# ANNUAL PLAN

Program Year 2016

Hawai'i Energy

leidos

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Hawai'i Energy
YOUR CONSERVATION & EFFICIENCY PROGRAM

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*Hawaii Energy is the ratepayer-funded energy 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.*

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# 1.0 INTRODUCTION

On behalf of Leidos Engineering, LLC. ("Leidos") and the Hawaii Energy Efficiency Program, operating as the Hawaii Public Benefits Fee Administrator (PBFA) under contract with the Hawaii Public Utilities Commission (PUC), we are pleased to present the PBFA Annual Plan for Program Year 2016 [July 1, 2016 through June 30, 2017] (PY16).

The Leidos team has a proven track record, saving customers a projected $1.2 billion in energy bill savings over the lifetime of the measures installed in the last seven years. Despite reductions in program budget, it is still our intention to deliver the highest level of program impact possible in PY16. In PY16 we will continue to build upon our integrity to drive deeper savings with our customers.

The Program's next phase, "Hawaii Energy 2.0", will focus on reducing administration costs and simplifying participation in incentive programs, as well as leveraging the knowledge and experience of our team to elevate program offerings. In tandem with operational improvements, *Hawaii Energy 2.0* will also include a revitalized approach to Program marketing and communications efforts, beginning with strategic brand development and explorations into how the Program can increase awareness, participation and empowerment through collaboration with local non-profits, community groups, Clean Energy Allies and others.

Energy efficiency and conservation undoubtedly play a critical role in achieving a 100% clean energy future for Hawaii, and the Hawaii Energy program serves as a catalyst through which this can be attained. Our plan for PY16 to maximize impact and drive innovation is outlined herein.

## 1.1 Annual Plan

This PY16 Annual Plan is based on our Proposal for the Public Benefits Fee Administrator HRS Chapter 269, Part VII, dated January 2016, and provides detailed strategies, budget, goals and a roadmap for administration and delivery of the Hawaii Energy Program, based on enhanced PBFA statutory authority, our experience to date, PUC directives and the State's clean energy goals.

Key features of this PY16 Annual Plan include:

a. Utilizing a $27M budget to provide program-level impacts of 119,451,334 kWh first year savings with $0.024 (LBNL Cost of Saved Energy (CSE)) per kWh average lifetime Program acquisition cost, a fraction of the current utility avoided cost of $0.166/kWh;

b. Achieving a TRB of $262M and a measure life energy cost savings of $304M to utility customers;

c. Revitalized approach to program marketing and communications efforts ;

d. Focused direct marketing efforts for residential programs: leveraging data analytics to identify the best prospects for each program, segmenting customers based on their characteristics and beliefs, and delivering messaging to those customers;

e. Enhanced services and technical training for Hawaii Energy's Clean Energy Ally network;

f. Further integration of AMPLIFY, Leidos award winning information management software platform, to meet tracking and reporting requirements, provide easier access

to information, generate project pre-approvals, and increase Clean Energy Ally participation;

g. Additional use of data analytics to provide information on opportunities to modify program design and target opportunities for savings;

h. Strategic Energy Management (SEM) teaming process to assist large businesses and institutions to plan and execute effective energy management as a critical part of business operations;

i. Market transformation through advocacy for enhanced Codes and Standards;

j. Increased collaboration with key stakeholders; and

k. Further alignment with the utility's programs to serve as a catalyst for 100% clean energy.

## 1.2 Key Factors in Plan Development

The following are some of the key factors and actions that have impacted the Annual Plan developed for PY16:

### Moving Beyond the Budget-Technology Paradigm

Largely due to its origin as a utility rebate program, a core tenant of the Hawaii Energy program (Hawaii Energy 1.0) was prescriptive and customized rebates for a portfolio of technologies (e.g. measures). For each of the residential and business programs, the foundation of planning, execution and reporting was based on four fiscal budgets, which included prescriptive rebates, customized rebates, rebates focused on services and maintenance and finally, the hard-to-reach sector.

For the residential portfolio, this included:

- REEM – Residential Energy Efficiency Measures
- RESM – Residential Energy Services & Maintenance
- CESH – Custom Energy Solutions for the Home
- RHTR – Residential Hard to Reach

For the business portfolio, this included:

- BEEM – Business Energy Efficiency Measures
- CBEEM – Custom Business Energy Efficiency Measures
- BESM – Business Energy Services & Maintenance
- BHTR – Business Hard to Reach

These budget categories were commonly referred to as programs by evaluators (e.g. BEEM program) in that they had prescribed net-to-gross factors and within these programs had prescribed facility types, which governed deemed energy savings claims.

*Hawaii Energy 2.0* will advance its impact by expanding the 'budget-technology' paradigm to emphasize delivery channels and market sectors. This approach maintains but de-emphasizes the importance of the eight fiscal budgets while bringing more attention to our customers (sectors), their energy efficiency needs (end-use technologies) and the means by which they can participate (channels). Moreover, this enables the program to better align with the State of Hawaii Energy Efficiency Potential Study published

in 2014 by ENERNOC Utility Solutions, which provides a common baseline by sector and technology to all stakeholders in the state. In practice, this translates into specific expectations and performance targets beyond budget spend and energy savings to include channel and sector-specific targets. For both Hawaii Energy staff and the growing network of Clean Energy Allies, this approach enables clear expectations in terms of available funding and expected energy savings, while ensuring a fair balance of participation relative to the economic potential to invest in energy efficiency.

The revamped implementation approach developed for PY16 and beyond, is founded on more efficient methods of driving and capturing greater energy savings and demand reduction for both the residential and business portfolios. Design updates are as follows:

- The residential program approach consists of program consolidation and alignment with natural procurement customer channels. This includes four clear channels of natural market behavior: direct consumer purchases (retail and online), trade ally installed measures, program communicated education/behavioral programs and direct install in hard-to-reach sectors. PY16 will also bring a new focused effort directly marketing the residential programs to drive participation. Alignment as described above allows focus on a single broad message to consumers in each segment, expanding energy efficiency messaging across a broader range of measures that share a similar consumer purchase behavior, while better leveraging program marketing costs.

- Business program delivery will also employ a multi-pronged approach in day-to-day operations based upon the channel, sector and end-use technology paradigm. The channels by which the business program will be delivered in PY16 include: upstream and midstream, trade ally driven, direct install programs, and comprehensive services. These channels are an explicit response to the many barriers preventing more program participation. For example, over 25% of the overall program's incentives (over 70% of lighting incentives) will flow through upstream and midstream channels, which will mitigate cost-related barriers as well as the barriers associated with traditional paperwork. Direct install programs eliminate all cost barriers and growing brand awareness will help alleviate the remaining barrier of trust. Aside from channels, an improved sector-focused approach will be critical. As most non-financial barriers have to do with trust and understanding of both allies and end-use technologies, having an objective 3rd party to rely upon for candid advice and feedback is essential. And, through the program's Clean Energy Ally program, customers can find capable firms who are not only competent, but familiar with the program's incentives.

### Increasingly Cost-Effective Programs

Increasing cost-effectiveness of program delivery was a primary driver in rethinking, reorganizing, and redesigning the Program portfolio. The PY16 design strikes a balance between capturing energy savings and achieving customer equity.

The benchmark measurements of the Energy Efficiency Program are the "Program Cost Test" that takes into account all program-related costs as compared to the energy reductions achieved. For PY16, the "all-in" cost per kWh is $0.02.

*The PY16 program energy figures are as follows:*

- Customer Level First Year Energy Impact of 136M kWh
- 1,604,448,203 kWh savings over the life of the measures
- $27,055,500 Overall Program Budget "Program Cost"
- Lifetime Cost of Saved Energy (CSE) of $0.024 /kWh
- Annual Cost Savings to Participants of $27 Million
- Lifetime project cost savings of $304 Million

**Figure 1 - PY16 Program Performance Targets and Impacts**

| PY16 Plan | First Year $/kWh | Lifetime $/kWh | Average Life yrs. | Incentives | First Year Energy kWh - Program Level | Lifetime Energy kWh - Program Level |
|---|---|---|---|---|---|---|
| Residential | $0.136 | $ 0.014 | 9.7 | $7,826,360 | 57,591,442 | 559,809,397 |
| Business | $0.153 | $ 0.011 | 13.6 | $9,438,910 | 61,859,892 | 842,994,054 |
| Direct Incentives Only | $0.145 | $ 0.012 | 11.74 | $17,265,270 | 119,451,334 | 1,402,803,451 |
| Residential Transformational | | | | $ 851,373 | | |
| Business Transformational | | | | $ 898,627 | | |
| Transformational Only | | | | $ 1,750,000 | | |
| **Program Cost** | **$0.159** | **$ 0.014** | | **$19,015,270** | **119,451,334 kWh** | **1,402,803,451 kWh** |
| **Customer Level Savings** | | | | | **135,683,747 kWh** | **1,604,448,203 kWh** |

| Economic Benefits | First Year Cost per kWh | Annual | Lifetime |
|---|---|---|---|
| **Potential Participant Cost Savings** | **$ 0.20** | **$ 26,892,607** | **$ 304,305,668** |
| Average Project Simple Payback | | 2.4 years | |
| **Potential Participant Capital Investment** | | **$ 65,519,776** | |
| Direct Incentives | | $ 17,265,270 | |
| Average Project Incentive as a % of Project Cost | | 26% | |

# 2.0 MARKETING & COMMUNICATIONS

## 2.1 Overview

Given a reduced budget, marketing and communications efforts will – more than ever – require creativity, cooperation and a strong emphasis on integrating quality metrics. In PY16, the Marketing & Communications (Marcom) efforts will focus on enhancing Hawaii Energy's image as a collaborative, trusted advisor and creating "force multipliers" (entities or people who can carry Hawaii Energy's messages to their networks) to increase program awareness, participation and empowerment. This includes addressing the following key objectives:

1. Empowering Clean Energy Allies to more effectively sell energy efficiency and the Hawaii Energy program;
2. Developing and/or expanding relationships with non-profits and other like-minded organizations such as Blue Planet Foundation, Kanu Hawaii and Kupu Hawaii to leverage their creativity and deep connections to the community (e.g. utilizing Zippy's tray liner menus to promote energy concepts to children); and
3. Positioning Program leadership as industry experts and identifying opportunities for them to advocate and educate.

This work will begin with solidifying the Program's brand identity and will continue throughout the year as we engage our team internally and communicate externally to Clean Energy Allies and our customer base. The following sections describe the work in detail, as well as the various marketing and communications tactics available to accomplish these goals.

## 2.2 Program Branding

A crucial part of positioning the Hawaii Energy program as the resource for energy efficiency to residential and business customers and eliminating barriers to participation is maintaining strong brand awareness. Market research conducted in 2012 and 2014 revealed that while customers "care a lot" about energy conservation and efficiency, they face barriers to implementing change in their daily lives. Key results of the studies were that:

- Many customers have either: (1) not heard of Hawaii Energy at all, (2) assume the program is a service of the utility, or (3) are unclear of the program's scope of work (confusion with renewable energy companies).
- Those that have participated in the program often fail to recognize the program beyond financial incentives and do not associate the program's other work (e.g. market transformation efforts) with the program.

These findings indicate that program messages need to be understandable and accessible to everyone, regardless of demographic. Wall-to-Wall Studios, an award-winning local creative agency with whom Hawaii Energy has worked with previously, will serve as a strategic partner in refreshing the Program's brand, beginning with the necessary first step of developing a "brand identity", or the way the Program wants to be perceived by customers.

Wall-to-Wall's belief is that strong brands have an underlying emotional connection with consumers. For example, when an ad is viewed, not all consumers may be at the point of taking action or even know that they need what a brand is offering at that moment. So, unlike the traditional approach of constantly including calls-to-action or sales-oriented messages in their communications, Wall-to-Wall's approach is to guide brands to build and store "emotional currency" with consumers, so that when a consumer is at the point of making a purchase decision, that particular brand will be considered. Strong brand identities work in favor of the brand even when the brand is not asking consumers to do anything.

Preliminary work with Wall-to-Wall began in PY15 with an audit of the Program's values, culture and purpose and will continue into PY16. Once a new brand identity is agreed upon internally, Hawaii Energy will be reintroduced publicly to customers through a strategic marketing campaign, implemented in the phases outlined in **Figure 2** in alignment with the brand identity.

The campaign strategy, tactics, and deliverables will be driven by the results of the brand audit and may include elements such as:

- Updating brand collateral pieces
- Media planning and oversight
- Traditional media advertising campaigns (print, radio, and television)
- Non-traditional online campaigns
- Direct mail and email marketing campaigns
- Public relations and social media campaigns
- Sponsorships, partnerships, or other alignments
- Events
- Post-game analysis and metrics

**Figure 2 - Phases of "Hawaii Energy 2.0" Branding Campaign Execution** *(provided by Wall-to-Wall Studios)*

**Phase 1 – *Discover***
Kick-off meeting to define campaign goals, understand the job parameters and develop the strategic criteria and project timeline.

**Phase 2 – *Define***
Wall-to-Wall will investigate creative directions that meet the criteria defined in the kick-off meeting. With clearly-defined target audiences and knowledge of the competitive landscape and Hawaii Energy's goals and position, the Wall-to-Wall team will formulate a strategic brief and recommendations for the Commission to review.

**Phase 3 – *Design***
The team will develop initial creative visual/design concepts and draft copy based on the creative brief(s) approved by Hawaii Energy.

**Phase 4 – *Develop***
Wall-to-Wall will refine the selected creative concept based on Hawaii Energy's feedback. As this is an iterative phase, there may be several rounds of presentations and revisions.

**Phase 5 – *Deploy***
Wall-to-Wall will finalize the deliverables and prepare for production and launch strategy.

The refreshed Hawaii Energy brand will be an integral part of the Program's PY16 marketing and communication strategies, which are driven by the need to present a cohesive, positive image to the public and engage customers across all market segments.

## 2.3 Clean Energy Ally Program

The overall goal in PY16 of the Clean Energy Ally program is to deepen trade ally relationships through clear, targeted communication and focused support offerings. The Program will expand its role as a trusted advisor to assist Clean Energy Allies and their customers, accelerate project implementation and increase participation. With a reduced budget, Hawaii Energy will rely heavily on its 500 member-strong Ally network in PY16 to increase the reach of the Program's messages, ultimately delivering energy savings through their established trusted customer relationships. As Clean Energy Allies also provide incredible insight into the market, we will make a concerted effort to integrate input and feedback into future program design, and align our marketing and communication strategies to help remove any project implementation barriers that our Clean Energy Allies face.

The Program recognizes the importance of growing the Clean Energy Ally membership base, as well as equipping members with the right tools and training to market the Hawaii Energy program effectively and in alignment with the overall brand strategy. Utilizing the Ally network as "force multipliers" will likely become one of Hawaii Energy's most powerful marketing tools. In light of this, the Program will invest in refining Clean Energy Ally benefits (with a focus on maximizing participant retention/activity) as well as increasing technical proficiency amongst Allies to augment Hawaii Energy's team of Energy Efficiency Advisors. This effort will ensure customers have a robust selection of Allies to implement projects. Several key marketing deliverables (outlined below) are planned for PY16 to support the Clean Energy Ally program:

1. Special Events – networking opportunities; technical or sales training; professional development and program education. We also plan to start the year with a kickoff event where Allies will be able to network and learn about program changes.

2. Marketing/Branding Support – co-op funding (see section below); free marketing materials such as co-branded collateral, signage and point-of-purchase displays; case studies; and Program logos that can be added to Ally business cards, lawn signs, and other marketing materials.

3. Increased website engagement – enhancing the Clean Energy Ally web portal with testimonial videos, previous webinars, and other educational content.

## 2.4 Tactics

Hawaii Energy's marketing and communications portfolio includes a wide array of tactical tools and methods for message distribution with the ultimate goal of supporting the Program's delivery of cost-effective energy savings. A brief overview of each tool is provided below, along with the goals the Program hopes to achieve for each in PY16.

### Outreach

The Program's community outreach efforts continue to play an important role in increasing and maintaining the awareness of Program rebates and offers for the general customer population and business communities.

Hawaii Energy participated in 49 community events in PY15, with approximately 121,600 people in attendance. This included a mixture of large, wide-reaching events and trade expos, as well as smaller events that tailored to specific market segments, with each being evaluated on cost-

effectiveness, reach and lead generation potential. For PY16, the Program will focus on streamlining outreach operations to improve impact measurement processes and maximize the contribution of events to incentivize program participation.

The Program also recognizes the need to build relationships with local trade organizations, key sustainability industry leaders and business service providers to leverage their resources and increase the reach of our messages. We plan to produce three to four of our own events in line with positioning the Program as a community resource and providing these groups with the necessary tools to amplify Hawaii Energy's messages. This could include such events as additional networking opportunities for Clean Energy Allies or an educational "Lunch 'N Learn" series.

### Website

The Hawaii Energy website is one of the most important marketing resources for communicating the brand and Program offerings while serving as a resource and educational tool for current and potential Program participants.

A high priority for PY16 will be to reassess and improve the Program's website, HawaiiEnergy.com. Over the last year, the Program has received requests for improvements in the website's navigation and prioritization of certain pages, and is currently soliciting input from our key stakeholders on ways the website can better address their needs. Coinciding with the operational goal of streamlining the rebate application process through Amplify, the Program will research the feasibility of implementing digital applications through the website.

The website requires regular, focused attention on content/tool creation and management with an emphasis on constantly improving the user experience. Marcom is also exploring ways to better engage users using different types of content and messaging (such as integrating customer testimonial videos) as well as how to improve the collection of customer feedback and incorporate it into the web development process.

### Social Media

As the digital age progresses, utilizing social media is a viable means for the Program to promote offerings, gather customer feedback and keep the Program's initiatives top-of-mind. Hawaii Energy's following has grown to over 3,800 users on Facebook, 2,800 on Twitter and 225 on Instagram in the past year and the Program continually aims to provide interesting, frequent and relevant content for users.

Industry trends in an ever-evolving social media landscape indicate a shift toward regulating the amount of free (i.e. "organic") exposure across many platforms, which has driven brands to be more creative in their approach to reaching users. In PY16, the Program will explore ways to be successful under these new limitations, including staying abreast of industry best practices; working with key local social media "influencers" to maximize content-sharing; collaborating with like-minded organizations to increase engagement; and refining social media advertising efforts (which still remains inexpensive compared to other mediums).

### Videos

Videos have become an increasingly popular method of consuming information. Market research has indicated that more than 70% of all internet traffic in 2017 will be video* and that social media

sites like Facebook and Twitter see the most attention and engagement on photo and video posts. The Program recognizes the importance of creating and sharing high-quality videos as part of its marketing strategy and hopes to be able to continue investing in building its video library in PY16 and beyond.

Videos can be used to convey a number of messages, from offer-related promotions with direct calls-to-action to helping the Program position itself positively through educational material or branding spots. Many efficiency programs throughout the country utilize video to connect with and empower customers and trade allies. Video creation and distribution technology has improved greatly over the last few years, such that videos with high production value can now be produced in-house rather than outsourced. Releasing them on digital platforms (i.e. websites, social media channels and email) allows for content to be viewed/shared quicker and easier, as well as tracked for measuring effectiveness and viewership.

In PY16, Hawaii Energy will continue adding to its library, with plans to produce a variety of videos including, but not limited to:

- Residential and commercial customer testimonials
- Educational "How-To" tutorials, guides to choosing appliances and energy-saving tips
- Recaps of Hawaii Energy events and presentations

* http://www.theguardian.com/small-business-network/2014/jan/14/video-content-marketing-media-online

### Email Marketing

Email marketing is a reliable, cost-effective way of reaching customers of all types and interests. The Program currently uses emails to supplement offer-related promotional campaigns and distribute educational information and human-interest stories through regular newsletters to a database of over 11,000 subscribers. Using email management software allows the Program to send emails using professionally-designed templates and receive immediate reports on customer engagement.

By tailoring email content to a customer's interests, demographics and purchase patterns, customers are more likely to enjoy Program messages and participate in offerings or share content with their friends and family members. The Program will utilize Honeywell's extensive experience with data management and market segmentation to enhance email marketing efforts in the residential portfolio, which will include developing a system that will "trigger" personalized customer care messages when participants take certain actions (i.e. submit a rebate application, call a phone number, etc.). Automating communication like this will allow for greater efficiency, ensuring that branding is consistent and subscribers are receiving communications at optimum frequencies.

### Co-op Funding

Hawaii Energy's presence in the marketplace is multiplied when our Clean Energy Allies include Hawaii Energy messaging and branding in their promotional events and materials. For the past two years, the Program has offered funding to subsidize advertising costs for Allies as a cost-effective way for the Program to not only increase brand awareness, but collaborate further with our Allies. Through the co-op advertising model, Allies commit to using Hawaii Energy logos and guided

messaging in accordance with Program branding guidelines in exchange for receiving a subsidy toward print, radio, TV or digital advertising costs.

For PY16, the Program will expand the subsidy criteria to include Ally-hosted events, such as workshops, breakfast meetings or luncheons. Supporting events will strengthen our relationships with Allies and allow the Program to maintain a strong presence in the community without shouldering much of the labor and financial costs associated with hosting events. As with advertising subsidies, all events will be subject to specific eligibility criteria in order to qualify for funding (helping the Program ensure uniformity and brand consistency) in addition to a monetary cap on each event to ensure this opportunity is made available to all types of Allies.

The Program will develop this criteria in the first quarter of the program year and launch the entire co-op funding initiative shortly after.

### Collateral

Well-written, visually-appealing collateral pieces are required to help all Hawaii Energy team members and trade allies illustrate the sometimes confusing technical information surrounding energy efficiency and Hawaii Energy's incentives. The Program will update existing collateral pieces for PY16 to reflect any changes in incentive levels or other offerings, as well as develop new pieces as necessary to support specific Program initiatives.

### Direct Mail

In PY16, the Program will consider implementing additional targeted direct mail and other integrated marketing efforts to promote various rebates and energy efficiency measures to businesses and residential customers. Utilizing Honeywell's tools for customer data analytics and segmentation, the Program will deploy four (4) residential direct mail campaigns throughout the year, including such topics as energy-efficient product promotion and a targeted piece for residents who have recently moved. In addition, the Program will continue to work with Hawaiian Electric to distribute targeted messaging and inserts through the electric company's business and residential monthly bills across the counties. Lastly, Hawaii Energy will also test the feasibility of using direct mail campaigns to reach commercial customers – a new effort this program year.

### Public Relations

Public relations ("PR") efforts will be a top priority in PY16, as positioning the Program as a trusted advisor will require a solid strategic communications plan. Building the "emotional currency" amongst ratepayers that comes from strong public relations work will be important initially as we refresh the Hawaii Energy brand and longer-term as we address the goal of positioning the Program as the go-to resource for information and expertise on energy efficiency and conservation.

Enhancing our efforts in this way will begin this year with the restructuring of a current Marcom team position to be primarily focused on helping to refine the overall communication strategy (see *Overview* section) for *Hawaii Energy 2.0* and aligning public relations efforts to this strategy. The Program will also build on its successful, established relationships with the media and other key stakeholders to support regular offer-related marketing/promotional campaigns and increase the amount of earned (rather than purchased) exposure. This will include media outreach utilizing industry-standard PR deliverables, which may include but are not limited to:

- Press releases
- Editorials/ghost-written articles
- Letters to the Editor
- Press Conferences, Interview, or Media Tours
- Radio, Television, or Press Interviews
- Check Presentations
- Seminars or Speaking Engagements

### Advertising

Hawaii Energy believes that when feasible, paid advertising is an important tactic for reaching both new and existing customers, as it helps to raise customer awareness of the Program's offerings as well as educate customers on the benefits of energy efficiency. The Program's strategy for advertising campaigns is to utilize a mix of distribution channels to reach a variety of customers as they consume media in various ways. These distribution channels may include but are not limited to:

- Traditional media buying (print, radio and television)
- Online digital campaigns (such as Google, Facebook, YouTube)
- Events sponsorships or other joint promotional campaigns

The Program will place a special emphasis this year on measuring the effectiveness of all advertising initiatives based on industry standards and consistently integrating the results into future initiatives. One advantage of purchasing digital advertising is the ability to track every customer behavior, such as clicking on ads or filling out web forms. The Program can also use customized website URLs to collect data on website traffic and click-through rates to gauge returns on advertising investments made throughout the Program year.

In PY16, the program goal is to implement and execute the following:

- Run two offer-related campaigns using online advertising and social media.
- Strategically purchase advertising in conjunction with the Program's brand awareness campaign

## 2.5 Emphasis on Metrics & Data

The growth of the Program over the last eight years has led to an increased demand for strong marketing and communication efforts. As the Program continues to explore new methods to increase customer engagement and brand awareness, Marcom will play an important role in improving the efficiency of program operations, both within the Marcom team and across the Hawaii Energy program. This includes implementing metrics (see list below) and collecting data which can be used to bolster marketing efforts, helping the Program make the most of limited marketing funds.

Sample metrics include:

- *Customer Activity* – Number of projects and savings from key segments and outreach efforts
- *Clean Energy Ally Activity* – Number of registered Allies, number of active allies, number of projects driven by Allies, amount of energy savings contributed by Allies
- *Collateral Materials, Direct Mail and Advertising* – Response rate, conversion rate, impressions

- *Website & Social Media Activity* – Visitors, unique visitors, actions, bounce rate, path analysis, engagement (sharing) rate/trends, post exposure
- *Marketing Expenses* – Measure against budget, return on investment
- *Customer Satisfaction* – Surveys and other forums to gain feedback

This marketing strategy is subject to change based on when programs achieve or are projected to achieve their targeted goals. We will continually improve and incorporate new strategies on an ongoing basis and make any necessary adjustments to ensure that our marketing initiatives are continually supporting the realization of goals.

# 3.0 TRANSFORMATIONAL PROGRAM STRATEGY & DETAILS

## 3.1 Overview

Market transformation programs provide strategic interventions in the market to create lasting efficiencies, and ultimately pave the way for the integration of clean energy solutions. We believe that in order to affect long-lasting change that saves energy, programs must build capacity amongst the workforce, residential customers, and business customers so they can make informed decisions. This ultimately increases the rate and level of energy efficiency adoption by consumers through changing market dynamics that overcome existing barriers. Hawaii Energy's market transformational project areas include:

- **Behavioral modification** initiatives targeted to specific audiences
- **Professional development & technical training** for Clean Energy Allies, energy managers, facility operators who buy and/or operate equipment, and others who influence decision making
- **Decision-making support** for large energy users in developing comprehensive energy management strategies to incorporate into business practices
- **Codes and standards support** to drive energy savings in both public and private sectors
- **Clean energy collaboration** with the utilities and the PUC

The goal of the Transformational program is to achieve lasting change in the market that results in energy savings within three to five years. Our market transformation efforts complement our residential, multifamily, commercial and institutional resource acquisition programs to act as force multipliers in driving the adoption of efficiency measures.

## 3.2 Key Objectives

The key objectives of the Transformational programs are to:

- Leverage the work of others in the community to reach across all islands and ratepayers
- Implement projects that will reduce energy consumption in the state within a five year period
- Leverage resources to support the development of self-sustaining efforts
- Support the continued development of a robust Clean Energy Ally program to leverage energy industry professionals to multiply energy efficiency projects
- Develop programs that support institutional change for energy efficiency that include strategic energy management, benchmarking and renewables integration
- Develop outcomes-based logic models and evaluation metrics to better measure progress, inform program design and ensure savings potential is maximized

## 3.3 Behavior Modification

Programs emphasizing behavior modification aim to help people make daily decisions that result in lower energy use through efficiency or conservation. This is accomplished through outreach and education that augments the overall Hawaii Energy marketing efforts. Our behavior modification approach is multifaceted and engages across different demographics. Our programs focus on building a

foundation of energy literacy through the mass market and "hard-to-reach" residents in underserved communities. The delivery mechanisms are diverse and leverage community partnerships and social media in order to scale messaging while maximizing cost-effectiveness. It is important to note that these efforts complement existing peer group comparison programs administered through the residential portfolio.

The proposed behavior modification programs focus on communicating transformative messages through face-to-face engagement, gamification, social media and online tracking tools. The critical aspect of these efforts is careful planning and design to ensure the right message is being delivered using the right language to the right person at the right time. While peer group comparisons and gamification techniques can be used to initially motivate, they must be augmented with additional educational efforts that help individuals internalize their capacity to affect energy use.

The following outlines the PY16 portfolio of behavior modification offerings planned:

### Community Workshops and Presentations

We will continue to expand the successful "Sharing the Aloha" workshop series, which blends financial and energy literacy to connect energy-related behavior to one's electric bill. Workshops will target community organizations, housing and condominium associations and government housing agencies that can provide access to a large number of residential customers (e.g. municipalities, hotels, etc.). We will utilize existing relationships with public housing, faith-based organizations, community organizations, nonprofits, schools and others to deepen the program's reach. Because of our diverse and dynamic audience, we will leverage the core competencies of our key community partners, Kanu Hawaii and Blue Planet Foundation, to assist with the development of effective and interesting content that fosters action.

In PY16, energy workshops and presentations will be coupled with an online or paper home audit in order to encourage participant action. This enables the program to engage participants following a workshop and allows us to assist with changing behavior and reducing energy use by offering relevant offerings in addition to basic education. Using GIS-based analytics, Hawaii Energy will also refine geographic targeting of presentation locations to ensure customer equity.

### Gamification Campaigns and Competitions

Gamification is a fun and effective way to engage customers and encourage people to reduce their energy use. When designed properly, gamification provides customers with multiple interactions and real-time feedback and can scale cost-effectively to larger audiences. Over the last two years, we have been working with Kanu Hawaii on employer-sponsored energy competitions that target the residential market. For PY16, we will use the existing programs as building blocks and also coordinate closely with Vermont Energy Investment Corporation (VEIC), a national leader in the design and implementation of energy efficiency services, to expand the competitions to serve residential, small commercial and other sectors. We will use our increased capacity to target specific high-impact behaviors utilizing the community-based social marketing methodology expressly developed in PY15 for behavior change campaigns, ensuring they are scalable, cost-effective and focused directly on barriers to change.

### Social Media and Mobile Messaging

For PY16, increased social media presence will be an important and invaluable tool for generating awareness, soliciting participation and shaping the public's perception and opinion regarding energy efficiency. Under the overarching guidance of our marketing subcontractor, Wall-to-Wall, we will work with both Kanu Hawaii and Blue Planet Foundation to enhance the program's social media presence. These Transformational efforts will directly align with the marketing and outreach initiatives outlined in the previous section. Activities will include the creation of videos, infographics and messaging that convey individual empowerment regarding the environmental and economic impacts possible through energy efficiency and conservation. These activities will drive measurable actions and changes in specific behaviors for targeted audiences that can be measured and reported.

### Community Education Support

In PY16, Hawaii Energy will continue to support collaborative efforts to raise awareness and educate the community about energy efficiency. Similar to past years, this will include sponsorship of activities that reach specific student and teachers groups who will go on to educate their peers and broader community about the importance of energy conservation and efficiency.

## 3.4 Professional Development & Technical Training

The Hawaii Energy program continues to focus on technical training and professional development to create a workforce knowledgeable in energy efficiency. Our proposed initiatives in this focus area increase the core competencies for Clean Energy Allies, decision-makers, influencers and operators. Our approach addresses both the current (buyers and sellers) and future (students) market players to ensure the viability of long-term savings. For all professional development and technical training offered in PY16, Hawaii Energy will require participants to demonstrate a commitment to specific energy saving projects or initiatives. We will also document commitment to follow-up steps and track progress via email surveys and direct contact from Energy Advisors.

### Clean Energy Ally Support

Formalized in 2014, the Hawaii Energy Clean Energy Ally network plays a critical role in energy efficiency program delivery and savings acquisition through their established, trusted customer relationships. PY16 plans include expanding Clean Energy Ally support, primarily through education and training activities to ensure they have a firm foundation in the *Hawaii Energy 2.0* program offerings and guidelines and that they benefit from preferential access to professional sales, technical and certification training offered by the Program. Moreover, trade ally-specific events, recognition mechanisms and awards will provide motivation for Trade Ally participation, recognize the most active Allies for their contributions, and celebrate their accomplishments.

### Targeted Ally Training Opportunities

Hawaii Energy will offer a portfolio of targeted training opportunities, such as efficiency sales training and professional credentialing and certification programs to advance the knowledge base and reputation of our trade allies. Such offerings may include:

- **Building Operator Certification (BOC)**
  Building Operator Certification Level I and Level II training sessions with University of Hawaii's Manoa Outreach College and Maui College's Sustainable Living Institute of Maui (SLIM)

program will be supported. The Program hopes to continue to offer the course in Hawaii County building on the successes of PY15 efforts. This type of technical training is focused on people who buy or operate equipment such as engineers, facility managers, building operators and energy managers.

- **Energy Efficiency Sales and Financial Analysis of Energy Projects Training**
  The Program will continue to educate energy industry professionals on how to successfully acquire approval for energy efficiency projects as it has done for a number of years. This year's plans include enhancing the trainings to include tools, templates and case studies to support market penetration of effective sales techniques. In conjunction with these workshops, we will host targeted events for specific market segments, such as the AOAO community, educational institutions and executive level business leaders.

- **Certified Energy Manager (CEM)**
  The CEM course is designed to strengthen the growing energy efficiency market by certifying a highly-skilled work force. Hawaii Energy will offer this certification to working professionals who directly support commercial facilities in achieving and sustaining energy efficiency.

- **Additional training sessions** for energy-efficient technologies and practices will be established in conjunction with manufacturers, suppliers, universities and allies.

The Program will emphasize cost-effectiveness wherever possible in facilitating these offerings. Rather than prioritizing in-person facilitators and standalone events, videos and online webinars will be leveraged to the degree possible, and we will look for opportunities where educational offerings may be incorporated into other Program events, such as trade ally sales calls, vendor "lunch & learns", Chamber of Commerce meetings, professional association meetings (AEE, USGBC, ASHRAE, etc.) and industry trade shows. Where applicable, training slides will be provided as a reference to participants following each course and each webinar will be recorded for on-demand access by individuals who were unable to attend. As appropriate, we will employ a before/after quiz to assess training effectiveness.

### Targeted Participant Training Opportunities

In addition to the offers listed above, Hawaii Energy's Energy Advisors have identified a growing need for customer-specific training. As we look to build capacity amongst trade allies so they can sell efficiency projects, we also recognize that decision-makers must have the skillsets to scope, approve, procure and manage energy-saving projects. Training will focus on both technical and business skills, (including financial analysis and contracting basics) and will include:

- **Practical Energy Management (PEM©)**
  PEM is a Leidos-developed and copyrighted tool that bootstraps customers in employing energy management techniques. This is a practical entrée into strategic energy management, but on a much more practical and consumable basis. This training will also encourage participants to take advantage of Hawaii Energy's other market transformational initiatives, such as benchmarking.

- **Facilities Management Training**
  The Program will continue to offer training for existing facilities staff, managers and technicians to support their role in implementing energy efficiency upgrades. This will include

technical training workshops on HVAC, lighting, pumps, motors, etc. to be promoted throughout the year.

### Educator Training and Grants

In order to truly transform the market, we must build capacity for Hawaii's future generation of decision-makers and trade allies. Since 2011, Hawaii Energy has worked with over 900 teachers throughout the islands with a variety of educational efforts, subsequently supporting over 75,000 students. We have developed and engaged a community of educators who are "energy champions" – those who invest in integrating energy lessons into their curriculums and empowering students to embrace efficiency and conservation messages and behaviors. Our teachers have hosted energy expos in their respective communities, delivered home energy kits to parents coupled with students that are educated in energy efficiency and mentored their fellow teachers in how to integrate energy saving activities into the classroom.

We hope to bring even more teachers into this growing network by continuing to offer teacher training and utilizing our existing "energy champions" to pilot new initiatives, ones that require deeper engagement of students and deliver meaningful benefits to their communities. To supplement the existing educator training formula, we will also leverage the successes of Blue Planet Foundation's Student Energy Summit and Energy Innovation Design Challenge (launched in 2015), which brings together participants (grades K-12) from across the islands to engage them in hands-on learning, debates, demonstrations and a design-thinking challenge. Students are challenged to provide innovative solutions, either technical-, policy-, or behavior-based, to issues surrounding energy efficiency and energy peak shaving.

### Degree Program Support

Hawaii Energy will continue to collaborate with the International Facility Management Association (IFMA) and the University of Hawaii – West Oahu (UHWO) to grow support for the recently established four-year Bachelor of Applied Science Facilities Management degree program. Hawaii Energy plans to support this initiative with funding as well as technical and industry expertise. We view this as increasingly important as experienced professionals age out of the workforce and technical responsibilities of facilities managers continue to expand.

### Energy Industry Workforce Development and Vocational Training

Hawaii Energy will work with Kupu Hawaii's Rewarding Internships for Sustainable Employment (RISE) program to draw high-caliber students and recent graduates into the energy industry while providing cost-effective support to the Program. Fellows will work on Hawaii Energy programs as needed, including variations of residential home audits, direct-install programs for the hard-to-reach sector and the Clean Energy Ally Program. These Hawaii Energy fellows will be given assignments that will benefit the program coupled with professional mentorship and applicable training opportunities to grow their capacity, enhance their quality of work and groom them to enter the energy field with skills and first-hand experience. The Hawaii Energy Fellows will be a part of a the broader Kupu Hawaii internship cohort designed to develop community-based energy vocational training and young professional development programs with the intent to broaden the reach and impact of Hawaii Energy in the community.

## 3.5 Energy in Decision-Making

While the use of incentives plays a significant role in influencing energy-saving projects, the Program recognizes there are other barriers to participation and has been working to address them through specialized initiatives. These offerings employ comprehensive services and engagement tools to assist end-use customers in making the best, fact-based decisions concerning their energy consumption over the immediate and long term.

The initiatives to influence and change energy decision-making focus on providing services, information and tools to change organizational and business practices. The efforts are targeted to specific and significant market sectors or consumer types. They also enhance customer engagement through building energy opportunity analysis, driving increased adoption of energy efficiency projects and practices.

### Strategic Energy Management (SEM)

SEM efforts will provide continual guidance to larger organizations to affect ongoing improvements in their energy management practices so that more energy efficiency measures can be implemented. The Program will introduce the processes of SEM and develop a set of tools and resources to assist large institutions to comprehensively plan for effective energy management as a critical part of their business decision making and exponentially increase the number and effectiveness of energy efficiency projects that are considered as part of the strategic vision. This makes it both a resource acquisition and market transformation effort. SEM has been rapidly expanding in energy efficiency programs across the U.S. as deeper energy savings are needed in the markets. This approach will lead to deeper and more meaningful energy efficiency throughout the organization.

### Data Analytics and Benchmarking

Measuring and analyzing a building's energy consumption through benchmarking assists owners and operators by showing how energy is being used relative to their peers, so they can make more informed decisions about how to lower costs. Hawaii Energy began an ongoing benchmarking initiative two years ago and our staff is well-equipped to perform tailored benchmarking analysis in the future. We will continue to refine our work in benchmarking for the commercial sector and provide online access via our website to serve as a resource for public consumption. We believe this work will also be useful for commercial program targeting, as we will be engaging those properties that show the highest EUIs (e.g. energy usage per square foot) to help identify specific energy efficiency opportunities. Moreover, benchmarking is not just an opportunity for building owners to seek out energy efficiency opportunities, but also provides the mechanism to recognize certain buildings as top energy efficiency performers. Additionally, we will provide support for ENERGY STAR® labeling as budgets allow.

### Water/Wastewater

Over the past three years, Hawaii Energy has formed strong relationships with County water agencies, the Commission on Water Resource Management, the Department of Health Safe Drinking Water Branch, the Rural Community Assistance Corporation, Hawaii Rural Water Association (HRWA) and others. Recently, we began a new collaboration with HRWA and other stakeholders to identify the most cost-effective opportunities for water and energy savings among private utilities, while at the same time realizing that some utilities may have exhausted all other avenues for financial assistance. Based on initial discussions and the recent success we've had with the County of Hawaii's Department of Water

Supply, we hope to focus our efforts on leak detection and leak reduction in PY16. Future funding may take the form of staffing grants, strategic energy management, direct incentives for projects, or other novel approaches to this sector.

### Commercial Engagement Platforms

In PY16, we will also supplement Hawaii Energy's internal data analytics capabilities with commercially available customer engagement platforms in order to accelerate and reinforce customer participation. We will look to leverage scalable platforms that provide portfolio screening across Hawaii's commercial building footprint. These types of screening analytics deliver actionable customer intelligence, targeting and engagement tools that will allow the Hawaii Energy staff to build more relationships with commercial customers and further enhance cost-effectiveness and customer equity.

## 3.6 Codes and Standards

Over the next three years, enhanced codes and standards will provide a significant foothold for advancing energy efficiency in Hawaii. In the past year, Hawaii Energy has conducted substantial research into current levels of code compliance in both the residential and business sectors, while continuing to support the State Building Code Council in the development of a modified IECC and ASHRAE energy code suitable for Hawaii's climate and environment. There are opportunities to engage the developer/design community to encourage innovation among builders and designers to exceed the existing code requirements. As such, we will conduct codes trainings and advocate for early adoption and compliance. Key to this effort is close collaboration with Blue Planet Foundation, who will support these efforts and raise awareness about codes and standards at both the state and county levels.

The proposed programs represent a multilayered approach to provide the technical assistance and training support needed to drive energy savings through enhanced codes and standards. They have been designed to engage both public and private sector stakeholders throughout the state.

### Codes Identification and Adoption

The State Building Code Council has recommended that the State adopt the current IECC 2015 Energy Code. This is a positive step forward and requires assistance to be fully adopted by the State and counties. In PY16, Hawaii Energy will work with Blue Planet Foundation to generate support for advancing the adoption of the code. Blue Planet has a long history of advocacy in Hawaii and we will collaborate at both the state and county levels to communicate the importance of energy codes and build consensus on techniques for integration of new code requirements.

Although residential new construction of single-family homes is currently fewer than 3,000 homes per year, there are plans for a considerable amount of development in the next 10 years. With this level of growth on the horizon, this arena is ripe for market transformation toward net zero home design. Through our collective efforts, Hawaii Energy will encourage new construction homes to be built 20 percent above code. The Program will continue relationships with local home developers and Home Energy Rating System (HERS) raters to design a voluntary net zero energy code for Hawaii's residences.

### Exceeding Code Compliance

Increasing energy code compliance and in many cases exceeding code, is a measurable and practical way to achieve energy savings. Findings from our work over the last few years have demonstrated that there is still a great deal of uncertainty surrounding the level of current code compliance throughout the state

as well as new technologies such as LED lighting that advance faster than code development. To address this, Hawaii Energy has developed informational resources and checklists to assist stakeholders (e.g., building designers, architects, plan reviewers and code officials) in evaluating a building's characteristics against IECC 2015 requirements. These tools allow them to better understand what the priorities are for each building's compliance.

By providing expert technical assistance, Hawaii Energy can increase compliance at a local level by helping the reviewers with interpreting the technical requirements of the building code. In the coming year, we will develop a system to streamline energy code support from *Hawaii Energy 2.0*. This will allow our codes specialists to review and provide feedback about code impacts on actual building energy use and the potential for subsequent ENERGY STAR® scores. Additionally, we will look to increase market pressure for compliance through the promotion of a building energy use disclosure program similar to that implemented in California.

### Code-Related Training

Key training areas specific to energy codes are HERS Rating, building testing and commissioning and Hawaii IECC 2015, as adopted. Furthermore, training areas specific to the energy industry include air barrier testing and duct and envelope testing. The aforementioned technical trainings (see Professional Development and Technical Training section) will be increasingly important in training the workforce for advancing energy codes. One such example is the Building Operator's Certification (BOC II) course, which includes training on controls and advanced building systems that will be required by coming codes. Hawaii Energy will also continue to collaborate with other training programs, such as those hosted by DBEDT.

## 3.7 Clean Energy Collaboration

As energy systems in Hawaii are becoming increasingly complex, it is essential we utilize energy efficiency as a grid resource. In particular, integrating demand response (DR) and other distributed energy resources (DER) together with energy efficiency is a critical infrastructure element needed to support a reliable and sustainable electric power system with a high penetration of renewable power. In addition, the time of day which the savings occurs and the ability to shift these savings (and thus, a more comprehensive and integrated demand side management (DSM) approach to services) is becoming increasingly important with the current challenges around daytime load and renewable energy production.

The Program's portfolio currently incentivizes all of the end uses listed in Figure 3 with the exception of electric vehicles, batteries and PV, resulting in a great opportunity for integrated DSM. Over the next three years, we will work closely with the utilities in order to understand their DR and extended DER activities and continue to expand the integration of DR in energy efficiency, so that current projects will be ready when the proposed DR programs are rolled out.

**Figure 3 - End-Uses with Demand Response Potential**

| Segment/Building Types | End-Uses |
|---|---|
| **Residential Customers:** | • Cooling<br>• Water Heating<br>• Electric Vehicles<br>• Batteries<br>• PV<br>• Other |
| **SMB and Large C&I customers:**<br>• **Education**<br>• **Grocery**<br>• **Health**<br>• **Hotel**<br>• **Large Multifamily**<br>• **Military**<br>• Office<br>• Restaurant<br>• Retail<br>• Warehouse<br>• Industrial<br>• Water Pumping | • Cooling<br>• Heating<br>• Lighting<br>• Ventilation<br>• Electric Vehicles<br>• Batteries<br>• PV<br>• Other<br>• Whole Facility |

SOURCE: Demand Response Potential Assessment for the Hawaiian Electric Companies, page 14

Hawaii Energy proposes to coordinate our incentives, education and Clean Energy Ally initiatives to assist the utilities in the promotion of integrated energy efficiency and DR. In PY16 we will work closely with the Commission and the utilities to jointly determine objectives, initiatives and funding for this effort.

### Promotion of the Benefits of Equipment Being DR Ready

One area that is a natural evolution of the Program is the promotion of equipment and system designs that have additional controls allowing customers to both reduce their energy consumption through greater equipment monitoring and flexible operations as well as being DR ready. Installing controls and communications during the construction and/or major renovation phase is much more cost-effective than installing enabling equipment after the fact.

### Innovation and Emerging Technologies Emerging Technologies

Emerging technologies are new, energy-efficient technologies, systems, or practices with significant energy savings potential that have not yet, for a variety of reasons, achieved sufficient market share to be considered self-sustaining or commercially viable. Emerging technologies may include prototypes, pre-commercial or recently commercialized equipment, as well as software, design tools, or energy services. In our efforts to build a pipeline of innovative projects incorporating emerging technologies, we will continue our ongoing work with the Energy Excelerator (EEx).This includes companies targeting hard-to-reach sectors, smart grid technology innovations, energy efficiency, demand response and water efficiency with energy savings.

## 4.0 RESIDENTIAL STRATEGY & DETAILS

In PY16 we will be transitioning to *Hawaii Energy 2.0*, the next generation of the Program. For the residential program, our multi-layered approach consists of consolidation and alignment with natural procurement customer channels. Aligning all Program activity within each market approach allows our team to more naturally engage consumers within their natural habits of obtaining energy using technologies. We can focus on a single broad message to consumers in each segment, expanding the energy efficiency messaging across a broader range of measures that share a similar consumer purchase behavior while better leveraging our marketing costs.

PY16 will bring a new focused effort directly marketing the residential programs to drive participation. Our primary strategy is to: (1) leverage data analytics to identify the best prospects for each program, (2) segment customers based on their characteristics and beliefs, and (3) deliver messaging to those customers. Market segments will be assessed across single- and multi-family sectors. Customers with the greatest potential for awareness and understanding will be targeted. These include high energy users, master-metered, multifamily units, and rental properties. This approach targets the right customers with relevant messaging about their specific needs, ultimately motivating them to participate in the programs. Since we will be targeting the customers most likely to benefit, this approach will deliver highly cost-effective enrollments, promote multi-program participation, and encourage both high satisfaction and word-of-mouth advertising.

In addition, consolidating measures from multiple programs into one gives consumers a higher exposure to a broader range of energy efficiency technologies when participating in any element of the Program. Consolidation also allows our team to employ greater automation and process efficiencies and streamline our operations to reduce operational and administrative costs, while marketing to specific segments.

In driving consolidation, we have identified four clear channels of natural market behavior and built our programs around these consumer channels: **direct consumer purchases (retail and online)**, **trade ally installed measures**, **program communicated education/behavioral programs**, and **direct install in hard-to-reach sectors**. Key themes for PY16 include a prioritized focus on upstream market actors with wider savings capture and reduced program operating costs through deeper engagement of installation contractors, retailers, distributors, and manufacturers, including greater leveraging of manufacturer and distributor marketing resources and deeper trade ally training.

The channels will allow us to organize our messaging and external approach to customers, but for internal purposes and in an effort to provide continuity with past program years, we have organized the new approach within the historical incentive budget categories as follows:

- **Residential Energy Efficiency Measures (REEM)**
  This budget category contains the core of Hawaii Energy's residential portfolio and undergoes incremental developments responding to market conditions (i.e. retail pricing) and consumer need. Customer channels include direct consumer purchases (retail and online), trade ally installed measures and program communicated education/behavioral change efforts.
- **Custom Residential Energy Efficiency Measures (CREEM)**
  This budget category provides a measure of flexibility within the prescriptive portfolio to

accommodate unforeseen market opportunities. Custom residential projects are typically delivered by trade allies. The budget and unit cost targets provide financial efficacy guidance to the Program and allies who champion these opportunities.

- **Residential Energy Services & Maintenance (RESM)**
  This budget category includes ally-driven service offerings to enhance energy savings persistence and bootstrap fledgling energy services businesses trying to secure a toehold in Hawaii.

- **Residential Hard-to-Reach (RHTR)**
  This budget category includes various projects among geographies and demographics that have been traditionally underserved. Efforts in PY16 will continue to address historical participation barriers through direct installation programs.

A summary listing of the updated residential program offerings can be found in the table below followed by a brief summary of additions and changes. Appendix B contains a projection of potential energy savings and cost effectiveness for the proposed changes by budget category, channel and end-use technology (e.g. measure) as well as the aggregate targets of the program portfolio.

**Figure 4 - List of Residential Programs**

| Residential Programs |
|---|
| **REEM** |
| Program Communication |
| Behavioral Energy Awareness / Responsibility |
| Upstream |
| High Efficiency Lighting |
| Scheduling & Control Systems |
| High Efficiency Electronics |
| Traditional Retail |
| High Efficiency Appliances |
| High Efficiency HVAC |
| On-Line Retail |
| Energy Savings Kits |
| Trade Ally Provided |
| High Efficiency Water Heating |
| High Efficiency HVAC |
| High Efficiency Appliances |
| Potentially Any and All Channels |
| Direct to Consumer Enhancements |
| **CREEM** |
| Trade Ally Provided |
| High Efficiency Custom Measure(s) |
| **RESM** |
| Trade Ally Provided |
| High Efficiency Water Heating |
| High Efficiency HVAC |
| **RHTR** |
| Trade Ally Provided |
| Special Initiatives |
| R Scheduled Multi-Family Direct Install (See: G, J or P Scheduled MFDI) |

## 4.1 Key Program Updates for Residential Energy Efficiency Measures (REEM)

### Residential Energy Efficient Products Program

A key enhancement for PY16 is the formalization of the Residential Energy Efficient Products program within the REEM budget category. The Residential Energy Efficient Products program will include all products typically purchased directly by consumers through the retail channel. It includes lighting, controls, appliances, fans, electronics, and others. Up to 50 percent of energy use in a typical Hawaii home is driven by measures that consumers purchase directly, usually based on factors unrelated to energy use. Consumers do not prioritize energy efficiency highly when planning purchases and often react to information found right at the time of purchase. All products that are purchased directly by consumers will be consolidated in this program and we will conduct a focused outreach and visibility campaign to retailers and end use consumers.

Through this program, we will work as far upstream as possible, securing participation agreements with retailers, distributors, and manufacturers to offer reduced product prices at the point of purchase (in effect an instant rebate), in exchange for a direct payment to the participating firm at time of reported sales. This process is already being applied to CFL lighting and will be applied to LED lighting, consumer electronics, small appliances, and controls. Point of purchase (POP) marketing materials will alert consumers to cost savings and value of more energy efficient choices.

We will leverage the large strides made recently through the ENERGY STAR® Retail Products Platform (ESRPP), a national midstream program developed as a collaborative initiative of ENERGY STAR, energy efficiency program sponsors, and retailer partners, facilitated by the U.S. Environmental Protection Agency (EPA). ESRPP will help the Hawaii Energy program better leverage retailers and consumer recognition of the ENERGY STAR brand to cost-effectively deliver sustained energy savings and longer-term market transformation of certain direct consumer purchase products. This program design provides incentives directly to retailers or distributors to stock and sell a higher percentage of specific highly efficient models than they would have otherwise.

The initial midstream program will focus on flat screen TVs, PC peripheral equipment, and related monitors, providing incentives for only a subset of the most energy efficient models based on the ENERGY STAR Most Efficient or similar most efficient product list. By limiting the program to only the most efficient products in each category, the Program will push retailers to order a higher percentage of the most efficient product models that go beyond the minimum ENERGY STAR specifications far sooner and in greater quantity than they would have otherwise, creating true market transformation while minimizing potential erosion of free-ridership.

Hawaii presents a unique opportunity for success with this program model as most national retailers consider Hawaii collectively as a specific market and decisions on product stock are often made unique to the islands. This avoids the historic barrier of getting retailers to commit a product mix across a split market. While we anticipate initiating this effort at the beginning of the program year, we estimate savings results will not begin to accrue until early to mid-2017 due to the impact of the buying, shipping, and stocking schedule of retailers which requires that the Program will be able to confirm model commitments no earlier than September 2016 for the following year's product inventory. While incentives will need to be determined product by product, we anticipate that incentives will range from $5 to $8 for computers, $10 to $12 for monitors, and $20 to $40 for TVs.

### *High Efficiency Lighting*

In PY16, we will quickly phase out incentives for CFLs and move aggressively to promote LED lighting technologies including a quick response incentive adjustment responding to rapid price changes. A large part of residential energy use continues to be lighting, a great opportunity for low cost savings with LED lamps as costs have come down significantly with this technology over the past year, and will continue to do so.

The Program is reducing the average dollar value per LED rebate to $2.26 in order to properly align with lower market prices. Qualified LED technologies will continue to expand in the coming year and the Program's educational marketing efforts will be matched accordingly to ensure customers are well informed to make the appropriate purchase choice to meet their needs.

### *High Efficiency Appliances*

Many or all of the products will be moved from a direct-to-consumer rebate to a midstream or even upstream incentive to increase high efficiency product availability in a market restricted by distributor or retailer stocking decisions. Additional enhancements to this segment includes online applications and the introduction of the ENERGY STAR® Retail Products Platform, described above.

### *High Efficiency HVAC*

Incentives and promotions will be modified for new heat pump and air conditioning technologies as their efficiency and availability rapidly increases and prices continue to drop. Ductless mini-split air conditioners and heat pump water heaters, offer a compelling opportunity for a transition to an upstream or midstream approach. This initiative will pilot a shift from the existing electric HVAC customer-focused rebates toward an aggressive upstream program to provide point-of-sale rebates and sales incentives to increase manufacturer and distributor investments in the highest efficiency HVAC equipment. This will lead to the increased stocking, promotion, marketing, and sales of high efficiency electric heat pump water heaters and ductless mini-splits, setting the stage for wide-scale adoption of these products throughout Hawaii. The shift would require a lower incentive ($50 to $100) per unit to manufacturers or distributors to get traction with higher efficiency unit sales. This effort will leverage our Clean Energy Ally program to include participating in manufacturer meetings with individual distributors to present the program, review and influence of manufacturer and distributor promotional and sales plans, and analysis of the market lift for qualified HVAC products during the program period.

## Energy Awareness Peer Group Comparison Behavior Program:

Over the last five years, this program has grown tremendously due to its effectiveness in motivating behavioral responses surrounding energy use in the home. Home Energy Reports are easily recognized and often commented on by utility customers. Customers receive additional insight into how their usage compares to similar households and the reports provide energy-saving tips while promoting available Hawaii Energy rebates.

The current behavior program has delivered significant savings contributions to the portfolio and is just hitting its stride. However, the paper Home Energy Reports have limited penetration potential as

demonstrated by the initial evaluation results. Reasonable growth opportunity exists through a number of program improvements and program retools.

First, we will aggressively look to move as many participants as possible to electronic report delivery, which can be cost-effectively provided more often to customers with more timely information. Second, we will promote the web- or mobile-based application option which will provide customers with a greater level of interaction and information response that will drive the depth of participation and the per-participant savings rate up substantially. Third, the report will effectively leverage behavior report data to better inform and refine market segmentation for the entire residential portfolio to improve the results of future marketing efforts. Finally, we will drive to further improve message coordination to better impact the uptake rate on the other programs in the portfolio, while effectively promoting the Hawaii Energy brand. While this will not increase the savings directly from the behavior program, it will increase the savings captured across the residential portfolio.

### Direct to Consumer Program Enhancements

As hard technology options produce smaller and smaller per unit gains, a greater savings impact is needed from deeper consumer behavior engagement. In PY16, the programs will focus on providing higher visibility to variations in individual usage patterns, greater and more frequent exposure to customer specific actions and deeper engagement though gamification and challenges. Additional strategically targeted incentive funding will be used such as higher incentives for the more expensive LED bulbs and seasonal short-term bonus incentives for lighting and small products.

## 4.2 Key Program Updates for Custom Residential Energy Efficiency Measures (CREEM)

### Hawaii Energy Efficiency Project Auction

Hawaii Energy believes there are always more creative or innovative ways to apply the basic energy efficiency and conservation principles. The Hawaii Energy Efficiency Auction in Program Year 2014 yielded new Clean Energy Allies and technologies to the Program's offering at that time. However, this effort offered a number of lessons. It was clear that a longer time frame was essential should an auction be repeated. With a three-year time horizon, we will roll out another auction-based program to be launched in PY16 and continue throughout the balance of the contract period. With the advantage of a longer schedule for awardees to implement, we believe it would be advantageous to offer a larger program from the outset.

Hawaii Energy will issue a call for projects to encourage contractors and energy vendors to develop cost-effective projects that focus on high energy consumption and hard-to-reach homes. The program will be a call for projects that meet a total dollar per kWh savings target and allow the market to be creative in the actions and measures that achieve the targeted cost per kWh energy savings. The projects will use utility metered data and be submetered if required to ensure savings performance.

### Custom Residential Projects (Lighting and Non-Lighting)

PY16 includes about $75,000 for custom residential incentives. This program will allow for customers to participate in unique program offerings. For example, LED technologies have improved significantly in the past few years and the Program is now well positioned to encourage the replacement of lamps not previously addressed by the more traditional upstream lighting market. By leveraging our existing Clean Energy Ally Program relationships we can better identify and penetrate the appropriate market

segment. We will also look to recruit customers based on participation in past and existing Transformational programs.

## 4.3 Key Program Updates for Residential Energy Services and Maintenance (RESM)

### Solar Water Heating Tune-Up

This popular offering will be expanded to a year-round effort. Initially launched in PY10 as a way to complement the solar water heating contractor efforts in the off season during the spring, the program has become popular with our contractors as a way to reach their customers, while ensuring longevity of system life as the program systems age.

### HVAC Tune-Up

Hawaii Energy will launch an effort to target HVAC tune-ups in targeted neighborhoods with a high concentration of central air conditioning systems, including Ocean Pointe in Ewa Beach, Mililani, and Kapolei.

## 4.4 Key Program Updates for Residential Hard-to-Reach (RHTR)

The islands have a very diverse population and there are a number of distinct and often interrelated drivers for why certain groups within the islands are particularly hard to reach. Residential hard to reach efforts consist of highly targeted, efficient direct delivery and install initiatives, and initiatives that leverage the local community organizations and leaders to reach isolated customers.

### Direct Install

Hawaii Energy is well-positioned to build upon the PY15 Multifamily Direct Install Program and expand the installation of energy-saving technologies like high efficiency showerheads, faucet aerators, advanced power strips and high efficiency light bulbs (CFLs and LEDs) in multifamily residences. In PY16 we will target 6,100 households to participate in the offering; this includes multifamily properties with individually-metered residential accounts and commercial master-metered accounts. The Program has a strong pipeline of leads and continues to engage property managers and government housing agencies to identify potential participants. We are also engaging additional properties through existing submetering and benchmarking efforts. This multifaceted approach will continue in PY16 as it has proven effective in gaining access to the multifamily market which has historically been slower to participate in existing rebate programs. In addition, we are targeting a limited number of direct installations of solar and heat pump water heaters, as well as refrigerators, in conjunction with local agency-provided work.

### Community Collaboration Initiatives

In PY16 we will be working with HCAP, MEO, and HCEOC to identify and coordinate additional potential initiatives to targeted residential customers who have been hard to reach or hard to enlist in previous efforts.

*Examples of potential initiatives include:*

- Leveraging partnerships with food pantries and senior center networks for free LED bulbs to broaden the reach of existing lighting incentive programs and reduce the electrical consumption in homes associated with hard-to-reach markets;

- Leveraging partnerships with meals-on-wheels and Visiting Nurse Association to distribute home energy kits during visits – building relationships with social service agencies that make home visits to reduce the energy burden for very low income residents;
- Leveraging our work with the Weatherization Assistance Program (WAP) to maximize energy savings technology in homes assisted through the Office of Community Services; target high-electricity users with low-incomes for direct installation of electrical savings measures through contract either directly with WAP, or with other contractors identified through an RFP process; and
- Continuing partnerships with affordable housing networks to develop strategies to maximize energy efficiency in all affordable housing constructed or renovated, and provide technical assistance and incentives to affordable housing developers for construction practices and technologies that maximize energy savings.

In summary, our implementation approach has been designed to take the Program to the next level of *Hawaii Energy 2.0*. We have realigned and enhanced our outreach approach for customers and allies to provide greater impact, optimized the use of various incentive mechanisms, and are offering new and enhanced spectrum of comprehensive approaches for deeper savings all integrated to provide a balanced approach to achieve program objectives. The following is an overview summary of residential program offerings by technology followed by detailed descriptions and energy savings.

## Behavioral Energy Awareness / Responsibility

- **Delivery Channel:** Program Communication
- **Budget Source:** REEM
- **Budget:** $1,485,000.00
- **Impacts:**
  - 1,457.8 kW
  - 12,777,618.6 kWh
  - $2,118,912.49 TRB

### Measures

- **Peer Group Comparison**

### Program Description

The Peer Group Comparison program began in the Ewa region on Oahu (which was formerly funded with ARRA) and expanded across the neighbor islands (Hawaii, Maui, Lanai and Molokai) in PY11. It expanded again in PY13 to include multiple zip codes on leeward and windward Oahu. In PY15 the number of recipients expanded once again to offer Home Energy Reports to an additional 110,000 households on Oahu. Recipient households received specific tips and promotions based on data driven market segmentation efforts. In PY15, web portal access became available to all residential utility account holders (approximately 380,000 households).

In PY16, a total of 247,500 households will receive paper home energy reports. Over the next year, this program will be transitioned to as large a percentage of participants as possible to electronic delivery of usage assessments and interactive web- or mobile-based tools to reduce report delivery costs, increase engagement levels and cross-promote other Hawaii Energy programs.

## High Efficiency Lighting

- **Delivery Channel:** Upstream
- **Budget Source:** REEM
- **Budget:** $2,726,684.00
- **Impacts:**
  - 4,436.6 kW
  - 31,277,795 kWh
  - $68,807,632.39 TRB

### Measures

- **CFLs**
  - Spiral
- **LEDs**
  - A19
  - Flood
  - Globe
  - Kit

### Program Description

The CFL and LED rebates are offered upstream through manufacturer direct incentives which are provided as point of sale cost reductions. The process includes:

- Distributors, retailers and manufacturers complete a program application in which they commit to advertising and promotion for instant rebates for the CFL and LEDs sold to customers.
- Participating retailers agree to display signage showing the rebate has been provided by the Program, provide assistance in ordering and stocking qualifying products, and provide sales staff training.
- Retailers agree to promote consumer education, undergo staff training and follow proper procedures.
- Manufacturers provide accurate, timely data on point of purchase information by store by SKU for rebate reimbursement.

**Implementation with Clean Energy Allies**
The program is implemented through strong working relationships between the program, the major CFL/LED manufacturers and the national retailers. The participating CFL manufacturers are: GE, FEIT, Sylvania, Westinghouse, TCP and Philips. The participating LED manufacturers are: Cree, Feit, Philips, GE, and Lighting Science Group. Participating retailers include: City Mill, Costco, Don Quijote, Foodland, Home Depot, Longs Drugs/CVS, Safeway, Sam's Club, Times and Wal-Mart who have all utilized their buying power to offer a better blend of quality, affordable CFLs and LEDs across the State.

## Scheduling & Control Systems

- **Delivery Channel:** Upstream
- **Budget Source:** REEM
- **Budget:** $11,430.00
- **Impacts:**
  - 4.1 kW
  - 31,651 kWh
  - $31,318.02 TRB

### Measures

- **Smart Strips**
  - Occupancy Sensored Power Strips
  - Master Device Power Strips
- **Occupancy Controls, Sensors & Timers**
  - Room Occupancy Sensors & Timers

### Program Description

**Room Occupancy Sensors & Timers**
These sensors control the use of lighting in areas around the home with infrequent use such as laundry, storage, garage or spare areas. They are not intended for high use areas or CFLs. The Program will continue to test distribution methods for room occupancy sensors and timers. We will reflect on lessons learned throughout the PY12-15 upstream implementation and utilize incoming data from the online fulfillment initiative to inform targeting of the offer.

## High Efficiency Electronics

- **Delivery Channel:** Upstream
- **Budget Source:** REEM
- **Budget:** $188,000.00
- **Impacts:**
  - 0.0 kW
  - 699,624 kWh
  - $1,509,836.02 TRB

### Measures

- **TBD**

### Program Description

New to the portfolio in PY16, electronic measures will be added by leveraging the large strides made recently through the ENERGY STAR® Retail Products Platform (ESRPP) a national midstream program developed as a collaborative initiative of ENERGY STAR, energy efficiency program sponsors, and retailer partners, facilitated by the U.S. Environmental Protection Agency (EPA).

The initial midstream program will focus on flat screen TVs, PC peripheral equipment, and related monitors, providing incentives for only a subset of the most energy efficient models based on the ENERGY STAR Most Efficient or similar most efficient product list.

## High Efficiency Appliances

- **Delivery Channel:** Traditional Retail / Trade Ally Provided
- **Budget Source:** REEM / BEEM
- **Budget:** $555,750.00
- **Impacts:**
  - 160.5 kW
  - 4,031,633 kWh
  - $8,528,212.67 TRB

### Measures

- **Refrigerators**
  - Garage Refrigerator / Freezer Recycle Only
  - Refrigerator (with Recycling of Old)
- **Pool VFD Controlled Pumps**

### Program Description

This program provides prescriptive incentives to residential customers who purchase and install energy efficiency measures that meet or exceed ENERGY STAR® standards.

The process includes:

- The customer purchases a qualified high efficiency appliance.
- The customer obtains an application through the Program's website, in hard copy from Hawaii Energy, or through point of sale retailer displays.

In PY16, many or all of the products will be moved from a direct-to-consumer rebate to a midstream or even upstream incentive to increase high efficiency product availability in a market restricted by distributor or retailer stocking decisions. Additional enhancements to this segment includes online applications and the introduction of the ENERGY STAR Retail Products Platform, described above.

The Program aims to continue to improve quality control and reporting of recyclers. At the beginning of PY16, we will work to identify recyclers on the Big Island in order to continue this program in Hawaii Island County. In addition, the Program will continue to advertise the Refrigerator/Freezer Bounty offer as the "Rid-A-Fridge" allowing customers the opportunity to donate their rebate directly to the local food bank

## High Efficiency HVAC

- **Delivery Channel:** Traditional Retail / Trade Ally Provided
- **Budget Source:** REEM / RESM
- **Budget:** $371,500.00
- **Impacts:**
  - 279.8 kW
  - 1,033,506.4 kWh
  - $3,802,245.82 TRB

### Measures

- **Fans**
  - Solar Attic Fans
  - Whole House Fans
- **Window AC**
  - Window AC with Recycling
- **VRF Split System AC**
- **Central Air Conditioner**
  - Zoning & Mini Split Retrofit Pilot
  - Central Air Conditioner Service – Tune Up

### Program Description

The Program provides prescriptive incentives to residential customers who purchase and install energy efficiency measures that meet or exceed ENERGY STAR® standards. The process includes:

- The customer purchases a qualified high-efficiency air conditioner, solar attic fan or whole house fan.
- The customer obtains an application through the Program's website, in hard copy from Hawaii Energy, or through point of sale retailer displays.
- Customers participating in the Window AC Trade-Up program must call Hawaii Energy for pick-up and recycling of their old working units.

**Implementation with Clean Energy Allies**
In PY16, we are putting an increased emphasis on working with Allies who install these efficient products in homes. We will continue to build relationships with manufacturers, distributors and dealers by offering workshop and events to train Allies on Hawaii Energy's offerings and processes while seeking input on how to create additional offerings and refinements to existing programs. We will also use industry working groups as a resource to identify appropriate efficiency standards when qualifying technologies to be incentivized.

| Direct to Consumer Program Enhancements | |
|---|---|
| • **Delivery Channel:** TBD<br>• **Budget Source:** REEM<br>• **Budget:** $212,500.00<br>• **Impacts:**<br>  ○ 199.4 kW<br>  ○ 2,054,333.0 kWh<br>  ○ $3,666,135.89 TRB | Program Description |
| Measures | In PY16, the programs will focus on providing higher visibility to variations in individual usage patterns, greater and more frequent exposure to customer specific actions and deeper engagement though gamification and challenges. Additional strategically targeted incentive funding will be used such as higher incentives for the more expensive LED bulbs and seasonal short-term bonus incentives for lighting and small products. These efforts will provide a greater savings impact from deeper consumer behavior engagement. |
| • **TBD** | |

## Energy Savings Kits

- **Delivery Channel:** On-Line Retail
- **Budget Source:** REEM
- **Budget:** $241,466.00
- **Impacts:**
  - 178.2 kW
  - 907,762.1 kWh
  - $2,258,083.07 TRB

### Measures

- **LED**
  - A19
  - Flood
  - Globe
- **Smart Strips**
  - Occupancy Sensored Power Strips
  - Master Device Power Strips
- **Water Conservation Device**
  - Bathroom Faucet Aerator
  - Kitchen Faucet Aerator
  - Low Flow Showerhead

### Program Description

In PY16, Hawaii Energy will expand its online presence to provide more services for customers. Efforts will include a customized user experience with product information and purchase options for lower cost energy-saving devices both online and in local retail locations. The online marketplace will have savings calculators addressing specific customer characteristics. This will result in customized suggestions for applicable energy-efficient technologies. Customers will then be able to take advantage of instant rebates for the purchase of products like advanced power strips, small appliance timers and occupancy sensors, which will be shipped to their door.

## High Efficiency Water Heating

- **Delivery Channel:** Trade Ally Provided
- **Budget Source:** REEM / RESM
- **Budget:** $975,000.00
- **Impacts:**
  - 623.1 kW
  - 3,224,488.3 kWh
  - $10,376,454.15 TRB

### Measures

- **Heat Pump Water Heater**
- **Solar Water Heater**
  - Solar Water Heater (SWH)
  - PV Direct Water Heater
  - Solar Water Heater Interest Buy Down
  - Solar Water Heater Tune-Up

### Program Description

**Heat Pump Water Heater**
For PY16, Residential heat pump rebates remain at a value of $300. Rebate applications for water heaters are provided by the retailers at the time of purchase or a customer can visit the Hawaii Energy website and download the form. Promotional efforts will focus on heat pump applications in multifamily settings.

**Solar Water Heating**
*Solar Water Heater (SWH) & PV Direct Water Heater System Installations*
The Program provides a rebate for solar hot water systems installed by qualified participating contractors; sale price reflects the inclusion of a $500 rebate. A small sample of post-installation inspections is conducted to ensure specifications compliance.

*Solar Water Heater Interest Buy Down*
The Program works with participating lending institutions to provide a $500 incentive to buy down the interest charges for loans made on solar hot water systems that are installed by qualified participating contractors. The customer works with a participating contractor to complete the standard installation process.

*Solar Water Heater Tune-Up*
The Solar Water Heater Tune-Up program provides a $100 incentive to residential customers for the maintenance and tune up of an existing solar water heater by existing participating contractors. The program aims to demonstrate the benefits of tune-ups, educate customers of potential savings and system longevity.

| High Efficiency Custom Measure(s) | |
|---|---|
| • **Delivery Channel:** Trade Ally Provided<br>• **Budget Source:** CREEM<br>• **Budget:** $76,500.00<br>• **Impacts:**<br>  ○ 33.5 kW<br>  ○ 334,507.7 kWh<br>  ○ $600,209.20 TRB | Program Description<br><br>This program allows budget dollars for custom residential incentives to customers to participate in unique program offerings. This enables inclusion should new technologies or application of technologies emerge that were not identified at the beginning of the program year. |
| Measures | |
| • **TBD** | |

## Direct Install

- **Delivery Channel:** Program Direct Install
- **Budget Source:** RHTR / BHTR
- **Budget:** $1,420,251.24
- **Impacts:**
  - 794.7 kW
  - 2,389,525.2 kWh
  - $3,553,037.49 TRB

### Measures

- **Heat Pump Water Heater**
- **Solar Water Heater**
- **Refrigerator (with recycling of old)**
- **Advanced Power Strips**
- **Water Conservation Devices**
  - Bathroom Faucet Aerator
  - Kitchen Faucet Aerator
  - Low Flow Showerhead (Fixed)
  - Low Flow Showerhead (Handheld)
- **CFL**
  - Spiral
  - Globe
- **LED**
  - A19
- **Project Direct Cost (Installation Cost & Site Visit Fee)**

### Program Description

**Multifamily Direct Install**
This program will continue the turn-key installation of energy-saving technologies like high efficiency showerheads, faucet aerators, advanced power strips and high efficiency light bulbs (CFLs and LEDs) in multifamily residences. The target for PY16 is 6,100 households to participate in the offering; this includes multifamily properties with individually-metered residential accounts and commercial master-metered accounts.

All measures are installed with no customer co-pay required. Hawaii Energy will manage sales efforts to recruit buildings, customer education, scheduling and installation for multifamily properties in hard-to-reach locations.

**Refrigerator (w/recycling)**
Building on existing relationships with local haulers/recyclers, the Program will expand its ENERGY STAR® refrigerator trade-up with recycling program to retail locations on Lanai and Molokai.

**Solar Water Heater**
The Program will continue to work with community assistance programs to identify hard-to-reach residential households to receive fully-funded solar water heating systems.

**Heat Pump Water Heater**
Hawaii Energy will work with government housing agencies and property management companies to identify ideal multifamily facilities to receive fully funded heat pump water heaters. We will engage the Clean Energy Allies for the installation work and will build on efforts initiated in PY14 and PY15 to appropriately address concerns for noise mitigation.

## 5.0 BUSINESS PROGRAM STRATEGY & DETAILS

Hawaii Energy in accordance with its plan to transition to the next generation of the Program, which we refer to as *Hawaii Energy 2.0*, will be retooling its business operations with enhanced tools and techniques to advise prospective participants in the value of energy efficiency. In PY16, Hawaii Energy will employ a multi-pronged approach in day-to-day operations based upon the channel, sector and end-use technology paradigm discussed earlier. The business program channels include: **retail (upstream and midstream)**, **trade ally driven** and **direct install**. These channels will be complemented by the business operations team, who will continue to be organized by sector and work with end-use customers and the Trade Allies that serve them. This personalized support will expand into more **comprehensive services**, such as Strategic Energy Management.

In an effort to provide continuity with past program years, we have organized the multi-layered approach within the historical incentive budget categories as follows:

**Figure 5 - List of Business Programs**

| Business Programs |
|---|
| **BEEM** |
| Midstream |
| High Efficiency Lighting |
| Trade Ally-Provided |
| High Efficiency Lighting |
| High Efficiency HVAC |
| High Efficiency Motors |
| High Efficiency Water Heating |
| High Efficiency Water Pumping |
| Envelope Improvements |
| Scheduling & Control Systems |
| High Efficiency Equipment & Appliances |
| Refrigeration Improvements |
| Traditional Retail |
| High Efficiency Equipment & Appliances |
| **CBEEM** |
| Trade Ally-Provided |
| High Efficiency Lighting |
| High Efficiency HVAC |
| High Efficiency TBD |
| **BESM** |
| Trade Ally-Provided |
| Behavioral Energy Awareness/Responsibility |
| High Efficiency HVAC |
| High Efficiency Water Pumping |
| Commissioning/Recommissioning |
| Program Direct |
| Strategic Energy Management |
| **BHTR** |
| Trade Ally-Provided |
| Kitchen Equipment |
| Special Initiatives |

| |
|---|
| Traditional Retail |
| Kitchen Equipment |
| Program Direct Install |
| G, J or P Scheduled Multifamily Direct Install |
| Small Business Direct Install (SBDIL) |

- **Business Energy Efficiency Measures (BEEM)**
  This budget category offers incentives for standard, known energy efficiency technologies in the form of prescriptive incentives in a streamlined application and grant award process.

- **Custom Business Energy Efficiency Measures (CBEEM)**
  This budget category offers incentives for non-standard energy efficiency technologies often needed for commercial and industrial customers who need to invest in energy efficiency opportunities specific to unique projects and designs. Incentive award amounts are determined via calculations performed to quantify specific energy savings related to unique applications. Customized projects by their very nature require trade allies to propose, sell and execute; and, often involve program Energy Advisors and engineering support from the start.

- **Business Energy Service and Maintenance (BESM)**
  This budget category focuses on developing viable projects through collaboration and direct support in the form of expertise and/or equipment (i.e. metering) from both allies and directly from the program. Guided by past years, this budget category is leaner than prior budgets with a greater focus on intentions and expected outcomes.

- **Business Hard-to-Reach (BHTR)**
  This budget category aims to secure various projects among geographies and demographics that have been traditionally underserved such as small businesses, restaurants as well as lower-income residential multifamily properties that happen to be on a commercial-rated meter.

For PY16, a number of incentive levels have been strategically adjusted to achieve overall participation and program goals while enhancing cost-effectiveness. In many cases, incentive levels have been reduced as incremental costs for certain measures have decreased. Concurrently, upstream and midstream initiatives have driven greater availability and diversity of products.

A summary listing of the changes to the Business Program offerings will be discussed below. Appendix B contains a projection of potential energy savings and cost effectiveness for the proposed changes by budget category, channel and end-use technology (e.g. measure) as well as the aggregate targets of the program portfolio.

## 5.1 Key Program Updates for Business Energy Efficiency Measures (BEEM)

### High Efficiency Lighting

The market for LED lighting has changed dramatically in recent years with pricing continually dropping as new measures are introduced on almost a daily basis. As such, in PY16 Hawaii Energy is updating the high efficiency lighting program to reflect market conditions and further drive adoption of LED lighting through a few key initiatives including: moderated incentives levels, shifting from customized to prescriptive offers, and the phasing out incentives for older technologies.

#### *Moderating Incentive Levels: Screw-in LEDs and Fluorescent T8s*

With the evolution in the LED market most manufacturers have standardized production of screw-in LED lamps, with most being equipped with dimming compatibility. As such, Hawaii Energy incentives will no longer distinguish between dimming and non-dimmable lamps. LED lamps will continue to distinguished based on the categories of Omni-Directional, which includes lamps like the old Edison based or A-based lamps, and Specialty, which includes lamps like flood lamps, PARs, BRs and MR retail lighting. Within Omni-Directional, there will be a distinction between screw-in and pin-based lamps due to the cost difference between the two categories; screw-in being less costly.

Within the categories as defined above, Hawaii Energy will be reducing the per unit incentive for LEDs in general. This reduction is mainly driven by the overall reduction in price of LED lamps in the marketplace, thereby not requiring the higher incentive to drive the buying decision.

With the advances of LED lighting technologies in the marketplace, including drop-in LED replacements for T8 fluorescent tubes, fewer customers are replacing inefficient fluorescent tubes with the more efficient reduced wattage fluorescent tubes. In addition, there is greater savings in replacing fluorescent tubes with LED alternatives although these do come at a higher cost. Therefore, the program will incentivize all cost-effective alternatives for customers to upgrade their lighting systems favoring higher incentives for LED options and reducing incentives for high efficiency reduced wattage fluorescent T8 tube lamps.

#### *Shifting from customized to prescriptive offerings*

Additional enhancements in PY16 will move historically customized lighting offerings to standard prescriptive incentives. As the market has matured and as LED fixtures have become even more efficient there is enough standardization nationally to create prescriptive incentives for these measures. Prescriptive incentive levels are easier for the customer to understand and to adopt, thereby increasing participation.

To kick off PY16, Hawaii Energy will implement a prescriptive incentive for LED linear tube lighting. The prescriptive incentive will cover two types of LED linear tube, Underwriters Laboratories (UL) Type A (e.g. plug-and-play) LED linear lamps that require no rewiring and simply snap into place when replacing fluorescent tubes, and UL Type C, that requires the removal of the lighting ballast and installation of an external LED driver.

*Phasing out older technologies*

Pulse start metal halide fixtures are being phased out of the program starting in PY16. This is in response to market conditions. The pulse start metal halide fixture has essentially been replaced in the market by more efficient LED fixtures.

### Moving Additional Measures to Midstream

Hawaii Energy will continue grow its midstream program by allocating ~40% of BEEM and CBEEM funding slated for lighting to this channel in PY16. Launched in PY14, the midstream program witnessed tremendous growth in PY15 with over $500,000 or nearly 50% of the BEEM lighting budget alone. This channel provides the program an administratively efficient platform to expand its reach, while eliminating recognized barriers to participation as it will require no rebate application. Rather, supporting documentation is provided to the Program by the distributor.

In PY16, Hawaii Energy will actively explore midstream opportunities with other measures such as motors, pumps, ENERGY STAR® kitchen equipment and possibly HVAC. Efforts will continue to recruit local distributors under the Clean Energy Ally banner to offer their customers, primarily installation contractors, the opportunity to receive instant rebates when purchasing qualified equipment.

### Discontinued & Modified Measures

The incentive for cool roof coating is being phased out of the program in PY16 due to its marginal cost effectiveness and limited influence the incentive plays in driving buying decisions. In the course of PY16, the program will repackage its offerings related to audits and energy studies to be more effective.

### Supporting Residential Customers

As in past years, BEEM funding will be tapped to support the residential consumer in cases where the residence happens to be on a commercial-rated meter, which is often the case in condominiums (e.g. multifamily sector).

### Operational Improvements

During PY16, the program plans to introduce system capabilities to enable currently fillable PDF forms and worksheets to be automatically received by the program via email with confirmation of receipt available to the submitting party (e.g. customer, contractor or other 3rd party). Data flow through this process will accelerate processing times as well as customer satisfaction.

The program will expand the deployment of AMPLIFY to BEEM-funded lighting projects. This initiative will empower current SBDIL contractors (fully trained on the AMPLIFY platform) to capture market-based projects while new allies will be solicited to adopt the platform, thus easing the application process and improve labor efficiencies on both ends of the transaction.

## 5.2 Key Program Updates for Customized Business Energy Efficiency Measures (CBEEM)

### Smaller Percentage of the Commercial Portfolio

With linear LEDs maturing enough to offer as a prescriptive incentive, CBEEM-funded projects will be just under 15% of the total business incentive budget down from over 30% in PY15.

### Customized Lighting and Non-Lighting

In an effort to manage overall program cost effectiveness during PY16, Hawaii Energy will reset incentives for customized lighting and non-lighting projects to levels established in PY13. This was carefully considered in relation to historical participation and it was determined that there is a limited correlation between increased custom incentive rates and overall project savings and participation. Thus, it is believed that reverting back to PY13 incentive levels will provide more optimal program results with little downside risk.

### Notable Commitments

PY16 is starting out with a significant program commitment to support an energy management system across a military housing complex with the balance of funding slated for both lighting and non-lighting projects.

### Energy Efficiency Auction

With a three-year time horizon, we will roll out another auction-based program to be launched in PY16 and continue throughout the balance of the contract period. With the advantage of a longer schedule for awardees to implement, we believe it would be advantageous to offer a larger program from the outset.

Hawaii Energy will issue a call for projects to encourage contractors and energy vendors to develop cost-effective projects in the commercial sector. The program will be a call for projects that meet a total dollar per kWh savings target and allow the market to be creative in the actions and measures that achieve the targeted cost per kWh energy savings. The projects will use utility metered data and be submetered if required to ensure savings performance.

## 5.3 Key Program Updates for Business Energy Services and Maintenance (BESM)

BESM-funded initiatives will be a key catalyst for realizing energy-saving projects in subsequent program years, where complementary programs in submetering and staffing grants will be offered. Notable in PY16 is the formal introduction of Strategic Energy Management.

### Program Influenced Savings

New for PY16, Hawaii Energy will implement a tracking and verification process to document savings achieved through influence or direct support from Hawaii Energy staff. These claim-only projects can arise from a project opportunity that was unknown to the customer until it was identified by an Energy Advisor or a Hawaii Energy activity, such as an energy team meeting. Claim-only projects are influenced by the Program in design or implementation but are not provided with an incentive for some reason, including (but not limited to): the Program helped overcome technical barriers; payback period was too short for Program guidelines; savings were adjusted upward after the original estimate was determined

to be too small; or savings were derived from a project receiving an outside funding source, but which the Program helped to leverage.

### Strategic Energy Management (SEM)

In PY16, Hawaii Energy Advisors will engage in Strategic Energy Management (SEM) efforts under both the commercial and market transformation programs. SEM goes beyond a project-by-project approach using continuous improvement across the organization to maximize energy efficiency. Our SEM approach uses elements based on the ISO 50001 energy management standard so that it is grounded in a strong foundation and provides the participant with the opportunity to continue to move toward certification if desired. Our SEM approach uses the following key stages: SEM Gap Analysis, Energy Profile and Review, Energy Team Development, Energy Management Information System (EMIS) assessment, EMIS implementation, Energy Modeling/Benchmarking, Operational and Capital Improvements, and Administrative Infrastructure for Control and Reporting. Because SEM can be a cost-effective approach to energy savings for the short and long term, we plan to engage at least three customers in this year and will build on these efforts in years to come. We anticipate most of the energy savings from SEM will occur after the customer has fully implemented the approach in years two and three of the Program.

### System Retro-commissioning

In PY16, Hawaii Energy will launch its newly designed retro-commissioning program for non-residential large customers in order to provide a cost-effective approach to uncovering no-cost or low-cost measures that will save energy. We will recruit and develop a group of allies that we call Service Providers who can effectively perform retro-commissioning services for business customers. The program will provide incentives for these allies and their customers to initiate a retro-commissioning study. Participation will require an upfront commitment from the customer and ally to implement measures under a certain payback value designated by the customer.

## 5.4 Key Program Updates for Business Hard-to-Reach (BHTR)

### Small Business Direct Install

The majority of BHTR funding will continue to support the Small Business Direct Install Lighting program. As PY16 begins, the SBDIL budget is nearly two-thirds subscribed and will be further streamlined and expanded to include non-lighting measures in future program years. This program plays a large role in supporting the business community on the neighbor islands, which are predominantly small businesses. The program will build upon its success in building this capacity and plan to encourage this base of trade allies to expand their role in securing market-based lighting projects through additional AMPLIFY functionality.

### Restaurants

The restaurant sector continues to be a hard-to-reach sector. For PY16, kitchen equipment will be offered through the retail channel, concentrated among a small number of commercial retailers. This end-use technology will be a candidate to convert into a midstream channel in PY16 further reducing barriers to participation while improving administrative efficiencies.

### Multifamily Direct Install

BHTR funding will support the residential Multifamily Direct Install program in cases where the residence happens to be on a commercial-rated meter, which is often the case in condominiums (e.g. multifamily sector). The plan reflects a 65/35 split between residential and commercial meters, however, subscription to the program will ultimately determine the degree to which BHTR funds will be tapped.

## 5.5 Business Program Details

To follow is an overview summary of the business program offerings by technology with detailed program descriptions, budget impact and energy savings.

## High Efficiency Lighting

- **Delivery Channel:** Trade Ally Provided / Midstream
- **Budget Source:** BEEM / CBEEM
- **Budget:** $3,054,531.61
- **Impacts:**
  - 3,527.7
  - 31,797,360.8 kWh
  - $81,954,004.96 TRB

### Measures

- **Linear Fluorescent**
  - T12/T8 to T8 Low Wattage (4 ft. lamps)
  - T12 to T8 Standard (2 & 3 ft. lamps)
- **Delamping**
  - Delamp with Reflector Kit (2, 4 & 8 ft. lamp)
  - Delamp Only (2, 4 & 8 ft lamp)
- **LED**
  - Linear T8 to Linear LED Tube: w/ Integrated Driver - Plug & Play (Type A)
  - Linear T12/T8 to Linear LED Tube: w/ Remote Driver (Type C)
  - Omni-Directional (Screw-In & Pin)
  - Specialty (Screw-In & Pin)
  - LED Flat Panel Drop-In Replacements
  - LED Refrigerated Case Lighting
  - LED Exit Signs
- **Occupancy Controls, Sensors & Timers**
  - Occupancy Light Sensors
- **Customized LED**
- **Customized Non-LED**

### Program Description

The special features of the next phase of the commercial lighting program will include an expansion of the midstream Lighting Distributor Instant Rebate Program. This program has proven to be the most cost-effective way to deliver a lighting incentive program to the local market, and the program makes it easy for customers to participate. By offering the incentive at the point of purchase, and without requiring applications, Hawaii Energy simplifies program participation and more customers benefit from the program. Further, by concentrating multiple customer transactions into a single data exchange between the distributor and Hawaii Energy, we leverage the tracking and sales software of our partnering distributors to more cost effectively process customer transactions.

Program enhancements will include creating more standard prescriptive rebates for new light-emitting diode (LED) technologies. For instance, when new exterior LED fixtures entered the market there was little standardization on what wattage LED fixture would replace a particular wattage high intensity discharge (HID) fixture. This made it difficult to set standard, prescribed incentive levels for these fixtures and, consequently, all exterior LED installations were treated as customized lighting projects. As the market has matured, and as LED fixtures have become even more efficient, there is enough standardization to create prescriptive incentives for these measures. Prescriptive incentive levels are easier for customers to understand and to adopt, thereby increasing participation. As a result, Hawaii Energy will seek to create more prescriptive incentives for LED measures.

# High Efficiency HVAC

- **Delivery Channel:** Trade Ally Provided
- **Budget Source:** BEEM / BESM / CBEEM
- **Budget:** $1,383,883.34
- **Impacts:**
  - 1,612.1
  - 7,167,599.6 kWh
  - $23,762,799.24 TRB

## Measures

- **Chillers:** Meets IECC 2015 Energy Code
- **Package AC Units:** Better than Current Code
- **VFD Speed Controlled**
  - Air Handler Units
  - Chilled Water / Condenser Water
- **VRF Air Conditioners**
  - Existing Facility
  - New Construction
- **Ventilation**
  - Garage Active Ventilation Control
- **Optimized Chiller Selection**
- **Custom HVAC**
- **ECM on Fan Coil Units** (see High Efficiency Motors section)

## Program Description

In PY16 Hawaii Energy will work with HVAC distributors to determine if instant rebates can be offered on all package, split, and VRF AC units that qualify for the standard rebate program. Other HVAC equipment, such as chillers and variable frequency drives (VFDs), are typically more complicated projects that still require incentives to promote, but don't lend themselves well to a midstream program.

**Chillers**: Both air-cooled and water-cooled that have efficiencies meeting the International Energy Conservation Code (IECC) 2015 energy code. Significant savings can be achieved with this measure particularly when you consider the life expectancy of a chiller is 20 years.

**Package Units**: Air-cooled package units are most often found in small facilities as they are least first-cost and maintenance intensive of HVAC options to this market. The most cost effective opportunity to reduce energy consumption in these units is to replace them with the highest efficiency unit available and potentially convert at the same time to a VAV distribution system to increase both comfort and reduce cooling loads.

**Variable Frequency Drives (VFD)**: The use of variable frequency drives to vary motor speeds to control flow in response to changes to loads provides significant savings in HVAC applications of supply, return and exhaust fans as well as chilled water and condenser water pumps.

**Inverter driven variable refrigerant flow (VRF)** air conditioning systems utilize variable speed compressors along with most often multiple individual zone evaporators to provide the ability to more closely match the building's cooling requirements. Energy savings from VRF air conditioning are primarily from increased part-load efficiency operation.

## High Efficiency Motors

- **Delivery Channel:** Trade Ally Provided
- **Budget Source:** BEEM
- **Budget:** $86,000.00
- **Impacts:**
  - 24.5 kW
  - 304,535.7 kWh
  - $753,902.75 TRB

### Measures

- **ECM**
  - Fan Coil Fans (HVAC)
  - Evaporator Fan Motors (with Controller) (Refrigeration)

### Program Description

**Electronically Commutated Motors (ECM):**

ECM motors have higher electrical efficiency (Electronically Commutated Motor, 70 percent efficient) than PSC (Permanent split capacitor, 49 percent efficient) or shaded-pole (32 percent efficient). In addition, “cooler” motor operation creates less heat load on the conditioned space. The two main program applications include HVAC and refrigeration.

## High Efficiency Water Heating

- **Delivery Channel:** Trade Ally Provided
- **Budget Source:** BEEM
- **Budget:** $103,650.00
- **Impacts:**
  - 63.8 kW
  - 363,948.4 kWh
  - $1,156,475.94 TRB

### Measures

- **Solar Water Heater**
- **Heat Pump Water Heater**

### Program Description

**Solar Water Heating:** Commercial solar water heaters can provide a renewable energy source of water heating. The systems can reduce electrical consumption for water heating by providing supplemental pre-heating all the way to 100% of the water heating needs limited by the hot water demand characteristic and the site's physical constraints on storage tank and panel locations.

**Heat Pumps:** Heat pump water heaters can provide a highly-efficient source of water heating. Water-source heat pumps are the most efficient when used to supplement the heat rejection from chilled water return loops and condenser water systems to heat a facility's domestic water needs or swimming pools. Heat pumps can also be air-source and provide heat mitigation in areas such as commercial kitchens and can function as a stand-alone water heater for pools.

The systems can reduce electrical consumption for water heating by providing supplemental pre-heating all the way to 100% of the water heating needs limited by the hot water demand characteristic and the site's physical constraints on heat pump storage tanks.

## Water Pumping Efficiency

- **Delivery Channel:** Trade Ally Provided
- **Budget Source:** BEEM/BESM
- **Budget:** $150,900.00
- **Impacts:**
  - 22.4 kW
  - 223,374.3 kWh
  - $573,790.11 TRB

### Measures

- **VFD Speed Controlled**
  - Booster Pumps
  - Pool Pump Packages
- **Water System Upgrade Assistance** (see related activities in Transformational Actions section)

### Program Description

**VFD Speed Controlled Pumps:**
The replacement of single speed staged domestic water booster pumps can provide up to 70% energy savings by providing constant pressure regardless of flow and reducing pump speed during low use periods, therefore increasing system efficiency.

Pool pumps often run much longer than necessary. A variable speed commercial pool pump motor in place of a standard single speed motor can save energy and maintain a comfortable swimming pool temperature and chemical circulation by using a smaller, higher efficiency pump and by operating it less.

**Water System Upgrade Assistance:**
The program will be delivered to the water and wastewater industry through general communication with facilities and their administration/management. We will provide information about the value of energy efficiency, the attributes of the program, and how funding can be provided to motivate implementation of energy saving projects.

Stand-alone educational programs will be provided to educate the industry on the value of energy efficiency and will be integrated with program information. We will raise awareness with industry consultants regarding energy efficiency value, the importance of integrating efficiency into their designs, and the financial benefit an energy-efficient design can bring to the clients they serve. Further, continual contact with regulatory agencies will keep them informed about the program and the value it can bring to the water and wastewater industry. Continual contact with other organizations and programs, such as the Rural Water Association, will continue to promote the program's value to all community sizes. The Hawaii Rural Water Association provides valuable interface with all of the midsize utilities and, importantly, the small systems.

## Envelope Improvements

- **Delivery Channel:** Trade Ally Provided
- **Budget Source:** BEEM
- **Budget:** $42,000.00
- **Impacts:**
  - 64.8 kW
  - 244,093.5 kWh
  - $571,952.33 TRB

### Measures

- **Window Tinting**

### Program Description

**Window tinting** can save energy by reducing the heat gain through windows as well as preventing lowering of temperature set points by occupants near the windows. Modern tints can provide the rejection of infrared energy while not blocking visible light. This expands the tinting opportunities in view sensitive locations such as hotel and office buildings.

The incentive for cool roof coating is being phased out of the program in PY16 due to its marginal cost effectiveness and limited influence the incentive plays in driving buying decisions.

## Scheduling & Control Systems

- **Delivery Channel:** Trade Ally Provided
- **Budget Source:** BEEM
- **Budget:** $70,000.00
- **Impacts:**
  - 60.9 kW
  - 482,043.2 kWh
  - $735,320.86 TRB

### Measures

- **Occupancy Controls, Sensors & Timers**
  - Hotel Room Occupancy Controls
- **Vending Machine Occupancy Controls**

### Program Description

This offer is for the installation of energy management systems that gives **thermostat control** to existing guest room air conditioning systems using occupancy sensors.

Controls can significantly reduce the energy consumption of **vending machine lighting and refrigeration** systems. Qualifying controls must power down these systems during periods of inactivity but, in the case of refrigerated machines, must always maintain a cool product that meets customer expectations. This measure applies to refrigerated beverage vending machines, non-refrigerated snack vending machines, and glass front refrigerated coolers. This measure should not be applied to ENERGY STAR® qualified vending machines, as they already have built-in controls.

## High Efficiency Equipment & Appliances

- **Delivery Channel:** Trade Ally Provided
- **Budget Source:** BEEM
- **Budget:** $20,800.00
- **Impacts:**
  - 8.0 kW
  - 69,110 kWh
  - $257,159.26 TRB

### Measures

- **Transformers (One-Phase)**
- **Transformers (Three-Phase)**
- **Refrigerator (with Recycling of Old)**
- **Garage Refrigerator / Freezer Recycle Only**

### Program Description

**Distribution transformers** are used in commercial and industrial applications to step down power from distribution voltage to be used in HVAC or process loads (220V or 480V) or to serve plug loads (120V). They are made up of one or more cores (typically carbon steel), two sets of metal windings (copper or aluminum), an insulating material (oil or air), and a container shell. Distribution transformers have no moving parts. However, energy efficient transformers can be constructed with larger cores, good-quality silicon steel, or even amorphous steel for the core and thicker wire. Although the increase in efficiency is small, when considering the useful life of a transformers is generally 30 years, the overall savings can be considerable.

**ENERGY STAR® Refrigerators**: There is a 32 to 62% energy reduction opportunity in the replacement of the "old" office refrigerator with a modern ENERGY STAR® model. The offering of a $100 incentive for ENERGY STAR® units bought and delivered by participating retailers. This incentive is a 10 to 25% reduction in the cost of a new ENERGY STAR® model.

## Refrigeration Improvements

- **Delivery Channel:** Trade Ally Provided
- **Budget Source:** BEEM
- **Budget:** $5,000.00
- **Impacts:**
  - 8.3 kW
  - 24,243.3 kWh
  - $63,017.08 TRB

### Measures

- **Refrigerated Night Covers**
- **ECM on Evaporator Fan Motors (see High Efficiency Motors sections)**

### Program Description

Commercial refrigeration equipment includes self-contained and remote-condensing refrigerators, freezers, and commercial refrigerator-freezers. Commercial refrigeration equipment is used for food storage and merchandising purposes in the food retail industry (i.e. grocery stores, supermarkets, convenience stores, specialty food stores) and the foodservice industry (i.e. restaurants and cafeterias). Energy conservation measures that reduce the operational time or intensity of refrigeration equipment while still maintaining a comfortable shopping and work environment can offer substantial savings. Refrigeration is, by far, the largest load in a grocery store. Significant energy savings can be gained not only from refrigeration tune-ups and maintenance, but also through retrofits and cost-effective replacement of older equipment.

There are many market segments that require commercial refrigeration, which includes independent grocers (i.e. Times, Don Quote, KTA) and national chain supermarkets (i.e. Costco, Safeway, Wholefoods), restaurants, mini-markets/gas stations, and smaller convenience stores.

This program will be delivered to the commercial market through the refrigeration suppliers. Information about the available incentives will be disseminated first to the refrigeration suppliers and vendors to leverage their reach into the commercial market. Then, we will communication with facility managers, engineers, and their administration/ management to inform them about the value of energy efficiency, the attributes of the program, and how funding can be provided to motivate implementation. Attendance and participation at the various trade shows and conferences will continue to make the industry aware of the program. Stand-alone educational programs will also be provided to educate the industry on energy efficiency value.

## High Efficiency TBD (Custom Projects)

- **Delivery Channel:** Trade Ally Provided
- **Budget Source:** CBEEM
- **Budget:** $1,033,857.50
- **Impacts:**
  - 868.9 kW
  - 6,206,713.8 kWh
  - $14,208,722.11 TRB

### Measures

- **Customized Project Measures with > 5 Year Life:** TBD - Committed
- **Customized Project Measures with <5 Year Life:** TBD - Uncommitted

### Program Description

This program provides for incentives for all energy-savings actions that are not already covered by the prescribed incentives. Custom incentives will not be limited to a certain list of measures.

This program will provide a custom application and granting process for participants to receive incentives for installing non-standard energy efficiency technologies. The intent of this structure is to enable customers to invest in energy efficiency processes and technology measures that may require calculations of energy savings for specific, unique applications. Incentive awards will be based on calculated savings that ensure program cost-effectiveness.

- Projects that have longer life measures often have longer paybacks, which makes it difficult for businesses to gain approvals for them.
- These projects can be pushed into reality by offering increases in the incentive levels in order to enhance feasibility and get them to a point where the customers will implement them.

## Behavioral Energy Awareness / Responsibility

- **Delivery Channel:** Trade Ally Provided
- **Budget Source:** BEEM / BESM
- **Budget:** $120,000.00
- **Impacts:**
  - 35.7 kW
  - 156,488.8 kWh
  - $279,254.83 TRB

### Measures

- **Submetering**
  - Condominium
  - Commercial Property

### Program Description

This program is designed to assist master-metered condominiums and their Association of Apartment Owners (AOAO) to install billing submeters for their units and common areas to drive energy conservation and ensure equity and fairness in allocating energy costs to tenants and/or owners of their condominium units. The knowledge of personal energy usage and the responsibility to pay for it can result in energy usage behavior modification and reward those making investments in energy efficient equipment.

The combination of billing submeters, along with education, peer group comparisons and special equipment offerings, will assist the owner or tenant to achieve significant energy conservation and efficiency.

This also provides the AOAO an opportunity to receive an energy audit of the property and participate in other Hawaii Energy incentives for conservation in all common areas. Possible additional incentives could include A/C, lighting, pool pumps, domestic water pumps and parking garage exhaust fans.

## Commissioning / Recommissioning

- **Delivery Channel:** Trade Ally Provided
- **Budget Source:** BESM
- **Budget:** $170,000
- **Impacts:**
  - 120.1 kW
  - 1,051,650 kWh
  - $174,395.12 TRB

### Measures

- **System Retrocommissioning**

### Program Description

The recommissioning/retrocommissioning measure incentivizes building owners to evaluate and/or periodically re-evaluate the effectiveness and efficiency of current building systems for optimal performance. Savings are achieved by optimizing building systems and assemblies to operate as efficiently as possible based on design criteria, data evaluation, and operational parameters. These savings opportunities will likely be a combination of no/low cost operational adjustments and sequencing, low-cost equipment optimization, and capital improvement projects, such as:

- Implementation of an automated building management system to control lighting and HVAC schedules and set-points.
- An education and training component for building operations personnel on how to operate the building efficiently, focusing particularly on O&M changes implemented during the retro-commissioning project.
- Inspect HVAC duct work for leaks and damage. Include findings in RCx report.
- Identify peak load shaving options that can be implemented during peak periods.
- Reduce customer operating costs during peak and off-peak periods.
- Develop a plan to educate and train the building personnel how to operate the building efficiently.
- Document findings and develop an action plan to implement recommended measures that reduce electricity usage.
- Reduce energy consumption in commercial and industrial facilities by incentivizing energy conservation measures through the customized incentive program.

## Strategic Energy Management (SEM)

- **Delivery Channel:** Program Direct
- **Budget Source:** BESM
- **Budget:** $75,000.00 (From transformational budget)
- **Impacts:**
  - 0 kW
  - 0 kWh
  - 0 TRB

### Measures

- **Operational Savings & Capital Projects**

### Program Description

The intent of the program is to establish an enhanced continual improvement approach to energy management so that more energy efficiency measures can be implemented. This makes it both a resource acquisition and market transformation effort. Most of the energy savings from SEM will occur after the customer has fully implemented the approach in years 2 and 3 of the Program. SEM is a very cost-effective approach for the short and long term, we plan to expand this to as many customers as possible.

The SEM approach follows the following process:

- SEM Gap Analysis
- Energy Profile and Review
- Energy Team Development
- Energy Management Information System (EMIS) assessment
- EMIS implementation
- Energy Modeling/Benchmarking
- Operational and Capital Improvements
- Administrative Infrastructure for Control and Reporting

## Influenced - Non-Incentivized Efforts

- **Delivery Channel:** Program Direct
- **Budget Source:** BESM
- **Budget:** $0
- **Impacts:**
    - 126.4 kW
    - 1,107,000.0 kWh
    - $2,762,368.55 TRB

**Measures**

- **Influenced – Non-Incentivized Efforts**

**Program Description**

**Influenced - Non-incentivized efforts** – In PY16 we will introduce the use of claim-only project savings. This includes energy efficiency savings that are claimed by a Program without the payment of a financial incentive. A claim-only project can arise from a project opportunity that was unknown to the customer until it was identified by an Energy Advisor or a Hawaii Energy activity, such as an energy team meeting. Claim-only projects are influenced by the Program in design or implementation but are not provided with an incentive for some reason, including (but not limited to): the Program helped overcome technical barriers; payback period was too short for Program guidelines; savings were adjusted upward after the original estimate was determined to be too small; or savings were derived from a project receiving an outside funding source, but which the Program helped to leverage. The fact that a Program implementer or activity identified the opportunity attests that it is Program-induced, even without an incentive. The customer will be asked to provide a signed Impact Statement asserting that the Program influence was the initiating factor.

## Kitchen Equipment

- **Delivery Channel:** Traditional Retail / Trade Ally Provided
- **Budget Source:** BHTR
- **Budget:** $116,000.00
- **Impacts:**
  - 192.1 kW
  - 927,154.1 kWh
  - $2,410,322.74 TRB

### Measures

- **Kitchen Exhaust Hood Demand Ventilation**
- **Commercial Ice Machine**
- **Commercial Electric Steam Cooker**
- **Commercial Electric Griddle**
- **Commercial Fryer**
- **Commercial Hot Food Holding Cabinet**
- **Commercial Combination Oven**
- **Commercial Convection Oven**
- **Commercial Reach-In Refrigerator**
- **Commercial Reach-In Freezer**

### Program Description

**Kitchen ventilation with demand control hood exhaust** uses temperature and/or smoke sensors to adjust ventilation rates. This saves significant energy comparing with the traditional 100% on/off controls.

Traditional ventilation systems operate at one speed regardless of how hard the appliances are working. Demand Control Kitchen Ventilation systems respond to variations in stove use, allowing the two-speed or variable speed fans to regulate exhaust and makeup airflow as necessary. Therefore, when stoves are off or only a few burners are in use, the exhaust fans work at lower speeds and use less energy.

Restaurants are extremely energy intensive, using about 5 to7 times more energy per square foot than other commercial buildings, such as office buildings and retail stores. High-volume, quick service restaurants may even use up to 10 times more energy per square foot than other commercial buildings. Restaurant operators and commercial or institutional kitchens can save energy and money annually and over the equipment lifetime by choosing ENERGY STAR® certified models. To meet ENERGY STAR's stringent requirements for energy efficiency, manufacturers use high-quality components and innovative technologies that often lead to other benefits such as shorter cook times, improved recovery times, higher production rates, and longer product lifetimes. Hawaii Energy will provide incentive for ENERGY STAR's seven commercial food services equipment categories, including: fryers, griddles, hot food holding cabinets, ice makers, ovens, refrigerators and freezers, and steam cookers.

## Small Business Direct Install Lighting (SBDIL)

- **Delivery Channel:** Program Direct Install
- **Budget Source:** BHTR
- **Budget:** $2,644,566.31
- **Impacts:**
  - 2,453.2 kW
  - 10,563,573.8 kWh
  - $27,562,862.49 TRB

### Measures

- **LED**
  - Refrigerated Case to LED
  - Exit Sign
  - A19 Incandescent to LED
  - Decorative to LED
  - MR16
  - PAR CFL to LED
  - PAR CFL to PAR LED
  - PAR CFL to BR LED
  - PAR Halogen to PAR LED
  - PAR Halogen to BR LED
  - T12 40W to LED
  - A19 LED
- **Linear Fluorescent**
  - T12 to T8
  - T12 to T8 LED Instant Start
  - T12HO to T8
  - T12 to F17
- **Custom Lighting**
- **Smart Strips**
  - Occupancy-Sensored Power Strips
- **Water Conservation Device**
  - Bathroom Faucet Aerator
  - Kitchen Faucet Aerator
  - Low Flow Showerhead (Fixed & Handheld)
- **CFL**
  - Spiral & Globe
- **Project Direct Cost**
  - Installation Cost & Cost Adder for Fixtures above or out of the reach of a 10' Ladder

### Program Description

Small Business Lighting Retrofit providing a "Turnkey" program consisting of audits, 100% incentivized lighting measures, installation by participating Hawaii Energy Participating contractors.

The 100% incentive levels will be reviewed to insure that changes in equipment pricing (LEDs in particular) are taken into account. Small business customers receiving electric power under a Schedule "G" rate are eligible under this program. The program will target the 50,000 customers within the small business market that have limited time and expertise within their organizations to research lighting technology options, obtain financing and contract with lighting contractors to replace their older less efficient lighting technologies. Key targets include:

**Restaurants**
This sector has a low participation rate, low saturation of high efficiency equipment and high potential for energy savings. The Small Business Direct Installation (SBDI) method has proven effective in generating attention and participation. It also allows the Program to gather information on equipment and operations, and present opportunities for greater energy savings through other programs, such as the ENERGY STAR® Kitchen Equipment program.

**Landlords-Tenants**
The landlord-tenant relationship provides challenges to making energy efficiency capital investments in properties and operations such as air conditioning and lighting upgrades. This funding is to create a program that works with landlords. This program will be targeted to provide landlords of small business schedule "G" customers with comprehensive audit, RFP and other support for energy saving projects that will drive down the energy cost of their tenants.

## 6.0 BUDGET

Below is a summary of the PY16 program budget.

| Activity | Non-Incentive | Incentive | Total |
|---|---|---|---|
| **Residential Programs** | | | |
| REEM | 1,055,000 | 6,466,580 | 7,521,580 |
| CREEM | 65,000 | 76,500 | 141,500 |
| RESM | 25,000 | 254,500 | 279,500 |
| RHTR | 290,000 | 1,028,780 | 1,318,780 |
| **Total Residential Programs** | **1,435,000** | **7,826,360** | **9,261,360** |
| **Residential Market Evaluation** | **78,055** | **0** | **78,055** |
| **Residential Outreach** | **785,000** | **0** | **785,000** |
| **Total Residential Services and Initiatives** | **2,298,055** | **7,826,360** | **10,124,415** |
| | | | |
| **Business Programs** | | | |
| BEEM | 625,000 | 3,846,975 | 4,471,975 |
| CBEEM | 585,000 | 2,118,647 | 2,703,647 |
| BESM | 135,000 | 321,250 | 456,250 |
| BHTR | 375,000 | 3,152,038 | 3,527,038 |
| **Total Business Programs** | **1,720,000** | **9,438,910** | **11,158,910** |
| **Business Market Evaluation** | **72,626** | **0** | **72,626** |
| **Business Outreach** | **340,000** | **0** | **340,000** |
| **Total Business Services and Initiatives** | **2,132,626** | **9,438,910** | **11,571,536** |
| | | | |
| **Total Residential and Business Services and Initiatives** | **4,430,681** | **17,265,270** | **21,695,951** |
| | | | |
| **Transformational Programs** | | | |
| Residential Transformational Programs | 0 | 851,373 | 851,373 |
| Business Transformational Programs | 0 | 898,627 | 898,627 |
| **Total Transformation Services and Initiatives** | **0** | **1,750,000** | **1,750,000** |
| | | | |
| **Total Supporting Services** | **1,847,708** | **0** | **1,847,708** |
| | | | |
| **Total Infrastructure/Facility Fee** | **476,404** | **0** | **476,404** |
| | | | |
| **Total Tax on Non-Incentive** | **318,286** | **0** | **318,286** |
| | | | |
| **Performance Amount** | **967,151** | **0** | **967,151** |
| | | | |
| **Total Estimated Contractor Costs *** | **8,040,230** | **19,015,270** | **27,055,500** |
| | | | |
| * See below for program base/enhancement budget breakout | | | |
| Base Budget | 7,500,000 | 17,500,000 | 25,000,000 |
| Enhancements | 540,230 | 1,515,270 | 2,055,500 |
| **Base Budget & Enhancements** | **8,040,230** | **19,015,270** | **27,055,500** |

## 7.0 PERFORMANCE GOALS & INCENTIVE TABLE

The following table outlines the Program's performance goals for the 2016-2017 year.

| Performance Indicators | | Goals | | Metrics | Award | | |
|---|---|---|---|---|---|---|---|
| | | | | | Fraction of Award 70% | Award Milestone 75% | Target Award $677,006 |
| Resource Acquisition | **KEY FOCUS AREAS** | ***Milestone*** | ***Target*** | **Metrics** | ***Award Breakout*** | ***Milestone Award Breakout*** | ***Target Award Breakout*** |
| | **Energy Efficiency & Conservation** | **75%** | **100%** | | | | |
| | • First Year Energy Reduction | 89,588,501 | 119,451,334 | kWh | **15%** | **$108,804** | **$145,072.65** |
| | • Peak Demand Reduction | 13,017 | 17,356 | kW | **15%** | **$108,804** | **$145,073** |
| | • Total Resource Benefit | $196,843,820 | $262,458,426 | $ | **40%** | **$290,145** | **$386,860** |
| | **Resource Acquisition Award** | | | | **70%** | **$507,754** | **$677,006** |
| Market Transformation & Customer Satisfaction | **Customer Equity** | | | | **Fraction of Award 17%** | **Award Milestone 75%** | **Target Award $164,416** |
| | **KEY FOCUS AREAS** | ***Milestone*** | ***Target*** | **Metrics** | ***Award Breakout*** | ***Milestone Award Breakout*** | ***Target Award Breakout*** |
| | **Economically Disadvantaged** | **75%** | **100%** | | | | |
| | • Small Business Direct Install | 4,500,000/525 | 6,000,000/700 | kWh/customers served | **7%** | **$50,775.43** | **$67,701** |
| | • Multifamily Direct Install | 787,500/3,150 | 1,050,000/4,200 | | | | |
| | **Island Equity** | | | | | | |
| | • County of Hawaii | NA | 13% | Target spend must be met in Hawaii & Maui Counties for Milestone and Target Award | | | |
| | • County of Maui | NA | 13% | | **10%** | **NA** | **$96,715** |
| | • City & County of Honolulu | NA | 74% | | | | |
| | **Market Transformation** | | | | **Fraction of Award 10%** | **Award Milestone NA** | **Target Award $96,715** |
| | **KEY FOCUS AREAS** | ***Milestone*** | ***Target*** | **Metrics** | ***Award Breakout*** | ***Milestone Award Breakout*** | ***Target Award Breakout*** |
| | **Behavior Modification** | | **100%** | | | | |
| | • Workshops and Presentations | NA | 2,000 | Number of participant-hours of Training | **4%** | **NA** | **$38,686** |
| | • Gamification Campaigns and Competitions | NA | 200 | Number of Participants | | | |
| | • Social Media and Mobile Messaging | NA | 3,250 | Number of online conversions | | | |
| | **Professional Development & Technical Training** | | **100%** | | | | |
| | • Clean Energy Ally Support | NA | 8,370 | Number of participant-hours of training | **4%** | **NA** | **$38,686** |
| | • Targeted Ally Training Opportunities | NA | | | | | |
| | • Targeted Participant Training Opportunities | NA | | | | | |
| | • Educator Training and Grants. | NA | | | | | |
| | • Degree Program Support. | NA | | | | | |
| | • Vocational Training. | NA | | | | | |
| | **Energy in Decision Making** | | **100%** | | | | |
| | • Strategic Energy Management (SEM) | NA | 2 | Number of SEM participating institutions | **1%** | **NA** | **$9,672** |
| | • Benchmarking | NA | 12 / 60 | 12 online sector benchmark resources/Number of benchmarking queries | | | |
| | **Codes and Standards** | | **100%** | | | | |
| | • Codes Identification and Adoption | NA | 3 | Advocacy Events | **1%** | **NA** | **$9,671.51** |
| | • Exceeding Code Compliance | NA | 36 | Number of customers assisted | | | |
| | • Code-Related Training | NA | 50 | Number of participant-hours of Training | | | |
| | **Clean Energy Collaboration** | | | | | | |
| | • Promotion of the Benefits of Equipment being DR Ready | TBD | TBD: Utility/PUC Needs | TBD | **0%** | **NA** | **$0.00** |
| | • Coordinated Engagement with Customers | TBD | | | | | |
| | • Innovation and Emerging Technologies Emerging Technologies | TBD | | | | | |
| | **Customer Satisfaction** | | | | **Fraction of Award 3%** | **Award Milestone NA** | **Target Award $29,015** |
| | **KEY FOCUS AREA** | ***Milestone*** | ***Target*** | **Metrics** | ***Award Breakout*** | ***Milestone Award Breakout*** | ***Target Award Breakout*** |
| | | | **100%** | | **3%** | **NA** | **$29,015** |
| | • Application Processing Customer Experience | NA | > 8.5 | Overall customer satisfaction score | | | |
| | **Market Transformation and Customer Satisfaction Award** | | | | **30%** | **$50,775** | **$290,145** |
| **Total Performance Award** | | | | | **100%** | **$558,530** | **$967,151** |

## 8.0 CONCLUSION

On July 1, 2016, the Leidos Team begins its seventh program year as Hawaii's Public Benefits Fee Administrator. Our goal is to serve as a catalyst to help Hawaii achieve 100% clean energy faster by reducing the generation needs through energy efficiency, as it is the simplest and most cost-effective action for residents and businesses to take.

Our implementation approach has been designed to take the Program to the next level of *Hawaii Energy 2.0*. We have realigned and enhanced our outreach approach for customers and allies to provide greater impact, optimized the use of various incentive mechanisms, and are offering a new and enhanced spectrum of comprehensive approaches for deeper savings, all integrated to provide a balanced approach to achieve program objectives.

As energy systems in Hawaii are becoming increasingly complex, it is essential we utilize energy efficiency as a grid resource. We will continue to explore what works best for Hawaii's energy efficiency and related clean energy efforts in this rapidly changing energy environment. We fully expect our programs to continue to evolve as needs for energy efficiency change based on grid requirements and markets develop and innovate, creating new opportunities for savings. In particular, integrating demand response (DR) and other distributed energy resources (DER) together with energy efficiency, is a critical infrastructure element needed to support a reliable and sustainable electric power system with a high penetration of renewable power. As such, we view this Annual Plan as a living document subject to strategic modification throughout the year as required to take advantage of unique opportunities, overcome unexpected barriers and integrate any changes in course directed by the PUC. Such modifications will be made with the concurrence of the PUC Contract Manager.

With our cumulative experience and the engaged support of our PUC, allies and customers, this PY16 Annual Plan will commence Hawaii's second PBFA Contract with a strong forward momentum towards achieving Hawaii's long term clean energy goals. Having a three year planning horizon allows for more flexibility which, in turn, will provide for greater and deeper energy savings. Going forward in the next two years of our contract, our Annual Plan will be submitted at least 60 days prior to the next program year since we have much more certainty on funding and scope with the new three year structure.

We look forward to collaborating with residents, businesses, and industry to help Hawaii achieve its clean energy goals.

Mahalo,

The Leidos Hawaii Energy Team

# 9.0 APPENDIX

## APPENDIX A Program-Level Budget (expanded version)

| | |
|---|---|
| **Residential Programs** | |
| **Residential Program Ops and Management** | |
| REEM | 1,055,000 |
| CREEM | 65,000 |
| RESM | 25,000 |
| RHTR | 290,000 |
| **Subtotal Residential Programs** | 1,435,000 |
| **Residential Market Evaluation** | 78,055 |
| **Residential Outreach** | 785,000 |
| ***Total Residential Non-Incentive*** | *2,298,055* |
| **Residential Incentives** | |
| REEM | 6,466,580 |
| CREEM | 76,500 |
| RESM | 254,500 |
| RHTR | 1,028,780 |
| **Subtotal Residential Incentives** | 7,826,360 |
| **Residential Transformational** | 851,373 |
| ***Total Residential Incentives*** | *8,677,733* |
| **Total Residential Programs** | **10,975,788** |
| | |
| **Business (C&I) Programs** | |
| **Business Programs Ops and Management** | |
| BEEM | 625,000 |
| CBEEM | 585,000 |
| BESM | 135,000 |
| BHTR | 375,000 |
| **Subtotal Business Programs** | 1,720,000 |
| **Business Evaluation** | 72,626 |
| **Business Outreach** | 340,000 |
| ***Total Business Non-Incentive*** | *2,132,626* |
| **Business Incentives** | |
| BEEM | 3,846,975 |
| CBEEM | 2,118,647 |
| BESM | 321,250 |
| BHTR | 3,152,038 |
| **Subtotal Business Incentive** | 9,438,910 |
| **Business Transformational** | 898,627 |
| ***Total Business Incentives*** | *10,337,537* |
| **Total Business Programs** | **12,470,163** |
| | |
| **Supporting Services** | |
| Supporting Services | 1,847,708 |
| **Total Supporting Services** | **1,847,708** |
| | |
| **Infrastructure/Facility Fee** | |
| Infrastructure/Facility Fee | 476,404 |
| **Total Infrastructure/Facility Fee** | **476,404** |
| **Subtotal Non-Incentive (Prior to Tax)** | 6,754,793 |
| **Total Tax on Non-Incentive** | 318,286 |
| **Performance Amount (Inclusive of Tax)** | 967,151 |
| ***Subtotal Non-Incentive Billed*** | *8,040,230* |
| ***Subtotal Residential and Business Customer Incentives*** | *17,265,270* |
| ***Subtotal Transformational Incentives*** | *1,750,000* |
| ***Subtotal Customer and Transformational Incentives*** | *19,015,270* |
| **Total Estimated Contractor Costs** | **27,055,500** |

# APPENDIX B Summary of PY16 Resource Acquisition Programs (By Measure)

| Incentives | PY16 | |
|---|---|---|
| Residential Resource Acquisition Programs | $7,826,359.98 | *45.3%* |
| Business Resource Acquisition Programs | $9,438,910.02 | *54.7%* |
| **Sub-Total: Resource Acquisition Programs** | **$ 17,265,270** | |

| Resource Acquisition | kW | kWh | TRB | Avg $/kWh | Avg. Life | kWh - Life | $/kWh - Life |
|---|---|---|---|---|---|---|---|
| Residential Program | 7,882 | 57,591,442 | $103,301,708 | $0.1359 | 9.7 | 559,809,397 | $0.0140 |
| Business Program | 9,475 | 61,859,892 | $159,156,717 | $0.1526 | 13.6 | 842,994,054 | $0.0112 |
| **Total Program** | **17,356** | **119,451,334** | **$262,458,426** | **$0.1445** | **11.7** | **1,402,803,451** | **$0.0123** |

| Customer Savings | 1st Year kWh | Lifetime kWh |
|---|---|---|
| Residential Program | 65,400,453 | 636,384,377 |
| Business Program | 70,283,294 | 968,063,826 |
| **Total Program** | **135,683,747** | **1,604,448,203** |

| Incentives | PY16 |
|---|---|
| Residential Transformational Programs | $ 851,373 |
| Business Transformational Programs | $ 898,627 |
| **Sub-Total: Transformational Programs** | **$ 1,750,000** |

| Customer Savings | 1st Year Bill Savings | Lifetime Bill Savings |
|---|---|---|
| Residential Program | $16,350,113 | $159,096,094 |
| Business Program | $10,542,494 | $145,209,574 |
| **Total Program** | **$26,892,607** | **$304,305,668** |

| | Quantity | Unit | Average Incentive per Unit | Incentive Budget per Measure | % of Budget | Demand Savings per Unit (kW) | Energy Savings per Unit (kWh) | Program-Level 1st Year Demand Savings (kW) | Program-Level 1st Year Energy Savings (kWh) | Utility Avoided Cost Total Resource Benefit (TRB) | Program-Level 1st Year $/kWh | Measure Life | Program-Level Lifetime Energy Savings (kWh) | Program-Level Lifetime $/kWh | Customer-Level 1st Year Demand Savings (kW) | Customer-Level 1st Year Energy Savings (kWh) | Customer-Level Lifetime Energy Savings (kWh) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Direct Incentives** | | | | | | | | | | | | | | | | | |
| **RESIDENTIAL RESOURCE ACQUISITION** | | | | | | | | | | | | | | | | | |
| **REEM** | | | | **$6,466,580** | **37.5%** | | | **7,251** | **55,070,961** | **$99,674,199** | | | **540,446,836** | | | **62,903,305** | **617,297,864** |
| **Program Communication** | | | | | | | | | | | | | | | | | |
| **Behavioral Energy Awareness / Responsibility** | **247,500** | | | **$1,485,000** | **8.6%** | | | **1,457.8** | **12,777,618.6** | **$2,118,912.49** | | | **12,777,618.6** | | | **14,610,840.8** | **14,610,840.8** |
| Peer Group Comparison - Quarterly Paper Report | 247,500 | Households | $6 | $1,485,000.00 | 8.6% | 0.0067 | 59.0 | 1,457.8 | 12,777,618.6 | $2,118,912.49 | $0.1162 | 1 | 12,777,618.6 | $0.1162 | 1,667.0 | 14,610,840.8 | 14,610,840.8 |
| **Upstream** | | | | | | | | | | | | | | | | | |
| **High Efficiency Lighting: CFL** | **760,000** | | | **$432,000** | **2.5%** | | | **1,595** | **11,298,928** | **$12,793,656** | | | **67,793,566** | | | **12,920,000** | **77,520,000** |
| 13W Spiral CFL | 500,000 | each | $0.50 | $250,000.00 | 1.4% | 0.0024 | 17.0 | 1,049.4 | 7,433,505.0 | $8,416,879.14 | $0.0336 | 6 | 44,601,030.0 | $0.0056 | 1,200.0 | 8,500,000.0 | 51,000,000.0 |
| 19W Spiral CFL | 120,000 | each | $0.70 | $84,000.00 | 0.5% | 0.0024 | 17.0 | 251.9 | 1,784,041.2 | $2,020,050.99 | $0.0471 | 6 | 10,704,247.2 | $0.0078 | 288.0 | 2,040,000.0 | 12,240,000.0 |
| 23W Spiral CFL | 140,000 | each | $0.70 | $98,000.00 | 0.6% | 0.0024 | 17.0 | 293.8 | 2,081,381.4 | $2,356,726.16 | $0.0471 | 6 | 12,488,288.4 | $0.0078 | 336.0 | 2,380,000.0 | 14,280,000.0 |
| **High Efficiency Lighting: LED** | **1,015,345** | | | **$2,294,684** | **13.3%** | | | **2,841** | **19,978,867** | **$56,013,976** | | | **299,683,011** | | | **22,845,263** | **342,678,938** |
| 7W A-Line LED (40W Equiv) | 40,614 | each | $2 | $81,228 | 0.5% | 0.0032 | 22.5 | 113.7 | 799,158.6 | $2,240,570.08 | $0.1016 | 15 | 11,987,379.5 | $0.0068 | 130.0 | 913,815.0 | 13,707,225.0 |
| 10W A-Line LED (60W Equiv) | 609,203 | each | $2 | $1,218,406 | 7.1% | 0.0032 | 22.5 | 1,704.9 | 11,987,241.7 | $33,608,164.99 | $0.1016 | 15 | 179,808,626.1 | $0.0068 | 1,949.4 | 13,707,067.5 | 205,606,012.5 |
| 13W A-Line LED (75W Equiv) | 101,534 | each | $2.50 | $253,835 | 1.5% | 0.0032 | 22.5 | 284.1 | 1,997,876.9 | $5,601,370.03 | $0.1271 | 15 | 29,968,153.5 | $0.0085 | 324.9 | 2,284,515.0 | 34,267,725.0 |
| 18W A-Line LED (100W Equiv) | 121,841 | each | $2.50 | $304,602.50 | 1.8% | 0.0032 | 22.5 | 341.0 | 2,397,456.2 | $6,721,655.06 | $0.1271 | 15 | 35,961,843.3 | $0.0085 | 389.9 | 2,741,422.5 | 41,121,337.5 |
| 7W LED Flood Light (60W Equiv) | 3,047 | each | $2.50 | $7,617.50 | 0.0% | 0.0032 | 22.5 | 8.5 | 59,955.6 | $168,095.16 | $0.1271 | 15 | 899,333.9 | $0.0085 | 9.8 | 68,557.5 | 1,028,362.5 |
| 9W LED Flood Light (65W Equiv) | 60,921 | each | $3 | $182,763 | 1.1% | 0.0032 | 22.5 | 170.5 | 1,198,737.9 | $3,360,855.12 | $0.1525 | 15 | 17,981,069.2 | $0.0102 | 194.9 | 1,370,722.5 | 20,560,837.5 |
| 11W LED Flood Light (75W Equiv) | 7,108 | each | $3 | $21,324 | 0.1% | 0.0032 | 22.5 | 19.9 | 139,863.6 | $392,130.11 | $0.1525 | 15 | 2,097,953.7 | $0.0102 | 22.7 | 159,930.0 | 2,398,950.0 |
| 16W LED Flood Light (100W Equiv) | 1,016 | each | $4 | $4,064 | 0.0% | 0.0032 | 22.5 | 2.8 | 19,991.8 | $56,050.11 | $0.2033 | 15 | 299,876.3 | $0.0136 | 3.3 | 22,860.0 | 342,900.0 |
| 9W LED Globe Lamp | 30,461 | each | $2.50 | $76,152.50 | 0.4% | 0.0032 | 22.5 | 85.2 | 599,378.8 | $1,680,455.14 | $0.1271 | 15 | 8,990,682.2 | $0.0085 | 97.5 | 685,372.5 | 10,280,587.5 |
| 14W LED Globe Lamp | 9,139 | each | $2.50 | $22,847.50 | 0.1% | 0.0032 | 22.5 | 25.6 | 179,827.4 | $504,175.16 | $0.1271 | 15 | 2,697,411.3 | $0.0085 | 29.2 | 205,627.5 | 3,084,412.5 |
| 10W LED Downlight kit | 20,307 | each | $4 | $81,228 | 0.5% | 0.0032 | 22.5 | 56.8 | 399,579.3 | $1,120,285.04 | $0.2033 | 15 | 5,993,689.7 | $0.0136 | 65.0 | 456,907.5 | 6,853,612.5 |
| 12.5W LED Downlight kit | 10,154 | each | $4 | $40,616 | 0.2% | 0.0032 | 22.5 | 28.4 | 199,799.5 | $560,170.10 | $0.2033 | 15 | 2,996,992.4 | $0.0136 | 32.5 | 228,465.0 | 3,426,975.0 |
| **Scheduling & Control Systems** | | | | **$11,430** | **0.1%** | | | **4** | **31,651** | **$31,318** | | | **171,352** | | | **36,192** | **195,936** |
| Advanced Power Strips - Sensored | 250 | each | $29 | $7,250 | 0.0% | 0.0071 | 62.4 | 1.6 | 13,642.7 | $11,800.91 | $0.5314 | 5 | 68,213.3 | $0.1063 | 1.8 | 15,600.0 | 78,000.0 |
| Smart Strips | 250 | each | $10 | $2,500 | 0.0% | 0.0071 | 62.4 | 1.6 | 13,642.7 | $11,800.91 | $0.1832 | 5 | 68,213.3 | $0.0366 | 1.8 | 15,600.0 | 78,000.0 |
| Room Occupancy Sensors & Timers | 240 | each | $7 | $1,680 | 0.0% | 0.0046 | 20.8 | 1.0 | 4,365.7 | $7,716.19 | $0.3848 | 8 | 34,925.2 | $0.0481 | 1.1 | 4,992.0 | 39,936.0 |
| **High Efficiency Electronics** | **800,000** | | | **$188,000** | **1.1%** | | | **0.0** | **699,624.0** | **$1,509,836.02** | | | **11,193,984.0** | | | **800,000.0** | **12,800,000.0** |
| TBD - Electronics | 800,000 | kWh | $0.24 | $188,000 | 1.1% | 0.0000 | 1.0 | 0.0 | 699,624.0 | $1,509,836.02 | $0.2687 | 16 | 11,193,984.0 | $0.0168 | 0.0 | 800,000.0 | 12,800,000.0 |
| **Traditional Retail** | | | | | | | | | | | | | | | | | |
| **High Efficiency Appliances** | **4,965** | | | **$488,500** | **2.8%** | | | **144** | **3,573,968** | **$7,597,458** | | | **49,743,179** | | | **4,086,730** | **56,879,900** |
| Garage Refrigerator / Freezer Bounty (Just recycling) | 1,000 | each | $85 | $85,000 | 0.5% | 0.0340 | 859.0 | 29.7 | 751,221.3 | $1,601,691.64 | $0.1131 | 14 | 10,517,097.8 | $0.0081 | 34.0 | 859,000.0 | 12,026,000.0 |
| Refrigerator (with Recycling of Old) | 3,825 | each | $100 | $382,500 | 2.2% | 0.0340 | 822.0 | 113.7 | 2,749,653.5 | $5,886,444.97 | $0.1391 | 14 | 38,495,149.0 | $0.0099 | 130.1 | 3,144,150.0 | 44,018,100.0 |
| Pool VFD Controller Pumps | 140 | each | $150 | $21,000 | 0.1% | 0.0060 | 597.0 | 0.7 | 73,093.2 | $109,321.68 | $0.2873 | 10 | 730,932.2 | $0.0287 | 0.8 | 83,580.0 | 835,800.0 |
| **High Efficiency HVAC** | **860** | | | **$49,000** | **0.3%** | | | **129** | **179,681** | **$1,079,376** | | | **2,642,217** | | | **205,460** | **3,021,300** |
| Solar Attic Fans | 120 | each | $50 | $6,000 | 0.0% | 0.0000 | 158.0 | 0.0 | 16,581.1 | $42,441.34 | $0.3619 | 20 | 331,621.8 | $0.0181 | 0.0 | 18,960.0 | 379,200.0 |
| Whole House Fans | 240 | each | $75 | $18,000 | 0.1% | 0.5000 | 365.0 | 104.9 | 76,608.8 | $851,383.50 | $0.2350 | 20 | 1,532,176.6 | $0.0117 | 120.0 | 87,600.0 | 1,752,000.0 |
| Window AC with Recycling | 500 | each | $50 | $25,000 | 0.1% | 0.0540 | 197.8 | 23.6 | 86,491.0 | $185,550.68 | $0.2890 | 9 | 778,419.2 | $0.0321 | 27.0 | 98,900.0 | 890,100.0 |
| **On-Line Retail** | | | | | | | | | | | | | | | | | |
| **Energy Savings Kits** | **40,600** | | | **$241,466** | **1.4%** | | | **178** | **907,762** | **$2,258,083** | | | **11,937,335** | | | **1,038,000** | **13,650,000** |
| 9W A-Line LED (60W Equiv) | 27,000 | each | $5 | $135,000 | 0.8% | 0.0032 | 22.5 | 75.6 | 531,277.0 | $1,489,520.66 | $0.2541 | 15 | 7,969,154.6 | $0.0169 | 86.4 | 607,500.0 | 9,112,500.0 |
| 9W LED Floodlight (65W Equiv) | 7,200 | each | $5.50 | $39,600 | 0.2% | 0.0032 | 22.5 | 20.1 | 141,673.9 | $397,205.51 | $0.2795 | 15 | 2,125,107.9 | $0.0186 | 23.0 | 162,000.0 | 2,430,000.0 |
| 9W LED Globe Lamp | 3,400 | each | $5.63 | $19,142 | 0.1% | 0.0032 | 22.5 | 9.5 | 66,901.5 | $187,569.27 | $0.2861 | 15 | 1,003,523.2 | $0.0191 | 10.9 | 76,500.0 | 1,147,500.0 |
| Advanced Power Strips - Sensored | 1,200 | each | $29 | $34,800 | 0.2% | 0.0071 | 62.4 | 7.5 | 65,484.8 | $56,644.39 | $0.5314 | 5 | 327,424.0 | $0.1063 | 8.5 | 74,880.0 | 374,400.0 |
| Aerator Bathroom | 300 | each | $0.58 | $174 | 0.0% | 0.1250 | 65.0 | 32.8 | 17,053.3 | $36,844.60 | $0.0102 | 5 | 85,266.7 | $0.0020 | 37.5 | 19,500.0 | 97,500.0 |
| Aerator Kitchen | 100 | each | $1.50 | $150 | 0.0% | 0.0170 | 65.0 | 1.5 | 5,684.4 | $5,518.47 | $0.0264 | 5 | 28,422.2 | $0.0053 | 1.7 | 6,500.0 | 32,500.0 |
| Showerhead -- Electric | 200 | each | $3 | $600 | 0.0% | 0.1250 | 81.2 | 21.9 | 14,202.4 | $26,783.17 | $0.0422 | 5 | 71,011.8 | $0.0084 | 25.0 | 16,240.0 | 81,200.0 |
| Smart Strips | 1,200 | each | $10 | $12,000 | 0.1% | 0.0089 | 62.4 | 9.3 | 65,484.8 | $57,997.00 | $0.1832 | 5 | 327,424.0 | $0.0366 | 10.7 | 74,880.0 | 374,400.0 |
| **Trade Ally Provided** | | | | | | | | | | | | | | | | | |
| **High Efficiency Water Heating** | **1,530** | | | **$725,000** | **4.2%** | | | **560** | **2,680,093** | **$9,904,506** | | | **50,456,577** | | | **3,064,610** | **57,695,650** |
| Heat Pumps | 200 | each | $300 | $60,000 | 0.3% | 0.2100 | 1,644.0 | 36.7 | 287,545.5 | $542,426.16 | $0.2087 | 10 | 2,875,454.6 | $0.0209 | 42.0 | 328,800.0 | 3,288,000.0 |
| Solar Water Heater | 1,250 | units | $500 | $625,000 | 3.6% | 0.4600 | 2,057.0 | 502.9 | 2,248,635.3 | $8,895,608.45 | $0.2779 | 20 | 44,972,705.3 | $0.0139 | 575.0 | 2,571,250.0 | 51,425,000.0 |
| Solar Water Heater Interest Buy-Down | 50 | each | $500 | $25,000 | 0.1% | 0.4600 | 2,057.0 | 20.1 | 89,945.4 | $355,824.34 | $0.2779 | 20 | 1,798,908.2 | $0.0139 | 23.0 | 102,850.0 | 2,057,000.0 |
| PV Water Heater | 30 | each | $500 | $15,000 | 0.1% | 0.0000 | 2,057.0 | 0.0 | 53,967.2 | $110,647.11 | $0.2779 | 15 | 809,508.7 | $0.0185 | 0.0 | 61,710.0 | 925,650.0 |
| **High Efficiency HVAC** | **1,670** | | | **$318,000** | **1.8%** | | | **141** | **815,342** | **$2,591,619** | | | **12,773,735** | | | **932,320** | **14,606,400** |
| Solar Attic Fans | 140 | each | $50 | $7,000 | 0.0% | 0.0000 | 158.0 | 0.0 | 19,344.6 | $49,514.90 | $0.3619 | 20 | 386,892.1 | $0.0181 | 0.0 | 22,120.0 | 442,400.0 |
| VRF Split System AC | 1,200 | tons | $200 | $240,000 | 1.4% | 0.0180 | 640.0 | 18.9 | 671,639.0 | $1,477,103.07 | $0.3573 | 15 | 10,074,585.6 | $0.0238 | 21.6 | 768,000.0 | 11,520,000.0 |
| Whole House Fans | 280 | each | $75 | $21,000 | 0.1% | 0.5000 | 365.0 | 122.4 | 89,377.0 | $993,280.75 | $0.2350 | 20 | 1,787,539.3 | $0.0117 | 140.0 | 102,200.0 | 2,044,000.0 |
| Central Air Conditioning Mini Split Retrofit Pilot | 50 | 0 | $1,000 | $50,000 | 0.3% | 0.0000 | 800.0 | 0.0 | 34,981.2 | $71,720.70 | $1.4293 | 15 | 524,718.0 | $0.0953 | 0.0 | 40,000.0 | 600,000.0 |
| **High Efficiency Appliances** | **140** | | | **$21,000** | **0.1%** | | | **1** | **73,093** | **$109,322** | | | **730,932** | | | **83,580** | **835,800** |
| Pool VFD Controller Pumps | 140 | each | $150 | $21,000 | 0.1% | 0.0060 | 597.0 | 0.7 | 73,093.2 | $109,321.68 | $0.2873 | 10 | 730,932.2 | $0.0287 | 0.8 | 83,580.0 | 835,800.0 |
| **Potentially Any and All Channels** | | | | | | | | | | | | | | | | | |
| **Potentially Any and All Measures** | **2,280,310** | | | **$212,500** | **1.2%** | | | **199** | **2,054,333** | **$3,666,136** | | | **20,543,330** | | | **2,280,310** | **22,803,100** |
| Direct-to-Consumer Program Enhancements | 2,280,310 | kWh | $0.09 | $212,500 | 1.2% | 0.0001 | 1.0 | 199.4 | 2,054,333.0 | $3,666,135.89 | $0.1034 | 10 | 20,543,330.0 | $0.0103 | 228.0 | 2,280,310.0 | 22,803,100.0 |
| **CREEM** | | | | **$76,500** | **0.4%** | | | **33** | **334,508** | **$600,209** | | | **3,345,077** | | | **382,500** | **3,825,000** |
| **Trade Ally Provided** | | | | | | | | | | | | | | | | | |
| **High Efficiency Custom Measure(s)** | **382,500** | | | **$76,500** | **0.4%** | | | **33.5** | **334,507.7** | **$600,209.20** | | | **3,345,077.3** | | | **382,500.0** | **3,825,000.0** |
| Custom Measure(s) | 382,500 | kWh | $0.20 | $76,500 | 0.4% | 0.0001 | 1.0 | 33.5 | 334,507.7 | $600,209.20 | $0.2287 | 10 | 3,345,077.3 | $0.0229 | 38.3 | 382,500.0 | 3,825,000.0 |
| **RESM** | | | | **$254,500** | **1.5%** | | | **73** | **582,879** | **$603,199** | | | **3,299,230** | | | **666,505** | **3,772,575** |
| **Trade Ally Provided** | | | | | | | | | | | | | | | | | |
| **High Efficiency Water Heating** | **2,500** | | | **$250,000** | **1.4%** | | | **63.4** | **544,394.9** | **$471,948.09** | | | **2,721,974.6** | | | **622,500.0** | **3,112,500.0** |
| Solar Water Heater Tune Up | 2,500 | each | $100 | $250,000 | 1.4% | 0.0290 | 249.0 | 63.4 | 544,394.9 | $471,948.09 | $0.4592 | 5 | 2,721,974.6 | $0.0918 | 72.5 | 622,500.0 | 3,112,500.0 |
| **High Efficiency HVAC** | **50** | | | **$4,500** | **0.0%** | | | **9.9** | **38,483.7** | **$131,250.89** | | | **577,255.4** | | | **44,005.0** | **660,075.0** |
| Central Air Conditioning Tune up | 50 | each | $90 | $4,500 | 0.0% | 0.2260 | 880.1 | 9.9 | 38,483.7 | $131,250.89 | $0.1169 | 15 | 577,255.4 | $0.0078 | 11.3 | 44,005.0 | 660,075.0 |

| | Quantity | Unit | Average Incentive per Unit | Incentive Budget per Measure | % of Budget | Demand Savings per Unit (kW) | Energy Savings per Unit (kWh) | Program-Level 1st Year Demand Savings (kW) | Program-Level 1st Year Energy Savings (kWh) | Utility Avoided Cost Total Resource Benefit (TRB) | Program-Level 1st Year $/kWh | Measure Life | Program-Level Lifetime Energy Savings (kWh) | Program-Level Lifetime $/kWh | Customer-Level 1st Year Demand Savings (kW) | Customer-Level 1st Year Energy Savings (kWh) | Customer-Level Lifetime Energy Savings (kWh) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Direct Incentives** | | | | | | | | | | | | | | | | | |
| **RESIDENTIAL RESOURCE ACQUISITION** | | | | | | | | | | | | | | | | | |
| **RHTR** | | | | **$1,028,780** | **6.0%** | | | **524** | **1,603,094** | **$2,424,101** | | | **12,718,254** | | | **1,448,143** | **11,488,938** |
| **Trade Ally Provided** | | | | | | | | | | | | | | | | | |
| **Special Initiatives** | **448** | | | **$394,500** | **2.3%** | | | **36** | **480,500** | **$1,088,172** | | | **6,636,270** | | | **434,056** | **5,994,824** |
| Direct Install - Heat Pump Water Heater (HPWH) | 50 | each | $2,400 | $120,000 | 0.7% | 0.2100 | 1,644.0 | 11.6 | 90,995.4 | $171,653.85 | $1.3187 | 10 | 909,954.0 | $0.1319 | 10.5 | 82,200.0 | 822,000.0 |
| Direct Install - Solar Water Heater (SWH) | 20 | each | $9,000 | $180,000 | 1.0% | 0.4600 | 2,057.0 | 10.2 | 45,542.0 | $180,164.22 | $3.9524 | 20 | 910,839.6 | $0.1976 | 9.2 | 41,140.0 | 822,800.0 |
| Refrigerator (with Recycling of Old) | 378 | each | $250 | $94,500 | 0.5% | 0.0340 | 822.0 | 14.2 | 343,962.6 | $736,353.50 | $0.2747 | 14 | 4,815,476.6 | $0.0196 | 12.9 | 310,716.0 | 4,350,024.0 |
| **R Scheduled Multi-Family Direct Install (See: G, J or P Scheduled MFDI)** | **31,281** | | | **$634,280** | **3.7%** | | | **488** | **1,122,594** | **$1,335,930** | | | **6,081,984** | | | **1,014,087** | **5,494,114** |
| Advanced Power Strips - Sensored | 3,018 | each | $66.79 | $201,572.22 | 1.2% | 0.0071 | 62.4 | 23.7 | 208,473.8 | $180,329.93 | $0.9669 | 5 | 1,042,368.9 | $0.1934 | 21.4 | 188,323.2 | 941,616.0 |
| Aerator Bathroom | 2,668 | each | $7.10 | $18,942.80 | 0.1% | 0.0170 | 65.0 | 50.2 | 191,975.9 | $186,370.61 | $0.0987 | 5 | 959,879.7 | $0.0197 | 45.4 | 173,420.0 | 867,100.0 |
| Aerator Kitchen | 2,434 | each | $8.22 | $20,007.48 | 0.1% | 0.0170 | 65.0 | 45.8 | 175,138.5 | $170,024.76 | $0.1142 | 5 | 875,692.4 | $0.0228 | 41.4 | 158,210.0 | 791,050.0 |
| CFL 13W | 13,612 | each | $3.36 | $45,736.32 | 0.3% | 0.0024 | 17.0 | 36.2 | 256,164.2 | $290,052.05 | $0.1785 | 6 | 1,536,985.4 | $0.0298 | 32.7 | 231,404.0 | 1,388,424.0 |
| CFL 9W Globe | 2,350 | each | $6.60 | $15,510.00 | 0.1% | 0.0024 | 17.0 | 6.2 | 44,224.7 | $50,075.10 | $0.3507 | 6 | 265,347.9 | $0.0585 | 5.6 | 39,950.0 | 239,700.0 |
| LED 5W | 677 | each | $5.01 | $3,391.77 | 0.0% | 0.0032 | 22.5 | 2.4 | 16,862.4 | $47,276.39 | $0.2011 | 15 | 252,935.7 | $0.0134 | 2.2 | 15,232.5 | 228,487.5 |
| Showerhead Fixed | 1,181 | each | $15.26 | $18,022.06 | 0.1% | 0.1144 | 81.2 | 149.6 | 106,158.2 | $190,272.60 | $0.1698 | 5 | 530,791.0 | $0.0340 | 135.1 | 95,897.2 | 479,486.0 |
| Showerhead Handheld | 1,375 | each | $22.53 | $30,978.75 | 0.2% | 0.1144 | 81.2 | 174.1 | 123,596.6 | $221,528.22 | $0.2506 | 5 | 617,982.8 | $0.0501 | 157.3 | 111,650.0 | 558,250.0 |
| Site Visit Fee | 3,966 | each | $70.63 | $280,118.58 | 1.6% | 0.0000 | 0.0 | 0.0 | 0.0 | $0.00 | $0.0000 | 0 | 0.0 | $0.0000 | 0.0 | 0.0 | 0.0 |

## APPENDIX B Summary of PY16 Resource Acquisition Programs (By Measure), continued

| | Quantity | Unit | Average Incentive per Unit | Incentive Budget per Measure | % of Budget | Demand Savings per Unit (kW) | Energy Savings per Unit (kWh) | Program-Level 1st Year Demand Savings (kW) | Program-Level 1st Year Energy Savings (kWh) | Utility Avoided Cost Total Resource Benefit (TRB) | Program-Level 1st Year $/kWh | Measure Life | Program-Level Lifetime Energy Savings (kWh) | Program-Level Lifetime $/kWh | Customer-Level 1st Year Demand Savings (kW) | Customer-Level 1st Year Energy Savings (kWh) | Customer-Level Lifetime Energy Savings (kWh) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Direct Incentives** | | | | | | | | | | | | | | | | | |
| **COMMERCIAL RESOURCE ACQUISITION** | | | | | | | | | | | | | | | | | |
| **BEEM** | | | | **$3,846,975** | **22.3%** | | | **4,371** | **33,584,687** | **$90,628,408** | | | **497,892,677** | | | **40,451,294** | **599,690,066** |
| **Midstream** | | | | | | | | | | | | | | | | | |
| **High Efficiency Lighting** | **195,400** | | | **$1,271,675** | **7.4%** | | | **1,377** | **14,522,948** | **$36,749,051** | | | **215,915,714** | | | **17,492,259** | **260,061,082** |
| Linear Fluorescent: T12/T8 to T8 Low Wattage (4 foot lamps) | 12,300 | lamps | $2 | $24,600 | 0.1% | 0.0050 | 32.9 | 51.1 | 335,977.3 | $900,279.91 | $0.0732 | 14 | $4,703,681.75 | $0.0052 | 61.5 | 404,670.0 | 5,665,380.0 |
| Linear Fluorescent: T12 to T8 Standard (3 foot lamps) | 300 | lamps | $4 | $1,200 | 0.0% | 0.0040 | 56.4 | 1.0 | 14,047.8 | $32,096.17 | $0.0854 | 14 | $196,669.62 | $0.0061 | 1.2 | 16,920.0 | 236,880.0 |
| Linear Fluorescent: T12 to T8 Standard (2 foot lamps) | 1,200 | lamps | $3 | $3,600 | 0.0% | 0.0040 | 35.9 | 4.0 | 35,767.2 | $88,775.70 | $0.1007 | 14 | $500,740.38 | $0.0072 | 4.8 | 43,080.0 | 603,120.0 |
| Delamp with Reflector Kit (8 Foot Lamp) | 300 | lamps removed | $10 | $3,000 | 0.0% | 0.2300 | 333.0 | 57.3 | 82,942.0 | $439,894.14 | $0.0362 | 14 | $1,161,187.65 | $0.0026 | 69.0 | 99,900.0 | 1,398,600.0 |
| Delamp with Reflector Kit (4 foot Lamp) | 4,500 | lamps removed | $5 | $22,500 | 0.1% | 0.0100 | 149.2 | 37.4 | 557,429.9 | $1,263,019.77 | $0.0404 | 14 | $7,804,017.90 | $0.0029 | 45.0 | 671,400.0 | 9,399,600.0 |
| Delamp with Reflector Kit (2 foot Lamp) | 1,650 | lamps removed | $3 | $4,125 | 0.0% | 0.0060 | 80.0 | 8.2 | 109,593.0 | $252,572.57 | $0.0376 | 14 | $1,534,302.00 | $0.0027 | 9.9 | 132,000.0 | 1,848,000.0 |
| Linear T8 to Linear LED Tube: w/ Integrated Driver - Plug & Play (Type A) | 75,000 | lamps | $5 | $375,000 | 2.2% | 0.0042 | 60.6 | 261.5 | 3,770,372.8 | $9,115,662.50 | $0.0995 | 15 | $56,555,592.19 | $0.0066 | 315.0 | 4,541,250.0 | 68,118,750.0 |
| Linear T12/T8 to Linear LED Tube: w/ Remote Driver (Type C) | 21,600 | lamps | $10 | $216,000 | 1.3% | 0.0060 | 86.5 | 107.6 | 1,551,239.1 | $3,750,444.00 | $0.1392 | 15 | $23,268,586.50 | $0.0093 | 129.6 | 1,868,400.0 | 28,026,000.0 |
| LED Omni-Directional: Screw-In | 18,000 | lamps | $3 | $54,000 | 0.3% | 0.0041 | 58.8 | 60.7 | 878,144.8 | $2,122,033.48 | $0.0615 | 15 | $13,172,172.57 | $0.0041 | 73.1 | 1,057,687.2 | 15,865,308.7 |
| LED Omni-Directional: Pin | 18,000 | lamps | $5 | $90,000 | 0.5% | 0.0041 | 58.8 | 60.7 | 878,144.8 | $2,122,033.48 | $0.1025 | 15 | $13,172,172.57 | $0.0068 | 73.1 | 1,057,687.2 | 15,865,308.7 |
| LED Specialty: Screw-In or Pin | 37,200 | lamps | $7 | $260,400 | 1.5% | 0.0209 | 180.5 | 645.5 | 5,574,796.7 | $14,849,242.53 | $0.0467 | 15 | $83,621,949.75 | $0.0031 | 777.5 | 6,714,600.0 | 100,719,000.0 |
| LED Flat Panel Drop-In Replacements | 1,000 | Fixtures | $50 | $50,000 | 0.3% | 0.0186 | 268.2 | 15.4 | 222,631.5 | $538,258.17 | $0.2246 | 15 | $3,339,473.06 | $0.0150 | 18.6 | 268,150.0 | 4,022,250.0 |
| LED Refrigerated Case Lighting | 1,350 | lamps | $75 | $101,250 | 0.6% | 0.0320 | 199.7 | 35.9 | 223,831.2 | $648,911.22 | $0.4523 | 15 | $3,357,468.73 | $0.0302 | 43.2 | 269,595.0 | 4,043,925.0 |
| LED Exit Signs | 600 | signs | $30 | $18,000 | 0.1% | 0.0350 | 307.0 | 17.4 | 152,932.1 | $428,763.62 | $0.1177 | 16 | $2,446,912.80 | $0.0074 | 21.0 | 184,200.0 | 2,947,200.0 |
| Occupancy Light Sensors | 2,400 | sensors | $20 | $48,000 | 0.3% | 0.0068 | 67.8 | 13.5 | 135,098.3 | $197,063.98 | $0.3553 | 8 | $1,080,786.24 | $0.0444 | 16.3 | 162,720.0 | 1,301,760.0 |
| **Trade Ally Provided** | | | | | | | | | | | | | | | | | |
| **High Efficiency Lighting** | **147,150** | | | **$970,200** | **5.6%** | | | **1,363** | **11,651,844** | **$30,466,781** | | | **171,373,692** | | | **14,034,140** | **206,412,155** |
| Linear Fluorescent: T12/T8 to T8 Low Wattage (4 foot lamps) | 8,200 | lamps | $2 | $16,400 | 0.1% | 0.0050 | 32.9 | 34.0 | 223,984.8 | $600,186.61 | $0.0732 | 14 | $3,135,787.83 | $0.0052 | 41.0 | 269,780.0 | 3,776,920.0 |
| Linear Fluorescent: T12 to T8 Standard (3 foot lamps) | 200 | lamps | $4 | $800 | 0.0% | 0.0040 | 56.4 | 0.7 | 9,365.2 | $21,397.45 | $0.0854 | 14 | $131,113.08 | $0.0061 | 0.8 | 11,280.0 | 157,920.0 |
| Linear Fluorescent: T12 to T8 Standard (2 foot lamps) | 800 | lamps | $3 | $2,400 | 0.0% | 0.0040 | 35.9 | 2.7 | 23,844.8 | $59,183.80 | $0.1007 | 14 | $333,826.92 | $0.0072 | 3.2 | 28,720.0 | 402,080.0 |
| Delamp Only (8 Foot Lamp) | 1,800 | lamps removed | $15 | $27,000 | 0.2% | 0.2300 | 333.0 | 343.7 | 497,651.9 | $2,639,364.82 | $0.0543 | 14 | $6,967,125.90 | $0.0039 | 414.0 | 599,400.0 | 8,391,600.0 |
| Delamp Only (4 foot Lamp) | 10,000 | lamps removed | $10 | $100,000 | 0.6% | 0.0100 | 149.2 | 83.0 | 1,238,733.0 | $2,806,710.61 | $0.0807 | 14 | $17,342,262.00 | $0.0058 | 100.0 | 1,492,000.0 | 20,888,000.0 |
| Delamp Only (2 foot Lamp) | 5,750 | lamps removed | $5 | $28,750 | 0.2% | 0.0060 | 80.0 | 28.6 | 381,915.0 | $880,177.14 | $0.0753 | 14 | $5,346,810.00 | $0.0054 | 34.5 | 460,000.0 | 6,440,000.0 |
| Delamp with Reflector Kit (8 Foot Lamp) | 200 | lamps removed | $10 | $2,000 | 0.0% | 0.2300 | 333.0 | 38.2 | 55,294.7 | $293,262.76 | $0.0362 | 14 | $774,125.10 | $0.0026 | 46.0 | 66,600.0 | 932,400.0 |
| Delamp with Reflector Kit (4 foot Lamp) | 3,000 | lamps removed | $5 | $15,000 | 0.1% | 0.0100 | 149.2 | 24.9 | 371,619.9 | $842,013.18 | $0.0404 | 14 | $5,202,678.60 | $0.0029 | 30.0 | 447,600.0 | 6,266,400.0 |
| Delamp with Reflector Kit (2 foot Lamp) | 1,100 | lamps removed | $2.50 | $2,750 | 0.0% | 0.0060 | 80.0 | 5.5 | 73,062.0 | $168,381.71 | $0.0376 | 14 | $1,022,868.00 | $0.0027 | 6.6 | 88,000.0 | 1,232,000.0 |
| Linear T8 to Linear LED Tube: w/ Integrated Driver - Plug & Play (Type A) | 50,000 | lamps | $5 | $250,000 | 1.4% | 0.0042 | 60.6 | 174.4 | 2,513,581.9 | $6,077,108.33 | $0.0995 | 15 | $37,703,728.13 | $0.0066 | 210.0 | 3,027,500.0 | 45,412,500.0 |
| Linear T12/T8 to Linear LED Tube: w/ Remote Driver (Type C) | 14,400 | lamps | $10 | $144,000 | 0.8% | 0.0060 | 86.5 | 71.7 | 1,034,159.4 | $2,500,296.00 | $0.1392 | 15 | $15,512,391.00 | $0.0093 | 86.4 | 1,245,600.0 | 18,684,000.0 |
| LED Omni-Directional: Screw-In | 12,000 | lamps | $3 | $36,000 | 0.2% | 0.0041 | 58.8 | 40.5 | 585,429.9 | $1,414,688.99 | $0.0615 | 15 | $8,781,448.38 | $0.0041 | 48.7 | 705,124.8 | 10,576,872.5 |
| LED Omni-Directional: Pin | 12,000 | lamps | $5 | $60,000 | 0.3% | 0.0041 | 58.8 | 40.5 | 585,429.9 | $1,414,688.99 | $0.1025 | 15 | $8,781,448.38 | $0.0068 | 48.7 | 705,124.8 | 10,576,872.5 |
| LED Specialty: Screw-In or Pin | 24,800 | lamps | $7 | $173,600 | 1.0% | 0.0209 | 180.5 | 430.3 | 3,716,531.1 | $9,899,495.02 | $0.0467 | 15 | $55,747,966.50 | $0.0031 | 518.3 | 4,476,400.0 | 67,146,000.0 |
| LED Refrigerated Case Lighting | 900 | lamps | $75 | $67,500 | 0.4% | 0.0320 | 199.7 | 23.9 | 149,220.8 | $432,607.48 | $0.4523 | 15 | $2,238,312.49 | $0.0302 | 28.8 | 179,730.0 | 2,695,950.0 |
| LED Exit Signs | 400 | signs | $30 | $12,000 | 0.1% | 0.0350 | 307.0 | 11.6 | 101,954.7 | $285,842.41 | $0.1177 | 16 | $1,631,275.20 | $0.0074 | 14.0 | 122,800.0 | 1,964,800.0 |
| Occupancy Light Sensors | 1,600 | sensors | $20 | $32,000 | 0.2% | 0.0068 | 67.8 | 9.0 | 90,065.5 | $131,375.98 | $0.3553 | 8 | $720,524.16 | $0.0444 | 10.9 | 108,480.0 | 867,840.0 |
| **High Efficiency HVAC** | **513,250** | | | **$1,080,500** | **6.3%** | | | **1,349** | **5,284,777** | **$18,506,167** | | | **83,536,276** | | | **6,365,284** | **100,615,810** |
| Chillers: Meets 2015 Energy Code | 6,450 | Tons | $50 | $322,500 | 1.9% | 0.0550 | 267.8 | 294.5 | 1,434,099.1 | $5,509,879.01 | $0.2249 | 20 | $28,681,982.55 | $0.0112 | 354.8 | 1,727,310.0 | 34,546,200.0 |
| Package Units: Better than Current Code | 700 | tons | $200 | $140,000 | 0.8% | 0.0560 | 552.2 | 32.5 | 320,924.8 | $830,386.31 | $0.4362 | 15 | $4,813,872.53 | $0.0291 | 39.2 | 386,540.0 | 5,798,100.0 |
| VFD - AHU | 3,600 | hp | $50 | $180,000 | 1.0% | 0.2000 | 471.7 | 597.8 | 1,409,834.2 | $6,057,166.55 | $0.1277 | 15 | $21,147,513.62 | $0.0085 | 720.0 | 1,698,084.0 | 25,471,260.0 |
| VFD - Chilled Water / Condenser Water | 1,600 | hp | $80 | $128,000 | 0.7% | 0.2450 | 902.7 | 325.5 | 1,199,146.7 | $4,182,623.70 | $0.1067 | 15 | $17,987,200.20 | $0.0071 | 392.0 | 1,444,320.0 | 21,664,800.0 |
| Variable Refrigerant Flow Air Conditioners - Existing Facility | 400 | Tons | $250 | $100,000 | 0.6% | 0.0680 | 676.7 | 22.6 | 224,732.1 | $580,388.50 | $0.4450 | 15 | $3,370,981.05 | $0.0297 | 27.2 | 270,680.0 | 4,060,200.0 |
| Variable Refrigerant Flow Air Conditioners - New Construction | 500 | Tons | $300 | $150,000 | 0.9% | 0.0680 | 676.7 | 28.2 | 280,915.1 | $725,485.62 | $0.5340 | 15 | $4,213,726.31 | $0.0356 | 34.0 | 338,350.0 | 5,075,250.0 |
| Garage Active Ventilation Control | 500,000 | kWh | $0.12 | $60,000 | 0.3% | 0.0001 | 1.0 | 47.4 | 415,125.0 | $620,237.26 | $0.1445 | 8 | $3,321,000.00 | $0.0181 | 57.1 | 500,000.0 | 4,000,000.0 |
| **High Efficiency Motors** | **1,400** | | | **$86,000** | **0.5%** | | | **24** | **304,536** | **$753,903** | | | **4,568,036** | | | **366,800** | **5,502,000** |
| ECM - Fan Coil Fans | 1,100 | motors | $55 | $60,500.00 | 0.4% | 0.0265 | 232.0 | 24.2 | 211,879.8 | $562,614.25 | $0.2855 | 15 | $3,178,197.00 | $0.0190 | 29.2 | 255,200.0 | 3,828,000.0 |
| ECM w/Controller- Evaporator Fan Motors | 300 | motors | $85 | $25,500.00 | 0.1% | 0.0010 | 372.0 | 0.2 | 92,655.9 | $191,288.50 | $0.2752 | 15 | $1,389,838.50 | $0.0183 | 0.3 | 111,600.0 | 1,674,000.0 |
| **High Efficiency Water Heating** | **795** | | | **$103,650** | **0.6%** | | | **64** | **363,948** | **$1,156,476** | | | **5,877,008** | | | **438,360** | **7,078,600** |
| Commercial Solar Water Heating - Elec. Res. | 275 | tons | $250 | $68,750.00 | 0.4% | 0.2500 | 980.0 | 57.1 | 223,752.4 | $929,141.46 | $0.3073 | 20 | $4,475,047.50 | $0.0154 | 68.8 | 269,500.0 | 5,390,000.0 |
| Heat Pump - End-of-Life Upgrade | 500 | tons | $65 | $32,500.00 | 0.2% | 0.0150 | 300.0 | 6.2 | 124,537.5 | $202,783.39 | $0.2610 | 10 | $1,245,375.00 | $0.0261 | 7.5 | 150,000.0 | 1,500,000.0 |
| Heat Pump - Conversion from Electric Resistance | 20 | tons | $120 | $2,400.00 | 0.0% | 0.0300 | 943.0 | 0.5 | 15,658.5 | $24,551.10 | $0.1533 | 10 | $156,585.15 | $0.0153 | 0.6 | 18,860.0 | 188,600.0 |
| **High Efficiency Water Pumping** | **115** | | | **$50,900** | **0.3%** | | | **13** | **139,242** | **$350,421** | | | **2,063,851** | | | **167,711** | **2,485,819** |
| VFD Dom. Water Boosters - VFD ($3K per Sys.) | 75 | hp | $600 | $45,000.00 | 0.3% | 0.0560 | 588.2 | 3.5 | 36,623.4 | $93,559.60 | $1.2287 | 15 | $549,350.48 | $0.0819 | 4.2 | 44,111.3 | 661,668.8 |
| VFD Dom. Water Boosters - added HP Reduction | 30 | hp reduced | $80 | $2,400.00 | 0.0% | 0.3730 | 3,921.0 | 9.3 | 97,662.3 | $249,448.30 | $0.0246 | 15 | $1,464,934.61 | $0.0016 | 11.2 | 117,630.0 | 1,764,450.0 |
| VFD Pool Pump Packages | 10 | hp | $350 | $3,500.00 | 0.0% | 0.0060 | 597.0 | 0.0 | 4,956.6 | $7,413.31 | $0.7061 | 10 | $49,565.93 | $0.0706 | 0.1 | 5,970.0 | 59,700.0 |
| **Envelope Improvements** | **60,000** | | | **$42,000** | **0.2%** | | | **65** | **244,094** | **$571,952** | | | **2,440,935** | | | **294,000** | **2,940,000** |
| Window Tinting | 60,000 | square feet | $0.70 | $42,000.00 | 0.2% | 0.0013 | 4.9 | 64.8 | 244,093.5 | $571,952.33 | $0.1721 | 10 | $2,440,935.00 | $0.0172 | 78.0 | 294,000.0 | 2,940,000.0 |
| **Scheduling & Control Systems** | **1,200** | | | **$170,000** | **1.0%** | | | **85** | **595,372** | **$932,048** | | | **4,762,978** | | | **717,100** | **5,736,800** |
| Hotel Room Occupancy Controls | 500 | units | $100 | $50,000.00 | 0.3% | 0.1000 | 750.0 | 41.5 | 311,343.8 | $480,430.54 | $0.1606 | 8 | $2,490,750.00 | $0.0201 | 50.0 | 375,000.0 | 3,000,000.0 |
| Vending Machine Energy Control Systems | 200 | units | $100 | $20,000.00 | 0.1% | 0.1170 | 1,028.0 | 19.4 | 170,699.4 | $254,890.32 | $0.1172 | 8 | $1,365,595.20 | $0.0146 | 23.4 | 205,600.0 | 1,644,800.0 |
| Condominum Submetering | 500 | units metered | $200 | $100,000.00 | 0.6% | 0.0570 | 273.0 | 23.7 | 113,329.1 | $196,726.75 | $0.8824 | 8 | $906,633.00 | $0.1103 | 28.5 | 136,500.0 | 1,092,000.0 |
| **High Efficiency Equipment & Appliances** | **40** | | | **$20,800** | **0.1%** | | | **8** | **69,110** | **$257,159** | | | **1,727,750** | | | **83,240** | **2,081,000** |
| Transformers (One-Phase) - Various: 15 to 333 KVA | 20 | Unit | $455 | $9,100.00 | 0.1% | 0.2100 | 1,817.0 | 3.5 | 30,171.3 | $112,314.09 | $0.3016 | 25 | $754,282.13 | $0.0121 | 4.2 | 36,340.0 | 908,500.0 |
| Transformers (Three-Phase) - Various: 15 to 1,000 KVA | 20 | Unit | $585 | $11,700.00 | 0.1% | 0.2700 | 2,345.0 | 4.5 | 38,938.7 | $144,845.17 | $0.3005 | 25 | $973,468.13 | $0.0120 | 5.4 | 46,900.0 | 1,172,500.0 |
| **Refrigeration Improvements** | **500** | | | **$5,000** | **0.0%** | | | **8** | **24,243** | **$63,017** | | | **242,433** | | | **29,200** | **292,000** |
| Refrigerated Night Covers | 500 | Linear Feet | $10 | $5,000.00 | 0.0% | 0.0200 | 58.4 | 8.3 | 24,243.3 | $63,017.08 | $0.2062 | 10 | $242,433.00 | $0.0206 | 10.0 | 29,200.0 | 292,000.0 |
| **Traditional Retail** | | | | | | | | | | | | | | | | | |
| **High Efficiency Equipment & Appliances** | **550** | | | **$46,250** | **0.3%** | | | **16** | **384,572** | **$821,433** | | | **5,384,005** | | | **463,200** | **6,484,800** |
| Garage Refrigerator / Freezer Bounty (Just recycling) | 300 | Unit | $50 | $15,000.00 | 0.1% | 0.0340 | 859.0 | 8.5 | 213,955.4 | $456,178.00 | $0.0701 | 14 | $2,995,375.95 | $0.0050 | 10.2 | 257,700.0 | 3,607,800.0 |
| Refrigerator (with Recycling of Old) | 250 | Unit | $125 | $31,250.00 | 0.2% | 0.0340 | 822.0 | 7.1 | 170,616.4 | $365,254.71 | $0.1832 | 14 | $2,388,629.25 | $0.0131 | 8.5 | 205,500.0 | 2,877,000.0 |

| | Quantity | Unit | Average Incentive per Unit | Incentive Budget per Measure | % of Budget | Demand Savings per Unit (kW) | Energy Savings per Unit (kWh) | Program-Level 1st Year Demand Savings (kW) | Program-Level 1st Year Energy Savings (kWh) | Utility Avoided Cost Total Resource Benefit (TRB) | Program-Level 1st Year $/kWh | Measure Life | Program-Level Lifetime Energy Savings (kWh) | Program-Level Lifetime $/kWh | Customer-Level 1st Year Demand Savings (kW) | Customer-Level 1st Year Energy Savings (kWh) | Customer-Level Lifetime Energy Savings (kWh) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Direct Incentives** | | | | | | | | | | | | | | | | | |
| **COMMERCIAL RESOURCE ACQUISITION** | | | | | | | | | | | | | | | | | |
| **CBEEM** | | | | **$2,118,647** | **12.3%** | | | **1,920** | **13,712,104** | **$34,203,527** | | | **183,474,156** | | | **16,515,633** | **220,986,638** |
| **Trade Ally Provided** | | | | | | | | | | | | | | | | | |
| **High Efficiency Lighting** | **6,772,138** | | | **$812,656.61** | **4.7%** | | | **787** | **5,622,568** | **$14,738,172** | | | **78,715,951** | | | **6,772,138** | **94,809,938** |
| Customized Project Measures - Over 5 Year Life: LED | 5,514,594 | kWh | $0.12 | $661,751.23 | 3.8% | 0.0001 | 1.0 | 641.0 | 4,578,491.3 | $12,001,383.64 | $0.1445 | 14 | $64,098,878.48 | $0.0103 | 772.0 | 5,514,593.6 | 77,204,310.1 |
| Customized Project Measures - Over 5 Year Life: Non-LED | 1,257,545 | kWh | $0.12 | $150,905.38 | 0.9% | 0.0001 | 1.0 | 146.2 | 1,044,076.6 | $2,736,788.78 | $0.1445 | 14 | $14,617,072.22 | $0.0103 | 176.1 | 1,257,544.8 | 17,605,627.5 |
| **High Efficiency HVAC** | **2,267,778** | | | **$272,133** | **1.6%** | | | **264** | **1,882,823** | **$5,256,632** | | | **28,242,338** | | | **2,267,778** | **34,016,667** |
| Customized Project Measures - Over 5 Year Life: HVAC TBD | 2,267,778 | kWh | $0.12 | $272,133.34 | 1.6% | 0.0001 | 1.0 | 263.6 | 1,882,822.5 | $5,256,632.29 | $0.1445 | 15 | $28,242,338.03 | $0.0096 | 317.5 | 2,267,777.8 | 34,016,667.3 |
| **High Efficiency TBD** | **7,475,717** | | | **$1,033,857.50** | **6.0%** | | | **869** | **6,206,714** | **$14,208,722** | | | **76,515,868** | | | **7,475,717** | **92,160,033** |
| Customized Project Measures - Over 5 Year Life: TBD - Committed | 6,225,717 | kWh | $0.15 | $933,857.50 | 5.4% | 0.0001 | 1.0 | 723.6 | 5,168,901.3 | $13,548,997.42 | $0.1807 | 14 | $72,364,617.68 | $0.0129 | 871.6 | 6,225,716.7 | 87,160,033.3 |
| Customized Project Measures - Less than 5 Year Life: TBD - Uncommitted | 1,250,000 | kWh | $0.08 | $100,000 | 0.6% | 0.0001 | 1.0 | 145.3 | 1,037,812.5 | $659,724.69 | $0.0964 | 4 | $4,151,250.00 | $0.0241 | 175.0 | 1,250,000.0 | 5,000,000.0 |
| **BESM** | | | | **$321,250** | **1.9%** | | | **268** | **2,285,942** | **$3,242,661** | | | **18,156,908** | | | **2,121,040** | **16,528,320** |
| **Trade Ally Provided** | | | | | | | | | | | | | | | | | |
| **Behavioral Energy Awareness / Responsibility** | **100** | | | **$20,000** | **0.1%** | | | **12** | **43,160** | **$82,528** | | | **345,278** | | | **41,040** | **328,320** |
| Commercial Property Submetering (Pilot / TBD) | 100 | units metered | $200 | $20,000 | 0.1% | 0.1140 | 410.4 | 12.0 | 43,159.7 | $82,528.09 | $0.4634 | 8 | $345,277.73 | $0.0579 | 11.4 | 41,040.0 | 328,320.0 |
| **High Efficiency HVAC** | **13** | | | **$31,250** | **0.2%** | | | **0** | **0** | **$0** | | | **0** | | | **0** | **0** |
| Optimized Chiller Selection Engineering | 13 | Units | $2,500 | $31,250 | 0.2% | 0.0000 | 0.0 | 0.0 | 0.0 | $0.00 | $0.0000 | 20 | $0.00 | $0.0000 | 0.0 | 0.0 | 0.0 |
| **High Efficiency Water Pumping** | **80,000** | | | **$100,000** | **0.6%** | | | **10** | **84,132** | **$223,369** | | | **1,261,980** | | | **80,000** | **1,200,000** |
| Water & Waste Water Catalyst - Rural Site Grants | 80,000 | kWh | $1.25 | $100,000 | 0.6% | 0.0001 | 1.0 | 9.6 | 84,132.0 | $223,368.90 | $1.1886 | 15 | $1,261,980.00 | $0.0792 | 9.1 | 80,000.0 | 1,200,000.0 |
| **Commissioning / Recommissioning** | **1,000,000** | | | **$170,000** | **1.0%** | | | **120** | **1,051,650** | **$174,395** | | | **1,051,650** | | | **1,000,000** | **1,000,000** |
| System Retrocommissioning | 1,000,000 | kWh | $0.17 | $170,000 | 1.0% | 0.0001 | 1.0 | 120.1 | 1,051,650.0 | $174,395.12 | $0.1617 | 1 | $1,051,650.00 | $0.1617 | 114.2 | 1,000,000.0 | 1,000,000.0 |
| **Program Direct** | | | | | | | | | | | | | | | | | |
| **Strategic Energy Management** | **1,000,000** | | | **$0** | **0.0%** | | | **126** | **1,107,000** | **$2,762,369** | | | **15,498,000** | | | **1,000,000** | **14,000,000** |
| Influenced - Non-Incentivised Efforts: Influenced - Non-Incentivised Efforts | 1,000,000 | kWh | $0 | $0.00 | 0.0% | 0.0001 | 1.0 | 126.4 | 1,107,000.0 | $2,762,368.55 | $0.0000 | 14 | $15,498,000.00 | $0.0000 | 114.2 | 1,000,000.0 | 14,000,000.0 |
| **BHTR** | | | | **$3,152,038** | **18.3%** | | | **2,916** | **12,277,159** | **$31,082,121** | | | **143,470,312** | | | **11,195,327** | **130,858,801** |
| **Trade Ally Provided** | | | | | | | | | | | | | | | | | |
| **Kitchen Equipment** | **50** | | | **$35,000** | **0.2%** | | | **25** | **144,279** | **$426,434** | | | **2,164,188** | | | **131,650** | **1,974,750** |
| Kitchen Exhaust Hood Demand Ventilation | 50 | hp | $700 | $35,000 | 0.2% | 0.4500 | 2,633.0 | 24.7 | 144,279.2 | $426,434.09 | $0.2426 | 15 | $2,164,187.77 | $0.0162 | 22.5 | 131,650.0 | 1,974,750.0 |
| **Special Initiatives** | **200** | | | **$50,000** | **0.3%** | | | **8** | **181,991** | **$389,605** | | | **2,547,871** | | | **164,400** | **2,301,600** |
| Refrigerator (with Recycling of Old) | 200 | each | $250 | $50,000 | 0.3% | 0.0340 | 822.0 | 7.5 | 181,990.8 | $389,605.03 | $0.2747 | 14 | $2,547,871.20 | $0.0196 | 6.8 | 164,400.0 | 2,301,600.0 |
| **Traditional Retail** | | | | | | | | | | | | | | | | | |
| **Kitchen Equipment** | **176** | | | **$81,000** | **0.5%** | | | **167** | **782,875** | **$1,983,889** | | | **9,394,500** | | | **714,348** | **8,572,171** |
| Commercial Ice Machine: Commercial Ice Machine: IHR < 1,000 | 8 | Unit | $100 | $800 | 0.0% | 0.1280 | 1,117.0 | 1.1 | 9,793.2 | $21,059.95 | $0.0817 | 12 | $117,518.77 | $0.0068 | 1.0 | 8,936.0 | 107,232.0 |
| Commercial Ice Machine: Commercial Ice Machine: 1,000 < IHR < 5,000 | 8 | Unit | $200 | $1,600 | 0.0% | 0.2970 | 2,601.0 | 2.6 | 22,804.1 | $49,003.58 | $0.0702 | 12 | $273,649.34 | $0.0058 | 2.4 | 20,808.0 | 249,696.0 |
| Commercial Ice Machine: Commercial Ice Machine: IHR > 1,500 | 8 | Unit | $325 | $2,600 | 0.0% | 0.4160 | 3,641.0 | 3.6 | 31,922.2 | $68,605.80 | $0.0814 | 12 | $383,066.99 | $0.0068 | 3.3 | 29,128.0 | 349,536.0 |
| Commercial Electric Steam Cooker: Commercial Electric Steam Cooker | 8 | Pans | $750 | $6,000 | 0.0% | 2.2300 | 3,258.0 | 19.6 | 28,564.3 | $124,329.27 | $0.2101 | 12 | $342,771.83 | $0.0175 | 17.8 | 26,064.0 | 312,768.0 |
| Commercial Electric Griddle: Commercial Electric Griddle | 8 | Linear Feet | $1,250 | $10,000 | 0.1% | 0.1700 | 758.0 | 1.5 | 6,645.7 | $17,108.07 | $1.5047 | 12 | $79,748.63 | $0.1254 | 1.4 | 6,064.0 | 72,768.0 |
| Commercial Fryer: Commercial Fryer: Standard Vat | 8 | Vats | $250 | $2,000 | 0.0% | 0.2500 | 1,093.0 | 2.2 | 9,582.8 | $24,833.95 | $0.2087 | 12 | $114,993.74 | $0.0174 | 2.0 | 8,744.0 | 104,928.0 |
| Commercial Fryer: Commercial Fryer: Large Vat | 8 | Vats | $250 | $2,000 | 0.0% | 0.6100 | 2,659.0 | 5.3 | 23,312.6 | $60,476.25 | $0.0858 | 12 | $279,751.48 | $0.0071 | 4.9 | 21,272.0 | 255,264.0 |
| Commercial Hot Food Holding Cabinet: Hot Food Holding Cabinet: Half-Size | 8 | Unit | $125 | $1,000 | 0.0% | 0.3300 | 1,807.0 | 2.9 | 15,842.8 | $38,234.09 | $0.0631 | 12 | $190,113.17 | $0.0053 | 2.6 | 14,456.0 | 173,472.0 |
| Commercial Hot Food Holding Cabinet: Hot Food Holding Cabinet: Full-Size | 8 | Unit | $800 | $6,400 | 0.0% | 0.7200 | 3,942.0 | 6.3 | 34,561.2 | $83,411.67 | $0.1852 | 12 | $414,734.98 | $0.0154 | 5.8 | 31,536.0 | 378,432.0 |
| Commercial Combination Oven: Combination Oven: < 15 Pans | 8 | Unit | $500 | $4,000 | 0.0% | 2.6000 | 11,604.0 | 22.8 | 101,737.4 | $261,818.34 | $0.0393 | 12 | $1,220,848.49 | $0.0033 | 20.8 | 92,832.0 | 1,113,984.0 |
| Commercial Combination Oven: Combination Oven: 15 to 28 Pans | 8 | Unit | $750 | $6,000 | 0.0% | 3.7000 | 16,003.0 | 32.4 | 140,305.3 | $364,946.33 | $0.0428 | 12 | $1,683,664.11 | $0.0036 | 29.6 | 128,024.0 | 1,536,288.0 |
| Commercial Combination Oven: Combination Oven: > 28 Pans | 8 | Unit | $2,400 | $19,200 | 0.1% | 5.4000 | 23,756.0 | 47.3 | 208,279.3 | $538,617.08 | $0.0922 | 12 | $2,499,351.66 | $0.0077 | 43.2 | 190,048.0 | 2,280,576.0 |
| Commercial Convection Oven: Convection Oven: Half-Size | 8 | Unit | $275 | $2,200 | 0.0% | 0.3800 | 1,988.0 | 3.3 | 17,429.7 | $42,637.95 | $0.1262 | 12 | $209,156.05 | $0.0105 | 3.0 | 15,904.0 | 190,848.0 |
| Commercial Convection Oven: Convection Oven: Full Size | 8 | Unit | $350 | $2,800 | 0.0% | 0.3600 | 1,879.0 | 3.2 | 16,474.0 | $40,328.44 | $0.1700 | 12 | $197,688.24 | $0.0142 | 2.9 | 15,032.0 | 180,384.0 |
| Commercial Reach-In Refrigerator: Reach-In Refrigerator - Solid Door: V < 15 Cu. Ft. | 4 | Unit | $250 | $1,000 | 0.0% | 0.0300 | 259.2 | 0.1 | 1,136.0 | $2,448.15 | $0.8802 | 12 | $13,632.49 | $0.0734 | 0.1 | 1,036.6 | 12,439.2 |
| Commercial Reach-In Refrigerator: Reach-In Refrigerator - Solid Door: 15 < V < 30 Cu. | 4 | Unit | $300 | $1,200 | 0.0% | 0.0530 | 459.9 | 0.2 | 2,016.1 | $4,340.55 | $0.5952 | 12 | $24,192.87 | $0.0496 | 0.2 | 1,839.6 | 22,075.2 |
| Commercial Reach-In Refrigerator: Reach-In Refrigerator - Solid Door: 30 < V < 50 Cu. | 4 | Unit | $300 | $1,200 | 0.0% | 0.0900 | 788.4 | 0.4 | 3,456.1 | $7,426.42 | $0.3472 | 12 | $41,473.50 | $0.0289 | 0.4 | 3,153.6 | 37,843.2 |
| Commercial Reach-In Refrigerator: Reach-In Refrigerator - Solid Door: V > 50 Cu. Ft. | 4 | Unit | $500 | $2,000 | 0.0% | 0.1260 | 1,102.3 | 0.6 | 4,832.2 | $10,386.06 | $0.4139 | 12 | $57,986.09 | $0.0345 | 0.5 | 4,409.2 | 52,910.4 |
| Commercial Reach-In Refrigerator: Reach-In Refrigerator - Glass Door: V < 15 Cu. Ft. | 4 | Unit | $100 | $400 | 0.0% | 0.0820 | 719.1 | 0.4 | 3,152.1 | $6,771.76 | $0.1269 | 12 | $37,825.37 | $0.0106 | 0.3 | 2,876.2 | 34,514.4 |
| Commercial Reach-In Refrigerator: Reach-In Refrigerator - Glass Door: 15 < V < 30 Cu. | 4 | Unit | $200 | $800 | 0.0% | 0.0770 | 671.6 | 0.3 | 2,944.1 | $6,331.85 | $0.2717 | 12 | $35,329.28 | $0.0226 | 0.3 | 2,686.4 | 32,236.8 |
| Commercial Reach-In Refrigerator: Reach-In Refrigerator - Glass Door: 30 < V < 50 Cu. | 4 | Unit | $225 | $900 | 0.0% | 0.0820 | 715.4 | 0.4 | 3,136.1 | $6,744.43 | $0.2870 | 12 | $37,633.36 | $0.0239 | 0.3 | 2,861.6 | 34,339.2 |
| Commercial Reach-In Refrigerator: Reach-In Refrigerator - Glass Door: V > 50 Cu. Ft. | 4 | Unit | $300 | $1,200 | 0.0% | 0.1020 | 890.6 | 0.4 | 3,904.1 | $8,394.75 | $0.3074 | 12 | $46,849.69 | $0.0256 | 0.4 | 3,562.4 | 42,748.8 |
| Commercial Reach-In Freezer: Reach-In Freezer - Solid Door: V < 15 Cu. Ft. | 4 | Unit | $100 | $400 | 0.0% | 0.0520 | 456.3 | 0.2 | 2,000.1 | $4,296.28 | $0.2000 | 12 | $24,000.87 | $0.0167 | 0.2 | 1,825.0 | 21,900.0 |
| Commercial Reach-In Freezer: Reach-In Freezer - Solid Door: 15 < V < 30 Cu. Ft. | 4 | Unit | $250 | $1,000 | 0.0% | 0.0990 | 868.7 | 0.4 | 3,808.1 | $8,179.99 | $0.2626 | 12 | $45,697.65 | $0.0219 | 0.4 | 3,474.8 | 41,697.6 |
| Commercial Reach-In Freezer: Reach-In Freezer - Solid Door: 30 < V < 50 Cu. Ft. | 4 | Unit | $275 | $1,100 | 0.0% | 0.1970 | 1,726.5 | 0.9 | 7,568.3 | $16,261.07 | $0.1453 | 12 | $90,819.28 | $0.0121 | 0.8 | 6,905.8 | 82,869.6 |
| Commercial Reach-In Freezer: Reach-In Freezer - Solid Door: V > 50 Cu. Ft. | 4 | Unit | $300 | $1,200 | 0.0% | 0.3990 | 3,493.1 | 1.7 | 15,312.6 | $32,907.39 | $0.0784 | 12 | $183,750.64 | $0.0065 | 1.6 | 13,972.2 | 167,666.4 |
| Commercial Reach-In Freezer: Reach-In Freezer - Glass Door: V < 15 Cu. Ft. | 4 | Unit | $50 | $200 | 0.0% | 0.1780 | 1,562.2 | 0.8 | 6,848.2 | $14,709.66 | $0.0292 | 12 | $82,178.97 | $0.0024 | 0.7 | 6,248.8 | 74,985.6 |
| Commercial Reach-In Freezer: Reach-In Freezer - Glass Door: 15 < V < 30 Cu. Ft. | 4 | Unit | $100 | $400 | 0.0% | 0.2290 | 2,003.9 | 1.0 | 8,784.3 | $18,879.71 | $0.0455 | 12 | $105,411.81 | $0.0038 | 0.9 | 8,015.4 | 96,184.8 |
| Commercial Reach-In Freezer: Reach-In Freezer - Glass Door: 30 < V < 50 Cu. Ft. | 4 | Unit | $150 | $600 | 0.0% | 0.4420 | 3,869.0 | 1.9 | 16,960.6 | $36,450.10 | $0.0354 | 12 | $203,527.35 | $0.0029 | 1.8 | 15,476.0 | 185,712.0 |
| Commercial Reach-In Freezer: Reach-In Freezer - Glass Door: V > 50 Cu. Ft. | 4 | Unit | $200 | $800 | 0.0% | 0.7750 | 6,789.0 | 3.4 | 29,761.1 | $63,949.71 | $0.0269 | 12 | $357,132.90 | $0.0022 | 3.1 | 27,156.0 | 325,872.0 |
| **Program Direct Install** | | | | | | | | | | | | | | | | | |
| **G, J or P Scheduled Multi-Family Direct Install** | **16,842** | | | **$341,471.26** | **2.0%** | | | **263** | **604,440** | **$719,331** | | | **3,274,701** | | | **546,016** | **2,958,176** |
| Advanced Power Strips - Sensored | 1,625 | each | $66.79 | $108,503.69 | 0.6% | 0.0071 | 62.4 | 12.8 | 112,218.7 | $97,069.25 | $0.9669 | 5 | $561,093.58 | $0.1934 | 11.5 | 101,371.9 | 506,859.6 |
| Aerator Bathroom | 1,437 | each | $7.10 | $10,199.15 | 0.1% | 0.0170 | 65.0 | 27.0 | 103,363.4 | $100,345.34 | $0.0987 | 5 | $516,816.79 | $0.0197 | 24.4 | 93,372.5 | 466,862.5 |
| Aerator Kitchen | 1,310 | each | $8.22 | $10,771.90 | 0.1% | 0.0170 | 65.0 | 24.7 | 94,293.4 | $91,540.24 | $0.1142 | 5 | $471,467.15 | $0.0228 | 22.3 | 85,179.3 | 425,896.3 |
| CFL 13W | 7,329 | each | $3.36 | $24,625.10 | 0.1% | 0.0024 | 17.0 | 19.5 | 137,922.6 | $156,168.27 | $0.1785 | 6 | $827,535.41 | $0.0298 | 17.6 | 124,591.3 | 747,547.8 |
| CFL 9W Globe | 1,266 | each | $6.60 | $8,356.26 | 0.0% | 0.0024 | 17.0 | 3.4 | 23,826.7 | $26,978.76 | $0.3507 | 6 | $142,960.42 | $0.0585 | 3.0 | 21,523.7 | 129,142.2 |
| LED 5W | 364 | each | $5.01 | $1,825.39 | 0.0% | 0.0032 | 22.5 | 1.3 | 9,075.0 | $25,443.36 | $0.2011 | 15 | $136,125.71 | $0.0134 | 1.2 | 8,197.9 | 122,968.1 |
| Showerhead Fixed | 636 | each | $15.26 | $9,697.73 | 0.1% | 0.1144 | 81.2 | 80.5 | 57,124.1 | $102,386.32 | $0.1698 | 5 | $285,620.39 | $0.0340 | 72.7 | 51,602.6 | 258,013.0 |
| Showerhead Handheld | 741 | each | $22.53 | $16,696.98 | 0.1% | 0.1144 | 81.2 | 93.9 | 66,616.3 | $119,399.68 | $0.2506 | 5 | $333,081.47 | $0.0501 | 84.8 | 60,177.3 | 300,886.6 |
| Site Visit Fee | 2,135 | each | $70.6 | $150,795.05 | 0.9% | 0.0000 | 0.0 | 0.0 | 0.0 | $0.00 | $0.0000 | 0 | $0.00 | $0.0000 | 0.0 | 0.0 | 0.0 |

## APPENDIX B Summary of PY16 Resource Acquisition Programs (By Measure), continued

| | Quantity | Unit | Average Incentive per Unit | Incentive Budget per Measure | % of Budget | Demand Savings per Unit (kW) | Energy Savings per Unit (kWh) | Program-Level 1st Year Demand Savings (kW) | Program-Level 1st Year Energy Savings (kWh) | Utility Avoided Cost Total Resource Benefit (TRB) | Program-Level 1st Year $/kWh | Measure Life | Program-Level Lifetime Energy Savings (kWh) | Program-Level Lifetime $/kWh | Customer-Level 1st Year Demand Savings (kW) | Customer-Level 1st Year Energy Savings (kWh) | Customer-Level Lifetime Energy Savings (kWh) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Direct Incentives** | | | | | | | | | | | | | | | | | |
| **COMMERCIAL RESOURCE ACQUISITION** | | | | | | | | | | | | | | | | | |
| **BHTR (Continued)** | | | | | | | | | | | | | | | | | |
| **Program Direct Install** | | | | | | | | | | | | | | | | | |
| **Small Business Direct Install (SBDIL)** | **510,659** | | | **$2,644,566.31** | **15.3%** | | | **2,453** | **10,563,574** | **$27,562,862** | | | **126,089,053** | | | **9,638,913** | **115,052,104** |
| Refrigerated Case to LED: LED Refrigerated Case Light Drivers | 350 | Drivers | $178 | $62,300 | 0.4% | 0.0000 | 0.0 | 0.0 | 0.0 | $0.00 | $0.0000 | 14 | $0.00 | $0.0000 | 0.0 | 0.0 | 0.0 |
| Refrigerated Case to LED: 5 ft. T12 Refrigerated Case to LED - Center | 195 | Lamps | $330 | $64,350 | 0.4% | 0.0451 | 266.6 | 9.6 | 56,982.3 | $157,411.01 | $1.1293 | 14 | $797,752.81 | $0.0807 | 8.8 | 51,994.5 | 727,923.1 |
| Refrigerated Case to LED: 5 ft. T12HO Refrigerated Case to LED - Center | 75 | Lamps | $330 | $24,750 | 0.1% | 0.0889 | 576.5 | 7.3 | 47,388.7 | $127,482.77 | $0.5223 | 14 | $663,441.80 | $0.0373 | 6.7 | 43,240.6 | 605,368.8 |
| Refrigerated Case to LED: 5 ft. T8HO Refrigerated Case to LED - Center | 105 | Lamps | $330 | $34,650 | 0.2% | 0.0510 | 252.8 | 5.9 | 29,089.3 | $84,989.80 | $1.1912 | 14 | $407,249.97 | $0.0851 | 5.4 | 26,543.0 | 371,602.2 |
| Refrigerated Case to LED: 5 ft. T12 Refrigerated Case to LED - Single/Ends | 155 | Lamps | $305 | $47,275 | 0.3% | 0.0667 | 365.6 | 11.3 | 62,109.6 | $175,653.72 | $0.7612 | 14 | $869,534.27 | $0.0544 | 10.3 | 56,673.0 | 793,421.4 |
| Refrigerated Case to LED: 5 ft. T12HO Refrigerated Case to LED - Single/Ends | 45 | Lamps | $305 | $13,725 | 0.1% | 0.1162 | 636.9 | 5.7 | 31,411.1 | $88,829.80 | $0.4369 | 14 | $439,754.71 | $0.0312 | 5.2 | 28,661.5 | 401,261.7 |
| Refrigerated Case to LED: 5 ft. T8HO Refrigerated Case to LED - Single/Ends | 45 | Lamps | $305 | $13,725 | 0.1% | 0.0798 | 318.3 | 3.9 | 15,699.1 | $49,618.14 | $0.8743 | 14 | $219,786.86 | $0.0624 | 3.6 | 14,324.9 | 200,548.3 |
| Refrigerated Case to LED: 6 ft. T12 Refrigerated Case to LED - Center | 100 | Lamps | $374 | $37,400 | 0.2% | 0.0454 | 259.4 | 5.0 | 28,432.3 | $79,396.22 | $1.3154 | 14 | $398,052.61 | $0.0940 | 4.5 | 25,943.6 | 363,209.9 |
| Refrigerated Case to LED: 6 ft. T12HO Refrigerated Case to LED - Center | 45 | Lamps | $374 | $16,830 | 0.1% | 0.1032 | 622.5 | 5.1 | 30,699.9 | $84,330.21 | $0.5482 | 14 | $429,797.90 | $0.0392 | 4.6 | 28,012.6 | 392,176.4 |
| Refrigerated Case to LED: 6 ft. T8HO Refrigerated Case to LED - Center | 15 | Lamps | $374 | $5,610 | 0.0% | 0.0692 | 393.7 | 1.1 | 6,472.6 | $18,095.60 | $0.8667 | 14 | $90,616.45 | $0.0619 | 1.0 | 5,906.0 | 82,684.5 |
| Refrigerated Case to LED: 6 ft. T12 Refrigerated Case to LED - Single/Ends | 70 | Lamps | $345 | $24,150 | 0.1% | 0.0663 | 368.5 | 5.1 | 28,270.6 | $79,583.00 | $0.8542 | 14 | $395,788.58 | $0.0610 | 4.6 | 25,796.0 | 361,144.0 |
| Refrigerated Case to LED: 6 ft. T12HO Refrigerated Case to LED - Single/Ends | 70 | Lamps | $345 | $24,150 | 0.1% | 0.1211 | 777.5 | 9.3 | 59,646.6 | $160,934.32 | $0.4049 | 14 | $835,051.99 | $0.0289 | 8.5 | 54,425.5 | 761,957.4 |
| Refrigerated Case to LED: 6 ft. T8HO Refrigerated Case to LED - Single/Ends | 25 | Lamps | $345 | $8,625 | 0.0% | 0.1106 | 733.6 | 3.0 | 20,098.5 | $53,736.98 | $0.4291 | 14 | $281,378.46 | $0.0307 | 2.8 | 18,339.2 | 256,748.6 |
| Cost Adder for Fixtures above or out of the reach of a 10' Ladder | 2,145 | Lamps | $7 | $15,015 | 0.1% | 0.0000 | 0.0 | 0.0 | 0.0 | $0.00 | $0.0000 | 0 | $0.00 | $0.0000 | 0.0 | 0.0 | 0.0 |
| Exit Sign: Incandescent Exit Sign Retrofit with LED Kit | 70 | Kits | $14 | $980 | 0.0% | 0.0660 | 327.8 | 5.1 | 25,144.8 | $73,424.78 | $0.0390 | 14 | $352,026.67 | $0.0028 | 4.6 | 22,943.8 | 321,212.7 |
| Exit Sign: Incandescent Exit Sign to New LED Fixture | 110 | Fixtures | $65 | $7,150 | 0.0% | 0.0531 | 228.9 | 6.4 | 27,590.4 | $84,703.66 | $0.2591 | 14 | $386,265.31 | $0.0185 | 5.8 | 25,175.3 | 352,454.4 |
| A19 Incandescent to LED: A19 100W Incandescent to LED | 230 | Lamps | $35 | $8,050 | 0.0% | 0.1283 | 557.0 | 32.3 | 140,404.2 | $429,861.23 | $0.0573 | 14 | $1,965,659.08 | $0.0041 | 29.5 | 128,114.2 | 1,793,599.1 |
| A19 Incandescent to LED: A19 75W Incandescent to LED | 290 | Lamps | $35 | $10,150 | 0.1% | 0.0810 | 481.4 | 25.7 | 153,012.0 | $422,109.71 | $0.0663 | 14 | $2,142,168.53 | $0.0047 | 23.5 | 139,618.4 | 1,954,658.2 |
| A19 Incandescent to LED: A19 60W Incandescent to LED | 2,330 | Lamps | $35 | $81,550 | 0.5% | 0.0733 | 329.1 | 187.1 | 840,427.0 | $2,541,340.97 | $0.0970 | 14 | $11,765,977.63 | $0.0069 | 170.7 | 766,861.9 | 10,736,066.7 |
| Decorative to LED: Decorative Candelabra 25W | 115 | Lamps | $35 | $4,025 | 0.0% | 0.0366 | 187.7 | 4.6 | 23,658.7 | $68,361.52 | $0.1701 | 14 | $331,221.49 | $0.0122 | 4.2 | 21,587.8 | 302,228.7 |
| Decorative to LED: Decorative Candelabra 40W | 730 | Lamps | $35 | $25,550 | 0.1% | 0.0641 | 300.6 | 51.2 | 240,463.1 | $715,969.82 | $0.1063 | 14 | $3,366,483.26 | $0.0076 | 46.8 | 219,414.6 | 3,071,805.0 |
| Decorative to LED: Decorative Med Base 40W | 130 | Lamps | $35 | $4,550 | 0.0% | 0.0635 | 366.9 | 9.0 | 52,273.3 | $145,454.93 | $0.0870 | 14 | $731,826.76 | $0.0062 | 8.3 | 47,697.7 | 667,767.8 |
| Decorative to LED: Decorative Med Base 60W | 110 | Lamps | $35 | $3,850 | 0.0% | 0.0933 | 447.7 | 11.3 | 53,967.6 | $159,466.01 | $0.0713 | 14 | $755,546.81 | $0.0051 | 10.3 | 49,243.7 | 689,411.6 |
| MR16: MR16 Halogen 20W to LED | 570 | Lamps | $32 | $18,240 | 0.1% | 0.0276 | 99.5 | 17.2 | 62,129.4 | $204,330.34 | $0.2936 | 14 | $869,811.21 | $0.0210 | 15.7 | 56,691.0 | 793,674.1 |
| MR16: MR16 Halogen 50W to LED | 1,950 | Lamps | $32 | $62,400 | 0.4% | 0.0693 | 322.9 | 148.0 | 690,130.6 | $2,059,336.16 | $0.0904 | 14 | $9,661,828.71 | $0.0065 | 135.1 | 629,721.4 | 8,816,100.2 |
| PAR CFL to LED: PAR20 CFL to PAR20 LED | 185 | Lamps | $36 | $6,660 | 0.0% | 0.0118 | 63.8 | 2.4 | 12,929.9 | $36,748.33 | $0.5151 | 14 | $181,018.21 | $0.0368 | 2.2 | 11,798.1 | 165,173.1 |
| PAR CFL to BR LED: PAR20 CFL to R20 LED | 135 | Lamps | $36 | $4,860 | 0.0% | 0.0104 | 48.2 | 1.5 | 7,137.8 | $21,332.38 | $0.6809 | 14 | $99,929.81 | $0.0486 | 1.4 | 6,513.0 | 91,182.7 |
| PAR CFL to BR LED: PAR30 CFL to BR30 LED | 1,255 | Lamps | $51 | $64,005 | 0.4% | 0.0088 | 42.4 | 12.2 | 58,289.1 | $172,270.66 | $1.0981 | 14 | $816,048.04 | $0.0784 | 11.1 | 53,186.9 | 744,616.9 |
| PAR CFL to PAR LED: PAR30 CFL to PAR30 LED | 535 | Lamps | $51 | $27,285 | 0.2% | 0.0096 | 46.1 | 5.6 | 27,042.4 | $79,786.27 | $1.0090 | 14 | $378,594.21 | $0.0721 | 5.1 | 24,675.3 | 345,454.7 |
| PAR CFL to BR LED: PAR38 CFL to BR40 LED | 100 | Lamps | $56 | $5,600 | 0.0% | 0.0086 | 47.7 | 0.9 | 5,232.6 | $14,764.43 | $1.0702 | 14 | $73,256.94 | $0.0764 | 0.9 | 4,774.6 | 66,844.5 |
| PAR CFL to LED: PAR38 CFL to PAR38 LED | 195 | Lamps | $56 | $10,920 | 0.1% | 0.0085 | 39.5 | 1.8 | 8,447.6 | $25,208.21 | $1.2927 | 14 | $118,265.91 | $0.0923 | 1.7 | 7,708.1 | 107,913.7 |
| PAR Halogen to PAR LED: PAR20 Halogen 50W to PAR20 LED | 765 | Lamps | $36 | $27,540 | 0.2% | 0.0661 | 303.5 | 55.4 | 254,422.5 | $763,242.36 | $0.1082 | 14 | $3,561,915.22 | $0.0077 | 50.5 | 232,152.2 | 3,250,130.2 |
| PAR Halogen to BR LED: PAR20 Halogen 50W to R20 LED | 210 | Lamps | $36 | $7,560 | 0.0% | 0.0654 | 284.0 | 15.1 | 65,357.4 | $200,111.83 | $0.1157 | 14 | $915,004.08 | $0.0083 | 13.7 | 59,636.5 | 834,911.1 |
| PAR Halogen to BR LED: PAR30 Halogen 75W to BR30 LED | 765 | Lamps | $51 | $39,015 | 0.2% | 0.0950 | 462.2 | 79.6 | 387,504.8 | $1,139,263.20 | $0.1007 | 14 | $5,425,067.06 | $0.0072 | 72.6 | 353,585.3 | 4,950,194.9 |
| PAR Halogen to PAR LED: PAR30 Halogen 75W to PAR30 LED | 350 | Lamps | $51 | $17,850 | 0.1% | 0.0843 | 401.2 | 32.4 | 153,875.3 | $456,009.89 | $0.1160 | 14 | $2,154,254.49 | $0.0083 | 29.5 | 140,406.2 | 1,965,686.2 |
| PAR Halogen to BR LED: PAR38 Halogen 75W to BR40 LED | 75 | Lamps | $56 | $4,200 | 0.0% | 0.1067 | 498.8 | 8.8 | 40,997.4 | $122,230.44 | $0.1024 | 14 | $573,963.20 | $0.0073 | 8.0 | 37,408.7 | 523,722.5 |
| PAR Halogen to BR LED: PAR38 Halogen 90W to BR40 LED | 65 | Lamps | $56 | $3,640 | 0.0% | 0.1021 | 466.6 | 7.3 | 33,235.2 | $99,894.77 | $0.1095 | 14 | $465,292.87 | $0.0078 | 6.6 | 30,326.0 | 424,564.4 |
| PAR Halogen to PAR LED: PAR38 Halogen 75W to PAR38 LED | 195 | Lamps | $56 | $10,920 | 0.1% | 0.0782 | 318.9 | 16.7 | 68,156.1 | $213,560.85 | $0.1602 | 14 | $954,184.87 | $0.0114 | 15.2 | 62,190.2 | 870,662.2 |
| PAR Halogen to PAR LED: PAR38 Halogen 90W to PAR38 LED | 25 | Lamps | $56 | $1,400 | 0.0% | 0.0983 | 465.6 | 2.7 | 12,755.6 | $37,858.10 | $0.1098 | 14 | $178,578.05 | $0.0078 | 2.5 | 11,639.0 | 162,946.6 |
| T12 34W: 1L 4 ft. T12 34W to 1L 4 ft. T8 28W Normal BF | 40 | Lamps | $59 | $2,360 | 0.0% | 0.0289 | 100.7 | 1.3 | 4,412.7 | $5,932.20 | $0.5348 | 6 | $26,475.99 | $0.0891 | 1.2 | 4,026.4 | 24,158.5 |
| T12 40W: 1L 4 ft. T12 40W to 1L 4 ft. T8 28W Low BF | 75 | Lamps | $59 | $4,425 | 0.0% | 0.0302 | 143.3 | 2.5 | 11,782.2 | $14,526.22 | $0.3756 | 6 | $70,693.38 | $0.0626 | 2.3 | 10,750.9 | 64,505.4 |
| T12 40W to LED: 1L 4 ft. T12 40W to 1L 4 ft. T8 LED Instant Start | 660 | Lamps | $70 | $46,200 | 0.3% | 0.0289 | 125.7 | 20.9 | 90,907.8 | $114,651.63 | $0.5082 | 6 | $545,446.89 | $0.0847 | 19.1 | 82,950.4 | 497,702.3 |
| T12: 1L 8 ft. T12 75W to 2L 4 ft. T8 28W Normal BF | 110 | Fixtures | $123 | $13,530 | 0.1% | 0.0610 | 273.0 | 7.4 | 32,912.5 | $41,201.73 | $0.4111 | 6 | $197,474.87 | $0.0685 | 6.7 | 30,031.6 | 180,189.3 |
| T12HO: 1L 8 ft. T12HO 110W to 2L 4 ft. T8 28W High BF | 30 | Fixtures | $128 | $3,840 | 0.0% | 0.0862 | 381.7 | 2.8 | 12,550.1 | $15,752.47 | $0.3060 | 6 | $75,300.37 | $0.0510 | 2.6 | 11,451.5 | 68,709.1 |
| T12 34W: 2L 4 ft. T12 34W to 2L 4 ft. T8 28W Low BF | 100 | Fixtures | $70 | $7,000 | 0.0% | 0.0289 | 165.9 | 3.2 | 18,184.1 | $21,463.66 | $0.3850 | 6 | $109,104.66 | $0.0642 | 2.9 | 16,592.4 | 99,554.4 |
| T12 40W: 2L 4 ft. T12 40W to 2L 4 ft. T8 28W Low BF | 870 | Fixtures | $70 | $60,900 | 0.4% | 0.0595 | 251.8 | 56.7 | 240,098.7 | $305,040.38 | $0.2536 | 6 | $1,440,592.11 | $0.0423 | 51.8 | 219,082.1 | 1,314,492.8 |
| T12 34W: 3L 4 ft. T12 34W to 3L 4 ft. T8 28W Low BF | 55 | Fixtures | $85 | $4,675 | 0.0% | 0.0731 | 380.5 | 4.4 | 22,938.0 | $27,671.85 | $0.2038 | 6 | $137,628.29 | $0.0340 | 4.0 | 20,930.2 | 125,581.3 |
| T12 40W: 3L 4 ft. T12 40W to 3L 4 ft. T8 28W Low BF | 70 | Fixtures | $85 | $5,950 | 0.0% | 0.1235 | 472.4 | 9.5 | 36,239.8 | $47,367.46 | $0.1642 | 6 | $217,438.69 | $0.0274 | 8.6 | 33,067.6 | 198,405.6 |
| T12 to F17: 2L 4 ft. FB40 T12 to 2L 2 ft. F17 Normal BF / Reflector | 460 | Fixtures | $118 | $54,280 | 0.3% | 0.0904 | 375.9 | 45.6 | 189,490.4 | $241,921.91 | $0.2865 | 6 | $1,136,942.52 | $0.0477 | 41.6 | 172,903.8 | 1,037,422.6 |
| T12 to F17: 2L 4 ft. FB40 T12 to 3L 2 ft. F17 Low BF | 75 | Fixtures | $98 | $7,350 | 0.0% | 0.0898 | 340.0 | 7.4 | 27,949.8 | $36,632.52 | $0.2630 | 6 | $167,698.66 | $0.0438 | 6.7 | 25,503.3 | 153,019.5 |
| T12: 2L 8 ft. T12 75W to 4L 4 ft. T8 28W Normal BF | 2,110 | Fixtures | $148 | $312,280 | 1.8% | 0.0929 | 412.4 | 214.8 | 953,610.6 | $1,196,244.39 | $0.3275 | 6 | $5,721,663.80 | $0.0546 | 196.0 | 870,138.3 | 5,220,829.6 |
| T12 34W: 3L 4 ft. T12 34W to 2L 4 ft. T8 28W Normal BF / Reflector | 25 | Fixtures | $103 | $2,575 | 0.0% | 0.0773 | 271.5 | 2.1 | 7,439.7 | $9,976.02 | $0.3461 | 6 | $44,638.21 | $0.0577 | 1.9 | 6,788.5 | 40,730.9 |
| T12 40W: 3L 4 ft. T12 40W to 2L 4 ft. T8 28W Normal BF / Reflector | 55 | Fixtures | $103 | $5,665 | 0.0% | 0.1640 | 594.4 | 9.9 | 35,826.0 | $47,581.18 | $0.1581 | 6 | $214,955.79 | $0.0264 | 9.0 | 32,690.0 | 196,140.1 |
| T12 34W: 4L 4 ft. T12 34W to 2L 4 ft. T8 28W Normal BF / Reflector | 45 | Fixtures | $103 | $4,635 | 0.0% | 0.1177 | 416.1 | 5.8 | 20,518.3 | $27,458.37 | $0.2259 | 6 | $123,109.85 | $0.0376 | 5.3 | 18,722.3 | 112,333.7 |
| T12 40W: 4L 4 ft. T12 40W to 2L 4 ft. T8 28W Normal BF / Reflector | 155 | Fixtures | $103 | $15,965 | 0.1% | 0.1523 | 566.3 | 25.9 | 96,188.5 | $126,769.25 | $0.1660 | 6 | $577,130.87 | $0.0277 | 23.6 | 87,768.8 | 526,612.9 |
| T12 40W to LED: 4L 4 ft. T12 40W to 2L 4 ft. T8 LED Instant Start / Reflector | 230 | Fixtures | $130 | $29,900 | 0.2% | 0.2264 | 1,236.2 | 57.1 | 311,610.0 | $371,812.40 | $0.0960 | 6 | $1,869,660.02 | $0.0160 | 52.1 | 284,333.9 | 1,706,003.1 |
| T12 34W: 4L 4 ft. T12 34W to 4L 4 ft. T8 28W Low BF | 460 | Fixtures | $95 | $43,700 | 0.3% | 0.0665 | 312.8 | 33.5 | 157,669.8 | $194,864.16 | $0.2772 | 6 | $946,018.94 | $0.0462 | 30.6 | 143,868.5 | 863,211.1 |
| T12 40W: 4L 4 ft. T12 40W to 4L 4 ft. T8 28W Low BF | 460 | Fixtures | $95 | $43,700 | 0.3% | 0.1162 | 479.2 | 58.6 | 241,582.4 | $309,123.87 | $0.1809 | 6 | $1,449,494.64 | $0.0301 | 53.5 | 220,436.0 | 1,322,616.1 |
| T12HO: 2L 8 ft. T12HO 110W to 4L 4 ft. T8 28W Normal BF / Reflector | 290 | Fixtures | $178 | $51,620 | 0.3% | 0.1552 | 670.9 | 49.3 | 213,211.2 | $269,348.34 | $0.2421 | 6 | $1,279,266.97 | $0.0404 | 45.0 | 194,548.2 | 1,167,288.9 |
| T12 40W to LED: 2L 4 ft. T12 40W to 2L 4 ft. T8 LED Instant Start | 3,481 | Fixtures | $100 | $348,100 | 2.0% | 0.0722 | 301.7 | 275.5 | 1,150,958.3 | $3,574,082.47 | $0.3024 | 14 | $16,113,416.61 | $0.0216 | 251.4 | 1,050,211.5 | 14,702,961.5 |
| T12 40W to LED: 3L 4 ft. T12 40W to 2L 4 ft. T8 LED Instant Start / Reflector | 390 | Fixtures | $150 | $58,500 | 0.3% | 0.1469 | 542.2 | 62.8 | 231,726.2 | $755,129.38 | $0.2525 | 14 | $3,244,166.17 | $0.0180 | 57.3 | 211,442.5 | 2,960,194.7 |
| T12 40W to LED: 3L 4 ft. T12 40W to 3L 4 ft. T8 LED Instant Start | 420 | Fixtures | $135 | $56,700 | 0.3% | 0.1335 | 549.7 | 61.4 | 253,017.6 | $789,955.56 | $0.2241 | 14 | $3,542,246.17 | $0.0160 | 56.1 | 230,870.2 | 3,232,182.9 |
| T12 40W to LED: 4L 4 ft. T12 40W to 4L 4 ft. T8 LED Instant Start | 2,880 | Fixtures | $165 | $475,200 | 2.8% | 0.1452 | 574.5 | 458.4 | 1,813,424.7 | $5,749,534.23 | $0.2620 | 14 | $25,387,946.02 | $0.0187 | 418.3 | 1,654,690.3 | 23,165,663.9 |
| Custom Lighting | 482,183 | kWh | $0.28 | $135,011.31 | 0.8% | 0.0003 | 1.0 | 163.7 | 528,439.1 | $1,822,118.39 | $0.2555 | 14 | $7,398,147.23 | $0.0182 | 149.4 | 482,183.2 | 6,750,565.5 |

| Transformational Incentives | | Budget | % of Budget |
|---|---|---|---|
| **RESIDENTIAL PROGRAMS** | | | |
| **RTRAN** | | **$851,373** | **48.6%** |
| **Program Management** | | **$232,500** | **1.3%** |
| | Program Management | $232,500 | 1.3% |
| **Behavior Modification** | | **$275,000** | **1.6%** |
| | Workshops and Outreach, Energy Literacy | $100,000 | 0.6% |
| | Gamefication / Competitions, Projects | $50,000 | 0.3% |
| | Workshops and Outreach, Projects | $120,000 | 0.7% |
| | Sponsorships, Sponsorships | $5,000 | 0.0% |
| **Professional Development and Technical Training** | | **$188,873** | **1.1%** |
| | Educator Training and Grants , Educator Training and Grants | $70,000 | 0.4% |
| | Trade Ally Programs, Trade Ally Program Development | $15,000 | 0.1% |
| | Vocational / Technical Training, Training | $20,000 | 0.1% |
| | Vocational / Technical Training, Technical Training | $83,873 | 0.5% |
| **Energy in Decision Making** | | **$0** | **0.0%** |
| | Strategic Energy Management , Benchmarking Program | $0 | 0.0% |
| **Codes and Standards** | | **$85,000** | **0.5%** |
| | Codes Compliance Support | $65,000 | 0.4% |
| | Codes Training / Technical Support | $20,000 | 0.1% |
| **Clean Energy Collaboration** | | **$70,000** | **0.4%** |
| | Smart Grid | $20,000 | 0.1% |
| | Demand Response | $0 | 0.0% |
| | Renewable Integration Recruitment and Outreach | $0 | 0.0% |
| | Innovation Program Consulting | $50,000 | 0.3% |
| **COMMERCIAL PROGRAMS** | | | |
| **BTRAN** | | **$898,627** | **51.4%** |
| **Program Management** | | **$300,000** | **1.7%** |
| | Program Management | $300,000 | 1.7% |
| **Behavior Modification** | | **$75,000** | **0.4%** |
| | Workshops and Outreach, Projects | $20,000 | 0.1% |
| | Workshops and Outreach, Projects | $50,000 | 0.3% |
| | Sponsorships | $5,000 | 0.0% |
| **Professional Development and Technical Training** | | **$278,627** | **1.6%** |
| | Trade Ally Programs, Energy Efficiency Sales Professional Training | $80,000 | 0.5% |
| | Trade Ally Programs, Trade Ally Program Development | $47,500 | 0.3% |
| | Vocational / Technical Training, Training | $50,000 | 0.3% |
| | Vocational / Technical Training, Higher Education Energy Program Support | $20,000 | 0.1% |
| | Vocational / Technical Training, Technical Training | $81,127 | 0.5% |
| **Energy in Decision Making** | | **$225,000** | **1.3%** |
| | Strategic Energy Management , Large Business Strategic Energy Management (SEM) | $75,000 | 0.4% |
| | Strategic Energy Management , Remote Targeting and Audits | $100,000 | 0.6% |
| | Strategic Energy Management , Water and Waste Water Industry Support | $20,000 | 0.1% |
| | Strategic Energy Management , Benchmarking Program | $30,000 | 0.2% |
| **Codes and Standards** | | **$20,000** | **0.1%** |
| | Codes Compliance Support, Codes Compliance Support | $10,000 | 0.1% |
| | Codes Training / Technical Support, Codes Training / Technical Support | $10,000 | 0.1% |
| **Clean Energy Collaboration** | | **$0** | **0.0%** |
| | Smart Grid | $0 | 0.0% |
| | Demand Response | $0 | 0.0% |
| | Renewable Integration Recruitment and Outreach | $0 | 0.0% |

## APPENDIX C Total Resource Benefit (TRB) Utility Benefit Values

**Demonstration TRB Values Using Modified Current EEPS Utility Avoided Cost**

| | | | Discount Rate | Factored EEPS | Escalation Rate | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 6% | 76% | 3% | | | | |
| | | | | Utility Avoided Costs* | | NPV for each Year | | NPV Cumulative from Final Year | |
| Program Year | Year | Period | NPV Multiplier | $/kW/yr. | $/kWh/yr. | $/kW/yr. | $/kWh/yr. | $/kW/yr. | $/kWh/yr. |
| **PY16** | 2016 | 1 | 1.00 | | $ 0.166 | - | $ 0.1658 | - | $ 0.1658 |
| **PY17** | 2017 | 2 | 0.94 | | $ 0.171 | - | $ 0.1611 | - | $ 0.3270 |
| **PY18** | 2018 | 3 | 0.89 | | $ 0.176 | - | $ 0.1566 | - | $ 0.4835 |
| **PY19** | 2019 | 4 | 0.84 | | $ 0.181 | - | $ 0.1521 | - | $ 0.6357 |
| **PY20** | 2020 | 5 | 0.79 | $ 904.0 | $ 0.187 | $ 716 | $ 0.1478 | $ 716 | $ 0.7835 |
| **PY21** | 2021 | 6 | 0.75 | $ 986.0 | $ 0.192 | $ 737 | $ 0.1437 | $ 1,453 | $ 0.9272 |
| **PY22** | 2022 | 7 | 0.70 | $ 856.0 | $ 0.198 | $ 603 | $ 0.1396 | $ 2,056 | $ 1.0668 |
| **PY23** | 2023 | 8 | 0.67 | $ 750.0 | $ 0.204 | $ 499 | $ 0.1356 | $ 2,555 | $ 1.2024 |
| **PY24** | 2024 | 9 | 0.63 | $ 663.0 | $ 0.210 | $ 416 | $ 0.1318 | $ 2,971 | $ 1.3342 |
| **PY25** | 2025 | 10 | 0.59 | $ 590.0 | $ 0.216 | $ 349 | $ 0.1281 | $ 3,320 | $ 1.4623 |
| **PY26** | 2026 | 11 | 0.56 | $ 527.0 | $ 0.223 | $ 294 | $ 0.1244 | $ 3,615 | $ 1.5867 |
| **PY27** | 2027 | 12 | 0.53 | $ 474.0 | $ 0.230 | $ 250 | $ 0.1209 | $ 3,864 | $ 1.7076 |
| **PY28** | 2028 | 13 | 0.50 | $ 1,020.0 | $ 0.236 | $ 507 | $ 0.1175 | $ 4,371 | $ 1.8251 |
| **PY29** | 2029 | 14 | 0.47 | $ 1,066.0 | $ 0.244 | $ 500 | $ 0.1142 | $ 4,871 | $ 1.9393 |
| **PY30** | 2030 | 15 | 0.44 | $ 964.0 | $ 0.251 | $ 426 | $ 0.1109 | $ 5,297 | $ 2.0503 |
| **PY31** | 2031 | 16 | 0.42 | $ 875.0 | $ 0.258 | $ 365 | $ 0.1078 | $ 5,662 | $ 2.1581 |
| **PY32** | 2032 | 17 | 0.39 | $ 795.0 | $ 0.266 | $ 313 | $ 0.1048 | $ 5,975 | $ 2.2628 |
| **PY33** | 2033 | 18 | 0.37 | $ 724.0 | $ 0.274 | $ 269 | $ 0.1018 | $ 6,244 | $ 2.3646 |
| **PY34** | 2034 | 19 | 0.35 | | $ 0.282 | $ - | $ 0.0989 | $ 6,244 | $ 2.4635 |
| **PY35** | 2035 | 20 | 0.33 | | $ 0.291 | $ - | $ 0.0961 | $ 6,244 | $ 2.5596 |
| **PY36** | 2036 | 21 | 0.31 | | $ 0.300 | $ - | $ 0.0934 | $ 6,244 | $ 2.6530 |
| **PY37** | 2037 | 22 | 0.29 | | $ 0.308 | $ - | $ 0.0907 | $ 6,244 | $ 2.7438 |
| **PY38** | 2038 | 23 | 0.28 | | $ 0.318 | $ - | $ 0.0882 | $ 6,244 | $ 2.8319 |
| **PY39** | 2039 | 24 | 0.26 | | $ 0.327 | $ - | $ 0.0857 | $ 6,244 | $ 2.9176 |
| **PY40** | 2040 | 25 | 0.25 | | $ 0.337 | $ - | $ 0.0833 | $ 6,244 | $ 3.0009 |

* EEPS Avoided Capacity Cost factored by 76% to reflect contribution of kW reductions achieved on Oahu in PY13. $161/MWh Avoided Costs per Guidance Recommendations. This is a conservative estimate based on EEPS 2014 Projections of $192, $225 and $192/MWh for HECO, HELCO and MECO respectively.