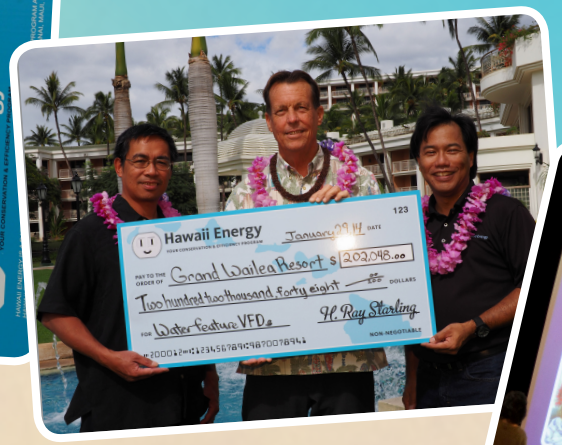

ANNUAL REPORT

Program Year 2013

July 1, 2013 - June 30, 2014

Hawaii Energy

YOUR CONSERVATION & EFFICIENCY PROGRAM

leidos

Annual Report

Program Year 2013

July 1, 2013 – June 30, 2014

This report was submitted to the Hawaii Public Utilities Commission
on November 21, 2014 by:

Hawaii Energy (Leidos Engineering)
Public Benefits Fee Administrator
1132 Bishop Street, Suite 1800
Honolulu, Hawaii 96813

Hawaii Energy is a ratepayer-funded conservation and efficiency program administered by Leidos Engineering, LLC under contract with the Hawaii Public Utilities Commission serving the islands of Hawaii, Lanai, Maui, Molokai and Oahu.

A full report with attachments is available at www.hawaiienergy.com/information-reports.

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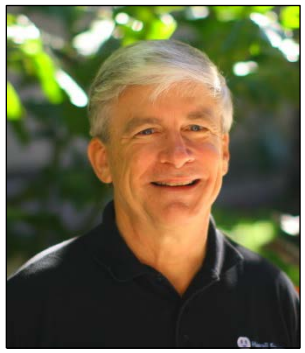
A MESSAGE FROM THE PROGRAM DIRECTOR



On behalf of the entire Hawaii Energy Team, we are proud to submit our Program Year 2013 (PY13) Annual Report, covering July 1, 2013 through June 30, 2014 and highlighting our fifth year as Hawaii's Public Benefits Fee Administrator (PBFA).

This has been another successful and progressive year for energy efficiency in Hawaii. As detailed in this Report, Hawaii Energy's efficiency programs for PY13 will deliver 1.75 billion kWh in lifetime energy savings to the electric grid system at a total program cost of 1.8¢ per kWh (total program costs / total system kWh benefit). This, in turn, will save an estimated equivalent of 2.6 million barrels of oil and 1.5 million tons of greenhouse gas emissions. And, at an average electric utility price of 32.8¢ per kWh, customers will save approximately $517 million on their electric bills over the life of the installed efficiency measures. These figures continue to show the exceptional cost-effectiveness of investing in energy efficiency and why ***efficiency continues to be Hawaii's premier electric grid resource,*** over fossil and renewables.

In addition to meeting our PY13 kWh savings goals at a very attractive cost for our customers, Hawaii Energy made further organizational restructuring and team additions to better facilitate the development and implementation of forward-looking strategies and innovative new measures. We also continued to enhance our customer engagement and build on existing collaborative relationships with our industry allies, Contract Manager, M&V Contractor, Hawaii Public Utilities Commission (PUC) and government leaders. Together, these efforts will help ensure that Hawaii Energy continues to provide best-in-class energy conservation and efficiency programs as required for Hawaii's changing energy future.

Operationally in PY13, Hawaii Energy continued its aggressive engagement with hard-to-reach residential and business customers on neighbor islands; helped more underserved small businesses participate with our Direct Install Lighting Program; accelerated facility-wide LED retrofit, benchmarking and metering programs for Hawaii's large buildings; and continued development of multi-island opportunities to assist water and wastewater operations with energy efficiency upgrades and practices, including publication of a Water & Wastewater Best Practices Manual for Hawaii.

Most significantly this Program Year, Hawaii Energy (as PBFA) designed and built the intake infrastructure and process to support the PUC's bold On-Bill Financing (OBF) initiative, which is expected to be a catalyst for giving all Hawaii electricity consumers a real opportunity to participate directly in the benefits of Hawaii's clean energy future. And at the end of our Program Year, we were quite pleased to be informed of the PUC's intention to extend our PBFA contract for a third year, until December 31, 2016. This convergence of our team's continued service and proven capability as PBFA, along with the PUC's new initiatives, an encouraging market potential study released this year and the strong working relationships we have established thus far promise transformational advances in Hawaii's clean energy progress going forward.

Finally, this Report caps five years of progressive transition from the original legacy rebate program to an innovative, responsive and effective energy efficiency program today that is providing much needed leadership and expertise in accelerating Hawaii's clean energy future.

Respectfully submitted,

H. Ray Starling

H. Ray Starling
Program Director

BACKGROUND

Program Origins

In 2006, the Hawaii Legislature (see Hawaii Revised Statutes §269-121 through 269-124) authorized the PUC to transfer the existing demand-side management (DSM) surcharge collected by Hawaii's electric utilities to a third-party administrator that would be contracted by the PUC. The transferred surcharge would be called the Public Benefits Fee and would be used by the contracted third-party administrator (the Public Benefits Fee Administrator or the PBFA) to manage and deliver energy-efficiency and demand-side management programs and services under the oversight of the PUC.

By Decision & Order # 23258 (Docket No. 2005-0069) dated February 13, 2007, the PUC announced it would establish a Public Benefits Fund to promote the development of programs and services that increase energy efficiency, reduce electricity consumption and demand, and ultimately decrease Hawaii's dependence on imported fossil fuels. In 2008, the PUC took further actions to direct the Hawaiian Electric Companies to begin collecting a Public Benefits Fee (PBF) surcharge.

On September 18, 2008, the PUC issued a competitive Request for Proposal (RFP) soliciting proposals and pricing for a Program Administrator for the Hawaii Energy Efficiency Program. Science Applications International Corporation (SAIC) submitted a proposal and was subsequently selected to negotiate a contract with the PUC. As a result of those negotiations, a contract was signed on March 3, 2009 between the PUC and SAIC whereby SAIC would become Hawaii's first PBFA and would operate the Hawaii Energy Efficiency Program until December 31, 2013 (with a possible extension until December 31, 2016 at the discretion of the PUC). The initial two-year budget of the contract was $38.4M, followed by a second two-year budget of $67.2M. For both contracts, 70% of the contract value was designated for direct incentives in the form of direct cash incentives or services.

The complete Program Historical Summary (2009 - 2012) is provided in Attachment G.

Current Year Program Overview

PY13 – Expansion of Program Reach and Harvesting Results from Prior Years Program Assistance

In our fifth year, Hawaii Energy pushed harder than ever to drive the effectiveness of the PBFA investments.

Expanding Reach

- Expanded Water & Wastewater industry assistance and used this as a model to expand our impact to other targeted sectors.
- Providing Program communications, not only through traditional advertising, but through innovative Transformational efforts such as Internet memes and low-cost PR efforts.

Harvesting Longer-Term Efforts

- AOAO submetering projects are a long-lead effort and are continuing to grow to project fruition.
- Large LED projects in which Hawaii Energy engages as a valued partner for participants are often more valuable than the technology and incentives alone.
- The SWH Tune-Up piloted in PY11 was evaluated for efficacy and launched with great success.
- Program improvements to SBDIL can be used to further monitor and refine existing programs

Tuning Programs to Meet Market Conditions

- Hawaii Energy modified the Small Business Direct Install Lighting (SBDIL) program to increase cost effectiveness by restricting T8 retrofits to T12 baselines. By making this modification, the program hopes to grow the SBDIL Contractors from 10 in PY13 to potentially 23 in PY14. In addition, the program continued to refine the automated tools and speed payment for the contractors, as well as played a critical role in dispute resolution for technical and construction performance. The challenge remains to continue to modify the program to both keep the contractors financially interested in participation and keep the SBDIL project costs a competitive part of the measure portfolio.
- The Water and Wastewater program was successful this year in rolling out our *Water & Wastewater Energy Management Best Practices Handbook* (available online at www.hawaiienergy.com/water-and-wastewater). This manual was customized for Hawaii and was coordinated with the release of the *State of Hawaii Water Commission's Training and Water Loss Manual* and training sessions. In addition, Hawaii Energy was engaged across State, Federal and County agencies to assist in the research and discussion of administrative solutions to barriers of project implementation and operational changes. One project can have the potential to save between 7,200,000 kWh and 21,000,000 kWh and $2 - 5 million dollars per year starting in 2014 depending on the outcome of permitting rules put into place at the end of this year. To encourage treatment facility lighting projects in the specialized industrial environment, Hawaii Energy assisted in the selection of LED replacement fixtures for a Maui County wastewater facility resulting in better light quality and quicker restrike to allow the fixtures to be turned off. The project outlined the need to address the challenges of fixture accessibility and awareness of the availability of LED purpose built fixture offerings.

Making Investments

- *People* – PY13 saw the organization reach full staffing levels to help the Program better engage with customers, HECO and up-and-coming energy and efficiency coordination efforts in PY14 (EV, DR, Smart Grid, Codes and Standards).
- *Technology* – Created OBF Web tools, data exchange services and Contractor Administration services that will be leveraged for new Energy Efficiency program offerings.
- *Data* – The program expanded its efforts in data analysis for market segmentation in order to provide valuable information and attract engagement with potential participants. Hawaii Energy purchased facility information data from Hawaii Information Systems (HIS) that incorporated information in Tax Map Key (TMK) and in Multiple Listing Services (MLS) data on properties. This data was correlated with the electrical usage histories and Geographic Information Systems (GIS) data to provide benchmark information for Hawaii. This information will be used to target and engage market segments with greater focus and effectiveness.
- *Spending Time with Customers* – The program drove major LED lighting projects by engaging with potential customers and lighting professionals, providing technical evaluation and following site procurement actions to ensure any hurdles were corrected with incentives, coordination or other Program assistance. Additional savings were achieved beyond the LED efficiency by application of networked controls with daylight and occupancy detection. The success of exterior lighting projects drove participants to follow their success with interior lighting retrofits and allowing their sites to be used as references for lighting manufacturers and retrofit professionals.
- Expanded the residential programs by leveraging the expertise and customer base of existing assistance programs.

Residential Programs

Residential portfolio spent $9,230,037 (97% of target), and achieved 71,239,576 kWh savings (99% of target), 9,493 kW peak demand savings (96% of target) and $68,617,110 in Total Resource Benefit (94% of target).

Implementation	Achievement
Created the Bounty **Rid-A-Fridge program** in partnership with the Hawaii Foodbank (Oahu), The Maui Food Bank and The Food Basket (Hawaii Island).	Over $3,000 was donated to the participating food banks through this program
Continued to **diversify measure portfolio** away from CFLs.	277,589 LEDs in PY13, an increase of 310% from PY12.
Extended the **Solar Water Heating Grant partnership** to include both Hawaii Community Economic Opportunity Council (HCEOC) and the Maui Economic Opportunity, Inc.	A total of 52 solar water heating systems were installed for "in-need" homes on Maui and Hawaii Island.
Expanded the **Peer Group Comparison program** to 57,500 additional households on Oahu.	132,500 recipient households receiving customized energy saving tips and month-to-month tracking progress on their electricity usage.
Grew **Solar Water Heating program trade ally base** to 89 Participating Contractors	2,185 systems
	Launched co-op advertising program for solar water heating participating contractors to receive advertising funds. Four (4) contractors participated and a total of $6,000 was reimbursed for their advertising.
Released and refined a **Solar Water Heating Tune-Up Program** based on feedback from the PY11 Tune-Up Pilot.	The Tune-Up program far surpassed expectations rebating 826 tune-ups performed in four months.
Collaborated on **Hui Up** with Blue Planet Foundation and Sust`AINAble Molokai to coordinate efforts to help residents exchange and recycle their old, inefficient refrigerators for heavily rebated ENERGY STAR® refrigerators.	Distributed 220 refrigerators to "in-need" households in Molokai through the Hui Up program.
Launched **bi-monthly residential e-newsletter** highlighting the program, res offers and rebates.	Grew opt-in list of engaged subscribers to 9,000 emails. Average open rate was 35%, which is the number of recipients who viewed the email.

PROGRAM OVERVIEW, OBJECTIVES & ORGANIZATION

Business Programs

Business portfolio spent $11,194,615 (96% of target), and achieved 55,765,938 kWh savings (77% of target), 7,294 kW peak demand savings (89% of target), and $87,925,661 in Total Resource Benefit (83% of target).

Implementation	Achievement
Increased incentive for **Electrically Commutated Motors (ECM)** with a push to increase awareness for this promising measure.	Successfully drove a large resort property to install ECMs in all 1,300 guestrooms and receive a $72,050 incentive.
Developed new incentive for large energy-efficient **Uninterruptible Power Supply (UPS)** systems.	A Higher Education Data Center received $55,575 incentive for the installation of a new UPS system achieving significant savings produced by the 8,760 hour per year operation, 413,000 kWh per year and 47 kW.
Harvested the results from years of work in the **Condo Submetering** program promoting equitable distribution and created direct financial responsibility of electrical consumption.	11 more condo and apartment complexes totaling 2,364 units. The largest project resulted in an $111,000 incentive for the submetering of 740 dwelling units reducing their energy consumption by over 179,000 kWh/year and demand by 21 kW.
Drove major **LED Exterior Lighting** projects with technical and financial assistance.	• $455,489 incentive motivated a large retail mall to do a LED replacement of old metal halide fixtures throughout the parking structure achieving cost savings of $702,000 per year, 2,679,000 kWh per year and 201 kW. • $43,786 incentive to the County of Hawaii for converting 857 of their low pressure sodium streetlights to LED streetlights saving $145,000, 360,000 kWh/year and reduced demand by 55 kW.
Assisted in **Innovative and Specialized Retrofits**	$91,484 incentive for the installation of a high efficiency rotary plastic bottle blower used to inflate plastic blanks inside of a shape mold. The old machine exhausted the compressed air after each bottle was pressed into the mold. The new machine recaptures compressed air, substantially reducing energy consumption by 600,000 kWh a year.
Continued success in **Commercial Water Pumping Improvements**	A $202,048 incentive to a Maui resort hotel for the installation and redesign of all of their water pumps on their pools and water features expected to save over 1,000,000 kWh per year and reduce demand by about 140 kW, saving the resort over $300,000 per year.
Refined **Direct Install program**	545 small businesses and restaurants were served, providing annual energy savings to these customers of over 4.5 million kwh.
Launched **quarterly business e-newsletter** highlighting the program, business offers and rebates.	Grew opt-in list of engaged subscribers to over 700 emails. Average open rate was 40%, which is the number of recipients who viewed the email.
Highlighted the successes of local businesses that have utilized the program and received incentives for their energy efficiency efforts by promoting them through **check presentations.**	A total of seven (7) local businesses were featured in check presentations and a monthly *Hawaii Business Magazine* ad. First program year where we brought public relations in-house. This enabled us to promote the program more efficiently and effectively to the local media.

PROGRAM OVERVIEW, OBJECTIVES & ORGANIZATION

Transformational Programs

Through the expertise and collaboration of Hawaii Energy and its subcontractors throughout PY13, the Transformational Program met and exceeded its goals for the Program Year.

Implementation	Achievement
"Sharing the Aloha" community workshop expansion with the addition of sessions held at large employers such as resorts, hospital and non-profits.	Achieved a new high of 3,101 attendees.
Memes – Worked with Kanu Hawaii to develop and distribute various energy-saving topics in the form of "memes," an item in the form of an image, video, phrase, etc., that is spread via the Internet and often altered in a creative or humorous way.	• In three months, memes resulted in 614,542 social media views of which 19,394 people took the next step and engaged in an action to read more, share, comment, view video, etc. • This approach to engage through social media, bring energy efficiency to new viewers, will be used to drive future participation of Hawaii Energy's offerings.
Pay it Forward - Piloted an offering with Kanu Hawaii to teach people how to use a simple mechanical plug timer to save energy by controlling "vampire loads" and then get those participants to help others do the same.	• Reached over 20,000 Hawaii residents via email and social media and got 1,035 responses. • Written installation instructions based on Hawaii-styled phrasing and photos produced the best install rates. • Photos of the installed plug timers provided verifications. • 38% posted their experience on social media.
Expanded Professional Training with the introduction of online recorded workshops providing participants from all islands access to training.	Achieved a new high of 1,336 participants.
The **Building Operator Certification (BOC)** courses had success in improving the recruitment of an appropriate audience.	51 well-qualified participants. The training was so effective that employers specifically requested an offering of BOC Level 2.
Followed the advice from the Teacher Advisory Board to allow educators to hold Energy Expos at their schools inviting the community to learn about conservation and efficiency from student-led NEED.org activities.	Reached 338 teachers through energy workshops, enriching the education of over 18,000 students.
Orchestrated a major press conference on September 19, 2013 with the Hawaii National Guard.	The conference generated significant media coverage. It was held in recognition of the Hawaii National Guard's efforts to reduce energy consumption and become more energy-efficient. Featured speakers were Governor Neil Abercrombie, Major General Darryll D.M. Wong and Hawaii Energy Program Director Ray Starling.

On-Bill Financing Program

Hawaii Energy provided the PUC with OBF program development support focused on: Program Management, Contractor Management, IT Solutions, and Marketing & Outreach. Hawaii Energy also worked closely with the other program entities - HECO and AFC First (Finance Program Administrator) - on process and IT system design issues, as well as the OBF Working Group on refining program parameters.

PY13 involved the development of numerous deliverables in support of the Program Administration role and final program parameters will be finalized upon the Investor selection and the late 2014 launch date.

Significant activities in PY13 included the following:

Program Management

- Development of the Program Administrator Operations Plan to define processes for customer and contractor eligibility, completion of energy assessments, and assessment criteria for submitted projects.
- Support to PUC staff on the development of the OBF Program Manual.
- Provided issue papers and presentations to facilitate discussions and to drive recommendations for program development.

Contractor Management

- Development of all Energy Assessment and project submission forms.
- Development of contractor training materials, training plan and the contractor-driven application process.
- Gathered industry feedback through several interactive sessions with solar water heater contractors and suppliers.

IT Support

- Create OBF information website to provide customer-facing information on the program.
- Built OBF contractor portal to provide an online project submission, tracking and approval tools.
- Interface with AFC First for rapid, cost effective web-based service solutions for processing project applications.
- Development of solar water heating and residential air conditioning estimated energy savings calculators.

Marketing & Outreach

- Presented Marketing & Outreach Plan discussing specific actions for supporting a contractor-centric marketing approach along with Hawaii Energy's direct engagement of specific hard-to-reach market segments.
- Outlined OBF marketing brochures to support customer education and engagement through both contractor driven marketing and Hawaii Energy outreach efforts.

Achievements

- The Program invested a total of $32,049,855 to deliver 1,749,955,694 kWh (system-level) over the measure lives resulting in a cost per kWh of $0.0183.
- Delivered $20,424,652 in incentives driving customer bill savings of $49,510,256 annually and over $517,191,593 over the life of the measures installed. See **Table 1** for details of customer energy cost savings by island and rate tariff.
- A first year Program level savings of 127,007,811 kWh.
- Diversified portfolio away from reliance on CFLs by 15.4%, while increasing LEDs by 191%.

Table 1
Customer Energy Cost Savings by Island

First-Year Energy Cost Savings

Island	R	G	J	P	DS	F	Total	kWh - 1st yr	Avg. Cost $/kWh*
Oahu	$19,903,830	$1,179,897	$5,909,233	$6,712,143	$2,627,466	$28,041	$36,360,610	112,806,380	$0.322
Hawaii	$4,791,090	$233,647	$743,796	$750,702	$0	$164,026	$6,683,261	16,363,022	$0.408
Maui	$4,005,836	$134,740	$469,202	$1,741,015	$0	$0	$6,350,792	16,829,320	$0.377
Molokai	$56,573	$2,012	$0	$0	$0	$0	$58,585	118,838	$0.492
Lanai	$21,635	$35,372	$0	$0	$0	$0	$57,007	114,701	$0.497
Total	**$28,778,964**	**$1,585,668**	**$7,122,231**	**$9,203,860**	**$2,627,466**	**$192,068**	**$49,510,256**	**146,232,261**	**$0.338**

Customer Lifetime Energy Cost Savings

Island	R	G	J	P	DS	F	Total	kWh - Lifetime	Avg. Cost $/kWh*
Oahu	$152,749,397	$15,787,155	$82,461,537	$95,484,969	$45,208,173	$346,144	$392,037,376	1,254,377,140	$0.31254
Maui	$28,864,153	$1,899,151	$7,210,337	$25,963,686	$0	$0	$63,937,328	172,473,649	$0.37071
Hawaii	$34,303,853	$3,243,438	$10,095,406	$9,942,227	$0	$2,460,394	$60,045,317	149,762,891	$0.40094
Molokai	$589,520	$29,306	$0	$0	$0	$0	$618,826	1,254,686	$0.49321
Lanai	$57,537	$495,209	$0	$0	$0	$0	$552,746	1,092,020	$0.50617
Total	**$216,564,460**	**$21,454,260**	**$99,767,280**	**$131,390,882**	**$45,208,173**	**$2,806,538**	**$517,191,593**	**1,578,960,387**	**$0.32755**

*Average per kWh customer electric cost based on actual participants' total bill energy costs for calendar year 2013.

Lessons Learned

The Business Program successfully integrated interns to support post-inspections for the Small Business Direct Install Program. This provided interns with valuable exposure to the energy efficiency industry while expanding the Program's capacity. This resource also provided better customer feedback to help the Program improve this offering in PY14 while building awareness of the Program throughout the small business community.

The Residential Program encouraged participation from new lighting manufacturers and retailers, both small and large, by simplifying the application process. Program representatives engaged lighting participants via phone and on the ground at retail locations. This resulted in a number of new lighting products being rebated throughout PY13.

The Transformational Program focused on improving the learning experience for all workshop participants through the thoughtful selection of well-qualified attendees and through extending the reach of our offerings across the five islands. With all programs, mindful attention was given to cost-effectively scale the offerings to reach more people, with particular attention to island equity and hard to reach communities. An important enhancement for the coming year is to deepen the learning through repeated contact with targeted customers, offering advanced training opportunities, and piloting new programs to further reach and encourage improved energy engagement across the state.

Significant Event(s)

The Business Program maintains a full calendar of meetings and events, both large and small that educate prospective participants on the many energy efficiency opportunities their businesses and facilities provide. The team also engaged professional associations throughout the year and is meeting often with technology vendors to stay current on new technologies, present Program developments and solicit ideas and feedback. While over seventy events were reported throughout the year, this is but a fraction of the Business Programs engagement with the business community and the vendors that support them.

In PY13, the Residential Program hosted eight (8) solar water heating contractor meetings. These meetings had a total audience of almost 200 people. They served as an opportunity to present Participating Contractors with Hawaii Energy's new initiatives, like the Cooperative Marketing program, and gather feedback regarding current industry trends in solar water heating.

A significant event for the Transformational Program was the University of Hawaii (UH) and Hawaii Energy "Energy Solutions Leadership Reception" that took place on May 8th, 2014. This event engaged keynote speaker and Hawaii Energy trainer, Mark Jewell, with an assembled group of approximately fifty leaders that included members of the UH Board of Regents, UH system and campus administrators, and facilities managers. It was an important engagement with a large, state institution that has helped to catalyze momentum to develop a comprehensive energy efficiency strategy for the University.

PROGRAM OVERVIEW, OBJECTIVES & ORGANIZATION

Program Objectives

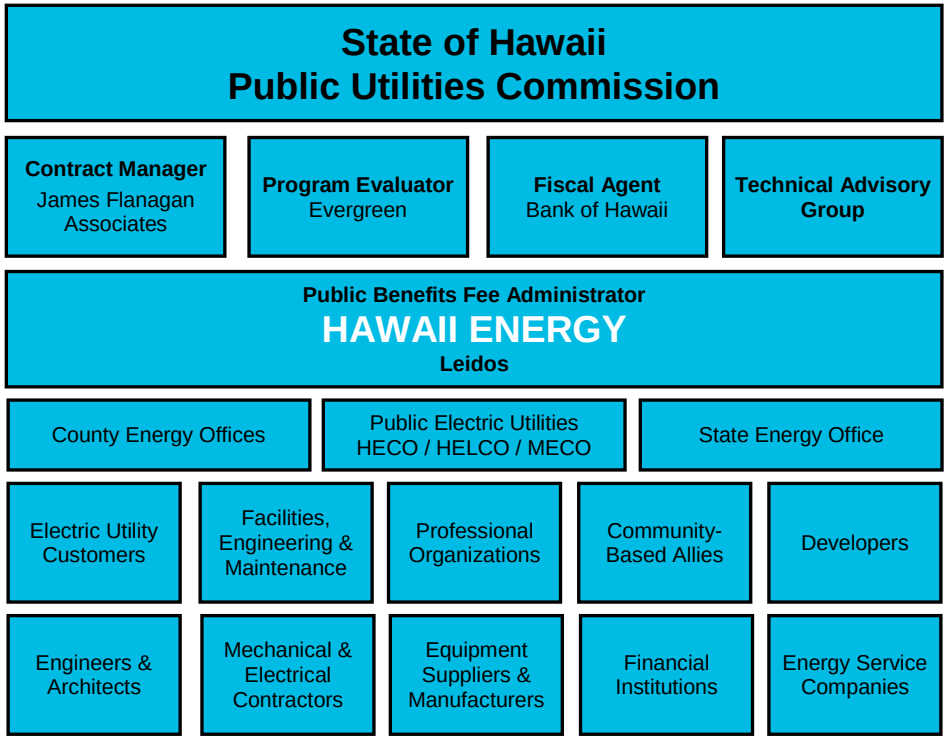
In addition to the PBFA Contract requirements and performance award goals, the Program's broader objectives for PY13 included:

- Reduce the State's demand for electricity, and by doing so, decrease the State's dependence on imported fuel.
- Expand the Program's outreach to the neighbor islands and other hard-to-reach constituents.
- Support the Hawaii Clean Energy Initiative and related efforts aimed at improving Hawaii's energy sustainability.
- Leverage strategic agencies and allies as "force multipliers" to extend the Program's outreach.
- Serve as one of the State's critical leaders, advocates and sources of information for energy conservation and efficiency efforts.
- Explore new innovative strategies in energy conservation and efficiency.
- Evolve the Program to affect behavior change through transformational programs, peer comparisons and enhanced information to increase personal awareness of energy consumption, as well as traditional cash incentives for implementing energy efficiency measures.
- Reach out to small businesses on a more individualized basis to enhance their viability as a going concern during the current economic downturn.

Oversight and Support

During PY13, the PBFA collaborated with a wide variety of support organizations and oversight entities. These oversight entities were comprised of the PUC, Contract Manager (James Flanagan Associates), Program Evaluator (Evergreen Economics), Fiscal Agent (Bank of Hawaii) and a Technical Advisory Group (TAG). The TAG is made up of local energy stakeholders who provide their expertise, technical guidance and support to ensure success of the Program. Together with the Program's supportive trade allies and community groups, Hawaii Energy continually worked to improve the accountability, functionality, offerings, efficiency and cost-effectiveness of the Program. Program oversight and support operatives are shown in **Figure 1**.

Figure 1 – Program (PBFA) Oversight and Support Organizations



PROGRAM OVERVIEW, OBJECTIVES & ORGANIZATION

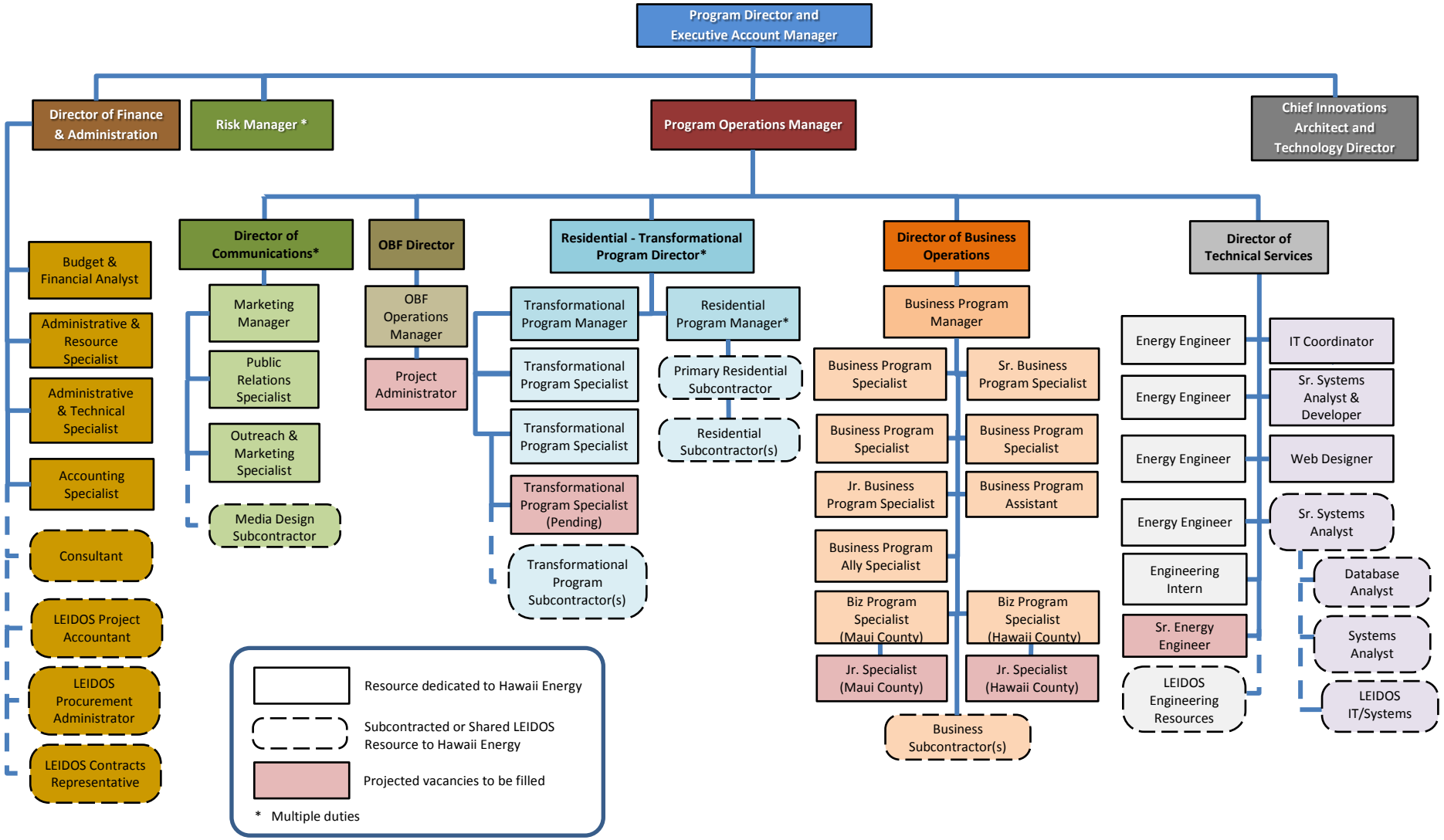
The foundation of the Program's organization is a core team of Leidos professionals in Honolulu, supported by off-site staff of uniquely skilled professionals throughout Leidos' organization nationwide. The Program also has a number of key subcontractors that together round out the Hawaii Energy team. These key subcontractors are:

- **Association of Energy Engineers (AEE) –** Provided technical training for Certified Energy Managers and Certified Energy Auditors.
- **Blue Planet Foundation –** Conducted Molokai Hui Up 3.0 (refrigerator trade-up program).
- **EEFG, Inc. –** Provided education, training, coaching and analysis to help energy users and service providers realize and express the true value of improving energy efficiency.
- **Helen N. Wai, LLC –** Provided training to assist communities and organizations in the areas of financial literacy and energy efficiency.
- **Home-Tech –** Provided solar water heating systems and commercial equipment inspections on Hawaii Island.
- **Honeywell –** Provided customer service and administrative functions to support the residential programs and provides check processing services for both residential and business incentive programs.
- **JN Plumb Tech –** Provided solar water heating systems and commercial equipment inspections on the islands of Lanai, Maui and Molokai.
- **Kanu Hawaii –** Provided transformational messaging and Pay-It-Forward (timer lending initiative) implementation support.
- **Kupu –** Provided energy efficiency interns for Program through Rewarding Internships for Sustainable Employment (RISE) program.
- **National Energy Education Development (NEED) Project –** Provided training for teachers to understand and be better able to teach energy efficiency in K-12 schools.
- **Opower –** Provided peer group comparison Home Energy Reports to residences in Maui County, Hawaii County and select parts of Honolulu County.
- **University of Hawaii Outreach College –** Provided technical training for building operators through their existing Continuing Education programs.
- **Wall-to-Wall Studios –** Provided online and advertising creative design services and media placement.

Program Organization

The Program's organization at the end of PY13 (including pending hires) is shown in the chart below:

Figure 2 – Program Organizational Chart
(as of June 30, 2014)



PERFORMANCE INDICATOR RESULTS

Program Performance Indicators and Related Targets

Overview

The following Performance Indicators were established in the PBFA Contract in order to set measureable performance targets that meet the PUC's objectives and to provide the basis for financial incentives as a reward for superior performance in achieving explicit Program goals. The Performance Indicators for PY13 are:

1. Cumulative Annual Electric Energy Savings (Program Level)
2. Peak Demand (Program Level)
3. Total Resource Benefit (Program Level)
4. Market Transformation
5. Island Equity (Broad Participation)

Table 2 defines the minimum, target and maximum award levels for each Performance Indicator used to measure the Program's performance.

Details of each indicator and its related target follow.

Table 2
Performance Indicators

Indicator		Minimum	Target	Maximum
First Year Energy Reduction (kWh)		106,212,107	141,616,143	155,777,757
Peak Demand Reduction (kW)		13,366	17,821	19,603
Utility Cost Avoidance (TRB)		$132,760,481	$177,013,974	$194,715,371
Market Transformation	Behavior Modification	13,500	18,000	n/a
	Professional Development	750	1,000	n/a
	Technical 'Know-How'	1,500	2,000	n/a
Island Equity	Honolulu County	59.0%	73.8%	n/a
	Hawaii County	10.3%	12.9%	n/a
	Maui County	10.7%	13.4%	n/a

PERFORMANCE INDICATOR RESULTS

Performance Indicator #1: Cumulative Annual Electric Energy Savings (Program Level)

Target: 141,616,143 kWh

Annual Electric Energy Savings directly benefit the State's goal of achieving energy independence by reducing the consumption of imported fossil fuels in proportion to the fossil-fueled units used to serve this load. The program participants directly benefit through lower electricity costs.

The Program Level Energy Savings Target of 141,616,143 kWh currently equates to 1,595,492 MMBTUs or avoided use of 260,782 bbls of liquid fossil fuels in Hawaii, see **Table 3**.

Table 3
Estimation of Potential Fossil Fuel Avoidance

Potential Barrels (BBLs) of Fossil Fuels Avoided in PY13				
Annual Program Level Energy Savings Target		141,616,143	kWh/Yr.	
Average Program Attribution to System Level Impact	÷	81%		
System Level Gross Generation Energy Impact		**174,834,744**	kWh/Yr.	
Est. 2013 Electrical Generation Source Distribution				
Renewable Energy Sold		1,304,525,000	kWh/Yr.	13.7%
Fossil-Fuel Energy Sold	+	8,242,675,000	kWh/Yr.	86.3%
Total Energy Sold		9,547,200,000	kWh/Yr.	
System Level Gross Generation Energy Impact		174,834,744	kWh/Yr.	
% System Average Fossil-Fuel Generation	x	86.3%		
Reduction Target Impact in Fossil Fuel-Generation		150,945,406	kWh	
Energy Avoided into Generators				
Fossil-Fuel Energy Generated		150,945,406		
Avg. System Generating Heat Rate	x	10,570	BTU/kWh	
Energy Required for Fossil-Fueled Electricity Production		1,595,492,938,099	BTU/Yr.	
Generation Liquid Fossil Fuel Mix				
Energy in BBL of Low Sulfur Fuel Oil		6,200,000	BTU/BBL	79.0%
Energy in BBL of #2 Fuel Oil (Diesel)		5,860,000	BTU/BBL	19.0%
Energy in BBL of Naptha		5,335,500	BTU/BBL	2.0%
Average System BTU/BBL		6,118,110	BTU/BBL	100.0%
Energy Required for Fossil-Fueled Electricity Production		1,595,492,938,099	BTU/Yr.	
Average System BTU/BBL	÷	6,118,110	BTU/BBL	
Number of Barrels of Fossil-Fuel Avoided		260,782	BBLs/Yr.	
Number of Barrels of Fossil-Fuel Avoided		260,782	BBLs/Yr.	
Potential Cost per BBL for Fossil Fuels	x	$125	per BBL	
Potential Fossil Fuel Cost Savings to State		$32,597,750	per year	
Potential Green House Gas Equivalencies Avoided in PY13				
System Level Gross Generation Energy Impact		174,834,744	kWh/Yr.	
Green House Gas Reduction* (www.epa.gov/egrid)				
Energy in kWh		**174,834,744**	kWh/year	
Energy in MWh		174,835	MWh/year	
CO2 - Carbon Dioxide		152,239	Tons/Year	
CH4 - Methane		9	Tons/Year	
N2O - Nitrous Oxide		2	Tons/ Year	
Green House Gas Equivalencies**				
Less Passenger Vehicles		25,381		
Less miles/year driven (avg passenger vehicle)		287,041,601		
Wind turbines installed		33		
Acres of US forest CO2 sequestered in one year		98,818		
Reduction Comparison to PV and SWH (Hawaii Energy)				
Rooftop PV Panels (300W) to offset same energy usage		406,897		
Solar Water Heating Systems to offset same energy usage		84,666		

*Power Profiler - HICC - Oahu - Excel tool and Website:
http://oaspub.epa.gov/powpro/ept_pack.charts
** EPA's Greenhouse Gas Equivalencies Calculator:
http://www.epa.gov/cleanenergy/energy-resources/calculator.html

PERFORMANCE INDICATOR RESULTS

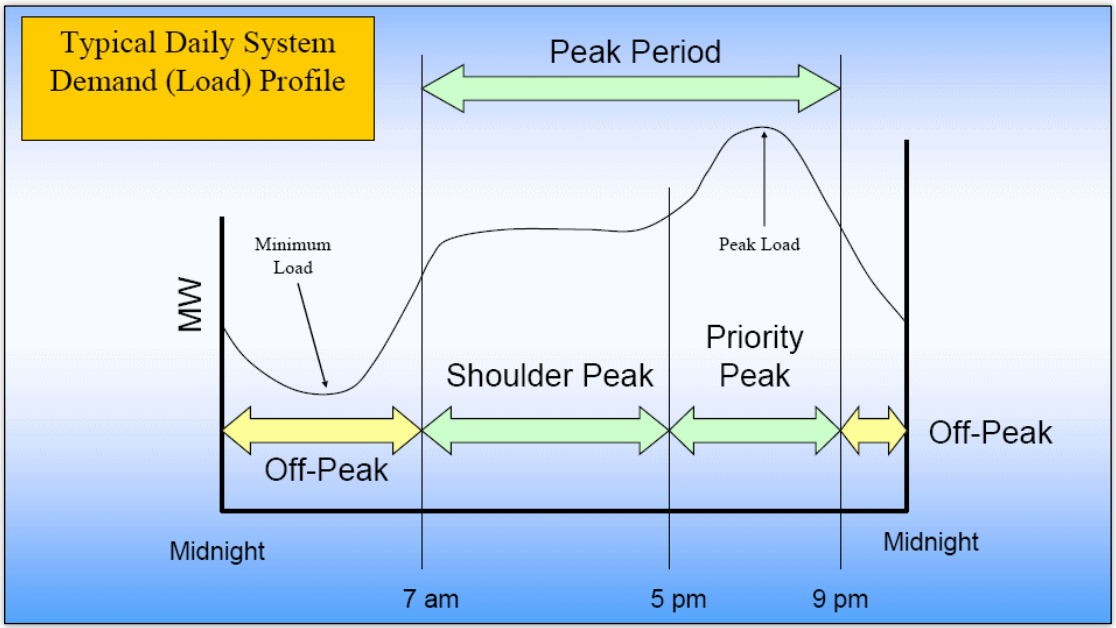
Performance Indicator #2: Peak Demand Savings

Target: 17,821 kW

Peak Demand Reduction is focused on reducing the electrical load during the traditional peak demand period between 5:00 p.m. and 9:00 p.m. on weekdays, as illustrated in **Figure 3**. System Demand Load is typically highest when humid nights increase air conditioner usage in addition to the normal evening water heating loads. This system peak load is used to plan the requirements for additional generation capacity. Reducing the load reduces the cost to the utility customer by deferring the need for an additional unit of generation. Aggressive peak load reductions and load shifting technologies may allow for the retirement of less efficient generation units as more renewable generation is available.

Program participants benefit from lower electrical costs and all customers benefit from the avoided cost to provide additional units of generation to meet increasing electrical peak demand. The target of 17,821 kW is equivalent to the power required to operate 4,642 water heaters at 4 kW each.

Figure 3 – Typical Daily System Demand (Load) Profile



PERFORMANCE INDICATOR RESULTS

Performance Indicator #3: Total Resource Benefit (TRB)

Target: $177,013,974

The Total Resource Benefit (TRB) is the estimated total net present value (NPV) of the avoided cost for the utility from the reduced lifetime demand (kW) and energy (kWh) from energy efficiency projects and measures. The utility costs were determined using average avoided cost data for installed capacity to meet demand and cost to produce energy that was provided by HECO IRP4 and adjusted under the advice of the Contract Manager. Average annual avoided cost for capacity and energy for calendar year 2013 escalated for a 20-year period was the basis for the analysis. The TRB incorporated avoided transmission and distribution costs into the avoided energy and capacity costs. The time value of money is represented by a discount rate of 6%. The discount rate is used to convert all costs and benefits to a "net present value" for comparing alternative costs and benefits in the same year's dollars.

Table 4 provides an example of the TRB calculation as if a hypothetical project consisted of a single measure with a nine (9) year life achieving the program demand (kW) and energy (kWh) targets. In the implementation of specific Program measures, individual calculations are done for each measure then summed together to determine the Program's TRB result.

Table 4
Example of the TRB Calculation using Look Up Table

Life	Discount Rate	kW Target	kWh Target		Project Cost
8	6%	25.0	25,000		$ 45,000

			Utility Avoided Cost		NPV for each Year		Cumulative NPV		TRB			
Year	Measure Life	NPV Multiplier	$/kW/yr.	$/kWh/yr.	$/kW/yr.	$/kWh/yr.	$/kW/yr.	$/kWh/yr.	Capacity Benefit	Energy Benefit	Total Resource Benefit	TRB/TRC Ratio
2013	1	1.00	$ 353	$ 0.104	$ 353	$ 0.1037	$ 353	$ 0.1037	$ 8,830	$ 2,592	$ 11,422	0.25
2014	2	0.94	$ 371	$ 0.109	$ 350	$ 0.1027	$ 703	$ 0.2064	$ 17,570	$ 5,160	$ 22,730	0.51
2015	3	0.89	$ 383	$ 0.112	$ 340	$ 0.1000	$ 1,043	$ 0.3064	$ 26,081	$ 7,660	$ 33,741	0.75
2016	4	0.84	$ 386	$ 0.113	$ 324	$ 0.0953	$ 1,368	$ 0.4016	$ 34,188	$ 10,041	$ 44,229	0.98
2017	5	0.79	$ 388	$ 0.114	$ 307	$ 0.0902	$ 1,675	$ 0.4919	$ 41,866	$ 12,297	$ 54,162	1.20
2018	6	0.75	$ 389	$ 0.114	$ 291	$ 0.0854	$ 1,965	$ 0.5773	$ 49,135	$ 14,432	$ 63,567	1.41
2019	7	0.70	$ 392	$ 0.115	$ 276	$ 0.0812	$ 2,242	$ 0.6584	$ 56,042	$ 16,461	$ 72,503	1.61
2020	8	0.67	$ 391	$ 0.115	$ 260	$ 0.0763	$ 2,502	$ 0.7348	$ 62,538	$ 18,369	$ 80,907	1.80
2021	9	0.63	$ 395	$ 0.116	$ 248	$ 0.0727	$ 2,749	$ 0.8075	$ 68,728	$ 20,187	$ 88,915	1.98

PERFORMANCE INDICATOR RESULTS

Performance #4: Market Transformation

Target: Two Tasks in each of the Four Categories

Transformational efforts are those that involve education, training and other legislative support activities that may not result in direct quantifiable energy savings. The focus of this year's target is to develop community partnerships to leverage their reach and expertise in delivering energy education to specific "hard-to-reach" communities and industries. These efforts contribute to development of an infrastructure and mindset that will result in societal changes and increased energy savings in the future.

Figure 4 provides a summary of the Market Transformation programs for PY13.

Figure 4 – Summary of Transformational Programs

Energy Literacy in Hard-to-Reach Communities: Sharing the Aloha		**Behavior Modification**
Energy Efficiency Literacy at Scale – Messaging		
Energy Efficiency Literacy at Scale – Devices and Pay-It-Forward		
2nd Annual Hawaii Sustainability in Higher Education Summit		
Hui Up 3.0 – Energy Literacy in Hard-to-Reach Communities		
Energy Education in the Schools - NEED	Basic Energy Workshop	**Professional Development**
	Building Science Workshop	
	Teacher Advisory Board	
Kupu – R.I.S.E. (Rewarding Internships for Sustainable Employment)		
Facilities Degree Program at the University of West Oahu		
Hui Up 3.0 – Green Workforce Development		
Energy Efficiency Sales Professional Training	The Efficiency Sales Professional Boot Camp	
	Learning to S.E.E. (Sell Efficiency Effectively)	
	Financial Analysis of Energy Efficiency	
Using Efficiency to Build Your Business	Finding Your Focus	
	Getting Efficiency Projects Approved	
Boosting Your Competitiveness	Taking Control of Your Energy Use	
	Making Efficiency Happen	
Water and Wastewater Training and Best Practices Handbook		**Technical Knowledge and Training**
Certified Energy Manager CEM), Energy Manager in Training (EMIT)		
Building Operator Certification (BOC©) Workshops		

PERFORMANCE INDICATOR RESULTS

Performance #5: Island Equity (Broad Participation)

Target: +/- 20% of each County's contribution to the PBF

The Island Equity target is intended to promote the equitable participation in the Program among the counties. For PY13, "equitable" would achieve the goal that for every dollar contributed to the PBF, a dollar would be returned to its county of origin through rebates, incentives, training and other Program initiatives.

Table 5 lists the results of the PY13 contributions to the PBF by island.

Table 5
Contributions to PBF by Island

Island	Residential Program Investment	Business Program Investment	PBFA Investment	%
Hawaii	$3,061,860	$2,548,359	$5,610,219	12.9%
Lanai	$60,177	$67,237	$127,414	0.3%
Maui	$2,883,051	$2,670,209	$5,553,260	12.7%
Molokai	$81,112	$72,062	$153,174	0.4%
Oahu	$12,780,054	$19,424,182	$32,204,236	73.8%
Totals	$18,866,254	$24,782,050	$43,648,303	100.00%
County	**Residential Program Investment**	**Business Program Investment**	**PBFA Investment**	**%**
Hawaii	$3,061,860	$2,548,359	$5,610,219	12.9%
Maui	$3,024,340	$2,809,509	$5,833,849	13.4%
Oahu	$12,780,054	$19,424,182	$32,204,236	73.8%
Totals	$18,866,254	$24,782,050	$43,648,303	100.00%

PERFORMANCE INDICATOR RESULTS

Performance Award for Achieving Targets

Under the PBFA Contract, Program Performance Awards are provided from a "performance pool" created through a holdback of $55,708 from each monthly invoice (prior to tax) for Leidos work performed. A total of $668,500 was withheld over the PY13, which equates to $700,000 once tax is applied. Leidos, as the PBFA, has the ability to earn the $700,000 by achieving 100% of the performance indicator targets, or a portion thereof based on the percentage of targets met. If the PBFA exceeds its targets, up to an additional $133,000 could be awarded.

The maximum performance award potential for PY13 is $833,000 as shown in **Table 6**.

Table 6
Potential Performance Awards

Indicator	Minimum	Target	Maximum	Weight	Target
First Year Energy Reduction	75% $ 183,750	100% $ 245,000	123.8% $ 303,188	35%	$ 245,000
Peak Demand Reduction	75% $ 26,250	100% $ 35,000	123.8% $ 43,313	5%	$ 35,000
TRB NPV of Utility Cost Avoidance	75% $ 210,000	100% $ 280,000	123.8% $ 346,500	40%	$ 280,000
Market Transformation	100% $ 70,000	100% $ 70,000	100% $ 70,000	10%	$ 70,000
Broad Participation "Island Equity"	80% $ 56,000	100% $ 70,000	100% $ 70,000	10%	$ 70,000
If all indicator metrics meet this level:	**Minimum**	**Target**	**Maximum**		
Performance Award Potential is:	560,000	700,000	833,000		

PERFORMANCE INDICATOR RESULTS

Performance Award Claim Summary

The Program's Performance Award Claim for PY13, is $616,981.24 (including tax) or 88.4% of the Program's potential target performance awards.

The Program's Performance Award Claim Summary based on the Program's Net Savings Impacts (kWh, kW and TRB), Market Transformation and Island Equity results are contained in **Table 7**.

Table 7
Performance Claim Summary

Indicator	Target	Results	% of Target	Award Claim
First Year Energy Reduction (kWh)	141,616,143	127,007,811	89.7%	$219,727.17
Peak Demand Reduction (kW)	17,821	16,787	94.2%	$32,968.34
TRB NPV of Utility Cost Avoidance ($)	$177,013,974	$156,542,771	88.4%	$247,618.73
Market Transformation				
Behavior Modification	18,000	23,297	129.4%	$23,334.00
Professional Development	1,000	1,336	133.6%	$23,333.00
Technical 'Know-How'	2,000	223	11.2%	$0.00
Island Equity				
Honolulu County	73.8%	71.7%	97.2%	$70,000.00
Hawaii County	12.9%	13.2%	102.6%	
Maui County	13.4%	15.1%	112.8%	
Performance Award Claim				**$616,981.24**

Technical Know-How was a new target area for the Transformational Program in PY13. Given the Program's limited experience in this sector, the original target goals applied were not attainable within the existing market. The Program has taken these lessons learned into account for PY14 and modified the target goals accordingly.

The tables on the subsequent pages provide the detailed calculations for each metric following the guidelines in Attachment C in the PBFA Contract.

PERFORMANCE INDICATOR RESULTS

Cumulative Annual Electric Energy Savings (Program-Level) Award Claim: $219,727.17

The Program Energy Reduction was 127,007,811 kWh, which was 90% of the target of 141,616,143 kWh in the award claim of $219,727.17. This award is calculated from $183,750 for meeting the minimum level and $35,977.17 for the remaining savings of 20,795,704 kWh awarded at a rate of $0.001730/kWh achieved beyond the minimum.

See calculations in **Table 8** for details.

Table 8
Energy Reduction Award Claim Summary

Cumulative Annual Electric Energy Savings	**Minimum**		**Target**	**Maximum**			
Energy Award Potential	$183,750.00		$245,000.00	$303,188.00			
	75%		100%	123.8%			
Energy Reduction Goals (kWh)	106,212,107		141,616,143	155,777,757			
	75%		100%	110%			
Incentive Calculation	**Meet Minimum**		**Target – Minimum**	**Maximum – Target**		**Total**	
Pool Award Potential	$183,750.00		$61,250.00	$58,188.00		$303,188.00	Max
Energy Goal Pools (kWh)	106,212,107	÷	35,404,036	14,161,614	/kWh	155,777,757	kWh
Award Amount / Rate ($/kWh)	$183,750.00		$0.00	$0.00			
Energy Achievement (kWh)	106,212,107		20,795,704	-		127,007,811	kWh
Award Amount / Rate ($/kWh)	$183,750.00	x	0.00173	0.004109	/MWh		
Energy Achievement Award Calculation	$183,750.00		$35,977.17	-		$219,727.17	Calculated
						$219,727.17	**Award Claim**

PERFORMANCE INDICATOR RESULTS

Peak Demand Savings Award Claim: $32,968.34

The Combined Peak Demand Reduction was 16,787 kW, which was 94% of the target savings level resulting in an award claim of $32,968.34. This award is calculated from $26,250 for meeting the minimum level and $6,718.34 for the remaining savings of 3,421 kW awarded at a rate of $1.96/kW achieved beyond the minimum.

See calculations in **Table 9** for details.

Table 9
Demand Reduction Award Claim Summary

Combined Annual Electric Demand Savings	**Minimum**		**Target**	**Maximum**			
Demand Reduction Award Potential	$26,250.00		$35,000.00	$43,313.00			
	75%		100%	123.8%			
Demand Reduction Goals (kW)	13,366		17,821	19,603	kW		
	75%		100%	110%			
Incentive Calculation	**Meet Minimum**		**Target – Minimum**	**Maximum – Target**		**Total**	
Pool Award Potential	$26,250.00		$8,750.00	$8,313.00		$43,313.00	Max
Demand Goal Pools (kW)	13,366	÷	4,455	1,782		19,603	kW
Award Amount / Rate ($/kW)	$26,250.00		$1.96	$4.66	/kW		
Demand Savings Achievement (kW)	13,366		3,421	-		16,787	kW
Award Amount / Rate ($/kW)	$26,250.00	x	$1.96	$4.66	/kW		
Demand Savings Achievement Award Calculation	$26,250.00		$6,718.34	-		$32,968.34	Calculated
						$32,968.34	**Award Claim**

PERFORMANCE INDICATOR RESULTS

Total Resource Benefit (TRB) Award Claim: $247,618.73

The TRB achievement of $156,542,771 NPV is 88.4% of the target amount between the minimum and target level. This award claim of $247,618.73 is calculated from $210,000 for meeting the minimum level and $37,618.73 for the remaining 13.4% awarded at a rate of $2,800/percent achieved beyond the minimum level.

See calculations in **Table 10** for details.

Table 10
TRB Award Claim Calculation

TRB Target Metrics	Minimum		Target	Maximum		
TRB Award Potential	$210,000		$280,000	$346,500		
TRB Goals Pools in Metrics	75%		100%	123.8%		
TRB Goals	$132,760,481		$177,013,974	$212,416,769		NPV of Utility Benefits
	75%		100%	110%		
Incentive Calculation	**Meet Minimum**		**Target – Minimum**	**Maximum – Target**		**Total**
Pool Award Potential	$210,000		$70,000	$66,500		$346,500 Max
TRB Goal Pools in Metrics	75%	÷	25%	10%		120%
Award Amount / Rate ($/%)	$210,000		$2,800	$3,325	/%	
TRB Achievement						$156,542,771
TRB Goals						$177,013,974
TRB Savings Achievement	75%		13.4%	-		88.4%
Award Amount / Rate ($/%)	$210,000	x	$2,800	$3,325	/%	
TRB Energy Achievement Award Calculation	$210,000		$37,618.73	-		$247,618.73 Calculated
						$247,618.73 Award Claim

PERFORMANCE INDICATOR RESULTS

Market Transformation Award Claim: $46,667.00

The Market Transformation claim of $46,667.00 is based on exceeding the target of two Annual Plan Transformational Tasks: Behavior Modification and Professional Development. See **Table 11** for details.

Table 11
Market Transformation Award Claim Calculation

Category	Minimum	Minimum Award	Target	Target Award (Min < Achieved < Target)	Rate	Achievement	Met	Award Claim
Behavior Modification	13,500	$17,500	18,000	$23,334	$0.7713	23,297	Yes	$23,334
Professional Development	750	$17,500	1,000	$23,333	$0.0429	1,336	Yes	$23,333
Technical 'Know-How'	1,500	$17,500	2,000	$23,333	$0.0857	223	No	$0
Total								**$46,667**

PERFORMANCE INDICATOR RESULTS

Island Equity (Broad Participation) Award Claim: $70,000

The Program achieved the targeted percentages of island equity this performance period.

See calculations in **Table 12** for details.

Table 12
Island Equity Award Claim Calculation

County	PY13 PBF Contribution	PBF Contribution %	Target	Minimum to Meet Target	PY13 Total Incentives	% Accomplished	% of Target	Met Minimum	Award Claim
Honolulu	$ 32,204,236	73.8%	>80%	59.0%	$ 16,327,168	71.7%	97.2%	Yes	
Hawaii	$ 5,610,219	12.9%	>80%	10.3%	$ 3,001,097	13.2%	102.6%	Yes	
Maui	$ 5,833,848	13.4%	>80%	10.7%	$ 3,430,037	15.1%	112.8%	Yes	
Total	$ 43,648,303	100.0%			$ 22,758,302	100.0%			
									$70,000

Incentives and Transformational Spent vs. Budget $				
County	**Budgeted**	**Accomplished**	**% of Budget**	**% Accomplished**
Honolulu	$ 17,292,924	$ 16,327,168	94.4%	71.7%
Hawaii	$ 3,012,557	$ 3,001,097	99.6%	13.2%
Maui	$ 3,132,640	$ 3,430,037	109.5%	15.1%
Total	**$ 23,438,121**	**$ 22,758,302**	**97.1%**	**100.0%**

Incentives and Transformational Spent Actual $			
County	**Incentives**	**Transformation**	**Total Accomplished**
Honolulu	$ 15,138,549	$ 1,188,619	$ 16,327,168
Hawaii	$ 2,484,915	$ 516,182	$ 3,001,097
Maui	$ 2,801,188	$ 628,849	$ 3,430,037
Total	**$ 20,424,652**	**$ 2,333,650**	**$ 22,758,302**

BUDGET PROGRESSION & EXPENDITURES

PY13 Annual Plan Budget

Pursuant to the Program's approved PY13 Annual Plan, the Program's initial budget for the program year was $33.4M, comprised of $19.7M in Incentives, $11.6M in Non-Incentives, and $2.2M in Transformational Incentives. As detailed in **Table 13** approximately 45% of the budget was allocated to Residential Programs and 55% to Business Programs, consistent with the prior Program Year.

Table 13
PY13 Annual Plan Budget

Activity	Non-Incentive	Incentive	Total
RESIDENTIAL PROGRAMS			
REEM	2,591,084	7,504,500	10,095,584
CESH	40,486	25,000	65,486
RESM	121,457	540,000	661,457
RHTR	121,457	801,939	923,396
Total Residential Programs	**2,874,484**	**8,871,439**	**11,745,923**
Residential Market Evaluation	242,914	0	242,914
Residential Outreach	931,171	0	931,171
Total Residential Services and Initiatives	**4,048,569**	**8,871,439**	**12,920,008**
BUSINESS PROGRAMS			
BEEM	1,286,545	4,295,800	5,582,345
CBEEM	989,650	1,060,000	2,049,650
BESM	692,755	4,645,069	5,337,824
BHTR	544,308	842,000	1,386,308
Total Business Programs	**3,513,258**	**10,842,869**	**14,356,127**
Business Market Evaluation	296,895	0	296,895
Business Outreach	1,138,098	0	1,138,098
Total Business Services and Initiatives	**4,948,251**	**10,842,869**	**15,791,120**
Total Residential and Business Services and Initiatives	**8,996,820**	**19,714,308**	**28,711,128**
TRANSFORMATIONAL PROGRAMS			
Residential Transformational Programs	0	985,715	985,715
Business Transformational Programs	0	1,204,763	1,204,763
Total Transformation Services and Initiatives	**0**	**2,190,478**	**2,190,478**
Total Supporting Services	**2,091,908**	**0**	**2,091,908**
Total Tax on Non-Incentive	**489,517**	**0**	**489,517**
Estimated Contractor Costs	**11,578,245**	**21,904,786**	**33,483,031**

Budget Reallocations

New to PY13 were changes in the Program's process to request reallocation of funds. In PY13 the program was given discretion to reallocate funds within certain areas without a formal contractual request. Funds were allowed to be moved within each of the Operations & Management areas (Residential and Business) and within each of the Incentive areas (Residential and Business). As a result, there was only one official reallocation during PY13. There were, however, internal budget transfers. Specifics of the reallocation and internal transfers are detailed in **Table 14** and described below.

Table 14
Budget Progression 7/1/13-6/30/14

	PY13 Annual Plan Budget	**R1 Reallocation** (dated 10/21/13; eff. 1/2014)	**R1 Budget**	**Bus Inc Transfer** (11/2013)	**PY13 Budget** (as of 11/2013)	**Bus T&M Transfer** (4/2014)	**PY13 Budget** (as of 5/2014)	**Incentive Transfers** (6/2014)	**Bus O&M Transfers** (6/2014)	**PY13 Budget** (as of 6/2014)	**Res/Bus O&M Transfers** (8/2014)	**PY13 Budget** (as of 8/2014)
Residential Programs												
Operations & Management												
REEM	2,591,084	(464,555)	2,126,529		2,126,529		2,126,529			2,126,529	205,000	2,331,529
CESH	40,486	(6,731)	33,755		33,755		33,755			33,755	(12,000)	21,755
RESM	121,457	(20,194)	101,263		101,263		101,263			101,263	(27,000)	74,263
RHTR	121,457	114,824	236,281		236,281		236,281			236,281	(60,000)	176,281
Total Residential Programs	2,874,484	(376,656)	2,497,828		2,497,828		2,497,828			2,497,828	106,000	2,603,828
Residential Market Evaluation	242,914	(6,633)	236,281		236,281		236,281			236,281	(110,000)	126,281
Residential Outreach	931,171	(289,837)	641,334		641,334		641,334			641,334	4,000	645,334
Total Residential Non-Incentives	4,048,569	(673,126)	3,375,443		3,375,443		3,375,443			3,375,443	-	3,375,443
Residential Incentives												
REEM	7,504,500	701,197	7,985,697		7,985,697		7,985,697	220,000		8,205,697		8,205,697
CESH	25,000	-	25,000		25,000		25,000			25,000		25,000
RESM	540,000	50,000	690,000		690,000		690,000	(100,000)		590,000		590,000
RHTR	801,939	(130,197)	791,742		791,742		791,742	(120,000)		671,742		671,742
Subtotal Residential Incentives	8,871,439	621,000	9,492,439		9,492,439		9,492,439	-		9,492,439		9,492,439
Residential Transformational	985,715	69,000	1,054,715		1,054,715		1,054,715			1,054,715		1,054,715
Total Residential Incentives	9,857,154	690,000	10,547,154		10,547,154		10,547,154			10,547,154		10,547,154
Total Residential Programs	**13,905,723**	**16,874**	**13,922,597**		**13,922,597**		**13,922,597**			**13,922,597**		**13,922,597**
Business (C&I) Programs												
Operations & Management												
BEEM	1,286,545	(291,393)	1,155,152		1,155,152	(200,000)	955,152		40,000	995,152	8,000	1,013,152
CBEEM	989,650	42,948	742,598		742,598	250,000	992,598		40,000	1,032,598	41,500	1,074,098
BESM	692,755	49,842	742,597		742,597		742,597			742,597	(30,000)	712,597
BHTR	544,308	(49,243)	495,065		495,065		495,065			495,065	(31,500)	463,565
Total Business Programs	3,513,258	(247,846)	3,135,412		3,135,412	50,000	3,185,412		80,000	3,265,412	(2,000)	3,263,412
Business Market Evaluation	296,895	(170,618)	206,277		206,277		206,277		(80,000)	126,277	(6,000)	120,277
Business Outreach	1,138,098	(404,245)	783,853		783,853	(50,000)	733,853			733,853	8,000	741,853
Total Business Operations & Management	4,948,251	(822,709)	4,125,542		4,125,542	-	4,125,542		-	4,125,542	-	4,125,542
Business Incentives												-
BEEM	4,295,800	625,000	4,520,800		4,520,800		4,520,800	400,000		4,920,800		4,920,800
CBEEM	1,060,000	2,988,026	2,573,026	1,000,000	3,573,026		3,573,026	475,000		4,048,026		4,048,026
BESM	4,645,069	(2,866,525)	3,253,544	(1,000,000)	2,253,544		2,253,544	(475,000)		1,778,544		1,778,544
BHTR	842,000	12,500	1,254,500		1,254,500		1,254,500	(400,000)		854,500		854,500
Subtotal Business Incentives	10,842,869	759,001	11,601,870		11,601,870		11,601,870	-		11,601,870		11,601,870
Business Transformational	1,204,763	84,334	1,289,097		1,289,097		1,289,097			1,289,097		1,289,097
Total Business Incentives	12,047,632	843,335	12,890,967		12,890,967		12,890,967			12,890,967		12,890,967
Total Business Programs	**16,995,883**	**20,626**	**17,016,509**		**17,016,509**		**17,016,509**			**17,016,509**		**17,016,509**

Table 14
Budget Progression 7/1/13-6/30/14 (cont'd)

	PY13 Annual Plan Budget	**R1 Reallocation** (dated 10/21/13; eff. 1/2014)	**R1 Budget**	**Bus Inc Transfer** (11/2013)	**PY13 Budget** (as of 11/2013)	**Bus T&M Transfer** (4/2014)	**PY13 Budget** (as of 5/2014)	**Incentive Transfers** (6/2014)	**Bus O&M Transfers** (6/2014)	**PY13 Budget** (as of 6/2014)	**Res/Bus O&M Transfers** (8/2014)	**PY13 Budget** (as of 8/2014)
Subtotal Non-Incentive (Prior to Tax)	11,088,728	(1,495,835)	9,592,893		9,592,893		9,592,893			9,592,893		9,592,893
Less Performance Incentives (Prior to Tax) [1]	(700,000)	31,500	(668,500)		(668,500)		(668,500)			(668,500)		(668,500)
Subtotal Non-Incentive Less Performance Incentive (PI)	10,388,728	(1,464,335)	8,924,393		8,924,393		8,924,393			8,924,393		8,924,393
Total Tax on Non-Incentive Without PA	489,517	(69,000)	420,517		420,517		420,517			420,517		420,517
Performance Incentive (Inclusive of Tax)	700,000	-	700,000		700,000		700,000			700,000		700,000
Subtotal Non-Incentives	11,578,245	(1,533,335)	10,044,910		10,044,910		10,044,910			10,044,910		10,044,910
Subtotal Residential and Business Customer Incentives	19,714,308	1,380,001	21,094,309		21,094,309		21,094,309			21,094,309		21,094,309
Subtotal Transformational Incentives	2,190,478	153,334	2,343,812		2,343,812		2,343,812			2,343,812		2,343,812
Subtotal Estimated Contractor Costs	**33,483,031**		**33,483,031**		**33,483,031**		**33,483,031**			**33,483,031**		**33,483,031**
Performance Awards in Excess of Target Levels	133,000		133,000		133,000		133,000			133,000		133,000
Total Estimated Contractor Costs, including Performance Awards in Excess of Target Levels	**33,616,031**		**33,616,031**		**33,616,031**		**33,616,031**			**33,616,031**		**33,616,031**

[1] This line is updated in R1 to reflect the amount of Performance Incentives excluding taxes, consistent with how Performance Incentives are withheld in the monthly invoices.
[2] These differences correspond to the change per Footnote 1, net of the resulting (69,000) change in the "Total Tax on Non-Incentive Without PI" line item.

PORTFOLIO FIFTH YEAR IMPACTS

Reallocation (R1)

The PY13 reallocation effective January 2014 was to update the budget such that Incentives comprised 70 percent of the program year budget and Non-Incentives comprised 30 percent (i.e., a "70/30 split"). In addition, a tax adjustment was made to the "Performance Incentives (Prior to Tax)" line item. The detailed changes were as follows:

- Transferred $1,533,335 (inclusive of taxes) from Residential and Business Operations Non-Incentives to Residential and Business Program Incentives.
- The "Performance Incentives (Prior to Tax)" line item was adjusted to reflect the amount of Performance Incentives (PI) excluding taxes, or $668,500. Historically, this line has reflected $700,000, representing total PI including taxes. However, PI withholding on monthly invoicing has been prior to taxes, and thus this change more accurately reflected this line item as well as taxes captured in other Non-Incentive line items.

Internal Budget Transfers

During the course of PY13, there were five internal budget transfers to meet changing operational needs. The transfers were as follows:

- **November 2013** – Transferred $1M of Incentive funds from BESM to CBEEM.
- **April 2014** – Transferred $200K of Business O&M funds from BEEM and $50K from Business Outreach to CBEEM.
- **June 2014** (Reflected in May Monthly Report) - Transferred Business O&M funds as follows: $80K from Business Evaluation to BEEM ($40K) and CBEEM ($40K).
- **June 2014** (Reflected in May Monthly Report) - Transferred Incentive funds as follows: $100K from RESM and $120K from RHTR to REEM; $475K from BESM to CBEEM and $400K from BHTR to BEEM.
- **August 2014** – Various O&M funds transfers. Residential transfers as follows: FROM - CESH ($12K), RESM ($27K), RHTR ($60K), and Residential Evaluation ($110K); TO - REEM $205K and Residential Outreach $4K. Business transfers as follows: FROM - BESM ($30K), BHTR ($31.5K), and Business Evaluation (6K); TO -BEEM 18K, CBEEM 41.5K, Business Outreach 8K.

PORTFOLIO FIFTH YEAR IMPACTS

Portfolio Expenditures

Throughout the year, the Program was diligent in reviewing operational needs and leveraging funding to drive program value. At year-end, the Program had utilized 97% of budgeted Incentives, 99% of budgeted O&M (including holdback amounts) and 99% of budgeted Transformational Incentives. Details of final PY13 expenditures and unspent funds by program categories are shown in **Table 15**. Specific discussions related to each Residential and Business program are provided within those respective sections.

Table 15
Program Expenditures and Unspent Funds

	Total Expenditures	R1 Budget	Percent Spent	Unspent	Percent Unspent
Residential Programs					
Ops and Management					
REEM[5]	2,329,403.41	2,331,529.00	99.91%	2,125.59	0.09%
CESH[5]	19,819.48	21,755.00	91.10%	1,935.52	8.90%
RESM[5]	74,042.06	74,263.00	99.70%	220.94	0.30%
RHTR[5]	175,671.65	176,281.00	99.65%	609.35	0.35%
Total Residential Programs	2,598,936.60	2,603,828.00	99.81%	4,891.40	0.19%
Residential Evaluation[5]	123,724.09	126,281.00	97.98%	2,556.91	2.02%
Residential Outreach[5]	644,817.24	645,334.00	99.92%	516.76	0.08%
Total Residential Non-Incentives	**3,367,477.93**	**3,375,443.00**	**99.76%**	**7,965.07**	**0.24%**
Residential Incentives					
REEM[3,6]	8,180,045.59	8,205,697.00	99.69%	25,651.41	0.31%
CESH	2,765.97	25,000.00	11.06%	22,234.03	88.94%
RESM[3]	555,000.00	590,000.00	94.07%	35,000.00	5.93%
RHTR[3]	492,225.25	671,742.00	73.28%	179,516.75	26.72%
Subtotal Residential Incentives	9,230,036.81	9,492,439.00	97.24%	262,402.19	2.76%
Residential Transformational	1,051,054.23	1,054,715.00	99.65%	3,660.77	0.35%
Total Residential Incentives	**10,281,091.04**	**10,547,154.00**	**97.48%**	**266,062.96**	**2.52%**
Total Residential Programs	**13,648,568.97**	**13,922,597.00**	**98.03%**	**274,028.03**	**1.97%**
Business (C&I) Programs					
Programs Ops and Management					
BEEM[2,4,5]	1,012,647.67	1,013,152.00	99.95%	504.33	0.05%
CBEEM[2,4,5]	1,073,736.77	1,074,098.00	99.97%	361.23	0.03%
BESM[5]	712,364.09	712,597.00	99.97%	232.91	0.03%
BHTR[5]	463,075.29	463,565.00	99.89%	489.71	0.11%
Total Business Programs	3,261,823.82	3,263,412.00	99.95%	1,588.18	0.05%
Business Evaluation[4,5]	120,134.59	120,277.00	99.88%	142.41	0.12%
Business Outreach[2,5]	741,730.02	741,853.00	99.98%	122.98	0.02%
Total Business Non-Incentives	**4,123,688.43**	**4,125,542.00**	**99.96%**	**1,853.57**	**0.04%**
Business Incentives					
BEEM[3,6,7]	4,872,145.62	4,920,800.00	99.01%	48,654.38	0.99%
CBEEM[1,3]	4,025,952.57	4,048,026.00	99.45%	22,073.43	0.55%
BESM[1,3,6]	1,596,607.59	1,778,544.00	89.77%	181,936.41	10.23%
BHTR[3]	699,909.68	854,500.00	81.91%	154,590.32	18.09%
Subtotal Business Incentives	11,194,615.46	11,601,870.00	96.49%	407,254.54	3.51%
Business Transformational	1,282,595.52	1,289,097.00	99.50%	6,501.48	0.50%
Total Business Incentives	**12,477,210.98**	**12,890,967.00**	**96.79%**	**413,756.02**	**3.21%**
Total Business Programs	**16,600,899.41**	**17,016,509.00**	**97.56%**	**415,609.59**	**2.44%**

Table 15
Program Expenditures and Unspent Funds (cont'd)

	Total Expenditures	R1 Budget	Percent Spent	Unspent	Percent Unspent
Total Services and Initiatives	**30,249,468.38**	**30,939,106.00**	**97.77%**	**689,637.62**	**2.23%**
Total Supporting Services	**2,050,771.50**	**2,091,908.00**	98.03%	**41,136.50**	**1.97%**
Subtotal Non-Incentives (Prior to Tax)	9,541,937.86	9,592,893.00	99.47%	50,955.14	0.53%
Less Performance Incentives (Prior to Tax)	(668,500.32)	(668,500.00)		0.32	
Subtotal Non-Incentive Less Performance Incentives (PI)	8,873,437.54	8,924,393.00		50,955.46	
Total Tax on Non-Incentive Without PI	418,116.38	420,517.00		2,400.62	
Performance Incentives (Inclusive of Tax)	0.00	700,000.00		700,000.00	
Subtotal Non-Incentives Billed	9,291,553.92	*10,044,910.00*	92.50%	753,356.08	7.50%
Subtotal Residential & Business Customer Incentives	20,424,652.27	*21,094,309.00*	96.83%	669,656.73	3.17%
Subtotal Transformational Incentives	2,333,649.75	*2,343,812.00*	99.57%	10,162.25	0.43%
Subtotal Customer &Transformational Incentives	22,758,302.02	*23,438,121.00*	97.10%	679,818.98	2.90%
Subtotal Estimated Contractor Costs	***32,049,855.94***	***33,483,031.00***	**95.72%**	**1,433,175.06**	**4.28%**
Performance Awards in Excess of Target Levels		133,000.00			
Total Estimated Contractor Costs (including Performance Awards in Excess of Target Levels)		**33,616,031.00**			

On-Bill Financing Program

In PY13, the Program contract was amended to include funding for the On-Bill Financing (OBF) Program. The OBF budget and deliverables were described in the OBF proposal attached to Supplemental Contract #5 (as revised on May 31, 2013). OBF budget and PY13 expenditures are detailed in **Table 16**. Although numerous OBF deliverables were developed in PY13, delays outside of Program control resulted in program launch being pushed back to late 2014. As a result, at year-end, the OBF Program had utilized 39% of its allotted funds. A more detailed discussion on the OBF program can be found in the Program Overview.

Table 16
OBF Program Expenditures and Unspent Funds

	Total Expenditures	Budget	Percent Spent	Unspent	Percent Unspent
Program Design & Development					
Design & Development					
Operations	431,356.89	963,242.00	45%	531,885.11	55%
IT/Data Management	147,665.00	-	-	(147,665.00)	-
Marketing	9,343.75	-	-	(9,343.75)	-
General & Administrative	40,597.50	107,026.00	38%	66,428.50	62%
Total Program Design & Development	**628,963.14**	**1,070,268.00**	**59%**	**441,304.86**	**41%**
Program Startup & Implementation					
Deliverable #6: Draft Contractor Materials & Processes					
Program Management	80,565.00	53,910.00	149%	(26,655.00)	-49%
Finance & Risk Management	15,672.50	17,100.00	92%	1,427.50	8%
Marketing & Communications	13,917.50	46,575.00	30%	32,657.50	70%
Operations	115,815.00	159,431.00	73%	43,616.00	27%
IT	-	-	-	-	-
Program Consultants	8,259.06	18,750.00	44%	10,490.94	56%
Other Direct Costs	-	40,000.00	-	40,000.00	100%
Total Deliverable #6:	**234,229.06**	**335,766.00**	**70%**	**101,536.94**	**30%**
Deliverable #7: Data Exchange & Application Automation					
Program Management	66,720.00	38,790.00	172%	(27,930.00)	-72%
Finance & Risk Management	15,443.75	17,100.00	90%	1,656.25	10%
Marketing & Communications	10,376.25	46,575.00	22%	36,198.75	78%
Operations	20,733.75	53,144.00	39%	32,410.25	61%
IT	365,849.69	372,750.00	98%	6,900.31	2%
Program Consultants	2,746.10	6,250.00	44%	3,503.90	56%
Other Direct Costs	-	60,000.00	-	60,000.00	100%
Total Deliverable #7:	**481,869.54**	**594,609.00**	**81%**	**112,739.46**	**19%**
Total Program Startup & Implementation	**716,098.60**	**930,375.00**	**77%**	**214,276.40**	**23%**
Program Launch & Ramp Up					
PUC Approvals, Program Launch & Administration					
Program Management	-	130,938.00	-	130,938.00	100%
Finance & Risk Management	-	31,400.00	-	31,400.00	100%
Marketing & Communications	-	58,478.00	-	58,478.00	100%
Operations	-	206,578.00	-	206,578.00	100%

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Table 16 OBF Program Expenditures and Unspent Funds					
	Total Expenditures	**Budget**	**Percent Spent**	**Unspent**	**Percent Unspent**
IT	-	177,170.00	-	177,170.00	100%
Program Consultants	-	30,000.00	-	30,000.00	100%
Other Direct Costs	-	150,000.00	-	150,000.00	100%
Subtotal PUC Approvals, Program Launch & Administration	**-**	**784,564.00**	**-**	**784,564.00**	**100%**
Deliverable #8: Program Elements					
Program Management	134,645.00	65,963.00	204%	(68,682.00)	-104%
Finance & Risk Management	23,151.25	18,840.00	123%	(4,311.25)	-23%
Marketing & Communications	4,673.75	42,182.00	11%	37,508.25	89%
Operations	152,408.75	102,547.00	149%	(49,861.75)	-49%
IT	230,550.00	221,463.00	104%	(9,087.00)	-4%
Program Consultants	9,479.45	10,000.00	95%	520.55	5%
Other Direct Costs	4,380.70	45,000.00	10%	40,619.30	90%
Total Deliverable #8:	**559,288.90**	**505,995.00**	111%	**(53,293.90)**	-11%
Deliverable #9: PA Receives Customers and Inquiries					
Program Management	-	52,375.00	-	52,375.00	100%
Finance & Risk Management	-	12,560.00	-	12,560.00	100%
Marketing & Communications	-	11,696.00	-	11,696.00	100%
Operations	-	82,631.00	-	82,631.00	100%
IT	-	44,293.00	-	44,293.00	100%
Program Consultants	-	10,000.00	-	10,000.00	100%
Other Direct Costs	-	30,000.00	-	30,000.00	100%
Total Deliverable #9:	**-**	**243,555.00**	**-**	**243,555.00**	**100%**
Deliverable #10: Contractor Training					
Program Management	-	12,600.00	-	12,600.00	100%
Finance & Risk Management	-	0.00	-	0.00	0%
Marketing & Communications	-	4,600.00	-	4,600.00	100%
Operations	-	21,400.00	-	21,400.00	100%
IT	-	-	-	-	-
Program Consultants	-	-	-	-	-
Other Direct Costs	-	25,000.00	-	25,000.00	100%
Total Deliverable #10:	**-**	**63,600.00**	**-**	**63,600.00**	**100%**
Total Program Launch & Ramp Up	**559,288.90**	**1,597,714.00**	**35%**	**1,038,425.10**	**65%**
Budget Reserve (prior to tax)		**1,271,142.00**	**-**	**1,271,142.00**	**100%**
Prog. Design & Development Billed	*628,963.14*	*1,070,268.00*	*59%*	*441,304.86*	*41%*
Prog. Startup & Implementation Billed	*716,098.60*	*930,375.00*	*77%*	*214,276.40*	*23%*
Program Launch & Ramp Up Billed	*559,288.90*	*1,597,714.00*	*35%*	*1,038,425.10*	*65%*
OBF Program Total (prior to reserve & tax)	***1,904,350.64***	***3,598,357.00***	***53%***	***1,694,006.36***	***47%***
OBF Budget Reserve	-	1,271,142.00	-	1,271,142.00	100%
Total Tax on OBF program	89,733.01	229,451.00	39%	139,717.99	61%
OBF Program Total (inclusive of reserve & tax)	**1,994,083.65**	**5,098,950.00**	**39%**	**3,104,866.35**	**61%**

PORTFOLIO FIFTH YEAR IMPACTS

Introduction

There are three levels of energy and demand savings shown in this Report. The three levels are used to show how energy and demand savings are credited at the customer's meter (Customer Level Savings), at the utility system generation level (System Level Savings) and at the PBFA Contract level (Program Level Savings).

1. **Customer Level Savings (Gross at Meter)** – This savings figure is the gross change in energy consumption at the customer meter that results directly from Program-promoted actions taken by Program participants. The savings are determined by direct metering, engineering calculations, or measurement and verification of prior installations of the particular savings measure. This is the savings level defined in the Program's Technical Resource Manual (TRM).

2. **System Level Savings (Gross Generated)** – This savings figure is realized at the utility system level and includes the transmission, distribution and generation station energy losses between the end-use customer and the utility generating units. System Level Savings has been termed Gross Level Savings in previous reports.

3. **Program Level Savings (Net Generated)** – This savings figure shows the amount of energy reductions determined to be directly attributed to PBFA Program actions by separating out the impacts that are a result of other influences, such as consumer self-motivation or free-riders. Free-riders are ratepayers or participants who received an incentive and/or education from the Program, but the incentive and/or education did not play a role in their decision to purchase the savings measure. These ratepayers would have taken action or purchased the energy-efficient item regardless of the incentive and therefore, Program Level Savings removes their participation.

PORTFOLIO FIFTH YEAR IMPACTS

Portfolio Energy and Demand Savings

Program Energy Savings for PY13 were:

- **First Year** – 127,007,831 kWh
  (56.1% in Residential and 43.9% in Business programs)

- **Lifetime** – 1,367,592,053 kWh
  (40.6% in Residential and 59.4% for Business programs)

The difference in percentage contributions between first year and lifetime savings remains due to the relative weight of CFLs and the Peer Group Comparison in the residential portfolio. These measures have relatively short measure lives (6 years and 1 year, respectively) as compared to longer lived measures in the business portfolio this year, bolstered by the LEDs having 15 year measure lives. Residential measures have an average measure life of 7.8 years in PY13 up from 7.0 years in PY12, while business measures have an average measure life of 14.6 years in PY13 up from 13.5 years in PY12.

Program Peak Demand reduction for PY13 was:

- Peak Demand – 16,786 kW (56.5% from Residential and 43.5% from Business)

The following tables provide a summary of the Residential and Business programs in the context of their level of activity, incentives, energy-saving impacts and cost effectiveness at the Program, System and Customer levels.

- **Table 17**: Cumulative Annual Electric Energy Savings (Program Level) by Budget Category

- **Table 18**: Cumulative Annual Electric Energy Savings (System Level) by Budget Category

- **Table 19:** Cumulative Annual Electric Energy Savings (Customer Level) by Budget Category

PORTFOLIO FIFTH YEAR IMPACTS

Table 17 Cumulative Annual Electric Savings (Program Level) by Budget Category								
Program	Apps Processed	Quantity of Energy Efficient Equipment (Units)	Incentives ($)	Demand Impact (kW)	First Year Energy Impact (kWh 1st Yr)	Lifetime Energy Impact (kWh - Life)	First Year Impact Cost ($/kWh)	Lifetime Impact Cost ($/kWh)
BEEM	2,150	118,085	$4,872,146	3,868	26,941,496	382,247,212	$0.181	$0.013
CBEEM	312	310	$4,025,953	2,799	22,539,657	338,108,258	$0.179	$0.012
BESM	1,297	16,878	$1,596,608	287	3,872,686	57,650,739	$0.412	$0.028
BHTR	719	11,371	$699,910	340	2,412,099	33,769,391	$0.290	$0.021
Business Totals	**4,478**	**146,644**	**$11,194,615**	**7,294**	**55,765,938**	**811,775,599**	**$0.201**	**$0.014**
REEM	37,170	2,979,267	$8,180,046	9,463	67,307,632	498,831,420	$0.122	$0.016
RESM	7	925	$555,000	0	3,758,500	54,419,569	$0.148	$0.010
RHTR	271	364	$492,225	23	166,211	2,418,371	$2.961	$0.204
CESH	3	3	$2,766	7	9,531	142,961	$0.290	$0.019
Residential Totals	**37,451**	**2,980,558**	**$9,230,037**	**9,493**	**71,241,873**	**555,816,454**	**$0.130**	**$0.017**
Total	**41,929**	**3,127,202**	**$20,424,652**	**16,787**	**127,007,811**	**1,367,592,053**	**$0.161**	**$0.015**

Program	Total Resource Benefit (TRB)	Total Resource Cost (TRC)	Driven Benefit Ratio (TRB/Incentive $)	Driven Investment Ratio (TRC/Incentive $)	Benefit Test (TRB/TRC)
BEEM	$43,581,303	$41,347,861	8.9	8.5	1.1
CBEEM	$34,914,212	$23,355,756	8.7	5.8	1.5
BESM	$5,549,055	$2,180,652	3.5	1.4	2.5
BHTR	$3,881,091	$701,956	5.5	1.0	5.5
Business Totals	**$87,925,661**	**$67,586,224**	**7.9**	**6.0**	**1.3**
REEM	$64,087,162	$41,289,807	7.8	5.0	1.6
RESM	$4,217,883	$4,866,600	7.6	8.8	0.9
RHTR	$276,077	$541,443	0.6	1.1	0.5
CESH	$35,988	$14,341	13.0	5.2	2.5
Residential Totals	**$68,617,110**	**$46,712,192**	**7.4**	**5.1**	**1.5**
Total	**$156,542,771**	**$114,298,416**	**7.7**	**5.6**	**1.4**

PORTFOLIO FIFTH YEAR IMPACTS

Table 18 Cumulative Annual Electric Savings (System Level) by Budget Category								
Program	**Apps Processed**	**Quantity of Energy Efficient Equipment (Units)**	**Incentives**	**Demand Impact (kW)**	**First Year Energy Impact (kWh 1st Yr)**	**Lifetime Energy Impact (kWh - Life)**	**First Year Impact Cost ($/kWh)**	**Lifetime Impact Cost ($/kWh)**
BEEM	2,150	118,085	$4,872,146	5,153	35,888,612	509,477,962	$0.136	$0.010
CBEEM	312	310	$4,025,953	3,737	30,085,040	451,351,640	$0.134	$0.009
BESM	1,297	16,878	$1,596,608	302	4,068,857	60,577,834	$0.392	$0.026
BHTR	719	11,371	$699,910	345	2,442,526	34,195,364	$0.287	$0.020
Business Totals	**4,478**	**146,644**	**$11,194,615**	**9,537**	**72,485,035**	**1,055,602,800**	**$0.154**	**$0.011**
REEM	37,170	2,979,267	$8,180,046	11,986	85,211,384	631,958,430	$0.096	$0.013
RESM	7	925	$555,000	0	4,085,326	59,151,706	$0.136	$0.009
RHTR	271	363	$492,225	30	207,525	3,022,818	$2.372	$0.163
CESH	3	3	$2,766	10	14,663	219,940	$0.189	$0.013
Residential Totals	**37,451**	**2,980,558**	**$9,230,037**	**12,025**	**89,518,897**	**694,352,894**	**$0.103**	**$0.013**
Total	**41,929**	**3,127,202**	**$20,424,652**	**21,563**	**162,003,933**	**1,749,955,694**	**$0.126**	**$0.012**

Program	**Total Resource Benefit (TRB)**	**Total Resource Cost (TRC)**	**Driven Benefit Ratio (TRB/Incentive $)**	**Driven Investment Ratio (TRC/Incentive $)**	**Benefit Test (TRB/TRC)**
BEEM	$58,080,792	$ 41,347,861	11.9	8.5	1.4
CBEEM	$46,613,026	$ 23,355,756	11.6	5.8	2.0
BESM	$5,832,686	$ 2,180,652	3.7	1.4	2.7
BHTR	$3,932,983	$ 701,956	5.6	1.0	5.6
Business Totals	**$114,459,487**	**$ 67,586,224**	**10.2**	**6.0**	**1.7**
REEM	$81,193,765	$ 41,289,807	9.9	5.0	2.0
RESM	$4,584,654	$ 4,866,600	8.3	8.8	0.9
RHTR	$347,263	$ 541,443	0.7	1.1	0.6
CESH	$55,365	$ 14,341	20.0	5.2	3.9
Residential Totals	**$86,181,047**	**$ 46,712,192**	**9.3**	**5.1**	**1.8**
Total	**$200,640,534**	**$ 114,298,416**	**9.8**	**5.6**	**1.8**

PORTFOLIO FIFTH YEAR IMPACTS

Table 19 Cumulative Annual Electric Savings (Customer Level) by Budget Category								
Program	**Apps Processed**	**Quantity of Energy Efficient Equipment (Units)**	**Incentives**	**Demand Impact (kW)**	**First Year Energy Impact (kWh 1st Yr)**	**Lifetime Energy Impact (kWh - Life)**	**First Year Impact Cost ($/kWh)**	**Lifetime Impact Cost ($/kWh)**
BEEM	2,150	118,085	$ 4,872,146	4,650	32,384,625	459,775,086	$ 0.150	$ 0.011
CBEEM	312	310	$ 4,025,953	3,368	27,113,732	406,688,692	$ 0.148	$ 0.010
BESM	1,297	16,878	$ 1,596,608	273	3,670,914	54,643,824	$ 0.435	$ 0.029
BHTR	719	11,371	$ 699,910	312	2,204,837	30,867,719	$ 0.317	$ 0.023
Business Totals	**4,478**	**146,644**	**$ 11,194,615**	**8,603**	**65,374,109**	**951,975,321**	**$ 0.171**	**$ 0.012**
REEM	37,170	2,979,267	$ 8,180,046	10,826	76,979,115	570,796,055	$ 0.106	$ 0.014
RESM	7	925	$ 555,000	0	3,676,004	53,225,715	$ 0.151	$ 0.010
RHTR	271	363	$ 492,225	27	189,581	2,761,515	$ 2.596	$ 0.178
CESH	3	3	$ 2,766	9	13,452	201,780	$ 0.206	$ 0.014
Residential Totals	**37,451**	**2,980,558**	**$ 9,230,037**	**10,863**	**80,858,152**	**626,985,065**	**$ 0.114**	**$ 0.015**
Total	**41,929**	**3,127,202**	**$ 20,424,652**	**19,466**	**146,232,261**	**1,578,960,387**	**$ 0.140**	**$ 0.013**

Program	**Total Resource Benefit (TRB)**	**Total Resource Cost (TRC)**	**Driven Benefit Ratio (TRB/Incentive $)**	**Driven Investment Ratio (TRC/Incentive $)**	**Benefit Test (TRB/TRC)**
BEEM	$ 52,413,317	$ 41,347,861	10.8	8.5	1.3
CBEEM	$ 42,003,037	$ 23,355,756	10.4	5.8	1.8
BESM	$ 5,261,744	$ 2,180,652	3.3	1.4	2.4
BHTR	$ 3,550,906	$ 701,956	5.1	1.0	5.1
Business Totals	**$ 103,229,004**	**$ 67,586,224**	**9.2**	**6.0**	**1.5**
REEM	$ 73,315,817	$ 41,289,807	9.0	5.0	1.8
RESM	$ 4,125,327	$ 4,866,600	7.4	8.8	0.8
RHTR	$ 317,200	$ 541,443	0.6	1.1	0.6
CESH	$ 50,792	$ 14,341	18.4	5.2	3.5
Residential Totals	**$ 77,809,136**	**$ 46,712,192**	**8.4**	**5.1**	**1.7**
Total	**$ 181,038,140**	**$ 114,298,416**	**8.9**	**5.6**	**1.6**

See Attachment H for a chart comparing the Program's kWh benefits and cost effectiveness at the Program, Customer and System levels.

PORTFOLIO FIFTH YEAR IMPACTS

Savings at Customer and Program Levels

Program Level Savings translate from Program participants (customers) achieving first-year savings based upon the energy efficiency measures they purchased or otherwise installed.

First-year Customer Energy Savings was 146,232,261 kWh per year (1.6% of 2013 utility sales), while Customer Peak Demand Savings was 19,466 kW (1.3% of 2013 utility sales). This does not reflect Peak Demand Savings for the customer as it may not coincide with their actual measured peak demand used for billing purposes. The utility reported non-coincident peak demand across all islands of 1,535,000 kW.

The following tables provide summaries of cumulative energy savings and peak demand savings in the context of program budget categories and island, specifically:

- **Table 20**: Energy (kWh) Reduction by Impact Level and by Island
- **Table 21**: Demand (kW) Reduction by Impact Level and by Island
- **Table 22**: Energy (kWh) Reduction by Impact Level and by Program
- **Table 23**: Demand (kW) Reduction by Impact Level and by Program

Table 20 Energy Impacts (kWh) by Impact Level and Island					
Island	**Customer Level Savings**	**System Losses**	**System Level Savings**	**Net-to-Gross Ratio**	**Program Level Savings**
Hawaii Island	16,363,022	9.0%	17,835,694	78.8%	14,053,209
Lanai	114,701	9.6%	125,667	89.0%	111,888
Maui	16,829,320	10.0%	18,505,521	77.8%	14,395,401
Molokai	118,838	9.6%	130,199	81.7%	106,332
Oahu	112,806,380	11.2%	125,406,852	78.4%	98,340,981
Total	**146,232,261**	**10.8%**	**162,003,933**	**78.4%**	**127,007,811**
Percent of Customer Level Savings			111%		87%

Table 21 Demand Impacts (kW) by Impact Level and Island					
Island	**Customer Level Savings**	**System Losses**	**System Level Savings**	**Net-to-Gross Ratio**	**Program Level Savings**
Hawaii Island	2,265	9.0%	2,469	78.8%	1,946
Lanai	7	9.6%	8	83.0%	6
Maui	2,362	10.0%	2,597	77.4%	2,011
Molokai	7	9.6%	8	80.7%	6
Oahu	14,825	11.2%	16,481	77.8%	12,817
Total	**19,466**	**10.8%**	**21,563**	**77.8%**	**16,787**
Percent of Customer Level Savings			111%		86%

PORTFOLIO FIFTH YEAR IMPACTS

Table 22 Energy Impacts (kWh) Impact Level and Program					
Program	**Customer Level Savings**	**System Losses**	**System Level Savings**	**Net-to-Gross Ratio**	**Program Level Savings**
Business Programs	**65,374,109**	**10.9%**	**72,485,035**	**76.9%**	**55,765,938**
BEEM	32,384,625	10.8%	35,888,612	75.1%	26,941,496
CBEEM	27,113,732	11.0%	30,085,040	74.9%	22,539,657
BESM	3,670,914	10.8%	4,068,857	95.2%	3,872,686
BHTR	2,204,837	10.8%	2,442,526	98.8%	2,412,099
Residential Programs	**80,858,152**	**10.7%**	**89,518,897**	**79.6%**	**71,241,873**
REEM	76,979,115	10.7%	85,211,384	79.0%	67,307,632
CESH	13,452	9.0%	14,663	65.0%	9,531
RESM	3,676,004	11.1%	4,085,326	92.0%	3,758,500
RHTR	189,581	9.5%	207,525	80.1%	166,211
Total	**146,232,261**	**10.8%**	**162,003,933**	**78.4%**	**127,007,811**
Percent of Customer Level Savings			111%		87%

Table 23 Demand Impacts (kW) by Impact Level and Program					
Program	**Customer Level Savings**	**System Losses**	**System Level Savings**	**Net-to-Gross Ratio**	**Program Level Savings**
Business Programs	**8,603**	**10.9%**	**9,537**	**76.5%**	**7,294**
BEEM	4,650	10.8%	5,153	75.1%	3,868
CBEEM	3,368	10.9%	3,737	74.9%	2,799
BESM	273	10.8%	302	95.0%	287
BHTR	312	10.7%	345	98.5%	340
Residential Programs	**10,863**	**10.7%**	**12,025**	**78.9%**	**9,492**
REEM	10,826	10.7%	11,986	79.0%	9,463
CESH	9	9.0%	10	65.0%	7
RESM	0	0.0%	0	0.0%	0
RHTR	27	9.4%	**30**	78.1%	23
Total	**19,466**	**10.8%**	**21,563**	**77.8%**	**16,787**
Percent of Customer Level Savings			111%		86%

PORTFOLIO FIFTH YEAR IMPACTS

CFLs & LEDs – Market Shift Continues Toward LEDs

The Program reduced its dependency on CFLs in PY13. There were 1,501,579 Residential and Business CFLs incentivized, this is 15.4% reduction from the 1,775,226 CFLs in PY12. CFL and LED savings remain a significant contributing measure to the Program as shown in **Table 24**.

The combined Residential and Business CFL and LED impact was a lower percentage of the portfolio, now 52% of the energy reduction achieved and 55% of the demand.

Table 24
CFL & LED Statistics

CFL

County Comparison	Business	Residential	Total	%
Honolulu	2,254	1,128,297	1,130,551	75.3%
Hawaii	641	196,769	197,410	13.1%
Maui	175	173,443	173,618	11.6%
Total	**3,070**	**1,498,509**	**1,501,579**	**100.0%**

Cost-Effectiveness	Business	Residential	Total
CFL Incentives	$13,945	$1,772,755	$1,786,701
CFL kWh 1st Year	349,959	47,590,167	47,940,126
1st Yr $/kWh	$0.04	$0.04	$0.04
CFL kWh Lifetime	2,707,243	285,541,003	288,248,246
Lifetime $/kWh	$0.005	$0.006	$0.006

Energy Comparison	Business	Residential	Total
CFL Program kWh	349,959	47,590,167	47,940,126
LED Program kWh	13,463,313	4,177,364	17,640,677
Portfolio kWh	55,765,938	71,241,873	127,007,811
% of Energy	1%	67%	38%
% of Energy	24%	6%	14%

LED

County Comparison	Business	Residential	Total	%
Honolulu	50,849	174,336	225,185	63.0%
Hawaii	9,493	61,521	71,014	19.9%
Maui	9,311	51,793	61,104	17.1%
Total	**69,653**	**287,650**	**357,303**	**100.0%**

Cost-Effectiveness	Business	Residential	Total
LED Incentives	$2,043,296	$1,569,831	$3,613,127
LED kWh 1st Year	13,463,313	4,177,364	17,640,677
1st Yr $/kWh	$0.152	$0.376	$0.205
LED kWh Lifetime	185,163,121	62,660,455	247,823,575
Lifetime $/kWh	$0.011	$0.025	$0.015

Demand Comparison	Business	Residential	Total
CFL Program kW	39	6,555	6,594
LED Program kW	1,920	760	2,680
Portfolio kW	7,294	9,493	16,787
% of Demand	1%	69%	39%
% of Demand	26%	8%	16%

PORTFOLIO FIFTH YEAR IMPACTS

CFL counts dropped by 15.4% compared to PY12 participation numbers whereas LEDs have increased 191%. LEDs will continue to increase their role in the Program-achieved savings. See **Table 25** for details.

Table 25
Impact of Change in CFL Savings Values

Lamp Count			
Program Year	**Business**	**Residential**	**Total**
PY2009	77,100	1,004,830	1,081,930
PY2010	60,080	1,738,553	1,798,633
PY2011	81,235	1,841,842	1,923,077
PY2012	11,898	1,763,328	1,775,226
PY2013	3,070	1,498,509	1,501,579
First Year kWh			
Program Year	**Business**	**Residential**	**Total**
PY2009	4,099,193	52,054,220	56,153,413
PY2010	4,985,218	45,779,857	50,765,075
PY2011	12,892,740	53,790,929	66,683,669
PY2012	1,784,176	51,753,273	53,537,449
PY2013	349,959	47,590,167	47,940,126
Average kWh Savings Per Lamp			
Program Year	**Business**	**Residential**	**Total**
PY2009	53	52	52
PY2010	83	26	28
PY2011	159	29	35
PY2012	150	29	30
PY2013	114	32	32

In PY13, the average kWh savings per lamp reflects an updated Net-To-Gross value implemented based on feedback from the Evaluation Measurement & Verification (EM&V) team.

PORTFOLIO FIFTH YEAR IMPACTS

Measure Contribution toward Savings Impacts

In PY13, the Program incentivized over 68 measures in 19 different measure categories. High Efficiency Lighting and High Efficiency HVAC accounted for the greatest savings impact and High Efficiency Water Heating was the third most impactful measure category. **Table 26** provides a summary of all measure categories and their respective energy impact for PY13.

- **#1 Contributor - High Efficiency Lighting** – 65% first year (down from 67% in PY12) and 56% lifetime energy savings (up from 50% in PY12). CFLs, LEDs and then T8LW lighting contributed the most toward the Program as they are the most cost-effective measures a customer can implement. LEDs have increased to the second single measure contributor at 17,640,677 kWh/year behind CFLs at 47,940,126 kWh/year.
- **#2 Contributor - High Efficiency HVAC** - 11% first year and 16% lifetime energy savings. Customized Chiller Plant and Prescriptive Chillers contributed 72% of this category.
- **#3 Contributor – High Efficiency Water Heating Measures** - 4% first year (steady from 4% in PY12) and 5% lifetime energy savings (down from 6% in PY12).

Table 26
Contribution by Measure Category in Order of Lifetime Energy Impact

Rank	Category	Apps	%	Measure Quantity	Program Demand (kW)	%	Program Energy (kWh 1st Year)	%	Program Energy (kWh - Life)	%	Incentives	%	Lifetime Cost ($/kWh)
1	High Efficiency Lighting	22,385	53.4%	1,921,382	11,276	67.2%	82,876,478	65.3%	771,427,918	56.4%	$8,709,316	42.6%	$0.011
2	High Efficiency HVAC	392	0.9%	1,389	1,994	11.9%	14,199,360	11.2%	222,773,658	16.3%	$3,183,154	15.6%	$0.014
3	High Efficiency Water Heating	2,618	6.2%	2,543	1,102	6.6%	5,265,031	4.1%	73,722,392	5.4%	$2,808,524	13.8%	$0.038
4	Energy Star Business Equipment	6,354	15.2%	6,858	197	1.2%	4,671,684	3.7%	65,403,574	4.8%	$800,135	3.9%	$0.012
5	Building Envelope Improvements	63	0.2%	61	369	2.2%	2,238,295	1.8%	56,397,393	4.1%	$454,699	2.2%	$0.008
6	Codes and Standards	7	0.0%	925	0	0.0%	3,758,500	3.0%	54,419,569	4.0%	$555,000	2.7%	$0.010
7	High Efficiency Motors	82	0.2%	4,846	238	1.4%	1,694,348	1.3%	26,984,634	2.0%	$501,777	2.5%	$0.019
8	High Efficiency Water Pumping	279	0.7%	278	187	1.1%	1,773,114	1.4%	24,338,562	1.8%	$328,576	1.6%	$0.014
9	Energy Awareness, Measurement and Control Systems	150	0.4%	1,176,987	732	4.4%	6,285,799	4.9%	16,657,501	1.2%	$1,800,991	8.8%	$0.108
10	High Efficiency Air Conditioning	3,720	8.9%	4,730	382	2.3%	1,269,930	1.0%	14,646,877	1.1%	$285,905	1.4%	$0.020
11	High Efficiency Appliances	4,985	11.9%	5,084	119	0.7%	925,136	0.7%	11,460,294	0.8%	$328,927	1.6%	$0.029
12	Custom Project	3	0.0%	3	19	0.1%	600,464	0.5%	11,431,610	0.8%	$111,073	0.5%	$0.010
13	Commercial Industrial Processes	19	0.0%	39	89	0.5%	518,299	0.4%	7,774,484	0.6%	$207,250	1.0%	$0.027
14	High Efficiency Industrial Equipment	7	0.0%	7	9	0.1%	253,583	0.2%	4,353,273	0.3%	$41,437	0.2%	$0.010
15	Data Center Measures	1	0.0%	1	39	0.2%	345,108	0.3%	4,141,294	0.3%	$55,575	0.3%	$0.013
16	Residential Design	826	2.0%	826	24	0.1%	209,851	0.2%	1,049,254	0.1%	$123,900	0.6%	$0.118
17	Energy Efficiency Equipment Grants	4	0.0%	1,221	11	0.1%	121,733	0.1%	608,666	0.0%	$11,955	0.1%	$0.020
18	Maintenance	4	0.0%	4	0	0.0%	1,099	0.0%	1,099	0.0%	$200	0.0%	$0.182
19	Other	4	0.0%	0	0	0.0%	0	0.0%	0	0.0%	$130	0.0%	$0
20	Business Design, Audits and Commissioning	18	0.0%	17	0	0.0%	**0**	0.0%	0	0.0%	$84,003	0.4%	$0
21	Accounting Record	8	0.0%	1	0	0.0%	0	0.0%	0	0.0%	$32,126	0.2%	$0
	Total	**41,929**	**100%**	**3,127,202**	**16,787**	**100%**	**127,007,811**	**100%**	**1,367,592,053**	**100%**	**$20,424,652**	**100%**	**$0.015**

PORTFOLIO FIFTH YEAR IMPACTS

Energy Impacts by Rate Schedule

Program Level impacts (first year) were greatest in the Residential Rate Schedule "R" with 68,852,918 kWh or 54.2% of savings, of which 72% was realized on Oahu. The Oahu Residential rate class provided the greatest savings of 50,102,519 kWh per year of all the rate schedules (39% of PY13 total kWh). A summary of Program energy impacts by rate schedule is provided in **Table 27.**

Table 27
Program Energy Impact (kWh) by Rate Schedule

Island	R	G	J	P	DS	F	Total	%
Hawaii	9,714,221	495,222	1,684,554	1,824,209	0	335,003	14,053,209	11.1%
Lanai	39,653	72,235	0	0	0	0	111,888	0.1%
Maui	8,893,431	305,135	1,070,811	4,126,024	0	0	14,395,401	11.3%
Molokai	103,093	3,238	0	0	0	0	106,332	0.1%
Oahu	50,102,519	3,345,889	17,075,611	19,625,281	8,118,543	73,136	98,340,981	77.4%
Total	**68,852,918**	**4,221,720**	**19,830,977**	**25,575,514**	**8,118,543**	**408,138**	**127,007,811**	**100.0%**
Percent	54.2%	3.3%	15.6%	20.1%	6.4%	0.3%	100.0%	

Demand impact had similar results with the Residential Rate schedule customers providing 9,366 kW or 55.8% of the demand savings. Oahu Residential Rate Customers provided the greatest savings of 6,806 kW of all the rate schedules (40% of PY12 total kW). A summary of Program Level demand impacts by rate schedule is provided in **Table 28**.

Table 28
Program Demand Impact (kW) by Rate Schedule

Island	R	G	J	P	DS	F	Total	%
Hawaii	1,342	61	225	267	-	51	1,946	11.6%
Lanai	5	1	-	-	-	-	6	0.0%
Maui	1,208	39	179	585	-	-	2,011	12%
Molokai	6	-	-	-	-	-	6	0.0%
Oahu	6,806	242	2,146	2,496	1,115	11	12,817	76.4%
Total	**9,366**	**344**	**2,551**	**3,348**	**1,115**	**62**	**16,787**	**100%**
Percent	55.8%	2.0%	15.2%	19.9%	6.6%	0.4%	100.0%	

PORTFOLIO FIFTH YEAR IMPACTS

Program Level Energy Impacts by Program and Rate Class

Table 29 shows Business and Residential program energy contributions by rate class.

- **# 1 Contributor - Residential Energy Efficiency Measures (REEM) within the Residential Rate Schedule "R"**
  66,672,058 kWh (52% of total program)
  The top three contributors toward this value were residential CFLs, Peer Group Comparison and LEDs.

- **# 2 Contributor - Business Energy Efficiency Measures (BEEM) within the Business Large Customer Rate Schedule "P"**
  13,030,582 kWh (10% of total program)
  Schedule "P" Customers are the biggest energy consumers and they undertake the largest energy-savings projects. Schedule "P" savings were dominated by high performance lighting at 53% of savings in the category. The lighting technologies were led by LED and T8 LW retrofits.

Table 29
Program Energy Impact (kWh) by Rate Class

Program	R	G	J	P	DS	F	Total	%
Business Programs	**121,867**	**3,824,842**	**18,342,639**	**25,572,446**	**7,496,006**	**0**	**408,138**	**55,765,938**
BEEM	14,937	855,270	10,323,870	13,030,582	2,716,836	0	0	26,941,496
CBEEM	21,243	441,412	6,031,275	10,858,419	4,779,170	0	408,138	22,539,657
BESM	3,414	2,158,929	592,672	1,117,671	0	0	0	3,872,686
BHTR	82,273	369,231	1,394,822	565,774	0	0	0	2,412,099
Residential Programs	**68,731,051**	**396,879**	**1,488,337**	**3,069**	**622,537**	**0**	**0**	**71,241,873**
REEM	66,672,058	9,968	0	3,069	622,537	0	0	67,307,632
CESH	9,531	0	0	0	0	0	0	9,531
RESM	1,886,718	383,444	1,488,337	0	0	0	0	3,758,500
RHTR	162,745	3,466	0	0	0	0	0	166,211
Total	**68,852,918**	**4,221,720**	**19,830,977**	**25,575,514**	**8,118,543**	**0**	**408,138**	**127,007,811**
Percent	**54.2%**	**3.3%**	**15.6%**	**20.1%**	**6.4%**	**0.0%**	**0.3%**	**100.0%**

PORTFOLIO FIFTH YEAR IMPACTS

Program Level Demand Impacts by Program and Rate Class

Table 30 shows Business and Residential program demand contributions by rate class.

- **# 1 Contributor - Residential Energy Efficiency Measures (REEM) within the Residential Rate Schedule "R"**
  9,322 kW (56% of total program)
  The top three contributors toward this value were Residential CFLs, Peer Group Comparison and LEDs.

- **# 2 Contributor - Business Energy Efficiency Measures (BEEM) within the Business Large Customer Rate Schedule "P"**
  1,873 kWh (11% of total program)
  Schedule "P" Customers are the biggest energy consumers and they undertake the largest energy-savings projects. Schedule "P" savings were dominated by high performance lighting at 53% of savings in the category. The lighting technologies were led by LED and T8 LW retrofits.

Table 30
Program Demand Impact (kW) by Rate Class

Program	R	G	J	P	DS	F	Total	%
Business Programs	**15**	**341**	**2,551**	**3,348**	**976**	**62**	**7,294**	**43.5%**
BEEM	2	102	1,445	1,873	447	0	3,868	23.0%
CBEEM	4	68	880	1,256	529	62	2,799	16.7%
BESM	1	124	26	137	-	-	287	1.7%
BHTR	9	48	200	82	-	-	340	2.0%
Residential Programs	**9,351**	**3**	**-**	**-**	**139**	**-**	**9,493**	**56.5%**
REEM	9,322	2	-	-	139	-	9,463	56.4%
CESH	7	0	-	-	-	-	7	0.0%
RESM	0	0	-	-	-	-	0	0.0%
RHTR	23	1	-	-	-	-	23	0.1%
Total	**9,372**	**344**	**2,546**	**3,348**	**1,115**	**62**	**16,787**	**100.0%**
Percent	55.8%	2.0%	15.2%	19.9%	6.6%	0.4%	100.0%	

PORTFOLIO FIFTH YEAR IMPACTS

Customer Level Energy Impacts by Program and Rate Class

Table 31 shows Business and Residential program energy contributions by rate class.

- **# 1 Contributor - Residential Energy Efficiency Measures (REEM) within the Residential Rate Schedule "R"**
  76,224,725 kWh (52% of total program)
  The top three contributors toward this value were Residential CFLs, Peer Group Comparison and LEDs.

- **# 2 Contributor - Business Energy Efficiency Measures (BEEM) within the Business Large Customer Rate Schedule "P"**
  15,707,361 kWh (10% of total program)
  Schedule "P" Customers are the biggest energy consumers and they undertake the largest energy-savings projects. High performance lighting led by LED and T8 LW retrofits were the top contributors to this category.

Table 31
Customer Energy Impact (kWh) by Rate Class

Program	R	G	J	P	DS	F	Total	%
Business Programs	**121,610**	**3,947,961**	**21,466,736**	**30,344,733**	**8,994,969**	**498,100**	**65,374,109**	**44.7%**
BEEM	18,098	1,028,070	12,372,491	15,707,361	3,258,605	0	32,384,625	22.1%
CBEEM	25,478	530,236	7,261,953	13,061,601	5,736,364	498,100	27,113,732	18.5%
BESM	3,280	2,052,369	555,538	1,059,727	0	0	3,670,914	2.5%
BHTR	74,754	337,286	1,276,754	516,044	0	0	2,204,837	1.5%
Residential Programs	**78,269,511**	**390,666**	**1,455,211**	**3,494**	**739,270**	**0**	**80,858,152**	**55.3%**
REEM	76,224,725	11,626	0	3,494	739,270	0	76,979,115	52.6%
CESH	13,452	0	0	0	0	0	13,452	0.0%
RESM	1,845,883	374,910	1,455,211	0	0	0	3,676,004	2.5%
RHTR	185,451	4,130	0	0	0	0	189,581	0.1%
Total	**78,391,121**	**4,338,627**	**22,921,947**	**30,348,227**	**9,734,239**	**498,100**	**146,232,261**	**100.0%**
Percent	**53.6%**	**3.0%**	**15.7%**	**20.8%**	**6.7%**	**0.3%**	**100.0%**	

PORTFOLIO FIFTH YEAR IMPACTS

Customer Level Demand Impacts by Program and Rate Class

Table 32 shows Business and Residential program demand contributions by rate class.

- **# 1 Contributor – Residential Energy Efficiency Measures (REEM) within the Residential Rate Schedule "R"**
  10,659 kW (54% of total program)
  The top three contributors toward this value were Residential CFLs, Solar Water Heating and Peer Group Comparisons.

- **# 2 Contributor – Business Energy Efficiency Measures (BEEM) within the Business Large Customer Rate Schedule "P"**
  2,258 kWh (11% of total program)
  Schedule "P" Customers are the biggest energy consumers and they undertake the largest energy-savings projects. LED, T8 and VFD Pumps were the top contributors to this category.

Table 32
Customer Demand Impact by Rate Class

Program	R	G	J	P	DS	U	F	Total	%
Business Programs	**15**	**365**	**3,001**	**3,974**	**1,171**	**0**	**76**	**8,603**	**44.2%**
BEEM	2	122	1,733	2,258	536	0	0	4,650	23.9%
CBEEM	4	81	1,060	1,511	635	0	76	3,368	17.3%
BESM	0	118	24	130	0	0	0	273	1.4%
BHTR	9	44	184	75	0	0	0	312	1.6%
Residential Programs	**10,695**	**3**	**0**	**0**	**165**	**0**	**0**	**10,863**	**55.8%**
REEM	10,659	2	0	0	165	0	0	10,826	55.6%
CESH	9	0	0	0	0	0	0	9	0.0%
RESM	0	0	0	0	0	0	0	0	0.0%
RHTR	26	1	0	0	0	0	0	27	0.1%
Total	**10,710**	**369**	**3,001**	**3,974**	**1,336**	**0**	**76**	**19,466**	**100.0%**
Percent	55.0%	1.9%	15.4%	20.4%	6.9%	0.0%	0.4%	100.0%	

PORTFOLIO FIFTH YEAR IMPACTS

Energy Efficiency Portfolio Standard (EEPS) Impacts

2014 Energy Efficiency Potential Study

The PUC contracted with EnerNOC Utility Solutions Consulting to conduct an independent evaluation of energy efficiency (EE) market potential in the State of Hawaii from 2013-2030. This study identifies the potential energy savings that can be achieved by contributing entities toward the goals outlined in the EEPS.

The Executive Summary of the report can be found at:
http://puc.hawaii.gov/reports/energy-reports/attachment/state_of_hi_potential_study_final/

The following are the key findings and figure excerpted from the report.

Key Findings

The purpose of the study was to assess whether the State is on track to meet the EEPS goals by 2030. As shown in Figure ES-1, this study concludes it is **highly** likely that the **EEPS** goals can be met through a combination of interventions:

- **Energy-efficiency programs** like those being delivered by Hawai'i Energy [the Public Benefits Fee Administrator (PBFA)][1] and Kauai Island Utility Cooperative (KIUC)
- **Existing appliance standards and building codes** that are already in place or "on the books" for the next five years. Federal, state and local codes and standards taking effect on or after January 1, 2009 count toward EEPS goals. Savings from these existing codes and standards are substantial and reflect the federal Energy Independence and Security Act of 2007 (EISA) lighting standard and several federal appliance standards that were established since the EEPS goal was set in 2008.
- **Economic potential** is the amount of cost-effective potential remaining after appliance standards and building codes are taken into consideration. In addition to savings that can be gained through future EE programs, economic potential also includes savings that result from changes in manufacturing practices as a result of agreements with ENERGY STAR or energy efficiency agencies (most notable for consumer electronics) and savings from early adopters that purchase energy-efficient appliances or equipment **outside** of programs. While these latter two categories, (savings from manufacturing practices and from early adopters) are not directly attributed to energy efficiency programs offered by KIUC or the PBFA, the savings are significant. If a method can be developed to measure the savings from these categories in the future, it might be appropriate to count these savings toward the EEPS goal.

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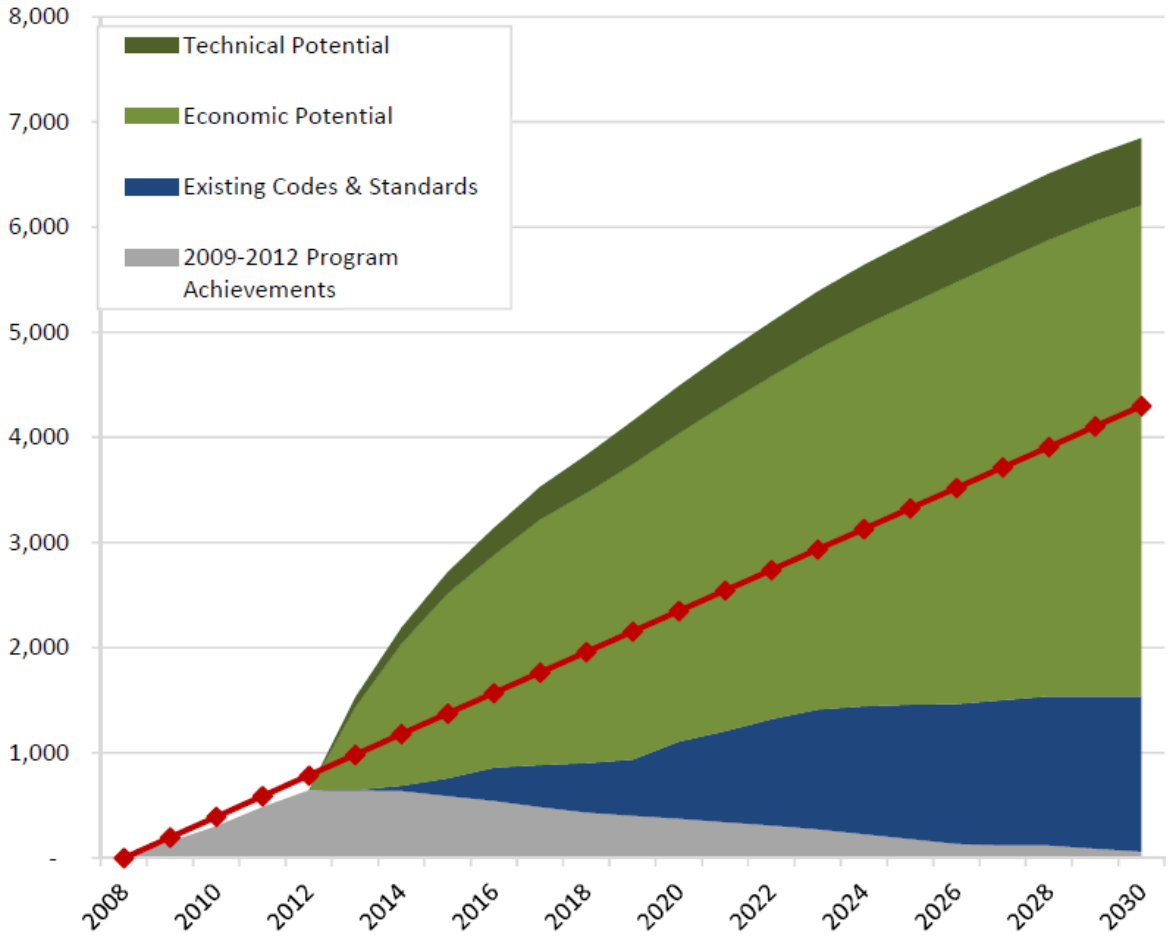
Figure ES-1 shows the year-by-year potential savings from the interventions against the EEPS goal. This study was grounded in 2012 and estimates potential savings for 2013 through 2030. For 2009–2012, program savings estimates developed outside this study were used and are assumed to decay over time. The study estimates that cost-effective cumulative energy efficiency potential in 2030 is 6,210 GWh, or about 144% of current EEPS goals. This indicates that the while the EEPS goals are aggressive, it is likely they can be met cost-effectively.

Figure ES-1 Potential Savings Estimates Compared to the EEPS Goal (GWh)



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Application of Fifth Year Energy Savings towards EEPS Goal

The targeted goal of the EEPS is a 4,300 GWh reduction from the expected usage in 2030. This "slice of savings" will be the result of many actions, including energy efficiency retrofits, increased appliance standards, product improvements (to meet consumer demands for longer battery lives and less environmental impact), building codes, behavior change and much more. Hawaii Energy will capture many of these actions through our programs and services.

As measures and actions are put into place, each will start to provide an annual energy savings. These savings will be provided each year until the device or action is replaced with a new one that provides at least the same energy reduction that will maintain the savings. For simplicity this year, we have decided to show the savings as forever persistent and assume first year savings will last forever.

Figure 5 projects the results of the current program performance level impacts being achieved each year. Hawaii DSM program operations began in 1996; however, **Figure 5** depicts the yearly DSM performance from 2008 - 2013 and adds the current PY13 impacts as if they will be achieved each year into the future. The result is that 3,476 GWh, or 80% of the goal is potentially achieved (purple line).

The difference between actual electricity sales (green line) and the Program's cumulative impact (light blue line) has increased to nearly 1,000 GWhs since the inception of DSM programs (blue area).

The sales of energy on each island are also provided for scale and reduction opportunity identification. The last piece of information added this year is a demonstration of the estimated annual energy consumption of 100,000 electric vehicles (based on 2013 technology, energy use of 8 kWh/day).

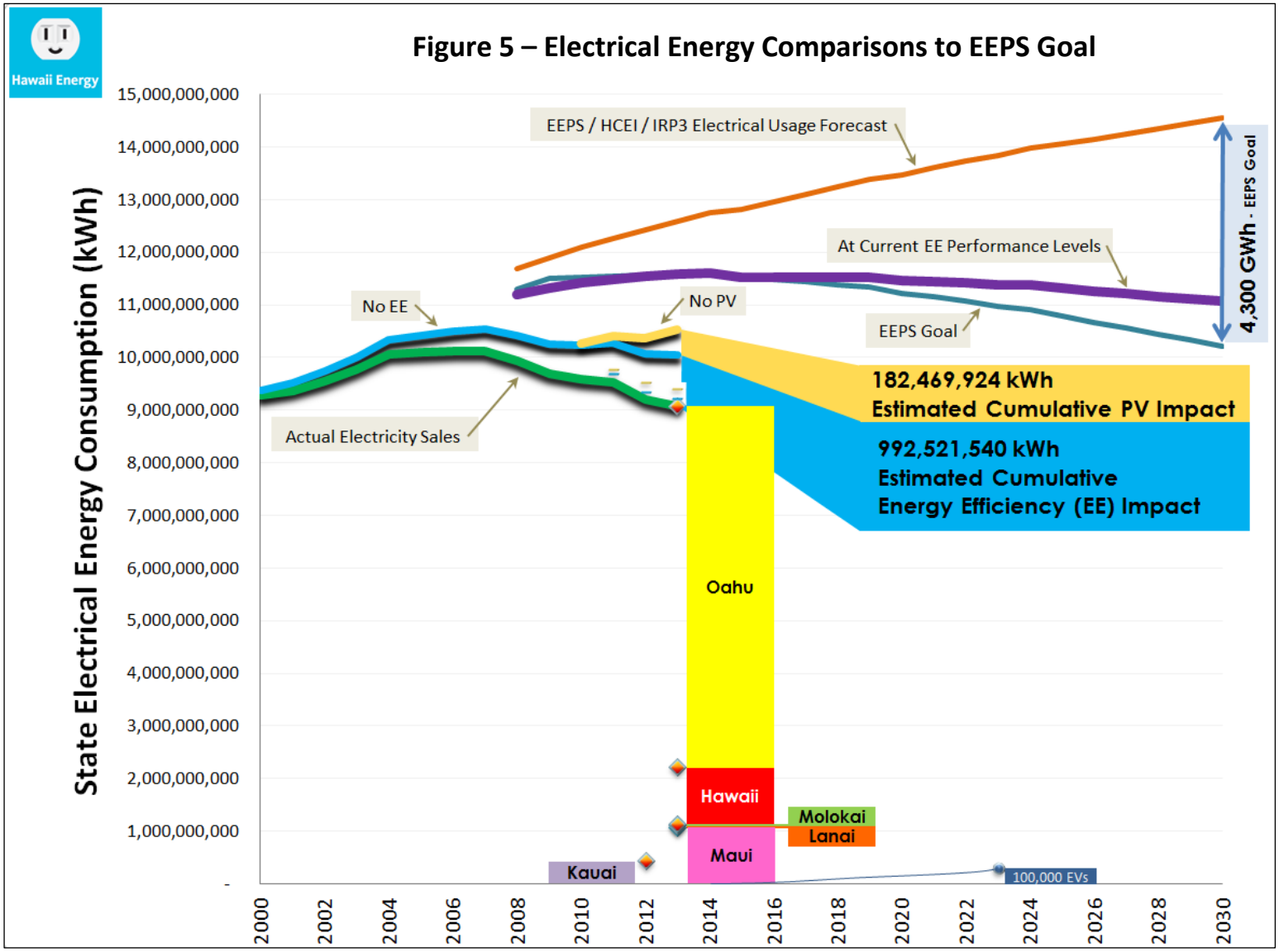
Figure 5 – Electrical Energy Comparisons to EEPS Goal
Hawaii Energy
State Electrical Energy Consumption (kWh)
15,000,000,000
14,000,000,000
13,000,000,000
12,000,000,000
11,000,000,000
10,000,000,000
9,000,000,000
8,000,000,000
7,000,000,000
6,000,000,000
5,000,000,000
4,000,000,000
3,000,000,000
2,000,000,000
1,000,000,000
-
EEPS / HCEI / IRP3 Electrical Usage Forecast
At Current EE Performance Levels
EEPS Goal
4,300 GWh - EEPS Goal
No EE
No PV
Actual Electricity Sales
182,469,924 kWh
Estimated Cumulative PV Impact
992,521,540 kWh
Estimated Cumulative
Energy Efficiency (EE) Impact
Oahu
Hawaii
Molokai
Lanai
Maui
Kauai
100,000 EVs
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
2024
2026
2028
2030

PORTFOLIO FIFTH YEAR IMPACTS

Cumulative Impacts of Energy Efficiency (EE) and Non-Utility Photo-Voltaic (PV) Installations

Figure 6 shows Hawaii GDP economic activity, cumulative impact of the actions and measures supported by DSM programs, and estimated roof top PV contribution, visualized as light green, light blue, and yellow lines respectively. The light blue line is calculated by adding the cumulative energy savings for each year of EE activity to the Hawaii GDP predicted energy consumption. Similarly, PV cumulative impact is also added to show it has made significant increases over the past four years, providing a Hawaii Energy-estimated 182 GWh reduction in electrical energy sales. The remaining undefined impacts are predictably market-driven. The Program will investigate these reductions in PY14 utilizing the PUC 2014 Energy Efficiency Potential Study and Program-purchased benchmarking data. Areas of review will include appliance and device sales, energy code compliance, customer-driven efficiency and other consumer actions.

It can also be seen that electrical sales (dark green line) flatlined from around 2004 until the 2008 economic downturn, when sales actually started to decline. Much of the 2004 to 2008 stagnation may be attributed to improved consumer and business electronics (e.g. the transition from cathode ray tube (CRT) screens to flat panel displays), as well as rapid adoption of improved consumer appliances, high efficiency lighting (CFLs and T8). Although the GDP has since recovered to pre-2008 levels, expected energy sales have continued to decrease, which may be attributed to: 1) the dramatic improvements in air conditioning technologies (e.g. inverter-driven variable capacity and oil-free compressor units) and 2) the maturation and cost-effectiveness of LED technology.

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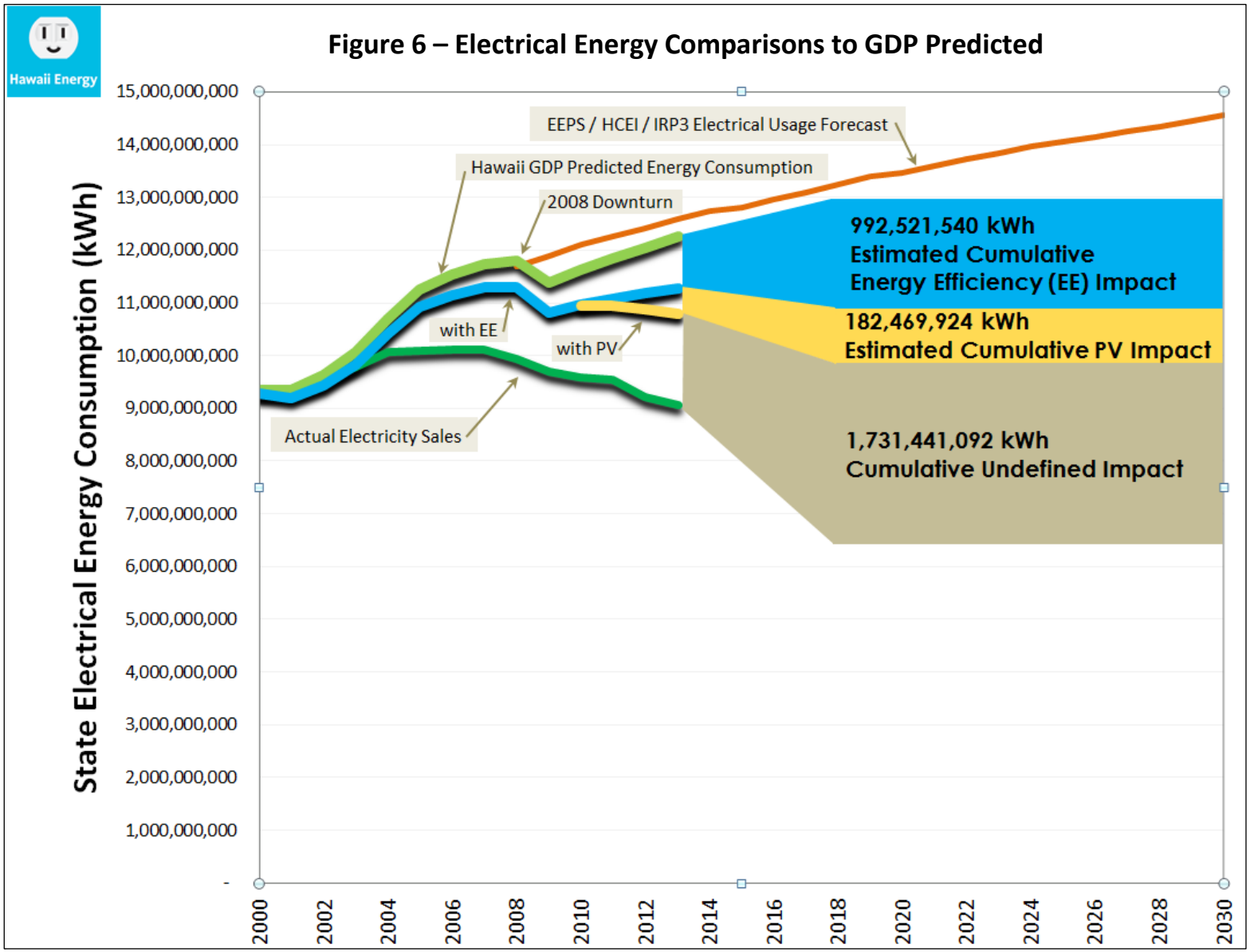
Figure 6 – Electrical Energy Comparisons to GDP Predicted



PORTFOLIO FIFTH YEAR IMPACTS

Portfolio Impacts Relative to Load

Tables 33, 33a and 34 show the Program and Customer Level Impacts as compared to PY13 electricity sales.

Customer level savings were equivalent to 1.6% of the 2013 annual energy usage and 1.3% of the peak demand for the utility customers.

Oahu had both the largest energy and demand reductions and the largest percentage of load with energy at 1.6% and demand at 1.3%.

Table 33
Energy Impacts vs. Sales

Island	2013 kWh Generated*	Customer Level Savings	% of Sales	Program Level Savings	% of Sales
Hawaii	1,159,100,000	16,362,200	1.4%	14,053,209	1.2%
Lanai	27,300,000	114,701	0.4%	111,888	0.4%
Maui	1,141,300,000	16,829,153	1.5%	14,395,401	1.3%
Molokai	32,100,000	118,838	0.4%	106,332	0.3%
Oahu	7,187,300,000	112,804,032	1.6%	98,338,408	1.4%
Total	**9,547,100,000**	**146,228,924**	**1.5%**	**127,005,238**	**1.3%**
kWh Sales**					
Total	9,069,500,000	146,228,924	1.6%	127,005,238	1.4%

* HEI 2013 10K Report - net generated and purchased power

** Total Sales in 10K reported only for Total

Table 33a
HECO Sales vs. Generated

HECO Consolidated Operating Statistics	kWh/Yr	%
Net Generated and Purchased	9,547,100,000	100.0%
Sales	9,069,500,000	95.0%
System Losses and Use	477,600,000	5.0%

Table 34
Demand Impacts vs. Sales

Island	2013 kW Peak*	Customer Level Reduction	% of Peak	Program Level Reduction	% of Peak
Hawaii	190,200	2,265	1.2%	1,946	1.0%
Lanai	5,000	7	0.1%	6	0.1%
Maui	190,300	2,362	1.2%	2,011	1.1%
Molokai	5,400	7	0.1%	6	0.1%
Oahu	1,144,000	14,825	1.3%	12,816	1.1%
Total	**1,534,900**	**19,466**	**1.3%**	**16,785**	**1.1%**

* Reported HEI 2010 10K Report (non-coincident and non-integrated)

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Portfolio Total Resource Benefit (TRB) and Total Resource Cost (TRC)

TRB

The utilities' total avoided cost of all saved energy and capacity avoided is called the Total Resource Benefit (TRB). The total Program portfolio had a net TRB of $156,542,771. Table 38 shows the measures and their relative contributions. The top three measures provided 78% of the TRB value. They are: High Efficiency Lighting, High Efficiency HVAC and High Efficiency Water Heating.

- *High Efficiency Lighting* – The largest contributor to the TRB at $92,922,942 (59.4%). CFLs alone had a 38% first year energy impact contribution to the Program, despite a short six (6) year useful life and low unit savings number. CFLs were the greatest contributor to the TRB at $38,451,943 (24.6%).
- *High Efficiency HVAC* – The second measure to offer significant contribution at $24,520,860 (15.7%) was High Efficiency HVAC.
- *High Efficiency Water Heating* – The third largest measure contributing to the TRB at $9,836,876 (6.3%) was High Efficiency Water Heating.

TRC

Total Resource Cost is the customer's project or incremental cost to purchase and install the energy-efficient equipment or make operational changes above what would have been done anyway. PY13 Program Savings were achieved with an estimated TRC of $114,298,416, compared to $56,213,606 in PY12.

The largest customer investments were High Efficiency Air Conditioning at $22,966,459 (20.1%), followed by LEDs at $20,145,278 (17.6%) and Solar Water Heaters at $20,145,278 (31.3%). See **Table 35** for details.

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Table 35 Measure Portfolio Total Resource Benefit and Costs (TRB & TRC)														
Category	Program Demand (kW)	%	Program Energy (kWh 1st Year)	%	Program Energy (kWh - Life)	%	Average Measure Life (Years)	TRB/ TRC	Total Resource Benefit (TRB)	%	Total Resource Cost (TRC)	%	Incentives	%
High Efficiency Lighting	11,276	67.2%	82,876,478	65.3%	771,427,918	56.4%	9.3	3.0	$92,992,942	59.4%	$30,759,266	26.9%	$8,709,316	42.6%
High Efficiency HVAC	1,994	11.9%	14,199,360	11.2%	222,773,658	16.3%	15.7	0.8	$24,520,860	15.7%	$30,618,454	26.8%	$3,183,154	15.6%
High Efficiency Water Heating	1,102	6.6%	5,265,031	4.1%	73,722,392	5.4%	14.0	0.6	$9,836,876	6.3%	$17,653,257	15.4%	$2,808,524	13.8%
Energy Star Business Equipment	197	1.2%	4,671,684	3.7%	65,403,574	4.8%	14.0	0.8	$5,826,176	3.7%	$7,505,784	6.6%	$800,135	3.9%
Building Envelope Improvements	369	2.2%	2,238,295	1.8%	56,397,393	4.1%	25.2	1.3	$4,688,072	3.0%	$3,647,323	3.2%	$454,699	2.2%
Codes And Standards	0	0.0%	3,758,500	3.0%	54,419,569	4.0%	14.5	0.9	$4,217,883	2.7%	$4,866,600	4.3%	$555,000	2.7%
High Efficiency Motors	238	1.4%	1,694,348	1.3%	26,984,634	2.0%	15.9	0.6	$2,981,992	1.9%	$5,304,312	4.6%	$501,777	2.5%
High Efficiency Water Pumping	187	1.1%	1,773,114	1.4%	24,338,562	1.8%	13.7	1.5	$2,593,597	1.7%	$1,736,624	1.5%	$328,576	1.6%
Energy Awareness, Measurement And Control Systems	732	4.4%	6,285,799	4.9%	16,657,501	1.2%	2.7	0.8	$2,192,163	1.4%	$2,911,516	2.5%	$1,800,991	8.8%
High Efficiency Air Conditioning	382	2.3%	1,269,930	1.0%	14,646,877	1.1%	11.5	1.1	$2,558,198	1.6%	$2,244,428	2.0%	$285,905	1.4%
High Efficiency Appliances	119	0.7%	925,136	0.7%	11,460,294	0.8%	12.4	0.4	$1,325,594	0.8%	$3,655,022	3.2%	$328,927	1.6%
Custom Project	19	0.1%	600,464	0.5%	11,431,610	0.8%	19.0	0.7	$858,657	0.5%	$1,246,133	1.1%	$111,073	0.5%
Commercial Industrial Processes	89	0.5%	518,299	0.4%	7,774,484	0.6%	15.0	1.0	$935,627	0.6%	$926,962	0.8%	$207,250	1.0%
High Efficiency Industrial Equipment	9	0.1%	253,583	0.2%	4,353,273	0.3%	17.2	0.7	$334,972	0.2%	$510,830	0.4%	$41,437	0.2%
Data Center Measures	39	0.2%	345,108	0.3%	4,141,294	0.3%	12.0	2.0	$467,236	0.3%	$228,000	0.2%	$55,575	0.3%
Residential Design	24	0.1%	209,851	0.2%	1,049,254	0.1%	5.0	0.5	$137,556	0.1%	$293,366	0.3%	$123,900	0.6%
Energy Efficiency Equipment Grants	11	0.1%	121,733	0.1%	608,666	0.0%	5.0	6.2	$74,178	0.0%	$11,955	0.0%	$11,955	0.1%
Maintenance	0	0.0%	1,099	0.0%	1,099	0.0%	1.0	0.3	$192	0.0%	$556	0.0%	$200	0.0%
Business Design, Audits And Commissioning	0	0.0%	0	0.0%	0	0.0%	0	0.0	$0	0.0%	$145,796	0.1%	$84,003	0.4%
Accounting Record	0	0.0%	0	0.0%	0	0.0%	0	0.0	$0	0.0%	$32,096	0.0%	$32,126	0.2%
Total	**16,787**	**100%**	**127,007,811**	**100%**	**1,367,592,053**	**100%**	**10.8**	**1.4**	**$156,542,771**	**100%**	**$114,298,279**	**100%**	**$20,424,522**	**100%**

PORTFOLIO FIFTH YEAR IMPACTS

TRC Test

The societal cost test of the TRB/TRC provides a metric of how much "return on investment" is provided by:

- Saving energy versus creating it (kWh reductions)
- Avoiding the need for increased power plant capacity (Peak kW reductions)

The TRB/TRC ratio of 1.4 indicates that society is getting a 1.4 times return (or 140%) on their investment. Currently this does not include the benefits of avoided transmission and distribution costs or any "externalities" that bring benefit to society, such as reductions in air and water emissions. Refer to **Tables 36-37** for details under TRB/TRC.

Table 36
TRC Measure Values

Measure	Program Demand (kW)	%	Program Energy (kWh 1st Yr)	%	Program Energy (kWh - Life)	%	Average Measure Life (Yrs)	TRB/TRC	Total Resource Benefit (TRB)	%	Total Resource Cost (TRC)	%	Incentives	%
Delamping	390	2.3%	2,770,696	2.2%	38,789,745	2.8%	14.0	25.9	$4,464,301	2.9%	$172,464	0.2%	$155,653	0.8%
CFL	6,556	39.1%	47,600,431	37.5%	285,684,692	20.9%	6.0	25.6	$38,451,943	24.6%	$1,499,500	1.3%	$1,773,747	8.7%
Central Plant Optimization	0	0.0%	237,328	0.2%	2,373,281	0.2%	10.0	9.4	$202,322	0.1%	$21,508	0.0%	$21,508	0.1%
Water Cooler Timer	11	0.1%	121,733	0.1%	608,666	0.0%	5.0	6.2	$74,178	0.0%	$11,955	0.0%	$11,955	0.1%
Custom Lighting	11	0.1%	264,507	0.2%	3,679,197	0.3%	13.9	6.0	$326,111	0.2%	$54,544	0.0%	$47,755	0.2%
T8 Low Wattage	896	5.3%	8,142,725	6.4%	113,998,152	8.3%	14.0	3.7	$12,207,548	7.8%	$3,278,092	2.9%	$2,012,237	9.9%
Water Heating - Heat Recovery	63	0.4%	154,775	0.1%	1,547,747	0.1%	10.0	3.5	$311,607	0.2%	$89,924	0.1%	$32,070	0.2%
Whole House Fans	175	1.0%	350,530	0.3%	6,925,129	0.5%	19.8	3.0	$1,263,546	0.8%	$422,937	0.4%	$29,925	0.1%
High Performance Windows	218	1.3%	1,700,722	1.3%	51,021,667	3.7%	30.0	2.7	$3,797,188	2.4%	$1,392,080	1.2%	$289,605	1.4%
Water Heating - Heat Pump	5	0.0%	13,954	0.0%	139,539	0.0%	10.0	2.6	$26,006	0.0%	$9,900	0.0%	$2,780	0.0%
Data Center Technologies	39	0.2%	345,108	0.3%	4,141,294	0.3%	12.0	2.0	$467,236	0.3%	$228,000	0.2%	$55,575	0.3%
Pool Pump	0	0.0%	4,682	0.0%	70,225	0.0%	15.0	2.0	$6,804	0.0%	$3,374	0.0%	$1,125	0.0%
Demand Control Ventilation	296	1.8%	2,194,502	1.7%	29,958,758	2.2%	13.7	1.9	$3,410,984	2.2%	$1,763,984	1.5%	$478,707	2.3%
VFD Applications	584	3.5%	3,048,497	2.4%	39,505,093	2.9%	13.0	1.7	$5,144,622	3.3%	$2,973,679	2.6%	$477,981	2.3%
EMS	268	1.6%	2,103,174	1.7%	33,688,454	2.5%	16.0	1.7	$3,607,287	2.3%	$2,153,704	1.9%	$377,447	1.8%
LED	2,680	16.0%	17,640,677	13.9%	247,823,575	18.1%	14.0	1.4	$28,746,347	18.4%	$20,145,278	17.6%	$3,613,127	17.7%
Commercial Lighting	716	4.3%	6,595,503	5.2%	88,813,752	6.5%	13.5	1.4	$9,196,094	5.9%	$6,411,988	5.6%	$1,144,781	5.6%
Motors	104	0.6%	508,494	0.4%	9,196,828	0.7%	18.1	1.4	$1,109,578	0.7%	$820,665	0.7%	$89,552	0.4%
Submetering	181	1.1%	1,407,274	1.1%	11,258,191	0.8%	8.0	1.3	$1,446,849	0.9%	$1,140,823	1.0%	$354,600	1.7%
Window Film	128	0.8%	480,719	0.4%	4,807,187	0.4%	10.0	1.3	$773,548	0.5%	$594,459	0.5%	$110,263	0.5%
Refrigeration	3	0.0%	142,201	0.1%	2,037,038	0.1%	14.3	1.3	$166,524	0.1%	$123,805	0.1%	$21,557	0.1%
Custom	299	1.8%	3,029,047	2.4%	46,104,917	3.4%	15.2	1.1	$4,668,813	3.0%	$4,329,256	3.8%	$654,076	3.2%
Lighting Controls	24	0.1%	213,421	0.2%	2,045,601	0.1%	9.6	1.1	$225,525	0.1%	$197,732	0.2%	$36,005	0.2%
Metering	0	0.0%	720	0.0%	2,881	0.0%	4.0	1.1	$360	0.0%	$342	0.0%	$151	0.0%
Water Pumping	41	0.2%	383,440	0.3%	5,751,603	0.4%	15.0	1.0	$597,193	0.4%	$581,191	0.5%	$49,440	0.2%
Efficiency Inside Home Design	0	0.0%	3,758,500	3.0%	54,419,569	4.0%	14.5	0.9	$4,217,883	2.7%	$4,866,600	4.3%	$555,000	2.7%
Custom - VFD Air Compressor	6	0.0%	31,221	0.0%	312,215	0.0%	10.0	0.9	$43,854	0.0%	$50,284	0.0%	$5,459	0.0%

Table 36 TRC Measure Values (cont'd)														
Measure	Program Demand (kW)	%	Program Energy (kWh 1st Yr)	%	Program Energy (kWh - Life)	%	Average Measure Life (Yrs)	TRB/TRC	Total Resource Benefit (TRB)	%	Total Resource Cost (TRC)	%	Incentives	%
Refrigerator	200	1.2%	4,747,662	3.7%	66,467,270	4.9%	14.0	0.8	$5,921,231	3.8%	$7,661,273	6.7%	$897,390	4.4%
Room Occupancy Sensors	18	0.1%	223,423	0.2%	1,763,190	0.1%	7.9	0.8	$198,644	0.1%	$242,779	0.2%	$65,688	0.3%
Water Heating - Solar Water Heater	947	5.6%	4,220,862	3.3%	61,365,095	4.5%	14.5	0.6	$8,295,539	5.3%	$14,367,793	12.6%	$2,658,038	13.0%
Peer Group Comparison	551	3.3%	4,819,509	3.8%	4,819,509	0.4%	1.0	0.6	$694,074	0.4%	$1,254,271	1.1%	$1,254,271	6.1%
Ceiling Fan	58	0.3%	514,051	0.4%	2,570,257	0.2%	5.0	0.6	$335,705	0.2%	$588,490	0.5%	$126,980	0.6%
High Efficiency - Air Conditioner	934	5.6%	5,895,272	4.6%	103,052,437	7.5%	17.5	0.5	$11,425,850	7.3%	$22,966,459	20.1%	$1,878,294	9.2%
Solar Thermal Water Heating	45	0.3%	202,332	0.2%	3,034,978	0.2%	15.0	0.5	$408,653	0.3%	$778,722	0.7%	$116,750	0.6%
Custom - Energy Star TV Monitor	7	0.0%	34,580	0.0%	518,696	0.0%	15.0	0.5	$67,999	0.0%	$148,363	0.1%	$6,247	0.0%
ECM	133	0.8%	1,185,854	0.9%	17,787,806	1.3%	15.0	0.4	$1,872,414	1.2%	$4,483,733	3.9%	$412,310	2.0%
Heat Pump Water Heaters	66	0.4%	912,021	0.7%	9,120,206	0.7%	10.0	0.4	$965,899	0.6%	$2,742,089	2.4%	$126,068	0.6%
Custom - Compressor	0	0.0%	80,161	0.1%	2,004,020	0.1%	25.0	0.4	$124,594	0.1%	$336,741	0.3%	$14,421	0.1%
Clothes Washer	106	0.6%	780,258	0.6%	9,363,094	0.7%	12.0	0.3	$1,112,662	0.7%	$3,316,181	2.9%	$217,100	1.1%
Solar Attic Fans	3	0.0%	90,392	0.1%	451,959	0.0%	5.0	0.3	$47,920	0.0%	$166,314	0.1%	$9,600	0.0%
Cool Roof Technologies	23	0.1%	56,854	0.0%	568,538	0.0%	10.0	0.1	$117,336	0.1%	$1,660,783	1.5%	$54,824	0.3%
Energy Study	0	0.0%	0	0.0%	0	0.0%	0	0.0	$0	0.0%	$145,796	0.1%	$84,003	0.4%
Benchmark Metering	0	0.0%	0	0.0%	0	0.0%	0	0.0	$0	0.0%	$101,061	0.1%	$101,061	0.5%
Total	**16,787**	**100%**	**127,007,811**	**100%**	**1,367,592,053**	**100%**	**10.8**	**1.4**	**$156,542,771**	**100%**	**$114,298,416**	**100%**	**$20,424,652**	**100%**

Table 37 Total vs. Incremental Measure Cost			
Measure	**Measure Total Cost ($)**	**Measure Incremental ($)**	**Difference ($)**
Solar Water Heater	$14,899,949.38	$14,899,949.38	-
Chiller	$9,778,736.18	$1,955,747.24	$7,822,988.94
Refrigerator - Trade In	$7,014,174.59	$2,104,252.38	$4,909,922.21
LED	$5,743,220.35	$5,743,220.35	-
Package Unit AC	$5,156,579.65	$1,031,315.93	$4,125,263.72
Commercial Lighting	$4,980,461.49	$1,245,115.37	$3,735,346.12
Design	$4,810,200.00	$1,202,550.00	$3,607,650.00
VRF AC	$4,384,770.00	$2,192,385.00	$2,192,385.00
HVAC	$4,304,564.15	$1,076,141.04	$3,228,423.11
Clothes Washer	$3,316,181.48	$663,236.30	$2,652,945.18
EC Motor - Refrigeration	$3,033,832.36	$3,033,832.36	-
Heat Pump Water Heaters	$2,435,660.48	$487,132.10	$1,948,528.38
Cool Roof Technologies	$1,660,783.00	$415,195.75	$1,245,587.25
Windows	$1,392,080.28	$348,020.07	$1,044,060.21
EC Motors - Fan Coil Units	$1,331,015.29	$1,331,015.29	-
Custom Equipment	$1,246,132.96	$311,533.24	$934,599.72
Condominium Submetering Pilot	$1,140,823.09	$1,140,823.09	-
Equipment Controls - Building	$1,038,589.26	$259,647.32	$778,941.95
Demand Control Kitchen Ventilation (DCKV)	$926,961.95	$926,961.95	-
VFD - AHU	$885,064.65	$221,266.16	$663,798.49
VFD - Pumps Non HVAC	$823,641.17	$205,910.29	$617,730.88
CEE Tier 1 Listed Premium Efficiency Motors	$813,384.50	$40,669.23	$772,715.28
Equipment Controls - HVAC	$602,999.00	$150,749.75	$452,249.25
Ceiling Fans	$588,650.11	$117,730.02	$470,920.09
Domestic Water Booster Packages	$581,190.67	$435,893.00	$145,297.67
Demand Ventilation Control - AC	$568,378.00	$142,094.50	$426,283.50
VFD - Chilled Water/Condenser Water	$482,331.00	$120,582.75	$361,748.25
Window Tinting	$467,304.46	$116,826.12	$350,478.35
Whole House Fans	$422,936.51	$422,936.51	-
Air Compressor	$387,024.98	$96,756.25	$290,268.74
VFD - Pool Pump Packages	$336,159.03	$336,159.03	-
Heat Pump	$304,224.23	$304,224.23	-
Solar Water Heating Tune-up	$293,366.17	$293,366.17	-
Garage Demand Ventilation Control	$268,644.40	$67,161.10	$201,483.30

Table 37 Total vs. Incremental Measure Cost (cont'd)			
Measure	**Measure Total Cost ($)**	**Measure Incremental ($)**	**Difference ($)**
Refrigerators w/Recycling	$262,405.47	$78,721.64	$183,683.83
VFD - Cooling Tower Fan	$252,276.00	$63,069.00	$189,207.00
Data Center Technologies	$228,000.00	$57,000.00	$171,000.00
Refrigerator - Under $600	$216,224.18	$43,244.84	$172,979.34
Equipment Controls - Bi-Level Lighting	$197,732.07	$49,433.02	$148,299.05
Solar Attic Fans	$166,314.30	$166,314.30	-
ENERGY STAR® - TV	$148,362.61	$37,090.65	$111,271.96
Refrigeration	$123,804.56	$30,951.14	$92,853.42
Refrigerator - HUI UP	$111,384.00	$33,415.20	$77,968.80
Equipment Controls - Central Plant	$102,987.39	$25,746.85	$77,240.54
Water Heating	$99,823.51	$24,955.88	$74,867.63
Energy Study	$90,207.40	$45,103.70	$45,103.70
Equipment Controls	$80,222.00	$20,055.50	$60,166.50
Equipment Controls - Lighting	$43,470.00	$10,867.50	$32,602.50
Pool VFD Controller Pumps	$34,988.54	$27,990.83	$6,997.71
VFD - Exhaust Fan	$25,000.00	$6,250.00	$18,750.00
Custom Lighting	$8,837.80	$2,209.45	$6,628.35
VFD - Fans - Non HVAC	$3,333.00	$833.25	$2,499.75
T12 to T8 with Electronic Ballast	$627.86	$627.86	-
Maintenance - AC	$555.75	$555.75	-
Metering - Home Energy	$341.95	$68.39	$273.56
Totals	**$88,616,913.00**	**$44,164,904.00**	**$44,452,009.00**

Island Equity

The Island Equity target is based on incentive dollars spent as compared to the contribution of each County towards the Public Benefits fund. In PY13, the Program invested in both Hawaii and Maui counties in two direct install programs:

- Hard-to-Reach Residential Solar Water Heating, a partnership with the Hawaii Community Economic Opportunity Council (HCEOC) and Maui Economic Opportunity (MEO).
- Direct Installation Lighting Program in small businesses and restaurants.
- The impact of the actual incentive distributed within each County are as follows:
- PY11 = 66% of incentive funds in Honolulu, 16% in Hawaii and 18% in Maui counties.
- PY12 = 64% of incentive funds in Honolulu, 23% in Hawaii and 13% in Maui counties.
- PY13 = 74% of incentive funds in Honolulu, 14% in Hawaii and 13% in Maui counties as shown in **Table 38**.

Table 38
Program Level Island Equity by Business and Residential

County	Island	kWh Sales	%	Business Energy Reduction	% of Business Savings	% of Sales	Residential Energy Reduction	% of Residential Savings	% of Sales	Total Energy Reduction	% of Total Savings	% of Sales
Honolulu	Oahu	6,858,535,760	75.7%	45,848,361	82.2%	0.7%	52,492,620	73.7%	0.8%	98,340,891	77.4%	1.4%
Hawaii	Hawaii	1,076,103,574	11.9%	4,338,192	7.8%	0.4%	9,715,017	13.6%	0.9%	14,053,209	11.1%	1.3%
Maui		1,130,176,957	12.5%	5,578,962	10%	0.5%	9,034,659	12.7%	0.8%	14,613,622	11.5%	1.3%
	Lanai	25,325,948	0.3%	75,649	0.1%	0.3%	36,239	0.1%	0.1%	111,888	0.1%	0.4%
	Maui	1,075,502,905	11.9%	5,500,075	9.9%	0.5%	8,895,327	12.5%	0.8%	14,395,401	11.3%	1.3%
	Molokai	29,348,104	0.3%	3,238	0%	0%	103,093	0.1%	0.4%	106,332	0.1%	0.4%
Total		**9,064,816,291**	**100%**	**55,765,516**	**100%**	**0.6%**	71,242,295	**100%**	**0.8%**	**127,007,811**	**100%**	**1.4%**

PY13 Customer Level Island Equity by Business and Residential

County	Island	kWh Sales	%	Business Energy Reduction	% of Business Savings	% of Sales	Residential Energy Reduction	% of Residential Savings	% of Sales	Total Energy Reduction	% of Total Savings	% of Sales
Honolulu	Oahu	6,858,535,760	75.7%	53,614,168	82.0%	0.8%	59,192,212	73.2%	0.9%	112,806,380	77.1%	1.6%
Hawaii	Hawaii Island	1,076,103,574	11.9%	5,079,846	7.8%	0.5%	11,283,176	14.0%	1.0%	16,363,022	11.2%	1.5%
Maui		1,130,176,957	12.5%	6,679,523	10.2%	0.6%	10,383,337	12.8%	0.9%	17,062,860	11.7%	1.5%
	Lanai	25,325,948	0.3%	72,675	0.1%	0.3%	42,026	0.1%	0.2%	114,701	0.1%	0.5%
	Maui	1,075,502,905	11.9%	6,602,906	10.1%	0.6%	10,226,414	12.6%	1.0%	16,829,320	11.5%	1.6%
	Molokai	29,348,104	0.3%	3,941	0.0%	0.0%	114,897	0.1%	0.4%	118,838	0.1%	0.4%
Total		**9,064,816,291**	**100.0%**	**65,373,536**	**100.0%**	**0.7%**	**80,858,725**	**100.0%**	**0.9%**	**146,232,261**	**100.0%**	**1.6%**

Reported total sales by county in HEI's 2012 10k Annual Report filed with the Securities and Exchange Commission.

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Table 39 provides the breakout of incentive spending by Island by Rate Schedule. The residential rate schedule "R" is the highest single rate schedule receiving incentives at 42%. The next highest is rate schedule "P" with 24%.

Table 39
Island Incentive Spending by Rate Schedule

Island	R	G	J	P	DS	F	Total	%
Hawaii	$1,593,522	$199,975	$307,069	$335,609	$0	$48,741	$2,484,915	12.2%
Lanai	$70,380	$48,142	$0	$0	$0	$0	$118,522	0.6%
Maui	$1,329,310	$98,205	$273,367	$828,692	$0	$0	$2,529,574	12.4%
Molokai	$125,029	$25,871	$2,222	$0	$0	$0	$153,122	0.7%
Oahu	$5,451,420	$1,054,399	$3,044,396	$3,743,483	$1,827,362	$11,460	$15,132,519	74.1%
Total	**$8,569,661**	**$1,426,592**	**$3,627,053**	**$4,907,784**	**$1,827,362**	**$60,201**	**$20,424,652**	**100.0%**
Percent	**42.0%**	**7.0%**	**17.8%**	**24.0%**	**8.9%**	**0.3%**	**100.0%**	

Table 40 shows the island equity by program budget category. In total, energy-saving achievement was distributed as follows:

- PY11 = 79% in Honolulu, 11% in Hawaii and 10% in Maui counties.
- PY12 = 73% in Honolulu, 14% in Hawaii and 13% in Maui counties.
- PY13 = 77% in Honolulu, 11% in Hawaii and 12% in Maui counties.

Table 40
Island Equity Energy Savings by Program Budget Category (kWh)

Program	Hawaii Island/ County	Lanai	Maui	Molokai	Maui County	Oahu / City & County of Honolulu	Total	%
Business Programs	**4,338,192**	**75,649**	**5,500,075**	**3,238**	**5,578,962**	**45,848,783**	**55,765,938**	**43.9%**
BEEM	2,483,066	-	3,222,791	2,768	3,225,559	21,232,871	26,941,496	21.2%
CBEEM	1,057,817	-	1,990,755	470	1,991,225	19,490,616	22,539,657	17.7%
BESM	424,705	75,464	188,437	-	263,902	3,184,079	3,872,686	3.0%
BHTR	372,605	185	98,092	-	98,277	1,941,217	2,412,099	1.9%
Residential Programs	**9,715,017**	**36,239**	**8,895,327**	**103,093**	**9,034,659**	**52,492,197**	**71,241,873**	**56.1%**
REEM	9,648,404	36,239	8,755,595	28,300	8,820,134	48,839,093	67,307,632	53.0%
CESH	9,531	-	-	-	-	0	9,531	0.0%
RESM	-	-	107,692	-	107,692	3,650,807	3,758,500	3.0%
RHTR	57,082	-	32,039	74,793	106,833	2,297	166,211	0.1%
Total	**14,053,209**	**111,888**	**14,395,401**	**106,332**	**14,613,622**	**98,340,981**	**127,007,811**	**100%**
%	11.1%	0.1%	11.3%	0.1%	11.5%	**77.4%**	**100%**	

PORTFOLIO FIFTH YEAR IMPACTS

Table 41 shows island equity by incentive dollars spent and the resulting customer bill savings. In aggregate, ratepayers realized a $45,054,796 reduction in their bills in PY12.

Table 41
Island Equity Incentives by Program Budget Category

Program	Hawaii Island / County	Lanai	Maui	Molokai	Maui County	Oahu / City & County of Honolulu	Total	%
Business Programs	**$876,838**	**$49,013**	**$1,198,069**	**$3,243**	**$1,250,296**	**$9,061,452**	**$11,188,501**	**54.8%**
BEEM	$416,514	$0	$583,288	$675	$583,963	$3,865,669	$4,866,146	23.8%
CBEEM	$172,610	$0	$379,453	$69	$379,522	$3,473,821	$4,025,953	19.7%
BESM	$193,544	$48,637	$203,521	$0	$252,118	$1,150,906	$1,596,608	7.8%
BHTR	$94,171	$376	$31,806	$2,500	$34,692	$571,057	$699,910	3.4%
Residential Programs	**$1,608,077**	**$69,509**	**$1,331,505**	**$149,879**	**$1,550,892**	**$6,071,068**	**$9,230,037**	**45.2%**
REEM	$1,341,661	$69,509	$1,156,810	$68,799	$1,295,117	$5,543,268	$8,180,046	40.1%
CESH	$2,766	$0	$0	$0	$0	$0	$2,766	0.0%
RESM	$0	$0	$28,200	$0	$28,200	$526,800	$555,000	2.7%
RHTR	$263,650	$0	$146,495	$81,080	$227,575	$1,000	$492,225	2.4%
Total	**$2,484,915**	**$118,522**	**$2,529,574**	**$153,122**	**$2,801,188**	**$15,132,519**	**$20,418,537**	**100%**
%	12.2%	0.6%	12.4%	0.7%	13.7%	**74.1%**	**100.0%**	

*Reference **Table 1 -** PY13 Customer Energy Cost Savings (page 13)

Impacts

For PY13, Hawaii Energy's Business program achieved savings of 55,765,938 kWh (first year) and 7,294 kW savings with $11,194,615 in incentives. In relative terms, 54.8% of Hawaii Energy's incentives captured 43.9% of kWh (first year) and 43.5% of kW demand first year savings, respectively, with a Total Resource Benefit to Cost ratio of 1.3.

Table 42 provides a detailed breakdown by program with a closer look at each program to follow. For PY13, Hawaii Energy's Business program realized results by continuing to offer programs, services, measures and related incentives to address opportunities in the marketplace and accelerate the adoption of energy-efficient technologies.

Table 42
Business Program Impacts Summary

Category	Units	Program Demand (kW)	%	Program Energy (kWh 1st Yr)	%	Program Energy (kWh - Life)	%	Average Measure Life (Years)	TRB/ TRC	Total Resource Benefit (TRB)	%	Total Resource Cost (TRC)	%	Incentives	%
BEEM	118,085	3,868	53.0%	26,941,496	48.3%	382,247,212	47.1%	14.2	1.1	$43,581,303	49.6%	$41,347,861	61.2%	$4,872,146	43.5%
CBEEM	310	2,799	38.4%	22,539,657	40.4%	338,108,258	41.7%	15	1.5	$34,914,212	39.7%	$23,355,756	34.6%	$4,025,953	36.0%
BESM	16,878	287	3.9%	3,872,686	6.9%	57,650,739	7.1%	14.9	2.5	$5,549,055	6.3%	$2,180,652	3.2%	$1,596,568	14.3%
BHTR	11,371	340	4.7%	2,412,099	4.3%	33,769,391	4.2%	14	5.5	$3,881,091	4.4%	$701,956	1.0%	$699,920	6.3%
Total	**146,644**	**7,294**	**100.0%**	**55,765,938**	**100.0%**	**811,775,599**	**100.0%**	**14.6**	**1.3**	**$87,925,661**	**100.0%**	**$67,586,224**	**100.0%**	**$11,194,615**	**100.0%**

A number of the Program's offers are highlighted below as examples of driving energy efficiency projects through productive collaboration with customers, manufacturers, facility management firms, consultants and contractors that produced impressive results.

Central Plant Optimization Program

This complex offer was phased out in PY12 due to poor cost effectiveness, complexities of installation and mixed energy savings results. In PY13 we completed the evaluation phase of the three projects that were completed under this offer. The Queens Medical Center project produced an annual savings of 687,013 kWh and 112.2 kW. The property at 677 Ala Moana produced an annual savings of 224,717 kWh and 65 kW. Hale Pau Hana is an AOAO on Maui. We executed a variant of the central plant optimization on their solar thermal hot water system. The project produced an annual savings of 27,820 kWh and 0 kW due to peak period hot water requirements.

Condominium Submetering

Requiring significant effort by Program Specialists to assist condominium boards and condominium and apartment residents to save energy, the continuation of this program in PY13 saw eleven additional successful installations of submetering at major condominium or apartment complexes. In total, Hawaii Energy paid out $354,600 in incentives for the installation of submeters on 2,364 individual units. These facilities are expected to save more than 181 kW in demand reductions and approximately 1.4 million kWh in annual tenant energy usage.

Central Chiller Plant Benchmarking Program

The Central Plant Benchmarking Program was continued in PY13. The intent of the program is to incentivize certain large local facility operators to install the metering necessary to monitor performance of their chilled water plants. With accurate, real-time operational and efficiency information, building engineers and managers are able to make smarter decisions related to operations, maintenance and capital investment in their facility. For example, a large resort on Hawaii Island installed benchmark metering and was able to determine that their newly-purchased chiller was not performing as efficiently as expected. As a result, they are collaborating with the chiller contractor and Hawaii Energy to resolve the problem. For engineers at Hawaii Energy, having access to real-time and trend data for a variety of applications is an invaluable resource.

Small Business Direct Install Lighting (SBDIL)

This offer provided full-cost lighting retrofits to 449 small businesses and restaurants to achieve 69,106,803 kWh - Life in customer level savings. The $1,903,806 of PBFA funds invested into these projects are now producing over $2,202,612 in annual savings for these businesses. This is a 116% annual Internal Rate of Return (IRR) and will achieve over $30.8 M in lifetime cost savings. In PY13 the cost effectiveness of this program increased significantly due to the elimination of the T8 to low-wattage T8 retrofits and concentration on T12 to T8 conversions.

Expenditures

The Hawaii Energy commercial team continued its focus beyond the BEEM and CBEEM Program in PY13, with the hard-to-reach sector (BHTR) and Business Energy Service and Maintenance (BESM).

See **Table 43** for the detailed expenditures.

Table 43
Business Program Expenditures

	Expenditures	R1 Budget	Percent Spent	Unspent	Percent Unspent
Business (C&I) Programs					
Business Programs Operations & Management					
BEEM	$1,012,647.67	$1,013,152.00	99.95%	$504.33	0.05%
CBEEM	$1,073,736.77	$1,074,098.00	99.97%	$361.23	0.03%
BESM	$712,364.09	$712,597.00	99.97%	$232.91	0.03%
BHTR	$463,075.29	$463,565.00	99.89%	$489.71	0.11%
Total Business Programs	$3,261,823.82	$3,263,412.00	99.95%	$1,588.18	0.05%
Business Evaluation	$120,134.59	$120,277.00	99.88%	$142.41	0.12%
Business Outreach	$741,730.02	$741,853.00	99.98%	$122.98	0.02%
Total Business Non-Incentives	**$4,123,688.43**	**$4,125,542.00**	**99.96%**	**$1,853.57**	**0.04%**
Business Incentives					
BEEM	$4,872,145.62	$4,920,800.00	99.01%	$48,654.38	0.99%
CBEEM	$4,025,952.57	$4,048,026.00	99.45%	$22,073.43	0.55%
BESM	$1,596,607.59	$1,778,544.00	89.77%	$181,936.41	10.23%
BHTR	$699,909.68	$854,500.00	81.91%	$154,590.32	18.09%
Subtotal Business Incentives	$11,194,615.46	$11,601,870.00	96.49%	$407,254.54	3.51%
Business Transformational	$1,282,595.52	$1,289,097.00	99.50%	$6,501.48	0.50%
Total Business Incentives	**$12,477,210.98**	**$12,890,967.00**	**96.79%**	**$413,756.02**	**3.21%**
Total Business Programs	**$16,600,899.41**	**$17,016,509.00**	**97.56%**	**$415,609.59**	**2.44%**

Business Trade Allies

Background

Trade allies include product manufacturers, wholesale and retail suppliers, equipment contractors, architects, engineers and electricians. These individuals and companies are those on the front lines directly responsible for energy efficiency measures being sold, designed, financed, installed, commissioned and maintained. By working with them, the Program is successful in uncovering opportunities for partnerships with trade allies that leverage resources to promote energy conservation and efficiency.

Trade Ally Program Feedback

Hawaii Energy incorporates trade ally perspectives and concerns in the program planning process to establish well-supported, effective strategies. Developing a successful relationship with these industry leaders attracts other groups over time. Industry groups are one way Hawaii Energy incorporates the views of representatives of key trade groups. By sharing insights and experiences on different technology and equipment performance with the trade allies, the Program's knowledge and awareness of different market segments are enhanced, thus helping to influence customer's energy-saving decisions. See **Table 44** for details.

Ongoing Training

To be on the cutting edge of the conservation and efficiency field, Hawaii Energy provides ongoing training and support for the trade allies. Hawaii Energy has developed a strong training program for lighting and HVAC contractors, mechanical contractors, architects and engineers participating in its business incentive program. Educational and promotional workshops are conducted to influence commercial purchase decisions.

In PY13, Hawaii Energy successfully launched its water cooler timer offer for businesses. Free timers were provided to businesses and installed directly by the water cooler timer vendor and water delivery companies. 500 timers were distributed to the Navy and 3,000 were distributed and installed at local businesses through property management companies. This offer provided energy savings of 202.5 kWh/year per timer with a cost effectiveness of $.074/kWh. Due to the success of this offer, the program has decided to expand this offer to our residential market in PY14.

Table 44 Business Project Sources						
Trade Allies	**Measures**	**Customer Level Demand Savings (kW)**	**Customer Level Energy Savings (kWh 1st Yr)**	**Customer Level Energy Savings (kWh - Life)**	**Cumulative Customer Level Energy Savings**	**Incentives**
Energy Industries	700	1,231	9,044,315	127,874,472	17.7%	$1,182,174
Direct From Applicants	223	833	5,946,505	77,051,444	10.7%	$1,121,479
Island Palm Communities (Actus Lend Lease)	19	324	2,716,673	68,150,879	9.5%	$464,183
EMCC	518	305	2,876,624	41,374,234	5.7%	$908,796
Sylvania Lighting Services	133	432	2,942,594	40,212,534	5.6%	$226,105
Clear Blue Energy Corp.	15	390	2,853,626	38,424,862	5.3%	$379,570
WSP Group	7	148	2,051,271	30,387,645	4.2%	$263,027
Chelsea Group	8	209	1,766,579	28,810,160	4.0%	$383,715
Johnson Controls	29	285	1,582,451	27,798,598	3.9%	$480,151
Trane	18	152	1,579,540	27,093,003	3.8%	$214,692
Hawaii Energy	27	158	1,325,535	18,238,610	2.5%	$202,239
Aquatic Energy Solutions	1	141	1,229,863	17,218,082	2.4%	$202,048
PSIG	29	286	1,149,917	17,014,928	2.4%	$143,271
Pono Energy Solutions	631	14	1,100,235	15,526,073	2.2%	$541,078
Albert Chong Associates	8	121	1,068,838	14,963,725	2.1%	$114,333
Paradise Lighting	288	147	1,057,103	13,360,015	1.9%	$325,444
Capitol Light	22	94	640,567	9,498,758	1.3%	$52,575
Forest City	3	39	433,534	9,351,498	1.3%	$72,576
Gexpro	1	66	580,000	8,700,000	1.2%	$250,000
Correa Electric, LLC	44	62	333,814	4,673,402	0.6%	$87,275
Wesco Distribution Inc.	8	31	172,686	4,470,526	0.6%	$23,929
Dorvin D. Leis	10	144	402,460	4,353,804	0.6%	$52,995
Melink Corporation	11	47	277,782	4,166,723	0.6%	$85,850
Mattos Electric, LLC	112	47	270,273	3,783,824	0.5%	$116,293
Pioneer Electric	11	37	251,542	3,283,728	0.5%	$33,475
Team Going Green	7	28	217,249	3,188,774	0.4%	$22,193
Briteswitch, LLC	7	32	218,153	3,092,500	0.4%	$37,725
Noresco	1	20	175,042	2,625,630	0.4%	$23,503
Loeb Lighting Services, Inc.	8	24	166,399	2,495,984	0.3%	$11,430
AMM Electrical & Lighting Maintenance, LLC	45	19	163,280	2,285,914	0.3%	$48,396
King's Kustom Tinting	3	60	226,429	2,264,290	0.3%	$46,210
Magnum Energy Solutions, LLC	1	19	206,133	2,061,330	0.3%	$24,804
Air Central, Inc.	3	19	135,211	2,028,171	0.3%	$59,943
Real Win Win	13	21	138,412	1,934,658	0.3%	$21,923
Global Energy & Lighting	1	19	132,241	1,851,374	0.3%	$15,583
M. Watanabe Electrical Contractor, Inc.	1	9	53,035	1,803,190	0.3%	$7,499
Remaining Sources	*1,019*	*460*	*3,065,755*	*39,200,744*	*5.4%*	*$565,236*
Totals	**3,985**	**6,470**	**48,551,668**	**720,614,087**	**100.0%**	**$8,811,715**

Business Energy Efficiency Measures (BEEM) Program

Objective

The objective of this program is to acquire electric energy and demand savings through customer installations of standard, known energy efficiency technologies by applying prescriptive incentives in a streamlined application process. Measures incentivized through BEEM include:

- High Efficiency Lighting
- High Efficiency HVAC such as water-cooled chiller, variable refrigerant flows (VRF) and packaged & split systems
- CEE Premium Efficiency Motors
- High Efficiency Water Heating
- Variable Frequency Drives (VFDs) connecting to pool pumps, chilled water pumps, condenser water pumps and air handling units
- Window Tinting
- Cool Roof Technology
- ENERGY STAR® Refrigerator

The Courtyard Marriott Waikiki Beach received an incentive check of $119,385 for the completion of several energy-saving installations to reduce their hotel's electricity usage. They installed split air-conditioning systems, a variable frequency drive for the pool pump, LED lamps in guest corridors and air-conditioning energy management control systems in their 400 guestrooms. Through these efforts, the hotel is estimated to save approximately $190,000 in electricity costs or 625,000 kWh per year.

Accomplishments

ENERGY STAR® LED Lamps

Advancement in the number of LED products available and listed by ENERGY STAR® and an adjustment to the program this year to allow other listings such as DesignLights Consortium® and Lighting Facts® lead to another increase in the number of LED lamps installed in Program Year 2013. This LED offering achieved energy savings of 6,368,728 kWh this past year or 23.6% of the total BEEM program energy savings. In addition to increasing the usage of LEDs, the offering encouraged customers to upgrade their lighting controls by providing higher incentives for dimmable LED lamps. With dimmable LED lamps customers can achieve even more energy savings.

Condominium Submetering

The offering was designed to ensure fairness when allocating energy costs among dwellings, as well as to encourage energy conservation through direct feedback and financial responsibility for personal energy use. For AOAOs, submetering presented a great opportunity to eliminate their largest variable cost: energy. This program was initially developed in PY10 and has gained significant momentum since the first projects were completed in PY11. In total, 2,364 submeters were installed on individual apartments and condominium units in PY13 resulting in 1,407,274 kWh first year energy savings. This was an increase in savings from this measure by more than ten times over the previous year.

Ilikai Apartment Building received an incentive check of $153,000 for the installation of a submetering system for their building. They are estimated to save approximately $270,000 and 995,000 kWh per year. Submetering raises awareness, reduces energy use and can help save money on electric bills. By fairly allocating the cost of electricity used, it encourages occupants to conserve energy in each of their units.

Impacts

For PY13, the BEEM Program achieved savings of 26,941,496 kWh (first year) and 3,868 kW savings with $4,872,145.62 in incentives. In relative terms, 23.9% of Hawaii Energy's incentives captured 21.2% kWh (first year) and 23.0% kW of the demand first year savings for PY13. **Table 45** provides further details.

- **# 1 Contributor to BEEM – LED Lamps (23.6%)**
  LED lamps were the largest contributor to the BEEM Program savings with energy (first year) and demand savings of 6,368,728 kWh and 885 kW, respectively.

- **# 2 Contributor to BEEM – T12 to T8 Lighting (14.8%)**
  T12 to T8 low wattage lighting was the second largest contributor to the BEEM Program savings with energy (first year) and demand savings of 3,988,380 kWh and 532 kW, respectively.

Table 45 BEEM Program Impacts								
Category	Units	Program Demand (kW)	%	Program Energy (kWh First Year)	%	Program Energy (kWh - Life)	%	Average Measure Life (Years)
LED	59,280	885	22.9%	6,368,728	23.6%	92,617,583	24.2%	14.5
Chiller	36	464	12.0%	2,916,216	10.8%	58,324,320	15.3%	20.0
T12 To T8 With Electronic Ballast	25,673	532	13.8%	3,988,380	14.8%	55,837,316	14.6%	14.0
Delamping With Reflectors	7,936	295	7.6%	2,108,322	7.8%	29,516,509	7.7%	14.0
Package Unit AC	790	192	5.0%	1,528,287	5.7%	22,924,306	6.0%	15.0
VRF AC	301	108	2.8%	1,007,506	3.7%	15,112,583	4.0%	15.0
T8 To T8 Low Wattage	6,201	116	3.0%	1,059,734	3.9%	14,836,280	3.9%	14.0
EC Motors - Fan Coil Units	4,117	91	2.3%	795,242	3.0%	11,928,637	3.1%	15.0
Condominium Submetering Pilot	2,364	181	4.7%	1,407,274	5.2%	11,258,191	2.9%	8.0
Delamping	1,718	95	2.5%	662,374	2.5%	9,273,236	2.4%	14.0
VFD - Chilled Water/Condenser Water	54	224	5.8%	826,293	3.1%	8,262,931	2.2%	10.0
Demand Control Kitchen Ventilation (DCKV)	39	89	2.3%	518,299	1.9%	7,774,484	2.0%	15.0
VFD – AHU	171	170	4.4%	480,154	1.8%	7,202,311	1.9%	15.0
EC Motor – Refrigeration	705	42	1.1%	390,611	1.4%	5,859,169	1.5%	15.0
Domestic Water Booster Packages	13	41	1.1%	383,440	1.4%	5,751,603	1.5%	15.0
Heat Pump Water Heaters	35	18	0.5%	569,462	2.1%	5,694,620	1.5%	10.0
Window Tinting	48	128	3.3%	480,719	1.8%	4,807,187	1.3%	10.0
Refrigerators W/Recycling	399	11	0.3%	271,226	1.0%	3,797,160	1.0%	14.0
Refrigerator - Trade In	322	9	0.2%	220,014	0.8%	3,080,198	0.8%	14.0
Solar Water Heater	5	65	1.7%	122,256	0.5%	1,833,842	0.5%	15.0
Sensors	3,209	17	0.4%	220,407	0.8%	1,739,062	0.5%	7.9
HID Pulse Start Metal Halide	368	10	0.3%	77,997	0.3%	1,091,952	0.3%	14.0
Water Cooler Timer (H2off)	1,221	11	0.3%	121,733	0.5%	608,666	0.2%	5.0
Compact Fluorescent Lighting (CFL)	2,387	23	0.6%	199,289	0.7%	597,866	0.2%	3.0
Cool Roof Technologies	6	23	0.6%	56,854	0.2%	568,538	0.1%	10.0
Pool VFD Controller Pumps	12	3	0.1%	34,321	0.1%	514,809	0.1%	15.0
Clothes Washer	246	6	0.1%	42,171	0.2%	506,054	0.1%	12.0
Bounty - Refrigerator / Freezer	19	1	0.0%	13,499	0.1%	188,988	0.0%	14.0
CEE Tier 1 Listed Premium Efficiency Motors	19	7	0.2%	12,283	0.0%	184,248	0.0%	15.0
VFD - Exhaust Fan	2	5	0.1%	11,798	0.0%	176,977	0.0%	15.0
Refrigerator - Under $600	134	2	0.0%	11,729	0.0%	164,200	0.0%	14.0
Ceiling Fans	229	4	0.1%	31,611	0.1%	158,057	0.0%	5.0
Whole House Fans	3	1	0.0%	2,509	0.0%	50,177	0.0%	20.0
VFD - Pool Pump Packages	1	0	0.0%	488	0.0%	4,880	0.0%	10.0
Maintenance - AC	1	0	0.0%	269	0.0%	269	0.0%	1.0
Accounting Record	1	0	0.0%	0	0.0%	0	0.0%	0
Recycler Cost	20	0	0.0%	0	0.0%	0	0.0%	0
Total	**118,085**	**3,868**	**100%**	**26,941,496**	**100%**	**382,247,212**	**100%**	**14.2**

Table 45 (cont'd) BEEM Program Impacts							
Category	TRB/TRC	Total Resource Benefit (TRB)	%	Total Resource Cost (TRC)	%	Incentives	%
LED	3.7	$10,361,697	23.8%	$2,802,947	6.8%	$709,209	14.6%
Chiller	0.5	$6,198,225	14.2%	$12,720,361	30.8%	$752,575	15.4%
T12 To T8 With Electronic Ballast	4.1	$6,334,973	14.5%	$1,534,708	3.7%	$565,321	11.6%
Delamping With Reflectors	21.4	$3,391,546	7.8%	$158,720	0.4%	$132,215	2.7%
Package Unit AC	0.5	$2,494,082	5.7%	$5,486,772	13.3%	$494,528	10.2%
VRF AC	0.5	$1,579,116	3.6%	$3,440,789	8.3%	$449,202	9.2%
T8 To T8 Low Wattage	4.3	$1,584,595	3.6%	$372,060	0.9%	$75,592	1.6%
EC Motors - Fan Coil Units	0.9	$1,259,893	2.9%	$1,449,815	3.5%	$352,300	7.2%
Condominium Submetering Pilot	1.3	$1,446,849	3.3%	$1,140,823	2.8%	$354,600	7.3%
Delamping	78.1	$1,072,755	2.5%	$13,744	0.0%	$23,438	0.5%
VFD - Chilled Water/Condenser Water	2.4	$1,353,307	3.1%	$569,371	1.4%	$88,080	1.8%
Demand Control Kitchen Ventilation (DCKV)	1.0	$935,627	2.1%	$926,962	2.2%	$207,250	4.3%
VFD – AHU	1.3	$1,205,474	2.8%	$939,985	2.3%	$51,813	1.1%
EC Motor – Refrigeration	0.2	$612,521	1.4%	$3,033,832	7.3%	$59,925	1.2%
Domestic Water Booster Packages	1.0	$597,193	1.4%	$581,191	1.4%	$49,440	1.0%
Heat Pump Water Heaters	0.2	$537,132	1.2%	$2,437,864	5.9%	$73,868	1.5%
Window Tinting	1.3	$773,548	1.8%	$594,459	1.4%	$110,270	2.3%
Refrigerators W/Recycling	1.3	$337,373	0.8%	$262,405	0.6%	$49,875	1.0%
Refrigerator - Trade In	0.9	$273,826	0.6%	$321,308	0.8%	$40,250	0.8%
Solar Water Heater	3.3	$389,182	0.9%	$117,973	0.3%	$31,424	0.6%
Sensors	0.8	$194,890	0.4%	$234,479	0.6%	$64,360	1.3%
HID Pulse Start Metal Halide	1.1	$123,429	0.3%	$107,456	0.3%	$12,610	0.3%
Water Cooler Timer (H2off)	6.2	$74,178	0.2%	$11,955	0.0%	$11,955	0.2%
Compact Fluorescent Lighting (CFL)	33.4	$79,702	0.2%	$2,387	0.0%	$4,868	0.1%
Cool Roof Technologies	0.1	$117,336	0.3%	$1,660,783	4.0%	$54,824	1.1%
Pool VFD Controller Pumps	1.4	$49,878	0.1%	$34,989	0.1%	$8,325	0.2%
Clothes Washer	0.3	$60,152	0.1%	$192,044	0.5%	$12,300	0.3%
Bounty - Refrigerator / Freezer	18.1	$16,713	0.0%	$925	0.0%	$925	0.0%
CEE Tier 1 Listed Premium Efficiency Motors	1.0	$43,234	0.1%	$41,635	0.1%	$3,175	0.1%
VFD - Exhaust Fan	1.3	$32,753	0.1%	$25,000	0.1%	$1,500	0.0%
Refrigerator - Under $600	0.3	$19,779	0.0%	$73,884	0.2%	$6,675	0.1%
Ceiling Fans	0.5	$20,619	0.0%	$41,101	0.1%	$8,265	0.2%
Whole House Fans	3.4	$9,249	0.0%	$2,744	0.0%	$225	0.0%
VFD - Pool Pump Packages	0.3	$431	0.0%	$1,475	0.0%	$150	0.0%
Maintenance - AC	0.3	$46	0.0%	$142	0.0%	$50	0.0%
Accounting Record	0.0	$0	0.0%	$10,098	0.0%	$10,098	0.2%
Recycler Cost	0.0	$0	0.0%	$675	0.0%	$675	0.0%
Total	**1.1**	**$43,581,303**	**100%**	**$41,347,861**	**100%**	**$4,872,146**	**100%**

Expenditures

The Program distributed nearly all BEEM operation and incentive budgets due to the popularity and demand for the program's offerings. See **Table 46** for details.

Table 46
BEEM Program Expenditures

	Expenditures	R1 Budget	Percent Spent	Unspent	Percent Unspent
BEEM Operations	$1,012,647.67	$1,013,152.00	99.95%	$504.33	0.05%
BEEM Incentives	$4,872,145.62	$4,920,800.00	99.01%	$48,654.38	0.99%
Total BEEM	**$5,884,793.29**	**$5,933,952.00**	**99.17%**	**$49,158.71**	**0.83%**

Ko'oloa'ula is a low income housing development located in Ewa Beach, Oahu accommodating larger, multi-generational families. They made many energy-saving upgrades including installing exterior lighting, adding occupancy sensors and installing ENERGY STAR® refrigerators and ceiling fans in the units. The property is expected to save an estimated 195,776 kWh each year and received a $34,955 incentive, which helped them to fund additional improvements including in the community playground for children.

Customized Business Energy Efficiency Measures (CBEEM) Program

Objective

The objective of this program is to provide a custom application and approval process for participants to receive incentives for installing non-standard energy efficiency technologies. The commercial and industrial custom incentives enable customers to invest in energy efficiency opportunities related to manufacturing processes and other technology measures that may require calculations of energy savings on a case-by-case basis for specific, unique applications.

Custom incentives are available for all energy-savings opportunities that are not already covered by the prescribed incentives and are not limited to a certain list of measures. Some examples of custom technologies include, but are not limited to, energy management systems, exhaust ventilation control systems, high performance lighting, low emissivity glass and HVAC controls.

Accomplishments

ENERGY STAR® LED Fixtures

In PY13 both the quality and availability of LED products continued to increase, leading to more products being listed by ENERGY STAR®. In addition, the program began accepting listings from other rating agencies as certification of quality and eligibility for inclusion in the program. By accepting product listing by other rating agencies like DesignLights Consortium® and Lighting Facts® greatly increased to number and types of LED fixtures that could be installing in the CBEEM program. This led to a significant increase in savings in the program from LED fixtures.

Commercial Lighting

In addition to LED lighting fixtures, the CBEEM program was also successful in promoting innovative commercial lighting projects like bi-level fluorescent lighting for stairwell and hallways. Typically these areas, for safety reasons, have been illuminated with fluorescent fixtures that were on at full power 24 hours per day, 365 days per year. Today with occupancy controls and bi-level fixtures, these lamps can be powered at levels around 20% when not occupied, still providing some lighting for the area, and powered on at full power when any occupancy is detected. Studies have found that typical stairwells in apartment complexes are occupied less than 10% of the time, thereby generating significant saving in the non-occupied times.

Aloha Petroleum, the largest independent gasoline marketer in Hawaii, received an incentive check for $41,352 for the installation of energy-efficient LEDs at 17 gas stations on Oahu. The new lights provide a warmer ambience and help increase visibility while customers pump their gas. They are expected to save an estimated 292,437 kWh annually; equivalent to saving $88,290 in electricity costs.

Impacts

For PY13, the CBEEM Program achieved savings of 22,539,657 kWh (first year) and 2,799 kW savings with $4,025,953 in incentives. In relative terms, 19.7% of Hawaii Energy's incentives captured 16.7% kWh (first year) and 17.7 % kW of the demand first year savings for PY12. **Table 47** provides a detailed breakout of the program.

- **#1 Contributor to CBEEM – Commercial Lighting (24.7%)**
  Commercial Lighting was the largest contributor to CBEEM Program savings with energy (first year) and demand savings of 5,566,295 kWh and 648 kW, respectively.

- **#2 Contributor to CBEEM – LED Lighting (23.6%)**
  LED technologies were the second largest contributor to CBEEM Program savings with energy (first year) and demand savings of 5,310,645 kWh and 799 kW, respectively.

Chaminade University currently serves over 2,800 students throughout a 65-acre campus, which is shared with St. Louis School and the Marianist Center of Hawaii. The university is working in phases to complete an energy-efficient retrofit on all of their exterior lighting, but recently replaced 77 old, inefficient lamps with new LEDs. With their exterior lighting on 12 hours a day, every day, this retrofit reduced their lighting usage by 73% and is estimated to save them $6,380 per year. For this project, Chaminade received a $3,170 incentive from Hawaii Energy.

Table 47 CBEEM Program Impacts																
Category	Units	Program Demand (kW)	%	Program Energy (kWh 1st Yr)	%	Program Energy (kWh – Life)	%	Average Measure Life (Yrs)	TRB/ TRC	Total Resource Benefit (TRB)	%	Total Resource Cost (TRC)	%	Incentives	%
Commercial Lighting	66	648	23.2%	5,566,295	24.7%	73,571,897	21.8%	13.2	1.6	$7,914,647	22.7%	$5,009,209	21.4%	$969,427	24.1%
LED	162	799	28.5%	5,310,645	23.6%	67,570,383	20.0%	12.7	1.5	$7,876,251	22.6%	$5,350,980	22.9%	$862,957	21.4%
Windows	7	218	7.8%	1,700,722	7.5%	51,021,667	15.1%	30.0	2.7	$3,797,188	10.9%	$1,392,080	6.0%	$289,605	7.2%
HVAC	8	299	10.7%	3,029,047	13.4%	46,104,917	13.6%	15.2	1.1	$4,668,813	13.4%	$4,329,256	18.5%	$654,076	16.2%
VFD - Pumps Non HVAC	5	137	4.9%	1,245,254	5.5%	17,142,760	5.1%	13.8	2.2	$1,845,172	5.3%	$823,641	3.5%	$238,922	5.9%
Demand Ventilation Control - AC	8	124	4.4%	795,546	3.5%	11,933,196	3.5%	15.0	2.4	$1,389,845	4.0%	$568,378	2.4%	$130,470	3.2%
Custom Equipment	3	19	0.7%	600,464	2.7%	11,431,610	3.4%	19.0	0.7	$858,657	2.5%	$1,246,133	5.3%	$111,073	2.8%
Equipment Controls - Building	6	77	2.8%	751,678	3.3%	10,301,265	3.0%	13.7	1.5	$1,099,050	3.1%	$749,553	3.2%	$129,972	3.2%
Garage Demand Ventilation Control	5	84	3.0%	880,657	3.9%	10,251,078	3.0%	11.6	4.0	$1,085,512	3.1%	$268,644	1.2%	$140,987	3.5%
CEE Tier 1 Listed Premium Efficiency Motors	5	97	3.5%	496,211	2.2%	9,012,580	2.7%	18.2	1.4	$1,066,344	3.1%	$779,030	3.3%	$86,377	2.1%
Equipment Controls - HVAC	6	67	2.4%	542,077	2.4%	8,037,350	2.4%	14.8	1.3	$874,540	2.5%	$662,999	2.8%	$100,953	2.5%
VFD - Cooling Tower Fan	4	37	1.3%	310,939	1.4%	4,831,330	1.4%	15.5	2.0	$513,610	1.5%	$252,276	1.1%	$50,252	1.2%
Data Center Technologies	1	39	1.4%	345,108	1.5%	4,141,294	1.2%	12.0	2.0	$467,236	1.3%	$228,000	1.0%	$55,575	1.4%
Air Compressor	3	6	0.2%	111,382	0.5%	2,316,235	0.7%	20.8	0.4	$168,448	0.5%	$387,025	1.7%	$19,880	0.5%
Chiller	2	26	0.9%	131,718	0.6%	2,058,246	0.6%	15.6	1.1	$256,456	0.7%	$241,000	1.0%	$39,189	1.0%
Equipment Controls - Bi-Level Lighting	5	24	0.9%	213,421	0.9%	2,045,601	0.6%	9.6	1.1	$225,525	0.6%	$197,732	0.8%	$36,005	0.9%
Refrigeration	4	3	0.1%	142,201	0.6%	2,037,038	0.6%	14.3	1.3	$166,524	0.5%	$123,805	0.5%	$21,557	0.5%
Water Heating	2	68	2.4%	168,729	0.7%	1,687,287	0.5%	10.0	3.4	$337,613	1.0%	$99,824	0.4%	$34,850	0.9%
Solar Water Heater	3	11	0.4%	57,885	0.3%	1,018,945	0.3%	17.6	0.3	$123,649	0.4%	$361,965	1.5%	$31,337	0.8%
Equipment Controls	1	0	0.0%	55,279	0.2%	552,793	0.2%	10.0	0.6	$47,126	0.1%	$80,222	0.3%	$7,956	0.2%
Energy Star - TV	1	7	0.3%	34,580	0.2%	518,696	0.2%	15.0	0.5	$67,999	0.2%	$148,363	0.6%	$6,247	0.2%
Equipment Controls - Lighting	1	5	0.2%	28,575	0.1%	285,751	0.1%	10.0	0.9	$38,840	0.1%	$43,470	0.2%	$4,873	0.1%
Custom Lighting	1	2	0.1%	11,949	0.1%	143,389	0.0%	12.0	2.0	$17,243	0.0%	$8,838	0.0%	$2,049	0.1%
VFD - Fans - Non HVAC	1	0	0.0%	9,295	0.0%	92,950	0.0%	10.0	2.4	$7,924	0.0%	$3,333	0.0%	$1,364	0.0%
Total	**310**	**2,799**	**100%**	**22,539,657**	**100%**	**338,108,258**	**100%**	**15.0**	**1.5**	**$34,914,212**	**100%**	**$23,355,756**	**100%**	**$4,025,953**	**100%**

Expenditures

The Program distributed nearly all CBEEM operation and incentive budgets due to the popularity and demand for the Program offerings, in particular the growth in LED lighting solutions. See **Table 48** for details.

Table 48
CBEEM Program Expenditures

	Expenditures	R1 Budget	Percent Spent	Unspent	Percent Unspent
CBEEM Operations	1,073,736.77	1,074,098.00	99.97%	361.23	0.03%
CBEEM Incentives	4,025,952.57	4,048,026.00	99.45%	22,073.43	0.55%
Total CBEEM	**5,099,689.34**	**5,122,124.00**	**99.56%**	**22,434.66**	**0.44%**

Located in Kapolei, Pacific Allied Products is a plastics manufacturing company that took steps to become more energy-efficient. Through the installation of a new high-speed bottle blower, they received a $91,484 incentive check and they are estimated to save more than $148,000 in electricity costs or 601,560 kWh annually. The bottle blower inflates plastic bottles by capturing and recycling excess air which then helps to save electricity. For example, the amount of electricity required to produce 1,000 half-liter bottles of water can be reduced by 43%.

Business Energy Service and Maintenance (BESM) Program

Objective

The objective of this program was to help target sectors that are currently underserved such as retail and small businesses. Additionally, this program conducted a more aggressive outreach effort to lighting and electrical contractors by offering training, education, promotional materials and frequent communications on program updates.

Accomplishments

Small Business Direct Install Lighting (SBDIL)

This offering targeted small businesses that have limited time and expertise to research lighting technology options, secure financing and hire contractors to replace their older, less efficient lighting technologies. This offering provided full energy-efficient lighting retrofits to small businesses in Hawaii, Honolulu and Maui counties. Small business customers that were either (1) a Schedule "G" rate class or (2) under master-metered accounts were eligible for this offer.

In the SBDIL program, Trade Allies recruited small businesses to participate, performed audits and executed the retrofits. This direct installation grant approach achieved first year customer level energy savings of 2,590,083 kWh in PY13, excluding the impacts from the SBDIL specifically for restaurants. Demand savings from this program in PY13 was 122 kW.

With the high electricity costs in Maui, it was a no-brainer for Teri Edmonds, owner of local shoe boutique, If the Shoe Fits, to participate in Hawaii Energy's Free Small Business Direct Install Lighting Program. The lighting in her 13-year old Wailuku store was retrofitted with a mixture of energy-saving LEDs and CFLs. In addition to the 80% reduction in lighting energy use, the store has experienced improved lighting performance and lower cooling costs due to less heat from the lighting. If the Shoe Fits is expected to save an estimated 4,176 kWh or $1,336 in electricity costs per year.

Central Plant Optimization Program

This complex offer was phased out in PY12 due to poor cost effectiveness, complexities of installation and mixed energy savings results. It was replace by our Central Plant Benchmark metering initiative. In PY13 we completed the evaluation phase of the three projects that were completed under this offer. The Queens Medical Center project produced an annual savings of 687,013 kWh and 112.2 kW. The property at 677 Ala Moana produced an annual savings of 224,717kWh and 65 kW. Hale Pau Hana is an AOAO on Maui. We executed a variant of the central plant optimization on their solar thermal hot water system. The project produced an annual savings of 27,820 kWh, but 0 kW due to peak period hot water requirements.

Central Chiller Plant Benchmarking Program

The Central Chiller Plant Benchmarking Incentive continued in PY13. It was designed to encourage business customers to install a central chiller plant metering and data logging system that will provide real-time data and trend data. This data reflects actual tons of cooling and measured efficiency in kW per ton. Many large commercial facilities, such as hotels and multi-level office buildings, lack information to determine whether their chiller plant is running efficiently or not. The new metering equipment makes it possible for the customer to understand the current operational and performance metrics of their Chiller plants and allows them to set meaningful energy efficiency goals and track progress towards those goals. Real-time and trend data is also available to engineers at Hawaii Energy via web interface, so that Hawaii Energy may increase its knowledge base and benchmark data related to typical chiller performance for various businesses on Oahu and the neighbor islands. Hawaii Energy incentivizes 100% of the equipment and installation and in turn has access to the data for five years after the project is complete. This will allow Hawaii Energy to not only benchmark performance but also track energy efficiency improvements directly influenced by data received from this program. A total of two projects were started and completed in PY13, with a total incentive expenditure of $182,685.

For the last four years, the Four Seasons Resort Maui has been on an energy efficiency journey that has included the entire retrofit and upgrade of their central chiller plant (left) and other electrical equipment. A Building Automation System was also installed to monitor and control the environment and ensure the operational performance of the facility. The BAS system already helped identify an underground hot water leak and fine-tuned the waste heat recovery and storage system. It will also provide benchmarks on all equipment so that peak performance levels can be maintained in the future. Through their efforts, the Four Seasons Resort Maui received an incentive of $347,000 from Hawaii Energy. They are expected to save an average of more than 2.7 million kWh per year and approximately $810,000 annually in energy cost savings.

Impacts

For PY13, the BESM Program achieved energy savings of 3,872,686 kWh (first year), an increase of 9% from the previous program year. Demand savings for the program in PY13 was 287 kW with $1,596,568 in incentives. In relative terms, 7.8% of Hawaii Energy's incentives captured 3.0% kWh (first year) and 1.7% kW of the demand first year savings for PY13, but this program reached customers that would not otherwise have participated in the energy efficiency programs. **Table 49** provides a detailed breakout of the program.

- **#1 Contributor to BESM – Small Business Direct Install Lighting (70.8%)**
  Small Business Direct Install Lighting offer was comprised of T8/T8LW, LED, CFL and Custom Lighting incentives and was the largest contributor to the BESM Program with energy (first year) and demand savings of 2,741,582 kWh and 128 kW, respectively.

Table 49
BESM Program Impacts

Category	Units	Program Demand (kW)	%	Program Energy (kWh 1st Yr)	%	Program Energy (kWh – Life)	%	Average Measure Life (Years)	TRB/ TRC	Total Resource Benefit (TRB)	%	Total Resource Cost (TRC)	%	Incentives	%
T12 To T8 With Electronic Ballast	9,014	88	30.7%	1,808,447	46.7%	25,318,253	43.9%	14.0	2.9	$2,298,830	41.4%	$796,154	36.5%	$796,154	49.9%
Central Plant Optimization	4	119	41.3%	991,954	25.6%	17,320,495	30.0%	17.5	5.0	$1,783,325	32.1%	$353,776	16.2%	$76,358	4.8%
LED	4,870	73	25.3%	786,231	20.3%	11,007,228	19.1%	14.0	5.2	$1,125,576	20.3%	$217,458	10.0%	$217,458	13.6%
Custom Lighting	196	0	0.0%	127,993	3.3%	1,791,897	3.1%	14.0	4.5	$139,802	2.5%	$30,766	1.4%	$30,766	1.9%
T8 To T8 Low Wattage	1,758	2	0.8%	75,091	1.9%	1,051,279	1.8%	14.0	0.6	$90,027	1.6%	$143,005	6.6%	$143,005	9.0%
Compact Fluorescent Lighting (CFL)	346	4	1.4%	65,876	1.7%	922,263	1.6%	14.0	19.4	$87,168	1.6%	$4,498	0.2%	$4,498	0.3%
CFL	61	1	0.3%	10,264	0.3%	143,689	0.2%	14.0	14.1	$13,993	0.3%	$991	0.0%	$991	0.1%
LED Refrigerated Case Lighting	30	1	0.3%	6,831	0.2%	95,636	0.2%	14.0	1.0	$10,334	0.2%	$10,750	0.5%	$10,750	0.7%
Energy Study	17	0	0.0%	0	0.0%	0	0.0%	0	0.0	$0	0.0%	$145,796	6.7%	$84,003	5.3%
Installation Cost - Ladders	579	0	0.0%	0	0.0%	0	0.0%	0	0.0	$0	0.0%	$2,901	0.1%	$2,901	0.2%
Accounting Record	0	0	0.0%	0	0.0%	0	0.0%	0	0.0	$0	0.0%	$21,998	1.0%	$22,038	1.4%
Central Plant Benchmarking	2	0	0.0%	0	0.0%	0	0.0%	0	0.0	$0	0.0%	$427,558	19.6%	$182,685	11.4%
VRF AC	1	0	0.0%	0	0.0%	0	0.0%	0	0.0	$0	0.0%	$25,000	1.1%	$25,000	1.6%
Total	**16,878**	**287**	**100%**	**3,872,686**	**100%**	**57,650,739**	**100%**	**14.9**	**2.5**	**$5,549,055**	**100%**	**$2,180,652**	**100%**	**$1,596,608**	**100%**

Expenditures

The Program had a material surplus in the BESM incentive budgets due to a conservative reallocation of funds to BESM in October (effective in January) to accommodate anticipated Small Business Direct Install Lighting projects on all islands.

See **Table 50** for details.

Table 50
BESM Program Expenditures

	Expenditures	R1 Budget	Percent Spent	Unspent	Percent Unspent
BESM Operations	712,364.09	712,597.00	99.97%	232.91	0.03%
BESM Incentives	1,596,607.59	1,778,544.00	89.77%	181,936.41	10.23%
Total BESM	**2,308,971.68**	**2,491,141.00**	**92.69%**	**182,169.32**	**7.31%**

Business Hard-To-Reach (BHTR) Program

Objective

The objective of this program was to help targeted geographies and demographics that have been traditionally underserved such as retail, restaurants and other small businesses. Additionally, this program conducted more aggressive outreach to lighting and electrical contractors with training, promotional materials and frequent communications on program updates.

Accomplishments

Direct Install Restaurant Lighting Retrofit

This offering targeted restaurants that have limited time and expertise to research lighting technology options, secure financing and hire contractors to replace their older, less efficient lighting technologies. This offering provided full energy-efficient lighting retrofits to restaurants in Hawaii, Honolulu and Maui counties at no cost to the customer. Trade allies recruited small businesses to participate, performed audits and executed the retrofits. This direct installation approach achieved first year customer level energy savings of 2,336,257 kWh. Demand savings for the customers for PY13 was 350 kW.

Impacts

For PY13, the BHTR Program achieved savings of 2,412,099 kWh (first year) and 340 kW savings with $699,920 in incentives. In relative terms, 3.4% of the PBFA's incentives captured 1.9% kWh (first year) and 2.0% kW of the demand first year savings for PY13. **Table 51** provides the detailed measures contributing to this program.

Table 51
BHTR Program Impacts

Category	Units	Program Demand (kW)	%	Program Energy (kWh 1st Yr)	%	Program Energy (kWh – Life)	%	Average Measure Life (Years)	TRB/ TRC	Total Resource Benefit (TRB)	%	Total Resource Cost (TRC)	%	Incentives	%
LED	5,290	163	47.9%	988,288	41.0%	13,836,034	41.0%	14.0	7.1	$1,676,453	43.2%	$234,670	33.4%	$234,670	33.5%
T12 To T8 With Electronic Ballast	2,860	100	29.6%	850,748	35.3%	11,910,478	35.3%	14.0	5.3	$1,297,643	33.4%	$242,845	34.6%	$241,345	34.5%
T8 To T8 Low Wattage	2,326	57	16.7%	360,325	14.9%	5,044,546	14.9%	14.0	3.2	$601,480	15.5%	$189,320	27.0%	$190,820	27.3%
Custom Lighting	339	9	2.6%	135,618	5.6%	1,898,651	5.6%	14.0	10.4	$181,139	4.7%	$17,358	2.5%	$17,358	2.5%
Compact Fluorescent Lighting (CFL)	276	11	3.1%	74,530	3.1%	1,043,425	3.1%	14.0	33.6	$120,418	3.1%	$3,588	0.5%	$3,588	0.5%
LED Refrigerated Case Lighting	21	0	0.1%	2,590	0.1%	36,257	0.1%	14.0	0.5	$3,958	0.1%	$8,252	1.2%	$8,252	1.2%
Installation Cost - Ladders	250	0	0.0%	0	0.0%	0	0.0%	0	0.0	$0	0.0%	$1,250	0.2%	$1,250	0.2%
Other	0	0	0.0%	0	0.0%	0	0.0%	0	0.0	$0	0.0%	$137	0.0%	$137	0.0%
Accounting Record	9	0	0.0%	0	0.0%	0	0.0%	0	0.0	$0	0.0%	$4,536	0.6%	$2,490	0.4%
Total	**11,371**	**340**	**100%**	**2,412,099**	**100%**	**33,769,391**	**100%**	**14.0**	**5.5**	**$3,881,091**	**100%**	**$701,956**	**100%**	**$699,910**	**100%**

Small Business Direct Install Lighting Program – Customer-Level Impacts

Customers participating in the SBDIL program should save over $2,202,612 in operating expenses per year. Over the life of the lighting measures installed, the customers are expected to save over $30,836,561. This is money that they can invest into business driving more job growth and profitability. See **Table 52** for further details.

The restaurant projects saw greater savings due to their longer hours of operation and more frequent change from incandescent to LED technology. The program cost-effectiveness of this program increased significantly in PY13 due to the elimination of the T8 to low-wattage T8 retrofits and concentration on T12 conversions.

Table 52
SBDIL Customer Level Impacts by Island

	Hawaii	Lanai	Maui	Molokai	Oahu	Total	Program Cost/ kWh
SBDIL – Lighting Retrofits							
Customers	55	7	22	0	248	332	
Measures	187	52	95	0	971	1,305	
kW Reduction	37	1	8	0	76	122	
kWh - First Year	375,445	62,644	165,276	0	1,986,718	2,590,083	**$0.462**
kWh - Life	5,256,232	877,009	2,313,866	0	27,814,049	36,261,157	**$0.033**
Incentives	$175,214	$48,646	$61,997	$0	$912,529	$1,197,386	
SBDIL – Restaurant Lighting							
Customers	16	1	7	0	93	117	
Measures	76	2	33	0	549	660	
kW Reduction	75	0	7	0	268	350	
kWh - First Year	372,970	171	77,852	0	1,885,264	2,336,257	**$0.302**
kWh - Life	5,221,583	2,390	1,089,927	0	26,393,693	32,707,593	**$0.022**
Incentives	$96,207	$376	$28,094	$0	$580,752	$705,429	
Total							
Customers	71	8	29	0	341	449	
Measures	263	63	128	0	1520	1974	
kW Reduction	112	2	15	0	344	472	
kWh - First Year	748,415	72,675	243,128	0	3,871,982	4,936,200	**$0.386**
kWh - Life	10,477,816	1,017,453	3,403,793	0	54,207,742	69,106,803	**$0.028**
Incentives	$271,420	$49,013	$90,092	$0	$1,493,281	$1,903,806	
Financial Benefits							
Average "G" Rate	$0.46	$0.51	$0.41	$0.51	$0.34	$0.45	
Annual Savings	$344,877	$37,044	$98,610	$0	$1,333,472	$2,202,612	
Lifetime Savings	$4,828,282	$518,616	$1,380,544	$0	$18,668,604	$30,836,561	
Simple Payback (years)	0.8	1.3	0.9	0	1.1	0.9	
IRR	127%	76%	109%	0%	89%	116%	

Expenditures

The Program had a material surplus in the BHTR incentive budget due to a significant backlog of committed projects in the Small Business Direct Install Lighting projects on all islands.

See **Table 53** for details.

Table 53
BHTR Program Expenditures

	Expenditures	R1 Budget	Percent Spent	Unspent	Percent Unspent
BHTR Operations	463,075.29	463,565.00	99.89%	489.71	0.11%
BHTR Incentives	699,909.68	854,500.00	81.91%	154,590.32	18.09%
Total BHTR	**1,162,984.97**	**1,318,065.00**	**88.23%**	**155,080.03**	**11.77%**

Impacts

For PY13, Hawaii Energy's Residential program achieved savings of 71,241,873 kWh (first year) and 9,493 kW savings with $9,230,037 in incentives. In relative terms, 45% of Hawaii Energy's incentives captured 56% of and 56.5% of kWh (first year) and kW savings, respectively. See **Table 54**.

Table 54
Residential Program Impacts

Category	Units	Program Demand (kW)	%	Program Energy (kWh 1st Year)	%	Program Energy (kWh - Life)	%	Average Measure Life (Years)	TRB/ TRC	Total Resource Benefit (TRB)	%	Total Resource Cost (TRC)	%	Incentives	%
REEM	2,979,267	9,463	99.7%	67,307,632	94.5%	498,835,552	89.7%	7.4	1.6	$64,087,162	93.4%	$41,289,807	88.4%	$8,180,046	88.6%
RESM	925	0	0.0%	3,758,500	5.3%	54,419,569	9.8%	14.5	0.9	$4,217,883	6.1%	$4,866,600	10.4%	$555,000	6.0%
RHTR	363	23	0.2%	166,211	0.2%	2,418,371	0.4%	14.6	0.5	$276,077	0.4%	$541,443	1.2%	$492,225	5.3%
CESH	3	7	0.1%	9,531	0.0%	142,961	0.0%	15.0	2.5	$35,988	0.1%	$14,341	0.0%	$2,766	0.0%
Total	**2,980,558**	**9,493**	**100%**	**71,241,873**	**100%**	**555,816,454**	**100%**	**7.8**	**1.5**	**$68,617,110**	**100%**	**$46,712,192**	**100%**	**$9,230,037**	**100%**

RESIDENTIAL PROGRAM

Expenditures

In PY13 the program successfully distributed 97.2% of residential incentive funds reaching 99% of the first year kWh target and 96% of the kW savings target. The year ended with a total incentive spend of $9,230,037 leaving only a small surplus of $266,063. Residential Energy Efficiency Measures (REEM), which represents the backbone of the residential portfolio, utilized 99.7% of its budget. Residential Energy Services & Maintenance (RESM) was also particularly successful this year as, with the economy rebounding, many new construction projects that did not get completed in PY12 hit in PY13. Similar to PY12, the modest budget for Customized Solutions for the Home (CESH) played a small role in role in PY13.

The Residential Hard-to-Reach program executed 52 solar water heating system direct install projects on Hawaii Island and Maui. Additionally, together with the Transformational team, the Residential Hard-to-Reach program funded the Hui Up refrigerator trade up on Molokai. Through collaboration with local community agencies the team identified a number of similar worthy opportunities to be implemented during Program Year 14. Despite a year of significant program activity, the Residential Hard-to-Reach budget closed PY13 with a $180k or 27% surplus. See **Table 55** for details.

Table 55
Residential Program Expenditures

	Expenditures	R1 Budget	Percent Spent	Unspent	Percent Unspent
Residential Programs					
Residential Program Operations and Management					
REEM	$2,329,403.41	$2,331,529.00	99.9%	$2,125.59	0.09%
CESH	$19,819.48	$21,755.00	91.10%	$1,935.52	8.90%
RESM	$74,042.06	$74,263.00	99.70%	$220.94	0.30%
RHTR	$175,671.65	$176,281.00	99.65%	$609.35	0.35%
Total Residential Programs	$2,598,936.60	$2,603,828.00	99.81%	$4,891.40	0.19%
Residential Evaluation	$123,724.09	$126,281.00	97.98%	$2,556.91	2.02%
Residential Outreach	$644,817.24	$645,334.00	99.92%	$516.76	0.08%
Total Residential Non-Incentives	**$3,367,477.93**	**$3,375,443.00**	**99.76%**	**$7,965.07**	**0.24%**
Residential Incentives					
REEM	$8,180,045.59	$8,205,697.00	99.69%	$25,651.41	0.31%
CESH	$2,765.97	$25,000.00	11.06%	$22,234.03	88.94%
RESM	$555,000.00	$590,000.00	94.07%	$35,000.00	5.93%
RHTR	$492,225.25	$671,742.00	73.28%	$179,516.75	26.72%
Subtotal Residential Incentives	$9,230,036.81	$9,492,439.00	97.24%	$262,402.19	2.76%
Residential Transformational	$1,051,054.23	$1,054,715.00	99.65%	$3,660.77	0.35%
Total Residential Incentives	**$10,281,091.04**	**$10,547,154.00**	**97.48%**	**$266,062.96**	**2.52%**
Total Residential Programs	**$13,648,568.97**	**$13,922,597.00**	**98.03%**	**$274,028.03**	**1.97%**

Residential Trade Allies

Background

The residential trade allies include product manufacturers, wholesalers, retailers and contractors. These companies range from global entities to local proprietorships and all play a vital role in the Program's success. Some are on the front lines selling energy-efficient products, while others are behind the scenes delivering appliances and recycling those which have been replaced. In all, Hawaii Energy continued to enjoy the support of almost 200 unique companies playing a role in driving energy efficiency in the residential market. See **Table 56** for additional details on trade ally activity.

Trade Ally Program Outreach and Feedback

Hawaii Energy solicits feedback on a daily basis when contractors call in for work orders, or when the Program delivers applications to retailers. As a result, we have enhanced our trade ally experience across all programs by introducing a *Participation Application*, further streamlining the participation process. We also improved our Program communications to participants by tailoring the delivery method to the target recipient. The Program enhanced web site resources to encourage self-service, sent direct emails, utilized standard USPS letter mailings and increased phone contact with authorized principals/points of contact. Program representatives also engaged in multiple retail and commercial events with our partners in order to spread the word about Hawaii Energy offerings.

Ongoing Quality Assistance

In PY13, the Residential program continued to enhance the quality of programs offered through trade allies. Dovetailing on the success of the solar water heating contractor quarterly score cards initiated in PY12, in PY13 the Program began featuring top performers in the Hawaii Energy residential e-newsletter. These efforts continue to keep quality at the forefront of our participating contractor's attention. The Program actively coaches contractors experiencing challenges that arise from time to time, which continues to be well received.

Table 56 Residential Trade Ally Projects						
Trade Allies	**Measures**	**Customer Level Demand Savings (kW)**	**Customer Level Energy Savings (kWh 1st Yr.)**	**Customer Level Energy Savings (kWh - Life)**	**Cumulative Customer Level Energy Savings (%)**	**Incentives**
Costco	1,035,973	4,740	33,273,534	232,496,205	42.5%	$2,267,247
Home Depot	454,604	2,268	16,927,456	114,510,771	20.9%	$801,371
Pacific Sustainable Building Science	719	0	3,194,640	47,919,600	8.8%	$431,400
Sears	3,868	136	2,184,824	29,343,998	5.4%	$404,123
City Mill	97,255	449	3,167,226	21,766,315	4.0%	$196,077
Lowes	43,796	281	2,439,083	21,557,684	3.9%	$238,307
Walmart	79,394	397	2,882,002	17,292,013	3.2%	$76,889
Sam's Club	39,691	196	1,413,282	8,688,255	1.6%	$42,586
Island Cooling, LLC	378	188	378,208	7,442,645	1.4%	$28,300
Best Buy	724	22	393,019	5,379,078	1.0%	$66,200
D.R. Horton	206	0	481,364	5,306,115	1.0%	$123,600
Navy Exchange (NEX)	870	26	386,822	5,198,796	1.0%	$68,850
Safeway	13,518	68	490,290	2,944,876	0.5%	$13,018
OK TV & Appliance	235	8	189,539	2,644,650	0.5%	$28,925
Longs/CVS	10,212	51	370,696	2,224,174	0.4%	$9,861
Discomart	214	8	137,004	1,840,296	0.3%	$21,950
Hamai Appliance - Maui	193	7	129,273	1,770,774	0.3%	$20,525
Remaining Allies	20,347	311	1,739,531	18,298,963	3.3%	$370,169
Residential Program Totals	**1,802,197**	**9,156**	**70,177,793**	**546,625,209**	**100.0%**	**$5,209,397**

Residential Energy Efficiency Measures (REEM) Program

Objective

This program consisted of five major initiatives including:

- High Efficiency Water Heating
- High Efficiency Lighting
- High Efficiency Air Conditioning
- High Efficiency Appliances
- Energy Awareness, Measurement and Controls Systems

The largest offer, involving CFLs, was administered through indirect upstream incentives to customers via lighting distributors and manufacturers. Second to the CFL offering was the Peer Group Comparison program, which was expanded to an additional 57,500 households on Oahu. The third largest offer in PY13 was LEDs, which saw a unit increase of over 200% from PY12.

In summary, rounding out the top three initiatives for first year kWh savings were CFLs, Peer Group Comparison and LEDs. This demonstrates a visible shift in the program as in PY12, the second and third largest offerings were Solar Water Heating and Refrigerator Trade-In, respectively.

Impacts

For PY13, the REEM program achieved savings of 67,307,632 kWh (first year) and 9,463 kW savings with $8,180,046 in incentives. In relative terms, 89% of Residential program incentives captured 94.5% and 99.7% of kWh (first year) and kW savings, respectively. See **Table 57** for details. The three largest contributors were:

- **#1 Contributor to REEM – CFLs (70.7%)**

  CFLs were the largest contributor to the REEM Program savings with energy (first year) and demand savings of 47,590,167 kWh and 6,555 kW, respectively. In terms of first year energy savings, the reliance on CFLs dropped approximately 3% with CFLs accounting for 70.7% of REEM savings in PY13 down from 74% in PY12. The overall unit count of CFLS decreased by 272,000 from PY12 resulting in an absolute savings reduction of about 8%.

- **#2 Contributor to REEM – Peer Group Comparison (7.2%)**

  The Peer Group Comparison Home Energy Report program was the second largest contributor to the REEM Program in terms of first year energy savings. In PY13 the program expanded to an additional 57,500 homes on Oahu resulting in a total of 132,500 recipient households in the program. Despite the expansion, the program contributed 4,819,509 kWh in first year savings, a reduction of over one million kWh from PY12.

- **#3 Contributor to REEM – LEDs (6.2%)**

  LEDs were the third largest contributor to the REEM Program savings with energy (first year) and demand savings of 4,167,833 and 753, respectively. This performance was an increase of over 300% from PY12. Moreover, with a measure life of 15 years, LEDs contribute over 12% of REEM lifetime energy savings.

Table 57 REEM Program Impacts																
Category	Units	Program Demand (kW)	%	Program Energy (kWh 1st Year)	%	Program Energy (kWh - Life)	%	Average Measure Life (Yrs)	TRB/ TRC	Total Resource Benefit (TRB)	%	Total Resource Cost (TRC)	%	Incentives	%
CFL	1,498,509	6,555	69.3%	47,590,167	70.7%	285,541,003	57.2%	6.0	25.7	$38,437,950	60.0%	$1,498,509	3.6%	$1,772,755	21.7%
LED	287,647	753	8.0%	4,167,833	6.2%	62,517,494	12.5%	15.0	0.7	$7,656,090	11.9%	$11,505,880	27.9%	$1,567,065	19.2%
Solar Water Heater	2,185	872	9.2%	3,912,723	5.8%	58,690,849	11.8%	15.0	0.6	$7,837,507	12.2%	$13,920,761	33.7%	$2,173,700	26.6%
Refrigerator - Trade In	5,371	160	1.7%	3,863,029	5.7%	54,082,404	10.8%	14.0	0.7	$4,806,131	7.5%	$6,692,742	16.2%	$671,375	8.2%
Clothes Washer	4,096	100	1.1%	738,087	1.1%	8,857,040	1.8%	12.0	0.3	$1,052,510	1.6%	$3,124,137	7.6%	$204,800	2.5%
Whole House Fans	396	173	1.8%	348,021	0.5%	6,874,953	1.4%	19.8	3.0	$1,254,297	2.0%	$420,193	1.0%	$29,700	0.4%
Peer Group Comparison	1,174,452	551	5.8%	4,819,509	7.2%	4,819,509	1.0%	1.0	0.6	$694,074	1.1%	$1,254,271	3.0%	$1,254,271	15.3%
VRF AC	588	143	1.5%	310,447	0.5%	4,631,883	0.9%	14.9	0.9	$897,779	1.4%	$1,051,981	2.5%	$117,600	1.4%
Bounty - Refrigerator / Freezer	359	11	0.1%	268,863	0.4%	3,764,084	0.8%	14.0	18.1	$332,900	0.5%	$18,370	0.0%	$18,370	0.2%
Heat Pump	261	48	0.5%	342,559	0.5%	3,425,586	0.7%	10.0	1.4	$428,767	0.7%	$304,224	0.7%	$52,200	0.6%
Ceiling Fans	3,313	55	0.6%	482,440	0.7%	2,412,201	0.5%	5.0	0.6	$315,086	0.5%	$547,389	1.3%	$118,715	1.5%
VFD - Pool Pump Packages	258	10	0.1%	134,637	0.2%	1,346,369	0.3%	10.0	0.4	$142,877	0.2%	$326,984	0.8%	$38,700	0.5%
Solar Water Heating Tune-Up	826	24	0.3%	209,851	0.3%	1,049,254	0.2%	5.0	0.5	$137,556	0.2%	$293,366	0.7%	$123,900	1.5%
Solar Attic Fans	192	3	0.0%	90,392	0.1%	451,959	0.1%	5.0	0.3	$47,920	0.1%	$166,314	0.4%	$9,600	0.1%
Refrigerator - Under $600	267	4	0.0%	24,509	0.0%	343,128	0.1%	14.0	0.3	$41,458	0.1%	$143,280	0.3%	$13,315	0.2%
Room Occupancy Sensors	166	1	0.0%	3,016	0.0%	24,128	0.0%	8.0	0.5	$3,754	0.0%	$8,300	0.0%	$1,328	0.0%
Metering - Home Energy	2	0	0.0%	720	0.0%	2,881	0.0%	4.0	1.1	$360	0.0%	$342	0.0%	$151	0.0%
Maintenance - AC	3	0	0.0%	829	0.0%	829	0.0%	1.0	0.4	$146	0.0%	$414	0.0%	$150	0.0%
Recycler Cost	376	0	0.0%	0	0.0%	0	0.0%	0	0.0	$0	0.0%	$12,350	0.0%	$12,350	0.2%
Total	**2,979,267**	**9,463**	**100%**	**67,307,632**	**100%**	**498,835,552**	**100%**	**7.4**	**1.6**	**$64,087,162**	**100%**	**$41,289,807**	**100%**	**$8,180,046**	**100%**

RESIDENTIAL PROGRAM

Expenditures

In PY13, the Program utilized 99.7% of available incentive funds, realizing a small surplus of only $25,651.41. Among the mix of measures in the PY13 plan, the Solar Water Heating Tune-Up offer was originally planned for the Residential Energy Services and Maintenance (RESM) program but was in fact charged to REEM funds, further contributing to the distribution of almost the entire budget.

See **Table 58** for details.

Table 58
REEM Program Expenditures

	Expenditures	R1 Budget	Percent Spent	Unspent	Percent Unspent
REEM Operations	$2,329,403.41	$2,331,529.00	99.91%	$ 2,125.59	0.09%
REEM Incentives	$8,180,045.59	$8,205,697.00	99.69%	$25,651.41	0.31%
Total REEM	**$10,509,449.00**	**$10,537,226.00**	**99.74%**	**$27,777.00**	**0.26%**

Overall Accomplishments

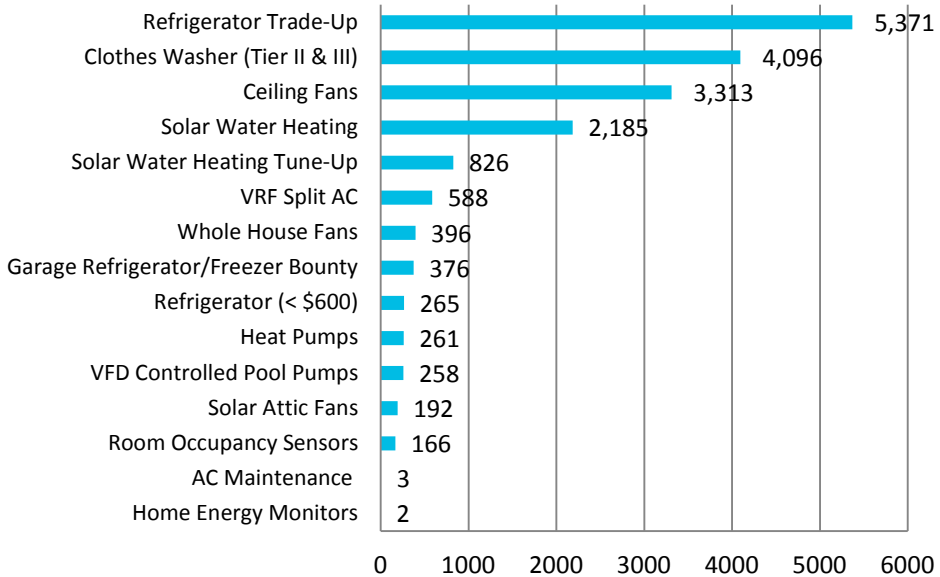
Popular Offerings

Figure 7 summarizes the participation of REEM incentives by measure.

Quality Customer Support

During PY13, Hawaii Energy's residential call center handled over 12,663 customer calls ranging from, "What kind of refrigerator should I buy?" to, "What is the difference in solar technologies offered to heat to my water?", and "What can we do to lower our monthly utility bill?" We saw that 989 of the customers calling were concerned about their energy usage related to the Peer Group Comparison (Opower Home Energy Report), although a few opted out of the report (less than 1 percent). Most were pleased with the reports and were very interested in looking at decreasing their usage. The call center team was able to manage the coverage of these calls while maintaining an eight (8) second average answer rate with less than 1% abandonment rate for all customer calls.

Figure 7 - REEM Rebated Units



"As a retired, blind person, I live on a very modest, fixed income in a small, one-bedroom apartment. The only way I can seem to keep up with the ever-growing cost of living is to find ways to lower or cut my expenses. **Thanks to the Hawaii Energy Home Energy Reports, I've become more aware of my electricity usage compared to my neighbors.** *It became very clear that there was room for improvement and especially cost savings. So, I set out to make changes in my home to become more energy-efficient.*

At its highest, my electric bill was as high as $128 a month and my ranking was 28 out of 100 neighbors. After taking some steps to save energy such as replacing my old appliances with ENERGY STAR® models and reducing phantom loads by using power strips for my electronics, my electric bill dropped to as low as $83 a month. I cut my bill by about 35% and my ranking moved up to as high as 8 out of 100 neighbors.

What's especially great is my kids are the ones who read my electric bill and the Home Energy Reports to me each month, so they are learning first-hand how going green can not only help save money, but also the environment.

This isn't the end of my energy-saving journey. I now plan to replace my water heater with a more energy-efficient tankless water heater and reduce my AC usage by installing ENERGY STAR® ceiling fans and a security screen door. I'm also making more of an effort to cook, do laundry an even take showers during off-peak hours. I would love to lower my bill even more and I know my kids would love to see their dad move up to #1!"

- K. Okazaki
Mililani Mauka resident

Customer Experience Management

The Program continued to successfully utilize its Customer Experience Management (CEM) tool, Medallia, for a fourth year. This software generates an automated customer email survey for the ENERGY STAR® rebate and Solar Water Heating program participants. In PY13, the Program sent out over 7,500 surveys to gauge customer experience with Hawaii Energy. With a response rate of over 33%, the overall satisfaction rating averaged 9.2 out of 10 in areas of field service, rebate satisfaction and willingness to recommend Hawaii Energy offerings. In PY13, Hawaii Energy logged only six (6) complaints, which is down from eight (8) complaints PY12 and 29 in complaints in PY11. For the most part, complaints revolved around customer perception issues and at the end of the calls the customers left with a better understanding of the Program's value.

Accomplishments by Incentive Offering

High Efficiency Water Heating (HEWH)

For PY13, the HEWH program achieved a savings of 4,465,133 kWh (first year) and 944 kW savings with $2,349,800 in incentives. In relative terms, 28.7% of REEM incentives captured 6.6% and 10% of kWh (first year) and kW savings, respectively.

HEWH - Solar Water Heating (SWH)

Instant Rebate and Interest Buy-Down Program – With 2,185 solar thermal systems installed and incentivized either directly or through participating lenders, the Program saw a steady performance in PY13. Solar water heating was the fourth largest contributor to the REEM Program savings with energy (first year) and demand savings of 3,912,723 kWh and 872 kW, respectively. At the close of the year, the Program had 89 participating contractors.

The solar interest buy-down option, known as "Hot Water, Cool Rates," continued to remain a selling tool for the Program's participating contractors, however, when given the option, customers typically opt for a no-financing solution. Additionally, the popularity of photovoltaics (PV), despite the recommended loading order (i.e., solar water heating first, PV second), continues to overshadow the potential of solar water heating.

Solar Water Heating Inspections – 85% of installations were inspected in PY13. The Program uses an algorithm to select systems to be inspected based on a number of factors including first-pass rates, however, inspections will also be conducted on an as-requested basis. This has helped to lower administration costs, while not sacrificing quality.

Heat pump water heaters reached 87% of target with 261 units rebated. While about 18% less units were rebated than in PY12, this technology still represents as a viable option for smaller households. See **Table 59** for details of the High Efficiency Water Heating offers.

Table 59
REEM High Efficiency Water Heating Program Impacts

Category	Units	Program Demand (kW)	%	Program Energy (kWh 1st Yr.)	%	Program Energy (kWh - Life)	%	Average Measure Life (Yrs)	TRB/ TRC	Total Resource Benefit	%	Total Resource Cost ($)	%	Incentives	%
Solar Water Heater	2,185	872	92.3%	3,912,723	87.6%	58,690,849	92.9%	15.0	0.6	$7,837,507	93.3%	$13,920,761	95.9%	$2,173,700	92.5%
Heat Pump	261	48	5.1%	342,559	7.7%	3,425,586	5.4%	10.0	1.4	$428,767	5.1%	$304,224	2.1%	$52,200	2.2%
Solar Water Heating Tune-Up	826	24	2.6%	209,851	4.7%	1,049,254	1.7%	5.0	0.5	$137,556	1.6%	$293,366	2.0%	$123,900	5.3%
Total	**3,272**	**944**	**100%**	**4,465,133**	**100%**	**63,165,689**	**100%**	**14.1**	**0.6**	**$8,403,830**	**100%**	**$14,518,352**	**100%**	**$2,349,800**	**100%**

See **Table 60** for details on solar water heating systems installed by island and **Table 61** for solar water heating system installations listed by participating contractor.

Table 60
Solar Water Heating System Installations by Island

Category	Units	Program Demand (kW)	%	Program Energy (kWh 1st yr.)	%	Lifetime Energy (kWh)	%	Incentives $	%
Hawaii Island	246	97	11%	436,395	11%	6,545,922	11%	**246,000**	11%
Lanai	1	0.4	0%	1,652	0%	24,773	0%	**1,000**	0%
Maui	280	111	13%	499,685	13%	7,495,268	13%	**280,000**	13%
Oahu	1,658	663	76%	2,974,717	76%	44,620,753	76%	**1,646,700**	76%
Total	**2,185**	**872**	100%	**3,912,448**	100%	**58,686,716**	100%	**2,173,700**	100%

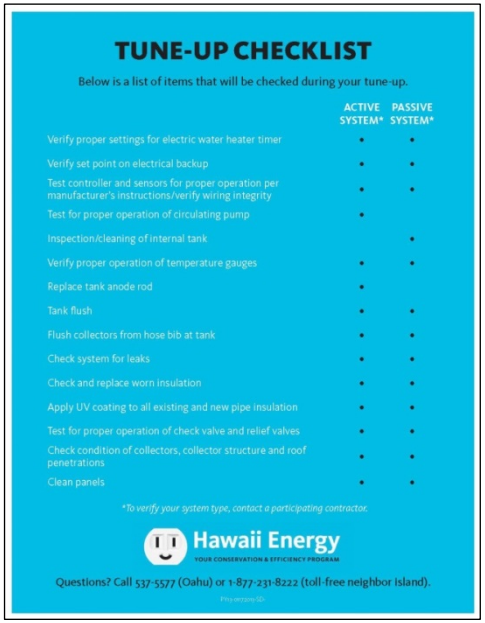
Table 61 Solar Water Heating System Installations by Participating Contractor					
	Contractor	**% TOTAL**		**Contractor**	**% TOTAL**
1	EYC Electric	17.29%	30	Commercial Plumbing, Inc.	0.48%
2	Poncho's Solar Service - Oahu	10.65%	31	Apollo Solar	0.43%
3	Solar Help Hawaii	8.09%	32	Bonterra Solar Services	0.43%
4	Alternate Energy - Oahu	5.88%	33	Poncho's Solar Service - Big Island	0.39%
5	Haleakala Solar - Maui	5.35%	34	Sun King - Oahu	0.34%
6	Drainpipe Plumbing & Solar	3.76%	35	Royal Flush Plumbing	0.29%
7	C&J Solar Solutions	3.56%	36	Hi-Tech Plumbing Corporation	0.24%
8	Hawaiian Island Solar, Inc.	3.56%	37	Knight's Plumbing, Inc.	0.24%
9	Energy Unlimited, Inc.	3.47%	38	Professional Electrical Hawaiian Contractors	0.24%
10	True Green Solar, LLC	3.42%	39	Williams Plumbing	0.24%
11	Haleakala Solar - Oahu	2.89%	40	Pacific Islands Construction	0.19%
12	Maui Pacific Solar, Inc.	2.84%	41	Risource Energy Renewable Systems, LLC	0.19%
13	Keith Shigehara Plumbing, Inc.	2.79%	42	Qualified Plumbing	0.14%
14	Grand Solar	2.26%	43	Red Opae Plumbing	0.14%
15	Hi-Power Solar, LLC	2.22%	44	South Pacific Plumbing, LLC	0.14%
16	Island Solar Service, Inc. - Oahu	2.02%	45	Built To Last Plumbing	0.10%
17	Sonshine Solar Corp.	2.02%	46	Calvin's Plumbing	0.10%
18	RT's Plumbing, Inc	1.64%	47	Indie Plumbing & Solar	0.10%
19	Hawaiian Solar & Plumbing	1.54%	48	Larry's Plumbing & Solar, Inc.	0.10%
20	Affordable Solar Contracting	1.49%	49	21st Century Technologies HI - Maui	0.05%
21	M. Torigoe Plumbing, Inc.	1.35%	50	Ahi, Inc.	0.05%
22	Sun King - Maui	1.25%	51	Five M Plumbing	0.05%
23	21st Century Technologies HI - Oahu	0.96%	52	Johnson's Plumbing Inc	0.05%
24	Solar Aide Company	0.96%	53	Kihei Plumbing	0.05%
25	Alternate Energy - Maui	0.92%	54	Perrin Plumbing, LLC	0.05%
26	Giant Solar, LLC	0.87%	55	Solar Engineering & Contracting - Oahu	0.05%
27	Allen's Plumbing - Maui	0.77%	56	Sunny Solutions, Inc.	0.05%
28	Solar Services Hawaii	0.63%	57	TNH Plumbing	0.05%
29	Kona Solar Service, LLC	0.53%	58	W Contracting, Inc. DBA Energypro Hawaii	0.05%
				TOTAL	**100.00%**

Participating Contractor Meetings

Hawaii Energy continued to meet with its network of Participating Contractors on Oahu, Maui and Hawaii islands. These half-day sessions provided a forum to update contractors on Program results, introduce new programs like the Solar Water Heating Tune-Up and give an opportunity for honest and open dialogue aimed to improve the Program. This year, the agenda was broadened from solar to all of the Program's residential offerings and the upcoming On-Bill Financing programs.

Solar Water Heating Tune-Up Program

The PY13 Solar Water Heating Tune-Up program provided a $150 rebate to help offset the cost of maintenance for existing solar hot water systems. This program was carefully designed using input from the PY11 Tune-Up Pilot and included a key maintenance checklist to address system performance and longevity. The new offer also streamlined the application process for the contractors. This Tune-Up program far surpassed the initial expectation of 150 rebates, closing out the program year with 826 in total.



TUNE-UP CHECKLIST

Below is a list of items that will be checked during your tune-up.

	ACTIVE SYSTEM*	PASSIVE SYSTEM*
Verify proper settings for electric water heater timer	•	•
Verify set point on electrical backup	•	•
Test controller and sensors for proper operation per manufacturer's instructions/verify wiring integrity	•	•
Test for proper operation of circulating pump	•	
Inspection/cleaning of internal tank		•
Verify proper operation of temperature gauges	•	•
Replace tank anode rod	•	
Tank flush	•	•
Flush collectors from hose bib at tank	•	•
Check system for leaks	•	•
Check and replace worn insulation	•	•
Apply UV coating to all existing and new pipe insulation	•	•
Test for proper operation of check valve and relief valves	•	•
Check condition of collectors, collector structure and roof penetrations	•	•
Clean panels	•	•

*To verify your system type, contact a participating contractor.

Hawaii Energy
YOUR CONSERVATION & EFFICIENCY PROGRAM

Questions? Call 537-5577 (Oahu) or 1-877-231-8222 (toll-free neighbor island).

Data from the PY13 Solar Tune-Up program is still being analyzed but based on participating contractor feedback there were a few key takeaways, including: (1) the Tune-Up program contributed to more program participation at a time of the year when the industry is historically slow; and (2) the use of Hawaii Energy's co-branded marketing materials helped increase customers' awareness about the importance of solar water heating system maintenance and care.

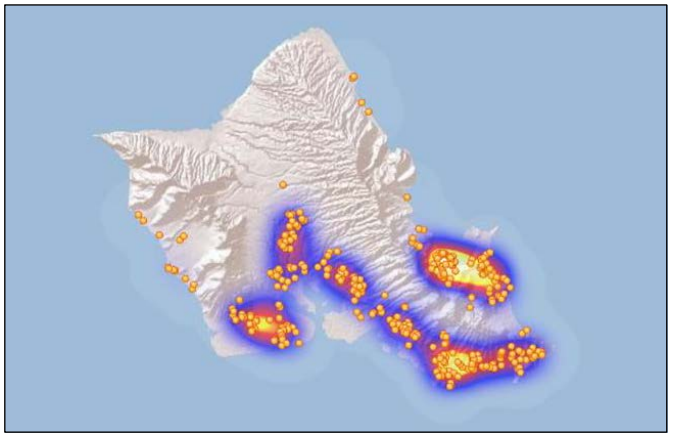
For Hawaii Energy, the Tune-Up provided an opportunity to collect data on system condition and overall performance. For instance, although it is generally recognized that one of the primary causes of unrealized energy savings from solar water heating is the misuse of system timers, the Program had not performed any quantitative analysis to validate this. The initial Tune-Up data review showed that 28% of timers were either not functioning or not in use. These findings confirm what was previously suspected and, as a result, the Program is now planning for an increased educational campaign surrounding timers in PY14.

Additionally, findings from the Tune-Up program indicated that 60% of all anode rods were in fair or poor condition. As this is a common failure point with solar hot water systems, the Tune-Up required anode rod replacement plays an important role in decreasing the chance of early system failure. Contractors also documented that 87% of the systems serviced were in "Good" or "Excellent" condition, only 4% of systems had existing leaks, and five systems serviced were over 30 years old.

The Program utilized geographic information systems (GIS) mapping tools to analyze the location of PY13 Tune-Up participants in comparison with the PY11 pilot. Interestingly, the concentration of tune-ups performed shifted from the majority of participation taking place on neighbor islands in PY11 to

higher concentrations in windward Oahu in PY13. In PY14 we will be further analyzing overall system condition with available solar data to assess system performance in the hottest sun zones.

These observations are important as they allow Hawaii Energy to better evaluate the accuracy of the existing Program Standards and Specifications and identify areas that need to be addressed. Initial results were presented to contractors at the bi-annual Contractor Meetings, which led to a number of additional requests for data analysis from contractors.



The above heat map shows the concentration of Tune-Up participants. Orange points show participant locations. Blue areas reflect lower density, red is medium density and yellow areas show the highest concentration of tune-ups performed.

High Efficiency Lighting

For PY13, the High Efficiency Lighting Program achieved savings of 51,758,000 kWh (first year) and 7,308 kW savings with $3,339,820 in incentives. In relative terms, 40.8 % of REEM incentives captured 76.9% of kWh (first year) and 77.2% kW savings, respectively.

The program moderated the volume of CFLs to a level of 1.5M (down from 1.7M) while maintaining an average incentive of $1.18. PY13 saw the LED market make even greater strides in qualifying products for the residential market. The 287,647 rebated units reflect an increase of 320% over PY12.

Much effort was spent maintaining program participation with both manufacturers and retailers gained in PY12. Hawaii Energy was also able add many additional partners to our team in PY13. Among the larger manufacturers, Cree and Westinghouse joined the mix. The Program also recruited some smaller niche manufacturers such as Green Creative, Satco, Energy Mad and Light Bulb Source along with a few other distributors/retailers that work in the hardware, grocery and direct-to-consumer lighting markets. Feedback showed that increased retailer education along with the proper selection of lighting products really drives customer adoption.

See **Table 62** for details.

Table 62
REEM High Efficiency Lighting Program Impacts

Category	Units	Program Demand (kW)	%	Program Energy (kWh 1st Yr)	%	Program Energy (kWh - Life)	%	Average Measure Life (Yrs)	TRB/ TRC	Total Resource Benefit	%	Total Resource Cost	%	Incentives	%
CFL	1,498,509	6,555	89.7%	47,590,167	91.9%	285,541,003	82.0%	6.0	25.7	$38,437,950	83.4%	$1,498,509	11.5%	$1,772,755	53.1%
LED	287,647	753	10.3%	4,167,833	8.1%	62,517,494	18.0%	15.0	0.7	$7,656,090	16.6%	$11,505,880	88.5%	$1,567,065	46.9%
Total	**1,786,156**	**7,308**	**100%**	**51,758,000**	**100%**	**348,058,496**	**100%**	**6.7**	**3.5**	**$46,094,040**	**100%**	**$13,004,389**	**100%**	**$3,339,820**	**100%**

High Efficiency Air Conditioning

For PY13, the High Efficiency Air Conditioning Program achieved savings of 1,231,299 kWh (first year) and 375 kW savings with $275,615 in incentives. This represents a 140% increase in savings from PY12. In relative terms, 3.4% of REEM incentives captured 1.8% and 4.0% of kWh (first year) and kW savings, respectively.

For PY13, the program held multiple meeting with major manufacturers and distributors as a means to gather feedback on their experience with current and historical Hawaii Energy rebate offerings. This intelligence gathering allowed the Program to better gauge the in the energy efficiency space within the AC market. It also provided an opportunity for dialogue regarding the deemed savings for applications in residential air conditioning, thus allowing better analysis of program cost effectiveness. These conversations were integral in the design of the Window AC Trade-Up and VRF program modifications to be implemented in PY14.

Solar Attic Fans and Whole House Fans, introduced in PY10, continued to show steady demand.

See **Table 63** for details.

Table 63
REEM High Efficiency Air Conditioning Program Impacts

Category	Units	Program Demand (kW)	%	Program Energy (kWh 1st Yr)	%	Program Energy (kWh - Life)	%	Average Measure Life (Yrs)	TRB/ TRC	Total Resource Benefit	%	Total Resource Cost	%	Incentives	%
Whole House Fans	396	173	46.3%	348,021	28.3%	6,874,953	47.8%	19.8	3.0	$1,254,297	49.9%	$420,193	19.2%	$29,700	10.8%
VRF AC	588	143	38.2%	310,447	25.2%	4,631,883	32.2%	14.9	0.9	$897,779	35.7%	$1,051,981	48.1%	$117,600	42.7%
Ceiling Fans	3,313	55	14.6%	482,440	39.2%	2,412,201	16.8%	5.0	0.6	$315,086	12.5%	$547,389	25.0%	$118,715	43.1%
Solar Attic Fans	192	3	0.9%	90,392	7.3%	451,959	3.1%	5.0	0.3	$47,920	1.9%	$166,314	7.6%	$9,600	3.5%
Total	**4,489**	**375**	**100%**	**1,231,299**	**100%**	**14,370,996**	**100%**	**11.7**	**1.2**	**$2,515,082**	**100%**	**$2,185,876**	**100%**	**$275,615**	**100%**

High Efficiency Appliances

For PY13, the High Efficiency Appliances Program achieved savings of 5,029,125 kWh (first year) and 284 kW savings with $958,910 in incentives. In relative terms, 11.7% of REEM incentives captured 7.5% and 3.0% of kWh (first year) and kW savings, respectively. Since PY09, Hawaii Energy has continued to expand its retail community to Hawaii and Maui counties, with a current total over 200 retail participants. This includes many new independently owned retailers along with all of the “big box” retailers in the State. Hawaii Energy’s Trade Ally Team regularly visited all retailers throughout the program year to keep them current on rebate levels, promotions and to ensure proper display of Hawaii Energy’s Point-of-Purchase (POP) collateral. Throughout the program year, retailers were regularly updated via emails and phone calls.

As ENERGY STAR® products become more common (and non-ENERGY STAR® models become less available), the Program has continued to curtail rebate offerings for some common ENERGY STAR® products. In order to moderate demand and manage the available PBF funds, the Program continued to offer the Refrigerator Trade-Up program in four (4) batches throughout PY13 and secured 3,863,029 kWh savings from this offer, reflecting 77% of the High Efficiency Appliance Program. This performance was consistent with PY12 in both scale and contribution to the REEM portfolio. The ENERGY STAR® clothes washer and VFD Controlled Pool Pump offers held steady in PY13 with 4,096 and 258 units, respectively.

Garage Refrigerator/Freezer Bounty Program – In PY13, the Refrigerator/Freezer Bounty Program was updated with the creation of Rid-A-Fridge to Fight Hunger, a partnership between Hawaii Energy and the local food banks. As an enhancement to the Bounty program, which offers a rebate to customers who unplug and recycled a working refrigerator and/or freezer, Rid-A-Fridge allows customers to donate their rebate directly to their local food bank by simply checking a box on their application. At the conclusion of PY13 almost $3,000 had been donated to food banks on Oahu, Maui and Hawaii Island.

See **Table 64** for details.

Table 64
REEM High Efficiency Appliances Program Impacts

Category	Units	Program Demand (kW)	%	Program Energy (kWh 1st Yr.)	%	Program Energy (kWh - Life)	%	Average Measure Life (Years)	TRB/ TRC	Total Resource Benefit	%	Total Resource Cost	%	Incentives	%
Refrigerator - Trade In	5,371	160	56.2%	3,863,029	76.8%	54,082,404	79.1%	14.0	0.7	$4,806,131	75.4%	$6,692,742	64.9%	$671,375	70.0%
Clothes Washer	4,096	100	35.3%	738,087	14.7%	8,857,040	13.0%	12.0	0.3	$1,052,510	16.5%	$3,124,137	30.3%	$204,800	21.4%
Bounty - Refrigerator/Freezer	359	11	3.7%	268,863	5.3%	3,764,084	5.5%	14.0	18.1	$332,900	5.2%	$18,370	0.2%	$18,370	1.9%
VFD - Pool Pump Packages	258	10	3.4%	134,637	2.7%	1,346,369	2.0%	10.0	0.4	$142,877	2.2%	$326,984	3.2%	$38,700	4.0%
Refrigerator - Under $600	267	4	1.4%	24,509	0.5%	343,128	0.5%	14.0	0.3	$41,458	0.7%	$143,280	1.4%	$13,315	1.4%
Recycler Cost	376	0	0.0%	0	0.0%	0	0.0%	0	0.0	$0	0.0%	$12,350	0.1%	$12,350	1.3%
Total	**10,727**	**284**	**100%**	**5,029,125**	**100%**	**68,393,024**	**100%**	**13.6**	**0.6**	**$6,375,876**	**100%**	**$10,317,864**	**100%**	**$958,910**	**100%**

Energy Awareness, Measurement and Control Systems

For PY12, the Energy Awareness, Measurement and Control Systems Program achieved savings of 4,823,246 kWh (first year) and 551 kW savings with $1,255,750 in incentives. In relative terms, 15.4 % of REEM incentives captured 7.2% and 5.8% of kWh (first year) and kW savings, respectively.

Peer Group Comparison – In PY13, Hawaii Energy expanded the Home Energy Report program to include an additional 57,500 households on Oahu resulting in a total of 132,500 participating households at the close of the program year. The Home Energy Report consists of an outbound mailer measuring a home's energy use against 99 homes in their peer group (i.e., similar sized home and demographics). Initial calls from new customers responding to mailings ranged from general inquiries about the program to anger (e.g., save paper, privacy, low ranking). This was the expected outcome of the mailers, which are designed to elicit a strong response followed by behavioral changes. Customers were shown how to log in to their account and enter information specific to their home, followed by a discussion of how they could save money. Typically during the call, customers

decided to continue their participation in the program. Hawaii Energy continues to maintain the lowest attrition rate nationwide with the Peer Group Comparison report. In all, 4,819,509 kWh savings came from this offer, reflecting 99.9% of the Energy Awareness and Control System program.

Room Occupancy Sensors – Despite a relatively strong start for room occupancy sensors through upstream distribution channels, the program suffered from a premature cancellation when the sole participating retailer ended the offering due to their internal program restructuring.

Whole House Energy Metering – Hawaii Energy soft-launched this offer with a variable rebate in PY10. Although there has been low participation over the last few years, the Program is further researching the available technologies and devising a strategy to increase targeted participation for PY14.

See **Table 65** for details.

Table 65
Energy Awareness Measurement and Control Systems Program Impacts

Category	Units	Program Demand (kW)	%	Program Energy (kWh 1st Yr.)	%	Program Energy (kWh - Life)	%	Average Measure Life (Years)	TRB/ TRC	Total Resource Benefit	%	Total Resource Cost	%	Incentives	%
Peer Group Comparison	1,174,452	551	99.9%	4,819,509	99.9%	4,819,509	99.4%	1.0	0.6	$694,074	99.4%	$1,254,271	99.3%	$1,254,271	99.9%
Room Occupancy Sensors	166	1	0.1%	3,016	0.1%	24,128	0.5%	8.0	0.5	$3,754	0.5%	$8,300	0.7%	$1,328	0.1%
Metering - Home Energy	2	0	0.0%	720	0.0%	2,881	0.1%	4.0	1.1	$360	0.1%	$342	0.0%	$151	0.0%
Total	**1,174,620**	**551**	**100%**	**4,823,246**	**100%**	**4,846,518**	**100%**	**1.0**	**0.6**	**$698,188**	**100%**	**$1,262,913**	**100%**	**$1,255,750**	**100%**

Custom Energy Solutions for the Home (CESH)

This incentive category provided a measure of flexibility within the prescriptive portfolio to accommodate unforeseen market opportunities with budgetary and unit cost targets to provide financial efficacy guidance to the Program and allies who champion these opportunities.

In PY13, the program rebated three custom lighting proposals for specialized residential LED lighting applications. All other opportunities were addressed through the other programs (e.g., REEM, RESM and RHTR). As the market continues to evolve in PY14, the Program anticipates increased activity for this incentive category.

See **Table 66** and **67** for details.

Table 66
CESH Program Impacts

Category	Units	Program Demand (kW)	%	Program Energy (kWh 1st Yr.)	%	Program Energy (kWh - Life)	%	Average Measure Life (Years)	TRB/ TRC	Total Resource Benefit	%	Total Resource Cost	%	Incentives	%
LED	3	7	100.0%	9,531	100.0%	142,961	100.0%	15	2.5	$35,988	100.0%	$14,341	100.0%	$2,766	100.0%
Total	**3**	**7**	**100.0%**	**9,531**	**100.0%**	**142,961**	**100.0%**	**15**	**2.5**	**$35,988**	**100.0%**	**$14,341**	**100.0%**	**$2,766**	**100.0%**

A modest amount of time was spent reviewing a few inquiries involving the PY13 expenditures. See **Table 67** for more detail.

Table 67
CESH Program Expenditures

	Expenditures	R1 Budget	Percent Spent	Unspent	Percent Unspent
CESH Operations	$19,819.48	$21,755.00	91.10%	$ 1,935.52	8.90%
CESH Incentives	$ 2,765.97	$25,000.00	11.06%	$22,234.03	88.94%
Total CESH	**$22,585.45**	**$46,755.00**	**48.31%**	**$24,169.55**	**51.69%**

Residential Energy Services & Maintenance (RESM) Program

Objective

The Residential Energy Services and Maintenance program targets ally-driven service offerings to enhance energy savings persistence and bootstrap fledgling energy services businesses trying to secure a toehold in Hawaii. For PY13, the RESM Program achieved savings of 3,758,500 kWh (first year) and with $555,000 in incentives specifically for the Efficiency Inside Home Design Program. The Solar Water Heating Tune-Up, while originally budgeted for the RESM program, was charged under REEM during PY13.

Accomplishments

Residential Design and Audit Programs – Efficiency Inside Home Design

Introduced in PY10, this program requires energy modeling to make comparisons between energy code-compliant designs and enhanced designs. Since this program's inception, Efficiency Inside has given Hawaii Energy the unprecedented opportunity to dive into the key characteristics of home energy use in Hawaii. Hawaii Energy has also established and maintained a productive relationship with a number of developers, modeling and testing consulting firms. In PY13, 925 homes were modeled across 13 communities, including one on Maui.

This approach has demonstrated the following progress the last four years:

- PY10: Collaboration with Home Energy Rating System (HERS) raters to develop program measurements and verification;
- PY11 and PY12: Gathering of data about home construction techniques and standard operation; recruitment of developers to participate in home energy design; and
- PY13: Use of utility data to determine actual home energy usage and compare with as-designed specifications.

In PY13 the Program was able to combine Efficiency Inside collected data with actual home energy usage data, and perform enhanced analysis. Some preliminary findings show:

- Homes are constructed such that they will consume up to 17% less energy than a baseline code built home ("baseline code" being IECC 2006 with solar water heating).
- Non-PV homes in the Ewa plain use on average 580-680 kWh/month, which is slightly less than, but in line with the Kapolei average of 705 kWh/month for a non-PV home.
    - The Program estimates that air conditioning could account for up to 68% of these new home's energy usage; and that
    - Many homes show no sign of energy usage from air conditioning.
- Air conditioning drives home energy usage in hotter Hawaii climates.
    - **Figure 8** displays monthly energy costs for 67 new homes of the exact same model and neighborhood.

- **Figure 9** shows 3 charts of estimated home energy use breakdowns corresponding to the Average use, Above Average use, and Maximum use circles in Figure 8.

Figure 8

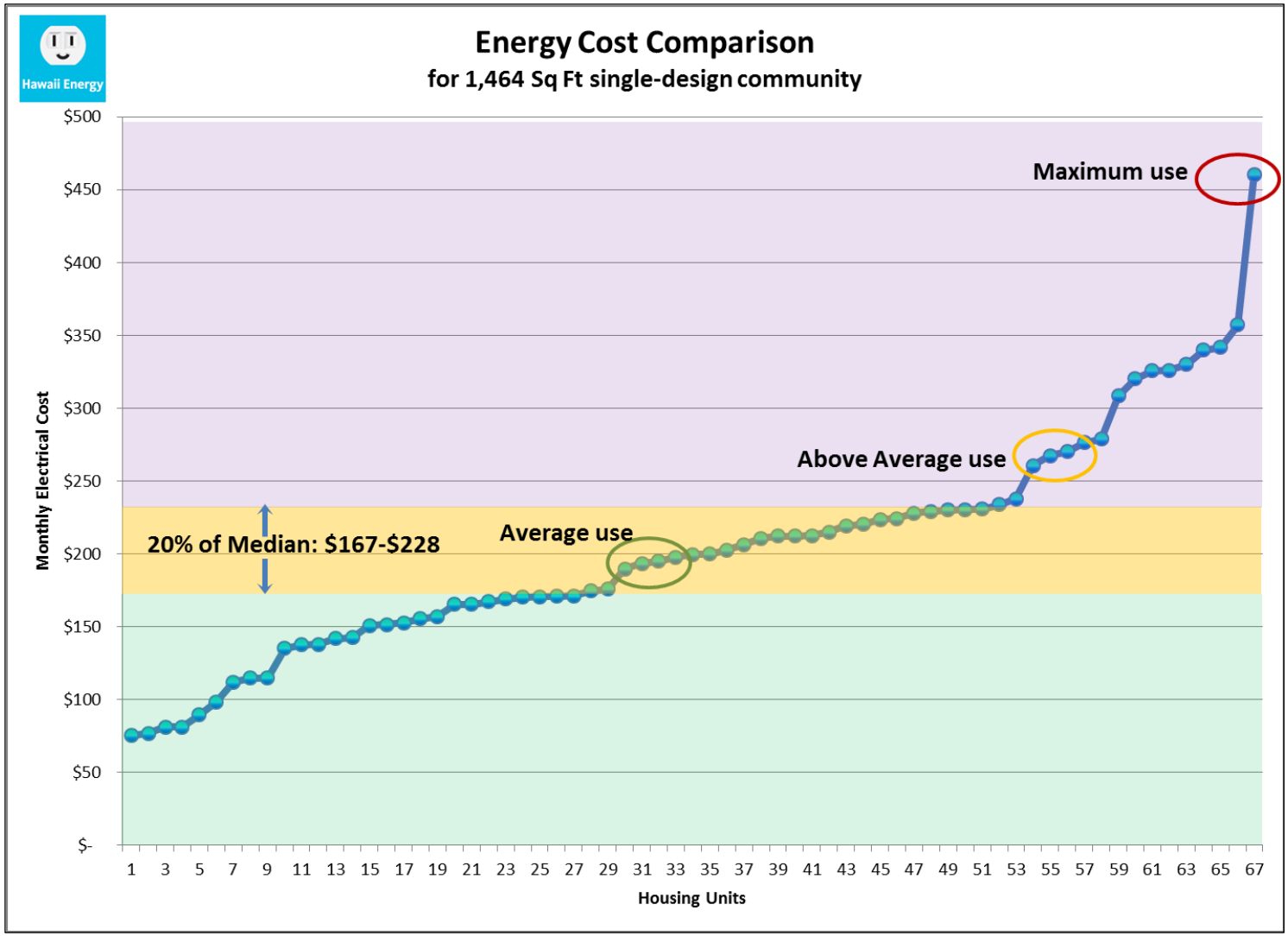
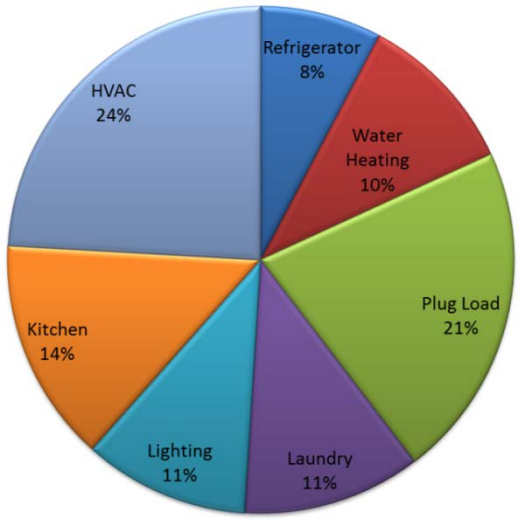
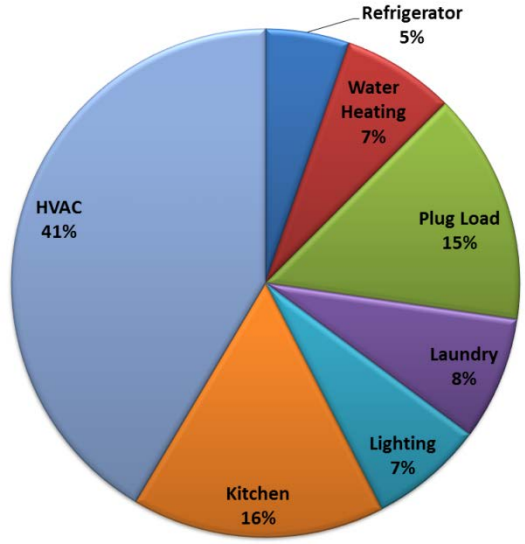


Figure 9 – Evolution & Comparisons of Residential Electricity Use

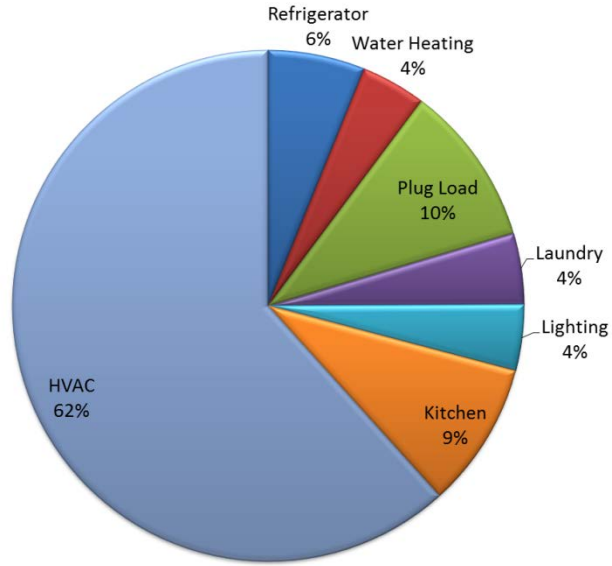
Average Household Use
$200/month | 600 kWh/month



Above-Average Household Use
$260/month | 800 kWh/month



Maximum Household Use
$460/month | 1,580 kWh/month



Hawaii Energy analyzed utility billed energy use. Knowing the installed appliances and estimating typical usage, air conditioning consumption could be reasonably calculated.

A high energy-using home could have up to 62% of their energy going toward air conditioning. Unaccounted users such as electric vehicles would lower this, but total would remain significant around 55%.

The Hawaii Energy Program has also gained the following insight:

- The Energy Policy Act forbids requiring equipment efficiencies higher than those cited in the Act, which is currently 13 SEER for residential air conditioning. However, some forward thinking builders in Hawaii outfit new homes through this program with much higher efficiency units in the 16 SEER range.
- HERS raters are suggesting the next steps for new construction home design:
    - Right-size air conditioning using Manual J and verifying compliance via 3rd party assessment; and
    - Increase building tightness.
- Net-Zero homes are being built with the following conditions:
    - Constructed with 1 kW PV installed; and
    - EV-ready

RESIDENTIAL PROGRAM

In PY14, the traditional Efficiency Inside program will come to a close with just 100 home incentives remaining. The Program plans to use the data gathered over the last four years to work more closely with developers and residents, and provide data in a meaningful way that will encourage behavioral changes in energy usage. It will also explore Demand Response and SmartGrid programs that will provide usage information to the residents allowing them to be better informed and encouraging energy management.

Impacts

For details, see **Table 68**.

Table 68
RESM Program Impacts

Category	Units	Program Demand (kW)	%	Program Energy (kWh 1st Yr.)	%	Program Energy (kWh - Life)	%	Average Measure Life (Years)	TRB/TRC	Total Resource Benefit	%	Total Resource Cost	%	Incentives	%
Design	925	0	0.0%	3,758,500	100.0%	54,419,569	100.0%	14.5	0.9	$4,217,883	100.0%	$4,810,200	100.0%	$555,000	100.0%
Total	**925**	**0**	**100.0%**	**3,758,500**	**100.0%**	**54,419,569**	**100.0%**	**14.5**	**0.9**	**$4,217,883**	**100.0%**	**$4,810,200**	**100.0%**	**$555,000**	**100.0%**

Expenditures

In PY13, the Efficiency Inside Home Design program spent $555,000, 99.7% of the incentive budget.

See **Table 69** for details.

Table 69
RESM Program Expenditures

	Expenditures	R1 Budget	Percent Spent	Unspent	Percent Unspent
RESM Operations	$74,042.06	$74,263.00	99.70%	$220.94	0.30%
RESM Incentives	$555,000.00	$590,000.00	94.07%	$35,000.00	5.93%
Total RESM	**$629,042.06**	**$664,263.00**	**94.70%**	**$35,220.94**	**5.30%**

Residential Hard-To-Reach (RHTR) Program

Objective

The Residential Hard-To-Reach program seeks to secure various projects among geographies and demographics that have been traditionally underserved. This incentive category specifically addresses landlord/tenant barriers through direct installation of energy saving technologies.

Accomplishments

Solar Water Heater – Direct Install

In PY12 the Program worked with Hawaii County Economic Opportunity Council to install 169 solar water heating systems for "in need" families. It was determined that by collaborating on this project with the Program providing funding for solar water heating systems, HCEOC could extend its grant to help more families in other ways. For PY13 the program expanded its reach and collaborated with Maui Economic Development (MEO) to work with their identified hard-to-reach residents. At the conclusion of PY13, the Program had fully-funded a total of 52 solar water heating systems, 19 on Maui and 33 on Hawaii Island.

Molokai Hui Up

During PY13, Hawaii Energy partnered with the Blue Planet Foundation and Sust'AINAble Molokai to execute a Hui Up on Molokai. The Residential Hard-To-Reach program supported this initiative with a $250 incentive for a new ENERGY STAR® refrigerator for 220 households.

RESIDENTIAL PROGRAM

Impacts

During PY13 Hawaii Energy built on PY12 successes and continued to provide resources through major solar water heating grants and the refrigerator trade up program, Hui Up. Residential Hard-to-reach (RHTR) resources target traditionally underserved demographics. For PY13, Hawaii Energy's program achieved savings of 166,211 kWh (first year) and 23 kW savings with $492,225 in incentives. In relative terms, 5% of Hawaii Energy's residential incentives captured 0.2% of kWh (first year) and kW savings.

See **Table 70** for details.

Table 70
RHTR Program Impacts

Category	Units	Program Demand (kW)	%	Program Energy (kWh 1st Yr)	%	Program Energy (kWh - Life)	%	Average Measure Life (Years)	TRB/ TRC	Total Resource Benefit	%	Total Resource Cost	%	Incentives	%
Solar Water Heater	52	20	86.8%	91,418	55.0%	1,371,263	56.7%	15.0	0.4	$183,026	66.3%	$410,645	75.8%	$411,145	83.5%
Refrigerator - Hui Up	211	3	13.2%	74,793	45.0%	1,047,108	43.3%	14.0	0.9	$93,051	33.7%	$105,948	19.6%	$56,230	11.4%
Refrigerator - Hui Up (Molokai)	100	0	0.0%	0	0.0%	0	0.0%	0	0.0	$0	0.0%	$24,850	4.6%	$24,850	5.0%
Total	**363**	**23**	**100%**	**166,211**	**100%**	**2,418,371**	**100%**	**14.6**	**0.5**	**$276,077**	**100%**	**$541,443**	**100%**	**$492,225**	**100%**

Expenditures

See **Table 71** for detailed expenditures and unspent funds.

Table 71
RHTR Program Expenditures

	Expenditures	R1 Budget	Percent Spent	Unspent	Percent Unspent
RHTR Operations	$175,671.65	$176,281.00	99.65%	$609.35	0.35%
RHTR Incentives	$492,225.25	$671,742.00	73.28%	$179,516.75	26.72%
Total RHTR	**$667,896.90**	**$848,023.00**	**78.76%**	**$180,126.10**	**21.24%**

TRANSFORMATIONAL PROGRAM

Introduction

In PY13, the Transformational program expanded its residential and business-related efforts to support three key areas, specifically: (1) Behavior Modification, (2) Professional Development and (3) Technical Knowledge and Training. An emphasis was placed on green workforce development and energy literacy through education in schools, households and communities at large. The underlying intent of these offerings is to transform the market through various means that will lead to gains through energy efficiency and conservation within three to five years. Through the expertise and collaboration of Hawaii Energy staff and subcontractors throughout PY13, the Transformational Program met and exceeded most of its goals and addressed some additional priorities that were recognized throughout the Program Year. See **Table 72** for details on Transformational achievements.

Table 72
Transformational Achievements

	Participants	
Category	**Achieved**	**Goal**
Behavior Modification	23,297	18,000
Helen Wai	3,101	
Kanu – Messaging	19,394	
Kanu – Devices	300	
UH Sustainability Summit	297	
Hui Up – BPF	205	
Energy Videos - BPF	N/A	
Professional Development	1,336*	1,000
The NEED Project	338	
RISE - Kupu Hawaii	6	
UHWO - IFMA	N/A	
Hui Up - SMI	12	
EEFG	980*	
Technical Training	223*	2,000
CEM - AEE	48	
BOC - UHMOC & SLIM	51	
W&WW Training	124*	

*Number of participants differs from value that was previously reported in PUC Monthly reports due to new information presented after June report was submitted.

Behavior Modification

Energy Literacy in Hard-to-Reach Communities

"Sharing the Aloha" Workshops – A Free Community Workshop with Helen N. Wai

For islanders living at or below Hawaii's average income level, the apparent inability to control high electricity costs, let alone understanding energy, is a cause of great frustration. To address this, Hawaii Energy once again subcontracted Helen N. Wai because of her experience and success in providing face-to-face financial literacy instruction and guidance to Hawaii's rural, low-income and Native Hawaiian-American families and communities over the past 15 years. Helen is Native Hawaiian, her family has been living on Hawaiian Homestead lands in Nanakuli, Oahu for generations, and she is well regarded by the local community, giving her credibility and access far beyond what Hawaii Energy would otherwise have.

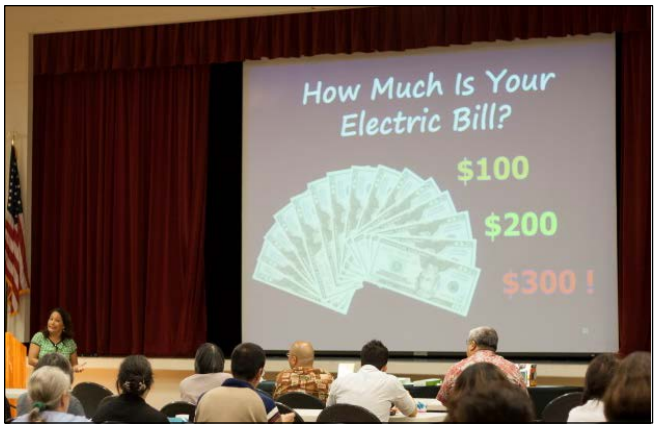
In PY13, 3,101 participants attended 104 "Sharing the Aloha" workshops throughout the islands. Classes were augmented to address energy efficiency and enhanced with a complimentary energy-saving item for each participant. This free item encouraged participation and also helped attendees save energy.

Throughout PY13, the need for energy education in new venues was increasingly apparent. Individuals in the targeted demographics typically have multiple jobs, an extended family and children to care for, and therefore are not able to attend regularly scheduled community workshops. To address this barrier to participation, the Program began providing workshops at the residents' place of employment during lunch times. These workshops were held for employees of hotels, resorts, supermarkets, hospitals, colleges and labor unions.

About two years ago, we held a Sharing the Aloha workshop at the Kona Coast Resort for our employees. Because of the energy-saving information we learned at the workshop, the Resort Manager and I used a Belkin Conserve Insight Monitor to measure how much energy the four drink machines on our property used. They were each costing us $100 a month to operate! We removed three of the drink machines and replaced the fourth with a new ENERGY STAR® machine. We're estimated to save about $3,600 annually!"

Rhonda Brown
Assistant Resort Manager
Kona Coast Resort

New this year, "Sharing the Aloha" did a joint community outreach event on Wednesday, May 28, 2014 at Office of Hawaiian Affair's (OHA) Kulana Oiwi Halau on Molokai. The event followed the Maui County's small business conference held at the nearby University of Hawaii (UH) Maui College – West Molokai campus. The target audience was small local businesses owners, families, past Hawaii Energy participants, as well as individuals interested in learning how to reduce their electric bills. The collaboration was successful, boasting an attendance of 124 people at this event.



Throughout the program year, Hawaii Energy received many positive emails and phone calls from workshop participants. Many of the participants felt empowered by the information and greatly appreciated Helen's presentation, primarily because her compassion and use of local terms and phrases made it more relatable to their everyday lives.

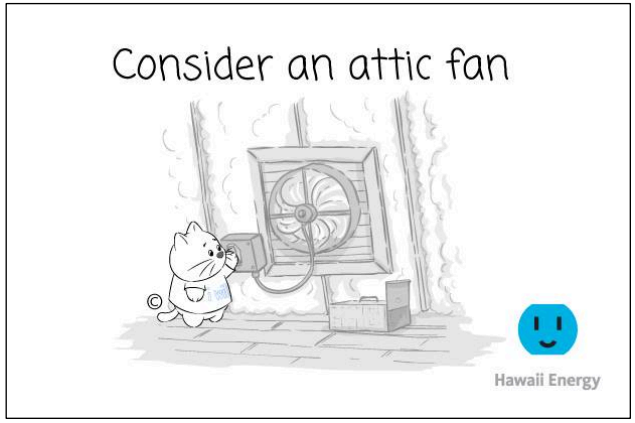
Energy Efficiency Literacy at Scale – Kanu Hawaii

Messaging

Hawaii Energy recognizes that the socioeconomic and cultural diversity in Hawaii presents a unique challenge for promoting energy efficiency and conservation. It often requires personal connections, relatable examples, pictures, or simple cultural phrases to capture and retain the public's attention and interest.

To help address this unique challenge, Kanu Hawaii was once again subcontracted to take on the following tasks: (1) educate/inspire action to save and conserve energy and (2) encourage sharing their experience with friends and family. Kanu Hawaii was selected because of its vision related to the above challenge and its mission to "empower people to build more environmentally sustainable, compassionate, and resilient communities rooted in personal commitments to change." Kanu Hawaii is an ideal partner for Hawaii Energy due to its appreciation for Hawaii's unique way of life, its compassion for helping underserved families and its highly effective use of social media messaging tools.

In PY12, Kanu Hawaii worked with Hawaii Energy to identify ten (10) meaningful energy-saving activities relevant to Hawaii families and create messaging to communicate the value of these behaviors. Kanu Hawaii's interaction with a diverse set of communities identified the following energy saving opportunities to address: fans, air conditioners, entertainment centers, electric water heaters, showers and baths, refrigerators, kitchen appliances, clothes washers, power strips, and video games systems. A series of memes (defined as "an idea, behavior, or style that spreads from person to person within a culture") were created by Kanu reflecting a sense of Hawaii's culture that identifies energy-saving activities in an attractive, relatable way. Once a person sees the meme in a printed document, webpage, blog or presentation, they are presented with additional information in infographics and/or videos that further explain the value of new behaviors that when adopted can result in energy savings.



In PY13, Kanu Hawaii built upon this foundation and created additional energy-saving memes, along with infographics and videos. They also produced energy education curriculum for adults and activity and coloring books for children. Both highlighted the creative energy-saving messages specifically designed for Hawaii's diverse population. Kanu's design approach made messages attractive and appealing to draw people in and motivate them to learn more about saving energy.

Kanu Hawaii tested the newly developed memes' "attractiveness" using Facebook to create discussions and engagements. In less than three months, Kanu had 614,572 social media views of which 19,394 people engaged (took action) using the newly created memes.

Devices

Since the Program began focusing on transformational programs, it became clear that many electric ratepayers lack access to simple energy-saving devices (e.g. timers, advanced power strips, etc.). For those that do, the standard instructions that accompany these devices are often difficult to understand leading to incorrect use or no use at all. Therefore, Kanu Hawaii was subcontracted to implement a carefully designed a 300-participant pilot that would overcome some known barriers and provide access to a simple device, while ensuring its proper use. With the findings, Hawaii Energy could develop subsequent offers that would be more likely to succeed, especially among hard to reach sectors.

Hawaii Energy and Kanu Hawaii chose a simple timer as the best energy conservation measure to pilot.

Access to this simple device was addressed by an innovative Pay-It-Forward model developed by Kanu Hawaii. The foundation of the Pay-It-Forward model is to provide a simple, satisfying and successful customer experience that will lead the customer to share their experience with others. Key to the customer's experience was the set of instructions provided with the timer. To maximize the Program's learnings, three subgroups were established, each receiving different instructions. The first group received the manufacturer's instructions; the second group received printed Kanu-developed instructions, while the third group received a Kanu-produced video with their timer. Each of the three groups was further divided into two groups: one receiving a timer with factory-set pins (e.g. on 24/day), while the other received a Kanu-set timer, which was preset to be off during the overnight hours. Kanu Hawaii successfully recruited 300 participants, divided into six (6) test groups that were then sent a package of two timers (one to use and one to Pay-It-Forward) and the instructions.

Kanu created special instructions to help participants understand and take action to curb energy consumption by using the device. Some of the key elements of the Kanu Hawaii produced printed instructions included a Hawaii-styled narrative, simple images and highlights to overcome confusion, suggested common household items with vampire loads and in general a "home-grown" or small business-like feel that was more welcoming.

Participants of the Kanu "Pay-It-Forward" project received two timers to help them reduce the energy usage for a single device in their home
After trying the device on their own, they were encouraged to pass the second timer to a family member or friend and show them how to save energy using it.

Kanu's video instructions featured Kanu staff demonstrating the setting and installation of the timer on an appropriate device.

The project was successful in a number of ways. The Program engaged participants from all islands and received valuable feedback, testimonials and pictures verifying correct installations. Hawaii Energy and Kanu learned that localized meme-based instructions (e.g. infographic) were the most successful tool in overcoming barriers to proper installation and use. And overall, participants had a positive experience resulting in 75% indicated they would Pay-It-Forward, meaning they would give their second timer to a friend and show them how to use it.

This pilot showed promise in developing an educational distribution model for low-cost energy-saving measures that can target the residential market. In the coming Program Year, Hawaii Energy intends to build upon this pilot as it continues to establish efficient ways to benefit the residential sector with low-cost conservation measures.

Second Annual Hawaii Sustainability in Higher Education Summit

University of Hawaii 10-Campus System, Hawaii Pacific University, Brigham Young University-Hawaii and Chaminade University

Hawaii Energy made a conscious effort to develop strong relationships within the University of Hawaii (UH) system in PY13. One aspect of this was continuing the financial and technical support for the University of Hawaii Sustainability in Higher Education Summit. The first event, held in PY12, exceeded its key intended outcomes and expectations, which included: (1) refining the draft UH System Sustainability Policy and (2) providing an opportunity for building cross campus collaborations by sharing insights and best practices. The 2nd Annual University of Hawaii Sustainability in Higher Education Summit was a three-day conference that took place March 13th - 15th, 2014 at the University of Hawaii Windward Community College in Kaneohe. Hawaii Energy was a gold sponsor for this event and participated in panel discussions.

The Summit was attended by 297 participants, including representatives from the University of Hawaii 10-campus system, invited guests and higher education colleagues at Hawaii Pacific University, Brigham Young University-Hawaii, and Chaminade University. The Summit's goal was to continue statewide higher education sustainability strategy, establish sustainability goals, share best practices and build long-term relationships to support campus efforts to move from vision to action in energy efficiency and broader sustainability efforts.

Marketing and Logistics Support for Residential Energy Literacy in Hard-to-Reach Communities

Hui Up 3.0 with Blue Planet Foundation and Sust`AINAble Molokai

Based on previous success achieved on Molokai and Lanai, Hawaii Energy subcontracted Blue Planet Foundation and Sust`AINAble Molokai (see *Professional Development*) to launch another round of Hui Up, the refrigerator exchange program, on Molokai. In addition to the refrigerator exchange, the Program added an educational component for energy efficiency and conservation by funding Sust`AINAble Molokai to have their youth interns provide participants with a simple home energy assessment.

Blue Planet Foundation focused on effectively marketing this opportunity to Molokai residents, recruiting eligible participants and handling the logistical and fiduciary components involved in the refrigerator exchange. This resulted in 220 participant households exchanging their old, inefficient refrigerator for a new ENERGY STAR® refrigerator to reduce their energy bill.

The Hui Up program continued into its third year, sending youth interns into residents' homes and educating them about energy efficiency opportunities.

Energy Videos

Blue Planet Foundation

Hawaii Energy contracted with Blue Planet Foundation to produce two professional-quality videos introducing concepts surrounding energy use in small businesses and homes. The intention of the videos is to serve as an effective introduction to efficiency for these historically hard-to-reach business customers. These videos incorporated a local tone and style in order to most effectively communicate the message to Hawaii's small business and residential audience.

To the left are screen captures from the two energy videos created by Blue Planet Foundation. "Money Monster" (left) depicted some of the ways that small businesses tend to waste money in their facilities and "The Romero's" (right) featured Kehau and Mike Romero of Waianae, who shared their experience monitoring their home energy use and the positive changes they made as a result.

Professional Development

Energy Education in the Schools

The National Energy Education Development (NEED) Project

The National Energy Education Development (NEED) Project brings over 30 years of experience in energy education and has correlated their lessons and materials to Hawaii education standards. NEED programs are designed to practice student peer-to-peer teaching and cooperative learning. More importantly, NEED's student-directed activities empower students to take active roles in educating their peers, families and communities about energy issues and in identifying and solving the problems unique to their communities.

Hawaii Energy subsidized travel and registration costs for three teachers so they could attend the National Energy Conference for Educators in July 2013.

Throughout PY13, 338 teachers across Honolulu, Hawaii and Maui counties participated in NEED activities such as workshops, grants and development meetings. Major breakthroughs in penetration of the Hilo area of Big Island's population allowed us to surpass our goal of 275 teachers by 19%. These teachers were from 169 local schools and served a total of 18,738 students. Hawaii Energy now has a pool of teachers (contact list of 535 teachers) who they will continue to consult with and leverage to expand the energy education in the community.

The NEED Project workshops focused on developing a clear understanding of the science of energy and energy efficiency and conservation lessons for school, home and commercial applications. The two types of one-day workshops: Basic Energy Workshop and Building Science Workshop were offered to teachers providing training and curriculum materials for all grade levels and subject matter. Teachers were provided with professional development credits, a substitute reimbursement for their attendance, as well as energy learning kits to use in their classrooms. In addition, teachers who attended the NEED workshops were eligible for grants for up to $2,500 throughout the Program year for projects that build capacity in energy efficiency and conservation. Five (5) grants were awarded to teachers at local schools ranging from $500 to $2,500.

Hawaii Energy also had unprecedented success in the historically hard-to-reach Hilo area. In PY13, the Program was able to reach the Hilo market for educators by forming relationships with local resource teachers and principals and leveraging those relationships to generate interest and awareness of the importance of the energy education workshops. The average NEED workshop attendance for the Hilo area in previous years was approximately 15. In PY13, the Hilo workshop was the largest with 60 participants and a waiting list. There were many requests during and after the workshop for more information regarding energy-saving tips and recommendations as well as requests for additional workshops from attendees. Hawaii Energy will continue to engage and support these teachers and will offer a second-level workshop, Building Science, in PY14.

NEED teachers had the opportunity to delve deeper into the NEED curriculum at the annual National Energy Conference for Educators held in July 2013. For PY13, the Program subsidized the travel and cost of attendance for three (3) Hawaii NEED teachers to participate in this five-day conference. This trip allowed them to explore the NEED curriculum further with their peers from across the country and learn from well-seasoned NEED teachers as their

facilitators. These three teachers have been very active in sharing and promoting the NEED curriculum and Hawaii Energy at community events and within their schools.

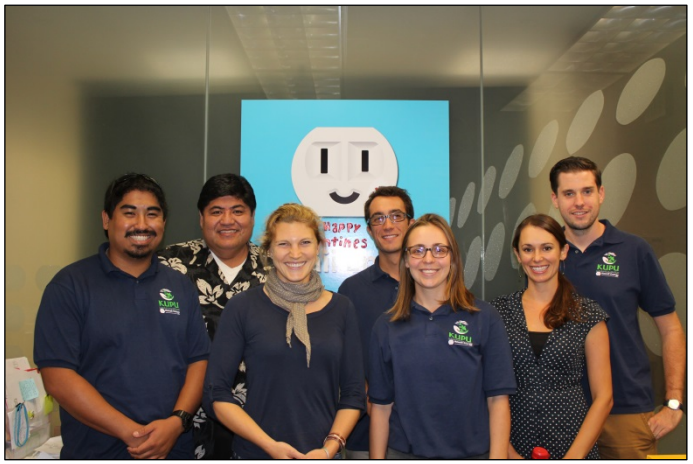
In June 2014, NEED and Hawaii Energy hosted their second annual Teacher Advisory Board (TAB) session. The TAB was comprised of ten (10) teachers who have participated in past NEED workshops. These teachers are highly motivated and have successfully implemented the NEED curriculum. The members of the second session were selected by Hawaii Energy and NEED staff to ensure that various types of schools from each island were represented. The TAB session, which was facilitated by both Hawaii Energy and NEED staff, served as a platform for teachers to discuss further developments that would support teachers in applying energy education in their curriculum. Hawaii Energy and NEED have taken these suggestions from the TAB meeting and have begun to integrate them into NEED curriculum and operations.

The TAB meeting was also used as an incubator for new ideas and initiatives. Based on feedback Hawaii Energy received from the third-party Measurement and Verification review, it was recognized that it would be beneficial for The NEED Project to have a more direct connection to the residential community with regard to energy education. The team worked with the TAB members to strategize about methods for effectively achieving energy savings in students' homes. It was mutually decided that the members of the TAB would pilot an Energy Expo with their students in the next academic year to involve parents and other community members in energy education. Two Energy Expos are already scheduled for PY14; these events will also serve as a platform to promote other Hawaii Energy offerings to ratepayers.

RISE (Rewarding Internships for Sustainable Employment)

Kupu Hawaii

The Program recognizes the need to prepare the next generation for green jobs and sees great value in green workforce development. Therefore, Hawaii Energy teamed up with the RISE Program operated by Kupu Hawaii to recruit, train and mentor six (6) interns for green workforce development. Through the RISE program, these college students and young professionals had paid internships working specifically in energy efficiency in the commercial, residential and agriculture sectors. These interns contributed to green initiatives with guidance and mentorship from Hawaii Energy and Kupu Hawaii staff. The interns supported Hawaii Energy's work in the field, performed market research on the agriculture sector, and worked with University of Hawaii (UH) staff on the Kukui Cup student dormitory energy challenge. In addition to their work in these sectors, interns attended Sustainability Seminar Series (S3) to build skills and their professional capacity, have access to rare insider opportunities to tour facilities, meet with leading experts in the State and nation, and keep abreast of current issues through networking, events and newsletters.



Although stationed on different islands, RISE interns gathered for several trainings in Honolulu to evaluate and discuss their experiences and learn new information about the Program.

Five (5) of the RISE interns worked with Hawaii Energy's Small Business Direct Install Lighting (SBDIL) program performing a total of 162 SBDIL post-inspections within Hawaii, Honolulu and Maui counties. They also conducted market research among contractors and participants in the Program to better understand their perceptions of the SBDIL program and Hawaii Energy. The interns produced a white paper and presented their findings and recommendations to Hawaii Energy at the end of the year. Recommendations included a request for a new data system for contractors and a need for better marketing and communication about the SBDIL program. These have all been considered and will be implemented in PY14.

One (1) intern oversaw the Kukui Cup program throughout the academic year. The Kukui Cup is a program to encourage the reduction of energy use in college student resident halls at the University of Hawaii at Manoa campus. The intern learned innovative behavior change techniques via "gamification", which involves social marketing, student activities and educational pedagogy. This intern produced a report and gave a presentation to Hawaii Energy staff on findings and recommendations for future implementations of the program. Findings suggest that leaders of the program needed to be involved for longer than one year in order to properly grow the program and have a lasting impact.

Four (4) of the interns performed market research on the local agriculture industry exploring energy efficiency opportunities in this sector. Although the agricultural sector is relatively small in Hawaii, their final presentation offered a number of ideas for Hawaii Energy to better engage farms and food manufacturers. Suggestions included additional technical workshops and website enhancements specifically for the agricultural sector among others.

Facilities Degree Program at the University of Hawaii West Oahu

University of Hawaii West Oahu & International Facility Management Association

In order to address the growing need for professional facilities management personnel, the International Facility Management Association (IFMA) Hawaii Chapter, University of Hawaii West Oahu (UHWO), and Hawaii Energy are collaborating on the creation of an innovative academic degree program that will prepare students for careers in facilities operation and management.

In PY13, Hawaii Energy provided the University of Hawaii Foundation with $20,000 to support the development of the UH West Oahu Bachelor of Applied Science (BAS) Concentration in Facilities Management. This funding was utilized to retain a local expert to consult on the development of the degree program in relation to various stakeholder priorities. This energy consultant is tasked with identifying key industry partners, collaborating with UHWO administrative and faculty personnel to identify course content, identifying experts to serve as lecturers, and creating a strategic rollout plan for the program including a 3 to 5-year budget. The energy industry expert consultant will also be researching IFMA program certification in order to complement UHWO's existing courses with new construction, energy, and engineering coursework to meet industry workforce needs.

Because of this promising start, the University Foundation was able to successfully leverage the funding to secure an award of $245,677 from the U.S. Office of Naval Research (ONR) to support the establishment of a STEM Center of Excellence and a BAS Concentration in Facilities Management program. In addition to the materials and equipment being purchased with the ONR grant, two UH West Oahu faculty members are currently researching the Facilities Management program curriculum in conjunction with the chosen energy industry consultant.

TRANSFORMATIONAL PROGRAM

In PY14, Hawaii Energy plans to continue to support the development of this degree program through collaboration with the energy consultant, UHWO and IFMA Hawaii members. The Program plans to develop a three to five-year "Road Map" documenting the needed support from Hawaii Energy and the Hawaii IFMA Chapter that will be executed in parallel to UH West's degree development work.

Green Workforce Development and Residential Energy Literacy in Hard-to-Reach Communities

Hui-Up 3.0 with Sust`AINAble Molokai

Hawaii Energy subcontracted Sust`AINAble Molokai and Blue Planet Foundation (see *Behavior Modification*, page 120) to launch Hui Up 3.0 on Molokai, a refrigerator exchange program with an educational component to improve the energy literacy of participating households. The professional development and education aspects of this project were driven by Sust`AINAble Molokai, which recruited and trained a team of twelve (12) local youth to convey energy efficiency and conservation information, tips and practices to participating households. In addition to providing this in-home training, these youth performed 205 home energy assessments with a focus on plug loads, particularly focused on the refrigerators they encountered.

Energy Efficiency Sales Professional Training

EEFG® - Mark Jewell, President

Recognizing that educating energy conservation and efficiency sales and advocacy professionals could lead to broader Program participation, Hawaii Energy continued to subcontract Mr. Mark Jewell of Energy Efficiency Funding Group (EEFG) in PY13. EEFG is a training and education services firm based in California and its principal, Mr. Jewell worked in commercial real estate investment for over 15 years before becoming a nationally recognized expert on energy efficiency. In PY13, a total of 980 individuals participated in the following offerings.

Some of the more than 200 participants that attended Mark Jewell's workshops this program year.

The Hawaii Energy Workshop Series

In advance of the Hawaii Energy Workshop Series V (HEWS V) being offered, EEFG conducted an introductory webinar entitled, "Finding the Value in Efficiency" to which a total of 66 individuals subscribed. The webinar touched upon assessing energy-saving potential, calculating returns and securing approval for projects, while identifying which upcoming courses would provide more detail on each of the topics presented.

Later in PY14, EEFG offered eight (8) topics for the Series both in-person and on-demand, including:

1. Learning to S.E.E. (Sell Efficiency Effectively)
2. Financial Analysis for Energy Efficiency Projects - Beginning
3. Financial Analysis of Energy Efficiency Projects - Intermediate

4. Financial Analysis of Energy Efficiency Projects - Advanced
5. Taking Control of Your Energy Use
6. Making Efficiency Happen
7. Benchmarking Your Commercial Building and What's Next After Benchmarking?
8. Benchmarking as a Business

In general, these courses are intended to stimulate energy efficiency sales activity within Hawaii Energy's island territory, particularly among the medium-sized commercial customers, and to provide professional development to those selling energy-efficient equipment/services to that market. While the Program had only offered in-person courses in the past, the on-demand (online) series enabled professionals to participate despite travel constraints. Once registered, these participants have access to their chosen courses for one full year and is intended be a resource to apply lessons learned, while being able to return to the online courses for reinforcement. A total of 832 individuals participated in these courses, with 224 attending the in-person classes at the Double Tree Hilton Alana Waikiki Hotel on Oahu Island, while the balance of 608 registered for the on-demand courses.

Post-surveys for the Series were very positive and anecdotally implied that the Program could increase participation through Webinar versions of these courses. As expected, the majority of attendees plan to use the knowledge and skills gained from the course to increase efficiency/renewable utilization by their customer or client's facility.

The Efficiency Sales Professional Boot Camp

EEFG also offered the Efficiency Sales Professional ™ (ESP) Certificate Program, which is an intensive, six-day session including 48 hours of training on sales, energy efficiency, financial analysis, and personal productivity. This robust course included 24 learning modules teaching participants to find the highest valued targets and capture their attention, to map the decision-making chain and skillfully assess motivations, to concisely communicate value and artfully blend emotion and logic to neutralize objection to gain approval, and to replace myth with math and motivation to escape the clutches of simple payback period.

At Hawaii Energy direction, EEFG contacted highly valued local organizations to notify them of the Boot Camp and encourage their members to participate. Over the course of the Series, more than 50 relevant member organizations (e.g., BOMA, AIA, USGBC, and IFMA) were solicited to attend. Ultimately, 27 participants attended the certificate program during the week of May 5th at the Double Tree Hilton Alana Waikiki Hotel on Oahu Island.

Post-surveys revealed that both Mr. Jewell and the courses were extremely well-received and valued. Many attendees commented on the abundance of valuable practical course material alongside expressions of gratitude to have the opportunity to attend these high-level trainings at such an affordable cost.

Mark Jewell's Presentation to UH Board of Regents and Facilities Staff & Video Supplement

The University of Hawaii represents one of Hawaii's most significant energy consumers. On May 8, 2014, Mark Jewell delivered a keynote presentation at the Information Technology Center of the University of Hawaii Manoa Campus to an audience of 55 leaders and other important stakeholders in the

University's energy-related planning and projects. This event was a catalyst for more engagement with the UH System and Hawaii Energy leading into PY14.

EEFG also produced a reenactment of that keynote, a Vimeo-format video of approximately one hour using "green screen technology", featuring Jewell as the speaker with selected PowerPoint slides inserted as the background. This video will be used as an ongoing introduction to staff as Hawaii Energy continues working with UH.

Mark Jewell giving a special presentation to campus leaders and stakeholders at the University of Hawaii at Manoa

Technical Training

Certified Energy Manager (CEM), Energy Manager in Training (EMIT) and Online Training

Association of Energy Engineers (AEE)

Since PY11, Hawaii Energy has worked with AEE to hold training seminars and certification programs in Hawaii. Objectives of the program were to strengthen the workforce in Hawaii, develop energy managers and improve their skills set, and to offer attendees the opportunity to gain the Certified Energy Manager (CEM) certification designation, which fosters their professional development.

In PY13, Hawaii Energy offered one subsidized AEE Online Training Course, *Developing an Energy Management Master Plan*, as part of our support to the water and wastewater sector, while also evaluating the effectiveness of the online delivery method. The purpose of this course was to introduce the concept of energy management master planning to water and wastewater operators and managers. This online training offered flexibility for people who have a limited amount of time and could not be away from the office. Nine (9) professionals completed the course. Hawaii Energy received a number of emails thanking the Program for these great online courses.

This year, in addition to in-person trainings like the one above, Hawaii Energy and AEE offered an online training course designed especially for water and wastewater professionals.

Hawaii Energy also offered an in-person CEM Preparatory Seminar. The five-day program was a great success. There were a total of 39 unique registrants, from utility employees to state employees to military personnel. Of the 39 participants, 17 received CEM certification and three (3) received the Energy Manager in Training (EMIT) certification and will be eligible for a CEM certificate once they have achieved requisite experience. Positive comments and feedback from the participants suggested that the course was very well-received. Each participant checked “Yes” when asked if they would recommend this training to others. With the diverse origins of the participants, Hawaii Energy anticipates the skills gained in the training will result in effective efficiency efforts in a variety of end-users.

Building Operator Certification (BOC©) Workshops

University of Hawaii at Manoa Outreach College & Sustainable Living Institute of Maui (SLIM)

Hawaii Energy partnered with the University of Hawaii at Manoa Outreach College and SLIM to bring the nationally recognized energy efficiency training and certification program, Level 1 Building Operator Certifications (BOC®), to those working in commercial building operations and maintenance on Maui and Oahu. The training and certification program was a great opportunity for commercial businesses to improve energy efficiency in their processes in order save money and become more sustainable over the long term. BOC graduates also save money for commercial and institutional buildings by improving the energy efficiency of lighting, heating and cooling systems, and by enabling operators to be proactive in complying with environmental regulations affecting facility operations and maintenance.

Topics covered in the training included:

a. Energy Efficient Operation of Building HVAC Systems
b. Measuring and Benchmarking Energy Performance
c. Efficient Lighting Fundamentals
d. HVAC Controls Fundamentals
e. Indoor Environmental Quality
f. Common Opportunities for Low-Cost Operational Improvement
g. Building Scoping for Operational Improvement

Students in one of the Oahu BOC training sessions get familiar with some of the tools used in energy

Three sets of BOC training and certifications were held in the Spring of PY13 – one (1) on Maui and two (2) on Oahu. Each BOC training consisted of eight (8) classes, which were covered within an eight (8) week period. For each participant, it was a total time commitment of about 74 hours, which included in-class exams and project assignments. Hawaii Energy provided funding for this training by heavily subsidizing the training costs to make it more affordable for qualified participants to attend. Qualified participants were defined as building engineers, HVAC technicians, electricians, maintenance workers, building managers and others involved in running or improving energy efficiency in a facility. As a result, a total of 51 participants received their Building Operator Certification.

Water and Wastewater Training and Best Practices Handbook Production

The water and wastewater initiative in PY13 focused on training and technical support in an effort to build momentum for energy efficiency in this sector. Hawaii Energy was very successful in engaging all the major water and wastewater operators on Oahu, Maui, and Hawaii Island. The Program provided energy and pump efficiency training for 124 operators and managers from the Honolulu Board of Water Supply (BWS), Oahu Environmental Services Wastewater division, Maui Department of Water Supply (DWS), and Maui County Environmental Management and Wastewater Reclamation Division. The Program also partnered with the Hawaii Commission on Water Resource Management to address water and wastewater operators on all islands about the importance of water loss control and the connection between water loss and wasted energy. On Maui, the Program produced and delivered a three-hour block of instruction for the SLIM-sponsored basic water and wastewater operator course given at UH Maui Campus. Despite continued engagement with Hawaii Island DWS and County of Hawaii Department of Environmental Management Wastewater Division the Program was unable to coordinate a training session in PY13. Training on Hawaii Island will remain a priority in PY14.

Most notably, Hawaii Energy produced and distributed the State's first "Water and Wastewater Energy Management Best Practices Handbook", which was developed with New York State Energy Research and Developmental Authority (NYSERDA) and Focus on Energy, Wisconsin's statewide energy efficiency and renewable resource program. The handbook is designed to assist operators, managers and financial decision-makers in making wise decisions with respect to energy efficiency within the water and wastewater sector. It includes industry-tested best practices and addresses benefits and limitations to each best practices and overall industry acceptance of the measures. The Handbook was completed towards the end of PY13 so distribution will continue into PY14.

MARKETING & OUTREACH

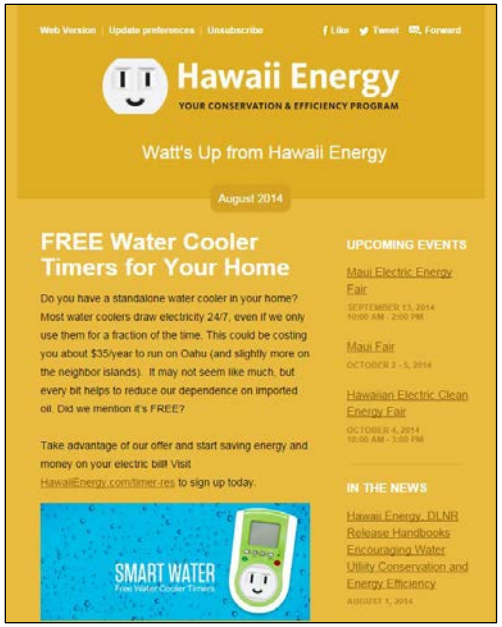
In PY13, the focus of the Program's marketing, outreach and communications efforts was to continue to increase awareness of Hawaii Energy and evolve our strategic endeavors to ensure consistency in branding and messaging. Our goals for PY13 included: (1) provide more comprehensive and integrated marketing and communications support to our residential, business and transformational offers; (2) bring public relations services in-house to more effectively communicate our program's initiatives; and (3) expand advertising strategy to leverage brand awareness to drive participation.

Below are just some of the marketing and communications highlights from PY13:

Marketing, Advertising and Promotions

Email Marketing

In PY13, the Program developed and launched a consistent email marketing plan to complement our current marketing efforts. It was important for the Program to integrate email marketing into its overall marketing and communications strategy to extend our audience reach and increase awareness. The benefits of email marketing include the ability to: (1) provide real-time and personalized messages; (2) send targeted marketing campaigns to one of three subscriber lists (i.e., residential, business and energy professionals) and (3) communicate with electric ratepayers more frequently.



Our email marketing plan included:

- Development of distribution plans for email marketing targeting each audience in support of Residential, Business and Transformational program goals;
- Creation of e-newsletter templates (i.e., residential, business and energy professionals);
- Development of three subscriber lists; and
- Development and maintenance of our email database to have quality subscriber lists.

As a result of our email marketing efforts, some highlights included:

- Developing a list of over 10,000 engaged email subscribers who have all opted in to receive email communications from us.
- Distributing email marketing messages monthly either via our bi-monthly residential e-newsletter, quarterly business e-newsletter or specialized messages promoting Transformational and program-wide efforts.
- Achieving an average open rate of 37.32% and an average click-through rate of 10.39% across all 16 email messages sent in PY13. Based on industry standards, both are above average open and click-through rates and can be attributed to our commitment to providing engaging and relevant information, maintaining a quality email list as well as providing targeted messages to segmented recipients.

MARKETING & OUTREACH

Advertising

Co-op Advertising

To extend the Program's residential solar water heating message and promote the instant $1,000 rebate, a co-op advertising program was developed and piloted in 2nd quarter of PY13. Solar water heating participating contractors were eligible to receive advertising funds from the Program to help offset the cost of their company's advertising in print publications, radio and TV. To qualify for funding, their advertising must include Hawaii Energy's logo and messaging. Participating contractors were eligible for reimbursements up to 50% of the cost of their ad, not to exceed $1,000 per program year per contractor.

Although only four (4) solar water heating companies participated in the co-op advertising program and received reimbursements, the Program received positive feedback from the contractors for this initiative. Many of the contractors expressed interested in this program, but due to varying factors like advertising budgets already being committed, were unable to take advantage of the offer. As such, we've decided to continue our co-op advertising program in PY14.

Sample advertisements from contractors who took advantage of the Hawaii Energy's Co-op Advertising offer.

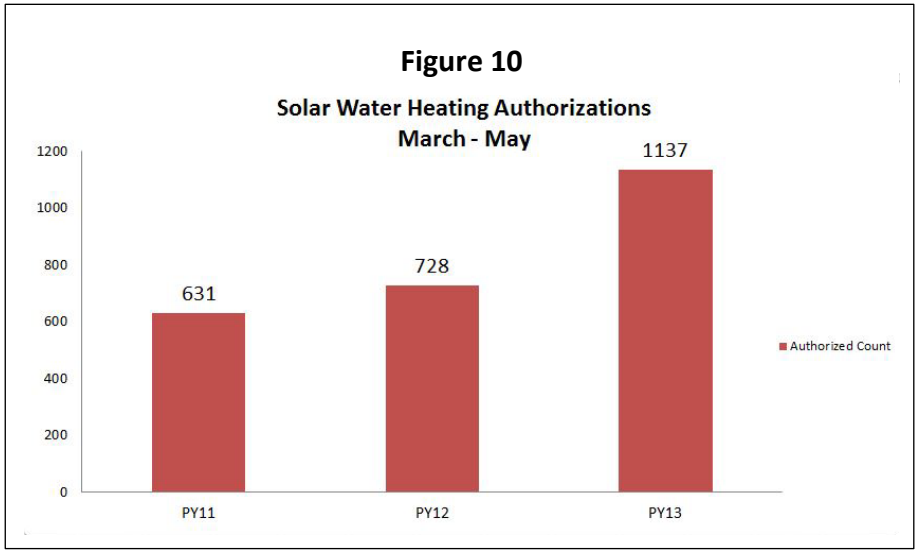
Solar Water Heating Ad Campaign

With the changes to the PV industry in the 2nd and 3rd quarter of PY13, it was an ideal time for the Program to further promote solar water heating.

The objectives for the PY13 advertising campaign, which ran for three months from March to May, were to:

1) Build on the brand equity from the PY12 ad campaign;
2) Increase awareness of the benefits of solar water heating;
3) Drive consumers online to learn how to get started as well as guide them through the purchasing process.

The advertising strategy was to continue with a mix of TV, online, radio and print advertising. As a part of the strategy, there was a more targeted focus on print and radio advertising on the neighbor islands since those mediums are primary sources for the community to get news. Overall, the portfolio of media purchased for this campaign yielded and estimated reach of 11.4 million, which helped to continue to convey our message and increase brand awareness. Reach is defined as the estimated number of readers or viewers reached in a given medium.



The PY13 goal for solar water heating was to have 2,400 systems installed through the instant $1,000 rebate. In the two program years since the advertising campaign has been running, the Program has seen an 80.2% increase in solar water heating authorizations from March through May, which has been the timeframe of our media buys (see **Figure 10** at left).

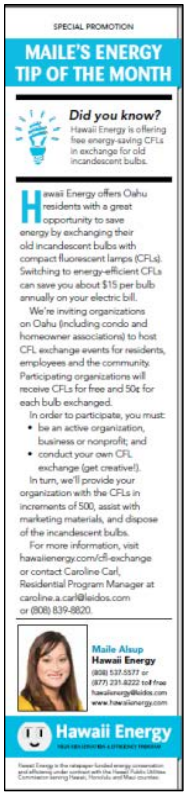
Some highlights from the advertising campaign include:

- Reaching approximately 269,000 unique Facebook users and delivering 869,000 impressions.
- Driving over 3,000 customers to the solar water heating landing page via the banner ad campaign on a variety of targeted websites.

Broadened Advertising Strategy

Since the inception of the Hawaii Energy program, the advertising strategy had been focused on promoting specific residential rebates and offers with a limited advertising run. In order to increase awareness of the Hawaii Energy brand, it was important to broaden our advertising strategy to be more consistent and continuous. In PY13, messaging was focused on the overall program and the variety of rebates it offers.

- **Hawaii Business Magazine:** Launched our "Energy Tip of the Month" column (right), a monthly advertisement designed to attract attention like an editorial in the front "Trending Now" section of the publication. The column promoted the Program and our various incentives and rebates. In addition, we had a 1/3 page monthly ad placed in the Small Business section that highlighted a company that received an incentive. *Hawaii Business Magazine* reaches 81,000 business-minded readers and decision-makers each month.
- **Green Hawaii: A 32-Page Guide to Living a Greener Life** produced by *Hawaii Home + Remodeling Magazine*: We sponsored and helped to develop this special publication, which provided readers with ways to save energy and money through energy conservation and efficiency. *Green Hawaii* reached 110,000 people and appeared in the April issue of *Hawaii Home + Remodeling Magazine*, May issue of *Honolulu Magazine* and June issue of *Hawaii Business Magazine*. Along with this special publication, *Hawaii Home + Remodeling Magazine* sent out a Hawaii Energy-focused e-newsletter to over 6,000 monthly subscribers in April and May 2014. The Program also received 10,000 copies for distribution at community outreach events.


SPECIAL PROMOTION

MAILE'S ENERGY TIP OF THE MONTH

Did you know?
Hawaii Energy is offering free energy-saving CFLs in exchange for old incandescent bulbs.

Hawaii Energy offers Oahu residents with a great opportunity to save energy by exchanging their old incandescent bulbs with compact fluorescent lamps (CFLs). Switching to energy-efficient CFLs can save you about $15 per bulb annually on your electric bill.

We're inviting organizations on Oahu (including condo and homeowner associations) to host CFL exchange events for residents, employees and the community. Participating organizations will receive CFLs for free and 50¢ for each bulb exchanged.

In order to participate, you must:
- be an active organization, business or nonprofit; and
- conduct your own CFL exchange (get creative!).

In turn, we'll provide your organization with the CFLs in increments of 500, assist with marketing materials, and dispose of the incandescent bulbs.

For more information, visit hawaiienergy.com/cfl-exchange or contact Caroline Carl, Residential Program Manager at caroline.a.carl@leidos.com or (808) 839-8820.

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Hawaii Energy

MARKETING & OUTREACH

- **KRTR 96.3 FM:** Launched radio advertising campaign with Summit Media Hawaii's KRTR 96.3 FM, which ran from April to June. This campaign included "Energy Saving Tips of the Day" spots during the afternoon drive time (3 - 8 p.m.), on-air DJ endorsements by Shawnee Hammer, monthly live radio interviews and placement of online ads on the KRTR website. KRTR is the top "at work" radio station on Oahu and reaches adults 25 - 54 years old and women 25 - 44 years old.

Direct Mail

Electric Bill Inserts

The Program designed inserts highlighting residential rebates (including CFLs and the Bounty offer) and business incentives. These inserts were included with the March and April bills for Hawaiian Electric, Hawaiian Electric Light Company and Maui Electric. The bill inserts reached 365,000 residential electric customers and 60,000 business electric customers per monthly insert.

Solar Water Heating Direct Mail

The Program developed and strategically distributed via mail a postcard-sized direct mail piece in May promoting residential solar water heating, its energy-saving benefits and the Hawaii Energy rebate to homeowners in Ewa Beach, Kapolei, Mililani and Waipahu with a household income of more than $75,000. Those Oahu neighborhoods were specifically chosen due to high PV saturation in those areas. The direct mail reinforced the message of solar water heating as a first step towards energy savings before or in addition to PV. A total of 20,389 mailers were sent out and the program received a significant lift in traffic to our solar water heating website page in the four days after the distribution of the direct mailer. We received on average 107 visits per day, up from an average of 30. A vanity URL (hawaiienergy.com/solarsavings) was used on the direct mail piece, which enabled us to track interest and engagement. This was the first time the Program ever used a direct mail strategy to reach an audience and promote an offer.

This three-panel direct mail piece was sent out in May 2014 as the last component to a program year-long push for the $1,000 solar water heating rebate.

Social Media

Solar Water Heating Facebook Promotion

We wrapped up the Program's 10-week solar water heating Facebook promotion, which launched at the end of PY12. As a part of the promotion, Facebook users were asked to "like" the Hawaii Energy Facebook page and share how they would use the $600 savings they would have received if they had installed a solar water heating system. Contestants entered to win an energy-saving gift pack (valued at $50) and a winner was chosen weekly. This promotion substantially increased "likes" for the program Facebook page by over 50% with 1,171 likes. "Likes" are important in social media in that they indicate strong audience interest and engagement.

Energy-Saving Instagram Photo Contest

In PY13, we launched an Instagram account for Hawaii Energy. To increase our Instagram follows, we piloted the Program's first Instagram photo contest with the YMCA Healthy Kids Day event on April 12. Participants were asked to take a photo with one or more energy-saving devices displayed at the event and were eligible to win a gift basket. Ten (10) Instagram users entered the contest and we acquired 15 new followers. We later determined that there may have been more contest entries, but some contestants may not have made their Instagram newsfeed public, which resulted in us not being able to view their photos. The Program will continue to experiment with and refine social media engagement.

Our Solar Water Heating Facebook Contest (left) and Healthy Kids' Day Instagram Photo Contest (right) helped us further increase and engage with our social media following and build our e-newsletter subscription base.

Public Relations

Public relations is the management of relationships between an organization and its various stakeholders through strategic communications. Hawaii Energy's public relations efforts have resulted in the development of solid, working relationships with the local news media, which has resulted in positive media coverage for the Program.

Throughout PY13, Hawaii Energy continued to strategically identify and leverage media opportunities to amplify ratepayer's awareness of and participation in Hawaii Energy as a program, as well as specific residential and business offerings. Public relations continues to be a critical component to the Program's integrated marketing strategy in order to establish credibility and build awareness through the news media.

The marketing and communications team expanded in PY13 to include the hiring of a Public Relations Specialist. Since the inception of the Program in 2008, we retained local subcontractors for our public relations services. As the Program continued to grow, we determined it would be more efficient and effective to bring these services in-house.

Results

Hawaii Energy generated a plethora of media coverage that spanned all news mediums including television, radio, newspapers, magazines, websites and trade publications.

The estimated cumulative reach of media coverage was calculated by multiplying the circulation/audience figures of each medium by three, which is a generally-accepted calculation method within the public relations industry. Cumulative reach was estimated at more than 8,601,868.

The total Publicity Value (PV) of media coverage is estimated at $237,770. Publicity Value is calculated by multiplying the Advertising Value Equivalency (AVE) by three, which is a factor generally accepted by the marketing industry. AVE is what the editorial coverage would cost if it were advertising space (print publications) or on-air time (television and radio).

Media Coverage Highlights

Generated media coverage is highlighted below and divided into categories. To read full stories secured throughout the year, please refer to the media coverage report in Attachment F.

Press Conference

On September 19, 2013, Hawaii Energy orchestrated a press conference with the Hawaii National Guard in recognition of their commitment to energy conservation and efficiency. The Hawaii National Guard completed a pilot program designed to reduce energy consumption. These programs and behavior modifications throughout the National Guard's 20-plus facilities, resulted in approximately 7% overall energy reduction with some of its facilities seeing up to a 23% reduction. Governor Abercrombie and Major General Darryll Wong of the Hawaii National Guard attended and spoke at the press conference.

MARKETING & OUTREACH

In PY12, Hawaii Energy sponsored a command-wide training program to introduce energy conservation practices and energy audit guidelines to approximately 132 National Guard staff. In turn, these staff members applied the training to the facilities where they worked and shared their knowledge with other facility occupants. Hawaii Energy provided the training in collaboration with Smart Sustainability Consulting, a Honolulu-based company, which specialized in occupant engagement through the identification and education of wasteful lighting and air conditioning practices with the goal of adopting institutional behavior change.

Program Director Ray Starling addresses the attendees at a press conference announcing the Hawaii National Guard's energy-saving initiatives in September 2014.

Several energy-saving opportunities were identified by the energy audits performed as part of the training. These ranged from space consolidation or optimization to no- and low-cost operational changes to large-scale capital improvement projects.

From January to March 2013, the National Guard worked on four energy efficiency retrofit projects that were estimated to save more than 257,000 kilowatt hours (kWh) per year the equivalent to more than $79,000 in electricity cost per year based on $0.31 per kWh (average kWh rate in 2012). Hawaii Energy presented a check for $21,361 in incentives to the National Guard for its various energy-saving initiatives.

These initiatives and energy efficiency measures included the following:

- *Interior De-Lamping* – Removed 1,195 fluorescent lamps throughout eight (8) facilities in excessively lit areas.
- *LED Retrofit* – Replaced 20 Metal Halide and 12 High Pressure Sodium exterior lamps with energy-efficient, UL qualified LEDs, which reduced energy consumption by 70 percent in Buildings 306/306a.
- *Water-Cooled Chiller & Variable Frequency Drive (VFD) Pumps* – Replaced existing A/C system with an energy-efficient, water-cooled chiller and added VFD technology to pumps and motors. Current data forecasts savings of 75,600 kWh per year in Buildings 306/306a.
- *Implementation of a Commander-Supported Energy Conservation Awareness Program* – The program encouraged all facility occupants to take personal responsibility for energy conservation in their workspace. This measure alone was estimated to have added greatly to the overall energy reduction realized throughout all facilities.

Stories about the press conference appeared on Hawaii News Now's evening newscast (CBS and NBC affiliate in Hawaii), its website HawaiiNewsNow.com and sister station website KFVE.com. Hawaii's ABC affiliate also pursued a story that aired on KITV News as well as the *Honolulu Star-Advertiser* (print and online).

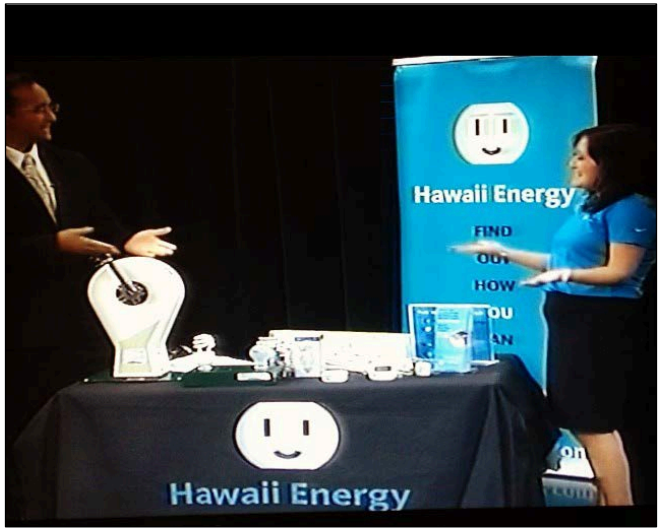
MARKETING & OUTREACH

Seasonal Stories

Hawaii Energy created additional opportunities to keep the importance of energy conservation and efficiency top-of-mind by developing seasonal stories ideas during Christmas and Earth Day.

Green Leaf Blog (*Honolulu Star-Advertiser*) pursued our story ideas about how to save energy during Christmas that included purchasing LED Christmas lights, keeping ovens and refrigerators closed and washing full loads of laundry when families visit. A similar story was also featured in Hawaiian Properties' monthly newsletter that was written for property managers at various condos around Oahu. Hawaii Energy also developed energy-saving tips geared toward families and children that appeared in *Maui Family Magazine*.

During Earth Day (April 22, 2014), Hawaii Energy was a guest on KHON's morning show "Wake Up 2Day", which featured low-cost tips to reduce energy consumption with conserve switches, smart strips and plug-in energy monitors as well as the importance of solar water heating.



Marketing Manager Maile Alsup represented Hawaii Energy on KHON2's morning show, "WakeUp2Day" to provide energy-saving tips in conjunction with Earth Day.

Energy-Saving Offers

Throughout PY13, the marketing and communications team turned each new or updated residential and business offer into an opportunity to be featured in the news. The process involved working closely with the residential and business teams to identify details of the offer, as well as its energy savings potential and cost benefits. In addition, to better prepare Hawaii Energy's call centers, the team developed frequently asked questions (FAQs) documents about these various offers.

To saturate awareness, our public relations efforts resulted in stories in various newspapers, trade publications, online news websites, blogs and radio interviews. Below is a sampling and brief description of the different offers and key media coverage.

Bounty Increase – Hawaii Energy doubled the rebate for its recycling program on Oahu to $50, giving added incentive to recycle their extra working refrigerators or freezers.

- Green Leaf Blog (*Honolulu Star-Advertiser*) – Double Rates for Rid-A-Fridge"
- *Pacific Business News* – "Hawaii Energy Doubles Rebate for Old Refrigerators"

Solar Water Heater Tune-Up – Residents had the limited-time opportunity to receive a $150 rebate for a "tune-up" or maintenance on their solar water heaters to check for wear and tear that could include leaks, corrosion or timer malfunction.

- *Honolulu Star-Advertiser* – "$150 Rebate Offered Toward Cost of Solar Water Heater Tune-Up"
- *Pacific Business News* – "This Industry's In Hot Water — That's a Good Thing"

LED Exit Signs – The Program initiated a limited-time business incentive of $40, doubling the program's standard incentive of $20, to replace old incandescent exit signs with new LED exit signs.

- Green Leaf Blog (*Honolulu Star-Advertiser*) – "Hawaii Businesses: Save Energy… Plus LED Exit Signs"
- *Hawaii News Now's Sunrise* (Morning Television Show)
- *Honolulu Star-Advertiser* – "Businesses Can Get Rebate for Converting to LED 'Exit' Signs"
- *Pacific Business News* – "Hawaii Businesses Can Turn Their Old Exit Signs Into Cash"
- *West Hawaii Today* – "Incentive Offered for Installing LED Signs"

Water Cooler Timers – The Program launched a business offering for free water cooler timers.

- *Building Management Hawaii* (Trade Publication) – "Time to Stay Cool" bylined article by Business Program Manager Keith Block
- *Honolulu Star-Advertiser* – "Free Water Cooler Timers Offered for Most Hawaii Businesses"
- *Pacific Business News* – "Hawaii Energy Offering Free Water Cooler Timers to Businesses"

Small Business Direct Install Lighting (SBDIL) – SBDIL was an existing offer that continued to be valuable for small businesses and restaurants to have Hawaii Energy-approved contractors replace old lighting with energy-efficient lighting at no cost to the customer.

- Green Leaf Blog (*Honolulu Star-Advertiser*)
- *Pacific Business News* – "Businesses Can Get Free Upgrades to Save Energy"
- *West Hawaii Today* – "Program Replaces Inefficient Lighting for Small Businesses"

Check Presentations

Hawaii Energy recognized and promoted businesses' energy-saving projects and their financial incentives received from the Program. There were a total of 11 check presentations with business ratepayers from various industries that included hotels, packaging companies and convenience stores/gas stations.

The company's executive teams and contractors that worked on the projects were invited for a photo opportunity on property. In turn, Hawaii Energy secured news coverage and photo placements in several media outlets.

MARKETING & OUTREACH

Aloha Petroleum – The largest independent gasoline marketer and one of the biggest convenience store operators in Hawaii, received a $41,352 incentive for installing energy-efficient lighting at 17 of its gas stations on Oahu. The estimated annual savings toward electricity costs was $88,920.

- *Green Magazine* (Online Edition) – "Hawaii Energy Presents Check to Aloha Petroleum"
- *Pacific Business News* – "Aloha Petroleum Receives Incentive Check From Hawaii Energy"
- Petrolworld.com – "Aloha Petroleum Gets Incentives for Energy Efficiency"

Courtyard Marriott Waikiki Beach – The hotel received an incentive of more than $119,000 for installing an energy-efficient air conditioning system and LEDs. The hotel was projected to save approximately $190,000 a year on electricity costs.

- *Associated Press* – "Saving Energy Wins Waikiki Hotel More Than $119,000"
    - Picked up by HawaiiNewsNow.com, KFVE.com, Renewable Energy News, Seattle Post-Intelligencer
- *Hawaii News Now* (5 a.m. newscast)
- *Maui News* (Business/In Brief section)
- *Pacific Business News* – " Courtyard By Marriott Waikiki Beach Gets Money Back for Saving Energy"
- *West Hawaii Today* – "Saving Energy Wins Hotel More Than $119k"

Pacific Beach Hotel received the largest hotel incentive in Hawaii Energy history – $308,145 for air conditioning system upgrades and the installation of an energy management system. They are estimated to save $280,000 per year in electricity costs.

Grand Wailea – The hotel installed new variable frequency drives and pump equipment designed to seamlessly adjust the water flow for its Wailea Canyon Activity Pool that included nine separate pools and various waterslides, white water rapids, whirlpool and the world's first "water elevator." The financial incentive was $202,048. The estimated annual cost savings toward electricity was $380,028.

- *Maui News* – "Grand Wailea Rewarded for its Energy Efficiency Efforts"
- *Maui TV News* – "Resort Receives 'Grand' Energy Incentive"

Hawaii Prince Hotel Waikiki and Golf Club – The 541-room hotel received a $150,000 incentive for upgrading its air conditioning system by replacing three old chillers with energy-efficient enhanced chillers for the entire property. The estimated annual energy savings was $288,000.

- *Green Magazine* (Online Edition) – "Hawaii Energy Presents $150,000 Incentive Check to the Hawaii Prince Hotel Waikiki and Golf Club for a New Energy-Efficient Air Conditioning System"

- *Pacific Business News* – "Hawaii Energy Gives $150,000 to Hawaii Prince Hotel Waikiki for Upgrading AC System"

Pacific Allied Products – Incentive for $91,484 to a Kapolei-based plastics manufacturing company for installing a high-speed bottle blower to inflate plastic bottles that captures and recycles excess air to help save electricity. The estimated annual energy savings was $148,000.

- *Midweek* (Print & Online Editions) – "Hawaii Energy Supports Pacific Allied Products"

Pacific Beach Hotel – Received the largest incentive check of any hotel since inception of the Hawaii Energy program at $308,145 for air conditioning system upgrades and for the installation of an energy management system. The estimated annual electricity cost savings was $280,000.

- *Hotel Business* – "Pacific Beach Hotel Earns $308K for Energy Program"
- *Pacific Business News* – "Pacific Beach Hotel Gets Largest Energy Incentive Check of Any Hawaii Hotel"

Public Relations Support of Transformational Offers

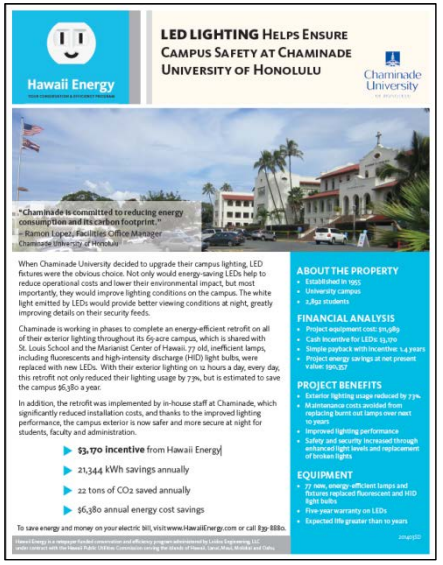
The marketing and communications team amplified awareness about a transformational offering for energy professionals called "Creating Value with Energy Efficiency Spring Workshop Series." The five-day workshop was conducted by a nationally-recognized energy efficiency expert named Mark Jewell and designed specifically for industry professionals (i.e., electrical contractors, architects, engineers) and vendors responsible for pursuing expense-reducing capital projects. Media coverage included a guest interview on Hawaii Public Radio's popular talk show "The Conversation" that aired during the morning drive-time hours. Additional media coverage included an online story in the *Pacific Business News*.

Another transformational offering that the marketing and communications team helped promote were the NEED (National Energy Education Development) Project workshops. These free workshops held on Hawaii Island, Molokai and Oahu were aimed at educating teachers about how to teach energy efficiency to Kindergarten to 12th grade students. Teachers received training, curriculum materials, energy kits (valued between $300 and $400) to use with their students and were eligible to apply for Hawaii Energy Education Grants up to $2,500 and a scholarship to attend NEED's annual National Energy Conference for Educators. In order to secure attendance, flyers were distributed through schools, social media content was developed and calendar listings were secured in *Midweek*. There was also post media coverage about one of the workshops held in Kaneohe featured in *Midweek*'s community newspaper called *Midweek Islander*.

MARKETING & OUTREACH

Case Studies

In order to show the benefits of Hawaii Energy and the incentives we offer, we began developing case studies on businesses who have successfully worked with the Program. These case studies enable us to showcase the details of their energy-saving projects and how energy efficiency has benefitted their business or organization. The case studies will be able to be used as a tool for our business specialists to provide to potential participants. Two (2) case studies were completed in PY13, which featured Chaminade University (right) and If the Shoe Fits, a small business direct install lighting participant. We will continue our case study development in PY14.


Hawaii Energy

LED LIGHTING HELPS ENSURE CAMPUS SAFETY AT CHAMINADE UNIVERSITY OF HONOLULU

Chaminade University

"Chaminade is committed to reducing energy consumption and its carbon footprint."
– Ramon Lopez, Facilities Office Manager
Chaminade University of Honolulu

When Chaminade University decided to upgrade their campus lighting, LED fixtures were the obvious choice. Not only would energy-saving LEDs help to reduce operational costs and lower their environmental impact, but most importantly, they would improve lighting conditions on the campus. The white light emitted by LEDs would provide better viewing conditions at night, greatly improving details on their security feeds.

Chaminade is working in phases to complete an energy-efficient retrofit on all of their exterior lighting throughout its 69-acre campus, which is shared with St. Louis School and the Marianist Center of Hawaii. 77 old, inefficient lamps, including fluorescents and high-intensity discharge (HID) light bulbs, were replaced with new LEDs. With their exterior lighting on 12 hours a day, every day, this retrofit not only reduced their lighting usage by 73%, but is estimated to save the campus $6,380 a year.

In addition, the retrofit was implemented by in-house staff at Chaminade, which significantly reduced installation costs, and thanks to the improved lighting performance, the campus exterior is now safer and more secure at night for students, faculty and administration.

- **$3,170 incentive** from Hawaii Energy
- 21,344 kWh savings annually
- 22 tons of CO_2 saved annually
- $6,380 annual energy cost savings

To save energy and money on your electric bill, visit www.HawaiiEnergy.com or call 839-8880.

ABOUT THE PROPERTY
- Established in 1955
- University campus
- 2,850 students

FINANCIAL ANALYSIS
- Project equipment cost: $11,985
- Cash incentive for LEDs: $3,170
- Simple payback with incentive: 1.4 years
- Project energy savings at net present value: $90,257

PROJECT BENEFITS
- Exterior lighting usage reduced by 73%
- Maintenance costs avoided from replacing burnt out lamps over next 10 years
- Improved lighting performance
- Safety and security increased through enhanced light levels and replacement of broken lights

EQUIPMENT
- 77 new, energy-efficient lamps and fixtures replaced fluorescent and HID light bulbs
- Five-year warranty on LEDs
- Expected life greater than 10 years

Weekly Online Talk Show

Hawaii Energy continued its sponsorship of the "Hawaii: The State of Clean Energy" online talk show produced and hosted by Jay Fidell of ThinkTech Hawaii. Hawaii Energy was featured each week during a 5-minute segment called the "Negawatt Moment with Hawaii Energy." The show was streamed live on Ustream.com on Wednesdays from 4 to 5 p.m. and re-aired on community access television station *Olelo*. Links to the archived shows, which appear on several different website including YouTube and Vimeo, can be found on the ThinkTech Hawaii website.

The talk show served as a forum for Hawaii Energy's staff to bring awareness to the latest residential, business and transformational rebates and incentives as well as practical energy conservation tips. The marketing and communications team conducted media training and developed talking points to prepare staff members for each interview.

"Sharing The Aloha" workshop facilitator Helen Wai made her first appearance on the "Hawaii: The State of Clean Energy" show this year, accompanied by Hawaii Energy team members Derrick Sonoda and Ray Starling.

Outreach

For PY13, the Program continued to build on its overall goals of: (1) partnering with local businesses and nonprofit organizations to further our conservation messaging efforts; (2) increasing our presence and participation at local events and expos in order to broaden our audience reach and (3) continuing to present our Program to a variety of organizations and groups.

Event Participation and Presentations

Throughout its fifth year, Hawaii Energy built upon a strong foundation of successful outreach events and explored several opportunities to reach new audiences and introduce our expanded offerings.

The Program's goal for community outreach event participation has always been to: (1) reach a wide-array of electric ratepayers; (2) to continue involvement in past outreach events that were deemed successful and (3) to find and participate in new outreach events. Community outreach participation is defined as the Program having a booth or table at an expo, conference, tradeshow, fair or festival and distributing Program-related information and giveaways. This program year, Hawaii Energy participated in 38 community outreach events with an estimated total attendance of 117,636 people. Of these events, 79% of them were in Honolulu County, 8% in Hawaii County and 13% in Maui County.

Several new events were added in PY13 in an effort to reach a wider audience. These included the Pacific Building Trade Expo, "Science Alive!" at the Bishop Museum and the Earth Day Festival at the University of Hawaii at Manoa.

In March and April, the Program also participated in three "open house" events hosted by Hawaiian Electric Company (HECO) in Pearl City, Moanalua and Kaimuki where HECO planned to pilot smart meters. Hawaii Energy staffed informational tables to engage attendees interested in energy conservation and efficiency.

In March, Hawaii Energy and Leidos Engineering, LLC jointly supported along with other sponsors the first-ever "Electric Utilities of the Future" conference hosted by the Maui Economic Development Board. The event brought together energy experts, business leaders and policymakers from across the nation and state to discuss Hawaii's progress towards clean energy.

In addition to community outreach event participation, the Program conducted 22 presentations to a variety of organizations providing information on Hawaii Energy, residential rebates and business incentives. Of these presentations, 9% were in Hawaii County, 77% in Honolulu County and 14% in Maui County. We were able to reach approximately 1,011 people through these efforts.

Table 73
Number of Program Events and Presentations

	Counties			Grand Total
	Hawaii	Honolulu	Maui	
Community Outreach Events	3	30	5	38
Presentations	2	17	3	22

Table 74
Estimated Reach of Outreach Events & Presentations

	Counties			Grand Total
	Hawaii	Honolulu	Maui	
Community Outreach Events	700	36,586	80,350	117,636
Presentations	150	900	61	1,011

MARKETING & OUTREACH

Partnerships

Honolulu Board of Water Supply

Hawaii Energy partnered once again with the Honolulu Board of Water Supply (BWS) to sponsor their annual Water Conservation Week Poster and Poetry Contests. This year's theme, "Conserve Water: No Effort is Too Small," invited Oahu students to consider how small conservation efforts can impact the overall preservation of our water supply, especially combined with other actions. More than 1,300 posters and 200 poems were submitted to the annual contests and the winners were selected based on the accuracy of information, originality, creativity and artistic or poetic ability, based on the student's age to convey the theme. 42 Oahu students from kindergarten to 12th grade were recognized and presented with awards at a ceremony held at the City and County of Honolulu's Mission Memorial Auditorium. Hawaii Energy was also included in all public relations efforts and the calendar that will highlight all of the winners and submissions for the poster and poetry contest.

Hawaii Energy sponsored the Honolulu Board of Water Supply's Water Conservation Week Poster & Poetry Contest and attended the awards ceremony in May.

"Rid-A-Fridge to Fight Hunger" Benefitting Food banks

The Program enhanced its "Bounty" refrigerator/freezer recycling offer this year by rolling out a campaign titled "Rid-A-Fridge to Fight Hunger." Residents who participated in the Bounty offer were given the option to donate the amount of their rebate ($50 on Oahu, $65 on neighbor islands) to their local food banks – Hawaii Foodbank on Oahu, Maui Food Bank on Maui and The Food Basket on Hawaii Island. Through this collaboration with the food banks, Hawaii Energy was able to refresh excitement for the Bounty offer and raise over $3,000 collectively for all three nonprofits.

In addition to adding this option to the standard rebate form, Hawaii Energy implemented extensive PR and marketing efforts through pre-existing distribution channels (e.g., radio spots, a press release, campaign-specific collateral distributed by refrigerator recyclers, posts to social media accounts, etc.) to ensure the most cost-effective promotion. Public relations coverage included a guest interview on Hawaii's most-watched television morning show, *Sunrise*, on Hawaii News Now, and stories in *Pacific Business News*, *Maui News* and *West Hawaii Today.*

This flyer was distributed to local refrigerator recyclers, who helped encourage donations to the food banks as they picked up old refrigerators.

"Hui Up!"

Hawaii Energy continued its efforts to strengthen the community by working with Blue Planet Foundation to help Molokai residents lower the cost of their electric bills through a refrigerator exchange program called, "Hui Up!." The program offered residents to exchange their old refrigerators for energy-efficient models for just $250, which also included free pick-up and recycling of the old refrigerator and delivery of the new one.

Blue Planet and Hawaii Energy set up an information booth in Kaunakakai, the heart of the island, to speak with residents and encourage participation in the program. In addition, Blue Planet and Hawaii Energy went door-to-door to a handful of homes to interview residents and capture video footage to provide television stations for potential media coverage.

Hui Up! helped 220 households on Molokai purchase new energy-efficient refrigerators that were estimated to each save about $500 in electricity costs annually. Hawaii Energy secured television morning appearances on KITV News and KHON News (Fox affiliate). Print media coverage included the *Molokai Dispatch* and *Pacific Business News*.

As part of the Hui Up program, Hawaii Energy staff went to Molokai to assist residents with their refrigerator exchanges and provide information about other Hawaii Energy rebates.

KEY REPORTING ASSUMPTIONS

Technical Resource Manual (TRM)

All energy efficiency and conservation programs need to estimate the average amount of energy and demand that is saved for installations of standard measures. This allows an effective program to promote these standard measures across markets with an incentive amount that is appropriate for the amount of energy and/or demand that is typically saved. Hawaii Energy maintains these energy saving estimates in the Technical Resource Manual (TRM). The following describes how the TRM was developed and the key assumptions that were used in estimating the energy (kWh) savings and demand (kW) reduction impacts claimed by the Program. Changes are made from time to time at the recommendations of the Program Evaluator. Upon the end of each program year, a formal evaluation is conducted by the Program Evaluator whereby updates are implemented for the subsequent program year.

The TRM is intended to be a flexible and living document. New measures may be added as new program designs are implemented. These measures are often not yet characterized, so new information will be gathered through evaluations or research. Savings for current measures may change as the market evolves.

There are four main reasons to update TRM values:

- New Measure Additions – As new technologies become cost-effective, they will be characterized and added to the manual. In addition, new program delivery design may result in the need for new measure characterization.

- Existing Measure Updates – Updates will be required for a number of reasons; examples include: increase in the federal standard for efficiency of a measure; new information from field tests; altered qualification criteria; decrease in measure cost; or a new evaluation that provides a better value of an assumption for a variable. As programs mature, characterizations need to be updated to meet the changes in the market.

- Retiring Existing Measures – When the economics of a measure become such that it is no longer cost-effective or the free-rider rate is so high that it is not worth supporting, the measure shall be retired.

- Third-Party Measurement and Verification (M&V) Contractor TRM Review – Annually the M&V contractor will provide a review of the current TRM and make recommendations based on current market research and in-field savings verification of measures.

Description of the TRM

The TRM provides methods, formulas and default assumptions for estimating energy and peak demand impacts for measures and projects that receive financial incentives from Hawaii Energy. It is organized by program, end use and measure. It describes how the Program estimates energy savings from each measure. The PY13 TRM represents a total of 73 measures for both residential and commercial programs and is shown as Attachment E.

KEY REPORTING ASSUMPTIONS

Overview of the TRM Derivation

In the TRM, each measure includes a description of the typical baseline (average) energy use and the high efficiency energy use for that type of technology. The energy saved is typically the differential between the two. The energy use of the baseline technology may include some estimation of market status related to various types of older, less efficient equipment. The final savings values are compared against the previous evaluation studies performed for the Hawaiian Electric Companies' programs, as described in this report.

Data assumptions are based on Hawaii specific data, when and where available. Where Hawaii data was not available, data from neighboring regions is used where available and in some cases, engineering judgment is applied. Referenced data sources, in general order of preference, but not necessarily limited to, include:

- Energy and Peak Demand Impact Evaluation Report of the 2005-2007 Demand Management Programs – KEMA
- HECO IRP-4: Energy Efficiency Potential Study (HECO DSM Docket)
- 2004 – 2005 Database for Energy Efficiency Resources (CA DEER database)
- 2007 – 2008 Database for Energy Efficiency Resources (CA DEER database) Update
- Other Energy Efficiency Program Design Information (e.g. Efficiency Maine, Focus on Energy, etc.)
- CEUS – The California Commercial Building End-Use Survey
- Evergreen TRM Review/Report dated 6/20/13
- Evergreen – Third Party Evaluation NTG Recommendation Memo January 2013
- ENERGY STAR® Partner Resources
- Field verification of measure performance

The savings estimates for each measure were initially drawn from the KEMA Evaluation Report for 2005 through 2007 since this report was the most recent information available on specific markets. The values in this report were built upon previous evaluation reports and in-field measurements.

Since there were many measures that used "average" field measured data and no mathematical savings derivations, the calculation approach in the TRM attempted to develop these savings calculations based on typical measure characteristics. The primary use of the KEMA report values was to guide market assumptions, especially for the baseline energy use, to more accurately estimate the typical savings.

Customer level savings are based on many variables including: measure life, market sectors, base versus enhanced case, persistence and coincidence factors. Claimed savings were compared against other sources, such as savings values used in other jurisdictions and research documentation from KEMA, the American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE), the National Renewable Energy Laboratory (NREL) and other organizations.

KEY REPORTING ASSUMPTIONS

Factors Determining Program Level Savings

Application of System Loss Factors

The amount of energy saved at a customer site is not equal to the amount saved at the electric utility plant supplying the energy to that site. There are system losses in generation, transmission and distribution of energy from the power plant to the site. This results in a larger savings at the power plant than at the customer site. To account for this larger impact on the system the "system loss factor" needs to be estimated. The system loss factors were provided by HECO, MECO and HELCO. They do not vary by measure, but by island, and are listed in **Table 75**.

Table 75
System Loss Factors

County System to Customer Energy Loss Factors		
Oahu	**Maui**	**Hawaii**
11.17%	9.96%	9.00%

The system loss factors were applied to the estimated Customer Level savings for each measure to calculate the impact on the system of a particular measure. The resulting System Level savings was used to estimate the overall impact to the reduced cost of not producing the saved energy. This "avoided cost" is the overall economic benefit and used within one of the primary cost benefit measures for the Program, called a Total Resource Cost (TRC) test.

Net-to-Gross Ratio

The Net-to-Gross (NTG) Ratio is used to adjust the System Level Energy savings to determine the energy saving that is attributed to the Program, or "Program Level Savings."

Program Level Savings are those directly attributed to Hawaii Energy actions by separating out the impacts that are a result of other influences, such as consumer self-motivation or free-riders. Free-riders are ratepayers or participants who received an incentive and/or education by the Program, but the incentive and/or education did not play a role in their decision to purchase or receive the savings measure.

Table 76
Net-To-Gross Factors

Program	Description	NTG
BEEM	Business Energy Efficiency Measures	0.75
CBEEM	Custom Business Energy Efficiency Measures	0.75
BESM	Business Services and Maintenance	0.95
BHTR	Business Hard-to-Reach	0.99
REEM	Residential Energy Efficiency Measures	0.79
CESH	Custom Energy Solutions for the Home	0.65
RESM	Residential Services and Maintenance	0.92
RHTR	Residential Hard-to-Reach	1.00
Composite NTG Ratio		**0.78**

New Program Net-to-Gross Values

The Third-Party Evaluator recommendations for Net-to-Gross values were adopted for the development of the PY13 Annual Plan and were based on verified PY12 results. These values recognize the differences in Program-driven savings between the various categories of measures. The evaluation can be found at www.hawaiienergy.com/information-reports. Hawaii Energy utilizes the combined Program total NTG ratio of 78%. The values used in PY13 are provided in **Table 76**.

KEY REPORTING ASSUMPTIONS

Development of Avoided Costs

As described above, the primary overall economic benefit for the State is the avoided cost for the energy that is saved. The total avoided cost of all the energy that is saved is called the Total Resource Benefit (TRB). To estimate the TRB for individual measures or for the total savings for the Program, the cost per MWh supplied and the system capacity cost per kW need to be estimated into the future.

Proxy Avoided Cost Developed

The avoided cost that is used for PY13 is estimated using an extrapolation of the avoided energy data provided by HECO. The energy and capacity cost data from the first few years was then extrapolated over 20 years. **Table 77** shows this extrapolation. This table was deemed a reasonable estimate of actual avoided energy and capacity costs as it was more in line with the avoided costs used in many other programs. Therefore, these avoided costs were used to calculate the TRB (Total Resource Benefit).

Table 77
Utility Avoided Cost

		Discount Rate		
		6%	Utility Avoided Cost	
Year	Measure Life	NPV Multiplier	$/kW/yr.	$/kWh/yr.
2013	1	1	353.2	0.104
2014	2	0.94	370.6	0.109
2015	3	0.89	382.5	0.112
2016	4	0.84	386.2	0.113
2017	5	0.79	387.7	0.114
2018	6	0.75	389.1	0.114
2019	7	0.7	391.9	0.115
2020	8	0.67	390.7	0.115
2021	9	0.63	394.6	0.116
2022	10	0.59	398.3	0.117
2023	11	0.56	397.4	0.117
2024	12	0.53	401.4	0.118
2025	13	0.5	405.7	0.119
2026	14	0.47	409.3	0.120
2027	15	0.44	415.9	0.122
2028	16	0.42	423.3	0.124
2029	17	0.39	428.9	0.126
2030	18	0.37	433.9	0.128
2031	19	0.35	438.9	0.13
2032	20	0.33	443.9	0.132

CONCLUSION

As we conclude this PY13 Annual Report, the Hawaii Energy team would like to thank the PUC and the people of Hawaii for the opportunity and privilege to serve as your Public Benefits Fee Administrator over the past five years. We especially appreciate the confidence you have placed in us by extending our contract for a third additional year (through 2016) and directing that we expand the range of energy services being performed under the contract. This will allow us to make an even stronger contribution to Hawaii's clean energy efforts.

We also want to thank the PUC staff, our Contract Manager, subcontractors, allies, friends and constituents for all the support you have provided to help us develop the Program to this point of evolution. The Hawaii Energy Team is proud to have this unique opportunity to work with all of you in making such important advances in Hawaii's quest for long term sustainability.

As we begin our new program year, the Hawaii Energy Team pledges to continue our best efforts to serve the people of Hawaii and accelerate Hawaii's progress towards a 100% clean energy economy.

ATTACHMENTS

Attachment A: Acronym List

A list of the commonly used Hawaii Energy acronyms

Attachment B: PY13 Program Participation List

A report of Program impacts by program and measure, including gross, net, annualized and lifecycle savings.

Attachment C: PY13 Contract Renewal Proposal (Attachment S1A from Supplemental Contract No. 5)

The Performance Incentive Mechanism from the original PBFA contract is superseded by this Renewal Proposal (submitted May 1, 2013), which covers the changes implemented in Program Year 2013.

Attachment D: PY13 Annual Plan

The Program's annual plan, which provides Leidos' strategies and plans for administration and delivery of the Hawaii Energy portfolio for PY12 (July 1, 2012 to June 30, 2013). Through this plan, Hawaii Energy set forth overall strategies to increase program participation, maximize energy savings, and encourage the development of energy efficiency materials.

Attachment E: PY13 Technical Reference Manual

The Program's reference manual, which provides methods, formulas, and default assumptions for estimating energy and peak impacts of incentivized projects and measures. The reference manual is organized by program, end use and measure.

Attachment F: PY13 Media Coverage Report

The media coverage report contains highlights of print and online media coverage, which ranged from general population publications to localized media.

Attachment G: Program Historical Summary (2009 - 2012)

A summary of the Program's implementation methods, achievements, significant events and lessons learned for each year since the Program's inception.

Attachment H: Program, Customer and System Benefits Chart

A chart comparing the Program's kWh benefits and cost effectiveness at the Program, Customer and System levels.