

Transition from Utility Administered to Third-Party Administered Energy Efficiency Programs in Hawaii: Success through Flexibility

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ABSTRACT

In 2007, the Hawaii Public Utilities Commission (PUC or Commission) determined that the energy efficiency programs offered by Hawaiian Electric Company, Inc., Maui Electric Company, Limited and Hawaii Electric Light Company, Inc. (collectively the HECO Companies) would transition to a third-party administrator overseen by the Commission. A third-party implementer was selected, and the programs were transitioned on July 1, 2009. A Public Benefits Fee (PBF) was established to support the energy efficiency and demand-side programs and services.

This paper will discuss the transition process and outcomes of the first two completed years of third-party implementation. A key issue is portfolio freedom – the third-party administrator is empowered to investigate new program and marketing ideas to better meet its goals, which now emphasize total resource benefits (TRB) in addition to kW and kWh savings.

Measures, target markets, customer segments and the overarching evaluation approach will be discussed in the paper, including the following topics:

- Increased emphasis on the longevity of measures (TRB value)
- Reduced emphasis on CFLs
- Increased role of community partnerships
- Focus on geographic equity
- Solar hot water heating – an important measure in both pre- and post-transition programs
- Introduction of infrastructure/market transformation programs
- Introduction of behavioral programs with savings
- Relative cost per kWh and kW for pre-transition and current
- Evaluation transitioned from an ex post multi-year evaluations to an emphasis on ex ante estimates with full annual verification, formative analysis and market assessment.

The paper will conclude with a “what’s on deck” section on next steps for the portfolio, including the role of PBF funded programs in achieving Hawaii’s new Energy Efficiency Portfolio Standards.

Introduction

The State of Hawaii is faced with a growing load and some of the highest electric rates in the country. No stranger to energy efficiency, the HECO Companies and Kauai Electric Utility Cooperative (KIUC) have offered Demand-Side Management (DSM) programs since the early 1990’s. These utility administered energy efficiency programs or Utility Market Structure

allowed for DSM program cost recovery as well as lost margins and a performance incentive for meeting or exceeding EE program goals.

With direction from the Hawaii State Legislature under Act 162, 2006 Session Laws of Hawaii, the PUC was authorized to direct the electric utilities to collect funds from its ratepayers through a PBF surcharge to be specifically used to support energy efficiency programs and services, which were transferred to a third-party administrator contracted by the Commission. The PBF disbursements are subject to Commission review and approval.

The PUC in its Decision and Order #23258 (Order) detailed concerns over the inherent conflict between host utility objectives to sell more electricity as a means of increasing profit and the DSM goals of encouraging customers to use less electricity. The Order also noted concerns regarding high costs of administering the programs and the possibility of increased customer choice associated with a Non-Utility Market Structure. Under such a structure, it was reasoned, a Public Benefits Fund Administrator (PBFA) would have a greater motivation to explore and implement all cost effective DSM programs. The Order described the various roles and responsibilities of the PBFA and targeted a January 2009 transition date. All three HECO companies; HECO (Oahu), HELCO (Hawaii Island) and MECO (Maui County) were ordered to transition to the PBFA programs. The island of Kauai maintains a co-op style electric utility under KIUC and was allowed to continue its existing utility administered programs.

Concurrent to the proposed transition date, State agencies and utilities worked to develop a new plan that emphasized a transition to clean energy goals with the introduction of the Hawaii Clean Energy Initiative (HCEI) – a partnership between the State of Hawaii and the U.S. Department of Energy.¹ Put into place in October of 2008, this agreement set forth a broad ranging set of goals including:

- Increasing the Renewable Energy Portfolio Standard (RPS) to 40% by 2030 and listing specific renewable projects and related tasks
- Decoupling goals for utility rate proceedings
- Energy Efficiency Portfolio Standards (EEPS) requiring 4,300 GWh in energy efficiency savings statewide by 2030

The ultimate objectives of these goals were to move the State towards meeting 70% of its energy needs with clean energy within one generation.

The Transition from utility to PBFA portfolio

RFP and Bid process:

In September of 2008, the PUC issued a Request for Proposals (RFP) requesting proposals for pricing a new third party administered portfolio of energy efficiency programs. The RFP requested bidders to propose a performance-based contract with minimum and maximum awards and corresponding targets. The RFP also outlined minimum monthly, quarterly and yearly reporting requirements, marketing goals and a first year transition period with programs, goals and budgets being similar to existing HECO Companies' programs. The

¹ <http://www.hawaiicleanenergyinitiative.org/>

RFP listed important policy objectives that would be considered as performance indicators in a winning proposal:

- Maximizing electricity and peak demand savings
- Total resource benefits (TRB)
- Broad participation by customers,
- Overcoming market barriers
- Transforming end use markets.

In response to this RFP, the Commission received a number of well-qualified proposals and setup scoring criteria that compared relative costs and impacts as well as bidder experience and track records. After a detailed review of bids and a comprehensive interview with three finalists, the Commission awarded the PBFA contract to Science Applications International Corporation (SAIC).

PBFA Contract

The PBFA multi-year contract began on March 3, 2009 and ends on December 31, 2013 and may be extended for an additional three period, or any part thereof, if mutually agreed upon prior to contract expiration. The PUC established an initial budget of \$38.4 million for SAIC to administer the portfolio of energy efficiency programs for two program years: PY2009 – from July 1, 2009 through June 30, 2010 and PY2010 - July 1, 2010 through June 30, 2011. The contract provided that SAIC administer the programs for two additional program years at a budget that was to be negotiated at a later date. For the first two program years, a performance incentive agreement was followed which allowed for a “hold-back” of \$700,000/year of billings. This amount was to be withheld subject to the PBFA meeting minimum yearly target goals in 5 areas shown below in Table 1:

Table 1. Performance Indicators and Relative Awards

Performance Indicator	2009 Performance Pool	2010 Performance Pool
Res and Bus Energy (kwh)	40%	40%
Peak Demand (kW)	15%	10%
Total Resource Benefits (\$)	30%	30%
Market Transformation	10%	10%
Island Equity	5%	10%

The contract included specific minimum, target, and maximum goals for each of the performance indicators described above. In addition to receiving the holdback if targets were met, SAIC was eligible to receive an award of \$133,000 for exceeding target goals as set forth in its contract for each program year.

This proposed model outlined in the PBFA contract differed significantly from program performance incentives in the earlier utility market structure. Previously, the HECO Companies were awarded a fixed incentive equal to a fixed percentage of net system benefits with savings to be trued up based on the utilities own program evaluation. This incentive was capped at an

annual maximum of \$4 million. Utilities were also limited to administering a fixed set of 8 key programs based on docketed yearly filings.

EM&V Model

In addition to the PBFA, the PUC contracted with a fiscal agent, contract manager and an Evaluation, Measurement & Verification (EM&V) contractor, through competitively bid request for proposal processes, to assist the PUC in overseeing the PBF. Evergreen Economics, together with its subcontractors, has served as the EM&V contractor for both the PY2009 and PY2010 implementation cycles.²

- **Focus on *Ex Ante* Savings Estimates with Installation Verification**

Savings claims for the PBFA are based on a regulatory approach that focuses on approving *ex ante* per unit savings, tried up with measure installation verification at the close of each program year. That is: energy and demand savings estimates for measures (installed through (and/or activities promoted by) the program are approved on an *ex ante* basis. These savings estimates must be documented in a Technical Reference Manual (TRM) prepared by the PBFA and reviewed by the EM&V Contractor. The TRM must include estimates for all prescriptive measures, and descriptions of calculation methodologies for custom measures. The information in the TRM must be consistent with the information in any database or other tool used to calculate savings resulting from the programs. The TRM must be updated each year to reflect the best available information. A two-year cycle may be permitted at the PUC's discretion.

The approved estimates are be “deemed,” for the applicable program year. That is: savings from energy efficiency measures are evaluated using the following formula:

$$\text{Measures installed} \times \text{TRM estimate} \times \text{Verification Rate}$$

Where:

Measures installed =	Program qualifying measures properly installed and operating and recorded correctly in the program database
TRM estimate =	The approved TRM value for energy and demand savings
Verification rate =	The percent of measures found to be installed and operating per EM&V verification processes using appropriately designed sampling techniques.

Ex post EM&V to develop and/or update unit savings estimates is conducted for selected measures and programs, but the results are applied prospectively rather than retrospectively (with some exceptions, e.g., custom sites). That is, the results are used to update estimates for the subsequent version of the TRM. This approach enables the EM&V team to have confidence in the savings estimates that are being used for the program, while allowing the PBFA a measure of security for program planning. The implementer can be confident in the savings they will be

² The team was lead by ECONorthwest for PY2009 but the work was transitioned to Evergreen Economics in 2011, which enabled key staff to complete their duties as required by provisions in the contract.

credited, providing that the measures are in-place, operational and program qualifying based on the EM&V Contractor’s verification work.

From the PY 2009 program cycle through the PY 2011 program cycle, the PBFA has crafted a TRM that has been through many drafts and several extremely thorough rounds of review by the EM&V Contractor. Developing such thorough documentation of program savings estimates has required a lot of effort from both teams, but has paid off in terms of improved transparency, which in turn benefits program planning, reporting and EM&V.

- **Process and Market Evaluations**

The EM&V team also conducted an ambitious set of process and market evaluation activities, with slightly different emphases depending on priorities for each evaluation cycle.

Table 2. Process and Market Evaluation Activities, PY2009 and PY2010

Activity	PY2009	PY2010
Analysis of First year and Cumulative Savings	✓	✓
Comparison of Accomplishments and Program Potential	✓	□
Analysis of Rebate Distribution	✓	✓
Telephone Surveys	✓	✓
• Participants	✓	✓
• Non-Participants	✓	
In-depth interviews	✓	✓
• Program Staff	✓	✓
• Market Actors	✓	✓
Focus Groups		✓
Economic Effects of EE		✓

The EM&V team’s most consistent finding from the market and process evaluations is that the program has been extremely successful in obtaining savings from a few key measures (like CFLs) and from a few key sectors (e.g., the military). However, in the near future – likely within the next several years if not sooner – these measures will be tapped out. In order to meet the state’s energy efficiency goals the PBFA programs will need to reach more sectors and will need to rely less on the relatively cheap lighting measures. Establishing these kinds of goals for the PBFA, and continuing to de-emphasize the focus on short-term savings, will require some evolution in the policy guidance the PUC provides to the PBFA. As described throughout this paper, the closer, real-time relationship between the program, EM&V and policymakers has already demonstrated benefits that arise from being able to modify policies that serve to guide the PBFA implementation, in addition to providing recommendations for improving the programs within their regulatory and contractual framework.

PBFA Portfolio, the first three program years

First Year - Transition Year: July 1, 2009-June 30, 2010 (PY2009)

Both the RFP and the PBFA contract stressed the need to ensure a smooth transition between the HECO Companies' programs and those administered by the PBFA. The focus on this first year was to put the tracking, accounting, reporting and new evaluation systems in place that would allow for a strong foundation to build future programs upon and ensure that there was continuity for program participants, contractors, trade allies and retailers. To this end, general program categories and incentive levels were as close as possible to those used by the HECO Companies.

Primary program areas in the transition years were:

Residential Programs

- Residential Water Heater Program
- Residential New Construction
- Energy Solutions for the Home
- Residential Low Income

Business Programs

- Business Standard Energy Efficiency (CIEE)
- Business New Construction (CINC)
- Business Customized Rebate (CICR)

In addition to the transition programs, the contract allowed for new programs to be implemented as the year progressed. This strategy allowed the PBFA to focus its efforts on developing a comprehensive new tracking system that could accommodate detailed program reporting requirements. The program developed new and comprehensive documentation for the program operating procedures, measure savings claims, and requirements that subsequently became the basis of yearly verification and evaluation efforts as well as a reference point for program changes and improvements in future years.

The first program year ended on June 30, 2010 and the PBFA submitted a draft program savings claim that was evaluated by the EM&V contractor. This detailed verification study included a detailed desk review of the TRM, a review of all engineering savings claims, and a statistically valid suite of both onsite and telephone surveys. The EM&V contractor verified the savings claim within a required level of accuracy, and determined that the PBFA had met the minimum target levels for all program performance indicators with the exception of the island equity goal. The following Table 3 indicates performance for this transition year:

Table 3. PY2009 Performance Impact Summary³

Performance indicator	Target	PY09 Results	% of Target
Res (GWh)	68.7	66.5	97%
Bus (GWh)	57.3	46.7	81%
Peak Demand (MW)	20.1	22.8	113%
TRB (\$M)	140.1	126.6	90%
Market Transformation			
Emerging Tech	20	21	105%
Trade Ally Referrals	40	383	958%
Island Equity			Not met

In addition to meeting the majority of its initial performance goals, the PBFA developed new brand and message strategies, developed new relationships with providers and trade allies, trained and hired new local program staff, and undertook the role of administering federal stimulus funded (ARRA) energy efficiency programs. In order to maximize its resources, the PBFA also adjusted the incentive levels based on minimizing its cost of saved energy both for first year and lifetime savings. This portfolio approach to balancing goals and budgets became much more important under the fixed price PBFA contract as compared to earlier Utility Market structure based program efforts and continues to be an effective method of maximizing efficacy of ratepayer resources. The program also managed to meet its contractual requirement of returning 70% of its total PBFA funds to customer participants in the form of incentives, services and direct installed energy efficiency measures. This goal is higher than in previous HECO Companies' administered programs and continues to be a defining program goal. Earlier HECO rates were at 58%, 45% and 60% for program years 2008, 2007 and 2006 respectively.

Second Year of Programs: July 1, 2010-June 30, 2011 (PY2010)

The PBFA filed its annual program plans for PY2010 with a host of changes and lessons learned based on the first year of program operations. A primary driver for many of the program changes were the use of results from the EM&V efforts undertaken in PY2009, and recommendations from the EM&V team. These changes included revisions to savings values and program design. Key recommendations from the EM&V team were based on results including analyses of the program accomplishments, research on customer perceptions measured through telephone and onsite surveys with participants and non-participants, and interviews with local contractors. Highlights for PY2010 by program area include the following:

Residential

- Combine and simplify three different program offerings into one program for added flexibility to adjust programs.

³ Order Setting Deadline for Comments Regarding RW Beck's Program Year 2009 Performance Incentive Award Claim, Hawaii Public Utilities Commission, Docket 2007-0323, January 06, 2011.

- Addition of a *New Residential Programs Incubator*.
- Introduction of a Solar Interest Buy Down loan program co-funded with ARRA-funding to serve as a pilot for future years.
- Introduction of a Bounty Program to remove and recycle old second refrigerators.
- Rollout of an ARRA funded peer comparison program to encourage behavioral changes and serve as a pilot for a future PBFA program.
- Elimination of window air conditioning programs that did not deliver cost effective savings.
- New home AC and solar water heater tune up programs to improve measure efficacy.

Business

- Introduction of new business measures such as cool roof technologies and sub-metering pilots for multi-unit buildings.
- Introduction of tiered incentives to encourage measures with longer payback.
- Introduction of a dual peak incentive for measures that provide cooling peak savings not necessarily in line with utility-wide early evening water heater driven peak.
- Launch of Central Plant Optimization program providing technical assistance and incentives for large commercial cooling plants.
- Introduction of AC tune up programs.
- Launch of small commercial direct install lighting program for hard-to-reach customers.

Based on these new program designs and the incorporation of EM&V results from the first program cycle, a revised TRM was used to document new deemed savings figures and calculation approaches to custom savings. A new TRB calculation that encompassed these savings assumptions was developed and incorporated as a goal for the second program year.

Similar to the previous year, the PBFA submitted its savings claim at the end of PY2010 and these claims were evaluated by the EM&V contractor. Results for PY2010 are shown here in Table 4:

Table 4. PY2010 Performance Impact Summary⁴

Performance indicator	Target	PY10 Claims	PY10 Verified	% of Target
Res (GWh)	71.2	56.9	55.7	98%

⁴ Order No 30128, Setting Deadline for Comments Regarding SAIC Program Year 2010 Performance Award Claim, Hawaii Public Utilities Commission, Docket 2007-0323, January 19, 2012.

Bus (GWh)	61.4	58.1	50.8	88%
Peak Demand (MW)	23.1	17.0	17.0	Not Met
TRB (\$M)	148.6	134.7	122.0	92%
Market Transformation				
State Demonstration	10	0	0	Not met
Launch RCx			Completed	Met
Community Partners	4		5	Met
Island Equity				Met

The majority of performance goals were met. Peak demand goals were lower than anticipated due in large part to reduction in allowable demand savings credit for CFL's – a result that was implemented in the second program year. State Demonstration projects were not able to be completed due to funding difficulties at State owned facilities.

Third Year and PBFA Contract extension: PY2011 and PY2012

As discussed previously, the initial PBFA budget was for two program years. Upon completion of the initial two-year period, the PBFA and the PUC negotiated new budgets, new performance indicators and some revised program features and terms. At the same time, the PBF collection was increased from 1% to 1.5% of utility sales resulting in increased PBFA annual budgets of nearly \$33.5 million for PY2011 and PY2012

The new PBFA contract also included some structural and operational revisions designed to improve program offerings. The first and most important was to allow up to 10% of the incentive budget to be used for non-resource or infrastructure development goals. This change was made in light of findings from the EM&V contractor's findings and nationwide studies that identified a need for infrastructure development and training in the energy efficiency service sectors.

Another significant change to the Program metrics was the revision of documented savings for CFL lamps. Historically in Hawaii, CFL's comprised as much as 50% of the total first year program savings. Based on a California CFL study and review of savings results nationally for CFLs, savings were reduced by an estimated 57% from earlier years. The change derived primarily from a reduction in measure life. This change caused an increase in the cost of saved energy for the portfolio and a restructuring of measure types to minimize reliance on CFL's.

The TRB indicator was also increased to encourage the PBFA to focus on longer life measures that will provide longer lasting savings to ratepayers. The revised performance indicators for the subsequent two program years are shown below in Table 5:

Table 5. PY2011 and PY2012 Performance Goals

Performance Target Area	Fraction of Performance Pool
Energy (kwh)	35%
Peak Demand (kW)	5%
Total Resource Benefits (\$)	40%
Infrastructure development	10%
Island Equity	10%

Overall, this contract modification and subsequent portfolio designs allowed for several areas of program improvements that were enabled with the new Non Utility Market Structure based third party program administration.

Utility Programs versus PBFA programs

The transition from utility run to third party administered energy efficiency programs was a complex and lengthy process and it is too early to gauge its success, however, there seems to be a trend of increased innovation, flexibility and improved efficacy that has presented itself in the early years of the PBFA programs. The following examples support this claim:

- ***Improved program design and more accurate savings claims: Real time incorporation of EM&V results into program design and subsequent year savings claims have greatly improved in this area.*** Based on field findings and reports from the EM&V contractor, the PBFA changed its rollout strategy for CFL's to include more upstream programs with better signage and point of purchase rebates. Operational deficiencies in solar hot water systems and cooling systems led to introductions of equipment maintenance programs. Field findings regarding CFL give away programs led to changes in program rules and a cap on the number of lamps per household that can be claimed by the program. These types of changes, while possible under the earlier utility market structure programs were less likely to be implemented in a timely manner. The better linkage between EM&V results, program design changes and policy modifications when they are needed to implement a change has been a real benefit of the PBFA structure.
- ***Greater implementation of shorter-term pilot programs to test new technologies and program delivery concepts.*** A number of behavioral programs such as residential multi-family sub metering, and information programs such as Opower and in-house metering programs were able to be field tested in Hawaii while program managers and evaluation staff gathered program and performance data to be used in larger scale programs rolled out in the following year.
- ***Greater flexibility in allocating program budgets within the program portfolio.*** This allowed for greater budget efficacy and continuity of rebates and incentives. A number of contract budget changes were undertaken to allow overall portfolio budgets to stay close to original revenue collection based assumptions while individual program incentive budgets were adjusted in real time to account for changing program participation rates.
- ***Program research and evaluation efforts that support introduction of infrastructure training and education programs that will lead to greater long-term savings and market transformation.*** Detailed telephone and onsite survey data from the EM&V team illustrated a clear need for greater contractor awareness and training. A number of HVAC contractors were not aware of new program offerings and how they could be beneficial to their respective clients and customers. This has resulted in a suite of new contractor, engineer and service professional trainings and informational presentations both within the Hawaii junior colleges and professional associations and vendor alliances.

- **Customer equity and choice have benefitted through the introduction of a larger number of incented measures and program types aimed at different customer segments and classes.** While earlier utility programs allowed for a variety of customized measures, newer programs have carefully analyzed customer usage, measure activity and measure savings efficacy and life within the portfolio to better target new or especially effective measures. This analysis is made possible through a more sophisticated Salesforce based data tracking system and has resulted in more promotional campaigns and programs customized around certain customer segments and measures. A good example of this is the new direct install hard-to-reach lighting programs. These programs are targeted toward small commercial customers that were previously not participating at a high rate. With a different marketing approach and higher incentives for lighting, this segment activity has grown immensely.
- **Overall program efficacy was increased relative to previous years.** The following Table 6 and Figure 1 below demonstrate the cost effectiveness of PY2009 relative to previous years of utility administered programs.⁵

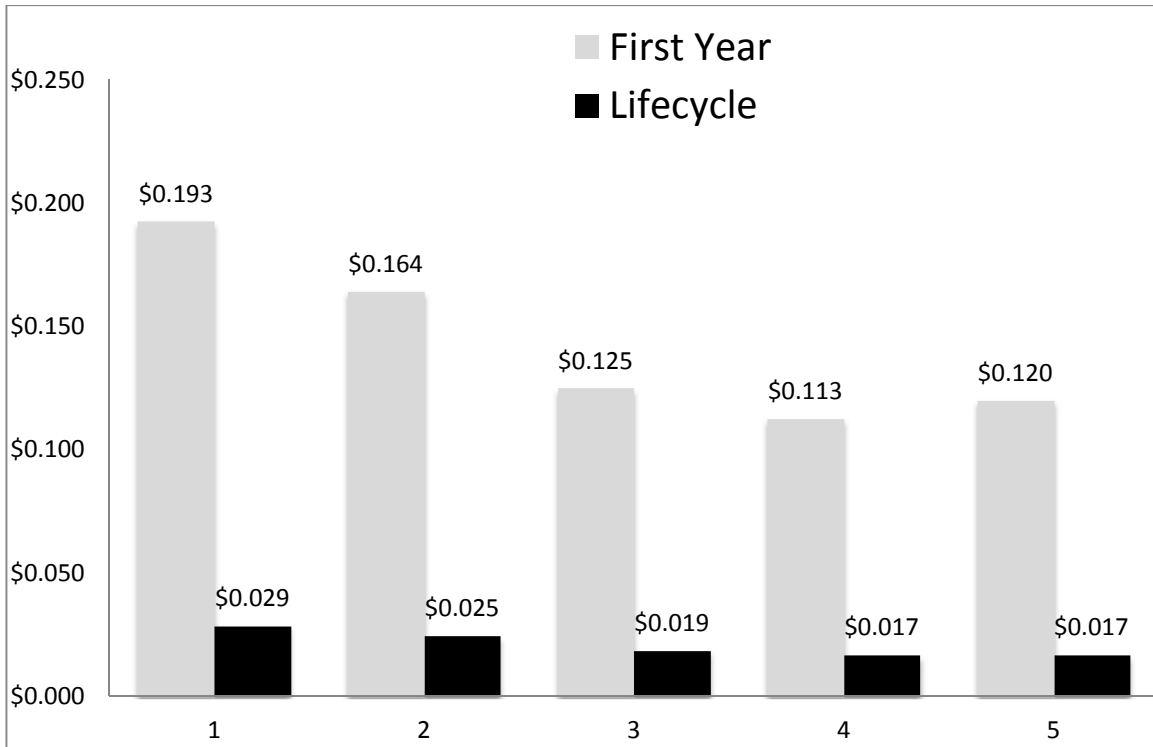
Table 6. Portfolio Efficacy (x \$1,000)

Year	Cust Incent	Prog Ops	Perf Award	Total Prog	1 st yr GWH	\$/kwh saved
2006	\$6,059	\$3,087	\$909	\$10,055	52.2	\$0.19
2007	\$10,538	\$6,884	\$4,750	\$22,172	135	\$0.16
2008	\$17,821	\$7,966	\$4,000	\$29,787	238	\$0.13
2009	\$11,729	\$5,098	\$645	\$17,472	155	\$0.11
2010	\$13,675	\$4,442	\$509	\$18,626	155	\$0.12

In Table 6 above, “Cust Incent” refers to total participant incentives, “Prog Ops” is the spending on operations and administration costs and “Perf Award” refers to the administrator incentive for meeting portfolio goals. Periods 1-5 reflect 2006-2010 respectively. PY2010 was normalized to account for reduced savings claim allowable for residential appliances and CFL’s in 2010 relative to previous years.

Figure 1. First Year and Lifecycle Cost of Saved Energy PY06-10

⁵ PY2009 Annual Report Executive Summary, SAIC Inc., Dec 15, 2009.



Challenges and Opportunities going forward

The PBFA portfolio is still in an early stages, however, the State has a much different portfolio of energy efficiency programs than those under earlier utility efforts. As discussed above, the first couple years allowed for the development of a strong foundation of programs, brand development, tracking systems and staff hiring and development. Some of the biggest challenges ahead will be how the PBFA can continue to deliver program savings after some of its most cost effective lighting measures and targeted customer segments reach saturation and begin to drop out of the portfolio. Potential studies indicate that much of this potential is nearly completed.

In efforts to address declining impacts of equipment based savings, the PBFA has been running several behavioral based pilot programs to capture a greater portion of this difficult to measure market. These pilot programs will continue to provide valuable data for use in determining associated energy savings for future program designs.

The PBFA is actively involved in long-range State goals to meet its EEPs of 4,300 GWh by 2030. This role may include greater involvement with other State agencies, County building offices and federal agencies as well working directly with more large energy users. An important and perhaps underutilized component within this goal may also lie within aggressive and coordinated approach to codes and standards within the State.