the *California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects* includes in the definition of Total Resource Cost Test that “The costs in this test are the program costs paid by both the utility and the participants... Thus all equipment costs, installation, operation and maintenance, cost of removal (less salvage value), and administrative costs, no matter who pays for them, are included in this test”.

One critical point for the Commission to note is that monetary costs will differ based on the type of program. For a first-time installation, or replacement of a broken appliance where the participant would have replaced the equipment anyway, you only need to count the incremental cost difference between the higher efficiency equipment incented by the program and the standard efficiency equipment. On the other hand, if the program is a retrofit or switch-out program where you are replacing equipment before the end of its useful life, you must take into account the full total cost of the new equipment installed, minus any salvage value of the equipment taken out. This is why new construction or other “lost opportunity” programs are considered more cost effective than retrofits.

It is also important that any rebate costs are only counted once in either the program cost (EDC cost) or the measure purchase cost (participant cost). So if you count the rebate as part of the program cost, when you calculate the measure cost (e.g. cost of new air conditioner) it should be the measure cost minus the rebate cost.

c) Can the TRC test include avoided environmental costs or other avoided societal costs?

Yes. Several states include the avoided environmental costs of energy production. This can include pollution damages from SO_x, NO_x, mercury, or particulates, expressed in cost per unit of energy produced. Also in California, the state uses a CO₂ adder of the avoided costs for energy efficiency. They use an eight dollar per ton of carbon dioxide equivalent which escalates annually at 5% per year. The Commission could calculate something similar in Pennsylvania using eGRID which has regional average emissions factors.

d) If the Commission limits costs considered under the TRC test to those incurred by the EDC, should the Commission exclude costs not incurred by the EDC from the test?

No. See answer in (b) above. The Commission must take into account both costs born by the EDC and the participant. This is common practice for those states that use the Total Resource Cost Test.

e) If participant costs that are not paid by the EDC are included, should these costs be reduced by tax credits or credits under the AEPS Act received by the participants?

Yes. See answer in (b) above. It is important that any rebate costs are only counted once in either the program cost (EDC cost) or the measure purchase cost (participant cost). So if you count the rebate as part of the program cost, when you calculate the measure cost (e.g. cost of new air conditioner) it should be the measure cost minus the rebate.

Additionally, the participant cost of the high efficiency measure should also be reduced by any applicable federal or state tax credits as stated in the *California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects*.

f) What elements of the "avoided monetary cost of supplying electricity" should be included in the TRC test?

Avoided monetary costs of supplying electricity should include the following:

- Generation costs. This includes avoided energy costs, capacity costs and transmission and distribution line loss.
- Transmission and distribution costs, including any deferred or avoided investments due to a reduction in electricity load and peak demand.
- Avoided costs of supply disruptions due to reductions in demand and peak loads.

i) What discount rate should be used in the calculation of NPV? How frequently should it be reevaluated? Should it be established for each EDC service territory, or for the Commonwealth as a whole?

Choosing the right discount rate is an important decision as the higher the discount rate, the greater the future benefits are discounted and the harder it is for an energy efficiency measure to be considered cost-effective.

For 2008, Connecticut Light and Power Company and United Illuminating used the Prime Rate, the rate that banks charge their best customers as the discount rate. A rolling, five-year average of 5.5 percent from the Federal Reserve Web site was used.¹ Efficiency Vermont in their 2007-2008 energy efficiency plan used a discount rate of 6.8%. However, the Vermont Department of Public Service recommended that a new, slightly lower discount rate for future valuation of Efficiency Vermont resource savings will be used in the next plan.²

¹ http://www.neep.org/policy_and_outreach/08.CT.elec.plan.pdf

² (http://www.encyvermont.com/stella/filelib/EfficiencyVermontAP07-8_Final.pdf)

According to *The National Action Plan for Energy Efficiency*, developed by the DOE, EPA and a wide variety of energy efficiency and conservation stakeholders, the Total Resource Cost test typically uses the EDC's weighted average cost of capital as the discount rate. This takes into account the average cost of borrowing of the utility, and is the same rate used to borrow money for other utility resource investments on the supply side.

The Commission should employ one of the above methods to determine the discount rate. The rate should be reexamined at least annually or any time a new program measure or EDC plan is examined.

k) The gas industry raised some interesting points on the net impact of displacing natural gas heating equipment (space and water) with electricity heating equipment. Should the TRC test include parameters to capture the consequences of net energy gains or losses in delivering alternative fuels to consumers?

Yes. Resource benefits resulting from programs including any savings in oil, gas or water saved by the customer due to the energy efficiency measure or program (e.g. insulation could save customer oil heat, or HVAC improvements could save the customer natural gas) should be included.

4. EVALUATION, MEASUREMENT AND VERIFICATION:

a) Should the Commission use a statewide, independent evaluator hired by the Commission to review EDC compliance with Act 129, pursuant to 2806.1(b)(1)(i)(J)?

To ensure that any evaluation is free of coercion from the EDC, PennFuture recommends that the Commission, not the EDC select the appropriate evaluation consultant.

Another option is to follow states like Connecticut, New York and Massachusetts that have boards and/or consultants representing the collective interest of various stakeholder groups. These groups work with utilities on selecting evaluation consultants, scoping studies, reviewing results, and planning evaluations.

Additionally, California has a firewall rule in place where contractors involved in any aspect of implementing a utility's program cannot be involved in conducting the evaluation.

b) What programs lend themselves to a "deemed savings" approach, and what programs require more rigorous pre- and post-verification processes? How often should savings estimates be reviewed and how?

As a general rule, deemed savings should only be used for programs with fixed operating conditions and well-known, documented stipulation values (e.g. energy-efficient appliances such as washing machines, computer equipment and refrigerators, some motors and drives, and lighting retrofit projects with well-understood operating hours.) Typically, retrofit programs that serve large numbers of customers with somewhat similar usage patterns, and that offer prescriptive measures tend lend themselves well to deemed savings. This is because one can characterize the measures being installed, the measures being replaced, and the usage and maintenance patterns and then apply that information to a large population.

It is more difficult to use deemed savings for custom programs, particularly those that involve design considerations, multiple measures, controls and practices, and somewhat specialized types of equipment. These types of programs may be better addressed with the measurement and verification options contained in the International Performance and Measurement Verification Protocol (IPMVP) such as: simulation modeling, on-site monitoring, or engineering analyses that are tailored to the situation. These tools can help to capture efficiency savings at the building level from an integrated set of measures but take into account “interactive effects” between measures. Typically, new construction projects, both residential and commercial, may fall into this category.

There is no set time frame for when deemed savings should be updated. The general rule is that deemed savings are updated from evaluation results. For example, Efficiency Vermont updates the deemed savings in their Technical Reference Manual (TRM) when evaluation results are available. Additionally, when a new federal or state energy efficiency equipment or appliance standard comes online, it’s deemed saving should be updated in the TRM. Typically the Department of Energy updates these standards every five to eight years.

The Commission should also examine the provisions contained in the Energy Policy Act (EPAct) 2005 and 2007. Both Acts contained updates to minimum efficiency requirements for equipment and appliances and these should be incorporated into Pennsylvania’s TRM.

d) *In addition to the TRM for standard measures, should the Commission adopt a standard measure and evaluation protocol for determining the energy savings from the installation or adoption of non-standard or custom measures not addressed in the TRM?*

Yes. The Commission should expand the TRM to include a standard measure and evaluation protocol along with definitions and algorithms to convert gross to net savings.

The Commission should adopt the International Performance and Measurement Verification Protocol (IPMVP) as the statewide standard for the measurement and verification of programs not able to be evaluated by using deemed savings currently in the TRM.

The IPMVP is a flexible measurement and verification tool that provides evaluators with the ability to choose which level of rigor and cost is best for each program in their portfolio. The IPMVP is the accepted industry standard used by energy service companies (ESCOs) and is becoming the standard for more and more states including: Connecticut, California, and NYSERDA in New York.

What makes the IPMVP so attractive is its inherent flexibility. If the Commission chooses to use the IPMVP as the standard, those conducting the evaluation are then allowed to select from four measurement and verification approaches (Option A, B, C and D, shown in Attachment A) in order to best match their specific project costs, savings requirements and particular measures or technologies.

Energy STAR’s Portfolio Manager Software can be used in conjunction with the IPMVP. For example, IPMVP “Option C” calls for measuring energy use at the entire facility through billing analysis or a computer simulation to account for interactive effects. ENERGY STAR’s Portfolio Manager Tool can

be used in Option C to account for situations where a retrofit may save electricity in one area, but cause an increase in energy usage in another area.

The standards within ISO New England's Protocol may be appropriate to implement in later years; however, the measurement and verification requirements in the ISO-NE protocol are perhaps too great for EDC programs in their infancy. The Commission should pay close attention to the process in PJM looking to incorporate energy efficiency into its capacity market. It is expected that FERC will issue an order on the subject early next year. PJM will need to develop evaluation, measurement and verification protocols for this new set of resources and the Commission should consider coordination between the PJM protocols and what it will require from EDCs.

e) *How might the Commission simplify and streamline the monitoring and verification of data so as to maximize resources for program measures but enable a thorough evaluation of program results consistent with Act 129 requirements?*

The Commission should create an evaluation, measurement and verification protocol that is tiered in levels of cost and rigor depending on the objectives of the program being evaluated, their scale, the evaluation budget and resources, and specific aspects of the measures and participants in the program. The Commission should focus evaluation funds and efforts on program areas of the most importance and most uncertainty. This can be accomplished by issuing a protocol that dictates which programs can utilize deemed savings and which programs can utilize the IPMVP set of options.

The simplest, least cost technique will be for those programs that are permitted to rely on deemed savings (see recommendations in 4b). These programs will need to have a commissioning process in place to verify that installations have been carried out properly in a site visit. Once the measure is verified it may be appropriate to apply deemed savings.

For those programs that must use measurement and verification to determine gross savings, evaluators will then be able to choose from the four options contained in the IPMVP with varying levels of certainty and cost. The evaluator can choose the option with the highest level of rigor that is consistent with the program budget and objectives.

It is important for the Commission to note that a full impact evaluation is not needed every year, which can help conserve funds. In the first one to two years of the program, evaluators should focus on process evaluations to ensure that EDC programs are being developed and run properly to see if any adjustments are needed. During the beginning years limited impact assessments should be done with deemed savings and verification such as site visits and auditing. In 2011 and in 2013 full impact evaluations should be done to ensure that EDCs have met their required consumption and peak load reductions.

f) *Should the Commission adopt standard data collection formats and data bases for the evaluation of program benefits and results that would be used across all EDC service territories?*

Yes. The Commission should establish common data collection formats and data bases for the evaluation of program benefits and results in order to provide consistency and transparency across

EDC service territories. It is important to avoid having EDC program savings reported with a multitude of formats, which would result in incompatible data and confusing results.

7. CSP ISSUES

b) Are there existing barriers to CSP market development that the Commission should address in the context of Act 129?

Yes. If EDCs are going to partner with CSPs for the development and implementation of energy efficiency and conservation programs, the CSPs will need access to EDC meter and billing data. Efficiency Vermont and the Energy Trust of Oregon have both been very effective independent program administrators because they worked out an agreement with utilities in the state to acquire this data. Having access to customer meter and billing data can enable the CSP to better determine which large commercial and industrial customers to target, what programs to develop, and to better track program effectiveness and savings.

III Comments on Working Group Draft Implementation Order:

C. COST BENEFIT ANALYSIS APPROVAL PROCESS

PennFuture recommends that the Commission expand the definition of the monetary benefits within Section C of the Working Group Draft Implementation Order to include the following:

Monetary benefits:

- Avoided supply costs including: generation costs, capacity costs valued at the marginal costs for the periods when there is a load reduction, transmission and distribution costs - including any deferred or avoided investments.
- Avoided costs of supply disruptions due to reductions in demand and peak loads.
- Resource Benefits – any savings in oil, gas or water saved by the customer due to the energy efficiency measure or program. (e.g. insulation could save customer oil heat, or HVAC improvements could save the customer natural gas).
- Operation and maintenance cost savings.
- Environmental net benefits (air pollution and climate impacts).

It is also important that the Commission make clear that any rebate costs are only counted once in either the utility cost or the participant cost (equipment cost). If a rebate is counted as part of a program cost, its value must be subtracted from the total equipment cost (e.g. cost of new air conditioner) along with any additional tax credits.

Please see the response to question 3 above for recommendations on the net present value discount rate.

D. PROCESS TO ANALYZE HOW THE PROGRAM AND EACH PLAN WILL ENABLE EDCS TO MEET REDUCTION REQUIREMENTS

1) Consumption Reduction Requirements

PennFuture urges the Commission to revise the current language on page 13 of the draft to ensure that the required Act 129 consumption and peak demand reductions are occurring due to energy efficiency and conservation programs within the EDC plans and not extraneous factors such as economic, weather conditions or non-program related energy conservation.

The Act clearly states in Section 2806.1.(B)(1)(I) “By July 1, 2009, each electric distribution company shall develop and file an energy efficiency and conservation plan with the Commission for approval to meet the requirements of subsection (A) and the requirements for reduction in consumption under subsections (c) and (d).” It is clear that the intent of Act 129 is for EDCs to meet the required reductions in consumption and peak demand solely with the energy efficiency and conservation measures within their plans.

Therefore, the Commission must make it clear that the consumption and peak demand reductions are due to measures in the EDC plans and not from savings from other government-funded energy conservation measures, economic or weather conditions.

2) Penalties

Footnote 7 on page 13 and footnote 8 on page 14 of the Working Group Draft Implementation Order both state that failure to meet the required reduction mandates will subject the EDC to a civil penalty of between one million and five million dollars that cannot be recovered in rates. This is far below the penalties mandated in the legislation. The Commission should revise these footnotes to reflect the correct language of Act 129:

“(I) The electric distribution company shall be subject to a civil penalty not less than \$1,000,000 and not to exceed \$20,000,000 for failure to achieve the required reductions in subsection (C) or (D). Any penalty paid by an electric distribution company under this subparagraph shall not be recoverable from ratepayers.”

E. STANDARDS TO ENSURE THAT A VARIETY OF MEASURES ARE APPLIED EQUITABLY TO ALL CUSTOMER CLASSES

PennFuture disagrees with the Commission’s interpretation of Section 2806.1.(A)(5) of Act 129 which requires “Standards to ensure that each plan includes a variety of energy efficiency and conservation measures and will provide the measures equitably to all classes of customers.”

The Commission interprets the requirement for equitable distribution to infer that each customer class be offered at least on EE and one DR program. The Commission goes on to state that the limitation on cost recovery and the specific limitation tying costs to the benefited class will ensure that offerings will not be skewed toward any particular class. However, if the Commission, based on feedback to directed question number 6 in this proceeding, allows for one class of customers to have EE&C charges in

excess of 2 percent of class revenues, due to an abundance of cost effective opportunities relative to other classes, then there is real concern that programs will be skewed to the large commercial and industrial customer class.

With specific carve-outs in place for low-income customers and units of federal, state and local government, it is the residential and small business customer class that could potentially not receive an adequate portion of programs. It is the residential and small business customers that are in the greatest need of energy efficiency and conservation measures. Residential and small business classes currently do not have access to time-of-use price signals like large commercial and industrial customers and therefore do not receive the price signal to conserve energy. In addition, there are significant market barriers in place such as: lack of capital, knowledge, split-incentives, etc., that create disincentives for these customers to make investments in energy efficiency measures.

One of the reasons Act 129 passed was due to concerns over the pending rate cap expiration across the remaining EDC territories. While it is true that large reductions in load from the commercial and industrial class will have an impact on reducing wholesale electricity costs to all customer classes, it is important to note that for those customers that participate in energy efficiency and conservation programs are able to receive not only rate reductions but up to a 20 percent reduction on their electricity bills.

For these reasons, PennFuture urges the Commission to revise this section to indicate that providing measures equitably to all classes of customers infers that each customer class shall receive an evenhanded distribution of measures. States in the region that have mandates for equitable distribution for energy efficiency and conservation programs typically have a breakout of programs as shown below:

Residential:

1. New construction
2. Whole house retrofit
3. Lighting and appliance
4. High-efficiency HVAC, proper sizing and installation

Small Commercial and Industrial:

1. Lighting and controls
2. Operations and maintenance training
3. HVAC replacement
4. High-efficiency coolers/refrigeration

Large Commercial and Industrial:

1. New construction
2. Prescriptive retrofit
3. Operations and maintenance training
4. Lighting and controls
5. HVAC replacement
6. Benchmarking and commissioning programs

Low-Income:

1. New construction
2. Multi and single family homes retrofit

All of the above programs have been proven to be cost-effective and cheaper than supply side investments. Therefore, all customer classes should have access to more than one EE and DR program. All customer classes should have access to several program options to help not only lower wholesale prices but to provide them with the tools and measures to lower their electric bills.

Attachment A: IPMVP Summary of M&V Options

M&V Option	How Savings Are Calculated	Cost
<p>Option A: Focuses on physical assessment of equipment changes to ensure the installation is to specification. Key performance factors (e.g., lighting wattage or chiller efficiency) are determined with spot or short-term measurements and operational factors (e.g. lighting operating hours or cooling ton-hours) are stipulated based on analysis of historical data or spot/short-term measurements. Performance factors and proper operation are measured or checked annually</p>	<p>Engineering calculations using spot or short-term measurements, computer simulations, and/or historical data</p>	<p>Dependent on number of measurement points. Approximately 1-5% of project construction cost of items subject to M&V.</p>
<p>Option B: Savings determined after project completion by short-term or continuous measurements taken throughout the term of the contract at the device or system level. Performance and operations factors are monitored.</p>	<p>Engineering calculations using metered data</p>	<p>Dependent on number and type of systems measured and the term of analysis/ metering. Typically 3-10% of project construction cost of items subject to M&V.</p>
<p>Option C: After project completion, savings determined at the “whole-building” or facility level using current year and historical utility meter (gas or electricity) or sub-meter data.</p>	<p>Analysis of utility meter (or sub-meter) data using techniques from simple comparison to multivariate (hourly or monthly) regression analysis.</p>	<p>Dependent on number and complexity of parameters in analysis. Typically 1-10% of project construction cost of items subject to M&V.</p>
<p>Option D: Savings determined through simulation of facility components and/or the whole facility</p>	<p>Calibrated energy simulation/modeling; calibrated with hourly or monthly utility billing data and/or end-use metering</p>	<p>Dependent on number and complexity of systems evaluated. Typically 3-10% of project construction cost of items subject to M&V.</p>

Source:

http://www.seattle.gov/dpd/cms/groups/pan/@pan/@sustainableblding/documents/web_informatio nal/dpds_007599.pdf