TRIENNIAL PLAN

PROGRAM YEAR 2019-2021

Hawaii Energy

leidos

Hawai'i Energy's mission is to empower island families and businesses to make smart energy choices that reduce energy consumption, save money and pursue a 100% clean energy future.

TRIENNIAL PLAN

Hawai`i Energy

Program Years 2019 – 2021

Submitted by

Hawai'i Energy leidos

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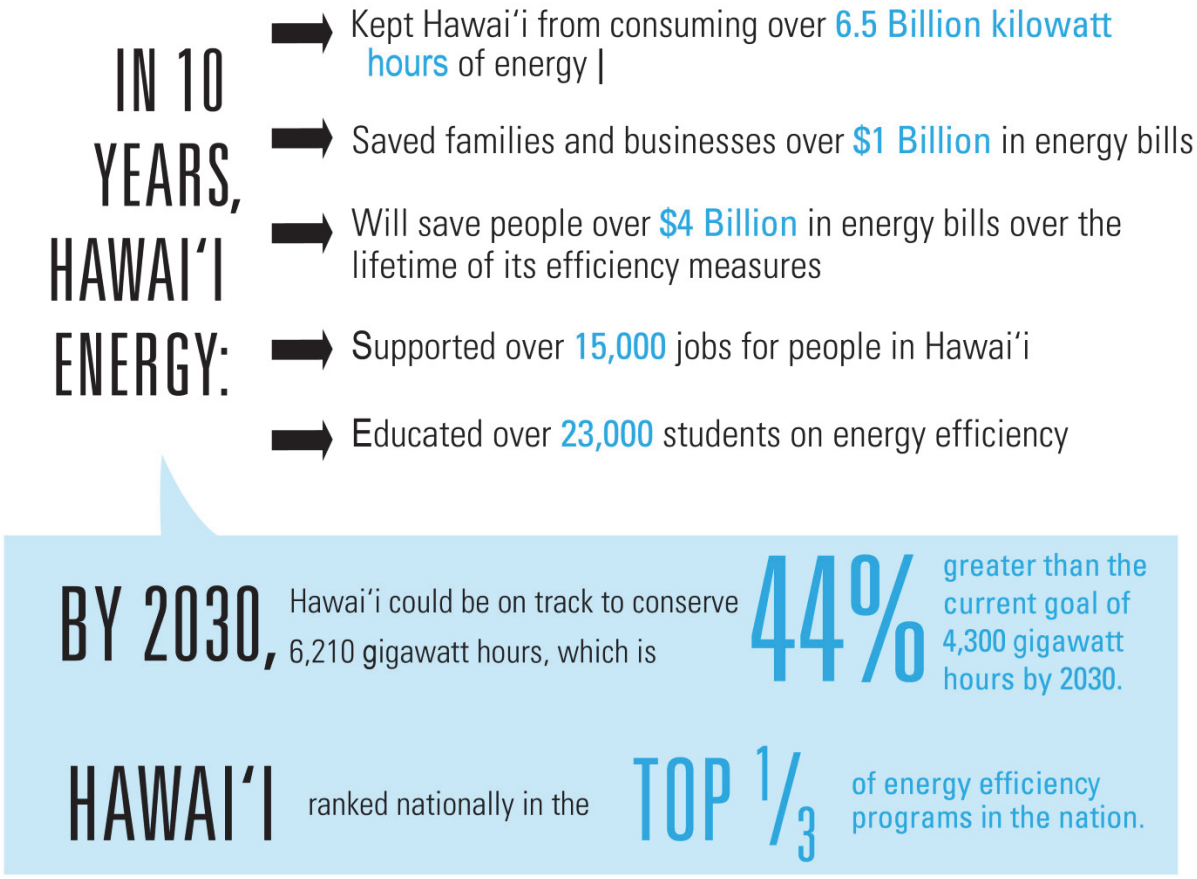
1. INTRODUCTION

1.1. Plan Overview

Hawai`i Energy ("the Program") presents this Triennial Plan for Program Years 2019-2021 (PY19-21) building on its proven track record of successful energy efficiency programs. PY19 marks the ten-year anniversary of the Program. Hawai`i Energy, administered by Leidos, has a long and unparalleled track record of success in its first decade of implementing energy efficiency programs as the Public Benefits Fee Administrator (PBFA) in Hawai`i.

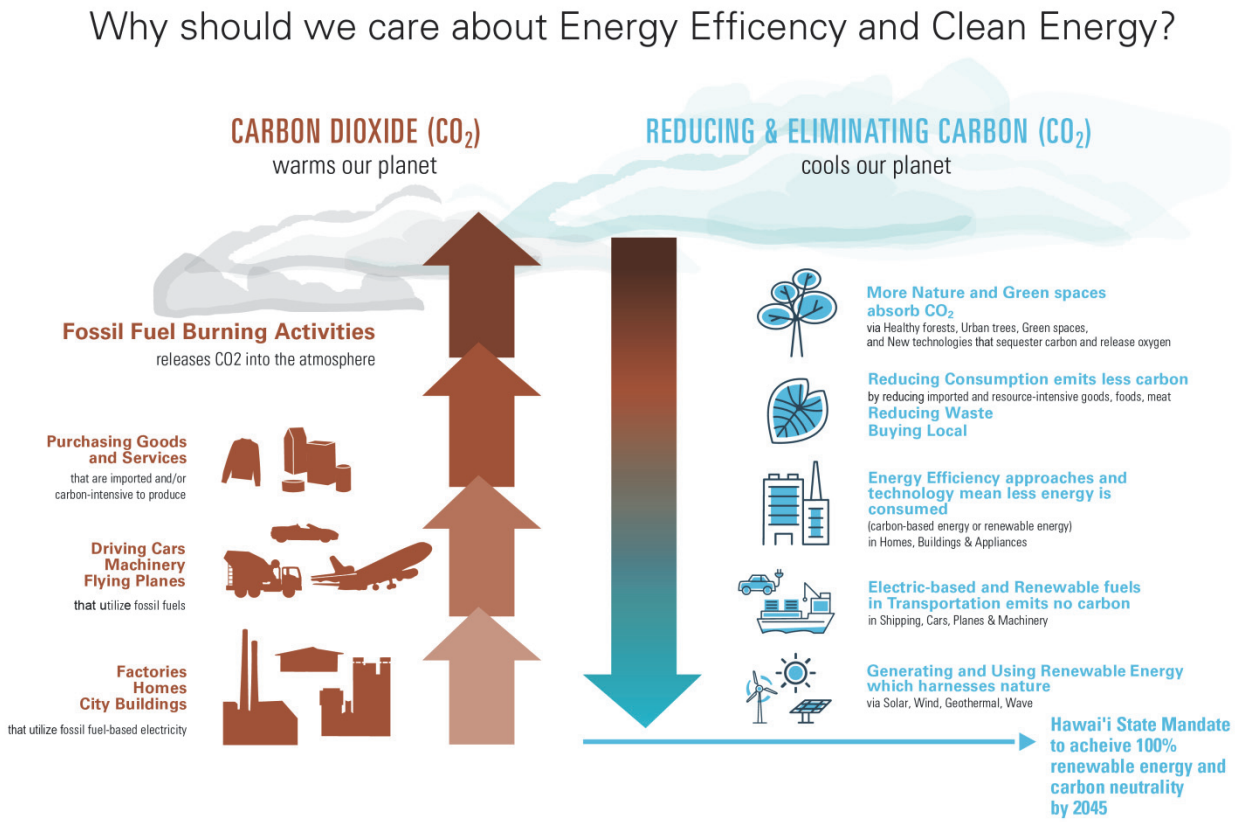


This success contributed to Hawai'i's ranking in the top third of energy efficiency programs in the nation[1] and becoming a model for the rest of the country in its pace-setting goals, such as achieving 100% clean energy by 2045, 100% carbon neutrality by 2045, reducing electricity consumption by 4,300 GWh by 2030, and the counties' shared goal of 100% clean transportation by 2045.

[1] American Council for an Energy Efficiency Economy. (2018). 2018 State Energy Efficiency Scorecard- Hawaii. Retrieved from: https://aceee.org/sites/default/files/pdf/state-sheet/2018/hawaii.pdf

However, things are changing and becoming more complex. The electricity industry in Hawai'i is in a period of dramatic transition, evolving from centralized fossil-fuel based generation to renewable energy and distributed technologies. The transition will require the adoption of increased amounts of distributed energy resources by customers and more active engagement with the grid.

There are several high impact climate action strategies relating to energy. First, increasing renewable energy and reducing Hawai'i's use of fossil fuel-based power generation and its carbon emissions have been crucial. Second to electricity generation, the next high-impact area for cutting carbon emissions is accelerating electric vehicle adoption. Third, buildings are a major source of carbon pollution due to inefficiency and waste. Driving deeper energy savings in buildings, while making them smarter and a resource to the grid to facilitate higher levels of renewable generation, is critical.



A warming planet and global climate change are responsible for devastating consequences to our natural ecoystems and the built environment threatening our food supply, water supply, nature cycles, housing and infrastructures, economy, and social fabric.

In order to accelerate the adoption of clean energy technologies, the role of Hawai'i Energy as the PBFA must evolve. This evolution will leverage the Program's core strengths and competencies to best serve individual customers, the broader customer base and the grid itself.

Over the course of the past 16 months, Hawai'i Energy has solicited feedback from multiple stakeholder groups around the evolution of the program and elements that should be

considered for the next 3-year program cycle. Three core areas emerged – Clean Energy Technologies, Accessibility & Affordability, and Market Transformation & Economic Development – in addition to seven objectives as outlined below in Section 1.2 below. This Plan represents a pivot point in which Hawai`i Energy is strategically evolving its existing technical assistance and incentives in these areas, and strengthening the organization as a Trusted Energy Advisor to empower customers to make educated decisions about all of their energy use, while ensuring that energy efficiency remains consumers' first choice. These efforts will deliver a higher level of benefits to all customers by providing new tools to help them reduce their overall energy usage and lower demand during peak periods.

This plan illustrates how we propose to achieve annual and lifetime energy savings, while providing grid benefits and also delivering non-energy benefits that create economic and environmental successes for all customers, create new and maintain existing jobs, and reach all customers in diverse socio-economic segments of our community.

For Hawai'i Energy to continue to meet our mission and grow impact, our Triennial Plan & new services moving forward reflect the following key acknowledgments:

The need to prioritize new and potential participants, giving greater access and equity for everyone

We've made significant headway in the mass market, reaching over 200,000 customers each year. Achieving energy efficiency with potential participants is the next area ready for growth. We want to ensure our economic backbone of families and businesses survives and thrives.

An ethical and economic imperative, for Hawaii's ALICE® families, reducing energy costs is a necessity, not a luxury.

The need to move beyond lighting; a focus on the "whole building," on a building's *system*, can achieve greater energy efficiency

The lowest cost energy efficiency approach for many years had us favoring the individual parts over how the parts *work together* to save more energy.

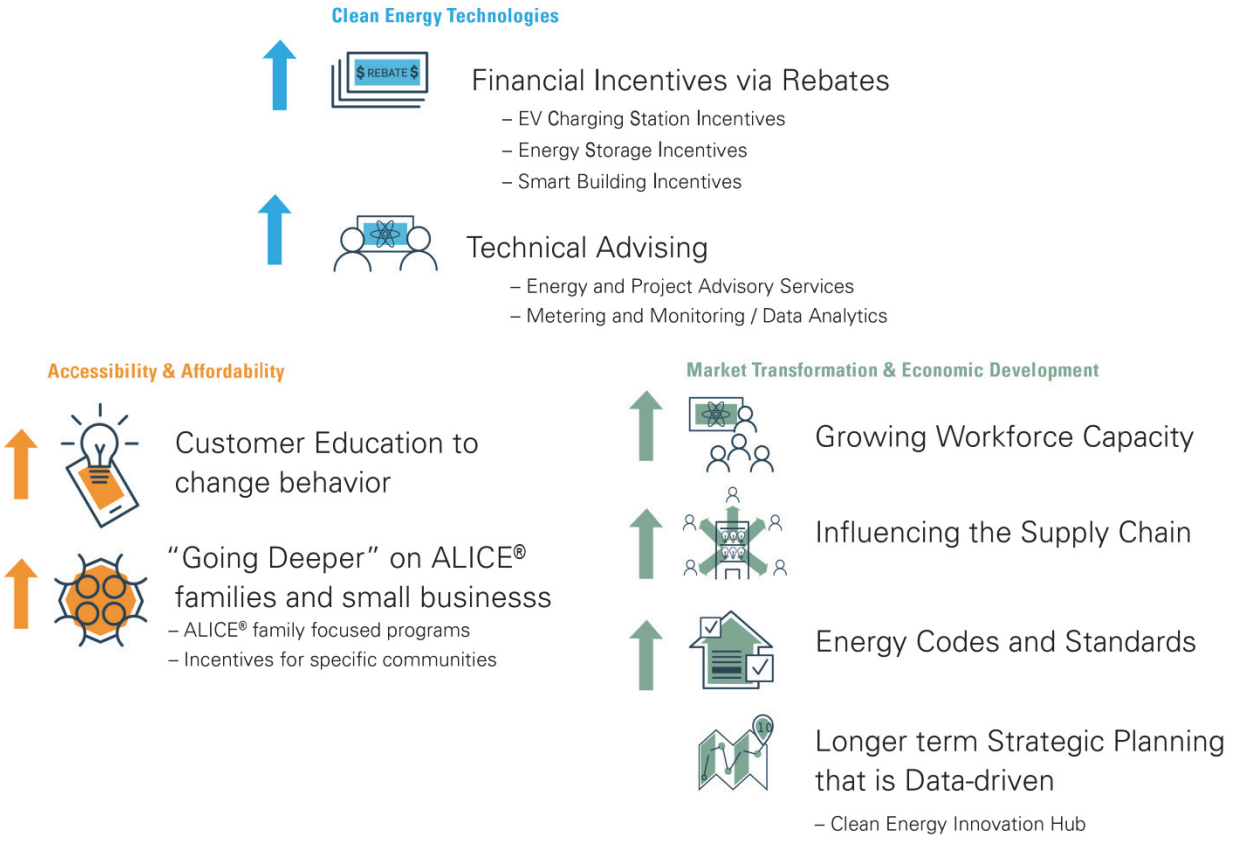
Amory Lovins of the Rocky Mountain Institute (RMI) has stated the potential for energy efficiency has been massively understated and its cost overstated.

The recognition that as the grid becomes more complex, customers (residential + commercial) have a growing need for trustworthy advice and consult to understand new tools that actively engage with the grid

With so much information (often conflicting), customers more than ever need expert, unbiased recommendations and project assistance.

During PY19-21, Hawai`i Energy will continue its core traditional business and residential energy efficiency programs, while both expanding its portfolio of incentives and services into new "grid service ready" initiatives and going deeper into hard-to-reach markets to ensure access and affordability for those who need it most. Additionally, the Hawai'i Public Utilities Commission has encouraged the Hawai'i Energy program to work collaboratively with the utility to identify cost-effective, non-wires alternatives to defer or replace utility transmission and distribution investments.

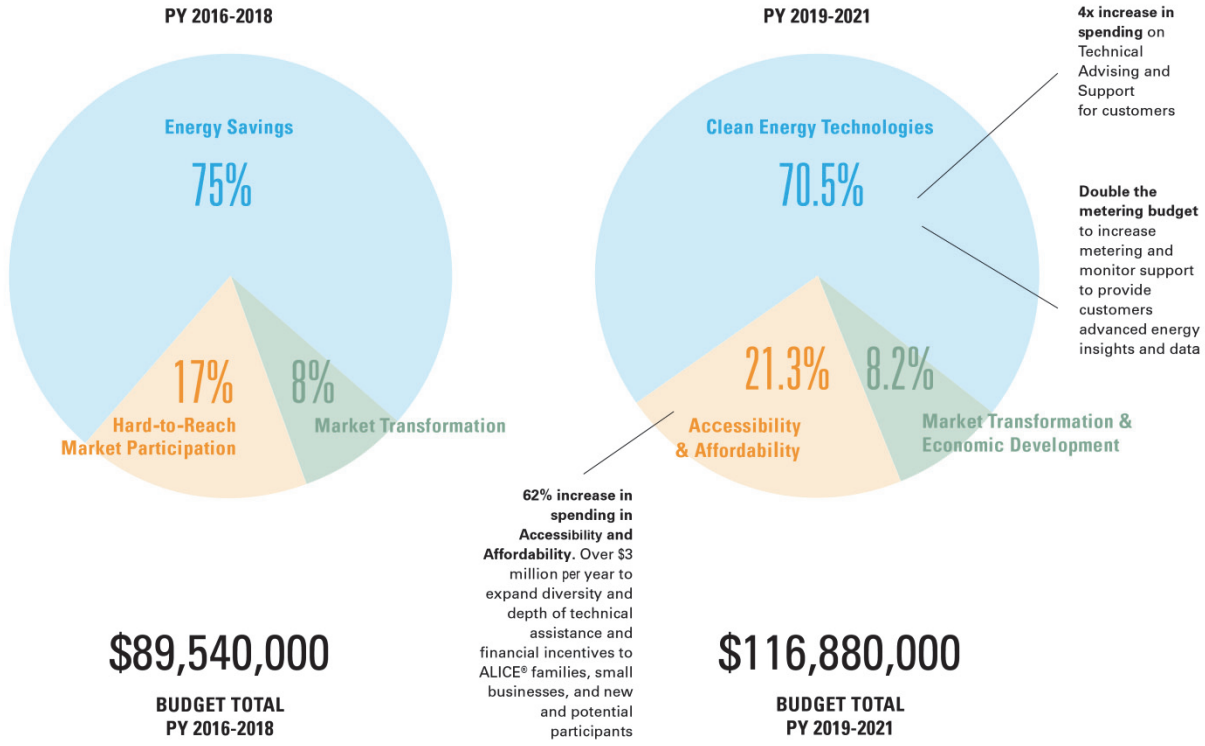
Moving forward, we will **expand services** in all of our existing core competencies and add 1 additional core competency



PY19-21 key program figures:

- Total customer savings of **over $1.3 Billion** over the life of the measures
- Levelized cost of saved energy: $.034 for total program, $.028 for resource acquisition
- Increased hard–to-reach spending to over $7 Million per year; an average increase of 60% per year when compared to PY18
- **Foundational investment of $5.5 million** to shift beyond traditional energy efficiency and incorporate more grid services in support of non-wires alternatives

Funding Allocation Comparison



In order to achieve this, we are proposing an increase to the budget to return investment to be comparable to the levels prior to the launch of the Green Energy Market Securitization (GEMS) program and diversion of PBF funding to that program. Our proposed budget represents several notable shifts: a decrease in Clean Energy Technologies from 75% in 2018 to 70.5% of the full portfolio of incentives and services in 2019-21; a meaningful increase from 17% to 22% in Accessibility & Affordability; and maintaining Market Transformation & Economic Development at 8% of the portfolio. When compared to PY18, this is an average of **$3 million dollars more spent in hard-to-reach markets each year.**

Hawai'i Energy is well positioned to help the State of Hawai'i achieve its ambitious goals. Its success has earned the trust of customers and stakeholders throughout the state because of its team's ability to look forward and analyze technologies and the marketplace, and evolve programs to best serve the energy goals of customers. Our network of contractors coupled with the infrastructure we have built to carry out our services and programs are strengths we intend to leverage further in this triennial period. We are proud of the fact that this mission-driven, committed team was selected for the second year in a row as one of *Hawai`i Business Magazine's* Best Places to Work (2018 and 2019).

1.2. Summary of Core Areas and Objectives

Through our stakeholder engagement process, Hawai`i Energy has refined its three Core Areas and seven Objectives.

CORE AREA #1: CLEAN ENERGY TECHNOLOGIES

Accelerate Hawai'i's transition to clean, resilient, cost-effective energy systems.

- ▶ **Objective 1:** *Reduce energy (kWh) usage and shift demand (kW) in alignment with the state's Energy Efficiency Portfolio Standards (EEPS).*
- ▶ **Objective 2:** *Reduce carbon emissions from buildings and transportation.*
- ▶ **Objective 3:** *Transform buildings into smart, resilient, grid resources.*

A recent paper[2] published in September 2018 by Amory Lovins of the Rocky Mountain Institute (RMI) highlighted that the size and cost of the potential resource base of energy efficiency is much larger and cheaper than previously believed. The paper states that the potential for energy efficiency has been massively understated and its cost overstated, by analyzing not whole buildings, vehicles, and factories, but only their individual parts, thus missing valuable ways to help the parts work together to save more energy at lower cost. The Hawai'i Energy programs will evolve to take a more holistic approach and integrated design to buildings, inclusive of vehicles, and other distributed energy resources. We feel this is critical to accelerate Hawai'i's **transition to clean, resilient, least-cost energy systems.**

These services form the core of Hawai'i Energy offerings to help residents and businesses save energy and adopt energy efficiency while supporting other customer-sited distributed energy resources.

CORE AREA #2: ACCESSIBILITY & AFFORDABILITY

Include everyone in the clean energy transition.

- ▶ **Objective 4:** *Provide critical assistance to low-income households, small businesses, and other hard-to-reach customer segments.*

With Hawai'i already being one of the most expensive places in the country to live, reducing monthly energy costs is important for our families and businesses. According to Aloha United Way's ALICE® (Asset Limited, Income Constrained, Employed) report released last year, 165,013 households (37%) are ALICE households living in financial hardship while another 47,066 households (11%) live below the poverty level. Our ALICE population represents people who have one or multiple jobs but struggle to afford basic necessities to remain stable and self-sufficient. Reducing energy costs are a necessity, and not a luxury, for these families. The Hawai'i Energy programs intend to increase investment for the ALICE population, as well as

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[2] Lovins, A. (2018). How big is the energy efficiency resource? *Environ. Res. Lett.,* **13,** 090401 https://doi.org/10.1088/1748-9326/aad965

small businesses and other hard-to-reach customer segments to **include everyone in the clean energy transition.**

These services focus on engaging "hard-to-reach" sectors, such as low- and middle-income households and small businesses, to ensure they have access to clean energy technologies and can participate in Hawai'i's energy transition.

CORE AREA #3: MARKET TRANSFORMATION & ECONOMIC DEVELOPMENT

Strengthen local communities, businesses, and boost Hawai'i's economy.

- ▶ **Objective 5:** *Influence long-lasting changes through strategic interventions to overcome market barriers.*
- ▶ **Objective 6:** *Enable smart energy choices through increasing energy awareness and literacy.*
- ▶ **Objective 7:** *Develop a dynamic, data-driven ten-year program roadmap that fosters innovative solutions*

Hawai'i Energy's programs and services have already helped to reduce greenhouse gas emissions and scale clean energy, not just to address climate change but to help create economic opportunities and jobs and to deliver immediate benefits to public health. Hawai'i has the highest electricity rates in the country, meaning any savings through energy use reduction immediately go to the bottom line of businesses, helping the State's economy.

According to the 2018 study, "Transcending Oil," published by the Rhodium Group[3], the shift to clean energy has already had an impact on our economy. More money is staying in Hawai'i and the State has twice as many residents employed in the clean energy sector than in conventional energy. According to a 2017 Department of Energy report entitled "U.S. Energy and Employment Report", there are over 10,000 Hawai'i residents employed in clean energy. Over half of those employees, 5,100, are specifically employed in energy efficiency. It's important for Hawai'i Energy to continue to drive economic development and job creation in the clean energy field, as well as other businesses that need to reduce their energy costs in order to grow.

The Rhodium Group study also points out that the faster Hawai'i reaches its clean energy goal, the more money will stay in Hawai'i. To support these outcomes, Hawai'i Energy will continue to identify areas where transformative changes in the marketplace can accelerate the adoption of clean energy technologies. We will increase investments in workforce development and training, which is vital to growing clean energy businesses and supporting robust clean technology supply channels. This will allow us to continue to strengthen local communities and businesses and boost Hawai'i's economy. These services focus on business development and market

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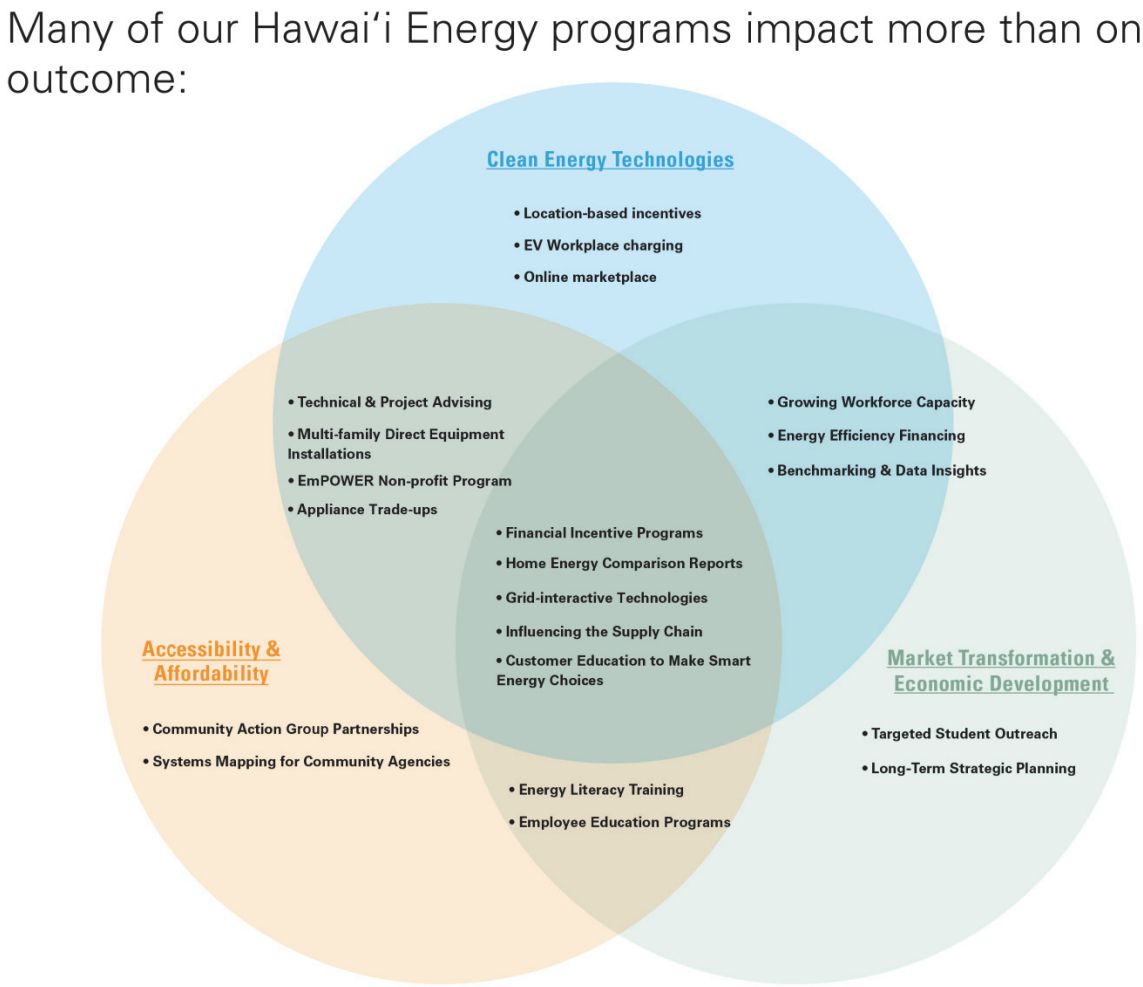
[3] Rhodium Group. (2018). *Transcending Oil. Hawaii's Path to a Clean Energy Economy.* New York, NY: Larson, Mohan, Herndon, Marsters and Pitt. https://rhg.com/research/transcending-oil-hawaiis-path-to-a-clean-energy-economy

transformation by accelerating customer awareness and market adoption of innovative clean energy technologies and services.

This Triennial Plan describes the proposed programs and initiatives for PY19-21. These programs have been arranged by the Core Area they support, respectively. While there is inevitably overlap of these areas and objectives, we have created this framework to align each offering with the area it most directly supports. As we go to market, the offerings to our customers and Clean Energy Allies will be seamless and not divided out this in manner.



1.3. Approach for PY19-21

Meeting the targets set forth in this three-year Plan will require Hawai'i Energy to innovate and maximize customer service, energy efficiency delivery, and accelerate market transformation. Our approach will continue to evolve and provide more technical and professional services to complement financial incentives to remove more of the barriers customers face in implementing energy projects. Being a trusted energy advisor is becoming increasingly more important as technologies advance and become more complex. The Hawai'i Energy program transition incorporates an intentional focus on energy services to assist customers with the planning,

design and evaluation of energy efficiency options. These services and bundled program packages will allow customers to take a more holistic approach to energy management.

No one entity can solve all of these issues alone. Meeting the ambitious state goals for renewable energy and carbon neutrality will require full partnership and collaboration between many groups across our state including the government, businesses and communities. Elevating and expanding our Clean Energy Ally (CEA) trade allies program will be a critical part of the program's success.

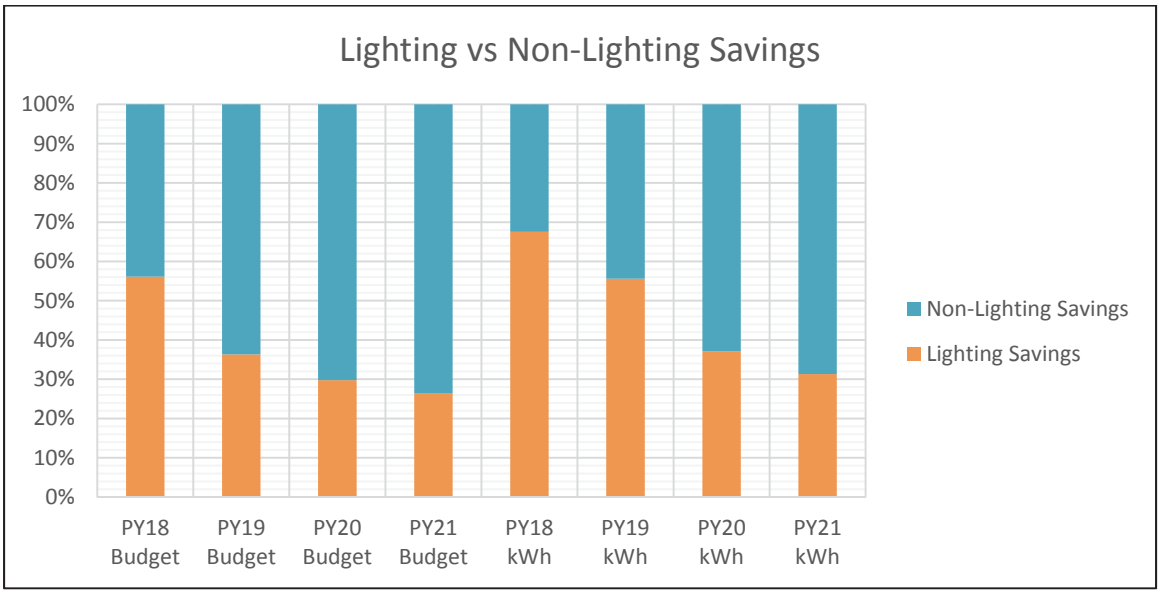
While we continue to raise the bar for energy efficiency programs, it is important to note that sustaining this level of program-attributed goals becomes increasingly challenging year after year. Rising baselines and modifications to net-to-gross ratios continue to reduce claimable savings opportunities. Over the next three years, Hawai'i Energy will develop ways to mine savings from more costly and challenging projects and market segments, including more integrated demand side management initiatives that provide additional grid services.

Through the course of this three-year performance period, we anticipate updates/inclusions from new Baseline and Potential studies, legislative and policy changes, updates to utility avoided cost metrics, and program evaluation results. We recognize the importance of remaining flexible and taking advantage of changing technological and market opportunities in order to maximize benefits to Hawai`i's communities.

Current Assumptions to Consider when Reviewing this Plan: The following baseline assumptions that were utilized in this planning effort:

- Budget based on $116,880,000 over three years;
- Investment (in dollars) into energy efficiency slightly increases from current cycle
- Maintained **70/30 split** between incentive and non-incentive;
- Maintained **45/55 split** between residential and business;
- **TRM, NTG** reductions, particularly in lighting and peer group program;
- Reduced investment into and savings from lighting (see Figure 1)
- Reduction in **system loss factor** (approximately 5.4% from Program level savings);
- Forecasting 3 years based on **current year TRM** for a triennial plan, with limited visibility into future analysis;
- Anticipating **avoided cost updates** in the future:
    - Reduction in cost of IPP procurements
    - How /when to include:
        - Temporal values
        - Locational values
        - Carbon benefits
        - Other non-energy benefits
- **Honolulu Sea Water Air Conditioning (HSWAC)** projected budget impact of $2 million in this triennial period, potential obligation of $7.5 million.

Figure 1



	PY 2016–2018	PY 2019–2021
SERVICES OFFERED	36	54
BUDGET TOTAL	$89,540,000	$116,880,000
CUSTOMER SAVINGS THE FIRST YEAR	Over 465 million kWh	Over 379 million kWh
CUSTOMER SAVINGS OVER THE LIFETIME OF ITS EFFICIENCY MEASURES	$1.4 Billion	$1.3 Billion

(NOTE: this figure does not reflect Hawai'i Energy's impact via new programs that support clean energy technologies — e.g., electrification of transportation or grid ready technologies)

To better serve more aggressive and longer-term state energy goals, the development of new three-year performance metrics with annual reporting on progress indicators have been included in this plan. Much of what we have proposed are best-practice standards used in other

areas to incorporate value of broader state energy policy goals. Additionally, prioritizing equity of services at the sector, island and state levels and measuring these programs differently than in the past is important.

We know that this broader set of objectives will require increased collaboration with the Hawaiian Electric Companies. We are committed to doing our part in expanding our collaborative efforts as it is imperative that ratepayer funds are being efficiently deployed and not subject to duplicative or counter-productive efforts. The goal of collaboration in these efforts should reduce cost to ratepayers, align communication to customers, and increase the likelihood of investment in technologies that will not only reduce customer costs, but also benefit the grid today and in the future.

2. IMPLEMENTATION OF STRATEGY

2.1. Clean Energy Technologies

Residential and business clean energy solution programs provide direct technical assistance and financial incentives to accelerate adoption of least-cost energy choices for families and businesses in Hawai'i. In this capacity, Hawai'i Energy is an important and objective market facilitator to advance the state's 100% clean energy goal and can serve as a clean energy advisor for all business and residential customers.

The increasing availability of intelligent and connected products, equipment, and systems enhances the opportunities for Hawai'i Energy programs to accelerate the realization of buildings as a grid resource. By aligning energy savings with peak energy demand periods and variable renewable energy, Hawai'i Energy can integrate customer clean energy solutions with broader system benefits like temporal grid services and increased resiliency. In order to achieve this, the Program will need to be well positioned to integrate energy storage, demand response and clean transportation technologies with traditional energy efficiency engagement, as the grid needs become more defined and programs come online.

2.1.1. Business Program

We view PY19-21 as the critical timeframe to capture deeper energy savings while preparing customers for the dynamic role they will play in the grid of the future. As such, we are aligning with current industry trends and best practices to move beyond traditional incentive programs and incorporate more comprehensive offerings.

This shift will allow the Program to promote deeper energy savings, provide better customer support in light of evolving grid needs, and incorporate an intentional focus on assisting customers with the planning, design and evaluation of energy efficiency options. Our holistic approach will focus on connecting customers with our extensive network of resources (including financing services, Clean Energy Allies and/or the distributors and manufacturers that influence the local supply chain) and addressing barriers – beyond financial – that prevent deeper savings from occurring.

Key initiative areas include:

- Business Energy Advising
- Supply Chain Engagement
- Grid Service-Ready Support

A. Business Energy Advising

Energy Advisory Services

Over the last decade, Hawai'i Energy's Energy Advisor team has gained a better understanding into the complexity in moving commercial energy efficiency projects forward. Even in the situations where funding is not a barrier, there are often constraints around access to information, limited time and human resources to oversee a project, lack of executive buy-in and complicated procurement processes. Our Energy Advisors have also developed strong relationships with customers who have relied on them as their trusted advisor. Below is a list of planned focus areas for Energy Advisors and CEAs.

a) **Champions for Our Customers:** While direct Program incentives remain important, it is even more critical that Hawai'i Energy's Energy Advisors act as champions for the customers. This role can include:
    - Assistance outlining and addressing technical and financial barriers, and identifying solutions tailored to the unique challenges that face different sectors and/or facility types
    - Serving as the "Seal of Approval" with upper management by providing an unbiased, third-party perspective in the decision-making process of both the project and the contractor selection.

b) **Design Guidance:** New construction design guidance to current energy efficiency practices and support for exceeding compliance to energy code

c) **Driving Deeper Savings via Technical Assistance, Financial and Procurement Guidance:** To drive deeper energy savings and better empower our Energy Advisors and the engineering team that supports our customers and Clean Energy Allies, the Program will look to do the following:
    - Provide increased technical assistance at scoping, design, and review stages of project
    - Assist with financing options and conversations with decision makers to move projects forward
    - Increase and enhance the capacity and resources within Hawai'i Energy's tool lending library in order to serve more customers in more ways
    - Provide guidance on procurement best practices and strategies

- Increase the amount of "influence only" and "claim only" savings projects where the Energy Advisors focus on influencing investment in projects and removing other barriers, rather than providing rebates

d) **Energy Efficiency Financing:** Upfront costs are often the largest barrier in moving forward with a project. While lighting projects typically provide an attractive and quick enough return on investment for investment, the deeper energy-saving measures are left on the table. Due to competing needs for capital within an organization, having options to eliminate upfront costs and a positive cash flow is critical.

- *Leverage Available Financing Products to Drive Deeper Retrofits* – Through industry partnerships, we will more effectively provide access to innovative financing packages designed to overcome the cost barriers associated with efficiency projects. We will utilize our existing network to connect customers with the financing agencies that are most suited to their needs. Proposed approaches include:
    - Below Market Financing: Utilize Program incentives to offer "below market" financing through interest rate buy-downs, making the financing terms more attractive and easily accessible. The program would also provide technical review of projects to help the banks eliminate the engineering risk of the project so the bank can focus on the credit risk of the customer.
    - Energy as a Service (EaaS): Similar to a traditional power purchase agreement for PV, EaaS, is an all-inclusive subscription-based pricing model that allows business to "pay as you go" and keeps the project financing off the balance sheet. As options develop in the marketplace, the Program will look for ways to better support this business model and pilot programs for market segments in which this solution is attractive and useful.
    - Loan-Loss Reserves: The Program is also considering providing loan-loss reserves to help hard-to-reach customers who do not have ideal credit to be able to access energy efficiency financing, particularly in instances in which Green Energy Market Securitization (GEMS) funding is not available.

e) **Holistic approach to drive High-Performance Buildings*:*** The path to our low-carbon, clean energy future relies on the reduction of emissions from the existing commercial building stock. This will require a holistic approach to building management in order to drive deeper retrofits. Hawai'i Energy will offer a tiered incentive framework to promote higher efficiency equipment along with optimized systems and processes. The framework will include a top-tier deep retrofit package that can combine building automation systems with other distributed energy resources like energy storage, smart inverters, and workplace charging.

f) **Expanded Education, Training and Benchmarking aligned with SEM:** This will require expanded education and training offerings beyond traditional energy efficiency measures to include whole building modeling, Net Zero Energy buildings, energy management systems, demand response and energy storage. We will also expand our benchmarking efforts to support broader analysis of the building stock by sector type.

Energy Advisory Incentive Offers

a) **Whole Building Assistance – Building Project Pipelines via Technical and Services Support:** These efforts represent a reinvestment in the Business Energy Services and Maintenance budget category to support additional technical support, metering, energy audits and studies, and retro-commissioning projects. Emphasis will continue to shift to this deeper engagement in order to build project pipelines and demonstrate the importance of the ongoing analysis that is required to achieve and maintain deeper energy savings. To do this, the Program will increase spending in these areas by over 300% compared to the PY16-18 contract cycle.

- *Design Whole-Building Incentives* – These offerings can also include incentives focused on whole building performance for optimizing interactive efficiencies within the various building systems, or incentives for less complex projects affecting one or two systems. This may also include increased or bonus incentives for higher target levels (e.g. LEED certified or green building tiers)
- *Submetering* – a key component of whole building efficiency is to empower occupants to manage their energy use. This offer incentivizes building owners and managers to bill tenants for their measured energy consumption, which has been proven to motivate tenants to use less electricity in order to reduce their electric bill costs.

b) Energy-Water Nexus

- *Rural Water and Wastewater support* – Hawai'i Energy continues to support the Hawai'i Rural Water Association (HRWA) with the development of its own energy efficiency program on the island of Hawai'i. Building on program criteria and selection of participant(s), Hawai'i Energy expects to provide assistance in utilizing water and electrical monitoring equipment to audit select water and wastewater systems. Data summary and findings will be reported along with recommended energy efficiency improvements including but not limited to higher efficiency pump replacements, variable speed drives to meet varying load conditions, pump check valve replacements and further process recommendations to improve system leak detection, water audit programs. Hawaii Energy will help to offset the costs of upgrades identified with incentives and work with federal partners like the SBA and USDA to identify financing opportunities.

- *County Water Utilities* – Leveraging the partnership around leak detection loggers with the Department of Water Supply (DWS) on the Big Island, Hawai'i Energy looks to engage with the other county water utilities over the next three years. Hawai'i Energy will continue to work with the DWS on the Big Island with its leak detection logger deployment as well as water audits to track water and energy savings from reduced non-revenue water loss. Maui County Department of Water Supply has also expressed interest in a similar collaboration and is ramping up with its own leak detection efforts. Continue working with Honolulu Board of Water Supply (BWS) and State Energy Office implementing Green Business Program with restaurants, who also qualify for the Energy Advantage program. Continue support for BWS conservation & efficiency education programs along with their equipment upgrades including pump station facilities.

- *UH School of Architecture* – Partner with Sustainable Building & Community Design program at the University of Hawai'i to benchmark water consumption in ENERGY STAR versus non-ENERGY STAR buildings. Explore combined water & energy efficiency customer education programs and incentives.

c) **Strategic Energy Management (SEM):** SEM is a holistic and proven approach to energy management that integrates data-driven tools and feedback systems with behavioral insights and energy analytics monitoring. Through facilitated engagement in continuously improving energy performance, businesses are able to increase operational energy competencies, and cost savings year after year. An SEM program is established and implemented in partnership with the customer, creating a culture of Continuous Energy Improvement (CEI). This approach improves productivity, overall facility operations, as well as impacting behavior and organizational culture around energy.

These efforts assist customers in managing and improving energy use over time through process and operational changes while generating leads and building trust for traditional resource acquisition projects. CEI emphasizes equipping and enabling energy teams, managers and staff to impact energy consumption through behavioral and operational improvements. The key difference from discrete equipment rebate programs is that energy savings are achieved through sustained organizational change (behavior and work processes) in addition to capital equipment project upgrades. This comprehensive and consistent approach decreases barriers to individual projects and increases the likelihood that all cost-effective measures are installed.

As Hawai'i Energy continues this comprehensive advisory approach with CEI participants, a key component will be accurate and sufficient data analysis to help customers make informed decisions. The CEI team will identify solutions to overcome the lack of interval meter data and work with customers to retrieve energy-correlated variables that will enable us to build an energy model and

track savings. By selecting participants who can benefit more with data on hand as well as arming customers with their own interval data through metering, better energy modeling and tracking is expected. Whether undergoing initial assessment, planning or project implementation, Hawai'i Energy's role as a trusted advisor through the CEI process is expected to deliver more value than traditionally incentivized projects.

d) **Codes and Standards:** Hawai'i Energy will continue to work with stakeholders to support the state and counties with building energy code and appliance standards. Please see the Economic Development and Market Transformation section for more details. Although this is considered a market transformation effort and funded from the BTRAN budget, the program expects to claim savings for these efforts in the next three years and reflects so under BESM in Appendix B within the Business Program.

B. Supply Chain Engagement

Clean Energy Ally-Driven Efficiency

a) Services to Engage CEAs

CEAs are valuable contractors and service providers who partner with us to deliver energy efficiency and renewable energy products, and expertise directly to island residents and businesses. The CEA program supports and leverages architects, engineers, contractors, manufacturers and distributors to efficiently and cost-effectively increase program participation for both business and residential customers. In PY19-21 we will continue to expand and recruit new Allies to support the new initiatives and program offerings as well as deepen the relationship and engagement with existing Allies through expanded and improved program offerings.

- *Streamline CEA Application Process* – The Program will also be streamlining the application process utilizing a single online form and leveraging our growing database of efficient technologies in order to reduce processing times and facilitate faster payment.
- *Increase Energy Studies to Drive Deeper Saving* – As mentioned above, Hawai'i Energy will increase funding on energy studies focused on driving deeper savings beyond lighting to enable Clean Energy Allies to help deliver needed data and information for customers to make smart energy investments.
- *Incentivize CEAs who Provide Grid Services* – In addition to the continuation of standard efficiency programs driven by the allies, Hawai'i Energy will also encourage and incentivize comprehensive energy service companies who drive "Buildings as a Grid Resource" through the installation of technologies that provide grid services.

- *Expand Benefits and Incentives for CEA High-Performers* – We will expand the CEA "Energy Insiders" top performer program that provides additional benefits and incentives for high performing contractors. This will also include a **contractor bonus program** to drive projects.
- *Empower CEAs with Data Analytics Services* – Hawai'i Energy will deploy data analytics services and metering to arm Clean Energy Allies with the needed data and information for customers to make smart energy investments.
- *Offer Educational & Networking Events as well as Co-Marketing, Innovative Technology, Financing Training to CEAs* – To enhance CEAs networking and networking opportunities, we will continue to support and promote the successful co-op advertising and co-op events program offerings, such as the "Cup of Joe" networking events and "lunch and learns." The Program will continue offering training and development courses to support workforce development and technical training of CEAs. It will also develop and offer additional training for CEAs on leading-edge energy efficiency technologies and emerging and innovative financing options for themselves and their customers.
- *Enhanced Trade Organization Engagement* – Enhanced engagement with trade organizations, such as American Institute of Architects (Honolulu Chapter and statewide), U.S. Green Business Council, Building Owners and Managers Association, American Society of Heating Refrigeration and Air-Conditioning Engineers, Illumination Engineering Society, and other organizations to strengthen and deepen relationships with CEAs.
- *Raising the Bar on CEAs* – In order to help provide customers better choices, the Program will implement screening criteria and increased program requirements to elevate the performance of participating CEAs.

b) Equipment Incentive Offers

For the PY19-21, incentive levels and measure offerings will continue to evolve to achieve energy saving retrofits beyond lighting, with cost-effective Program investments that aligns with national efficiency program trends. The planned blend of equipment measures achieves a balanced portfolio that decreases investment in lighting projects, increases investment in audits, retro-commissioning and new construction design support, and increases Program investment in additional energy benefits including HVAC optimization, energy management controls, and grid services. Implementation details for each of these equipment groups can be found in the *Delivery Strategies* section of the appendix.

- *Building Envelope* – Window tinting continues to be a low-cost and simple way to reduce solar heat gain in a building, improving occupant comfort and also reducing air conditioning energy use.

- *HVAC* – Increase in HVAC equipment and controls projects planned through expansion of channel partners including midstream distributors and Energy Advantage contractors.
- *Lighting*
    - Continue to leverage midstream distributors to reach customers who traditionally do not participate in efficiency, while also working with installation contractors to provide downstream incentives for equipment and controls.

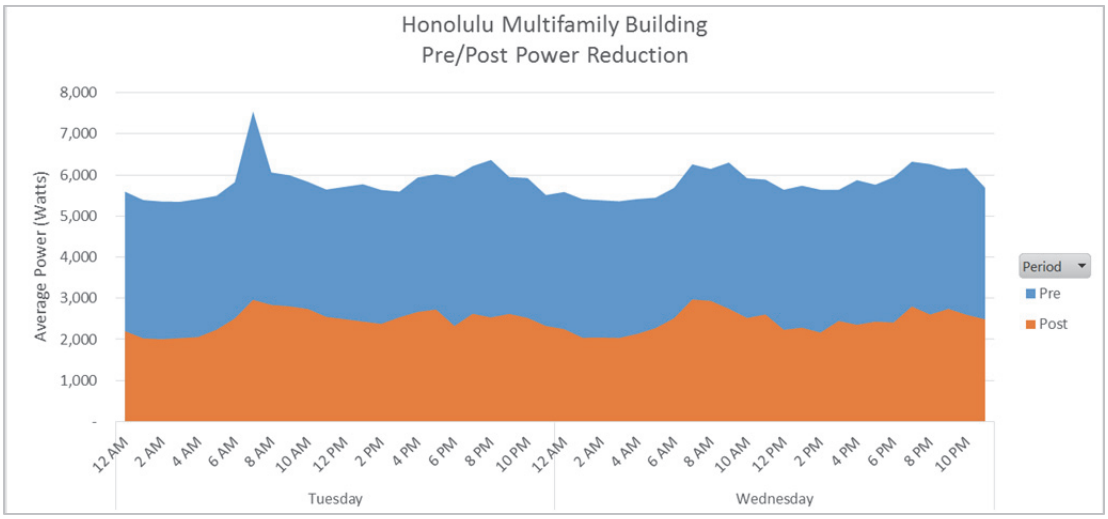
    - Shift from Lighting to More Comprehensive Measures: Traditional Ally-driven downstream incentives will continue to play a large role in the program portfolio; however we will see a more significant shift away from lighting programs to more comprehensive measures like advanced HVAC and controls. **Over the three years, business lighting incentives will decrease by over 44% and savings by 65% compared to PY18.**

Table 1: Business Lighting Impacts

Commercial Lighting Impacts	PY18	PY19	% Change	PY20	% Change	PY21	% Change
kWh	56,753,347	32,432,807	-42.9	24,257,711	-25.2	20,090,736	-17.2
kW	4,126	4,120	-0.1	3,000	-27.2	2,522	-15.9
Incentive Spend	$6,065,866	$5,334,619	-12.1	$4,109,813	-23.0	$3,388,497	-17.6

- *Plug/Process Loads*
    - *Refrigeration* – Continued focus on industrial customers, building on relationships with cold storage and refrigeration customers and contractors who initiated significant efficiency projects in PY18.
    - *Transformers* – One contractor estimates a retrofit potential of over 30,000 standard sized transformers representing over 200M kWh annual energy savings. Hawai'i Energy defined the savings for this measure in PY18, and will significantly increase investment for transformers over the next triennial.
- *Pumps and Motors* – Increase domestic water pump ("booster pump") upgrade projects through strategic collaboration with pump and motor contractors, utilizing measured data logging to show customers and potential customers actual project savings.
- *Emerging Technologies* – Anticipated initial stage completion of HSWAC with budget impact of $2 million and potential obligation of $7.5 million.
- *Water Heating* – No significant changes anticipated
- *Customized Projects*

Figure 2: Example of Domestic Water Pump Energy Savings



Standardizing formal reporting and saving calculation methods for custom projects will allow the team to engage more customers with holistic solutions that meet their needs, while addressing interactive and other effects that impede Program savings claims. Methods include comparing savings to predicted weatherization regression, pre/post utility bill analysis, and calculating savings from equipment specifications.

Distributor-Driven Efficiency

Currently known as the *Midstream* program, Hawai'i Energy will expand successful supply chain efforts in lighting to a broader range of technologies including HVAC, motors and refrigeration. We will continue to evaluate emerging technologies for inclusion into distributor-driven incentives and adoption into the marketplace. For example, development of a distribution network for energy efficient transformers may help penetrate market barriers quickly and more cost-effectively, reaching customers who typically do not prioritize energy efficiency. We will also enhance engagement to influence product purchasing. This includes enhanced involvement with trade allies and supply chain partnerships to influence purchasing patterns within the supply chain.

C. Grid Service-Ready Support

Grid Support Services

a) **Metering and Monitoring:** One major barrier identified in the installation or deployment of grid service technologies is the present lack of customer interval data, both at the main meter and certain key energy using equipment which is necessary to design solutions. To alleviate this market barrier, Hawai'i Energy will increase its metering and monitoring support for customers in order to provide them access to more granular energy usage data. The Hawai`i Energy Program will also benefit by having increased data for program design, marketing and implementation. As such, we have doubled the metering budgets in both the residential and business

portfolios. We also anticipate an expansion in the number of incentives given over the three year program cycle, as IGP progresses.

Hawai'i Energy has engaged with a number of business customers through benchmarking and data analytics efforts over the last five years. We will continue to provide customer-focused data analytics services and energy insights to support clean energy choices and drive customer action. We will expand benchmarking and energy optimization services for connected devices to enhance locational and temporal energy savings to support grid needs. We will also leverage detailed energy use data to inform targeted technologies for customer and grid benefit. The Program will also continue to partner with local organizations to support the sharing and analysis of energy data in order to help inform policy and project implementation. This also could be a critical resource should benchmarking legislation gain further momentum in the later years of the triennial plan.

Grid Support Incentive Offers

a) Demand Response Support: In response to the ever-changing needs of the electric grid, Hawai'i Energy is committed to preparing and empowering customers to be ready to participate in grid service programs as they become available from the utility or through third-party aggregators. Currently, the Hawaiian Electric Companies are in the process of rolling out new Demand Response (DR) programs as well as finishing the competitive bidding process for Grid Services Utilizing Demand-Side Resources. Hawai'i Energy is committed to providing foundational incentives to promote grid service capable technologies that can be installed today, so that they are advanced enough to adapt to future utility programs and optimize customer savings while minimizing negative impacts to the grid. We are actively supporting Hawaiian Electric's Integrated Grid Planning (IGP) efforts as well as meeting regularly with the Demand Response Team, and will continue to evolve offerings to align with this process.

Key areas that the program currently sees as supporting future grid needs are technologies and devices that have grid service capabilities. The following are examples of traditional technologies that would be appropriate for such delivery:

- **Smart thermostat** technologies that provide both energy efficiency and enable demand response participation for small commercial businesses.
- **HVAC controls** that provide both energy efficiency and enable demand response participation for medium and large commercial businesses.
- **Energy management and control systems** that provide cutting-edge building energy management in relation to grid needs.

It is important that programs help prepare customers for future programs offered by the utility, particularly when customers are making purchasing decisions on equipment with a long lifetime that can run 10 to 20 years. Incentive stacking can jumpstart adoption of these technologies. Added incentives in this area would not necessarily be tied to a traditional reduction of kWh usage, but rather focused on enabling customers

to participate in grid services programs with the opportunity to reduce their billing demand charges and be incentivized to reduce utility peak load.

b) **Customer-Sited Energy Storage Systems:** In addition to more traditional technologies that enable demand response capabilities to buildings and systems, battery energy storage systems (BESS) have been identified to provide numerous benefit streams (of which demand response is one), all of which are not currently captured by existing utility program offerings. Without an economic price signal, there is no value proposition for customers to control their load to be "grid-friendly" and until there is so, incentives can be a powerful motivator to shift customer load and flatten the system duck curve. Said incentives are also meant to pass on to customers system benefits that peak demand reduction achieves such as increased hosting capacity on the circuit level, T&D upgrade deferrals, etc.. BESS can help address short-term issues with temporal values of energy efficiency and better position customers to adjust their load profile in preparation for the application of Time-of-Use rates We will also include kW focused incentives for thermal energy storage systems to encourage daytime load while reducing evening cooling loads. These may be ice or chilled water HVAC system focused.

   In recognition of the complexity of capturing all revenue streams and maximizing utility of energy storage devices by the customer to reduce energy bills as well as participate in grid services, Hawai'i Energy will work to choose participants based on grid/geographic considerations, as well. The locational value of these technologies can offer non-wire alternatives to reduce the overall cost to ratepayers. Additionally, there exists opportunity to focus on deployment of battery storage with a resiliency aspect concerning essential government and private sector facilities where resiliency is critical; including the opportunity to provide grid services during non-emergency events. A pilot approach will first be taken to assess infrastructure needs for program deployment as well as the opportunity to do benefit-cost analysis of residential and commercial energy storage.

c) **Electrification of Transportation (EoT):** In March 2018, the Hawaiian Electric Companies filed their EoT roadmap, which details their plans to increase Electric Vehicles (EV) and EV charging infrastructure. At that time, Hawai'i Energy offered a letter of support for these efforts and we remain in communication with the Companies to align our program initiatives with the road map. The installation of EV charging infrastructure has been identified by many groups as a pain point in the transition to clean transportation across the islands. In discussions with the utility, we have identified this as area where Hawai'i Energy can provide incentives for specific use cases. These incentives are designed to leverage the current interaction Hawai'i Energy has with business customers on energy efficiency opportunities while the while the utility is proceeding with its EoT filings. Unlike "make-ready" infrastructure, which may be best delivered by the utility, the installation of charging stations is a good area for collaboration and a point of integration with Hawai'i Energy's other program offerings to customers.

For business customers, the greatest opportunity for near term impact lies in workplace charging, as a means to fill the belly of the duck and absorb excess PV generation during daylight hours. One of the biggest barriers to providing charging stations is the electrical infrastructure upgrades that are often required. By pairing the installation of their charging station with energy efficiency, some of these facilities may avoid an upgrade to their circuit panels. Additionally, energy efficiency can reduce some of the costs incurred from increased usage of the charging stations.

The Program intends to build on the EV pilot launched in PY18, which has received tremendous interest. The pilot was launched with $150,000 in funding from Ulupono Initiative, $50,000 of which was dedicated to workplace charging. Hawai'i Energy matched with $50,000 of incentive funds for a total budget of $100,000. For PY19-21, we will expand the reach of the program beyond just workplaces to include other commercially metered infrastructure such as municipal lots.

The Program is actively monitoring the status of HB1585. It is our intent to use any taxpayer funds first, in accordance with the requirements outlined in statute, if adopted. The Program would use ratepayer funding to either continue with the same requirements outlined in statute, or potentially have a different program with alternative requirements and incentive levels. All of this will be determined once the status of HB1585 is finalized. Should ratepayer funding not be needed for business EoT programs, this budget would be used to further other initiatives outlined in this plan for Grid Service Ready programs, particularly in Accessibility and Affordability area.

The Program will continue to evaluate growth in EV Microgrid and Vehicle-to-Grid (VTG) opportunities as the utilities start to value these resources and may choose to offer incentives as needed to increase the deployment of the enabling technologies. Additionally, rate structure modifications could help better integrate energy efficiency and EV efforts.

2.1.2. Residential Program

Hawai'i Energy has invested in a new strategic transition towards a comprehensive residential energy services program. As the energy landscape continues to change, helping our island families and residents make smart energy choices is becoming an increasingly important role for Hawai'i Energy.

The PY19-21 plan introduces several new initiatives for residential energy services, while also introducing some new supply channel (manufacturers, distributors, contractors, retailers) partnerships to improve the cost-effectiveness of financial incentives, increase stocking and access to energy efficient technologies, and streamline the engagement and incentive process to increase the impact of the programs. This comprehensive residential program strategy will help to advance new state residential energy codes and standards, increase targeted energy efficiency measures, and increase the rate of adoption of new clean energy technologies including connected appliances, electric vehicles, energy storage and renewable energy.

Key new initiatives include:

- Enhanced Lighting Program
- Online Energy Marketplace
- Retailer and Distributor Midstream programs
- Clean Energy Ally Training Platform
- Water Heating Enhanced Incentives
- Residential New Construction Program
- Whole House Energy Assessment and Retrofit Program
- Energy Behavior and Data Insights Initiatives
- Connected IDSM programs (e.g., Smart Thermostats)

These programs and initiatives are designed to support an evolving clean energy system in Hawai'i, create resilient local economies and homes, and increase clean energy jobs and businesses in the state.

A. Direct Consumer Purchases

Enhanced Lighting Offers

a) **Upstream Lighting:** The Upstream Lighting program will shift emphasis from standard screw-in bulbs to specialty lighting bulbs such as PARs, MR16s, decorative string lights and security lighting**. Over the three years, residential lighting incentives will decrease by over 74% and savings by 87%.**

Table 2 - Residential Lighting Impacts

Residential Upstream Lighting Impacts	PY18	PY19	% Change	PY20	% Change	PY21	% Change
Bulbs	1,374,642	600,000	-56.4	500,00	-16.7	400,000	-20.0
kWh	19,687,367	10,714,497	-45.6	3,298,218	-69.2	2.638,574	-20.0
kW	2,800	1,885	-32.7	524	-72.2	419	-20.0
Incentive Spend	$2,036,963	$780,000	-61.7	$650,000	-16.7	$520,000	-20.0

b) **Smart Lighting:** New incentives will be created for the new smart lighting products on the market today, as part of a larger connected home strategy towards IDSM.

c) **Continuous Bulb Replacement:** A continuous bulb replacement program will be launched to replace existing inefficient bulbs still in household sockets. Hawai'i Energy has performed successful bulb exchanges in the past via various community groups and communities and will enhance this delivery model for a wider deployment.

Online Energy Marketplace

a) **Leverage Online Marketplace to Expand Efficiency Offerings:** Hawai'i Energy will collaborate with the utilities' upcoming online energy marketplace to continue offering energy efficient products that are difficult to find on island retail shelves such as advanced power strips.

b) **Product Cross-Promotion:** We will also cross-promote customer access to high efficiency and "grid-forward"/connected products.

c) **Information to Drive Customer Decision-Making:** This online marketplace will provide customer-focused information to support clean energy choices and comparison of various products.

Retail Clean Energy Products

a) **Expanded Midstream Programs:** Hawai'i Energy will also expand the number of retailer and distributor/dealer midstream programs providing point-of-sale, instant rebates at brick and mortar locations. These incentives for lighting, HVAC and air quality (window A/C, dehumidifiers and air cleaners, and smart thermostats), and appliances such as washers, dryers, heat pumps, freezers and refrigerators, and consumer electronics (TVs, soundbars, monitors) help to increase stocking and sales of the most efficient equipment while streamlining back-end processes to reduce administrative costs and provide efficient delivery of Hawai'i Energy incentives to customers.

b) **Increased incentives for VFD Controlled Pool Pumps:** Enhanced program to target pool pump replacement.

c) **Enhanced, Bundled Residential Incentives:** The Program will support enhanced incentives for new homeowner/renter comprehensive upgrades for bundling water heating, cooling, appliances and lighting.

d) **Expanded Early Retirement Appliance Program:** Hawai'i Energy will expand the early retirement appliance program to target removal of secondary refrigerators and upgrading inefficient cooling, dehumidifying and air purifying equipment.

e) **Increased Penetration of Efficient Equipment for the Hard-to-Reach:** Hawai'i Energy will establish enhanced lighting and appliance offerings through partnerships with organizations serving hard-to-reach communities and lower income households (e.g., Foodbank, aggregating small local grocers and hardware). See Section 2.2 Accessibility and Affordability for more detail.

B. Clean Energy Ally-Integrated Offerings

New Benefit Offerings To Engage Clean Energy Allies

The Clean Energy Ally program helps drive participation and amplify the connection of the Program with the customer. The Program has nurtured long-lasting relationships with the solar contractor industry for the past decade and, in more recent program years, has folded in residential HVAC contractors as offerings have evolved and been designed for further market adoption. The CEA program will expand to include more trade ally categories, as well as midstream suppliers/distributors, and include the following new benefits:

a) **Tailored Training and Incentives:** The CEA program continues to act as a force multiplier for Hawai'i Energy's initiatives by building workforce capacity and impact through tailored training and incentives. We will continue to build out the technical support and training for CEAs to expand capabilities to market and sell energy efficiency and other IDSM services and technologies to their customers.

b) **Parallel/Tiered Incentives to Drive Efficiency:** Hawai'i Energy will go beyond customer incentives to offer parallel or tiered incentives to distributors and contractors for increasing stocking, sales and installation of high efficiency and clean energy technologies.

c) **Financing and Data Analytics:** Financing and data analytics services to provide sales tools to contractors to sell comprehensive energy retrofits and improve access to all residential households.

d) **Soliciting Trade Ally Feedback:** Developing a trade ally feedback loop to provide input on improving program results and participation.

e) **Trade Allies Awards and Recognition Program:** Developing an awards and recognition program for top-performing CEAs.

CEA-Enhanced Offerings

a) **High Efficiency Water Heating:** Water heating remains the single most impactful savings measure for the residential sector. Hawai'i Energy will accelerate heat pump water heater (HPWH) adoption with increased incentives and contractor bonuses for controls. Heat pump water heaters will also remain available at retail locations with upstream incentives. Solar thermal water heating and PV direct water heater system installations will continue with instant rebates provided to customers by participating contractors at the point of sale. In addition, we will continue work with participating lending institutions to provide an incentive to buy down the interest charges on solar hot water systems. The maintenance focused solar water heater tune-up program will expand during PY19-21, as well.

b) **Household Air Conditioning:** The Program will continue with to expand its offerings to encourage efficiency improvements in household air conditioning. In addition to the contractor driven VRF split system program, we will continue with the successful Window AC trade-in, which leverages local recyclers to bundle replacements of old inefficient units. We will also expand the residential AC tune-up and Central AC retrofitting.

c) **Whole Home Retrofits:** Hawai'i Energy will take a comprehensive approach in assessing a home's energy efficiency and savings potential as well as evaluating its comfort and long-term value. The Program will provide home energy assessment services with customized recommendations to deliver whole-house solutions. Utilizing internal resources and participating contractors will guide the process for the customer to implement energy retrofits and other improvements, such as installation of energy-efficient products, appliance and equipment replacements, and building envelope upgrades.

   The home performance program will leverage the complementary Clean Energy Ally program to achieve greater impact through established market actors.

d) **Residential New Construction & Retrofits**

   a) *Expanded Engineering Support and Incentives for High-Efficiency Homes* – Hawai'i Energy will expand its engineering design support and incentives for high efficiency home building designs and systems and the incorporation of EV charging, connected appliances and energy storage.

   b) *Strong Partnerships to Promote Bundled Efficiency Measures* – The Program will strengthen partnerships with Hawai'i housing agencies and developers to package energy efficiency with clean energy solutions and expanded access to electric vehicle charging.

   c) *Codes and Standards* – The Program will support industry compliance with IECC 2015 for new construction and building retrofits through targeted incentives and services to address financial and technical barriers. As part of a broader suite of market transformation programs, Hawai'i Energy will support training initiatives for Clean Energy Allies and the broader Hawai'i building industry, especially as the Counties

adopt various amendments that differ from each other. See *Market Transformation and Economic Development* section).

C. Behavior, Energy Insights and IDSM Optimization Services

Behavior Engagement

a) **Increased Awareness and Adoption of Clean Energy Technologies:** Hawai'i Energy will leverage our existing energy behavior engagement platform and home energy reports to support awareness and adoption of clean energy technologies (EVs, PV + storage and high efficiency technologies).

b) **Tailored and Effective Energy Technology Messaging:** Using the reach, experimental design structure, and data-driven capabilities of the program, the ability to target, tailor, and test the effectiveness of energy-transition technology messaging can be more swiftly, flexibly, and cost-effectively conducted with confidence.

c) **Effective Program, Policy, Tools and Data-Based Engagement:** Hawai'i Energy will explore opportunities to advance cross-cutting program, partner, and policy objectives through this process that can provide light-touch tools of intervention and data-driven results to serve and provide benefit beyond discrete kWh savings.

Advanced Energy Insights

a) **Data Analytics and Home Energy Insights to Drive Behavior:** Hawai`i Energy will continue to expand customer-focused data analytics services and customized household energy insights to support clean energy choices and drive customer action.

b) **Evidence-Based Mechanisms to Inform Energy Efficient Behavioral Change:** Investing in methods and mechanisms that simplify and standardize the ways that energy and program data can be used to drive program improvement processes (such as those applying behavioral techniques that measure impact) will yield immediate and longer term benefits to lower the cost of identifying and delivering evidence-based energy insights.

c) **Aggregated Data to Inform Program Savings & Benefits:** Aggregated data from participating households will be leveraged to inform program savings, as well as identify opportunities for targeted incentives or services to increase customer and grid benefits.

Energy Optimization

a) **Locational and Temporal Energy Savings:** Hawai'i Energy will explore optimization services for connected devices incentivized through the program in order to enhance locational and temporal energy savings to support grid needs.

b) **Targeted Max-Load Programs:** Optimization services will primarily target the largest household loads including water heating and cooling, as well as other connected loads suitable for grid services including pool pumps.

D. Grid Service-Ready Support

Hawai'i Energy is committed to providing foundational incentives to promote grid service capable technologies that can be installed today, so that they are advanced enough to adapt to future utility programs and optimize customer savings while minimizing negative impact to the grid. It is important that these programs help prepare customers for future programs offered by the utility, particularly when customers are making purchasing decisions on equipment with a long lifetime that can run 10 to 20 years. Incentive stacking can jumpstart adoption of these technologies. Added incentives in this area may not necessarily be tied to a traditional reduction of kWh usage, but rather focused on enabling customers to participate in grid services programs with the opportunity to reduce their demand.

Hawai'i Energy can also align programs with grid/geographic considerations. The locational value of these technologies can offer non-wire alternatives that can reduce the overall cost to ratepayers. Deployment can be ramped around specific locational grid needs based on direction from the utility or the PUC.

Demand Response

The Program will develop targeted initiatives to increase the penetration of efficient equipment and smart devices to provide customer benefits and support grid services. Initiatives identified for promotion in PY19-21 include:

- **Smart thermostat** technologies that provide both energy efficiency and enable demand response participation for homes.
- **Support Energy Monitors and Smart Devices:** One major barrier identified in the installation or deployment of grid service technologies is the present lack of customer interval data, both at the main meter and certain key energy-using equipment which is necessary to design solutions. To alleviate this market barrier, Hawai'i Energy will increase its metering and monitoring support for customers in order to provide them access to more granular energy usage data. The Hawai`i Energy Program will also benefit by having increased data for program design, marketing and implementation.
- **Grid-Interactive Water Heaters:** Hawai'i Energy will also continue to support targeted grid-interactive water heaters installations. The overall water heating strategy will be implemented in collaboration with utility demand response initiatives to ensure alignment with grid service objectives.
- **Heat Pump Water Heaters (HPWH):** The Program will accelerate heat pump water heater incentives with added bonuses for controls. Water heating is the largest electrical load in residential homes in Hawai'i. For homes that are not viable candidates for solar water heating – or that have existing PV systems – heat pump

water heaters are a cost-effective and proven solution for the replacement of demand-intensive standard electric water heaters.

Customer-Sited Energy Storage Systems

Deployment of grid-connected battery energy storage systems (BESS) can provide immediate DR value, while also driving peak demand reductions. BESS can help address short-term issues with temporal values of energy efficiency and better position customers to adjust their load profile in preparation for the application of Time-of-Use rates.

For PY19-21, Hawai'i Energy will design programs to incentivize early adopters to change energy consumption behavior to be more grid friendly during utility peak hours. Program rules are under development and we are leveraging input from national partner organizations to align with storage incentive programs being implemented within other energy efficiency programs (eg. Massachusetts, SMUD, NV Energy). We anticipate these initiatives will draw upon the "nudge unit" resources of behavioral science techniques to position and test approaches that navigate known challenges in the role of customer choice, perspective, and support and concerns for programs and rate options.

As the BESS market expands and more locational data becomes available, we anticipate ongoing evolution of the incentive structure. We will actively engage with industry stakeholders to ensure that the program design is properly aligned with changing customer and grid needs.

Electrification of Transportation

As is the case in the business sector, access to EV charging stations is also a barrier in the residential sector. In particular, there is a significant lack of access to charging stations for residents who live in multifamily dwellings. Customers in this situation may wish to purchase an electric vehicle but choose not to due to lack of vehicle charging infrastructure.

The Program intends to build on the EV pilot launched in PY18, which has received tremendous interest. The pilot was launched with $150,000 in funding from Ulupono Initiative, $100,000 of which was dedicated to multi-family unit dwellings. Hawai'i Energy funds were not allocated to multifamily installations in PY18, but in PY19-21 we will look to expand in this area. Leveraging existing relationships with multifamily building owners and property managers to overcome barriers to charge station installations, we will also identify further opportunities for cost savings through energy efficiency projects.

Hawai'i Energy's EV charging station rebate program criteria also aims for maximum utilization of charger equipment by stalls with access beyond a single resident. However, access to vehicle charging infrastructure will become a greater issue as the market expands and demand is expected to grow throughout the triennial period. As conditions evolve, the program will be well positioned to expand its reach beyond multi-family unit dwellings to include other residentially metered locations.

As is the case with our business programs, the Program is actively monitoring the status of HB1585. It is our intent to use any taxpayer funds first with the requirements outlined in statute, if adopted. The Program would use ratepayer funding to either continue with the same requirements outlined in statute or potentially have an additional program with other requirements and incentive levels. All of these details will be determined once the status of HB1585 is finalized. Should ratepayer funding not be needed for residential EoT programs, this budget would be used to further other initiatives outlined in this plan for Grid Service Ready programs, particularly in Accessibility and Affordability area.

2.2. Accessibility and Affordability

Hawai'i Energy will expand the diversity and depth of technical assistance and financial incentives directed toward low-income and hard-to-reach communities by **over $3 million a year (62% increase)**. These resources are an important component of ratepayer-funded energy portfolios throughout the nation. According to a report commissioned by the non-profit Aloha United Way, 11% of all households in Hawai`i fall below the federal poverty level. An additional 37% of all households are "ALICE" – i.e., Asset Limited, Income-Constrained, Employed – who don't make enough to afford basic necessities to remain stable and self-sufficient. This combined 48% of Hawai`i's population represent the financially vulnerable who focus on surviving rather than thriving.

Low-income households are more likely to face high energy burdens with a higher percentage of their total household income going toward paying utility bills. Energy efficiency programs provide important services to customers not only by lowering energy bills so that money can be directed toward basic necessities, but also in making homes healthier and more comfortable, giving residents and businesses more control over how and when they use energy, and contributing to local clean environment and sustainability goals.

Historically, however, it has been challenging to reach low-income populations who face unique barriers to participating, including lack of access to energy efficiency information, lack of capital and/or lack of credit to pay for high up-front costs of energy efficiency investments. Additionally, split incentives between owners and renters coupled with an aging housing stock further complicates the delivery of efficiency upgrades.

These communities include low-income households, rural communities, renters, multi-unit building owners, kupuna (aka senior citizens), military veterans, small businesses, non-profits, agricultural operations, and other underserved, vulnerable and geographically isolated segments.

Hawai`i Energy has outlined the following three strategies as the foundation for these efforts: **enhance existing programs**, **build energy literacy through strategic partnerships with key community action groups** that already effectively serve these markets, and **track and evaluate demographic data** collected on program participation. We will address the opportunities and challenges in reaching communities and outline how we will scale our efficiency programs in this sector.

2.2.1. Implementation Strategies

A. Enhance Existing Programs

Comprehensive and Integrated Services

Hawai'i Energy will develop a portfolio of bundled programs to maximize low-income energy efficiency benefits, energy savings and participation and tailored to the needs of local communities. We will leverage outreach tools and technologies to achieve greater awareness

of the financial, economic and environmental benefits and opportunities while realizing greater energy and financial savings.

This may include a comprehensive package of engineering services, financing and financial incentives, and other informational resources tailored to individual organizational or household needs. Hawai'i Energy program will seek out low-income households, including renter- and owner-occupied, in single- and multi-family family buildings and target existing and upcoming projects in transitional, affordable, and other subsidized housing. Hawai'i Energy will coordinate delivery of programs with other organizations with existing relationships to LI/HTR markets to best align and scale programs impacts and energy literacy.

Addressing Split-Incentives

Hawai'i Energy will enhance existing direct install and bulk purchase programs by increasing alignment with the replacement cycle for appliances in sub-metered rental units by landlords and property managers to support investments in high efficiency appliances even when the tenant pays the energy bill.

B. Build Energy Literacy

Community Action Group (CAG) Partnerships

The Program will foster long-term relationships with high-performing CAGs with built-in communication channels and relationships with households, building owners, and small businesses to expand access to energy literacy programs, services and clean energy products. Early-stage discussions are underway to work in partnership with Aloha United Way and the cohort of nonprofits it is funding to drive financial literacy with low-income residents. Energy savings is an important component to financial literacy, and Hawai`i Energy is exploring how to leverage these organizations to help educate and provide solutions to Hawai`i's Asset-Limited Income-Constrained Employed (ALICE) families. Direct to Consumer Purchases.

We will also increase partnerships to enhance and streamline distribution of energy efficient products with public and private human services entities, health organizations, food banks, and other non-profit agencies.

Focus on Tenant Behavior

Hawai'i Energy will engage renters/tenants in partnership with affordable housing providers to increase energy awareness and action through a campaign that takes advantage of a number of behavioral insight best practices to overcome known barriers in this hard-to-reach and underserved market area. These likely include trusted messaging, social incentives and feedback norms, salient prompts, and data analysis to validate and communicate results.

Calculate Value of Energy Improvements

We will provide facility owners, landlords and property managers with pre/post (2 years) engineering, data analytics and energy literacy support to properly monetize and fund clean energy improvements. Document benefits with partners to assess impacts of clean energy improvements on property value, comfort, and renter affordability and retention.

C. Track Data and Demographics

Demographic Data for Program Evaluation: Hawai'i Energy will collect participant demographic data on program participation to evaluate program impact, level of service and design of programs.

Energy- and Non-Energy Metrics to Inform Effective HTR Programming: We will assess energy and non-energy program metrics that best achieve desired outcomes for low-income and HTR customers through Hawai'i Energy clean energy program services.

Systems Mapping of Low-Income and HTR Service Agencies: We will also utilize data to inform systems mapping of the high-performing community action groups and service providers to low-income and HTR communities.

2.2.2. Incentive Offers

The following six initiatives will leverage the strategies outlined above to go deeper with customers.

A. Targeted Single & Multi-Family Direct Install

The Program will take the current multi-family direct installation service package and offer it for single-family homes, targeting hard-to-reach communities and publicly-funded housing programs, such as underserved & vulnerable populations, rural communities in Maui and Hawai'i counties, and the Section 8 Hawai'i housing voucher program.

B. Appliance Trade-Up and Comprehensive Building Retrofits

Expand measures to include water heating, replacement of window air conditioners, smart appliances, building controls, EV charging and other common area upgrades.

C. Heat Pump Water Heating

Water heating is the largest single residential load in Hawai'i households; however in apartments and other multi-family unit dwellings solar thermal is often not an option. Hawai'i Energy will assess opportunities for centralized and in-unit heat-pump water heaters to provide significant energy savings and address potential market and technology barriers.

D. Expanded Non-Profit Focus

After a strong launch in PY18 with five non-profits, the *EmPOWER Hawai'i Project* will continue to expand measures beyond lighting, increase the number of participating nonprofits, and add a full-time coordinator to supplement current Energy Advisors' support. This cohort approach provides engineering and financial support, along with education and reporting to increase energy literacy and remove typical barriers to participation from nonprofit agencies. A four-fold increase over the PY18 budget will enable the EmPOWER initiative to scale its first-year success, enabling more non-profits constrained by resources to implement energy efficiency projects. In addition to expanding reach, foundational work for program "alumni" to stay connected with the current cohort will also be implemented. While lighting projects are often highly cost-effective, with beneficial simple payback periods, the expanded program will also be able to fund longer lead-time, deeper energy savings such as HVAC retrofit projects.

E. Energy Advantage Expansion

Since 2011, the *Energy Advantage* program has been addressing some of the key barriers to participation in underserved communities within the commercial sector. Enhanced rebates from traditional commercial program offerings, development of a specific contractor base that understands the target customers, and providing a relatively turnkey solution through direct installation of energy efficient equipment are all offered through the Energy Advantage program. The Energy Advantage program will continue to deepen its influence by engaging more hard-to-reach small businesses, restaurants, and qualified multifamily properties for LED lighting retrofits, while expanding to provide other energy saving measures, such as HVAC upgrades, through the program as well. Investments will be made to expand functionality in the Leidos AMPLIFY tool utilized by contractors for audits, approvals, invoicing and project document submittals. Streamlining the rebate application process while adding functionality for HVAC equipment, the Energy Advantage team will continue to grow the number of participating contractors and train them on the tools necessary to drive deeper energy savings within Hawai`i's hard-to-reach businesses.

F. ENERGY STAR® Commercial Kitchen Equipment

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. Hawai'i Energy will continue to provide incentives 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.

2.3. Economic Development & Market Transformation

Hawai`i Energy's market transformation programs aim to empower consumers with the rationale and tools to be better-educated consumers of energy and implement efficiency at work and home. Through a comprehensive approach – effective education and training, productive outreach and relationship-building, and strategic partnerships and collaborations – these programs simultaneously remove the barriers and amplify the benefits to empower customers to make smart energy choices that become lasting behavioral changes. Hawai'i Energy's PY19-21 Economic Development and Market Transformation plans incorporate several core forward-focused initiatives to align with the state's policy goals for 100% Clean Energy by 2045. These initiatives include:

- **Developing a clean energy solutions innovation hub** for the rapid evaluation;
- **Design and prototyping of innovative emerging technologies and services**;
- **Establishing comprehensive clean energy training and behavior modification** initiatives for trade allies and customers; and
- **Constructing the internal team, program portfolio framework and data analytics** to support a "living" 10-year Hawai'i Energy roadmap to inform new strategies and investments.

To optimize customer and grid benefits through market transformation, Hawai'i Energy will leverage and invest in the strength of its clean energy ally contractor network, build on organizational experience in leading market transformation programs while identifying emerging trends and best practices and support the design of fully integrated clean energy buildings.

While the primary benefit of energy efficiency investments is the ability to provide energy services at a lower cost to save energy and money for the customer, they often produce a range of additional non-energy benefits. Among these benefits is economic development, including "green collar" job creation, growth of local industry and higher-paying jobs, as well as increased personal financial security.

According to "The 2019 U.S. Energy & Employment Report" jointly published by the National Association of State Energy Officials (NASEO) and Energy Futures Initiative (EFI), energy efficiency employed 2.35 million Americans in whole or in part in the design, production and installation of energy efficiency products and services, adding 76,000 jobs in 2018, an increase over the 67,000 jobs added in 2017. The demand growth for efficient technology and building upgrades has driven expansion among many traditional industries, including construction, energy-efficient appliance manufacturing, building materials, lighting, and other energy-saving goods and services. Additionally, as fuel-efficient and alternative-fuel vehicles grow in the automobile industry, increased numbers of employees work with natural gas, hybrids, plug-in hybrids, all-electric vehicles, and fuel cell/hydrogen vehicles.

Increased energy efficiency reduces household energy bills, increasing disposable income that, in turn, contributes back to the local economy, helping to create new jobs and support existing

ones. Additionally, efficiency reduces the cost of producing goods and services, increasing overall profitability, and leading to increased output and employment.

As Hawai`i Energy also continues to increase its efforts in Accessibility & Affordability, it will target these economic and social benefits to those households, businesses, geographies or sectors for whom they will make the biggest difference. These positive impacts can include lower energy costs for low- to moderate-income families and small businesses, increase opportunities for disadvantaged local workers to obtain jobs that pay good wages, and strengthen existing and generate new economic activity in underserved communities. Creating efficiency programs focused on these goals can have multiple benefits beyond saving energy that ripple throughout the economy, help address inequality and accessibility, build stronger local communities and improve economic competitiveness.

Many jurisdictions have started to account for the economic development and job-creation benefits of investing in energy efficiency and other clean energy. States such as Rhode Island, Colorado, Minnesota and Illinois have made the most progress toward including job creation and other economic benefits in their cost test framework for efficiency investments going forward. Hawai`i Energy will continue to look at practical approaches to estimate the positive economic impacts of energy efficiency locally, reviewing more commonly used efficiency modeling tools and best practices among various state initiatives that include economic development benefits in efficiency cost tests.

2.3.1. Clean Energy Ally (CEA) Program

The Clean Energy Ally (CEA) program serves as a force multiplier for participation in Hawai'i Energy's programs. The CEA program supports and leverages architects, engineers, contractors, manufacturers, and distributors to increase program participation from both commercial and residential customers. Clean Energy Allies play an important role in helping residential, commercial and industrial customers to implement energy efficiency projects and leverage available Hawai'i Energy rebates and program offerings. Clean Energy Allies can facilitate a strong delivery market infrastructure that helps lower the cost of delivering energy efficiency measures to customers and perhaps more importantly be an additional resource to customers who are actively in the buying process for clean energy technologies. Currently, over 450 companies participate in Hawai'i Energy's Clean Energy Ally program.

While the Hawai'i Energy program supports Clean Energy Allies through its market transformation and economic development program offerings, the impact of the Clean Energy Allies on our clean energy technologies programs makes the CEA program a unique point of emphasis..

A. Supporting Market Multipliers

CEAs help build and support a strong delivery market infrastructure to best serve Hawai'i ratepayer needs with energy efficiency options. Many of Hawai'i Energy's projects are completed in collaboration with our CEAs and we anticipate an increase in coordinated efforts in PY19-21.

Removing barriers to program participation by recruiting and motivating allies to become active participants in Hawai'i Energy programs are important objectives of the Clean Energy Ally program. The Program actively evaluates and refines the benefits for Clean Energy Allies to ensure they are properly supported. Current benefits include co-op funding for advertising, trainings and events, access to technical support, invitations to networking events and educational opportunities such as technical trainings and professional development courses augmented with professional sales tools.

Hawaii Energy relies on CEA feedback to help inform and improve program design to increase program participation. In the coming program years, we intend to continue recruiting new Allies to align with the program's new initiatives as well as deepen relationships and engagement with existing Allies through expanded and improved program offerings**.**

B. Deepening Industry Engagement

In addition to expanding and recruiting new allies to support the new initiatives and program offerings, Hawai'i Energy will be working to deepen the relationship and engagement with existing allies through expanded and improved program offerings, such as:

- Creating an "enhanced" tier for contractors that meet a higher level of requirements, a program strategy modeled after the successful Energy Advantage program. The program would expand this to be able to bundle solutions to make the process easier and more accessible to commercial customers.
- Expanding the "Energy Insiders" rewards program to provide additional benefits, incentives, and a contractor bonus program to drive projects for high-performing contractors.
- Expand and promote the successful co-op advertising and co-op event subsidies to enhance networking and business opportunities and leverage industry partners to offer co-branded advertising opportunities and events to the CEAs.
- Continue support of training and development courses to support workforce development and expand technical training of CEAs on selling energy efficiency to customers, emerging energy efficiency technologies and innovative financing options.
- Enhance engagement with trade organizations such as American Institute of Architects (AIA), U.S. Green Building Council (USGBC), Building Owners and Managers Association (BOMA), American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE), and Illuminating Engineering Society (IES) to foster collaboration between CEAs and customers.
- Enhance engagement with building designers and developers to support customer education and engagement with the value of energy efficiency early in the design cycle.
- Support large retail management and merchandising teams to ensure implementation of promotional agreements established at the corporate level.

- Complete the revamp of the CEA online search portal so customers can do advanced and targeted searches for contractors, as well as help CEAs generate business leads and find value in the Hawai'i Energy website. Develop a tiered status for CEAs to be listed as different Pluggy status to showcase the CEAs that are most active in our programs to customers.
- Develop a section on HawaiiEnergy.com that provides financing information to customers and CEAs. Similar to the Department of Energy's Better Buildings Financing Navigator, this tool could help users explore a wide array of financing choices and identify relevant options for their energy projects.
- Continue hosting the Innovation Symposium, enhancing sponsorship/exhibit opportunities for CEAs and recognizing top performing CEAs at the event.
- Continue the monthly CEA newsletter to include information on Hawai'i Energy programs, and trainings, networking events, featured Insider Rewards CEAs, market trends and marketing and promotional opportunities.
- Continue working with manufacturers, distributors, and suppliers to promote program benefits to potential participants.
- Collaborate with manufacturers regarding emerging and rapidly advancing technologies such as lighting controls and building automation systems and) for continuous commissioning. This includes staff training sessions on new technologies and attendance at industry trade shows.

C. Building Workforce Capacity

The foundation of an energy-independent Hawai'i will be dependent upon the skill set and knowledge of the workforce capacity in energy efficiency and conservation. To best support this, one of the main goals of the CEA program is to increase the base of qualified contractors and augment the skill sets to implement clean energy and energy efficiency projects, products and services. This in turn will help Allies successfully educate and support their customers and improve their energy efficiency operations through energy-saving projects. Improving Allies' ability to serve customers by implementing energy efficiency measures will improve the growing economic engine of our State as well as help customers reduce their energy costs.

As in previous years, in PY19-21 we will focus on providing educational opportunities to Allies through technical trainings, Continuing Education Credits and professional sales and financing training. These initiatives will allow Allies to gain a competitive edge by staying abreast of market trends by obtaining knowledge, resources and credentials that enable them to deepen their service offerings and customer base.

2.3.2. Data-Driven Strategic Planning

A. Ongoing Strategic Program Design

Data-Driven Strategic Alignment of Goals, Market Trends and Desired Outcomes

Strategic planning efforts will align immediate IDSM core program initiatives with interim goals and long-term policy objectives and outcomes. Effective data-informed strategic plans allow for stable commitment in markets to increase stakeholder confidence, engagement, investment, and widespread adoption of products and practices that are crucial to the transformation of Hawai'i's energy and transportation system.

Individual & Group Stakeholder Feedback to Inform Program Effectiveness

Hawai'i Energy program strategy will assess existing and new programs within the framework of the identified triennial goals and objectives, as well as support strong customer, trade ally and external stakeholder input through individual and cohort-style listening sessions.

Continuous PUC and Energy Efficiency Manager (EEM) Team Input

To ensure alignment with other policy objectives and docket proceedings, Hawai'i Energy will engage with the PUC and the EEM team – consisting of 2050 Partners and the associated EM&V contractor – throughout the triennial program period. These engagements will allow for additional input around all areas of the program, particularly, with the newer initiatives laid out in this plan. In the areas where the program offering has inherent complexity in either the implementation or performance evaluation, or is likely to intersect significantly with other dockets, Hawai'i Energy will actively seek input from this team. Beyond alignment, the intent of this ongoing collaboration is to provide opportunities for input on program design and evaluation metrics that can easily scale up for broader implementation in future years.

B. Data & Analytics Platforms

Integrating PY18 Pilot Data Analytics to inform Triennial Plan IDSM Program Design

Hawai'i Energy's data & analytic platforms piloted in 2018 will be integrated in residential and business ISDM programs to provide identification, targeting, and evaluation services in addition to direct energy services savings.

Data Analytics for Evaluating Program Impact and Informing Target Program Technologies and Design

The data and analytic platforms leverage an installed base of connected residential and business load disaggregation technologies and provide data-informed evaluation of program impacts, inform customer clean energy choices and identify targeted opportunities for new technologies and services.

Increased Data and Infrastructure to Better Equip Energy Advisors

These platforms will allow for increasing sources of energy data – including benchmarking and advanced metering infrastructure (AMI) – to support Energy Advisors in informing customer clean energy choices and improved program design.

C. Long-Term Planning Tools

Effective Planning Tools to Inform Short and Long-Term Planning Investments

Hawai'i Energy will introduce a forward-looking dynamic planning tool to create scenario models of a comprehensive suite of new clean energy programs, services and technologies to inform annual and long-term program investments. This work will also be shared as a part of the continuous stakeholder, PUC and EEM engagements, and inputs for a number of the variables used in the modeling efforts will be a products of the ongoing conversations.

Mapping Program Needs and Impacts via Scenario Modeling

Dynamic scenario modeling will allow program managers to accurately map program needs and impact over a multi-year period, allowing for Hawai'i Energy to better support the state clean energy goals, as well as provide stronger visibility for trade allies to invest in their business and a growing clean energy workforce.

2.3.3. Clean Energy Solutions Innovation Hub

The Program will focus on identifying, evaluating, convening and piloting new emerging technologies and services to fill pipeline for future Hawai'i Energy offers.

Leveraged Partnerships and Funding Resources

Hawai'i Energy will continue to expand and leverage partnerships with utilities, Elemental Excelerator, and federal, state and county agencies for identifying and deploying new clean energy collaboration efforts. As part of these partnerships, the Program will leverage external funding to build out the speed and scale for evaluating emerging technologies and services.

Stage-Gate® Evaluation Process

Emerging technologies and services will be deliberately evaluated through the Stage-Gate® process to ensure the technical and market viability prior to launching in core Hawai'i Energy offers.

Efficiency Through Leveraging Water-Energy Nexus

Hawai'i Energy will collaborate with water utilities to further examine the energy-water nexus where energy efficiency and water conservation intersect. The interconnectedness of energy and water resources affect long-term planning and resiliency efforts to reduce overall energy

and water demands. Educational and transformational efforts will also be developed to deliver joint community outreach activities.

2.3.4. Transforming the Supply Chain, Growing Customer Literacy, and Building Workforce Capacity

A. Codes & Standards, Supply Channel Engagement

The Hawai'i Energy Code for buildings at the state and county level have seen greater consideration with the adoption of the 2015 IECC at the state level and the mandatory adoption for counties in 2019. The City and County of Honolulu, with other counties following suit, have dedicated themselves to revamping the code adoption cycle for building codes to include mechanical, electrical, etc. Hawai'i Energy continues to work with stakeholders to support this process and provide feedback where possible. The program will continue to dedicate staff time and budget towards the awareness of energy codes by the public as well as efforts to increase compliance by easing barriers to compliance along with funding trainings for the IECC codes. Continuing to collaborate with the State Energy Office and building design community, we will continue to raise the bar beyond baseline code minimums, advocating for stretch codes and zero net energy new construction. Historically these efforts and activities were not associated with energy savings. However, new to the program is the attribution of savings from activities that increase compliance to code as well as activities for the adoption of standards such as appliance standards.

Codes and Standards for New Construction

In the midst of the State's burgeoning commercial new construction industry, Hawai'i Energy will expand its technical assistance throughout the design, construction and post-construction of new buildings. This will include longer lead-time commitments (up to three years or more) to both the building owners and design industry. Historically, the one-year program cycles have limited the influence of incentives due to lack of alignment with the five to ten year construction planning cycles. Early incentives have proven effective at building a more robust pipeline of new construction leads as they encourage the design industry to incorporate EE into project design and influence developers and building owners to invest in EE and green building practices. They are also needed to ensure that high efficiency equipment is not value engineered out of the project in the final stages when there are budget overruns.

Professional Development to Address Codes & Standards

Hawai'i Energy will support architect and building contractor professional trainings and engineering support services to address market barriers for building compliance with county level adoption of IECC 2015. We will also continue to provide trainings to County building departments and other officials to help with understanding and enforcement of the code.

Attributed Savings from Increasing Energy Code Compliance

Hawai'i Energy will track and count savings from activities, such as advocacy and further training and education in the design/development community. Request for information/request for proposals will be issued to gather information, create scope, and procure consultants to support this attribution effort and to identify opportunities for Program intervention to increase compliance.

Appliance Standards Advocacy

The Program will continue to advocate for the adoption of appliance standards which will play an important role in reaching EEPS in a very cost-effective manner. Hawai'i is not alone in adopting appliance standards, as over a dozen states have some form of appliance standards in place for various equipment, with California, a market leader, having paved the way. Appliance standards enable Hawai'i consumers to make the best energy, water and financial choice over the lifetime of the equipment and protect our consumers from "dumping" by manufacturers who cannot sell less efficient products in markets where standards do exist. Hawai'i Energy will provide education and training of appliance manufacturers, distributors, and retailers about the appliance efficiency standards established by law to help improve compliance.

EECC Stakeholder Coordination and Analytical Support

We will also continue to lead quarterly Energy Efficiency Codes Coordination (EECC) stakeholder meetings, provide analytical support to advance state building and appliance standards.

Voluntary Energy Performance Specifications

Hawai'i Energy will develop aggressive voluntary energy performance specifications to stretch state and local energy codes and standards for equipment and "EV-/PV-/Storage-ready" buildings.

B. Clean Energy Literacy

Increased Community, Youth, Low-Income and Hard-to-Reach Focus

The nucleus of energy literacy continues to be community and youth engagement, especially in hard-to-reach populations (refer to Section 2.2 Accessibility and Affordability). Hawai'i Energy will shift toward sustained engagements and commit to community and education stakeholders to make a collective impact in achieving long-lasting change.

Leveraging Human Services Contact Points to Integrate Targeted, Enhanced Energy Literacy

Hawai'i Energy will target communities and organizations where multiple, routine engagements are available. As an example, in homeless shelters and transitional housing properties, families may be required to participate in life skills classes; Hawai'i Energy is able

to integrate energy literacy with financial literacy in a life skills curriculum to save energy and reduce monthly expenses. Additionally, hard-to-reach community workshops and presentations will be coupled with enhanced engagement efforts, such as targeted audits, surveys, and gamification environments for a deeper educational impact.

STEM-Based Youth Education

The U.S. Department of Education has reported that not enough students have had access or have been introduced to meaningful Science, Technology, Engineering, (Art) and Math (STEM/STEAM) opportunities and, consequently, are not interested in these disciplines. Hawai'i Energy, however, understands STEM education is a critical component in preparing the next generation of students with the knowledge and skills to needed solve complex programs and pursue STEM careers that will help Hawai'i achieve its 2045 100% clean energy goal. STEM/STEAM initiatives and road mapping will continue for youth education including, incorporating energy specific curriculums into K-12 classrooms and working with key stakeholders to equip educators with project and inquiry-based learning tools.

Behavioral Insights

To drive deeper program penetration and participation, the Program will initiate efforts to integrate practical behavioral insights and design across all resource acquisition and market transformation programs. Plans to incorporate choice architecture and other behavioral science principles will be utilized to explore how effective interventions can affect positive behavior change; this will encourage customers to make the right energy choices and sway them into taking action. These efforts may utilize data-driven tools to help inform future best practices in program design.

Clean Energy Educational Resources

Hawai'i Energy will convene public and private stakeholders to develop a clean energy exhibit for all Hawai'i residents to envision the importance and benefits of reaching the state's clean energy goals. Transforming the mindset around the state's energy future will help educate and empower residents in making smart energy decisions and discovering innovations in energy efficiency and clean energy technologies. The diverse network of stakeholders will bring together varying expertise and perspectives, which will shape the process of crafting an exhibit that will provide an immersive, tactile, and educational experience.

A. Professional Development & Technical Training

Increased Targeted Technical and Financial Training

Hawai'i Energy will increase targeted training opportunities and provide technical and financial services to more market sectors expanded in the Clean Energy Ally program. Professional Development and training efforts will include the following:

a) **Offering specialized training for HVAC trade allies:** The Program has realized increased contractor participation in air conditioning initiatives through new installations and maintenance service. Growth in HVAC will continue and training will equip the trade allies with the capabilities to market and sell the value of energy efficiency to the end-use customer.

b) **Leveraging Plumbing Contractors to Promote High-Efficiency Products:** Engaging plumbing suppliers/distributors and trade allies on promoting high efficiency equipment, such as heat pump water heaters for adoption in the home. Hawai'i Energy will recruit allies and support efforts to elevate visibility, stock high-quality products, educate the salesforce, and provide technical guidance on installation of these clean energy technologies.

c) **Promoting Efficiency in Residential New Construction:** Advancing energy efficiency for new construction in the residential sector. Hawai'i Energy will collaborate with state government agencies on affordable housing projects and will pursue efficiency criteria development during the developer application and through the design process. Developers and home builders will be apprised of energy efficient opportunities in master planned communities and single home-builds (including major remodels) that will be incentivized beyond the current energy code.

d) **IECC 2015 Outreach & Training:** Following county adoption of IECC 2015, we will continue to provide outreach and education to CEA community.

e) **Emerging Technologies Technical Trainings:** Hawai'i Energy will also continue to expand the focus of technical trainings to match evolving Program scope and emerging technologies (i.e., battery storage, demand response).

Real Estate Technical Assistance and Support

The Program looks to train licensed real estate professionals to increase their knowledge around sale, purchase and valuation of energy and resource-efficient homes. This will help facilitate the enhanced valuation of such properties through awareness of the hidden benefits to the homeowner over time. The high cost of living and home prices offers opportunities to further energy efficiency education for real estate agents, mortgage lenders, appraisers, and home inspectors. As the existing housing stock turns over, real estate professionals will apply their knowledge to inform customers the value of energy efficiency. Hawai'i Energy will also support voluntary efforts to implement green features in the multiple listing service (MLS) systems to elevate the home-buying experience, such as home energy scores, indoor air quality, and other energy efficiency data points.

Hard-to-Reach Energy Workforce Development

We will continue to provide energy workforce training in hard-to-reach areas, especially with the aid of remote technology, and work with agencies and nonprofits to provide retraining for laid off workers seeking skills to build new careers.

Non-Credit Certificate in Energy Efficiency

The Program will build on its positive relationship with the University of Hawai'i to create a non-credit certificate in energy efficiency.

Technical Training and Vendor Presentations in Innovative Controls

In the field of energy efficient lighting there is an increased focus on systems like networked lighting controls rather than on lamps and fixtures. The Transformational program will strive to bring in technical training and vendor presentations on leading-edge controls technology to educate both contractors and end-users.

Training for Architecture and Engineering Students on Energy Efficiency in Front-End Design

Hawai'i Energy will strive to work with the University of Hawai'i Environmental Research Design Lab and School of Architecture to train architecture and engineering students and established architects in software for energy and daylight modeling, to transform the integrated design process and quantify energy and cost savings so that energy efficiency is a foundational element and is less likely to be value-engineered later in the process.

3. MARKETING & COMMUNICATIONS

3.1. Operational Support

A large share of marketing and communications efforts for the Program is generating awareness about and participation in incentive offerings. Whether it involves the launch of a new offering or a strategy to promote current offerings, the team can rely on any number of tactics – developed with input from Energy Advisors, Clean Energy Allies and customers – to distribute information to all parts of the supply chain. Currently successful distribution tactics include the following and will be refined as needed to support overall operational goals:

- **Hawai'i Energy website**
- **Printed collateral pieces** – brochures, informational sheets, utility bill inserts, store signage
- **Email marketing** – monthly newsletters, contractor/retailer communications, event recruitment
- **News releases & media coverage** – pitching stories to reporters to garner media coverage for Hawai'i Energy projects and initiatives
- **Outreach events** – annual Innovation Symposium, trade shows/expos, informational booths, in-person presentations by Energy Advisors
- **Cross-promotion** by other organizations
- **Social media** – Facebook, Instagram, Twitter, and YouTube

- **Clean Energy Ally network support** – Co-op Advertising reimbursements, educational & networking event logistics/recruitment/branding
- **Paid advertising (when appropriate)** – targeted ads designed specifically to promote rebate programs

In this next cycle, the Program looks to increase its investment in marketing and communications as a service crucial to expanding its operational portfolio. Building on strong relationships made with customers, stakeholders and members of the media over the last nine years, the Program can leverage these relationships to generate participation in new incentive programs, especially where strategic alliances within the business community can add credibility to our offerings.

Furthermore, as the Program more heavily focuses on addressing more complex barriers to energy efficiency implementation in low-income or other communities, marketing and communications efforts will require more customized tactics and additional resources that may be outside of the current marketing portfolio, such as:

- Translation services and collateral materials that are developed unique to various communities (including language translation where necessary)
- Coordination and funding support for community-led events, including highlighting special bulk appliance purchase and delivery programs
- Specialized, digital contest/challenge campaigns to integrate with market transformation efforts

Lastly, tackling this expanded scope and trying new tactics to reach new demographics carries with it a responsibility to make strategic communications decisions utilizing market research and customer experience data as much as we can. The Program will identify opportunities to make it easier to collect participant experience data, better understand consumer behavior patterns, and, frequently measure the effects of any changes in strategy on levels of awareness and recall. As we lay the foundations for what the efficiency program of the future might be, data-driven decisions will help the Program remain cost-effective with marketing tools – everything from website navigation, email frequency, store signage, to direct mail content can be made more useful and effective by reaching customers at the right time and with the right mindset.

3.2. Brand Awareness Strategy & Initiatives

Enhancing general brand awareness goes hand-in hand with supporting program operational goals. How much easier is it to progress if our customers are already knowledgeable – or better yet, supportive – of energy-efficient practices or lifestyles? The Program's goals that will continue to define our brand strategy, deepen awareness, and develop buy-in over the next three program years are:

1. Continue building name recognition/recall of Hawai'i Energy and basic understanding of our purpose.

2. Position Hawai'i Energy as the state's primary resource and authority on energy efficiency and conservation issues.
    a. Share Hawai'i Energy's strategic plans for the next three years and elicit strong stakeholder and community support.
    b. Elevate the reputation of Hawai'i Energy leadership team members within the community.
3. Raise awareness of the importance of saving energy as it relates to each customer.

The Program – as the primary resource for energy efficiency support and education in the state – continues to look for opportunities to build credibility, position itself as a thought leader, and reach new demographic targets with tailored messaging. By continuing to invest in achieving these goals, we keep the Hawai'i Energy program top-of-mind and help reduce barriers to implementation in all markets.

3.2.1. Advertising & Strategic Partnerships

One way the Program maintains frequent touchpoints with customers is through advertising. In today's rapid-fire, "information-overload" culture where very few free distribution platforms remain, strategic advertising is crucial to the overall portfolio. It is imperative that the Program invest wisely, considering not just cost, but frequency, reach, and message "sticky-ness" – the latter of which can also be enhanced by non-traditional methods. Recognizing that the definition of a smart energy choice will differ in various stages of life and business, it behooves the Program to share messages that instill and inspire for a mix of demographics.

The following is a proposed list of brand awareness-focused advertising initiatives over the next three years:

- **10th Anniversary Campaign:** Major media placements including TV, out-of-home, digital ads and experiential, interactive events for thought leader positioning and driving awareness off Hawai'i Energy's strategic plans for the next three years.
- **"Hawai`i Energized" Video Segments:** Television video segments and social media promotion to increase information accessibility to a local residential and business audience.
- **Sports Team & Event Sponsorship:** Frequent, large quantity exposure to a predominantly local audience comprising of home and business owners.
- **Strategic News Media Partnerships:** Event sponsorships, custom print publications, and editorial features to highlight Hawai`i Energy as an important/influential member of the business community.
- **Sustainability Partnerships:** Co-branded community events and public awareness campaigns to use existing sustainability-focused advocates and partners to amplify messages and conduct thought leader positioning among the sustainability-minded, civically engaged, and educated.

- **Best Places to Work (Hawai`i Business Magazine**): Thought leader positioning and recruitment to the business community.
- **Digital Influencer Partnerships:** Endorsement content on social media, possible distribution of energy-saving materials for review by local digital influencers.

Continued measurement (market research) should also be factored into the execution plans for any of these initiatives. It is our recommendation that we collect this data every 1-2 years as consumer behaviors and trends are ever-evolving.

3.2.1. Trusted Energy Advisor in Policy and Government

Marketing and communications also has a significant part to play in Hawai'i Energy's role in the local and national political arena. The Program relies on several national organizations and campaigns to bring credibility and support to our efforts locally, including the ENERGY STAR® program, National Energy Efficiency Day, and the American Council for an Energy Efficiency Economy (ACEEE). We often use content developed by these resource organizations and participate in their events to keep local efforts aligned with happenings on the national level.

Locally, regular engagement with political leaders and stakeholders is also necessary to ensure smooth operations. This includes, but is not limited to: keeping elected officials involved and informed of Hawai'i Energy's goals and progress; managing the public sentiment around our brand or any potentially controversial positions we take; and tracking any legislative actions that may affect operations and supporting when necessary. The Program also recognizes that policymakers serve as conduits for their constituents to receive information, and places an emphasis on leveraging relationships with lawmakers as an outreach partner.

4. BUDGET

Hawaii Energy Efficiency Program Budget Updates PY19-PY21 Triennial Plan	PY19	PY20	PY21	Total Budget
RESIDENTIAL PROGRAMS				
Clean Energy Technologies Planning & Implementation				
REEM	1,026,625	1,169,875	1,394,301	3,590,801
CREEM	119,375	143,250	219,650	482,275
RESM	119,375	119,375	281,725	520,475
RGRID	191,000	191,000	191,000	573,000
Subtotal Clean Energy Technologies Planning & Implementation	1,456,376	1,623,501	2,086,676	5,166,552
Residential Market Evaluation	120,548	142,839	186,669	450,055
Residential Outreach	731,059	748,604	801,240	2,280,903
Total Residential Clean Energy Technologies Non-Incentive	*2,307,982*	*2,514,943*	*3,074,585*	*7,897,510*
Hard to Reach Planning & Implementation				
RHTR	*419,042*	*428,566*	*523,803*	*1,371,411*
RHTR Outreach	*83,808*	*85,713*	*104,761*	*274,282*
Total Residential Hard to Reach Non-Incentive	*502,851*	*514,279*	*628,563*	*1,645,693*
Total Residential Non-Incentive	2,810,833	3,029,222	3,703,149	9,543,204
Residential Incentives & Technical Assistance				
Direct Incentives				
REEM	6,309,597	6,764,597	6,877,597	19,951,792
CREEM	340,000	400,000	460,000	1,200,000
RESM	565,000	565,000	565,000	1,695,000
RHTR	1,578,986	1,677,605	1,822,115	5,078,706
RGRID	591,708	838,252	1,084,797	2,514,758
Subtotal Residential Incentives	9,385,291	10,245,455	10,809,510	30,440,256
Technical Assistance	587,660	697,236	806,811	2,091,708
Total Residential Direct Incentives & Technical Assistance	*9,972,951*	*10,942,691*	*11,616,321*	*32,531,963*
Residential Transformational	1,387,658	1,387,658	1,387,658	4,162,974
Total Residential Incentives	11,360,609	12,330,349	13,003,979	36,694,937
Total Residential Programs	**14,171,442**	**15,359,571**	**16,707,128**	**46,238,141**
BUSINESS PROGRAMS				
Clean Energy Technologies Planning & Implementation				
BEEM	811,750	792,650	1,050,500	2,654,901
BET	-	47,750	71,625	119,375
CBEEM	854,725	869,050	1,079,150	2,802,926
BESM	105,050	95,500	191,000	391,550
CGRID	191,000	238,750	191,000	620,750
Subtotal Business Programs	1,962,526	2,043,701	2,583,276	6,589,503
Business Evaluation	181,461	152,321	180,259	514,040
Business Outreach	509,356	533,805	546,029	1,589,190
Total Business Clean Energy Technologies Non-Incentive	*2,653,342*	*2,729,826*	*3,309,564*	*8,692,732*
Hard to Reach Planning & Implementation				
BHTR	*766,112*	*783,723*	*864,309*	*2,414,145*
BHTR Outreach	*153,222*	*156,745*	*172,862*	*482,829*
Total Business Hard to Reach Non-Incentive	*919,334*	*940,468*	*1,037,171*	*2,896,974*
Total Business Non-Incentive	3,572,676	3,670,295	4,346,735	11,589,706

Hawaii Energy Efficiency Program Budget Updates PY19-PY21 Triennial Plan (cont'd)	PY19	PY20	PY21	Total Budget
Business Incentives & Technical Assistance				
Direct Incentives				
BEEM	3,222,000	2,949,705	2,897,751	9,069,456
BET	-	1,000,500	1,000,500	2,001,000
CBEEM	4,203,010	3,529,839	2,958,328	10,691,177
BESM	747,500	886,250	920,000	2,553,750
BHTR	3,488,866	3,892,023	4,119,442	11,500,331
CGRID	723,199	1,024,531	1,325,863	3,073,593
Subtotal Business Incentives	12,384,575	13,282,848	13,221,884	38,889,307
Technical Assistance	457,140	641,066	774,992	1,873,198
Total Business Direct Incentives & Technical Assistance	12,841,715	13,923,914	13,996,876	40,762,505
Business Transformational	1,450,027	1,450,027	1,450,027	4,350,081
Total Business Incentives	14,291,742	15,373,941	15,446,903	45,112,586
Total Business Programs	**17,864,418**	**19,044,235**	**19,793,638**	**56,702,292**
Support Services				
General & Administrative	1,353,052	1,344,428	1,398,353	4,095,833
IT & Data Management & Visualization	529,801	830,850	740,125	2,100,777
Branding	477,500	635,075	596,875	1,709,451
Total Support Services	**2,360,354**	**2,810,354**	**2,735,354**	**7,906,061**
Infrastructure/Facility Fee				
Infrastructure/Facility Fee	547,865	547,865	547,865	1,643,594
Total Infrastructure/Facility Fee	**547,865**	**547,865**	**547,865**	**1,643,594**
Subtotal Non-Incentive (Prior to Tax)	9,291,727	10,057,735	11,333,102	30,682,564
Total Tax on Non-Incentive	437,826	473,920	534,016	1,445,762
Performance Amount (Inclusive of Tax)	981,384	981,384	981,384	2,944,151
Subtotal Non-Incentive Billed	*10,710,937*	*11,513,039*	*12,848,501*	*35,072,477*
Subtotal Residential and Business Customer Incentives & Technical Assistance	*22,814,666*	*24,866,605*	*25,613,197*	*73,294,468*
Subtotal Transformational Incentives	*2,837,685*	*2,837,685*	*2,837,685*	*8,513,055*
Subtotal Customer and Transformational Incentives	*25,652,351*	*27,704,290*	*28,450,882*	*81,807,523*
Total Estimated Contractor Costs	**36,363,288**	**39,217,329**	**41,299,383**	**116,880,000**

% Splits	PY19	PY20	PY21	Total
Incentive	71%	71%	69%	70%
T&M	29%	29%	31%	30%
Residential	44%	45%	46%	45%
Business	56%	55%	54%	55%
G&A as a % of Budget	5%	5%	5%	5%
Hard to Reach	21%	22%	22%	22%
Clean Energy Technologies	70%	70%	70%	70%
Transformational	9%	8%	8%	8%

PERFORMANCE INDICATORS

	KEY FOCUS AREAS	PY19 Target	PY20 Target	PY21 Target	Total Target	Minimum 75%	Target 100%	Fraction of Award	Target Award	PY19 Award Billing	PY20 Award Billing	PY21 Award Billing	Metrics
								70%	$2,060,906	$ 680,098.88	$ 680,098.88	$700,707.94	
Clean Energy Technologies	**Energy Efficiency & Conservation**												
	• First Year Energy Reduction	100,930,855	101,216,303	104,452,428	306,599,586	229,949,690	306,599,586	15%	$ 441,623	$ 145,735.47	$ 145,735.47	$ 150,151.70	kWh
	• Lifetime Energy Reduction (new)	1,149,116,865	1,368,965,943	1,403,663,638	3,921,746,446	2,941,309,835	3,921,746,446	15%	$ 441,623	$ 145,735.47	$ 145,735.47	$ 150,152	kWh
	• Peak Demand Reduction	15,666	14,095	14,082	43,843	32,882	43,843	15%	$ 441,623	$ 145,735.47	$ 145,735.47	$ 150,152	kW
	• Total Resource Benefit	$271,482,976	$268,102,795	$273,215,451	$812,801,222	$609,600,917	$812,801,222	20%	$ 588,830	$ 194,313.97	$ 194,313.97	$ 200,202	$
	• Grid Services Ready (new)	800	900	1,000	2,700	2,025	2,700	5%	$ 147,208	$ 48,578.49	$ 48,578.49	$ 50,051	Projects/ demand management products installed or customers served
	• Greenhouse Gas Emissions/ Barrels of Oil (new)	107,000 / 180,000	101,000 / 170,000	103,000 / 173,000	311,000 / 523,000	N/A	311,000 / 523,000	0%	$ -	$ -	$ -	$ -	GHG Tons / Barrels based on HECO generation composition (annual) with EIA GHG per resource type
								70%	$2,060,906	$ 680,099	$ 680,099	$ 700,708	
	KEY FOCUS AREAS	PY19 Target	PY20 Target	PY21 Target	Total Target	Minimum 75%	Target 100%	Fraction of Award 20%	Target Award $ 588,830	PY19 Award Billing $ 194,314	PY20 Award Billing $ 194,314	PY21 Award Billing $ 200,202	Metrics
Accessibility & Affordability	**Economically Disadvantaged**												
	• Energy Advantage	650	650	650	1950	1463	1950	2%	$ 58,883	$ 19,431	$ 19,431	$ 20,020	Customers served
		$1,500,000	$1,750,000	$1,750,000	$5,000,000	$3,750,000	$5,000,000	2%	$ 58,883	$ 19,431	$ 19,431	$ 20,020	Customer bill savings
	• Single & Multifamily Direct Install	1934	1365	1020	4319	3239	4319	2%	$ 58,883	$ 19,431	$ 19,431	$ 20,020	Customers served
		$10,089,930	$3,773,374	$2,830,031	$16,693,335	$12,520,001	$16,693,335	2%	$ 58,883	$ 19,431	$ 19,431	$ 20,020	Customer bill savings
	• Community Based Energy Efficiency (new)	2	3	5	10	8	10	1%	$ 29,442	$ 9,716	$ 9,716	$ 10,010	Number of communities served
	• EmPOWER Hawai'i Project (new)	7	10	12	29	22	29	1%	$ 29,442	$ 9,716	$ 9,716	$ 10,010	Number of participating non-profits
	Island Equity												
	• County of Hawaii	13%	13%	13%	13%	N/A	13%						
	• County of Maui	13%	13%	13%	13%	N/A	13%	10%	$ 294,415	$ 97,157	$ 97,157	$ 100,101	Target spend must be met in Hawaii & Maui Counties for Milestone and Target Award
	• City & County of Honolulu	74%	74%	74%	74%	N/A	74%						
								20%	$ 588,830	$ 194,314	$ 194,314	$ 200,202	
	KEY FOCUS AREAS	PY19 Target	PY20 Target	PY21 Target	Total Target	Minimum N/A	Target 100%	Fraction of Award 8%	Target Award $ 235,532	PY19 Award Billing $ 77,726	PY20 Award Billing $ 77,726	PY21 Award Billing $ 80,081	Metrics
Economic Development & Market Transformation	**Behavior Change**												
	• Workshops and Presentations												
	STEM based student workshops	1200	1200	1200	3,600	N/A	3,600	1%	$ 29,442	$ 9,716	$ 9,716	$ 10,010	Number of participant-hours of training
	Adult learning	2750	2750	2750	8,250	N/A	8,250	1%	$ 29,442	$ 9,716	$ 9,716	$ 10,010	
	• Gamification Campaigns and Competitions	1000	1000	1000	3000	N/A	3000	0%	$ -	$ -	$ -	$ -	Number of Participants
	• Exhibit Educational Resources	2	1	1	4	N/A	4	0%	$ -	$ -	$ -	$ -	PY19 = Number of Stakeholder Collaboration Events; PY20 = Exhibit Conceptualization Report; PY21 =Exhibit Prototype
	• Sustained Outreach	1	2	2	6	N/A	6	0%	$ -	$ -	$ -	$ -	Participation Agreements
	• Behavioral Insights	1	2	2	5	N/A	5	0%	$ -	$ -	$ -	$ -	Number of Program Interventions
	Professional Development & Technical Training												
	• Clean Energy Ally Support												
	• Targeted Ally Training Opportunities												
	• Targeted Participant Training Opportunities	10,000	10,000	10000	30,000	N/A		4%	$ 117,766	$ 38,863	$ 38,863	$ 40,040	Number of participant-hours of training
	• Educator Training and Grants.												
	• Degree Program Support.												
	• Vocational Training.												
	Energy in Decision Making												
	• Strategic Energy Management (SEM)	6	7	8	21	N/A		1%	$ 29,442	$ 9,716	$ 9,716	$ 10,010	Number of new participating institutions
	Codes and Standards					N/A		1%	$ 29,442	$ 9,716	$ 9,716	$ 10,010	
	• Appliance Standards Advocacy (new)	5	6	7	18								Advocacy Events
	• Improving Code Compliance	1	1	1	3	N/A		Must meet all					Establishing compliance roadmap and tracking savings
	• Code-Related Training	100	100	100	300								Number of participant-hours of Training
	• Leading edge technologies and strategies	4	4	4	12								Meetings and one final report
	Clean Energy Innovation Hub												
	• Innovation and Emerging Technologies	1	2	3	6	N/A		0%	$ -	$ -	$ -	$ -	Companies supported
								8%	$ 235,532	$ 77,726	$ 77,726	$ 80,081	
	KEY FOCUS AREA				Total Target	Minimum N/A	Target 100%	Fraction of Award 2%	Target Award $ 58,883	PY19 Award Billing $ 19,431	PY20 Award Billing $ 19,431	PY21 Award Billing $ 20,020	Metrics
Customer Satisfaction	• Application Processing Customer Experience - Commercial				>9	N/A	>9	1%	$ 29,442	$ 9,716	$ 9,716	$ 10,010	Overall customer satisfaction score
	• Application Processing Customer Experience - Residential				>9	N/A	>9	1%	$ 29,442	$ 9,716	$ 9,716	$ 10,010	Overall customer satisfaction score
								2%	$ 58,883	$ 19,431	$ 19,431	$ 20,020	
TOTAL PERFORMANCE AWARD								100%	$2,944,151	$ 971,570	$ 971,570	$ 1,001,011	

5. PERFORMANCE METRICS

5.1. Proposed Performance Amount, Mechanism, Metrics and Assigned Weighting

The overall performance amount remains unchanged from the previous three-year contract cycle. However, with triennial goals instead of annual goals, we are proposing a structural change to the distribution mechanism. In order to fully realize the efficiencies and cost savings associated with moving away from comprehensive annual evaluations, the program is proposing milestones as guideposts to track progress. In this mechanism, annual progress payments amounting to 1/3 of the full amount would be billed each year while the final 1/3 payment would be withheld until the comprehensive EM&V reconciliation is completed at the end of the final year (PY21). Given that the final 34% payment would be adjusted accordingly ("trued-up") based on triennial goal achievement, and that the program performance has historically maintained a verification rate of over 90%, we anticipate little risk of overpayment in the first two years.

5.1.1. Overview of Performance Indicators – Metrics and Assigned Weighting

As we enter into the PY19-21 triennial cycle, the performance metrics and assigned weighting have been updated to align with the Core Program Goals – **Clean Energy Transition (70%), Accessibility & Affordability (20%), and Market Transformation & Economic Development (8%)**. We have also maintained the **Customer Satisfaction (2%)** metric category.

CLEAN ENERGY TECHNOLOGIES – 70%

Within Clean Energy Technologies, **first year energy reduction, peak demand reduction and total resource benefit** metric categories remain consistent with previous years. We have also **added lifetime energy reduction and grid services ready** metrics to the award evaluation. The weighting for these metrics are 15%, 15%, 20%, 15%, and 5%, respectively. The targets have been established based on the goals for the overall three-year term, with adjustments only applied as a result of updates to other variables like avoided cost, system loss factor and net-to-gross values. Additionally, we will provide of estimates of **greenhouse gas emissions and barrels of oil saved** but have not assigned any performance amount to those calculations.

ACCESSIBILITY & AFFORDABILITY – 20%

Hawai'i Energy remains committed to ensuring that resources are distributed equitably across geographies and economic classes. Consistent with previous years, we have maintained performance award allocation for economically disadvantaged and island equity.

Economically Disadvantaged (10%)

- The targets for **Energy Advantage** include both unit counts and first year customer bill savings. These dual metrics were developed to ensure a broader base of participation is coupled with meaningful customer bill impact. The Energy Advantage targets have been set to reach 1950 businesses and achieve $5,000,000 in first year kWh customer bill savings over the 3 years. Customer bill savings will be determined based on calculated energy savings and the utility effective rate. Combined these metrics are weighted at 2% of total performance award (1% each).
- **Multifamily / Single Family Direct Install program targets** include unit counts and customer bill savings over the lifetime of the measures. The overall unit count has gone down from previous years as the O'ahu market nears saturation and the Program continues to deploy more resources in Maui and Hawai'i counties where the market potential remains higher. The program is also diversifying installs into the hard to reach single family market. Residential lighting remains an important part of these direct install efforts and the deemed savings will drop in response to EISA lighting standards. The net result is that properties serviced will decrease, as will savings in PY20 and PY21. That said, the lifetime bill savings for these direct install efforts is still substantial. Lifetime customer bill savings will be calculated based on deemed energy savings, the measure useful life and the utility effective rate for the property. These metrics are also weighted at 2% of total performance award (1% each).
- We have added a performance indicator for **Community Based Energy Efficiency,** which will target number of communities reached. Community-based energy efficiency is a focus area intended to assess the energy efficiency needs of a particular hard-to-reach segment. This specific initiative was born out of feedback received at our stakeholder meeting. Many participants recommended targeted support for community and student leaders, with a listen first approach, allowing them to identify where they would like to see Hawai'i Energy program support. This is 1% of total performance award.
- We have also added a performance indicator for the **Empower** non-profit direct install program for number of participating organizations; this is also weighted at 1% of total performance award.

Island Equity (10%)

Island equity targets are set based on the proportion of PBF collections from the HECO, HELCO and MECO.

MARKET TRANSFORMATION & ECONOMIC DEVELOPMENT – 8%

Market Transformation and Economic Development programs make up 8% of the overall performance award value. This was developed in proportion with the percent of incentive dollars allocated to these programs. Each year, Hawai'i Energy takes a close look at its individual market transformation programs in order to incorporate lessons learned, market insight and stakeholder feedback. As we improve our transformational program offerings, we strive to evolve our performance metrics in order to more accurately evaluate success. The descriptions below highlight some of the adjustments made between PY18 metrics and the proposed PY19-21 metrics.

Behavior Change (2%)

- New focus area: Exhibit Educational Resources will focus on the engagement, planning and prototyping of an energy efficiency exhibit.
- New focus area: Sustained Outreach will track the groups or communities that commit to collaborating with Hawaii Energy on educational outreach over a sustained period of time.
- New focus area: Behavioral Insights will track the number of program interventions.

Professional Development (4%) - Increased professional development and technical training target to 10,000 participant hours.

Energy In Decision making (1%) - Increased number of SEM cohort participants to reflect momentum gained in PY18.

Codes and Standards (1%) – While the award allocation remains consistent at 1%, we have updated the metrics to take into account the progress made on Appliance Standards in PY18. The codes & standards team will continue to advocate for counties to adopt the 2015 IECC, assist in improving code compliance, and provide a forum for dialogue around leading-edge strategies through the energy code process.

Clean Energy Innovation Hub

- Hawaii Energy will work closely with clean energy stakeholders like the Elemental Excelerator to identify and support lead edge technologies and companies.

CUSTOMER SATISFACTION – 2%

Customer satisfaction is measured through online surveys that evaluate the customer application experience. We will be adding business program surveys to the evaluation pool in PY19-21.

5.2. Summary of Program Impacts & Levelized Cost of Saved Energy

Program Impacts

Triennial Plan (Program Level)	1st Year $/kWh	Lifetime $/kWh	Average Life yrs.	Incentives	1st Year Energy Program Level (kWh)	Lifetime Energy Program Level (kWh)
Residential	$0.253	$0.030	8.6	$32,531,963	128,523,925	1,102,516,409
Business	$0.229	$0.014	15.8	$40,762,505	178,075,660	2,819,230,036
Direct Incentives Only	$0.239	$0.019	12.8	$73,294,468	306,599,586	3,921,746,446
Residential Transformational				$4,162,975		
Business Transformational				$4,350,080		
Transformational Only				$8,513,055		
Program Cost	**$0.267**	**$0.021**		**$81,807,523**	**306,599,586**	**3,921,746,446**

Levelized Cost of Saved Energy

Triennial Plan (Customer Level)	1st Year Energy Customer Level (kWh)	Lifetime Energy Customer Level (kWh)	2017 Electricity Rates ($/kWh)	Lifetime Bill Savings
Residential	162,432,200	1,548,326,503	$0.293	$453,659,665
Business	217,121,046	3,435,207,380	$0.247	$848,496,223
Direct Incentives Only	**379,553,246**	**4,983,533,883**		**$1,302,155,888**

6. CONCLUSION

Hawai'i Energy is excited to launch the 10th year anniversary of the program and the first year of this three-year program cycle. Our goal is to make it easy for everyone in Hawai'i to play their part in the clean energy movement. To help with this, Hawai'i Energy will encourage and reward practical, everyday decisions around energy efficiency and clean energy. In doing so, we can collectively can help businesses and families save money, grow our economy, and reduce the demand for electricity and foreign imports.

While the cost of saved energy has increased over previous program years, energy efficiency still remains the most cost-effective resource to achieve the State's clean energy and carbon neutral goals. The increase in cost is a result of the program aggressively targeting a comprehensive list of energy savings measures and other clean energy technologies while reducing investment and savings from lighting. As noted earlier in the plan, the levelized cost of saved energy is $.034 for the total program, $.028 for just clean energy technologies (not inclusive of Accessibility & Affordability or Market Transformation and Economic Development programs) allowing the programs to be the lowest cost option compared to generation.

Hawai'i Energy recognizes the proposed increase in budget has implications which are not taken lightly. Based on past participation data, residential customers participating in the programs received in incentives about 6 times more than what they contributed from the public benefits fee and when you factor in energy savings, this increases to over 13 times when you factor in the energy savings of the equipment installed. This doesn't include all of the additional benefits from operational savings that occur as Hawai'i's residents increase their energy literacy, in part due to investment from the Hawai'i Energy program.

Hawai'i Energy also recognizes that hard to reach markets are named what they are because participation is typically low within these groups. The mindset needs to change in a way that the programs are easy to reach. This is precisely why Hawai'i Energy proposes to increase investment into accessibility and affordability by 62% over last program year. It is important these groups participate in the programs and realize the benefits and savings associated from smart energy choices.

As Hawai'i Energy prepares for this new triennial period, we intend to continue to build and foster relationships with community partners, energy stakeholders, and the families and businesses of Hawai'i to ensure we are doing all we can to deliver best in class program offerings to help save money, save energy, and pursue a 100% clean energy future.

Mahalo for your continued interest and support of the Hawai'i Energy programs.

Appendix A - Budget Category Acronyms

INCENTIVES

	Focus Area	Budget Category	Measures		Description
BUSINESS	Clean Energy Transition	Custom Business Energy Efficiency Measures	CBEEM	Custom calculated savings for not-prescriptive projects for equipment including lighting, HVAC, controls, pumps, motors and water heating	Direct incentives to customers and trade allies.
	Clean Energy Transition	Business Energy Efficiency Measures	BEEM	Prescriptive lighting, HVAC, motors, pumps etc.	Direct incentives to customers and trade allies.
	Clean Energy Transition	Business Energy Services and Maintenance	BESM	Whole building assistance, energy audits/studies, retro-commissioning, technical support, energy-water nexus, strategic energy management	Direct incentives to customers and trade allies. Technical services including project scoping, audits, energy modeling, customer data analytics via regression models, ongoing commissioning work, customer-sited staffing support.
	Clean Energy Transition	Business Emerging Technologies	BET	Honolulu Sea Water Air Conditioning Other emerging tech as identified	Direct incentives to customers and trade allies. Subcontracted services to evaluate and incorporate emerging technologies into the portfolio.
	Clean Energy Transition	Business Grid Services Ready	BGRID	Technical support and incentives for IDSM technologies that include DR capabilities, energy storage and/or electrification of transportation	Direct incentives to customers and trade allies. Technical services including field work, installations and inspections.
	Access and Affordability	Business Hard to Reach	BHTR	Access & Affordability programs such as small business direct install, Empower non-profit program, commercial kitchen, hard to reach grid services	Direct incentives to customers and trade allies. Technical services including field work, installations, bulk purchases, hauling, recycling and inspections.
	Market Transformation	Business Transformational	BTRAN	Market transformation programs: professional development and technical training, codes and standards, clean energy collaboration and energy in decision making	Program services and subcontracted work focusing on identifying needs and coordinating technical and professional development training for customers and contractors (CEA's) to elevate expertise and further economic development.
RESIDENTIAL	Clean Energy Transition	Custom Residential Energy Efficiency Measures	CREEM	Custom whole home services and retrofits, new construction programs and emerging tech	Direct incentives to customers and trade allies. Technical services including field work, installations, bulk purchases, hauling, recycling and inspections.
	Clean Energy Transition	Residential Energy Efficiency Measures	REEM	Prescriptive lighting, appliances, water heating, electronics and bounty programs	Direct incentives to customers and trade allies.
	Clean Energy Transition	Residential Energy Services and Maintenance	RESM	Residential AC and solar water heating tune-ups, audits, technical support and appliance standards savings	Direct incentives to customers and trade allies. Technical services including field work, installations, bulk purchases, hauling, recycling and inspections.
	Clean Energy Transition	Residential Grid Services Ready	RGRID	Technical support and incentives for IDSM technologies that include DR capabilities, energy storage and/or electrification of transportation	Direct incentives to customers and trade allies. Technical services including field work, installations and inspections.
	Access and Affordability	Residential Hard to Reach	RHTR	Access & Affordability programs including multi- and single-family direct install, community bulk purchase programs and direct install water heating	Direct incentives to customers and trade allies. Technical services including field work, installations, bulk purchases, hauling, recycling and inspections.
	Market Transformation	Residential Transformational	RTRAN	Market transformation programs: behavior change, outreach and education, energy literacy, workforce training, professional development and technical training, codes and standards and clean energy collaboration	Program services and subcontracted work focusing on improving energy literacy through training and community engagement to help families make smart energy choices and reduce their energy usage.

NON-INCENTIVES

	Focus Area	Budget Category	Measures		Description
BUSINESS	Clean Energy Transition	Custom Business Energy Efficiency Measures	CBEEM	Custom calculated savings for not-prescriptive projects for equipment including lighting, HVAC, controls, pumps, motors and water heating	Program implementation services including planning, coordination and collaboration tasks (e.g. rebate processing, customer support and advising, forecasting, project lead generation).
	Clean Energy Transition	Business Energy Efficiency Measures	BEEM	Prescriptive lighting, HVAC, motors, pumps etc.	
	Clean Energy Transition	Business Energy Services & Maintenance	BESM	Whole building assistance, energy audits/studies, retro-commissioning, technical support, energy-water nexus	
	Clean Energy Transition	Business Emerging Technologies	BET	Honolulu Sea Water Air Conditioning and other emerging tech as identified	
	Clean Energy Transition	Business Grid Services Ready	BGRID	Technical support and incentives for IDSM technologies that include DR capabilities, energy storage and/or electrification of transportation	
	Clean Energy Transition	Business Market Evaluation	Business Market Evaluation	All Clean Energy Transition Measures	Services associated with evaluation tasks such as Annual Report, EM&V Support, TRM, TRB, metric calculation questions. Also includes overall program reporting, such as Annual Plan.
	Clean Energy Transition	Business Outreach	Business Outreach	All Clean Energy Transition Measures	Services associated with community/sector outreach support for all clean energy transition measures. Tasks include community event/trade show support, marketing collateral materials, advertising, and overall measure specific strategic marketing activities.
	Access and Affordability	Business Hard to Reach	BHTR	Access & Affordability programs such as small business direct install, Empower non-profit program, commercial kitchen, hard to reach grid services	Program implementation services including planning, coordination and collaboration tasks (e.g. rebate processing, customer support and advising, forecasting, project lead generation).
	Access and Affordability	Business Hard to Reach Outreach	BHTR Outreach	Access & Affordability programs such as small business direct install, Empower non-profit program, commercial kitchen, hard to reach grid services	Services associated with community/sector outreach support for all Business Hard to Reach measures. Tasks include community event/trade show support, marketing collateral materials, advertising, and overall measure specific strategic marketing activities.

NON-INCENTIVES

	Focus Area		Budget Category	Measures	Description
RESIDENTIAL	Clean Energy Transition	CREEM	Custom Residential Energy Efficiency Measures	Custom whole home services and retrofits, new construction programs and emerging tech	Program implementation services including planning, coordination and collaboration tasks (e.g. rebate processing, customer support and advising, forecasting, project lead generation).
	Clean Energy Transition	REEM	Residential Energy Efficiency Measures	Prescriptive lighting, appliances, water heating, electronics and bounty programs	
	Clean Energy Transition	RESM	Residential Energy Services and Maintenance	Residential AC and solar water heating tune-ups, audits, technical support and appliance standards savings	
	Clean Energy Transition	RGRID	Residential Grid Services Ready	Technical support and incentives for IDSM technologies that include DR capabilities, energy storage and/or electrification of transportation	
	Clean Energy Transition	Residential Market Evaluation	Residential Market Evaluation	All Clean Energy Transition Measures	Services associated with evaluation tasks such as Annual Report, EM&V Support, TRM, TRB, metric calculation questions. Also includes overall program reporting, such as Annual Plan.
	Clean Energy Transition	Residential Outreach	Residential Outreach	All Clean Energy Transition Measures	Services associated with community/sector outreach support for all clean energy transition measures. Tasks include community event/trade show support, marketing collateral materials, advertising, and overall measure specific strategic marketing activities.
	Access and Affordability	RHTR	Residential Hard to Reach	Access & Affordability programs including multi- and single-family direct install, community bulk purchase programs and direct install water heating	Program implementation services including planning, coordination and collaboration tasks (e.g. rebate processing, customer support and advising, forecasting, project lead generation).
	Access and Affordability	RHTR Outreach	Residential Hard to Reach Outreach	Access & Affordability programs such as small business direct install, Empower non-profit program, commercial kitchen, hard to reach grid services	Services associated with community/sector outreach support for all residential hard to reach measures. Tasks include community event/trade show support, marketing collateral materials, advertising, and overall measure specific strategic marketing activities.
SUPPORT SERVICES	ALL	General & Administrative Support	General & Administrative Support	ALL	Program administration costs which include accounting and billing, procurement and purchasing, contracting, subcontractor and client invoicing.
	ALL	IT & Data Management & Visualization	IT & Data Management & Visualization	ALL	Services and expenses related to data transfers from the utility, energy savings and financial reporting and tracking, program related software and applications for program and contractor participation, and program (not customer-specific) data analytics for program planning and targeting purposes.
	ALL	Branding	Branding	ALL	Overall program branding and marketing, including branding campaigns, media buys, and market surveys.
INFRA-STRUCTURE	ALL	Infrastructure/ Facility Fee	Infrastructure/ Facility Fee	ALL	Fixed fee to cover infrastructure costs associated with the program. These expenses include but are not limited to office lease, IT and communications infrastructure, equipment and furnishings. Cost escalation increases are risk to Leidos.

APPENDIX B

Delivery Strategies

For Business and Residential programs

BUSINESS PROGRAM

BUSINESS PROGRAM

Whole Building Assistance

Program Category	**2.1 Clean Energy Technologies** **2.1.1 Business Program** **A. Business Energy Advising** **Energy Advisory Incentive Offers**
Description	**Energy Audit & Energy Study** Overcoming the customer barrier of lack of information in helping to identify and quantify the impact of efficiency projects, the Program will provide incentives to complete an energy audit and additional funding if a deeper study is needed. Incentivizing the installation of equipment with a short-term payback may be a strategy employed to drive action from the information garnered with such a study. **Retro-Commissioning and Re-Commissioning** The recommissioning/retro-commissioning 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. **Metering and Monitoring** Advanced sub-metering and energy monitoring can help customers gain crucial insight into when, where, and how much energy is being used within their facility. This information is very valuable when determining areas for energy efficiency improvements. Similar to retro-commissioning, metering and monitoring can also be used to determine the effectiveness and efficiency of current building systems

	for optimal performance. Where building systems are not preforming optimally, data from metering and monitoring can be used to fine tune those systems and verify savings from any operational changes to those systems. Metering and monitoring incentives cannot be combined with the retro-commissioning incentives. **Technical Support** The Hawai'i Energy team will provide other technical support to assist customers in selecting the ideal contractor for their audits, commissioning studies or efficiency projects.
Target Audience	Who – Property Managers, Facilities Directors, Chief Engineers and Governmental Facilities Departments, Electrical and Mechanical Contractors. What – Office Buildings, Hotels, Hospitals, and Large Commercial Facilities.
Barriers	• Lack of familiarity with availability of energy efficient technology and the vendors offering these services and products • Trust and creditability of technology providers • Unaware of business benefits of reducing exposure to cost of energy changes • Access to and/or understanding of financial options
Cost	Whole Building Assistance and Energy Study Grant: TOTAL TRIENNIAL INCENTIVE BUDGET: **$2,455,000**
Benefit	Although no energy and demand savings has been estimated for this program due to the uniqueness of the individual facilities participating in these services, some energy and demand savings is expected to come from offering these services. As such Hawai'i Energy reserves the right to claim savings for this program as they are verified in the field. TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): --- TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): ---
Implementation	Deeper engagement with electrical and mechanical engineering firms, commissioning professionals, large customers with identified energy teams or with a defined strategic energy plan.

BUSINESS PROGRAM

Submetering

Program Category	**2.1 Clean Energy Technologies** **2.1.1 Business Program** **A. Business Energy Advising** **Energy Advisory Incentive Offers**
Description	Submetering 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 Hawai'i 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.
Target Audience	Commercial property owners and Condominium owners, AOAO owners, etc.
Barriers	• High Initial first cost. • Lack of familiarity with availability of energy efficient technology and the vendors offering these services and products • Unaware of behavioral changes made possible through unit level metering. • Rigid administrative requirements, such as AOAO board approval processes
Cost	TOTAL TRIENNIAL INCENTIVE BUDGET: **$90,000**
Benefits	TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): **38,000** TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): **8**
Implementation	Close collaboration with vendors and building owners as well as leverage memberships in professional organizations to raise awareness and generate leads.

BUSINESS PROGRAM

Energy-Water Nexus

Program Category	**2.1 Clean Energy Technologies** **2.1.1 Business Program** **A. Business Energy Advising** **Energy Advisory Incentive Offers**
Description	Support for rural water utilities, wastewater as well as county water utilities. Support can take the form of financial incentives for technologies that reduce water loss which leads to direct energy savings such as leak detection loggers and energy efficiency equipment upgrades. Other support may include incentives for repair kits for said loggers as well as programmatic support for training rural water utilities on energy conservation methods and technologies.
Target Audience	Water utilities and municipalities on Hawai‘i, Honolulu, and Maui counties
Barriers	Engagement with water utilities and organizations that lack manpower to properly tackle the scope of the problem. Internal barriers lead to project lead times, equipment ship dates, and installation being pushed back.
Cost	Historically a 50% fund match has enabled utilities such as Hawai‘i County DWS to carry on with projects, funding without which the purchase of equipment would not be possible. Sponsorship amounts as program funds allow and are effective in driving program development. TOTAL TRIENNIAL INCENTIVE BUDGET: **$499,000**
Benefit	Depending on the region served and year to year average loss, energy and water savings can vary substantially. Particularly as leak detection loggers are deployed, the avoided loss shrinks whereby at some point cost effectiveness may decrease although this is not expected to be an issue for the time being. TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): **1,382,000** TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): **138**
Implementation	Work with potential partners, including Department of Water Supply (Hawai‘i, Maui County), Board of Water Supply (O‘ahu County), Hawai‘i Rural Water Association, American Water Works Association.

BUSINESS PROGRAM

Strategic Energy Management

Program Category	**2.1 Clean Energy Technologies** **2.1.1 Business Program** **A. Business Energy Advising** **Energy Advisory Incentive Offers**
Description	SEM is a holistic, longer-term approach to energy savings with a focus on the specific needs of individual customers. It can encompasses a broad array of strategies such as staff training, executive buy-in, energy studies, joint marketing promotions and integrating incentive payments with the customers' financial tracking systems. SEM promises to deliver deeper and more sustained savings. Continuous Energy Improvement (CEI) is a structured initiative within the SEM program centered on behavioral and work process changes to achieve deeper energy savings – i.e. sustained organizational change akin to continuous quality improvement initiatives. Customers are provided training on identifying savings opportunities in their daily work, technical support on energy usage measurement/modeling, and ongoing coaching until CEI becomes ingrained in the organizations' cultures. Capital projects may result from CEI efforts but are not the main focus.
Target Audience	Targeting participation from State & county governments, hospitals, target large customers w/ MV90 data, industrial sector.
Barriers	• Technical staff and time are required to successfully engage the customer in driving organizational change. • Customer organization needs commitment and an identified energy champion to ensure the team stays on task. • Quantifying savings or benefits is challenging without interval data.
Cost	TOTAL TRIENNIAL INCENTIVE BUDGET: **$600,000**
Benefits	TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): **1,204,000** TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): **120**
Scale	As targeted sectors and organizations are engaged and as budget and human resource allow for.
Implementation	• Collaborate with U.S. Department of Energy's Better Buildings Challenge team to implement best practices and facilitate Hawai'i businesses in becoming Better Buildings Partners. • Collaboration with Hawai'i Green Growth's Sustainable Business Forum • Consultations with VEIC, Leidos as well as using Energy Star resources • Potentially work with organizations using ISO 50001 • Develop customer-specific workshop materials, including energy models

BUSINESS PROGRAM

Codes & Standards

Program Category	**2.1 Clean Energy Technologies** **2.1.1 Business Program** **A. Business Energy Advising** **Energy Advisory Incentive Offers**
Description	**Building Code Adoption Advocacy** Supporting the State Building Code Council and Department of Planning and Permitting in an ongoing effort to follow code adoption cycles of every few years. Specifically in regards to the state energy code which is currently based of the International Energy Conservation Code. **Building Code Compliance Enhancement** Improve market compliance to energy code through strategic interventions, measured with pre & post energy code compliance studies with expert input via Delphi Panel. Components of which include: • Determining Baseline Compliance Level to energy code • Determining Enhanced Compliance Level to energy code • Estimate Energy Savings Due to Enhanced Compliance • Determine Savings Attributable to Compliance Enhancement Activities. • Collaborate with EM&V to identify and implement evaluation process **Appliance Standards Adoption** • Collaboration with partner organizations such as Appliance Standards Awareness Project (ASAP) and stakeholders to educate and negotiate the most suitable appliance standards for the state.
Target Audience	**Code Compliance Enhancement Activities** The building design & construction community, real estate developers, large and expanding customers **Appliance Standards** Appliance retailers, distributors, policymakers, grassroots organizations
Barriers	• Increased upfront new construction costs • Perception of reduced customer choice for appliance standards
Cost	Code Adoption and Compliance Enhancement Activities/Appliance Standards: TOTAL BUDGET: **$308,650**
Benefit	**Code Compliance** Attribution of savings for code compliance enhancement activities through formal or deemed attribution process. This would amount to a portion of savings that are outside savings lost to non-compliance, normal market adoption and new construction.

	Appliance Standards With minimal or no additional up-front cost, appliance standards could potentially save households with electric water heaters over $200 annually and could save 1,122 GWh over the next 15 years. Appliance standards enable Hawai'i consumers to make the best energy, water and financial choice over the lifetime of the equipment and protect our consumers from 'dumping' by manufacturers who cannot sell less efficient products in markets where standards do exist. Standards will also protect renters who often have little say in purchasing decisions by their landlords, but who may then bear the brunt of higher electric bills. TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): **7,162,000** TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): **716**
Implementation	**Program Design** RFI & RFP to commission a study to understand and track the impact of energy codes & standards enhancement. Reference DBEDT 2018 Code Compliance study. **IT Systems** Create C&S savings tracking and reporting scheme within backend systems **Staffing** • Work with Departments of Planning and Permitting (DPPs), State Energy Office (SEO), Appliance Standards Awareness Project (ASAP), Blue Planet Foundation (BPF) • Enlist third-party experts to conduct Delphi panel and interview industry and market participants to evaluate Hawai'i Energy contribution to influencing adoption of new codes and increasing compliance to new building energy codes. • Promotion of next cycle of IECC or stretch code with partner organizations. • Host trainings for architecture, engineering & construction (AEC) design community, permit office plan reviewers • Provide resources for plan review for energy code compliance

BUSINESS PROGRAM

Building Envelope

Program Category	**2.1 Clean Energy Technologies** **2.1.1 Business Program** **B. Supply Chain Engagement** **Equipment Incentive Offers**
Description	The Building Envelope incentive offers customer rebates for purchase and installation of window tinting, and will continue in the PY19-21 triennial to promote market uptake of this technology by reducing first costs. Window tinting can save energy by reducing 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 tinting opportunities in view sensitive locations such as hotel and office buildings.
Target Audience	Large and small commercial facility customers doing building improvement projects • Work with Property Managers, Facilities Directors, Chief Engineers and design sector professionals
Barriers	• High cost as a standalone measure • Lack of familiarity with availability of energy efficient technology and the vendors offering these services and products
Cost	TOTAL TRIENNIAL INCENTIVE BUDGET: **$156,000**
Savings	TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): **834,000** TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): **171**
Implementation	The program is delivered to customers by Trade Allies encouraging customer participation and assisting with application submittal.

BUSINESS PROGRAM

HVAC

Program Category	**2.1 Clean Energy Technologies** **2.1.1 Business Program** **B. Supply Chain Engagement** **Equipment Incentive Offers**
Description	**Package and Split Units** The air-cooled package units are most often found in small commercial facilities as they are least first-cost and maintenance intensive of HVAC options to this market. The units are often roof-top mounted and feed constant volume distribution systems. The most cost effective opportunity to reduce energy consumption in these units are 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. A higher cost option is to convert to VRF split systems. **Inverter Driven Variable Refrigerant Flow (VRF)** Inverter driven variable refrigerant flow (VRF) air conditioning systems are direct expansion AC systems that utilize variable speed evaporator/condenser fans, and a combination of fixed and variable speed compressors along with most often multiple individual zone evaporators to provide the ability to more closely match the AC system's output with the building's cooling requirements. A potential of 20 to 35% energy savings come from: • Part Load Efficiencies: Increased part-load efficiency operation • High Efficiency Motors: Many systems use ECM motors • Higher Room Temperatures: The capacity matching allows for better humidity control through longer cooling operation. • Reduction of Distribution Losses: Duct losses are reduced with DX systems. This may be offset by dedicated outside air distribution systems when needed. **Variable Frequency Drives (VFD)** The use of variable frequency drives to vary motor speeds to control flow in response to changes in loads provides significant savings in HVAC applications of supply, return and exhaust fans as well as chilled water and condenser water pumps.
Target Audience	Large commercial facility customers with existing chillers include centrifugal, screw, scroll and reciprocating, approaching the end of their useful life. • Work with property Managers, Facilities Directors, Chief Engineers and Governmental Facilities Departments Small Commercial facilities customers with existing rooftop package units, or splits systems approaching the end of their useful life. • Work with property Managers & Private and Public Facilities Directors, air Conditioning/Mechanical Contractors, Mechanical Engineers

Barriers	• High initial cost • Lack of familiarity with availability of energy efficient technology and the vendors offering these services and products
Cost	All Energy Efficient HVAC: TOTAL TRIENNIAL INCENTIVE BUDGET: **$1,375,000**
Savings	All Energy Efficient HVAC: TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): **15,113,000** TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): **1,580**
Implementation	To be eligible, chiller efficiency must exceed IECC 2015 code (consistent with ASHRAE 90.1-2016) code, Path A or Path B, by 10% or more. The following chiller retrofits should be evaluated as custom projects: water-cooled chillers larger than or equal to 600 tons, air-cooled chillers larger than or equal to 300 tons, and any chiller part of a larger, multi-system plant.1 In addition, a custom approach should be used for early retirement chiller projects and chillers installed in industrial or cold storage applications. Package and split unit will have a two tier approach based on the Consortium for Energy Efficiency (CEE) specifications. Work with HVAC contractors and distributors, and large customers

BUSINESS PROGRAM

Lighting

Program Category	**2.1 Clean Energy Technologies** **2.1.1 Business Program** **B. Supply Chain Engagement** **Equipment Incentive Offers**
Description	• **LED** o Linear T8 to Linear LED Tube: w/ Integrated Driver - Plug & Play (Type A) o Linear T12/T8 to Linear LED Tube: w/ Remote Driver (Type C) o Omni-Directional (Screw-In & Pin) o Specialty (Screw-In & Pin) o LED HID Replacements o LED Flat Panel Drop-In Replacements o LED Refrigerated Case Lighting o LED Exit Signs • **LED Troffer (fixture replacement or retrofit kit)** o 1ft x 4ft o 2ft x 2ft o 2ft x 4ft • **Occupancy Controls, Sensors & Timers** • **Delamping** o Delamping with Reflector Kit (2, 4 & 8 ft. lamp) o Delamping Only (2, 4 & 8 ft. lamp)
Target Audience	Who – Property Managers, Facilities Directors, Chief Engineers, Governmental Facilities Departments, Mechanical Engineers, Contractors What – All Commercial Facilities
Barriers	• High Initial first cost. • Lack of familiarity with availability of energy efficient technology and the vendors offering these services and products • Trust and creditability of technology providers • Unaware of business benefits of reducing exposure to cost of energy changes • Access to and/or understanding of financial options • Split-incentive between tenants and building owners
Cost	All Energy Efficient Lighting (includes Midstream distributors): TOTAL TRIENNIAL INCENTIVE BUDGET: **$4,475,000**
Benefits	All Energy Efficient Lighting (includes Midstream distributors): TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): **27,249,000** TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): **4,690**
Implementation	**Lighting** Incentive for efficient lighting measure will be offer in two ways. The first is through our traditional trade ally provided program, where electrical

contractors provide the lighting upgrades to our customer and the customer submits an application for a rebate for the lighting upgrade.

The second way incentive will be offered to our customer is instantly at the point of purchase through our midstream lighting 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, Hawai‘i Energy simplifies program participation resulting in more customers benefitting from the program. Further, by concentrating multiple customer transactions into a single data exchange between the distributor and Hawai‘i Energy, we leverage the tracking and sales software of our partnering distributors to reduce the cost to process customer transactions.

To be eligible, lighting measure have to be either Energy Star or Design Lights Consortium (DLC) certified.

Implement with electrical contractors and lighting distributors.

BUSINESS PROGRAM

Plug/Process Loads

Program Category	**2.1 Clean Energy Technologies** **2.1.1 Business Program** **B. Supply Chain Engagement** **Equipment Incentive Offers**
Description	**Refrigerated Case Night Covers** The installation of retractable aluminum woven fabric covers for open-type refrigerated display cases, where the covers are deployed during the facility's unoccupied hours in order to reduce refrigeration energy consumption. **Controls: Anti-Sweat Heaters** Refrigerated case doors contain electric heaters that run 24/7 to reduce moisture build-up. Anti-sweat heater controls regulate these heaters so that they will turn off when they are not needed. ASH controls can also extend condenser life. **Transformers** Transformers take the high voltage from the incoming line and step it down to a voltage that is usable by the facility's equipment. As a result, the transformer is running 24/7 and thus incurring core loss at all times. The use of better materials and engineering design can help to minimize these losses and produce higher efficiency transformers. This program seeks to offset some of the capital cost of purchasing these premium transformers in order to maximize efficiency and reduce wasted energy.
Target Audience	Who – Property Managers, Facilities Directors, Chief Engineers and Governmental Facilities Departments, Electrical and Mechanical Contractors. What – Office Buildings, Hotels, Hospitals, Large Commercial Facilities and Grocery Stores.
Barriers	• High Initial first cost. • Lack of familiarity with availability of energy efficient technology and the vendors offering these services and products • Trust and creditability of technology providers • Unaware of business benefits of reducing exposure to cost of energy changes • Access to and/or understanding of financial options
Cost	All Energy Efficient Plug and Process Loads: TOTAL TRIENNIAL INCENTIVE BUDGET: **$2,020,000**
Benefits	All Energy Efficient Pump and Motors: TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): **10,434,000** TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): **1,360**
Implementation	• Work with electrical and mechanical engineering firms and contractors • Targeted outreach in close collaboration with transformer distributors

BUSINESS PROGRAM

Pumps and Motors

Program Category	**2.1 Clean Energy Technologies** **2.1.1 Business Program** **B. Supply Chain Engagement** **Equipment Incentive Offers**
Description	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 increases system efficiency. **VFD domestic water booster pump packages** • Additional savings through horsepower reduction also available 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. **VFD Pool Pump Packages** There is an opportunity to save energy with motors designed to utilize less power for the same horsepower of work. Motors in many applications (Water pumping and air handing) have long operational hours and are often out of sight and mind until they fail. Motor must meet minimum efficiency requirement above NEMA Premium Efficiency which is now considered the base standard. Incentive levels will be based on the size, in horse power, of the motor. **Premium Efficiency Motors** There is an opportunity to save energy with ECM motors that 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. **ECM w/ Controller - Evaporator Fan Motors** **ECM- Fan Coil Fans**
Target Audience	Who – Property Managers, Facilities Directors, Chief Engineers and Governmental Facilities Departments Mechanical Contractors and VFD Pump Package suppliers. What – Apartments, Office Buildings, Hotels, Hospitals Commercial facilities with swimming pool. All Refrigeration and hotel room air handling units
Barriers	• High Initial first cost. • Lack of familiarity with availability of energy efficient technology and the vendors offering these services and products

	• Trust and creditability of technology providers • Unaware of business benefits of reducing exposure to cost of energy changes • Access to and/or understanding of financial options • Rigid administrative requirements, such as AOAO board approval processes
Cost	All Energy Efficient Pump and Motors: TOTAL TRIENNIAL INCENTIVE BUDGET: **$348,000**
Benefits	All Energy Efficient Pump and Motors: TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): **3,667,000** TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): **370**
Implementation	Close collaboration with mechanical engineering firms and contractors, and electrical equipment distributors to overcome customer barriers

BUSINESS PROGRAM

Emerging Technologies – Honolulu Sea Water Air Conditioning

Program Category	**2.1 Clean Energy Technologies** **2.1.1 Business Program** **B. Supply Chain Engagement** **Equipment Incentive Offers**
Description	The program covers the use of deep sea water in district cooling system to provide air conditioning to commercial sites. The program would provide a capital incentive to offset the interconnection cost of using the district cooling system in sourcing chilled water for HVAC applications. This new energy efficient system requires a large initial capital investment; thus, the program can have a significant impact in moving the market. Sea water air conditioning provides consistent cold water to participating sites by way of heat exchangers at an on-shore cooling station. The cold water is supplied to chilled water air conditioning systems at customer sites through underground pipes. This removes (or significantly reduces) individual onsite water chilling solutions and lowers energy usage. Projected impact: • Potential cooling energy reduction of up to 90%. • Honolulu SWAC (HSWAC) project has a planned capacity of 25,000 tons. • Currently 18 sites from 11 organizations are signed participants in HSWAC.
Target Audience	• Commercial building within the service area of the HSWAC system.
Barriers	• High capital cost require participation of multiple sites for system funding. • Significant construction requirement (scope & time). • Customer unfamiliarity with SWAC technology
Cost	Incentive rates at $300/ton per connection. TOTAL TRIENNIAL INCENTIVE BUDGET: **$2,001,000**
Benefits	TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): **16,180,000** TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): **1,340**
Implementation	Potential partners: • Honolulu Seawater Air Conditioning, LLC, Makai Ocean Engineering, Hawai'i Natural Energy Institute (HNEI) • Reference Case studies: Cornell University, City of Toronto, Canada, Stockholm, Sweden, Amsterdam, Netherlands
Time to Market	• 2 to 5+ years

BUSINESS PROGRAM

Water Heating

Program Category	**2.1 Clean Energy Technologies** **2.1.1 Business Program** **B. Supply Chain Engagement** **Equipment Incentive Offers**
Description	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. **Commercial Solar Water Heaters** • Electric Resistance • Heat Pump **Single Family Solar Water on Commercial Accounts Incentive** 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 facilities' domestic water needs or swimming pools. Heat pumps can also be air-source and provide heat mitigation in areas such a commercial kitchen and serve pools as a stand-alone water heater. **Heat Pumps** • Conversion from standard electric resistance
Target Audience	• AOAOs, Property Managers, Governmental Facilities Departments, Mechanical Contractors and Plumbing Suppliers. • Apartments, Hotels, and Government Housing
Barriers	• High Initial first cost. • Sufficient roof space for the installation • Lack of familiarity with availability of energy efficient technology and the vendors offering these services and products • Trust and creditability of technology providers • Unaware of business benefits of reducing exposure to cost of energy changes • Access to and/or understanding of financial options
Cost	All Energy Efficient Water Heating: TOTAL TRIENNIAL INCENTIVE BUDGET: **$5,000**
Benefits	All Energy Efficient Water Heating: TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): **50,000** TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): **20**
Implementation	Work with AOAO's, town home HOA's, solar water heating contractors, mechanical engineering firms and contractors, and plumbing equipment distributors

BUSINESS PROGRAM

Customized Projects

Program Category	**2.1 Clean Energy Technologies** **2.1.1 Business Program** **B. Supply Chain Engagement** **Equipment Incentive Offers**
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. **Customized Project Criteria** • Payback of greater than one year or 6 months for LED projects. • Pass the utility benefit-cost test, Total Resource Cost Ratio (TRC) based on the value of the Utility avoided demand (kW) and avoided energy (kWh) that the project produces • Incentive rate will not exceed the 50 percent of incremental cost of the energy efficiency improvement
Target Audience	Who – Property Managers, Facilities Directors, Chief Engineers and Governmental Facilities Departments, Mechanical Engineers and Contractors. What –All Commercial Facilities
Barriers	• Market acceptance of new technologies • High Initial first cost. • Risk Avoidance • Lack of familiarity with availability of energy efficient technology and the vendors offering these services and products • Trust and creditability of technology providers • Unaware of business benefits of reducing exposure to cost of energy changes • Access to and/or understanding of financial options
Cost	All Custom Efficiency Program: TOTAL TRIENNIAL INCENTIVE BUDGET: **$10,691,000**
Benefits	All Custom Efficiency Program: TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): **63,364,000** TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): **6,340**
Implementation	**Customized Application Process** 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.

Customer or his agent must submit a brief proposal that describes the project and includes estimates of energy savings and payback

- Engineering calculations are required and may be reviewed either internally or with a third-party engineering firm
- Program provide feedback on the project to clarify if needed
- In some case pre-installation and post installation metering may be required to verify savings.

Potential partners: Electrical and mechanical engineering firms and contractors

BUSINESS PROGRAM

Demand Response

Program Category	**2.1 Clean Energy Technologies** **2.1.1 Business Program** **C. Grid Service-Ready Support** **Grid Support Incentive Offers**
Description	The Hawaiian Electric Companies are in the process of rolling out new Demand Response (DR) programs. As these programs are initiated, Hawai'i Energy will work with the Hawaiian Electric Companies (HECO) to integrate the delivery of our Energy Efficiency (ER) program into the delivery of the DR programs. The following are technologies that would be appropriate for such delivery: • Smart thermostat technologies that provide both energy efficiency and enable demand response participation for small businesses • HVAC controls that provide both energy efficiency and enable demand response participation for medium and large commercial • Energy management and control systems • Grid-interactive water heaters
Target Audience	• Large commercial facilities • Small businesses with air conditioning load
Barriers	• Lack of well-defined demand response programs • Customer confusion over who is responsible for DR and EE programs • Customer awareness and understanding of the existing programs • Customers lack the understanding of how much it will cost to participate • Customers lack the understanding of how much they can save • Customers lack the understanding of how they will be called on
Cost	Demand Response: TOTAL TRIENNIAL INCENTIVE BUDGET: **$1,025,000**
Benefits	The savings from Hawai'i Energy's support for demand response is hard to quantify without new metrics in this field. However, Hawai'i Energy commits to a goal of providing at least 700 customer with demand response capable technologies.
Implementation	The Hawaiian Electric Companies, DR aggregators
Time to Market	As the HECO companies further define their DR programs, Hawai'i Energy will continue to evolve our coordination with their implementation.

BUSINESS PROGRAM

Customer-Sited Energy Storage Systems

Program Category	**2.1 Clean Energy Technologies** **2.1.1 Business Program** **C. Grid Service-Ready Support** **Grid Support Incentive Offers**
Description	Energy storage is becoming a vital way to integrating renewable energy into our island grid. Of the various storage technologies, battery storage can be used to provide a variety of services at the bulk system, transmission and distribution as well as behind the meter. Some of the customer benefits include emergency back-up, utility load peak shaving and capturing excess PV generation for on-site use or grid export. Currently, other than avoided demand cost charges, battery storage can also see positive revenue for being used to replace back up emergency generators for commercial buildings in the form of lower lifetime costs. With geographic, social equity and resilience aspects in mind, incentives for battery storage will be designed to align customer and grid benefits. Commercial energy storage will be projects installed at facilities with commercial rate schedules (i.e. 'G', 'J' 'P', etc.), as well as having a rated power output of 10kW or greater. Full technical specifications and program requirements will be developed based on an initial pilot in early PY19.
Target Audience	Standard commercial customers located in HECO identified grid congested areas or as otherwise determined by program discretion. As well as critical infrastructure buildings to support resiliency.
Barriers	Cost, although batteries have come down in price, remains cost prohibitive (long payback period) based on existing rate schedules and programs.
Cost	TOTAL TRIENNIAL INCENTIVE BUDGET: **$1,266,000**
Benefits	Utility peak demand savings based on battery charge/discharge schedule.
Implementation	Implementation • Application process, determining qualifying permits/locations • Agreement of customer energy storage data release to HE • Back-end IT support to manage data from installed batteries. • Determining strategic selection of participants according to grid needs). • Referencing existing programs in other states as seen below: **California Self-Generation Incentive Program (Steps)** California has enabled energy storage to qualify for its SGIP, a large portion of which is now going to energy storage. California has split its budget into steps or tiers with early adopters receiving richer incentives and the tiers progressing as the budget for each is used. Examples of PG&E incentive rates for large-scale storage and noticeably, carve outs for disadvantaged and low-income communities.

	Large-Scale Storage - $0.40/Wh Non-residential Storage Equity - $0.35/Wh Depends on ITC NV Energy offers incentives for commercial and industrial customers looking to invest in solar-integrated energy storage systems between 4-1,000 kW. The incentive rate depends on if the customer is on a Time-of-use rate or not and on the size of the system. For 4-100kW systems, TOU rate customers can received a maximum of $0.15/Wh and $0.08/Wh for customers on a non-TOU rate. The incentives are tiered similar to CA with $0.02/Wh increments for TOU customers and $0.01 steps for non-TOU customers down to $0.10/Wh for TOU and $0.05/Wh for non-TOU respectively. For 100-1,000kW systems, the incentives change again with TOU rate customers receiving a maximum of $0.40/Wh and $0.30/Wh for customers on a non-TOU rate. The incentives are tiered with $0.02/Wh increments down to $0.32/Wh for TOU and $0.22/Wh for non-TOU respectively for every $1 million incentives reserved. **ConEdison, New York** ConEdison also incentivizes various measures to reduce peak demand. Although limited to commercial projects only, thermal storage can receive 2019 incentive rates of $2,520/kW and battery storage can receive up to $1,620/kW. Both have an incentive limit of up to 70% of project cost. **Massachusetts** Massachusetts Department of Public Utilities has approved the state's three year energy efficiency plan to include behind-the-meter battery storage. Hawai'i is looking closely at MA for how they justified energy storage as an energy efficiency measure that passes a benefit-cost test. The incentive is also designed as a split between an upfront payment and a performance incentive when the customer signs up for a 5 year contract. The customer would bring their own battery and receive signals from the utility a day ahead for a three hour block. The performance payment would then be the average peak demand reduction over the three hours throughout the contract, evaluated annually. Customers also have financing options available such as the 7 year 0% interest loan through the MassSave HEAT loan program. Potential partners: HECO, grid service aggregators.
Time to Market	Upon completion of initial pilots with an initial goal of program rollout beginning 2020.

BUSINESS PROGRAM

Electrification of Transportation

Program Category	**2.1 Clean Energy Technologies** **2.1.1 Business Program** **C. Grid Service-Ready Support** **Grid Support Incentive Offers**
Description	This program covers the installation of electric vehicle charging stations for consumer electric vehicles (EV) at workplace, multi-unit dwelling (MUD), and other sites that provide effective load shifting to the midday. It is an evolution of the PY18 Electric Vehicle Charging Station Pilot that was offered in partnership with Ulupono Initiative. As electric vehicle adoption rates increase in Hawai'i, the load on the electrical grid also increase, especially during peak demand hours. Electric vehicle chargers deployed at locations where they are prominently utilized during the midday address this issue by moving the charging load to when renewable energy production levels are highest. This allows for better grid balancing and peak demand reduction in addition to added convenience for users such as employees and tenants. Another benefit is the encouragement of faster EV adoption which helps curtail carbon emissions.
Target Audience	• Commercial workplaces • Multi-unit dwellings • Facilities & locations whose occupancy levels peak during the midday
Barriers	• Emerging alternative vehicle technology (Hydrogen Fuel Cell) • Lack of equipment standardization across electric vehicle manufacturers
Cost	TOTAL TRIENNIAL INCENTIVE BUDGET: **$783,000**
Benefits	• Demand load shifting o 3.4 kW – 19.2 kW shifted per Level 2 charger o 1.4 kW – 1.9 kW shifted per Level 1 charger • Carbon offset from replacing mile-per-gallon with miles-per-kWh. • The program would benefit the roughly 7,000 and counting EV-owning rate payers in the state.
Implementation	• General system training and familiarization for Hawai'i Energy staff • Continued refinement to program & equipment qualification criteria in order to maximize grid-related benefits. • Program refinements will be based on collected data and experience gained at the completion of PY18's implementation of the EVCS pilot program. Potential partners: ChargePoint, Aloha Charge, Other EV charging equipment vendors and manufacturers
Time to Market	1 year

RESIDENTIAL PROGRAM

RESIDENTIAL PROGRAM

Enhanced Lighting Program

Program Category	**2.1 Clean Energy Technologies** **2.1.2 Residential Programs** **A. Direct Consumer Purchases**
Description	Lighting rebates are offered upstream through manufacturer direct incentives which are provided as point of sale cost reductions. The objective of the Enhanced Lighting program is to increase market demand for high efficiency LED lighting options by lowering product prices and increasing efficient product availability. Hawai'i Energy's lighting program has seen continued success since 2009, and these upstream rebates are critical in ensuring that Hawai'i residents choose ENERGY STAR® LEDs, rather than inefficient halogen bulbs or low quality LED products that remain prevalent on retailer shelves. In addition, point of sale delivery offers a cost-effective implementation strategy for promoting high-volume, efficient product options and opens the door for prime placement of quality products on retail shelves and end caps. As the technology evolves and prices for standard A19s have decreased, the program will be significantly reducing incentives for A19s and focusing on **specialty lighting, including PARs, MR16s, decorative lights, security lighting and smart lamps** which provide a potential additional grid service with controllability. An added focus will be on replacing bulbs in existing sockets throughout homes across the islands, either via a direct installation program such as the Energy Smart 4 Homes program, or via a distribution exchange with various community partners.
Target Audience	• Residents – single family and multifamily dwellings • Manufacturers, Distributors, Dealers and Retailers
Barriers	• Lack of understanding about how energy is used in the home • Lack of understanding as to which technology is the most appropriate for existing fixtures • Product availability of specialty and dimmable LEDs within the customer shopping area
Cost	TOTAL TRIENNIAL INCENTIVE BUDGET: $4,387,500
Benefits	TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): 23,835,515 TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): 4,036
Implementation	• Distributors, retailers and manufacturers complete a program application in which they commit to advertising and promotion for instant rebates for the 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.
- Rebates are administered to manufacturers and expected to reduce the retail price of the lighting.
- Replace bulbs in existing sockets via bulb exchanges with various community partners from apartment buildings to neighborhoods, and direct installation through other community based energy efficiency projects.

RESIDENTIAL PROGRAM

Online Energy Marketplace

Program Category	**2.1 Clean Energy Technologies** **2.1.2 Residential Programs** **A. Direct Consumer Purchases**
Description	Hawai'i Energy will continue to offer customers pre-incentivized energy saving measures through its online store, called "Energy Marketplace", in which customers can purchase individual measures (**LEDs, smart strips, water conservation devices**) depending on their needs. Combined with promotional "kits" offered through temporary campaigns throughout each program year, Hawai'i Energy's online offerings provide customers a quick, easy way to access quality energy efficiency measures at a reduced price. A continued collaboration with the utilities' online marketplace to offer these products and more.
Target Audience	• Residents – single family and multifamily dwellings • Manufacturers, Distributors, Dealers and Retailers
Barriers	• Lack of understanding about how energy is used in the home • Lack of understanding as to which technology is the most appropriate for home
Cost	TOTAL TRIENNIAL INCENTIVE BUDGET: $580,000
Benefits	TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): 517,926 TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): 111
Implementation	The online store presents an additional delivery mechanism to ensure that Hawai'i Energy's programs reach a diverse set of customers. With many customers favoring online commerce over brick-and- mortar stores, Hawai'i Energy's online presence plays an increasingly important role in program awareness, participation and new technology adoption. Other measures, such as smart thermostats, or occupancy sensors may be introduced to the Energy Marketplace, along with integrating other initiatives via the utilities' marketplace such as storage providers and EV purchase information.

RESIDENTIAL PROGRAM

Retail Clean Energy Products

Program Category	**2.1 Clean Energy Technologies** **2.1.2 Residential Programs** **A. Direct Consumer Purchases**
Description	This program provides prescriptive incentives to residential customers who purchase and install energy efficiency measures that meet or exceed ENERGY STAR® standards. The program objective is to increase the market for high efficiency appliances, electronics and residential equipment, as well as to reduce use of inefficient refrigerators, freezers and room air conditioners in the secondhand or 'backup' markets. The Retail Clean Energy Products program continues to evolve similarly to the ENERGY STAR Retail Products Platform (ESRPP), a collaborative midstream initiative of ENERGY STAR, energy efficiency program sponsors, retailer partners, and other key stakeholders, facilitated by the U.S. Environmental Protection Agency. In the long term, these efforts are expected to offer a gateway for energy efficiency programs to capture energy savings in the growing "miscellaneous/plug load" product categories at a significantly lower cost than current programs incur. Incentive dollars are used to influence product placement and signage or applied to instant rebates to customers, depending on the retailer's program preference. **Customer Mail-in Rebates:** • **Refrigerators** o Garage Refrigerator / Freezer Recycle Only o Refrigerator (with Recycling of Old) • **Window Air Conditioners** • **Smart Thermostats** • **Pool VFD Controlled Pumps** **Midstream Incentives:** • **Televisions** • **Sound Bars** • **Clothes Washers** • **Clothes Dryers** • **Dishwashers** • **Air Purifiers** • **Dehumidifiers** • **Heat Pumps** • **Smart Strips** o Tier I (master device) Advanced Power Strips • **Occupancy Controls, Sensors & Timers**
Target Audience	• Residents – single family and multifamily dwellings • Manufacturers, Distributors, Dealers and Retailers
Barriers	• Lack of understanding about how energy is used in the home • Lack of understanding as to which technology is the most appropriate for home

Cost	TOTAL TRIENNIAL INCENTIVE BUDGET: $4,328,000
Benefits	TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): 23,629,136 TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): 2,961
Implementation	Hawai'i Energy partners with multiple retailers across the islands including locally stores unique to each island, to national big box retailers. Some products will continue to be offered as a mail-in (downstream) rebate, while others will be incorporated into a midstream arrangement. The delivery strategy includes: • The customer purchases a qualified high efficiency appliance. • For Refrigerator with Recycling, the customer may apply online or obtains an application through the Program's website, in hard copy from Hawai'i Energy, or through point of sale retailer displays. • For Hawai'i Energy's "Rid-A-Fridge" program, Hawai'i Energy coordinates the pick-up of refrigerators and freezers through local recycling companies, distributing incentives to both the customer and the recycler. • For a high efficiency window AC purchase, the customer will obtain an application through the Program's website, in hard copy from Hawai'i Energy or through point of sale retailer displays. Hawai'i Energy then coordinates the pick- up of the old replaced window AC through a local recycling company, distributing incentives to both the customer and the recycler. • For some products including high efficiency clothes washers and dryers, electronics including televisions and sound bars, as well as air purifiers and dehumidifiers, Hawai'i Energy offers midstream incentives to encourage retailers to stock and sell only the most efficient models on their floors. Moving rebates upstream streamlines the rebate process and helps reduce supply barriers in a market restricted by distributer and retailer stocking decisions. • Remaining products are incentivized through a mail-in rebate, as described for refrigerator and window AC purchases. • Hawai'i Energy will continue its Smart Thermostat program, introduced in PY17. This technology is characterized by automatic learning and scheduling features, as well as two-way communication. These features save energy by ensuring the most efficient use of air conditioning and present future opportunities for demand savings through demand response programs.

RESIDENTIAL PROGRAM

High Efficiency Water Heating

Program Category	**2.1 Clean Energy Technologies** **2.1.2 Residential Programs** **B. Clean Energy Ally-Driven Services & Offerings**
Description	Hawai'i Energy's Clean Energy Allies (CEA) help drive participation in resource acquisition programs and amplify the connection of the Program with the customer. The residential clean energy ally network has had an established mature, long-lasting relationship with the solar contractor industry for the past decade. A comprehensive water heating approach that reduces energy use while contributing to grid services by viewing the water heater tank as a thermal storage battery will emphasize creating supply chain infrastructure (device availability at retail and wholesale locations, contractor to install) around heat pumps as well as grid interactive water heaters specified by utility grid service initiatives. • **Heat Pump Water Heaters** • **Solar Water Heaters** o Solar Water Heater (SWH) o PV Direct Water Heater o Solar Water Heater Interest Buy Down o Solar Water Heater Tune-Up • **Grid Interactive Water Heaters (*see Demand Response*)**
Target Audience	• Residents – single family and multifamily dwellings • Clean Energy Allies, Manufacturers and Distributors
Barriers	• Large up-front cost • Strong demand for PV / Low awareness of cost-effective SWH • Trust and credibility of technology providers • Quality of system design, equipment and installation • Operational knowledge and maintenances of technologies
Cost	TOTAL TRIENNIAL INCENTIVE BUDGET: $4,087,500
Benefits	TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): 5,808,636 TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): 867
Implementation	**Heat Pump Water Heaters** Hawaii Energy will accelerate heat pump water heater (HPWH) adoption with increased incentives and added bonuses for controls. In PY17, Hawai'i Energy began offering an upstream rebate on Heat Pump Water Heaters, recognizing that Hawai'i residents had limited options available on shelves. In an effort to influence stocking decisions, Hawai'i Energy began incentivizing retailers for each qualifying Heat Pump Water Heater sold. Hawai'i Energy will continue this program, while simultaneously offering rebates to customers for all Heat Pumps not incentivized at the retailer level and leveraging our CEA program processes to create a new contractor network to promote, sell and install this technology that has the potential to provide both energy efficiency and grid services.

Solar Water Heating

Solar Water Heater (SWH) & PV Direct Water Heater System Installations

The Program provides a rebate for Solar & PV hot water systems installed by qualified participating contractors. Contractors will provide an instant rebate to the customer at the point of sale, and submit an application directly to Hawai'i Energy for reimbursement. A portion of post-installation inspections is conducted to ensure specification compliance.

Solar Water Heater Interest Buy Down

The Program works with participating lending institutions to provide an 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 an incentive to residential customers for the maintenance and tune up of an existing solar water heater by participating contractors. The program aims to demonstrate the benefits of tune-ups, educate customers of potential savings and system longevity. Like the system installations, tune-ups will be subject to random inspections for quality assurance.

Grid Interactive Water Heaters *(see Demand Response)*

RESIDENTIAL PROGRAM

Household Air Conditioning

Program Category	**2.1 Clean Energy Technologies** **2.1.2 Residential Programs** **B. Clean Energy Ally-Driven Services & Offerings**
Description	In more recent program years, the residential clean energy ally program has folded in residential HVAC contractors as programs have evolved to drive further market adoption. 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, such as ACEEE, ASHRAE and ENERGY STAR when qualifying technologies to be incentivized. **Fans** • Solar Attic Fans • Whole House Fans **Window AC** • Window AC with Recycling **VRF Split System AC** • VRF Split System (small) • VRF Split System (large) • Residential AC Tune-Up **Central Air Conditioner** • Central AC Retrofit • Residential AC Tune-Up
Target Audience	• Residents – single family and multifamily dwellings • Clean Energy Allies, Manufacturers and Distributors
Barriers	• Large up-front cost • Trust and credibility of technology providers • Quality of system design, equipment and installation • Operational knowledge and maintenances of technologies
Cost	TOTAL TRIENNIAL INCENTIVE BUDGET: $2,955,000
Benefits	TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): 16,230,215 TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): 1,880
Implementation	**Whole House and Solar Attic Fans** As an alternative to HVAC, Hawaii Energy offers incentives for passive cooling with fans, either whole house or solar attic fans. We will continue our work with our Allies to make this option available to customers and reduce active HVAC loads where feasible.

Window AC with Recycling
In PY18, Hawai'i Energy launched a unique program to via a local contractor to replace window AC units with a high efficiency and bundle the old replacements for recycling with a local recycler. Developed as a midstream program to remove barriers to participation by having a contractor enroll customers and install product, this program will be expanded in other areas as a successful model to leverage the CEA network to accelerate retrofits of old inefficient equipment in homes.

HVAC Retrofits – Central AC and VRF
Hawai'i Energy will continue its air conditioning retrofit offering, which will incentivize the retrofit of an old, inefficient central AC or VRF unit with a new, higher model SEER rating. As with other Clean Energy Ally provided measures, a portion of Hawai'i Energy's tune up and retrofit rebates will be subject to inspection for the purpose of quality assurance.

Residential AC Tune Up
Hawai'i Energy will continue its highly successful Residential AC Tune Up program, first introduced in PY16. This measure includes the completion of a multipoint checklist on both indoor and outdoor units for central and split air conditioners. Hawai'i Energy was able to launch this program successfully by working directly with contractors to ensure program awareness and quality assurance.

RESIDENTIAL PROGRAM

Whole Home Retrofits

Program Category	**2.1 Clean Energy Technologies** **2.1.2 Residential Programs** **B. Clean Energy Ally-Driven Services & Offerings**

Description	The program will take a comprehensive approach to residential energy efficiency by assisting customers in understanding home energy use, identifying areas to increase energy performance, improving health & comfort, and lowering utility bills. The program will provide home audit services with customized recommendations to deliver whole-house solutions.
	• **Whole Home Energy Assessment**
	  o Audit Services
	• **Whole Home Retrofits**
	  o Appliance, electronics, and equipment upgrades
	  o Tune-up services for HVAC and solar water heating equipment
	  o Building systems and envelope recommendations
	  o Emerging technology deployments
	  o Direct Install measures: LED light bulbs, faucet aerators, showerheads, advanced power strips
	• **Emerging Technologies**
	  o Home Energy Monitors

Target Audience	• Residents – single family • Clean Energy Allies
Barriers	• Lack of understanding about how energy is used in the home • Lack of understanding as to which technology is the most appropriate for home • Quality of system design, equipment and installation • Trust and credibility of providers • Operational knowledge and maintenances of technologies
Cost	TOTAL TRIENNIAL INCENTIVE BUDGET: $1,095,000
Benefits	Packaged approach to customer engagement providing holistic solutions. Savings will vary depending on measures selected.
Implementation	Utilizing internal resources and our CEAs, Hawai‘i Energy will guide the process for the customer to implement energy retrofits and other improvements, such as installation of energy-efficient products, appliance and equipment replacements, building envelope upgrades, and grid services, as appropriate. A step-wise process will be developed to establish service relationships, create certification programs, and provide third-party verification of CEA performance.

RESIDENTIAL PROGRAM

Residential New Construction & Retrofits

Program Category	**2.1 Clean Energy Technologies** **2.1.2 Residential Programs** **B. Clean Energy Ally-Driven Services & Offerings**
Description	The Residential New Construction program incentivizes builders, architects, and/or developers to exceed code compliance and prioritize energy efficient design and whole house energy performance in the construction of new housing. This offering was introduced in PY17, and continues into the new program period. Engineering design support will be offered to incorporate EV charging, connected appliance and energy storage, where applicable. **New Construction Measures** • Lighting • HVAC • Appliances • Building Envelope • Energy Storage • Connected Devices / Appliances • EV Chargers
Target Audience	• Developers - single family and multifamily • Architects and engineers • Clean Energy Allies
Barriers	• Lack of understanding about how energy is used in the home • Lack of understanding as to which technology is the most appropriate for home • Quality of system design, equipment and installation • Trust and credibility of providers • Operational knowledge and maintenances of technologies
Cost	TOTAL TRIENNIAL INCENTIVE BUDGET: Base $180,000. Actuals vary based on projects serviced measures included.
Benefits	Ability to influence developers in the design phase and ensure that most efficient products are not value engineered out of construction.
Implementation	Utilizing internal resources and our CEAs, Hawai'i Energy will guide the process for the customer to implement energy retrofits and other improvements, such as installation of energy-efficient products, appliance and equipment replacements, building envelope upgrades, and grid services, as appropriate. A step-wise process will be developed to establish service relationships, create certification programs, and provide third-party verification of CEA performance.

RESIDENTIAL PROGRAM

Behavior Engagement

Program Category	**2.1 Clean Energy Technologies** **2.1.2 Residential Programs** **C. Behavior, Energy Insights and IDSM Optimization Services**
Description	The Home Energy Report program is a continuation of a behavior-based program launched in 2011, distributing quarterly printed reports to eligible customers. The reports compare their energy usage to that of similar households. The objective of the HER program is to provide relevant energy efficiency education and awareness to residential customers to encourage them to undertake energy-saving measures and behaviors. In addition, the HER program is a gateway program for residential customers to access other Hawai'i Energy offerings. In PY18, Hawai'i Energy completely revamped these reports with improved analytics, more reliable content, and an emphasis on positive feedback, consistent with industry best practices. These new reports will give residents a deeper understanding of their energy use, patterns, and where they might improve. Hawai'i Energy will leverage our existing energy behavior engagement platform and home energy reports to support awareness and adoption of clean energy technologies (EVs, PV + storage and high efficiency technologies). Using the reach, experimental design structure, and data-driven capabilities of the program the ability to target, tailor, and test the effectiveness of energy-transition technology messaging can be more swiftly, flexibly, and cost-effectively conducted with confidence.
Target Audience	• Residents – single family and multifamily dwellings
Barriers	• Lack of understanding about how energy is used in the home • Lack of understanding as to which technology is the most appropriate for home
Cost	TOTAL TRIENNIAL INCENTIVE BUDGET: $4,303,000
Benefits	TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): 31,165,614 TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): 10,573
Implementation	Individual customer reports are mailed to eligible households throughout the program year, and an electronic version is sent to customers with an email address on file. Eligibility is determined by the household's energy profile (usage and duration of active electric account), which is then grouped and compared with similar households based on energy usage, square footage, vintage of home, and weather data.

RESIDENTIAL PROGRAM

Advanced Energy Insights and Energy Optimization

Program Category	**2.1 Clean Energy Technologies** **2.1.2 Residential Programs** **C. Behavior, Energy Insights and IDSM Optimization Services**
Description	This program provides a free installed home energy monitor to eligible customers. The objective of the Advanced Energy Insights Program is to collect and analyze information regarding device and equipment patterns in Hawai'i homes to support energy saving communications and measurements. The program offers real- time, device and whole-home level energy data, machine learning, and human experts to deliver energy insights that are specific to the end-use (e.g. fridge, water heater, HVAC, electronics etc.) through the convenience of a modern smart phone app and increases awareness and market demand to inform targeted technologies for customer and grid benefit. The data collected will allow Hawai'i Energy to explore optimization services for connected devices in order to enhance locational and temporal energy savings to support grid needs. Optimization services will be primarily targeted to the largest household loads including water heating and cooling, as well as other connected loads suitable for grid services including pool pumps.
Target Audience	• Residents – single family and multifamily dwellings • Clean Energy Allies
Barriers	• Lack of understanding about how energy is used in the home • Lack of understanding as to which technology is the most appropriate for home
Cost	TOTAL TRIENNIAL INCENTIVE BUDGET: $1,545,000
Benefits	Savings will vary based on number of participants and actions taken. Additional insight from real-time energy data will help program build residential load profiles and improve targeted program design.
Implementation	Hawai'i Energy will incentivize the purchase and installation of the monitors through our CEA network. Promotional material will educate consumers on the devices' energy saving benefits.

RESIDENTIAL PROGRAM

Demand Response

Program Category	**2.1 Clean Energy Technologies** **2.1.2 Residential Programs** **D. Grid Service-Ready Support**
Description	Currently, the Hawaiian Electric Companies are in the process of rolling out new Demand Response (DR) programs as well as finishing the competitive bidding process for Grid Services Utilizing Demand-Side Resources. Hawai'i Energy is committed to providing foundational incentives to promote grid service capable technologies that can be installed today, so that they are advanced enough to adapt to future utility programs and optimize customer savings while minimizing negative impact to the grid. It is important that programs help prepare customers for future programs offered by the utility, particularly when customers are making purchasing decisions on equipment with a long lifetime that can run 10 to 20 years. The Program will develop targeted initiatives to increase the penetration of efficient equipment and smart devices to provide customer benefits and support grid services. Technologies may include: • Smart thermostats • Energy monitors and smart devices • Grid interactive water heaters • Heat pump water heaters with controls
Target Audience	• Residents – single family and multifamily dwellings • Residents in geographies with specific grid needs • Clean Energy Allies
Barriers	• Limited penetration of controlled technologies in households • Lack of interval data • Lack of understanding as to which technology is the most appropriate for home
Cost	TOTAL TRIENNIAL INCENTIVE BUDGET: $838,000
Benefits	Increased penetration of flexible, controllable load.
Implementation	o **Smart thermostat** technologies that provide both energy efficiency and enable demand response participation for homes will be incentivized through our retail programs and clean energy allies. o **Support Energy Monitors and Smart Devices:** Hawai'i Energy will increase its metering and monitoring support for customers in order to provide them access to more granular energy usage data. The Hawai`i Energy Program will also benefit by having increased data for program design, marketing and implementation.

- **Grid-Interactive Water Heaters:** Hawai'i Energy will also continue to support targeted grid-interactive water heaters installations. The overall water heating strategy will be implemented in collaboration with utility demand response initiatives to ensure alignment with grid service objectives.
- **Heat Pump Water Heaters (HPWH):** The Program will accelerate heat pump water heater incentives with added bonuses for controls. Water heating is the largest electrical load in residential homes in Hawai'i. For homes that are not viable candidates for solar water heating – or that have existing PV systems – heat pump water heaters are a cost-effective and proven solution for the replacement of demand-intensive standard electric water heaters.

RESIDENTIAL PROGRAM

Customer-Sited Energy Storage

Program Category	**2.1 Clean Energy Technologies** **2.1.2 Residential Programs** **D. Grid Service-Ready Support**
Description	Energy storage is becoming a vital way to integrate increased distributed generation into our island grid. Of the various storage technologies, battery storage can be used to provide a variety of services at the bulk system, transmission and distribution as well as behind the meter. Some of the customer benefits include emergency back-up, utility load peak shaving and capturing excess PV generation for on-site use or grid export. With geographic, social equity and resilience aspects in mind, incentives for battery storage will be designed to align customer and grid benefits.
Target Audience	• Residents – single family • Residents in geographies with specific grid needs • Clean Energy Allies
Barriers	• Cost • Infrastructure limitations (i.e. smart inverters/aggregators for grid services, virtual power plants, etc.)
Cost	TOTAL TRIENNIAL INCENTIVE BUDGET: $1,035,488
Benefits	Utility peak demand savings based on pre-programmed operating procedures.
Implementation	Residential energy storage projects are defined as being on a residential 'R' schedule and have a rated power output less than 10kW. Full technical specifications and program requirements will be developed based on an initial pilot in early PY19. Hawai'i Energy looks to incentivize early adopters to change energy consumption behavior to be more grid friendly during utility peak hours. These initiatives anticipate drawing upon the "nudge unit" resources of the behavioral science techniques to position and test approaches that navigate known challenges in the role of customer choice, perspective, and support and concerns for programs and rate options. Pilot programs will reference battery incentive programs in operation in other jurisdictions, including: Massachusetts, Sacramento Municipal Utility District (SMUD), California Self-Generation Incentive Program, and NV Energy.

RESIDENTIAL PROGRAM

Electrification of Transportation

Program Category	**2.1 Clean Energy Technologies** **2.1.2 Residential Programs** **D. Grid Service-Ready Support**
Description	There is a significant lack of access to charging stations for residents who live in multifamily dwellings. Customers in this situation may wish to purchase an electric vehicle but choose not to due to lack of vehicle charging infrastructure. Hawai'i Energy will leverage existing relationships with multifamily building owners and property managers to overcome barriers to charge station installations, while also identifying further opportunities for cost savings through energy efficiency projects.
Target Audience	• Residents – multifamily • Clean Energy Allies
Barriers	• Cost • Lack of infrastructure
Cost	TOTAL TRIENNIAL INCENTIVE BUDGET: $641,017
Benefits	Increased penetration of electric vehicles and access to charging data.
Implementation	The program will build off the PY18 EV charging pilot to expand into multifamily unit dwellings. Hawai'i Energy's EV charging rebate program criteria aims for maximum utilization of charger equipment by stalls with access beyond a single resident. Access to vehicle charging infrastructure will become a greater issue as the market expands and demand is expected to grow throughout the triennial period.

ACCESSIBILITY AND AFFORDABILITY

ACCESSIBILITY & AFFORDABILITY INITIATIVES

Targeted Single & Multi-Family Direct Install
Multi-Family Appliance Trade-Up & Comprehensive Building Retrofits
Heat Pump Water Heating

Program Category	**2.2 Accessibility & Affordability** **2.2.2 Incentive Offers** **A. Targeted Single & Multi-Family Direct Install** **B. Appliance trade-up and Comprehensive Building Retrofits** **3 Heat Pump Water Heating**
Description	The Community-Based Energy Efficiency (CBEE) program provides a holistic framework for communities to access bundled services of energy-saving opportunities, installation services, grid services, and access to program incentives with a turn-key delivery approach. The objective of CBEE is to increase adoption of energy efficiency solutions in hard-to-reach communities. CBEE will be administered using internal resources for program management services and implemented by clean energy allies and other supply chain providers. **DELIVERY STRATEGY:** **Community Collaboration Strategy** The foundation of CBEE will be the collaborative efforts reaching across public/private entities and community groups. The program will listen to and engage local organizations and agencies to evaluate the appropriate services, supply chain management logistics, and measures to implement in the community. The program will deliver market transformation efforts in education, outreach, and workforce development to further define a community's needs through energy literacy events and enhanced engagement initiatives (refer to sections in *Economic Development & Market Transformation*). **Hard-to-Reach Housing Strategy** *Multifamily & Single Family Direct Installation Services* This program will expand the traditional multifamily-centric direct installations into more single family retrofit services. The program will continue turn-key installation of energy-saving technologies, such as high efficiency light bulbs, showerheads, faucet aerators and advanced power strips for energy management. Also, while providing the in-unit installations, a home energy audit will be completed to find additional energy savings and split incentive opportunities. This includes properties with individually-metered residential accounts and commercial master-metered accounts. The program will continue to work with trade ally (channel partners) to deliver the services. All measures will be installed with no customer co-pay. **Split-Incentive Strategy** The program will engage landlords and property managers to support investments in high efficiency appliances, water heating equipment, and grid

	services for in-unit and common areas of both individual and master-metered buildings. *Bulk Purchase* The program will enhance existing bulk purchase programs by increasing alignment with the replacement cycle of inefficient appliances. Hawai'i Energy will continue to offer bulk purchase of ENERGY STAR appliances (with trade-in and recycling) for refrigerators, efficient clothes washers, dryers, and air conditioners to hard-to-reach customers at a significantly reduced price to increase affordability for hard-to-reach customers. *Water Heating Direct Install* Water heating is typically largest residential load in Hawai'i households. Through audit services and CEA involvement, the program will identify and assess opportunities for solar thermal and heat pump water heaters, both centralized and in-unit systems, to afford significant energy savings and address potential market and technology barriers. *Grid Services* In support of electric grid planning initiatives, the program will assess areas capable of piloting grid services Technologies will include demand response, energy storage, energy optimization, and electrification of transportation (refer to sections in the *Clean Energy Technologies* and G*rid Service Ready Programs*). **Data Services** Data may be collected on participant demographic to evaluate program impact, level of service, and design of custom programs. Metrics will be developed measuring energy and non-energy program benefits that best achieve desired outcomes for low-income and HTR customers. The data may also be utilized to inform systems mapping of the high-performing community action groups and service providers. **Participation & Incentive Strategy**: Participation and unit incentives are detailed in Appendix C
Target Audience	**LOW-INCOME AND HARD-TO-REACH COMMUNITIES** • Low-income households (e.g., Asset-Limited Income-Constrained Employed (ALICE) and poverty-level) • Rural communities • Senior/elderly community (kupuna), military, agricultural business, small business, non-profit, transitional, and other underserved, vulnerable populations
Barriers	**BARRIERS TO IMPLEMENTATION** • Split incentives where tenants benefit from energy efficiency measures whose costs are born by the landlord • Lack of awareness of the financial and environmental benefits of energy efficiency among the LI/HTR communities • Lack of awareness of Hawai`i Energy's services

	• Insular communities that are suspicious of external organizations and services • Competing needs for household and business time and budget (basic necessities) • Challenge in identifying and reaching residential and commercial budget decision-makers • Slow development of relationships with related community action organizations and with hard-to-reach residents and business
Cost	TOTAL TRIENNIAL DIRECT INCENTIVE BUDGET: **$7,469,000** • Increased allocation for direct incentive • Increased allocation for non-incentive needs to fund: o Staff research o Networking and developing individual and organizational community partnerships o Outreach & education o Data collection o Studies and strategic planning o Other administrative expenses **STAFFING** • Project Management: residential and commercial energy advisors and program managers who reach out to single-family and multi-family dwellings, small businesses, non-profits, and other hard-to-reach segments to deliver turnkey services, strategies and programs bundled to maximize low-income energy efficiency benefits, energy savings and participation and tailored to the needs of local communities. Hawai'i Energy will coordinate delivery with other organizations with existing relationships to LI/HTR markets to best align and scale programs impacts and energy literacy. • One full-time A&A Program Manager in PY19 to oversee research, program development, and program delivery. • One Assistant Program Manager by PY20 to provide support and implementation role • Marketing & Communications: marketing collateral (including website development, flyers and brochures, audio/video, and lead generation) **MARKET TRANSFORMATION** • Educational events, workshops, and training events to residential and commercial customers, especially focused on decision-makers **THIRD-PARTY** • Strategic partnerships with community action groups serving LI/HTR communities (see "Potential Partners" listed below) • Clean Energy Allies and other contractors to provide energy efficient products, conduct energy audits, and conduct retrofitting and outfitting

	• Third-party consultants for industry research and planning
Benefits / Projected Impact	**ENERGY SAVINGS:** TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): **3,308,000** TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): **763** **NON-ENERGY BENEFITS AND OTHER IMPACTS:** Accounting for non-energy benefits (NEBs) allows for the full value of energy efficiency to be captured. The benefits accrues to the utility, energy efficiency project and its program participants, and to society at large. Regulators seek to ensure that energy efficiency programs are cost-effective and therefore compare the benefits of EE programs against the cost of delivering the programs. Examples of NEBs include: **To the utility:** o Reduced shut-offs/reconnections, carrying cost of arrearages, bad debt, collection costs, and ancillary services costs o Improved power quality and reliability o Lower transmission and distribution costs **To the program participants:** o Empowered control over electricity and water bill savings and energy decisions o Fewer shutoffs and reconnections o Improved indoor air quality, improved health, reduced absenteeism at work and school o Improved comfort o Improved property values, aesthetics and appearance o Lower operating and maintenance costs o Improved employee productivity and retention o Reduced tenant turnover **To society-at-large** o Economic development benefits, e.g., stronger local economy, jobs creation, increased personal income and savings, and state GDP benefits o Preservation of affordable and low-income housing o Improved air quality, reduced healthcare costs o Environmental impact mitigation o Attract businesses in clean energy, efficiency sectors o Increased energy security o Increased partnerships, cross-collaboration, and mutual benefits among like-missioned organizations

Implementation

Infrastructure/ Implementation Requirements

Budget allocated will fund direct incentives and technical assistance for the following measures:

Multifamily & Single Family Direct Install

- Tier I (master device) Advanced Power Strips
- Water Efficiency Devices
  - Bathroom Faucet Aerator
  - Kitchen Faucet Aerator
  - Low Flow Showerhead (Fixed)
  - Low Flow Showerhead (Handheld)
- LED
  - A19
  - B11 Candelabra
  - G25 Globe
  - Other Specialty Lamps, as appropriate
- Project Direct Cost (Installation Cost & Site Visit Fee)

Bulk Purchase

- Refrigerator (with recycling of old)
- Clothes Washers
- Clothes Dryers
- Window AC with Recycling

Water Heating Direct Install

- Solar Water Heating
- Heat Pump Water Heating

Home Energy Audit Services

Market Transformation

- Community Energy Literacy Workshops
- Youth Education Workshops
- Enhanced Engagement efforts through surveys and gamification learning environments
- Research/studies and strategic planning on low-income and hard-to-reach communities

Grid Services

- Demand Response
- Energy Storage
- Electrification of Transportation

Best Practices / Baseline Programs to Reference

(1) Efficiency Vermont/VEIC:

Low-Income Electrical Efficiency Program (LEEP)

(www.efficiencyvermont.com/services/income-based-assistance/energy-bill-reduction)

The LEEP Program is open to homeowners and renters with household incomes not exceeding 80% of state median income. LEEP has two tracks: one that leverages Vermont's Weatherization Assistance Program (WAP) agencies; and another program that offers a targeted High Use Program for income-eligible households that use more than 10,000 kWh per year. These efforts include:

- Contracting with state's WAP agencies to install energy efficiency measures in income-eligible single- and multi-family homes referred by WAP.
- Identifying high electric use homes for the Targeted High Use Program
- Using WAP Energy Coaches to conduct energy education, assess whole-house electric efficiency opportunities, conduct walk-throughs, directly install measures, and coordinate with contractors to install energy efficient appliances and HVAC equipment at no cost to the customer.

Results:

- In 2015-2017, LEEP delivered average savings of 1.67 MWh and $1,250 in incentives per home, with an average program yield of $746/MWh.
- Installed measured result in long-term cost-reductions and also met Efficiency Vermont's societal cost-benefit test due to 15% low-income and 15% non-energy benefits adder. Heat pump technology results in $50-100 reduction in monthly electricity bills for customers previously electric resistance space and water heating.
- LEEP reduced energy burdens by providing whole-house direct-installation services and pays for the cost of energy coaching while creating minimal disruption for customers because energy coaches manage the projects.
- WAP partnerships lead to analysis of energy reduction opportunities that may not otherwise be achieved if delivered independently of each other.
- Forming partnerships with affordable housing, health, and weatherization agencies was pivotal in expanding organizations' services and ability to reach low-income. Also, using market opportunities to expand impact by piggy-backing on low-income housing rehab programs when funding allows.
- Flexibility in funding use relative to complying with metrics was key in reaching program goals.

(2) New York State Energy Research and Development Authority (NYSERDA)

EmPower New York is a comprehensive energy efficiency program that provides no-cost electric reduction and home performance measures to low-income household. Its goal is to achieve a 6% energy burden for low-income customers. It's open to homeowners and renters of one- to four-family homes and tenants of multi-family dwellings. (www.nyserda.ny.gov/empower)

Services include:

- Home energy assessment, in-home energy education, air sealing, insulation, health & safety assessment, heating system clean and tune, replacement of inefficient appliances, efficiency lighting and low-flow devices. Average project cost is $4000, with a cap of $7,500 per project. Program also uses costs caps on measures to control costs.

Results:

- EmPower served more than 140,000 households and provides long-term energy/bill savings in addition to address health and safety issues.
- It allowed NY State and its utilities to leverage administrative cost savings, avoid redundancy, provide a consistent level of service for customers statewide, simplify coordination with other programs (e.g., WAP and HEAP), and be responsive to priorities (e.g., storm response).
- Delivery infrastructure can be leveraged to test other interventions or delivery models for low-income customers such as solar, smart thermostats, and DR opportunities.
- Close coordination with utilities, human service agencies and communities was essential for raising awareness.
- Flexibility in delivery is key
- Focus on participant and contractor experience is important. Used LEAN on operational elements to SIMPLIFY participation and REDUCE administrative time and costs for the program and participants.

(3) Massachusetts Low-Income Energy Affordable Network (LEAN)

LEAN is a network of individual non-profit agencies that provides comprehensive weatherization, appliance efficiency, and heating system measures and services to eligible low-income households in MA regardless of the fuel used at no cost to the customer served. The network delivers this under the federal WAP. The program installs LED lightbulbs, replaces inefficient appliances, weatherized the building envelope, performs minor related repairs, and also tunes up, repairs, or replaces inefficient or inoperative heating systems.

Eligibility:

- All households with income at or below 60% of state median income
- Customers in multifamily dwellings of all sizes in which 50% or more of the tenants are income eligible.
- LEAN and program administrators (PAs) currently piloting delivery of no-cost energy services to households between 60-80% of median income in order to overcome the barriers these households face in accessing the non-low-income rebate programs.

Results:

- Single point of contact services, facilitating ease of application and providing a full scope of whole-building services while addressing barriers that are common to low-income programs.

Provides quality-controlled end-to-end management at no cost to the customer.

Potential Partners

- Aloha United Way and its Cohort Program organizations
- Hawai`i Leadership Forum
- Hawai`i Community Foundation
- Ulupono Initiative
- Blue Planet Foundation
- Hawaiian Electric Companies
- Economic Development Boards
- DBEDT/State Energy Office
- University of Hawai`i behavioral science faculty/students
- Hawai`i Association of Community Based Economic Development (HACBED), Office of Human Services, Office of Elderly Services, Hawai`i Public Housing Authority, Hawai`i Homeownership Association, etc.)
- Clean Energy Allies and other contractors to provide energy efficient products, conduct energy audits, and conduct retrofitting and outfitting

Program Eligibility

Based on income-eligibility, energy usage, geographical location, customers already vetted and served by potential partner organizations, industry segment, size of facility, and other criteria based on program parameters

Time to Market

Single-family, multi-family, small business and non-profit direct install programs will continue to be delivered in PY19 with enhanced outreach and increased numbers of: customers reached, communities served, achieved savings, and collaborative partnerships developed.

ACCESSIBILITY & AFFORDABILITY INITIATIVES

Nonprofit Program - *EmPOWER Hawai'i Project*

Program Category	**2.1 Accessibility & Affordability** **2.2.2 Incentive Offers**
Description	Nonprofits often face a unique set of challenges in implementing energy efficiency projects, including (but not limited to) a lack of capital, staffing, and technical expertise. The EmPOWER Hawai'i Project is a packaged offering that seeks to address some of those challenges and make it easy for nonprofits to participate in energy efficiency. Similar to the Energy Advantage program, EmPOWER offers higher customer rebates for the installation of energy efficient measures, promoting market uptake of these technologies by greatly reducing or eliminating first costs. Over the course of 8-10 months, Hawai'i Energy trains participants in a cohort structure to encourage cohesiveness and inter-organizational collaboration. Workshops are designed for facility managers with little to no technical background, help build understanding of the process of working with contractors and Hawai'i Energy, and promote behavior transformation within each organization. Cohort members gather to share best practices, issues and successes throughout their experiences. The offer aims to provide participants with a holistic experience in regards to energy efficiency and increases the value of Hawai'i Energy as a trusted advisor. To achieve this, Hawai'i Energy pairs participants with the Clean Energy Ally network and fosters relationship building across the industry. **Key Offer Components:** • Free facility audit to identify best opportunities for energy savings • Assistance with developing an Request For Proposal for services • Pairing participants with local contractors (Clean Energy Ally network) • 4-5 educational sessions on basic concepts of energy usage for commercial facilities, such as load profile and demand charges, efficiency vs. renewables, and interpretation of billing data • Higher incentives for energy-saving measures
Target Audience	Hawai'i-based nonprofits that: • Possess tax-exempt, 501(c)(3) status • Are high-usage organizations with significant opportunities to reduce energy costs • Provide services of significant need or reach, particularly vulnerable populations • Own their own facilities and have ability to easily make capital improvements • Have never participated with or received a rebate from Hawai'i Energy before • Can designate two (2) "champions" at the organization to serve as points of contact throughout the program, attend sessions, and keep the rest of the team updated as needed throughout the project • Are willing to commit at least 10 hours of time to the program

Barriers	• Limited budgets for overhead costs o Donors typically prefer to directly fund mission-focused services, rather than facility improvements • Oversight of energy efficiency savings as a resource option for funding • Lack of awareness of financial assistance available for energy efficiency work (i.e. Hawai'i Energy rebates, PPA financing, green loans & grants, etc.) • Constraints on decision-makers' time • Limited lighting opportunities, but other equipment potential (Hawai'i Energy constraint) • Lack of customer technical expertise
Cost	TOTAL TRIENNIAL INCENTIVE BUDGET: **$850,000**
Benefits	TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): **2,415,000** TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): **240**
Implementation	**Required Infrastructure** **Internal Staffing** Ideal: Single full-time Business team staff member or allowance of more current staffing hours for EmPOWER Job duties include: selecting and oversee cohort, training sessions, developing an RFP, scheduling (with the nonprofits, on-call, 1-on-1), etc. • Transformational team – tracking of workshop hours • Marketing & Communications – for relationship building, lead generation, strategic outreach for recruitment • Engineering team – pre- and post- project analysis of energy and billing data **IT** Website design/development/maintenance, applications, Salesforce updates **Third-Party Contractors** CEAs are needed to bid for projects and work within nonprofit means **Application Process** Maintenance of application, selection rubric, staffing to select cohort participants, etc. **Other** Venue spaces and equipment/supply budget to host informational meetings, orientation, training sessions, etc. **Scale** Several options for scaling outlined below: 1. Increase number of participating organizations (grow steadily over 3 years) 2. Create "Level 2" course for participants still in need of tailored support after completing first year requirements 3. Expand increased rebate offerings outside of lighting to HVAC, etc. All options dependent on staffing and budget.

Baseline Programs to Reference

- Grant funding and post-reporting is typical of other nonprofit program structures
- Energy Outreach Colorado: Nonprofit Energy Efficiency Program (NEEP) https://www.energyoutreach.org/programs-for-organizations/non-profit-energy-efficiency/
    - Project management, energy audits, management of contractor quotes, navigation of rebates/funding sources, energy conservation education, equipment replacement (lighting, insulation, HVAC, low-flow fixtures, etc.)

Other Nonprofit Programs:

- EmPOWER Maryland: BGE Smart Energy Savers Program https://bgesmartenergy.com/business/business-sectors/nonprofit
    - Lighting retrofits, personal occupancy sensors and power strips, HVAC equipment, building tune-up services on existing HVAC and controls
- Community Foundation for Greater Atlanta: Grants to Green http://cfgreateratlanta.org/nonprofits/available-grants/grants-to-green/

Funding for labor costs association with implementation, HVAC, water-efficient fixture replacement, lighting retrofits, building envelope improvements (air sealing, insulation), solar energy projects, new construction on a per case basis

Potential Partners

- Clean Energy Allies
- Topical Experts – help to teach sessions, experts in the industry
    - Measures, financing, etc.
- Additional funding partners
- Nonprofit "hubs" (membership)
    - Hawai'i Association of Nonprofit Organizations (HANO)
    - Aloha United Way (AUW)
    - Hawai'i Community Foundation
    - Media Partners (TV, Radio, Print, News)

ACCESSIBILITY & AFFORDABILITY INITIATIVES

Energy Advantage

Program Category	**2.1 Accessibility & Affordability** **2.2.2 Incentive Offers**
Description	Small to medium size businesses make up a large percentage of any utility's customer base, and the same is true in Hawai'i. According to a study by PG&E in 2016, small customers dominated the office, retail, and restaurant sectors. Moreover, the American Council for and Energy-Efficient Economy, states that small-to-medium commercial customers represent 90% of US businesses and consume about 20% of US energy. The Energy Advantage program is designed to address some of the key barriers to small business participation by providing the following: • A simplified offering through direct installation of energy efficient equipment (LED Lighting, expansion to HVAC upgrades); • Enhanced rebates from traditional commercial program offerings to improve the ROI; • Development of specific contractor base that understands the target customers and effectively markets to this group; • Recruitment of contractors that can market to specific cultures in their native language; • Significant reduction in upfront capital required by the customer as their cost to the contractor is net of the rebate. In some cases, the contractor will spread that upfront capital amount over several months to address this barrier; and • Ongoing training from Hawai'i Energy to help these contractors communicate the value of energy efficiency to key decision makers in a way that addresses their pain points and priorities.
Target Audience	The Energy Advantage program targets the following customer base: • Schedule G – 47,000+ small commercial rate schedule customers (defined by the Hawaiian Electric Companies) • Master-metered small businesses less than 5,000 sq.ft. • Restaurant customers under any rate schedule • Common areas for multifamily hard-to-reach properties **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 shown to be effective to get attention and participation with the ability to then gather information on the restaurant equipment and operations that can lead to greater energy savings through other programs such as the ENERGY STAR® Kitchen equipment program. **Landlords**

	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 that are taking tax credits. 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. **Multifamily Hard-To-Reach** Common areas for multifamily hard-to-reach properties have historically low participation in traditional rebate programs. This sector was added to the Energy Advantage portfolio in PY2018 to aid in alleviating financial and organizational barriers that may exist. In addition, opportunities in some multifamily facilities will overlap with the residential Energy Smart 4 Homes program (ES4H), providing a unified residential and commercial offering to a single facility.
Barriers	• Lack of time and/or expertise to engage in areas not directly related to their core business • Split-incentives between tenant and landlord make it difficult to motivate customers to implement energy efficiency projects • Multiple levels of decision makers (landlords, property managers, resident managers etc.) delay project progress • Projects often have a longer Return on Investment (ROI) due to shorter operating hours • Lack of access to capital - Customers lack capital for energy efficiency investments and often prioritize non-energy projects or energy projects with shorter term paybacks over more comprehensive upgrades
Cost	TOTAL TRIENNIAL INCENTIVE BUDGET: **$8,463,000**
Benefit	TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): **24,909,000** TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): **2,490**
Implementation	**Required Infrastructure** **Staffing** • Business Team – Energy Advantage processes, contractor management • Marketing & Communications – lead generation, website design/development/maintenance, collateral, audio/visual support **IT Systems** The Energy Advantage program is currently being served by two systems – AMPLIFY and Salesforce. Updates and improvements were made to AMPLIFY within the PY17-18 years in which mobile responsivity and tools, such as document generation, signature capturing and photo capabilities, were added. IT staffing and additional funding is required for expanded functionality in AMPLIFY – additional energy efficiency measures (HVAC), integrate control systems, streamlining rebate application process, and

maintenance of current functionality.

Third-Party Contractors
Clean Energy Allies – Energy Advantage approved Participating Contractors

Application Process
Maintenance of Energy Advantage documents (application, commitment letter, etc.)

Other
Venue space to host contractor annual meeting

Audio/Video capabilities for contractor orientation training, webinar series, training videos, etc.

Scale
In previous years a range of 600-1000 projects have been completed annually, dependent on budget and savings goals. The Program intends to continue this trend in the future.

Baseline Programs to Reference
Ameren Illionois Act on Energy: https://www.amerenillinoissavings.com/for-my-business/explore-incentives/small-business-incentives

- Free energy assessment
- Increased incentives
- Program Ally driven
- Receive a free smart thermostat through online store when completing an energy assessment
- Black Hills Energy: https://www.blackhillsenergy.com/rebates-energy-efficiency-programs/energy-efficiency-programs/small-business-direct-install-program
- Increased incentives
- Free energy assessment
- Trade ally network

Potential Partners
- U.S. Small Business Administration
    - Hawai‘i Small Business Development Center
- Chamber of Commerce
- Cultural Quad Chamber of Commerce Groups (Japanese, Chinese, Korean, Filipino)
- Financial Institutions
- Clean Energy Ally network
- Board of Water Supply
- Hawai‘i State Energy Office
- Hawai‘i Green Business Program

ACCESSIBILITY & AFFORDABILITY INITIATIVES

ENERGY STAR® Commercial Kitchen Equipment

Program Category	**2.1 Accessibility & Affordability** **2.2.2 Incentive Offers**
Description	**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
Target Audience	Restaurants and commercial kitchens
Barriers	• Traditionally low participation rate, low saturation rate of high efficiency equipment • Lack of time and/or expertise to engage in areas not directly related to their core business • Lack of access to capital – smaller profit margins • Difficulties in scheduling capital improvements – long hours of operation
Cost	TOTAL TRIENNIAL INCENTIVE BUDGET: **$1,026,000**
Benefits	TOTAL TRIENNIAL 1ST YEAR ENERGY SAVINGS (kWh): **3,845,000** TOTAL TRIENNIAL 1ST YEAR DEMAND SAVINGS (kW): **660**
Implementation	**Infrastructure Needs to Implement** **Staffing** Business team – staff member dedicated to implement incentive programs, provide Commercial Kitchen training, etc. • Transformational team – tracking of workshop/training hours • Marketing & Communications – lead generation, relationship building, strategic marketing **Third-Party Contractors** Equipment distributors, installers, Clean Energy Ally network **Other** Venue spaces and equipment/supply budget to host training sessions, etc. **Baseline Programs to Reference**

- Ameren Illinois – Act on Energy: https://www.amerenillinoissavings.com/for-my-business/explore-incentives/commercial-kitchens-incentives
    - Cash incentives for ENERGY STAR® certified kitchen equipment upgrades, water heaters, solid or glass door freezers, lighting upgrades
- Focus on Energy: https://www.focusonenergy.com/programs/commercial-kitchen-equipment
    - Standard incentive programs for the purchase of new commercial kitchen equipment and the retrofitting of existing equipment.
    - Midstream Commercial Kitchen Equipment Program
- CEE Commercial Kitchens Program Summary: https://library.cee1.org/content/commercial-kitchens-program-summary/
    - Listing of all specifications and incentive levels in 2018

Commercial Kitchens Initiative: https://forum.cee1.org/content/commercial-kitchens-initiative-description

Potential Partners

- Culinary institutes/schools
- Hawai‘i Restaurant Association
- Pacific Gateway Center
    - Culinary Business Incubator
- Board of Water Supply
    - Water conservation measures in restaurants & commercial kitchens
- Hawai‘i State Energy Office
    - Hawai‘i Green Business Program
    - Clean Energy Ally network

Appendix C
Summary Presentation of Programs

MEASURE PARAMETERS

Program / Measure	PY19 Quantity	PY19 Incentive per Unit	PY19 Average Demand Savings per Unit (kW)	PY19 Average Energy Savings per Unit (kWh)	PY20 Quantity	PY20 Incentive per Unit	PY20 Average Demand Savings per Unit (kW)	PY20 Average Energy Savings per Unit (kWh)	PY21 Quantity	PY21 Incentive per Unit	PY21 Average Demand Savings per Unit (kW)	PY21 Average Energy Savings per Unit (kWh)	Unit	Measure Life (years)
HAWAII ENERGY INCENTIVES														
BUSINESS PROGRAM														
BEEM														
Accounting														
Contractor Bonus	150,000	$ -	-	-	200,000	$ -	-	-	250,000	$ -	-	-	dollars	1
Building Envelope														
Window Film - New	50,000	$ 0.85	0.001	4.870	50,000	$ 0.85	0.001	4.870	50,000	$ 0.85	0.001	4.870	sqft	10
Window Film - Replacement	22,711	$ 0.43	0.001	4.870	22,711	$ 0.43	0.001	4.870	22,711	$ 0.43	0.001	4.870	sqft	10
HVAC														
A/C & Condensing Units: Packaged (Tier 1) - Air Cooled	221	$ 100.00	0.152	1,032.736	227	$ 100.00	0.152	1,032.736	159	$ 100.00	0.152	1,032.736	tons	15
A/C & Condensing Units: Packaged (Tier 2) - Air Cooled	35	$ 175.00	0.133	901.411	38	$ 175.00	0.133	901.411	27	$ 175.00	0.133	901.411	tons	15
A/C & Condensing Units: Packaged VRF - Air Cooled (Existing Facility)	49	$ 250.00	0.049	304.764	50	$ 250.00	0.049	304.764	35	$ 250.00	0.049	304.764	tons	20
A/C & Condensing Units: Packaged VRF - Air Cooled (New Construction	7	$ 250.00	0.058	394.980	7	$ 250.00	0.058	394.980	5	$ 250.00	0.058	394.980	tons	20
A/C & Condensing Units: Split (Tier 1) - Air Cooled	23	$ 100.00	0.271	1,841.560	23	$ 100.00	0.271	1,841.560	16	$ 100.00	0.271	1,841.560	tons	15
A/C & Condensing Units: Split (Tier 2) - Air Cooled	8	$ 175.00	0.238	1,612.350	8	$ 175.00	0.238	1,612.350	6	$ 175.00	0.238	1,612.350	tons	15
A/C & Condensing Units: Split VRF - Air Cooled (Existing Facility)	286	$ 250.00	0.096	650.117	286	$ 250.00	0.096	650.117	200	$ 250.00	0.096	650.117	tons	20
Chiller - Air Cooled	1,105	$ 45.00	0.035	434.723	994	$ 45.00	0.035	434.723	795	$ 45.00	0.035	434.723	tons	22
Chiller - Centrifugal	2,576	$ 45.00	0.005	622.666	2,318	$ 45.00	0.005	622.666	1,855	$ 45.00	0.005	622.666	tons	22
Chiller - Positive Displacement	1,245	$ 45.00	0.014	593.409	1,245	$ 45.00	0.014	593.409	996	$ 45.00	0.014	593.409	tons	22
Controls: Guest Room Energy Management System	2,242,500	$ 75.00	0.274	872.290	2,018,250	$ 75.00	0.274	872.290	1,614,600	$ 75.00	0.274	872.290	kWh	15
Heat Pumps: Packaged (Tier 1) - Air Cooled	7	$ 100.00	0.243	1,649.660	7	$ 100.00	0.243	1,649.660	6	$ 100.00	0.243	1,649.660	tons	15
Heat Pumps: Split (Tier 1) - Air Cooled	9	$ 100.00	0.271	1,841.560	8	$ 100.00	0.271	1,841.560	7	$ 100.00	0.271	1,841.560	tons	15
Heat Pumps: Split VRF - Air Cooled	227	$ 250.00	0.099	664.099	205	$ 250.00	0.099	664.099	184	$ 250.00	0.099	664.099	tons	20
VFD - Air Handler Fan	178	$ 50.00	0.081	518.730	160	$ 50.00	0.081	518.730	144	$ 50.00	0.081	518.730	hp	15
VFD - Chilled Water Pump	540	$ 80.00	0.115	669.330	486	$ 80.00	0.115	669.330	437	$ 80.00	0.115	669.330	hp	15
VFD - Condenser Water Pump	760	$ 80.00	0.115	669.330	684	$ 80.00	0.115	669.330	616	$ 80.00	0.115	669.330	hp	15
VFD - Garage Exhaust Fan	300	$ 0.12	0.700	1,819.500	240	$ 0.12	0.700	1,819.500	192	$ 0.12	0.700	1,819.500	hp	15
Lighting														
Controls: Occupancy Sensor	2,104	$ 20.00	0.005	36.598	1,683	$ 20.00	0.005	36.598	1,347	$ 20.00	0.005	36.598	sensors	8
Fluorescent: Delamping without Reflectors	270	$ 4.69	0.014	73.480	270	$ 4.69	0.014	73.480	270	$ 4.69	0.014	73.480	lamps	14
LED: A-Series	1,900	$ 2.75	0.013	72.611	950	$ 2.75	0.005	32.268	-	$ 2.75	0.005	32.268	lamps	15
LED: Corn Cob	75	$ 31.25	0.175	936.205	75	$ 31.25	0.175	936.205	75	$ 31.25	0.175	936.205	lamps	15
LED: Corn Cob (Exterior)	95	$ 31.25	0.144	955.516	95	$ 31.25	0.144	955.516	95	$ 31.25	0.144	955.516	lamps	12
LED: Directional (MR16)	645	$ 5.00	0.018	97.590	548	$ 5.00	0.002	12.930	466	$ 5.00	0.002	12.930	lamps	15
LED: Directional (PAR20)	368	$ 5.00	0.013	69.870	313	$ 5.00	0.002	11.260	313	$ 5.00	0.002	11.260	lamps	15
LED: Directional (PAR30)	1,031	$ 5.00	0.019	104.610	876	$ 5.00	0.003	17.780	876	$ 5.00	0.003	17.780	lamps	15
LED: Directional (PAR38)	605	$ 5.00	0.019	102.000	514	$ 5.00	0.004	23.850	514	$ 5.00	0.004	23.850	lamps	15
LED: Exit Sign	288	$ 15.00	0.032	283.300	288	$ 15.00	0.032	283.300	288	$ 15.00	0.032	283.300	signs	18
LED: Linear Type A	55,258	$ 4.50	0.005	29.549	55,258	$ 4.50	0.005	29.549	55,258	$ 4.50	0.005	29.549	lamps	15
LED: Linear Type B	7,220	$ 4.50	0.006	35.140	7,220	$ 4.50	0.006	35.140	7,220	$ 4.50	0.006	35.140	lamps	15
LED: Linear Type C	21,466	$ 8.83	0.006	33.279	10,739	$ 8.83	0.006	33.279	5,376	$ 8.83	0.006	33.279	lamps	15
LED: Refrigerated Case Lighting	177	$ 41.67	0.044	311.934	177	$ 41.67	0.044	311.934	177	$ 41.67	0.044	311.934	fixtures	8
LED: Troffer	16,274	$ 22.33	0.021	110.645	16,274	$ 22.33	0.021	110.645	16,274	$ 22.33	0.021	110.645	fixtures	15
LED: U-bend Type A	290	$ 7.00	0.012	58.174	290	$ 7.00	0.012	58.174	290	$ 7.00	0.012	58.174	lamps	15
LED: U-bend Type B	2	$ 7.00	0.013	66.430	2	$ 7.00	0.013	66.430	2	$ 7.00	0.013	66.430	lamps	15
LED: U-bend Type C	798	$ 11.50	0.015	78.385	798	$ 11.50	0.015	78.385	798	$ 11.50	0.015	78.385	lamps	15
Midstream														
Controls: Occupancy Sensor	24	$ 20.00	0.005	36.598	24	$ 20.00	0.005	36.598	24	$ 20.00	0.005	36.598	sensors	8
Fluorescent: Delamping with Reflectors	5	$ 9.38	0.014	75.040	5	$ 9.38	0.014	75.040	5	$ 9.38	0.014	75.040	lamps	14
LED: A-Series	5,800	$ 2.75	0.014	75.821	2,900	$ 2.75	0.005	31.769	-	$ 2.75	0.005	31.769	lamps	15
LED: Corn Cob	1,433	$ 31.25	0.213	1,139.895	1,433	$ 31.25	0.213	1,139.895	1,433	$ 31.25	0.213	1,139.895	lamps	15
LED: Decorative (Candelabra, 25W)	4	$ 1.50	0.008	45.580	4	$ 1.50	0.001	4.350	4	$ 1.50	0.001	4.350	lamps	15
LED: Directional (MR16)	4,000	$ 5.00	0.018	97.590	3,400	$ 5.00	0.002	12.930	3,400	$ 5.00	0.002	12.930	lamps	15
LED: Directional (PAR20)	1,500	$ 5.00	0.013	69.870	1,275	$ 5.00	0.002	11.260	1,275	$ 5.00	0.002	11.260	lamps	15
LED: Directional (PAR30)	5,700	$ 5.00	0.019	104.610	4,845	$ 5.00	0.003	17.780	4,845	$ 5.00	0.003	17.780	lamps	15
LED: Directional (PAR38)	1,000	$ 5.00	0.019	102.000	850	$ 5.00	0.004	23.850	850	$ 5.00	0.004	23.850	lamps	15
LED: Directional (PAR40)	20	$ 5.00	0.019	102.000	20	$ 5.00	0.019	23.850	20	$ 5.00	0.019	23.850	lamps	15
LED: Exit Sign	2,000	$ 15.00	0.032	283.300	2,000	$ 15.00	0.032	283.300	2,000	$ 15.00	0.032	283.300	signs	18
LED: Linear Type A	177,119	$ 4.50	0.005	29.658	77,119	$ 4.50	0.005	29.658	52,119	$ 4.50	0.005	29.658	lamps	15
LED: Linear Type B	10,464	$ 4.50	0.006	35.288	8,464	$ 4.50	0.006	35.288	6,864	$ 4.50	0.006	35.288	lamps	15
LED: Linear Type C	5,699	$ 8.83	0.006	35.820	2,850	$ 8.83	0.006	35.820	1,425	$ 8.83	0.006	35.820	lamps	15
LED: Refrigerated Case Lighting	140	$ 41.67	0.045	321.802	140	$ 41.67	0.045	321.802	140	$ 41.67	0.045	321.802	lamps	8
LED: Troffer	2,746	$ 22.33	0.026	136.471	2,746	$ 22.33	0.026	136.471	2,746	$ 22.33	0.026	136.471	fixtures	15
LED: U-bend Type A	1,723	$ 7.00	0.011	54.560	1,723	$ 7.00	0.011	54.560	1,723	$ 7.00	0.011	54.560	lamps	15
LED: U-bend Type B	24	$ 7.00	0.013	66.430	24	$ 7.00	0.013	66.430	24	$ 7.00	0.013	66.430	lamps	15
Plug/Process Load														
Case Night Cover	48	$ 10.00	-	48.140	48	$ 10.00	-	48.140	48	$ 10.00	-	48.140	ft	12
Controls: Anti-Sweat Heater	53	$ 40.00	0.036	343.340	53	$ 40.00	0.036	343.340	53	$ 40.00	0.036	343.340	ft	12
Transformers	250	$ 1,750.00	1.500	11,500.000	400	$ 1,750.00	1.500	11,500.000	500	$ 1,750.00	1.500	11,500.000	units	25
Pumps and Motors														
Booster Pumps	250	$ 80.00	0.420	4,414.280	225	$ 80.00	0.420	4,414.280	203	$ 80.00	0.420	4,414.280	hp	15
Booster Pumps - No VFD	30	$ 80.00	0.335	3,523.080	27	$ 80.00	0.335	3,523.080	24	$ 80.00	0.335	3,523.080	hp	15
ECM Fan Motor - A/C Fan Coil	1,400	$ 55.00	0.027	232.140	1,260	$ 55.00	0.027	232.140	1,134	$ 55.00	0.027	232.140	motors	15
ECM Fan Motor - Refrigeration	200	$ 85.00	0.001	9.300	180	$ 85.00	0.001	9.300	162	$ 85.00	0.001	9.300	motors	15
Pool pumps	50	$ 225.00	0.427	3,733.880	45	$ 225.00	0.427	3,733.880	41	$ 225.00	0.427	3,733.880	hp	10
Premium Efficiency Motor - 1800 RPM (4-pole) - TEFC	7	$ 75.00	0.028	46.460	7	$ 75.00	0.028	46.460	7	$ 75.00	0.028	46.460	hp	15
Submetering														
Condominium Unit - Actual Savings	184	$ 150.00	-	-	184	$ 150.00	-	-	184	$ 150.00	-	-	units metered	8
Small Business - Actual Savings	15	$ 150.00	0.240	1,080.000	15	$ 150.00	0.240	1,080.000	15	$ 150.00	0.240	1,080.000	units metered	8
Water Heating														
Heat Pump Water Heater - Replace Electric Resistance Water Heater	2	$ 120.00	0.210	1,644.000	2	$ 120.00	0.210	1,644.000	2	$ 120.00	0.210	1,644.000	units	10
Heat Pump Water Heater - Replace Heat Pump Water Heater	3	$ 65.00	0.030	943.000	3	$ 65.00	0.030	943.000	3	$ 65.00	0.030	943.000	units	10
Solar Water Heater - Replace Electric Resistance Water Heater	4	$ 250.00	1.800	3,108.730	4	$ 250.00	1.800	3,108.730	4	$ 250.00	1.800	3,108.730	systems	18
Solar Water Heater - Replace Heat Pump Water Heater	1	$ 250.00	1.800	3,108.730	1	$ 250.00	1.800	3,108.730	1	$ 250.00	1.800	3,108.730	systems	18
CBEEM														
Commercial Custom														
Custom	128,375	$ 17,009.69	0.000	1.000	128,375	$ 17,009.69	0.000	1.000	128,375	$ 17,009.69	0.000	1.000	kWh	9
Custom Controls	1,343,169	$ 177,969.89	0.000	1.000	1,343,169	$ 177,969.89	0.000	1.000	1,343,169	$ 177,969.89	0.000	1.000	kWh	10
Custom HVAC	3,299,708	$ 437,211.28	0.000	1.000	3,629,679	$ 480,932.41	0.000	1.000	3,629,679	$ 480,932.41	0.000	1.000	kWh	17
Custom Lighting	25,850,000	$ 3,425,125.00	0.000	1.000	20,680,000	$ 2,740,100.00	0.000	1.000	16,544,000	$ 2,192,080.00	0.000	1.000	kWh	12
Custom Miscellaneous	652,732	$ 86,487.03	0.000	1.000	456,913	$ 60,540.92	0.000	1.000	319,839	$ 42,378.64	0.000	1.000	kWh	9
Custom Pumps & Motors	27,010	$ 3,578.83	0.000	1.000	24,309	$ 3,220.94	0.000	1.000	21,878	$ 2,898.85	0.000	1.000	kWh	14
Custom Refrigeration	419,833	$ 55,627.87	0.000	1.000	377,850	$ 50,065.09	0.000	1.000	340,065	$ 45,058.58	0.000	1.000	kWh	15
BESM														
Codes & Standards														
Adoption & Compliance	1,200,000	$ -	-	-	2,400,000	$ -	-	-	3,600,000	$ -	-	-	kWh	25
Energy Study Grant														
Design Assistance	40,000	$ -	-	-	45,000	$ -	-	-	45,000	$ -	-	-	dollars	1
Energy Audit	15	$ 5,000.00	-	-	15	$ 5,000.00	-	-	15	$ 5,000.00	-	-	units	1
Energy Study Assistance	5	$ 20,000.00	-	-	5	$ 20,000.00	-	-	5	$ 20,000.00	-	-	units	1
Energy-Water Nexus														
County Leak Detection Support	150	$ 550.00	0.265	2,647.000	175	$ 550.00	0.265	2,647.000	200	$ 550.00	0.265	2,647.000	units	4
County Water Energy Studies	50,000	$ -	-	-	50,000	$ -	-	-	50,000	$ -	-	-	dollars	4
Rural Water Utility Support	-	$ -	-	-	20,000	$ -	-	-	40,000	$ -	-	-	dollars	4
Strategic Energy Management														
Operational Savings & Capital Projects - Influenced - Non-incentive Effc	4	$ 50,000.00	6.250	62,500.000	7	$ 28,571.43	4.857	48,571.429	12	$ 16,666.67	5.167	51,666.667	cohorts	1
Whole Building Assistance														
Metering & Monitoring	50,000	$ -	-	-	150,000	$ -	-	-	150,000	$ -	-	-	dollars	1
Retro|Re-Commissioning - Re-Commissioning	5	$ 15,000.00	-	-	5	$ 15,000.00	-	-	5	$ 15,000.00	-	-	units	3
Retro|Re-Commissioning - Retro-Commission	5	$ 15,000.00	-	-	5	$ 15,000.00	-	-	5	$ 15,000.00	-	-	units	3
Technical Support	300,000	$ -	-	-	350,000	$ -	-	-	350,000	$ -	-	-	dollars	1

CUSTOMER LEVEL SAVINGS

Program / Measure	PY19 1st Year Demand Savings (kW)	PY19 1st Year Energy Savings (kWh)	PY19 Lifetime Energy Savings (kWh)	PY20 1st Year Demand Savings (kW)	PY20 1st Year Energy Savings (kWh)	PY20 Lifetime Energy Savings (kWh)	PY21 1st Year Demand Savings (kW)	PY21 1st Year Energy Savings (kWh)	PY21 Lifetime Energy Savings (kWh)
HAWAII ENERGY INCENTIVES	19,949	131,053,051	1,500,954,184	16,732	123,341,882	1,734,059,584	16,549	125,158,313	1,748,520,116
BUSINESS PROGRAM	8,637	72,227,722	1,008,129,859	8,319	74,463,625	1,227,597,560	7,870	70,429,699	1,199,479,961
BEEM	4,068	27,730,871	419,805,563	3,280	23,398,774	410,050,715	3,092	21,947,275	400,020,195
Accounting	-	-	-	-	-	-	-	-	-
Contractor Bonus	-	-	-	-	-	-	-	-	-
Building Envelope	73	354,103	3,541,033	73	354,103	3,541,033	73	354,103	3,541,033
Window Film - New	50	243,500	2,435,000	50	243,500	2,435,000	50	243,500	2,435,000
Window Film - Replacement	23	110,603	1,106,033	23	110,603	1,106,033	23	110,603	1,106,033
HVAC	770	7,271,244	130,603,299	683	6,625,315	119,381,263	555	5,349,157	96,204,573
A/C & Condensing Units: Packaged (Tier 1) - Air Cooled	34	228,746	3,431,187	34	233,063	3,495,948	24	163,144	2,447,164
A/C & Condensing Units: Packaged (Tier 2) - Air Cooled	5	31,336	470,036	5	34,469	517,040	4	24,129	361,928
A/C & Condensing Units: Packaged VRF - Air Cooled (Existing Facility)	2	14,888	297,754	2	15,158	303,165	2	10,611	212,216
A/C & Condensing Units: Packaged VRF - Air Cooled (New Construction	0	2,765	55,297	0	2,765	55,297	0	1,935	38,708
A/C & Condensing Units: Split (Tier 1) - Air Cooled	6	42,328	634,924	6	42,328	634,924	4	29,630	444,447
A/C & Condensing Units: Split (Tier 2) - Air Cooled	2	13,431	201,463	2	13,431	201,463	1	9,402	141,024
A/C & Condensing Units: Split VRF - Air Cooled (Existing Facility)	28	186,038	3,720,751	28	186,038	3,720,751	19	130,226	2,604,525
Chiller - Air Cooled	38	480,221	10,564,866	35	432,199	9,508,380	28	345,759	7,606,704
Chiller - Centrifugal	12	1,603,987	35,287,714	11	1,443,588	31,758,942	9	1,154,871	25,407,154
Chiller - Positive Displacement	18	738,794	16,253,460	18	738,794	16,253,460	14	591,035	13,002,768
Controls: Guest Room Energy Management System	224	2,242,500	33,637,500	202	2,018,250	30,273,750	161	1,614,600	24,219,000
Heat Pumps: Packaged (Tier 1) - Air Cooled	2	11,135	167,028	2	12,249	183,731	1	9,799	146,985
Heat Pumps: Split (Tier 1) - Air Cooled	2	15,727	235,904	2	14,154	212,313	2	12,739	191,082
Heat Pumps: Split VRF - Air Cooled	23	151,036	3,020,721	20	135,932	2,718,649	18	122,339	2,446,784
VFD - Air Handler Fan	14	92,334	1,385,009	13	83,101	1,246,508	12	74,790	1,121,857
VFD - Chilled Water Pump	62	361,438	5,421,573	56	325,294	4,879,416	50	292,765	4,391,474
VFD - Condenser Water Pump	87	508,691	7,630,362	79	457,822	6,867,326	71	412,040	6,180,593
VFD - Garage Exhaust Fan	210	545,850	8,187,750	168	436,680	6,550,200	134	349,344	5,240,160
Lighting	921	5,271,891	84,157,506	799	4,572,376	75,039,574	762	4,349,815	70,595,059
Controls: Occupancy Sensor	11	77,002	616,012	9	61,601	492,810	7	49,281	394,248
Fluorescent: Delamping without Reflectors	4	19,840	456,274	4	19,840	456,274	4	19,840	456,274
LED: A-Series	25	137,960	545,565	5	30,655	231,875	-	-	-
LED: Corn Cob	13	70,215	1,099,230	13	70,215	1,099,230	13	70,215	1,099,230
LED: Corn Cob (Exterior)	14	90,774	1,089,288	14	90,774	1,089,288	14	90,774	1,089,288
LED: Directional (MR16)	12	62,946	170,171	1	7,089	53,631	1	6,026	45,586
LED: Directional (PAR20)	5	25,712	73,646	1	3,522	26,648	1	3,522	26,648
LED: Directional (PAR30)	20	107,853	314,227	3	15,582	117,877	3	15,582	117,877
LED: Directional (PAR38)	11	61,710	201,865	2	12,265	92,779	2	12,265	92,779
LED: Exit Sign	9	81,590	1,468,627	9	81,590	1,468,627	9	81,590	1,468,627
LED: Linear Type A	273	1,632,803	12,517,667	273	1,632,803	12,517,667	273	1,632,803	12,517,667
LED: Linear Type B	42	253,714	5,835,407	42	253,714	5,835,407	42	253,714	5,835,407
LED: Linear Type C	119	714,363	16,430,351	60	357,317	8,218,285	30	178,794	4,112,252
LED: Refrigerated Case Lighting	8	55,212	355,478	8	55,212	355,478	8	55,212	355,478
LED: Troffer	340	1,800,642	41,412,708	340	1,800,642	41,412,708	340	1,800,642	41,412,708
LED: U-bend Type A	3	16,871	129,342	3	16,871	129,342	3	16,871	129,342
LED: U-bend Type B	0	133	3,055	0	133	3,055	0	133	3,055
LED: U-bend Type C	12	62,551	1,438,592	12	62,551	1,438,592	12	62,551	1,438,592
Midstream	1,740	10,178,528	104,012,502	954	5,637,754	73,949,473	796	4,690,028	65,031,943
Controls: Occupancy Sensor	0	878	7,027	0	878	7,027	0	878	7,027
Fluorescent: Delamping with Reflectors	0	375	8,629	0	375	8,629	0	375	8,629
LED: A-Series	81	439,760	1,666,484	15	92,130	696,883	-	-	-
LED: Corn Cob	305	1,633,469	25,572,107	305	1,633,469	25,572,107	305	1,633,469	25,572,107
LED: Decorative (Candelabra, 25W)	0	182	296	0	17	131	0	17	131
LED: Directional (MR16)	72	390,360	1,055,325	7	43,962	332,593	7	43,962	332,593
LED: Directional (PAR20)	20	104,805	300,189	3	14,357	108,619	3	14,357	108,619
LED: Directional (PAR30)	108	596,277	1,737,238	15	86,144	651,697	15	86,144	651,697
LED: Directional (PAR38)	19	102,000	333,662	3	20,273	153,354	3	20,273	153,354
LED: Directional (PAR40)	0	2,040	6,673	0	477	3,608	0	477	3,608
LED: Exit Sign	64	566,600	10,198,800	64	566,600	10,198,800	64	566,600	10,198,800
LED: Linear Type A	878	5,252,982	40,271,275	378	2,263,982	17,356,514	253	1,516,732	11,627,823
LED: Linear Type B	62	369,259	8,492,913	50	297,619	6,845,202	40	240,307	5,527,034
LED: Linear Type C	34	204,138	4,695,152	17	102,069	2,347,576	9	51,035	1,173,788
LED: Refrigerated Case Lighting	6	45,052	290,486	6	45,052	290,486	6	45,052	290,486
LED: Troffer	71	374,749	8,618,844	71	374,749	8,618,844	71	374,749	8,618,844
LED: U-bend Type A	19	94,007	720,738	19	94,007	720,738	19	94,007	720,738
LED: U-bend Type B	0	1,594	36,665	0	1,594	36,665	0	1,594	36,665
Plug/Process Load	377	2,895,508	72,121,093	602	4,620,508	115,246,093	752	5,770,508	143,996,093
Case Night Cover	-	2,311	27,729	-	2,311	27,729	-	2,311	27,729
Controls: Anti-Sweat Heater	2	18,197	218,364	2	18,197	218,364	2	18,197	218,364
Transformers	375	2,875,000	71,875,000	600	4,600,000	115,000,000	750	5,750,000	143,750,000
Pumps and Motors	175	1,723,138	24,913,594	157	1,550,856	22,422,723	141	1,395,803	20,180,938
Booster Pumps	105	1,103,570	16,553,550	95	993,213	14,898,195	85	893,892	13,408,376
Booster Pumps - No VFD	10	105,692	1,585,386	9	95,123	1,426,847	8	85,611	1,284,163
ECM Fan Motor - A/C Fan Coil	38	324,996	4,874,940	34	292,496	4,387,446	31	263,247	3,948,701
ECM Fan Motor - Refrigeration	0	1,860	27,900	0	1,674	25,110	0	1,507	22,599
Pool pumps	21	186,694	1,866,940	19	168,025	1,680,246	17	151,222	1,512,221
Premium Efficiency Motor - 1800 RPM (4-pole) - TEFC	0	325	4,878	0	325	4,878	0	325	4,878
Submetering	4	16,200	129,600	4	16,200	129,600	4	16,200	129,600
Condominium Unit - Actual Savings	-	-	-	-	-	-	-	-	-
Small Business - Actual Savings	4	16,200	129,600	4	16,200	129,600	4	16,200	129,600
Water Heating	9	20,259	326,936	10	21,661	340,956	10	21,661	340,956
Heat Pump Water Heater - Replace Electric Resistance Water Heater	0	1,886	18,860	0	3,288	32,880	0	3,288	32,880
Heat Pump Water Heater - Replace Heat Pump Water Heater	0	2,829	28,290	0	2,829	28,290	0	2,829	28,290
Solar Water Heater - Replace Electric Resistance Water Heater	7	12,435	223,829	7	12,435	223,829	7	12,435	223,829
Solar Water Heater - Replace Heat Pump Water Heater	2	3,109	55,957	2	3,109	55,957	2	3,109	55,957
CBEEM	3,172	31,720,827	393,432,323	2,664	26,640,294	334,571,886	2,233	22,327,004	283,105,415
Commercial Custom	3,172	31,720,827	393,432,323	2,664	26,640,294	334,571,886	2,233	22,327,004	283,105,415
Custom	13	128,375	1,155,375	13	128,375	1,155,375	13	128,375	1,155,375
Custom Controls	134	1,343,169	13,431,690	134	1,343,169	13,431,690	134	1,343,169	13,431,690
Custom HVAC	330	3,299,708	56,095,033	363	3,629,679	61,704,536	363	3,629,679	61,704,536
Custom Lighting	2,585	25,850,000	310,200,000	2,068	20,680,000	248,160,000	1,654	16,544,000	198,528,000
Custom Miscellaneous	65	652,732	5,874,591	46	456,913	4,112,213	32	319,839	2,878,549
Custom Pumps & Motors	3	27,010	378,140	2	24,309	340,326	2	21,878	306,293
Custom Refrigeration	42	419,833	6,297,495	38	377,850	5,667,746	34	340,065	5,100,971
BESM	185	1,847,050	31,838,200	320	3,203,225	62,192,900	475	4,749,400	92,737,600
Codes & Standards	120	1,200,000	30,000,000	240	2,400,000	60,000,000	360	3,600,000	90,000,000
Adoption & Compliance	120	1,200,000	30,000,000	240	2,400,000	60,000,000	360	3,600,000	90,000,000
Energy Study Grant	-	-	-	-	-	-	-	-	-
Design Assistance	-	-	-	-	-	-	-	-	-
Energy Audit	-	-	-	-	-	-	-	-	-
Energy Study Assistance	-	-	-	-	-	-	-	-	-
Energy-Water Nexus	40	397,050	1,588,200	46	463,225	1,852,900	53	529,400	2,117,600
County Leak Detection Support	40	397,050	1,588,200	46	463,225	1,852,900	53	529,400	2,117,600
County Water Energy Studies	-	-	-	-	-	-	-	-	-
Rural Water Utility Support	-	-	-	-	-	-	-	-	-
Strategic Energy Management	25	250,000	250,000	34	340,000	340,000	62	620,000	620,000
Operational Savings & Capital Projects - Influenced - Non-incentive Effc	25	250,000	250,000	34	340,000	340,000	62	620,000	620,000
Whole Building Assistance	-	-	-	-	-	-	-	-	-
Metering & Monitoring	-	-	-	-	-	-	-	-	-
Retro|Re-Commissioning - Re-Commissioning	-	-	-	-	-	-	-	-	-
Retro|Re-Commissioning - Retro-Commission	-	-	-	-	-	-	-	-	-
Technical Support	-	-	-	-	-	-	-	-	-

PROGRAM LEVEL SAVINGS

Program / Measure	PY19 1st Year Demand Savings (kW)	PY19 1st Year Energy Savings (kWh)	PY19 Lifetime Energy Savings (kWh)	PY20 1st Year Demand Savings (kW)	PY20 1st Year Energy Savings (kWh)	PY20 Lifetime Energy Savings (kWh)	PY21 1st Year Demand Savings (kW)	PY21 1st Year Energy Savings (kWh)	PY21 Lifetime Energy Savings (kWh)
HAWAII ENERGY INCENTIVES	15,666	100,930,855	1,149,116,865	14,095	101,216,303	1,368,965,943	14,082	104,452,428	1,403,663,638
BUSINESS PROGRAM	7,024	58,937,415	825,657,720	6,802	60,975,660	1,004,390,754	6,484	58,162,585	989,181,562
BEEM	3,195	21,776,775	329,669,113	2,576	18,374,824	322,008,728	2,428	17,234,976	314,131,861
Accounting	-	-	-	-	-	-	-	-	-
Contractor Bonus	-	-	-	-	-	-	-	-	-
Building Envelope	57	278,074	2,780,738	57	278,074	2,780,738	57	278,074	2,780,738
Window Film - New	39	191,218	1,912,181	39	191,218	1,912,181	39	191,218	1,912,181
Window Film - Replacement	18	86,856	868,557	18	86,856	868,557	18	86,856	868,557
HVAC	604	5,710,035	102,561,466	536	5,202,794	93,748,913	436	4,200,640	75,548,490
A/C & Condensing Units: Packaged (Tier 1) - Air Cooled	26	179,632	2,694,477	27	183,022	2,745,333	19	128,116	1,921,733
A/C & Condensing Units: Packaged (Tier 2) - Air Cooled	4	24,608	369,115	4	27,068	406,026	3	18,948	284,218
A/C & Condensing Units: Packaged VRF - Air Cooled (Existing Facility)	2	11,691	233,823	2	11,904	238,073	1	8,333	166,651
A/C & Condensing Units: Packaged VRF - Air Cooled (New Construction	0	2,171	43,424	0	2,171	43,424	0	1,520	30,397
A/C & Condensing Units: Split (Tier 1) - Air Cooled	5	33,240	498,599	5	33,240	498,599	3	23,268	349,020
A/C & Condensing Units: Split (Tier 2) - Air Cooled	2	10,547	158,207	2	10,547	158,207	1	7,383	110,745
A/C & Condensing Units: Split VRF - Air Cooled (Existing Facility)	22	146,093	2,921,868	22	146,093	2,921,868	15	102,265	2,045,308
Chiller - Air Cooled	30	377,113	8,296,484	27	339,402	7,466,836	22	271,521	5,973,468
Chiller - Centrifugal	10	1,259,595	27,711,089	9	1,133,635	24,939,980	7	906,908	19,951,984
Chiller - Positive Displacement	14	580,167	12,763,680	14	580,167	12,763,680	11	464,134	10,210,944
Controls: Guest Room Energy Management System	176	1,761,013	26,415,193	158	1,584,912	23,773,673	127	1,267,929	19,018,939
Heat Pumps: Packaged (Tier 1) - Air Cooled	1	8,744	131,165	1	9,619	144,282	1	7,695	115,426
Heat Pumps: Split (Tier 1) - Air Cooled	2	12,350	185,253	2	11,115	166,728	1	10,004	150,055
Heat Pumps: Split VRF - Air Cooled	18	118,607	2,372,142	16	106,746	2,134,928	14	96,072	1,921,435
VFD - Air Handler Fan	11	72,509	1,087,634	10	65,258	978,870	9	58,732	880,983
VFD - Chilled Water Pump	49	283,834	4,257,507	44	255,450	3,831,756	40	229,905	3,448,581
VFD - Condenser Water Pump	69	399,470	5,992,047	62	359,523	5,392,842	56	323,571	4,853,558
VFD - Garage Exhaust Fan	165	428,651	6,429,758	132	342,920	5,143,807	106	274,336	4,115,045
Lighting	724	4,139,963	66,088,048	627	3,590,641	58,927,827	598	3,415,866	55,437,595
Controls: Occupancy Sensor	9	60,469	483,748	7	48,375	386,999	5	38,700	309,599
Fluorescent: Delamping without Reflectors	3	15,580	358,308	3	15,580	358,308	3	15,580	358,308
LED: A-Series	20	108,339	428,427	4	24,073	182,089	-	-	-
LED: Corn Cob	10	55,139	863,214	10	55,139	863,214	10	55,139	863,214
LED: Corn Cob (Exterior)	11	71,284	855,407	11	71,284	855,407	11	71,284	855,407
LED: Directional (MR16)	9	49,431	133,634	1	5,567	42,116	1	4,732	35,798
LED: Directional (PAR20)	4	20,192	57,834	0	2,766	20,926	0	2,766	20,926
LED: Directional (PAR30)	15	84,696	246,759	2	12,236	92,568	2	12,236	92,568
LED: Directional (PAR38)	9	48,460	158,523	2	9,631	72,859	2	9,631	72,859
LED: Exit Sign	7	64,072	1,153,298	7	64,072	1,153,298	7	64,072	1,153,298
LED: Linear Type A	214	1,282,224	9,829,999	214	1,282,224	9,829,999	214	1,282,224	9,829,999
LED: Linear Type B	33	199,239	4,582,487	33	199,239	4,582,487	33	199,239	4,582,487
LED: Linear Type C	93	560,982	12,902,590	47	280,597	6,453,737	23	140,405	3,229,311
LED: Refrigerated Case Lighting	6	43,358	279,153	6	43,358	279,153	6	43,358	279,153
LED: Troffer	267	1,414,027	32,520,986	267	1,414,027	32,520,986	267	1,414,027	32,520,986
LED: U-bend Type A	3	13,248	101,571	3	13,248	101,571	3	13,248	101,571
LED: U-bend Type B	0	104	2,399	0	104	2,399	0	104	2,399
LED: U-bend Type C	9	49,121	1,129,712	9	49,121	1,129,712	9	49,121	1,129,712
Midstream	1,367	7,993,097	81,679,978	749	4,427,272	58,071,782	625	3,683,032	51,068,935
Controls: Occupancy Sensor	0	690	5,518	0	690	5,518	0	690	5,518
Fluorescent: Delamping with Reflectors	0	295	6,776	0	295	6,776	0	295	6,776
LED: A-Series	63	345,339	1,308,673	12	72,349	547,256	-	-	-
LED: Corn Cob	240	1,282,747	20,081,520	240	1,282,747	20,081,520	240	1,282,747	20,081,520
LED: Decorative (Candelabra, 25W)	0	143	233	0	14	103	0	14	103
LED: Directional (MR16)	57	306,546	828,736	5	34,523	261,182	5	34,523	261,182
LED: Directional (PAR20)	15	82,302	235,735	2	11,274	85,298	2	11,274	85,298
LED: Directional (PAR30)	85	468,250	1,364,236	11	67,648	511,771	11	67,648	511,771
LED: Directional (PAR38)	15	80,100	262,021	3	15,920	120,428	3	15,920	120,428
LED: Directional (PAR40)	0	1,602	5,240	0	375	2,834	0	375	2,834
LED: Exit Sign	50	444,945	8,009,016	50	444,945	8,009,016	50	444,945	8,009,016
LED: Linear Type A	690	4,125,114	31,624,630	297	1,777,882	13,629,897	199	1,191,074	9,131,213
LED: Linear Type B	49	289,975	6,669,400	39	233,717	5,375,469	32	188,711	4,340,324
LED: Linear Type C	27	160,308	3,687,056	13	80,154	1,843,528	7	40,077	921,764
LED: Refrigerated Case Lighting	5	35,379	228,116	5	35,379	228,116	5	35,379	228,116
LED: Troffer	56	294,287	6,768,292	56	294,287	6,768,292	56	294,287	6,768,292
LED: U-bend Type A	15	73,823	565,988	15	73,823	565,988	15	73,823	565,988
LED: U-bend Type B	0	1,252	28,793	0	1,252	28,793	0	1,252	28,793
Plug/Process Load	296	2,273,813	56,635,973	473	3,628,439	90,501,605	590	4,531,522	113,078,693
Case Night Cover	-	1,815	21,775	-	1,815	21,775	-	1,815	21,775
Controls: Anti-Sweat Heater	1	14,290	171,479	1	14,290	171,479	1	14,290	171,479
Transformers	294	2,257,709	56,442,719	471	3,612,334	90,308,351	589	4,515,418	112,885,438
Pumps and Motors	137	1,353,163	19,564,397	123	1,217,872	17,608,340	111	1,096,110	15,847,889
Booster Pumps	82	866,622	12,999,337	74	779,960	11,699,404	67	701,964	10,529,463
Booster Pumps - No VFD	8	82,999	1,244,988	7	74,699	1,120,489	6	67,229	1,008,440
ECM Fan Motor - A/C Fan Coil	30	255,216	3,828,242	27	229,694	3,445,417	24	206,725	3,100,876
ECM Fan Motor - Refrigeration	0	1,461	21,910	0	1,315	19,719	0	1,183	17,747
Pool pumps	17	146,609	1,466,089	15	131,948	1,319,480	14	118,753	1,187,532
Premium Efficiency Motor - 1800 RPM (4-pole) - TEFC	0	255	3,831	0	255	3,831	0	255	3,831
Submetering	3	12,722	101,774	3	12,722	101,774	3	12,722	101,774
Condominium Unit - Actual Savings	-	-	-	-	-	-	-	-	-
Small Business - Actual Savings	3	12,722	101,774	3	12,722	101,774	3	12,722	101,774
Water Heating	7	15,909	256,739	7	17,010	267,749	7	17,010	267,749
Heat Pump Water Heater - Replace Electric Resistance Water Heater	0	1,481	14,811	0	2,582	25,820	0	2,582	25,820
Heat Pump Water Heater - Replace Heat Pump Water Heater	0	2,222	22,216	0	2,222	22,216	0	2,222	22,216
Solar Water Heater - Replace Electric Resistance Water Heater	6	9,765	175,770	6	9,765	175,770	6	9,765	175,770
Solar Water Heater - Replace Heat Pump Water Heater	1	2,441	43,943	1	2,441	43,943	1	2,441	43,943
CBEEM	2,491	24,910,048	308,958,471	2,092	20,920,357	262,735,958	1,753	17,533,173	222,319,852
Commercial Custom	2,491	24,910,048	308,958,471	2,092	20,920,357	262,735,958	1,753	17,533,173	222,319,852
Custom	10	100,812	907,304	10	100,812	907,304	10	100,812	907,304
Custom Controls	105	1,054,777	10,547,772	105	1,054,777	10,547,772	105	1,054,777	10,547,772
Custom HVAC	259	2,591,228	44,050,868	285	2,850,350	48,455,955	285	2,850,350	48,455,955
Custom Lighting	2,030	20,299,747	243,596,960	1,624	16,239,797	194,877,568	1,299	12,991,838	155,902,054
Custom Miscellaneous	51	512,584	4,613,257	36	358,809	3,229,280	25	251,166	2,260,496
Custom Pumps & Motors	2	21,211	296,950	2	19,090	267,255	2	17,181	240,529
Custom Refrigeration	33	329,691	4,945,360	30	296,722	4,450,824	27	267,049	4,005,742
BESM	184	1,837,262	31,669,479	319	3,186,250	61,863,319	472	4,724,231	92,246,153
Codes & Standards	119	1,193,641	29,841,020	239	2,387,282	59,682,040	358	3,580,922	89,523,061
Adoption & Compliance	119	1,193,641	29,841,020	239	2,387,282	59,682,040	358	3,580,922	89,523,061
Energy Study Grant	-	-	-	-	-	-	-	-	-
Design Assistance	-	-	-	-	-	-	-	-	-
Energy Audit	-	-	-	-	-	-	-	-	-
Energy Study Assistance	-	-	-	-	-	-	-	-	-
Energy-Water Nexus	39	394,946	1,579,784	46	460,770	1,843,081	53	526,595	2,106,378
County Leak Detection Support	39	394,946	1,579,784	46	460,770	1,843,081	53	526,595	2,106,378
County Water Energy Studies	-	-	-	-	-	-	-	-	-
Rural Water Utility Support	-	-	-	-	-	-	-	-	-
Strategic Energy Management	25	248,675	248,675	34	338,198	338,198	62	616,714	616,714
Operational Savings & Capital Projects - Influenced - Non-incentive Effc	25	248,675	248,675	34	338,198	338,198	62	616,714	616,714
Whole Building Assistance	-	-	-	-	-	-	-	-	-
Metering & Monitoring	-	-	-	-	-	-	-	-	-
Retro|Re-Commissioning - Re-Commissioning	-	-	-	-	-	-	-	-	-
Retro|Re-Commissioning - Retro-Commission	-	-	-	-	-	-	-	-	-
Technical Support	-	-	-	-	-	-	-	-	-

FINANCIALS

Program / Measure	PY19 Incentive Budget	PY19 Total Resource Benefit (TRB)	PY19 Total Resource Cost (TRC)	PY20 Incentive Budget	PY20 Total Resource Benefit (TRB)	PY20 Total Resource Cost (TRC)	PY21 Incentive Budget	PY21 Total Resource Benefit (TRB)	PY21 Total Resource Cost (TRC)
HAWAII ENERGY INCENTIVES	$ 25,652,351	$ 271,482,976	$ 99,490,091	$ 27,704,290	$ 268,102,795	$105,049,517	$ 28,450,882	$ 273,215,451	$104,628,275
BUSINESS PROGRAM	$14,291,741	$176,584,632	$57,177,081	$15,373,941	$192,342,673	$ 59,597,268	$15,446,903	$186,332,455	$ 57,578,271
BEEM	$ 3,222,000	$ 76,192,669	$15,399,602	$ 2,949,705	$ 65,274,559	$ 13,838,127	$ 2,897,751	$ 62,240,730	$ 13,378,357
Accounting	$ 150,000	$ -	$ 150,000	$ 200,000	$ -	$ 200,000	$ 250,000	$ -	$ 250,000
Contractor Bonus	150,000	-	150,000	200,000	-	200,000	250,000	-	250,000
Building Envelope	$ 52,152	$ 741,621	$ 260,761	$ 52,152	$ 741,621	$ 260,761	$ 52,152	$ 741,621	$ 260,761
Window Film - New	42,500	509,978	212,500	42,500	509,978	212,500	42,500	509,978	212,500
Window Film - Replacement	9,652	231,644	48,261	9,652	231,644	48,261	9,652	231,644	48,261
HVAC	$ 510,544	$ 19,118,585	$ 2,552,720	$ 478,295	$ 17,343,535	$ 2,391,476	$ 386,125	$ 14,011,556	$ 1,930,627
A/C & Condensing Units: Packaged (Tier 1) - Air Cooled	22,150	599,166	110,748	22,685	610,488	113,425	15,879	427,342	79,397
A/C & Condensing Units: Packaged (Tier 2) - Air Cooled	6,084	82,112	30,418	6,692	90,323	33,459	4,684	63,226	23,422
A/C & Condensing Units: Packaged VRF - Air Cooled (Existing Facility)	12,213	46,783	61,063	12,384	47,609	61,919	8,669	33,326	43,343
A/C & Condensing Units: Packaged VRF - Air Cooled (New Construction	1,750	8,442	8,750	1,750	8,442	8,750	1,225	5,909	6,125
A/C & Condensing Units: Split (Tier 1) - Air Cooled	2,299	110,836	11,493	2,299	110,836	11,493	1,609	77,585	8,045
A/C & Condensing Units: Split (Tier 2) - Air Cooled	1,458	35,204	7,289	1,458	35,204	7,289	1,020	24,643	5,102
A/C & Condensing Units: Split VRF - Air Cooled (Existing Facility)	71,540	569,155	357,700	71,540	569,155	357,700	50,078	398,409	250,390
Chiller - Air Cooled	49,710	1,354,871	248,549	44,739	1,219,384	223,694	35,791	975,507	178,955
Chiller - Centrifugal	115,920	3,846,000	579,600	104,328	3,461,400	521,640	83,462	2,769,120	417,312
Chiller - Positive Displacement	56,025	1,841,082	280,125	56,025	1,841,082	280,125	44,820	1,472,865	224,100
Controls: Guest Room Energy Management System	75	5,254,334	375	75	4,728,901	375	75	3,783,120	375
Heat Pumps: Packaged (Tier 1) - Air Cooled	675	29,167	3,375	743	32,083	3,713	594	25,667	2,970
Heat Pumps: Split (Tier 1) - Air Cooled	854	41,181	4,270	769	37,063	3,843	692	33,356	3,459
Heat Pumps: Split VRF - Air Cooled	56,858	463,301	284,288	51,172	416,971	255,859	46,055	375,273	230,273
VFD - Air Handler Fan	8,900	246,624	44,500	8,010	221,962	40,050	7,209	199,765	36,045
VFD - Chilled Water Pump	43,200	998,464	216,000	38,880	898,618	194,400	34,992	808,756	174,960
VFD - Condenser Water Pump	60,800	1,405,246	304,000	54,720	1,264,721	273,600	49,248	1,138,249	246,240
VFD - Garage Exhaust Fan	36	2,186,620	180	29	1,749,296	144	23	1,399,437	115
Lighting	$ 872,753	$ 14,492,869	$ 4,363,766	$ 778,268	$ 12,561,306	$ 3,891,340	$ 728,120	$ 11,968,154	$ 3,640,601
Controls: Occupancy Sensor	42,080	116,184	210,400	33,664	92,947	168,320	26,931	74,357	134,656
Fluorescent: Delamping without Reflectors	1,323	53,760	6,613	1,323	53,760	6,613	1,323	53,760	6,613
LED: A-Series	3,850	390,436	19,250	1,925	84,001	9,625	-	-	-
LED: Corn Cob	2,225	200,165	11,125	2,225	200,165	11,125	2,225	200,165	11,125
LED: Corn Cob (Exterior)	2,575	200,941	12,875	2,575	200,941	12,875	2,575	200,941	12,875
LED: Directional (MR16)	3,225	178,529	16,125	2,741	18,873	13,706	2,330	16,042	11,650
LED: Directional (PAR20)	1,840	73,168	9,200	1,564	9,849	7,820	1,564	9,849	7,820
LED: Directional (PAR30)	5,155	304,122	25,775	4,382	42,763	21,909	4,382	42,763	21,909
LED: Directional (PAR38)	3,025	175,684	15,125	2,571	33,588	12,856	2,571	33,588	12,856
LED: Exit Sign	4,320	219,322	21,600	4,320	219,322	21,600	4,320	219,322	21,600
LED: Linear Type A	220,199	4,466,059	1,100,993	220,199	4,466,059	1,100,993	220,199	4,466,059	1,100,993
LED: Linear Type B	28,660	694,154	143,300	28,660	694,154	143,300	28,660	694,154	143,300
LED: Linear Type C	164,411	1,951,678	822,055	82,254	976,217	411,268	41,175	488,486	205,874
LED: Refrigerated Case Lighting	8,850	83,318	44,250	8,850	83,318	44,250	8,850	83,318	44,250
LED: Troffer	370,186	5,154,945	1,850,930	370,186	5,154,945	1,850,930	370,186	5,154,945	1,850,930
LED: U-bend Type A	1,442	49,404	7,210	1,442	49,404	7,210	1,442	49,404	7,210
LED: U-bend Type B	8	386	40	8	386	40	8	386	40
LED: U-bend Type C	9,380	180,615	46,900	9,380	180,615	46,900	9,380	180,615	46,900
Midstream	$ 1,036,741	$ 28,170,608	$ 5,183,705	$ 591,445	$ 15,593,113	$ 2,957,225	$ 468,297	$ 13,000,644	$ 2,341,485
Controls: Occupancy Sensor	480	1,325	2,400	480	1,325	2,400	480	1,325	2,400
Fluorescent: Delamping with Reflectors	50	1,016	250	50	1,016	250	50	1,016	250
LED: A-Series	10,700	1,244,280	53,500	5,350	251,416	26,750	-	-	-
LED: Corn Cob	45,110	4,656,051	225,550	45,110	4,656,051	225,550	45,110	4,656,051	225,550
LED: Decorative (Candelabra, 25W)	6	508	30	6	54	30	6	54	30
LED: Directional (MR16)	20,000	1,107,157	100,000	17,000	117,045	85,000	17,000	117,045	85,000
LED: Directional (PAR20)	7,500	298,241	37,500	6,375	40,146	31,875	6,375	40,146	31,875
LED: Directional (PAR30)	28,500	1,681,375	142,500	24,225	236,419	121,125	24,225	236,419	121,125
LED: Directional (PAR38)	5,000	290,387	25,000	4,250	55,517	21,250	4,250	55,517	21,250
LED: Directional (PAR40)	100	5,808	500	100	3,058	500	100	3,058	500
LED: Exit Sign	30,000	1,523,067	150,000	30,000	1,523,067	150,000	30,000	1,523,067	150,000
LED: Linear Type A	707,027	14,370,574	3,535,135	307,027	6,192,674	1,535,135	207,027	4,148,199	1,035,135
LED: Linear Type B	42,048	1,011,123	210,240	34,048	815,022	170,240	27,648	658,142	138,240
LED: Linear Type C	45,592	558,789	227,960	22,796	279,395	113,980	11,398	139,697	56,990
LED: Refrigerated Case Lighting	7,000	67,989	35,000	7,000	67,989	35,000	7,000	67,989	35,000
LED: Troffer	80,640	1,072,239	403,200	80,640	1,072,239	403,200	80,640	1,072,239	403,200
LED: U-bend Type A	6,892	276,052	34,460	6,892	276,052	34,460	6,892	276,052	34,460
LED: U-bend Type B	96	4,627	480	96	4,627	480	96	4,627	480
Plug/Process Load	$ 440,100	$ 9,630,349	$ 2,200,500	$ 702,600	$ 15,384,856	$ 3,513,000	$ 877,600	$ 19,221,194	$ 4,388,000
Case Night Cover	480	3,386	2,400	480	3,386	2,400	480	3,386	2,400
Controls: Anti-Sweat Heater	2,120	36,118	10,600	2,120	36,118	10,600	2,120	36,118	10,600
Transformers	437,500	9,590,845	2,187,500	700,000	15,345,352	3,500,000	875,000	19,181,690	4,375,000
Pumps and Motors	$ 128,175	$ 3,919,130	$ 640,875	$ 115,410	$ 3,527,389	$ 577,050	$ 103,922	$ 3,174,822	$ 519,608
Booster Pumps	20,000	2,554,456	100,000	18,000	2,299,010	90,000	16,200	2,069,109	81,000
Booster Pumps - No VFD	2,400	244,612	12,000	2,160	220,151	10,800	1,944	198,136	9,720
ECM Fan Motor - A/C Fan Coil	77,000	792,444	385,000	69,300	713,199	346,500	62,370	641,879	311,850
ECM Fan Motor - Refrigeration	17,000	4,440	85,000	15,300	3,996	76,500	13,770	3,596	68,850
Pool pumps	11,250	321,462	56,250	10,125	289,316	50,625	9,113	260,385	45,563
Premium Efficiency Motor - 1800 RPM (4-pole) - TEFC	525	1,717	2,625	525	1,717	2,625	525	1,717	2,625
Submetering	$ 29,850	$ 28,887	$ 38,850	$ 29,850	$ 28,887	$ 38,850	$ 29,850	$ 28,887	$ 38,850
Condominium Unit - Actual Savings	27,600	-	27,600	27,600	-	27,600	27,600	-	27,600
Small Business - Actual Savings	2,250	28,887	11,250	2,250	28,887	11,250	2,250	28,887	11,250
Water Heating	$ 1,685	$ 90,621	$ 8,425	$ 1,685	$ 93,852	$ 8,425	$ 1,685	$ 93,852	$ 8,425
Heat Pump Water Heater - Replace Electric Resistance Water Heater	240	2,612	1,200	240	5,843	1,200	240	5,843	1,200
Heat Pump Water Heater - Replace Heat Pump Water Heater	195	3,918	975	195	3,918	975	195	3,918	975
Solar Water Heater - Replace Electric Resistance Water Heater	1,000	67,272	5,000	1,000	67,272	5,000	1,000	67,272	5,000
Solar Water Heater - Replace Heat Pump Water Heater	250	16,818	1,250	250	16,818	1,250	250	16,818	1,250
CBEEM	$ 4,203,010	$ 63,474,054	$21,015,048	$ 3,529,839	$ 53,770,682	$ 17,649,195	$ 2,958,328	$ 45,360,435	$ 14,791,640
Commercial Custom	$ 4,203,010	$ 63,474,054	$21,015,048	$ 3,529,839	$ 53,770,682	$ 17,649,195	$ 2,958,328	$ 45,360,435	$ 14,791,640
Custom	17,010	193,377	85,048	17,010	193,377	85,048	17,010	193,377	85,048
Custom Controls	177,970	2,234,651	889,849	177,970	2,234,651	889,849	177,970	2,234,651	889,849
Custom HVAC	437,211	8,332,610	2,186,056	480,932	9,165,871	2,404,662	480,932	9,165,871	2,404,662
Custom Lighting	3,425,125	50,686,437	17,125,625	2,740,100	40,549,150	13,700,500	2,192,080	32,439,320	10,960,400
Custom Miscellaneous	86,487	983,239	432,435	60,541	688,267	302,705	42,379	481,787	211,893
Custom Pumps & Motors	3,579	60,041	17,894	3,221	54,037	16,105	2,899	48,633	14,494
Custom Refrigeration	55,628	983,698	278,139	50,065	885,328	250,325	45,059	796,795	225,293
BESM	$ 1,047,500	$ 5,216,330	$ 2,177,500	$ 1,236,250	$ 10,094,808	$ 2,421,250	$ 1,270,000	$ 15,007,493	$ 2,510,000
Codes & Standards	$ -	$ 4,800,465	$ -	$ -	$ 9,600,930	$ -	$ -	$ 14,401,396	$ -
Adoption & Compliance	-	4,800,465	-	-	9,600,930	-	-	14,401,396	-
Energy Study Grant	$ 215,000	$ -	$ 215,000	$ 220,000	$ -	$ 220,000	$ 220,000	$ -	$ 220,000
Design Assistance	40,000	-	40,000	45,000	-	45,000	45,000	-	45,000
Energy Audit	75,000	-	75,000	75,000	-	75,000	75,000	-	75,000
Energy Study Assistance	100,000	-	100,000	100,000	-	100,000	100,000	-	100,000
Energy-Water Nexus	$ 132,500	$ 370,854	$ 462,500	$ 166,250	$ 432,663	$ 551,250	$ 200,000	$ 494,472	$ 640,000
County Leak Detection Support	82,500	370,854	412,500	96,250	432,663	481,250	110,000	494,472	550,000
County Water Energy Studies	50,000	-	50,000	50,000	-	50,000	50,000	-	50,000
Rural Water Utility Support	-	-	-	20,000	-	20,000	40,000	-	40,000
Strategic Energy Management	$ 200,000	$ 45,010	$ 1,000,000	$ 200,000	$ 61,214	$ 1,000,000	$ 200,000	$ 111,625	$ 1,000,000
Operational Savings & Capital Projects - Influenced - Non-incentive Effc	200,000	45,010	1,000,000	200,000	61,214	1,000,000	200,000	111,625	1,000,000
Whole Building Assistance	$ 500,000	$ -	$ 500,000	$ 650,000	$ -	$ 650,000	$ 650,000	$ -	$ 650,000
Metering & Monitoring	50,000	-	50,000	150,000	-	150,000	150,000	-	150,000
Retro|Re-Commissioning - Re-Commissioning	75,000	-	75,000	75,000	-	75,000	75,000	-	75,000
Retro|Re-Commissioning - Retro-Commission	75,000	-	75,000	75,000	-	75,000	75,000	-	75,000
Technical Support	300,000	-	300,000	350,000	-	350,000	350,000	-	350,000

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MEASURE PARAMETERS

	PY19 Quantity	PY19 Incentive per Unit	PY19 Average Demand Savings per Unit (kW)	PY19 Average Energy Savings per Unit (kWh)	PY20 Quantity	PY20 Incentive per Unit	PY20 Average Demand Savings per Unit (kW)	PY20 Average Energy Savings per Unit (kWh)	PY21 Quantity	PY21 Incentive per Unit	PY21 Average Demand Savings per Unit (kW)	PY21 Average Energy Savings per Unit (kWh)	Unit	Measure Life (years)
BHTR														
Commercial Kitchen														
Commercial Ice Machine	3	$ 165.00	0.116	1,012.877	5	$ 165.00	0.116	1,012.877	7	$ 165.00	0.116	1,012.877	units	12
Demand Control Ventilation - Kitchen Fan	450	$ 700.00	0.452	2,633.610	495	$ 700.00	0.452	2,633.610	495	$ 700.00	0.452	2,633.610	hp	15
Reach-In Freezer - Glass Door	3	$ 137.50	0.664	5,815.667	5	$ 137.50	0.664	5,815.667	5	$ 137.50	0.664	5,815.667	units	12
Reach-In Freezer - Solid Door	2	$ 231.25	0.148	1,298.490	3	$ 231.25	0.148	1,298.490	3	$ 231.25	0.148	1,298.490	units	12
Reach-In Refrigerator - Glass Door	2	$ 206.25	0.077	671.600	3	$ 206.25	0.077	671.600	3	$ 206.25	0.077	671.600	units	12
Reach-In Refrigerator - Solid Door	4	$ 337.50	0.075	657.598	6	$ 337.50	0.075	657.598	6	$ 337.50	0.075	657.598	units	12
Steam Cooker	2	$ 750.00	3.800	16,611.250	3	$ 750.00	3.800	16,611.250	3	$ 750.00	3.800	16,611.250	units	12
EMPOWER Non-profit														
HVAC & Other	115,000	$ 75,000.00	-	-	218,500	$ 100,000.00	-	-	415,150	$ 150,000.00	-	-	kWh	15
Lighting	714,286	$ 75,000.00	-	-	535,714	$ 150,000.00	-	-	535,714	$ 150,000.00	-	-	kWh	15
Technical Support	50,000	$ -	-	-	50,000	$ -	-	-	50,000	$ -	-	-	dollars	1
Energy Advantage														
Cost Adder for Fixtures above or out of the reach of a 10' Ladder-Flat R	4,375	$ -	-	-	4,375	$ -	-	-	4,375	$ -	-	-	dollars	8
HVAC Packaged - Air cooled - Flat Rate	500,000	$ 250,000.00	0.000	1.000	500,000	$ 350,000.00	0.000	1.000	500,000	$ 450,000.00	0.000	1.000	kWh	15
Lighting - Flat Rate	8,214,285	$ 2,400,000.00	0.000	1.000	8,214,285	$ 2,500,000.00	0.000	1.000	8,214,285	$ 2,500,000.00	0.000	1.000	kWh	15
Grid Services														
Demand Response	80,355	$ -	-	-	113,837	$ -	-	-	147,318	$ -	-	-	dollars	1
Energy Storage	107,140	$ -	-	-	140,622	$ -	-	-	174,103	$ -	-	-	dollars	1
EoT	53,570	$ -	-	-	87,052	$ -	-	-	120,533	$ -	-	-	dollars	1
Technical Support	26,785	$ -	-	-	60,267	$ -	-	-	93,748	$ -	-	-	dollars	1
Multifamily Direct Install														
Audit Services	400	$ 75.00	-	-	300	$ 75.00	-	-	225	$ 75.00	-	-	units	1
Measures	400	$ 180.00	0.108	350.000	300	$ 180.00	0.059	189.875	225	$ 180.00	0.059	189.875	units	10
Site Visit Fee [MFDI]	400	$ 55.00	-	-	300	$ 55.00	-	-	225	$ 55.00	-	-	units	1
BGRID														
Grid Services														
Demand Response	241,066	$ -	-	-	341,510	$ -	-	-	441,954	$ -	-	-	dollars	1
Energy Storage	321,421	$ -	-	-	421,866	$ -	-	-	522,310	$ -	-	-	dollars	1
EoT	160,711	$ -	-	-	261,155	$ -	-	-	361,599	$ -	-	-	dollars	1
Technical Support	80,355	$ -	-	-	180,800	$ -	-	-	281,244	$ -	-	-	dollars	1
BET														
SWAC Infrastructure														
SWAC Integration	-	$ -	0.255	3,089.000	3,335	$ 300.00	0.255	3,089.000	3,335	$ 300.00	0.255	3,089.000	tons	25
BTRAN														
Transformation														
Commercial	1,450,027	$ -	-	-	1,450,027	$ -	-	-	1,450,027	$ -	-	-	dollars	1
RESIDENTIAL PROGRAM														
REEM														
Accounting														
Accounting	299,497	$ -	-	-	299,497	$ -	-	-	299,497	$ -	-	-	dollars	1
Downstream														
Central AC Retrofit	20	$ 750.00	0.452	1,760.260	50	$ 750.00	0.452	1,760.260	50	$ 750.00	0.452	1,760.260	units	15
Garage Freezer Bounty (Customer Incentive)	500	$ 75.00	0.093	811.850	1,000	$ 75.00	0.093	811.850	1,000	$ 75.00	0.093	811.850	units	7
Garage Freezer Bounty (Recycler Incentive)	500	$ 50.00	0.093	811.850	1,000	$ 50.00	0.093	811.850	1,000	$ 50.00	0.093	811.850	units	7
Pool VFD Controller Pumps	200	$ 100.00	0.099	867.210	500	$ 100.00	0.099	867.210	500	$ 100.00	0.099	867.210	units	10
PV Water Heating	50	$ 750.00	0.460	2,057.090	150	$ 750.00	0.460	2,057.090	150	$ 750.00	0.460	2,057.090	units	18
Refrigerator (with Recycling of Old)	4,000	$ 150.00	0.088	767.930	4,000	$ 150.00	0.088	767.930	4,000	$ 150.00	0.088	767.930	units	14
Solar Attic Fans	250	$ 50.00	-	158.290	250	$ 50.00	-	158.290	250	$ 50.00	-	158.290	units	20
Solar Water Heater (SWH) Incentive	1,250	$ 750.00	0.296	1,991.900	1,250	$ 750.00	0.296	1,991.900	1,250	$ 750.00	0.296	1,991.900	systems	18
Solar Water Heater Interest Buy down	50	$ 750.00	0.296	1,991.900	50	$ 750.00	0.296	1,991.900	50	$ 750.00	0.296	1,991.900	systems	18
VRF Split System AC <2 tons	2,000	$ 150.00	0.081	1,288.710	2,000	$ 150.00	0.081	1,288.710	2,000	$ 150.00	0.081	1,288.710	units	15
VRF Split System AC >3 tons	500	$ 250.00	0.092	1,676.920	500	$ 250.00	0.100	2,112.210	500	$ 250.00	0.100	2,112.210	units	15
VRF Split System AC 2-3 tons	200	$ 250.00	0.100	2,112.210	500	$ 250.00	0.100	2,112.210	500	$ 250.00	0.100	2,112.210	units	15
Whole House Fans	400	$ 75.00	0.102	316.580	400	$ 75.00	0.102	316.580	400	$ 75.00	0.102	316.580	units	20
Window AC with Recycling (Customer Incentive)	500	$ 50.00	0.054	197.860	1,500	$ 50.00	0.054	197.860	1,500	$ 50.00	0.054	197.860	units	9
Window AC with Recycling (Recycler Incentive)	500	$ 40.00	0.054	197.860	1,500	$ 40.00	0.054	197.860	1,500	$ 40.00	0.054	197.860	units	9
Midstream														
Advanced Power Strip - Tier I	2,500	$ 17.00	0.007	62.370	2,500	$ 17.00	0.007	62.370	2,500	$ 17.00	0.007	62.370	units	5
Air Purifiers	750	$ 20.00	0.045	390.500	750	$ 20.00	0.045	390.500	750	$ 20.00	0.045	390.500	units	9
Clothes Dryers	2,500	$ 35.00	0.033	165.580	2,500	$ 35.00	0.033	165.580	2,500	$ 35.00	0.033	165.580	units	14
Clothes Washers - Tier I	2,500	$ 30.00	0.022	114.070	2,500	$ 30.00	0.022	114.070	2,500	$ 30.00	0.022	114.070	units	11
Clothes Washers - Tier II	2,000	$ 30.00	0.030	156.800	2,000	$ 30.00	0.030	156.800	2,000	$ 30.00	0.030	156.800	units	11
Clothes Washers - Tier III	500	$ 40.00	0.034	176.370	500	$ 40.00	0.034	176.370	500	$ 40.00	0.034	176.370	units	11
Dehumidifiers	525	$ 20.00	0.049	429.710	525	$ 20.00	0.049	429.710	525	$ 20.00	0.049	429.710	units	12
Dishwashers	1,000	$ 30.00	0.003	37.000	1,000	$ 30.00	0.003	37.000	1,000	$ 30.00	0.003	37.000	units	11
Electronics - Soundbars	1,000	$ 8.00	0.002	44.260	1,000	$ 8.00	0.002	44.260	1,000	$ 8.00	0.002	44.260	units	4
Electronics - TVs	35,000	$ 10.00	0.010	82.680	35,000	$ 10.00	0.010	82.680	35,000	$ 10.00	0.010	82.680	units	10
Smart Thermostats	150	$ 20.00	-	138.030	150	$ 20.00	-	138.030	150	$ 20.00	-	138.030	units	3
Online Marketplace														
Advanced Power Strip - Tier I	500	$ 10.00	0.007	62.370	500	$ 10.00	0.007	62.370	500	$ 10.00	0.007	62.370	units	5
Advanced Power Strip - Tier II	750	$ 15.00	0.014	119.200	750	$ 15.00	0.014	119.200	750	$ 15.00	0.014	119.200	units	5
Aerator Bathroom	250	$ 1.00	0.018	6.400	250	$ 1.00	0.018	6.400	250	$ 1.00	0.018	6.400	units	5
Aerator Kitchen	100	$ 1.50	0.030	55.750	100	$ 1.50	0.030	55.750	100	$ 1.50	0.030	55.750	units	5
LED	2,500	$ 5.00	0.006	34.110	2,500	$ 5.00	0.002	12.600	2,500	$ 5.00	0.002	12.600	lamps	15
LED Smart Bulb	200	$ 20.00	0.006	34.110	200	$ 20.00	0.002	12.600	200	$ 20.00	0.002	12.600	lamps	15
LED Specialty	500	$ 10.00	0.006	34.110	500	$ 10.00	0.002	12.600	500	$ 10.00	0.002	12.600	lamps	15
Shipping & Admin	150,000	$ -	-	-	150,000	$ -	-	-	150,000	$ -	-	-	dollars	1
Showerhead	150	$ 3.00	0.079	73.180	150	$ 3.00	0.079	73.180	150	$ 3.00	0.079	73.180	units	5
Switch Plug	250	$ 20.00	0.003	26.850	250	$ 20.00	0.003	26.850	250	$ 20.00	0.003	26.850	lamps	5
Peer Group Comparison														
Peer Group Comparison - Quarterly Paper Report	2,484,000	$ 1,300,000.00	0.002	4.422	2,235,600	$ 1,430,000.00	0.002	4.422	2,012,040	$ 1,573,000.00	0.002	4.422	units	1
Upstream														
Heat Pumps	200	$ 250.00	0.212	1,644.200	200	$ 250.00	0.212	1,644.200	200	$ 250.00	0.212	1,644.200	units	15
LED	600,000	$ 1.30	0.006	34.110	500,000	$ 1.30	0.002	12.600	400,000	$ 1.30	0.002	12.600	lamps	15
LED Bulb Replacement	50,000	$ 2.50	0.006	34.110	50,000	$ 2.50	0.002	12.600	50,000	$ 2.50	0.002	12.600	lamps	15
LED Smart Bulb	25,000	$ 10.00	0.006	34.110	35,000	$ 10.00	0.002	12.600	45,000	$ 10.00	0.002	12.600	lamps	15
LED Specialty Lamps	150,000	$ 2.25	0.006	34.110	150,000	$ 2.25	0.002	12.600	150,000	$ 2.25	0.002	12.600	lamps	15
CREEM														
Residential Custom														
Emerging Tech	150	$ 600.00	0.120	1,200.000	150	$ 600.00	0.120	1,200.000	150	$ 600.00	0.120	1,200.000	units	7
New Construction	50,000	$ -	16.667	166,666.667	60,000	$ -	16.667	166,666.667	70,000	$ -	16.667	166,666.667	dollars	10
Whole Home Retrofit	250	$ 200.00	0.040	400.000	250	$ 200.00	0.040	400.000	250	$ 200.00	0.040	400.000	units	10
Whole Home Services	150,000	$ -	-	-	200,000	$ -	-	-	250,000	$ -	-	-	dollars	1
RESM														
Codes & Standards														
Appliance Standards	-	$ -	-	-	8,000,000	$ -	-	-	16,000,000	$ -	-	-	kWh	8
Downstream														
Residential A/C Tune Up	4,000	$ 75.00	0.073	323.450	4,000	$ 75.00	0.073	323.450	4,000	$ 75.00	0.073	323.450	systems	3
Solar Water Heater Tune Up	2,500	$ 100.00	0.015	124.500	2,500	$ 100.00	0.015	124.500	2,500	$ 100.00	0.015	124.500	systems	5
Whole Home Assistance														
Technical Support	250,000	$ -	-	-	250,000	$ -	-	-	250,000	$ -	-	-	dollars	1
Whole Home Audit	50	$ 300.00	-	-	50	$ 300.00	-	-	50	$ 300.00	-	-	units	1

CUSTOMER LEVEL SAVINGS

	PY19 1st Year Demand Savings (kW)	PY19 1st Year Energy Savings (kWh)	PY19 Lifetime Energy Savings (kWh)	PY20 1st Year Demand Savings (kW)	PY20 1st Year Energy Savings (kWh)	PY20 Lifetime Energy Savings (kWh)	PY21 1st Year Demand Savings (kW)	PY21 1st Year Energy Savings (kWh)	PY21 Lifetime Energy Savings (kWh)
BHTR	1,212	10,928,974	163,053,773	1,204	10,919,517	163,236,685	1,220	11,104,205	166,071,377
Commercial Kitchen	214	1,245,403	18,500,212	240	1,394,055	20,639,571	240	1,396,334	20,666,919
Commercial Ice Machine	0	3,039	36,464	1	4,558	54,695	1	6,837	82,043
Demand Control Ventilation - Kitchen Fan	203	1,185,125	17,776,868	224	1,303,637	19,554,554	224	1,303,637	19,554,554
Reach-In Freezer - Glass Door	2	17,447	209,364	3	26,171	314,046	3	26,171	314,046
Reach-In Freezer - Solid Door	0	2,597	31,164	0	3,895	46,746	0	3,895	46,746
Reach-In Refrigerator - Glass Door	0	1,343	16,118	0	2,015	24,178	0	2,015	24,178
Reach-In Refrigerator - Solid Door	0	2,630	31,565	0	3,946	47,347	0	3,946	47,347
Steam Cooker	8	33,223	398,670	11	49,834	598,005	11	49,834	598,005
EMPOWER Non-profit	83	829,286	12,439,286	75	754,214	11,313,214	95	950,864	14,262,964
HVAC & Other	12	115,000	1,725,000	22	218,500	3,277,500	42	415,150	6,227,250
Lighting	71	714,286	10,714,286	54	535,714	8,035,714	54	535,714	8,035,714
Technical Support	-	-	-	-	-	-	-	-	-
Energy Advantage	871	8,714,285	130,714,275	871	8,714,285	130,714,275	871	8,714,285	130,714,275
Cost Adder for Fixtures above or out of the reach of a 10' Ladder-Flat R	-	-	-	-	-	-	-	-	-
HVAC Packaged - Air cooled - Flat Rate	50	500,000	7,500,000	50	500,000	7,500,000	50	500,000	7,500,000
Lighting - Flat Rate	821	8,214,285	123,214,275	821	8,214,285	123,214,275	821	8,214,285	123,214,275
Grid Services	-	-	-	-	-	-	-	-	-
Demand Response	-	-	-	-	-	-	-	-	-
Energy Storage	-	-	-	-	-	-	-	-	-
EoT	-	-	-	-	-	-	-	-	-
Technical Support	-	-	-	-	-	-	-	-	-
Multifamily Direct Install	43	140,000	1,400,000	18	56,963	569,625	13	42,722	427,219
Audit Services	-	-	-	-	-	-	-	-	-
Measures	43	140,000	1,400,000	18	56,963	569,625	13	42,722	427,219
Site Visit Fee [MFDI]	-	-	-	-	-	-	-	-	-
BGRID	-	-	-	-	-	-	-	-	-
Grid Services	-	-	-	-	-	-	-	-	-
Demand Response	-	-	-	-	-	-	-	-	-
Energy Storage	-	-	-	-	-	-	-	-	-
EoT	-	-	-	-	-	-	-	-	-
Technical Support	-	-	-	-	-	-	-	-	-
BET	-	-	-	850	10,301,815	257,545,375	850	10,301,815	257,545,375
SWAC Infrastructure	-	-	-	850	10,301,815	257,545,375	850	10,301,815	257,545,375
SWAC Integration	-	-	-	850	10,301,815	257,545,375	850	10,301,815	257,545,375
BTRAN	-	-	-	-	-	-	-	-	-
Transformation	-	-	-	-	-	-	-	-	-
Commercial	-	-	-	-	-	-	-	-	-
RESIDENTIAL PROGRAM	11,312	58,825,329	492,824,326	8,413	48,878,257	506,462,023	8,679	54,728,613	549,040,154
REEM	10,623	55,465,612	469,064,207	7,081	37,996,246	423,228,960	6,566	35,873,738	401,828,452
Accounting	-	-	-	-	-	-	-	-	-
Accounting	-	-	-	-	-	-	-	-	-
Downstream	1,204	10,986,928	162,091,029	1,529	13,564,486	191,201,588	1,529	13,564,486	191,201,588
Central AC Retrofit	9	35,205	528,078	23	88,013	1,320,195	23	88,013	1,320,195
Garage Freezer Bounty (Customer Incentive)	47	405,925	2,841,475	93	811,850	5,682,950	93	811,850	5,682,950
Garage Freezer Bounty (Recycler Incentive)	47	405,925	2,841,475	93	811,850	5,682,950	93	811,850	5,682,950
Pool VFD Controller Pumps	20	173,442	1,734,420	50	433,605	4,336,050	50	433,605	4,336,050
PV Water Heating	23	102,855	1,851,381	69	308,564	5,554,143	69	308,564	5,554,143
Refrigerator (with Recycling of Old)	352	3,071,720	43,004,080	352	3,071,720	43,004,080	352	3,071,720	43,004,080
Solar Attic Fans	-	39,573	791,450	-	39,573	791,450	-	39,573	791,450
Solar Water Heater (SWH) Incentive	370	2,489,875	44,817,750	370	2,489,875	44,817,750	370	2,489,875	44,817,750
Solar Water Heater Interest Buy down	15	99,595	1,792,710	15	99,595	1,792,710	15	99,595	1,792,710
VRF Split System AC <2 tons	162	2,577,420	38,661,300	162	2,577,420	38,661,300	162	2,577,420	38,661,300
VRF Split System AC >3 tons	46	838,460	12,576,900	50	1,056,105	15,841,575	50	1,056,105	15,841,575
VRF Split System AC 2-3 tons	20	422,442	6,336,630	50	1,056,105	15,841,575	50	1,056,105	15,841,575
Whole House Fans	41	126,632	2,532,640	41	126,632	2,532,640	41	126,632	2,532,640
Window AC with Recycling (Customer Incentive)	27	98,930	890,370	81	296,790	2,671,110	81	296,790	2,671,110
Window AC with Recycling (Recycler Incentive)	27	98,930	890,370	81	296,790	2,671,110	81	296,790	2,671,110
Midstream	646	4,771,072	49,058,687	646	4,771,072	49,058,687	646	4,771,072	49,058,687
Advanced Power Strip - Tier I	18	155,925	779,625	18	155,925	779,625	18	155,925	779,625
Air Purifiers	34	292,875	2,635,875	34	292,875	2,635,875	34	292,875	2,635,875
Clothes Dryers	83	413,950	5,795,300	83	413,950	5,795,300	83	413,950	5,795,300
Clothes Washers - Tier I	55	285,175	3,136,925	55	285,175	3,136,925	55	285,175	3,136,925
Clothes Washers - Tier II	60	313,600	3,449,600	60	313,600	3,449,600	60	313,600	3,449,600
Clothes Washers - Tier III	17	88,185	970,035	17	88,185	970,035	17	88,185	970,035
Dehumidifiers	26	225,598	2,707,173	26	225,598	2,707,173	26	225,598	2,707,173
Dishwashers	3	37,000	407,000	3	37,000	407,000	3	37,000	407,000
Electronics - Soundbars	2	44,260	177,040	2	44,260	177,040	2	44,260	177,040
Electronics - TVs	350	2,893,800	28,938,000	350	2,893,800	28,938,000	350	2,893,800	28,938,000
Smart Thermostats	-	20,705	62,114	-	20,705	62,114	-	20,705	62,114
Online Marketplace	53	254,602	1,659,472	41	185,770	1,453,008	41	185,770	1,453,008
Advanced Power Strip - Tier I	4	31,185	155,925	4	31,185	155,925	4	31,185	155,925
Advanced Power Strip - Tier II	11	89,400	447,000	11	89,400	447,000	11	89,400	447,000
Aerator Bathroom	5	1,600	8,000	5	1,600	8,000	5	1,600	8,000
Aerator Kitchen	3	5,575	27,875	3	5,575	27,875	3	5,575	27,875
LED	15	85,275	728,300	5	31,500	567,000	5	31,500	567,000
LED Smart Bulb	1	6,822	58,264	0	2,520	45,360	0	2,520	45,360
LED Specialty	3	17,055	145,660	1	6,300	113,400	1	6,300	113,400
Shipping & Admin	-	-	-	-	-	-	-	-	-
Showerhead	12	10,977	54,885	12	10,977	54,885	12	10,977	54,885
Switch Plug	1	6,713	33,563	1	6,713	33,563	1	6,713	33,563
Peer Group Comparison	3,726	10,983,420	10,983,420	3,353	9,885,078	9,885,078	3,018	8,896,570	8,896,570
Peer Group Comparison - Quarterly Paper Report	3,726	10,983,420	10,983,420	3,353	9,885,078	9,885,078	3,018	8,896,570	8,896,570
Upstream	4,992	28,469,590	245,271,600	1,512	9,589,840	171,630,600	1,332	8,455,840	151,218,600
Heat Pumps	42	328,840	4,932,600	42	328,840	4,932,600	42	328,840	4,932,600
LED	3,600	20,466,000	174,792,000	1,000	6,300,000	113,400,000	800	5,040,000	90,720,000
LED Bulb Replacement	300	1,705,500	14,566,000	100	630,000	11,340,000	100	630,000	11,340,000
LED Smart Bulb	150	852,750	7,283,000	70	441,000	7,938,000	90	567,000	10,206,000
LED Specialty Lamps	900	5,116,500	43,698,000	300	1,890,000	34,020,000	300	1,890,000	34,020,000
CREEM	28	446,667	2,260,000	28	446,667	2,260,000	28	446,667	2,260,000
Residential Custom	28	446,667	2,260,000	28	446,667	2,260,000	28	446,667	2,260,000
Emerging Tech	18	180,000	1,260,000	18	180,000	1,260,000	18	180,000	1,260,000
New Construction	-	166,667	-	-	166,667	-	-	166,667	-
Whole Home Retrofit	10	100,000	1,000,000	10	100,000	1,000,000	10	100,000	1,000,000
Whole Home Services	-	-	-	-	-	-	-	-	-
RESM	330	1,605,050	5,437,650	1,130	9,605,050	69,437,650	1,930	17,605,050	133,437,650
Codes & Standards	-	-	-	800	8,000,000	64,000,000	1,600	16,000,000	128,000,000
Appliance Standards	-	-	-	800	8,000,000	64,000,000	1,600	16,000,000	128,000,000
Downstream	330	1,605,050	5,437,650	330	1,605,050	5,437,650	330	1,605,050	5,437,650
Residential A/C Tune Up	292	1,293,800	3,881,400	292	1,293,800	3,881,400	292	1,293,800	3,881,400
Solar Water Heater Tune Up	38	311,250	1,556,250	38	311,250	1,556,250	38	311,250	1,556,250
Whole Home Assistance	-	-	-	-	-	-	-	-	-
Technical Support	-	-	-	-	-	-	-	-	-
Whole Home Audit	-	-	-	-	-	-	-	-	-

PROGRAM LEVEL SAVINGS

	PY19 1st Year Demand Savings (kW)	PY19 1st Year Energy Savings (kWh)	PY19 Lifetime Energy Savings (kWh)	PY20 1st Year Demand Savings (kW)	PY20 1st Year Energy Savings (kWh)	PY20 Lifetime Energy Savings (kWh)	PY21 1st Year Demand Savings (kW)	PY21 1st Year Energy Savings (kWh)	PY21 Lifetime Energy Savings (kWh)
BHTR	1,155	10,413,329	155,360,657	1,147	10,404,318	155,534,940	1,162	10,580,293	158,235,886
Commercial Kitchen	204	1,186,643	17,627,345	228	1,328,281	19,665,766	229	1,330,453	19,691,823
Commercial Ice Machine	0	2,895	34,743	0	4,343	52,115	1	6,514	78,172
Demand Control Ventilation - Kitchen Fan	194	1,129,209	16,938,129	213	1,242,129	18,631,942	213	1,242,129	18,631,942
Reach-In Freezer - Glass Door	2	16,624	199,486	3	24,936	299,229	3	24,936	299,229
Reach-In Freezer - Solid Door	0	2,474	29,693	0	3,712	44,540	0	3,712	44,540
Reach-In Refrigerator - Glass Door	0	1,280	15,358	0	1,920	23,037	0	1,920	23,037
Reach-In Refrigerator - Solid Door	0	2,506	30,075	0	3,759	45,113	0	3,759	45,113
Steam Cooker	7	31,655	379,860	11	47,483	569,790	11	47,483	569,790
EMPOWER Non-profit	79	790,159	11,852,382	72	718,629	10,779,440	91	906,001	13,590,017
HVAC & Other	11	109,574	1,643,612	21	208,191	3,122,863	40	395,563	5,933,439
Lighting	68	680,585	10,208,770	51	510,439	7,656,578	51	510,439	7,656,578
Technical Support	-	-	-	-	-	-	-	-	-
Energy Advantage	830	8,303,132	124,546,985	830	8,303,132	124,546,985	830	8,303,132	124,546,985
Cost Adder for Fixtures above or out of the reach of a 10' Ladder-Flat R	-	-	-	-	-	-	-	-	-
HVAC Packaged - Air cooled - Flat Rate	48	476,409	7,146,139	48	476,409	7,146,139	48	476,409	7,146,139
Lighting - Flat Rate	783	7,826,723	117,400,846	783	7,826,723	117,400,846	783	7,826,723	117,400,846
Grid Services	-	-	-	-	-	-	-	-	-
Demand Response	-	-	-	-	-	-	-	-	-
Energy Storage	-	-	-	-	-	-	-	-	-
EoT	-	-	-	-	-	-	-	-	-
Technical Support	-	-	-	-	-	-	-	-	-
Multifamily Direct Install	41	133,395	1,333,946	17	54,275	542,749	13	40,706	407,062
Audit Services	-	-	-	-	-	-	-	-	-
Measures	41	133,395	1,333,946	17	54,275	542,749	13	40,706	407,062
Site Visit Fee [MFDI]	-	-	-	-	-	-	-	-	-
BGRID	-	-	-	-	-	-	-	-	-
Grid Services	-	-	-	-	-	-	-	-	-
Demand Response	-	-	-	-	-	-	-	-	-
Energy Storage	-	-	-	-	-	-	-	-	-
EoT	-	-	-	-	-	-	-	-	-
Technical Support	-	-	-	-	-	-	-	-	-
BET	-	-	-	668	8,089,912	202,247,809	668	8,089,912	202,247,809
SWAC Infrastructure	-	-	-	668	8,089,912	202,247,809	668	8,089,912	202,247,809
SWAC Integration	-	-	-	668	8,089,912	202,247,809	668	8,089,912	202,247,809
BTRAN	-	-	-	-	-	-	-	-	-
Transformation	-	-	-	-	-	-	-	-	-
Commercial	-	-	-	-	-	-	-	-	-
RESIDENTIAL PROGRAM	8,642	41,993,440	323,459,144	7,293	40,240,643	364,575,189	7,598	46,289,843	414,482,076
REEM	7,958	38,773,772	299,864,733	6,004	29,814,845	284,070,345	5,558	28,186,146	272,349,098
Accounting	-	-	-	-	-	-	-	-	-
Accounting	-	-	-	-	-	-	-	-	-
Downstream	851	8,112,008	116,507,874	1,119	10,244,092	140,587,317	1,119	10,244,092	140,587,317
Central AC Retrofit	7	29,121	436,811	19	72,802	1,092,029	19	72,802	1,092,029
Garage Freezer Bounty (Customer Incentive)	38	335,770	2,350,389	77	671,540	4,700,778	77	671,540	4,700,778
Garage Freezer Bounty (Recycler Incentive)	38	335,770	2,350,389	77	671,540	4,700,778	77	671,540	4,700,778
Pool VFD Controller Pumps	16	143,466	1,434,664	41	358,666	3,586,660	41	358,666	3,586,660
PV Water Heating	19	85,078	1,531,411	57	255,235	4,594,232	57	255,235	4,594,232
Refrigerator (with Recycling of Old)	291	2,540,841	35,571,777	291	2,540,841	35,571,777	291	2,540,841	35,571,777
Solar Attic Fans	-	32,733	654,665	-	32,733	654,665	-	32,733	654,665
Solar Water Heater (SWH) Incentive	167	1,121,024	20,178,427	167	1,121,024	20,178,427	167	1,121,024	20,178,427
Solar Water Heater Interest Buy down	7	44,841	807,137	7	44,841	807,137	7	44,841	807,137
VRF Split System AC <2 tons	134	2,131,970	31,979,550	134	2,131,970	31,979,550	134	2,131,970	31,979,550
VRF Split System AC >3 tons	38	693,551	10,403,261	41	873,581	13,103,709	41	873,581	13,103,709
VRF Split System AC 2-3 tons	17	349,432	5,241,484	41	873,581	13,103,709	41	873,581	13,103,709
Whole House Fans	34	104,746	2,094,929	34	104,746	2,094,929	34	104,746	2,094,929
Window AC with Recycling (Customer Incentive)	22	81,832	736,489	67	245,496	2,209,468	67	245,496	2,209,468
Window AC with Recycling (Recycler Incentive)	22	81,832	736,489	67	245,496	2,209,468	67	245,496	2,209,468
Midstream	535	3,946,498	40,579,979	535	3,946,498	40,579,979	535	3,946,498	40,579,979
Advanced Power Strip - Tier I	14	128,977	644,884	14	128,977	644,884	14	128,977	644,884
Air Purifiers	28	242,258	2,180,322	28	242,258	2,180,322	28	242,258	2,180,322
Clothes Dryers	68	342,408	4,793,711	68	342,408	4,793,711	68	342,408	4,793,711
Clothes Washers - Tier I	45	235,889	2,594,777	45	235,889	2,594,777	45	235,889	2,594,777
Clothes Washers - Tier II	50	259,401	2,853,413	50	259,401	2,853,413	50	259,401	2,853,413
Clothes Washers - Tier III	14	72,944	802,386	14	72,944	802,386	14	72,944	802,386
Dehumidifiers	21	186,608	2,239,298	21	186,608	2,239,298	21	186,608	2,239,298
Dishwashers	2	30,605	336,659	2	30,605	336,659	2	30,605	336,659
Electronics - Soundbars	2	36,611	146,443	2	36,611	146,443	2	36,611	146,443
Electronics - TVs	290	2,393,671	23,936,707	290	2,393,671	23,936,707	290	2,393,671	23,936,707
Smart Thermostats	-	17,126	51,379	-	17,126	51,379	-	17,126	51,379
Online Marketplace	44	210,599	1,372,669	34	153,663	1,201,887	34	153,663	1,201,887
Advanced Power Strip - Tier I	3	25,795	128,977	3	25,795	128,977	3	25,795	128,977
Advanced Power Strip - Tier II	9	73,949	369,746	9	73,949	369,746	9	73,949	369,746
Aerator Bathroom	4	1,323	6,617	4	1,323	6,617	4	1,323	6,617
Aerator Kitchen	2	4,611	23,057	2	4,611	23,057	2	4,611	23,057
LED	12	70,537	602,429	4	26,056	469,007	4	26,056	469,007
LED Smart Bulb	1	5,643	48,194	0	2,084	37,521	0	2,084	37,521
LED Specialty	2	14,107	120,486	1	5,211	93,801	1	5,211	93,801
Shipping & Admin	-	-	-	-	-	-	-	-	-
Showerhead	10	9,080	45,399	10	9,080	45,399	10	9,080	45,399
Switch Plug	1	5,552	27,762	1	5,552	27,762	1	5,552	27,762
Peer Group Comparison	3,901	11,500,227	11,500,227	3,511	10,350,204	10,350,204	3,160	9,315,184	9,315,184
Peer Group Comparison - Quarterly Paper Report	3,901	11,500,227	11,500,227	3,511	10,350,204	10,350,204	3,160	9,315,184	9,315,184
Upstream	2,627	15,004,440	129,903,986	805	5,120,388	91,350,958	710	4,526,709	80,664,732
Heat Pumps	35	272,007	4,080,109	35	272,007	4,080,109	35	272,007	4,080,109
LED	1,885	10,714,497	91,508,274	524	3,298,218	59,367,924	419	2,638,574	47,494,340
LED Bulb Replacement	157	892,875	7,625,689	52	329,822	5,936,792	52	329,822	5,936,792
LED Smart Bulb	79	446,437	3,812,845	37	230,875	4,155,755	47	296,840	5,343,113
LED Specialty Lamps	471	2,678,624	22,877,068	157	989,465	17,810,377	157	989,465	17,810,377
CREEM	19	303,994	1,538,121	19	303,994	1,538,121	19	303,994	1,538,121
Residential Custom	19	303,994	1,538,121	19	303,994	1,538,121	19	303,994	1,538,121
Emerging Tech	12	122,505	857,537	12	122,505	857,537	12	122,505	857,537
New Construction	-	113,431	-	-	113,431	-	-	113,431	-
Whole Home Retrofit	7	68,058	680,585	7	68,058	680,585	7	68,058	680,585
Whole Home Services	-	-	-	-	-	-	-	-	-
RESM	317	1,546,127	5,238,029	1,088	9,252,440	66,888,529	1,859	16,958,752	128,539,030
Codes & Standards	-	-	-	771	7,706,313	61,650,501	1,541	15,412,625	123,301,001
Appliance Standards	-	-	-	771	7,706,313	61,650,501	1,541	15,412,625	123,301,001
Downstream	317	1,546,127	5,238,029	317	1,546,127	5,238,029	317	1,546,127	5,238,029
Residential A/C Tune Up	281	1,246,303	3,738,910	281	1,246,303	3,738,910	281	1,246,303	3,738,910
Solar Water Heater Tune Up	36	299,824	1,499,119	36	299,824	1,499,119	36	299,824	1,499,119
Whole Home Assistance	-	-	-	-	-	-	-	-	-
Technical Support	-	-	-	-	-	-	-	-	-
Whole Home Audit	-	-	-	-	-	-	-	-	-

FINANCIALS

	PY19 Incentive Budget	PY19 Total Resource Benefit (TRB)	PY19 Total Resource Cost (TRC)	PY20 Incentive Budget	PY20 Total Resource Benefit (TRB)	PY20 Total Resource Cost (TRC)	PY21 Incentive Budget	PY21 Total Resource Benefit (TRB)	PY21 Total Resource Cost (TRC)
BHTR	$ 3,565,651	$ 31,701,580	$16,331,351	$ 4,002,289	$ 31,717,239	$ 18,030,839	$ 4,263,190	$ 32,238,411	$ 18,838,640
Commercial Kitchen	$ 319,425	$ 4,142,177	$ 1,597,125	$ 353,138	$ 4,624,968	$ 1,765,688	$ 353,363	$ 4,630,589	$ 1,766,813
Commercial Ice Machine	300	7,495	1,500	450	11,242	2,250	675	16,863	3,375
Demand Control Ventilation - Kitchen Fan	315,000	3,970,742	1,575,000	346,500	4,367,817	1,732,500	346,500	4,367,817	1,732,500
Reach-In Freezer - Glass Door	550	42,995	2,750	825	64,492	4,125	825	64,492	4,125
Reach-In Freezer - Solid Door	525	6,397	2,625	788	9,595	3,938	788	9,595	3,938
Reach-In Refrigerator - Glass Door	400	3,314	2,000	600	4,971	3,000	600	4,971	3,000
Reach-In Refrigerator - Solid Door	1,150	6,480	5,750	1,725	9,720	8,625	1,725	9,720	8,625
Steam Cooker	1,500	104,754	7,500	2,250	157,132	11,250	2,250	157,132	11,250
EMPOWER Non-profit	$ 200,000	$ 2,357,597	$ 800,000	$ 300,000	$ 2,144,174	$ 1,300,000	$ 350,000	$ 2,703,236	$ 1,550,000
HVAC & Other	75,000	326,936	375,000	100,000	621,179	500,000	150,000	1,180,240	750,000
Lighting	75,000	2,030,660	375,000	150,000	1,522,995	750,000	150,000	1,522,995	750,000
Technical Support	50,000	-	50,000	50,000	-	50,000	50,000	-	50,000
Energy Advantage	$ 2,654,375	$ 24,774,056	$13,254,375	$ 2,854,375	$ 24,774,056	$ 14,254,375	$ 2,954,375	$ 24,774,056	$ 14,754,375
Cost Adder for Fixtures above or out of the reach of a 10' Ladder-Flat R	4,375	-	4,375	4,375	-	4,375	4,375	-	4,375
HVAC Packaged - Air cooled - Flat Rate	250,000	1,421,462	1,250,000	350,000	1,421,462	1,750,000	450,000	1,421,462	2,250,000
Lighting - Flat Rate	2,400,000	23,352,594	12,000,000	2,500,000	23,352,594	12,500,000	2,500,000	23,352,594	12,500,000
Grid Services	$ 267,851	$ -	$ 267,851	$ 401,777	$ -	$ 401,777	$ 535,702	$ -	$ 535,702
Demand Response	80,355	-	80,355	113,837	-	113,837	147,318	-	147,318
Energy Storage	107,140	-	107,140	140,622	-	140,622	174,103	-	174,103
EoT	53,570	-	53,570	87,052	-	87,052	120,533	-	120,533
Technical Support	26,785	-	26,785	60,267	-	60,267	93,748	-	93,748
Multifamily Direct Install	$ 124,000	$ 427,750	$ 412,000	$ 93,000	$ 174,041	$ 309,000	$ 69,750	$ 130,531	$ 231,750
Audit Services	30,000	-	30,000	22,500	-	22,500	16,875	-	16,875
Measures	72,000	427,750	360,000	54,000	174,041	270,000	40,500	130,531	202,500
Site Visit Fee [MFDI]	22,000	-	22,000	16,500	-	16,500	12,375	-	12,375
BGRID	$ 803,554	$ -	$ 803,554	$ 1,205,330	$ -	$ 1,205,330	$ 1,607,107	$ -	$ 1,607,107
Grid Services	$ 803,554	$ -	$ 803,554	$ 1,205,330	$ -	$ 1,205,330	$ 1,607,107	$ -	$ 1,607,107
Demand Response	241,066	-	241,066	341,510	-	341,510	441,954	-	441,954
Energy Storage	321,421	-	321,421	421,866	-	421,866	522,310	-	522,310
EoT	160,711	-	160,711	261,155	-	261,155	361,599	-	361,599
Technical Support	80,355	-	80,355	180,800	-	180,800	281,244	-	281,244
BET	$ -	$ -	$ -	$ 1,000,500	$ 31,485,386	$ 5,002,500	$ 1,000,500	$ 31,485,386	$ 5,002,500
SWAC Infrastructure	$ -	$ -	$ -	$ 1,000,500	$ 31,485,386	$ 5,002,500	$ 1,000,500	$ 31,485,386	$ 5,002,500
SWAC Integration	-	-	-	1,000,500	31,485,386	5,002,500	1,000,500	31,485,386	5,002,500
BTRAN	$ 1,450,027	$ -	$ 1,450,027	$ 1,450,027	$ -	$ 1,450,027	$ 1,450,027	$ -	$ 1,450,027
Transformation	$ 1,450,027	$ -	$ 1,450,027	$ 1,450,027	$ -	$ 1,450,027	$ 1,450,027	$ -	$ 1,450,027
Commercial	1,450,027	-	1,450,027	1,450,027	-	1,450,027	1,450,027	-	1,450,027
RESIDENTIAL PROGRAM	$11,360,610	$ 94,898,344	$42,313,010	$12,330,349	$ 75,760,121	$ 45,452,249	$13,003,979	$ 86,882,997	$ 47,050,004
REEM	$ 6,309,597	$ 88,354,975	$29,749,997	$ 6,764,597	$ 57,388,677	$ 32,024,997	$ 6,877,597	$ 55,170,673	$ 32,589,997
Accounting	$ 299,497	$ -	$ 299,497	$ 299,497	$ -	$ 299,497	$ 299,497	$ -	$ 299,497
Accounting	299,497	-	299,497	299,497	-	299,497	299,497	-	299,497
Downstream	$ 2,272,500	$ 23,234,060	$11,362,500	$ 2,627,500	$ 28,371,741	$ 13,137,500	$ 2,627,500	$ 28,371,741	$ 13,137,500
Central AC Retrofit	15,000	120,842	75,000	37,500	302,104	187,500	37,500	302,104	187,500
Garage Freezer Bounty (Customer Incentive)	37,500	543,631	187,500	75,000	1,087,262	375,000	75,000	1,087,262	375,000
Garage Freezer Bounty (Recycler Incentive)	25,000	543,631	125,000	50,000	1,087,262	250,000	50,000	1,087,262	250,000
Pool VFD Controller Pumps	20,000	314,523	100,000	50,000	786,308	250,000	50,000	786,308	250,000
PV Water Heating	37,500	361,246	187,500	112,500	1,083,738	562,500	112,500	1,083,738	562,500
Refrigerator (with Recycling of Old)	600,000	7,456,261	3,000,000	600,000	7,456,261	3,000,000	600,000	7,456,261	3,000,000
Solar Attic Fans	12,500	91,522	62,500	12,500	91,522	62,500	12,500	91,522	62,500
Solar Water Heater (SWH) Incentive	937,500	4,134,506	4,687,500	937,500	4,134,506	4,687,500	937,500	4,134,506	4,687,500
Solar Water Heater Interest Buy down	37,500	165,380	187,500	37,500	165,380	187,500	37,500	165,380	187,500
VRF Split System AC <2 tons	300,000	5,772,185	1,500,000	300,000	5,772,185	1,500,000	300,000	5,772,185	1,500,000
VRF Split System AC >3 tons	125,000	1,836,531	625,000	125,000	2,264,405	625,000	125,000	2,264,405	625,000
VRF Split System AC 2-3 tons	50,000	905,762	250,000	125,000	2,264,405	625,000	125,000	2,264,405	625,000
Whole House Fans	30,000	543,860	150,000	30,000	543,860	150,000	30,000	543,860	150,000
Window AC with Recycling (Customer Incentive)	25,000	222,091	125,000	75,000	666,272	375,000	75,000	666,272	375,000
Window AC with Recycling (Recycler Incentive)	20,000	222,091	100,000	60,000	666,272	300,000	60,000	666,272	300,000
Midstream	$ 701,500	$ 9,386,726	$ 3,507,500	$ 701,500	$ 9,386,726	$ 3,507,500	$ 701,500	$ 9,386,726	$ 3,507,500
Advanced Power Strip - Tier I	42,500	154,468	212,500	42,500	154,468	212,500	42,500	154,468	212,500
Air Purifiers	15,000	481,687	75,000	15,000	481,687	75,000	15,000	481,687	75,000
Clothes Dryers	87,500	1,211,239	437,500	87,500	1,211,239	437,500	87,500	1,211,239	437,500
Clothes Washers - Tier I	75,000	672,945	375,000	75,000	672,945	375,000	75,000	672,945	375,000
Clothes Washers - Tier II	60,000	737,707	300,000	60,000	737,707	300,000	60,000	737,707	300,000
Clothes Washers - Tier III	20,000	208,058	100,000	20,000	208,058	100,000	20,000	208,058	100,000
Dehumidifiers	10,500	482,460	52,500	10,500	482,460	52,500	10,500	482,460	52,500
Dishwashers	30,000	67,383	150,000	30,000	67,383	150,000	30,000	67,383	150,000
Electronics - Soundbars	8,000	29,461	40,000	8,000	29,461	40,000	8,000	29,461	40,000
Electronics - TVs	350,000	5,332,276	1,750,000	350,000	5,332,276	1,750,000	350,000	5,332,276	1,750,000
Smart Thermostats	3,000	9,043	15,000	3,000	9,043	15,000	3,000	9,043	15,000
Online Marketplace	$ 193,600	$ 509,204	$ 368,000	$ 193,600	$ 302,926	$ 368,000	$ 193,600	$ 302,926	$ 368,000
Advanced Power Strip - Tier I	5,000	30,894	25,000	5,000	30,894	25,000	5,000	30,894	25,000
Advanced Power Strip - Tier II	11,250	89,739	56,250	11,250	89,739	56,250	11,250	89,739	56,250
Aerator Bathroom	250	12,463	1,250	250	12,463	1,250	250	12,463	1,250
Aerator Kitchen	150	11,501	750	150	11,501	750	150	11,501	750
LED	12,500	250,278	62,500	12,500	89,124	62,500	12,500	89,124	62,500
LED Smart Bulb	4,000	20,022	20,000	4,000	7,130	20,000	4,000	7,130	20,000
LED Specialty	5,000	50,056	25,000	5,000	17,825	25,000	5,000	17,825	25,000
Shipping & Admin	150,000	-	150,000	150,000	-	150,000	150,000	-	150,000
Showerhead	450	37,610	2,250	450	37,610	2,250	450	37,610	2,250
Switch Plug	5,000	6,641	25,000	5,000	6,641	25,000	5,000	6,641	25,000
Peer Group Comparison	$ 1,300,000	$ 2,081,541	$ 6,500,000	$ 1,430,000	$ 1,873,387	$ 7,150,000	$ 1,573,000	$ 1,686,048	$ 7,865,000
Peer Group Comparison - Quarterly Paper Report	1,300,000	2,081,541	6,500,000	1,430,000	1,873,387	7,150,000	1,573,000	1,686,048	7,865,000
Upstream	$ 1,542,500	$ 53,143,444	$ 7,712,500	$ 1,512,500	$ 17,453,898	$ 7,562,500	$ 1,482,500	$ 15,423,232	$ 7,412,500
Heat Pumps	50,000	870,128	250,000	50,000	870,128	250,000	50,000	870,128	250,000
LED	780,000	38,016,957	3,900,000	650,000	11,281,476	3,250,000	520,000	9,025,181	2,600,000
LED Bulb Replacement	125,000	3,168,080	625,000	125,000	1,128,148	625,000	125,000	1,128,148	625,000
LED Smart Bulb	250,000	1,584,040	1,250,000	350,000	789,703	1,750,000	450,000	1,015,333	2,250,000
LED Specialty Lamps	337,500	9,504,239	1,687,500	337,500	3,384,443	1,687,500	337,500	3,384,443	1,687,500
CREEM	$ 340,000	$ 516,743	$ 1,100,000	$ 400,000	$ 516,743	$ 1,200,000	$ 460,000	$ 516,743	$ 1,300,000
Residential Custom	$ 340,000	$ 516,743	$ 1,100,000	$ 400,000	$ 516,743	$ 1,200,000	$ 460,000	$ 516,743	$ 1,300,000
Emerging Tech	90,000	191,292	450,000	90,000	191,292	450,000	90,000	191,292	450,000
New Construction	50,000	181,262	250,000	60,000	181,262	300,000	70,000	181,262	350,000
Whole Home Retrofit	50,000	144,189	250,000	50,000	144,189	250,000	50,000	144,189	250,000
Whole Home Services	150,000	-	150,000	200,000	-	200,000	250,000	-	250,000
RESM	$ 815,000	$ 1,511,553	$ 3,015,000	$ 815,000	$ 14,955,215	$ 3,015,000	$ 815,000	$ 28,398,878	$ 3,015,000
Codes & Standards	$ -	$ -	$ -	$ -	$ 13,443,662	$ -	$ -	$ 26,887,325	$ -
Appliance Standards	-	-	-	-	13,443,662	-	-	26,887,325	-
Downstream	$ 550,000	$ 1,511,553	$ 2,750,000	$ 550,000	$ 1,511,553	$ 2,750,000	$ 550,000	$ 1,511,553	$ 2,750,000
Residential A/C Tune Up	300,000	1,144,945	1,500,000	300,000	1,144,945	1,500,000	300,000	1,144,945	1,500,000
Solar Water Heater Tune Up	250,000	366,609	1,250,000	250,000	366,609	1,250,000	250,000	366,609	1,250,000
Whole Home Assistance	$ 265,000	$ -	$ 265,000	$ 265,000	$ -	$ 265,000	$ 265,000	$ -	$ 265,000
Technical Support	250,000	-	250,000	250,000	-	250,000	250,000	-	250,000
Whole Home Audit	15,000	-	15,000	15,000	-	15,000	15,000	-	15,000

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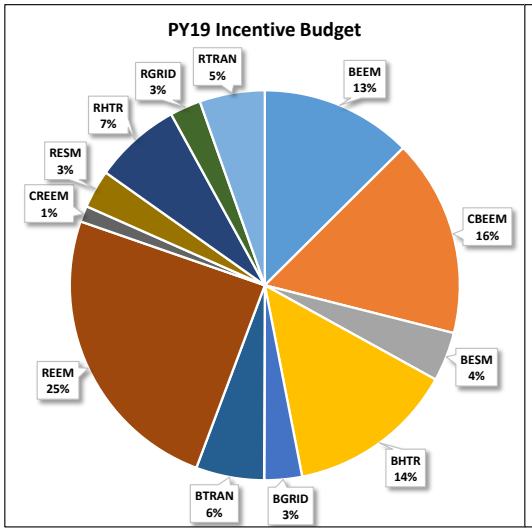
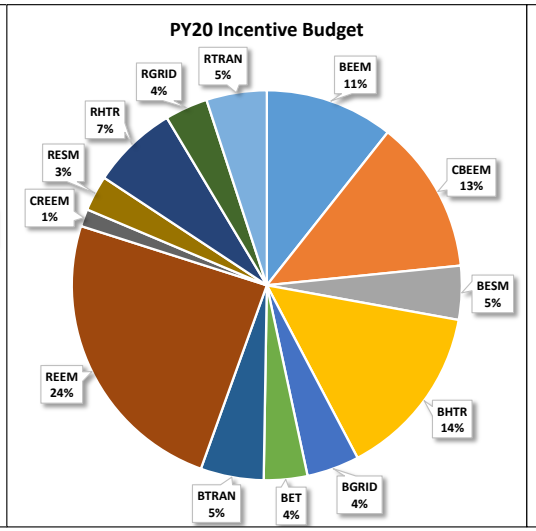
	MEASURE PARAMETERS													
	PY19				PY20				PY21					
	Quantity	Incentive per Unit	Average Demand Savings per Unit (kW)	Average Energy Savings per Unit (kWh)	Quantity	Incentive per Unit	Average Demand Savings per Unit (kW)	Average Energy Savings per Unit (kWh)	Quantity	Incentive per Unit	Average Demand Savings per Unit (kW)	Average Energy Savings per Unit (kWh)	Unit	Measure Life (years)
RHTR														
Community Program														
Measures & Services	50,000	$ 200,000.00	0.073	463.030	100,000	$ 400,000.00	0.073	463.030	150,000	$ 600,000.00	0.073	463.030	kWh	15
Technical Support	250,000	$ -	-	-	250,000	$ -	-	-	250,000	$ -	-	-	dollars	1
Downstream														
Clothes Dryers - Bulk Purchase	50	$ 500.00	0.033	165.580	50	$ 500.00	0.033	165.580	50	$ 500.00	0.033	165.580	units	14
Clothes Washers - Tier I - Bulk Purchase	50	$ 500.00	0.022	114.070	50	$ 500.00	0.022	114.070	50	$ 500.00	0.022	114.070	units	11
Heat Pumps	25	$ 3,000.00	0.212	1,644.200	25	$ 3,000.00	0.212	1,644.200	25	$ 3,000.00	0.212	1,644.200	units	15
Refrigerator Bulk Purchase	250	$ 500.00	0.165	1,109.440	250	$ 500.00	0.165	1,109.440	250	$ 500.00	0.165	1,109.440	units	18
SWH Direct Install	20	$ 8,000.00	0.296	1,991.900	20	$ 8,000.00	0.296	1,991.900	20	$ 8,000.00	0.296	1,991.900	units	18
Window AC with Recycling - Bulk Purchase	250	$ 150.00	0.054	197.860	250	$ 150.00	0.054	197.860	250	$ 150.00	0.054	197.860	units	9
Grid Services														
Demand Response	65,745	$ -	-	-	93,139	$ -	-	-	120,533	$ -	-	-	dollars	1
Energy Storage	87,660	$ -	-	-	115,054	$ -	-	-	142,448	$ -	-	-	dollars	1
EoT	43,830	$ -	-	-	71,224	$ -	-	-	98,618	$ -	-	-	dollars	1
Technical Support	21,915	$ -	-	-	49,309	$ -	-	-	76,703	$ -	-	-	dollars	1
Multifamily Direct Install														
Audit Services	975	$ 75.00	-	-	731	$ 75.00	-	-	548	$ 75.00	-	-	units	1
Measures	975	$ 180.00	0.108	350.000	731	$ 180.00	0.059	189.875	548	$ 180.00	0.059	189.875	units	10
Site Visit Fee	975	$ 55.00	-	-	731	$ 55.00	-	-	548	$ 55.00	-	-	units	1
Single Family Direct Install														
Audit Services	900	$ 75.00	-	-	675	$ 75.00	-	-	506	$ 75.00	-	-	units	1
Measures	900	$ 350.00	0.170	550.000	675	$ 350.00	0.078	251.405	506	$ 350.00	0.078	251.405	units	10
Site Visit Fee	900	$ 55.00	-	-	675	$ 55.00	-	-	506	$ 55.00	-	-	units	1
RGRID														
Grid Services														
Demand Response	197,236	$ -	-	-	279,417	$ -	-	-	361,599	$ -	-	-	dollars	1
Energy Storage	262,981	$ -	-	-	345,163	$ -	-	-	427,344	$ -	-	-	dollars	1
EoT	131,491	$ -	-	-	213,672	$ -	-	-	295,854	$ -	-	-	dollars	1
Technical Support	65,745	$ -	-	-	147,927	$ -	-	-	230,109	$ -	-	-	dollars	1
RTRAN														
Transformation														
Residential	1,387,658	$ -	-	-	1,387,658	$ -	-	-	1,387,658	$ -	-	-	dollars	1

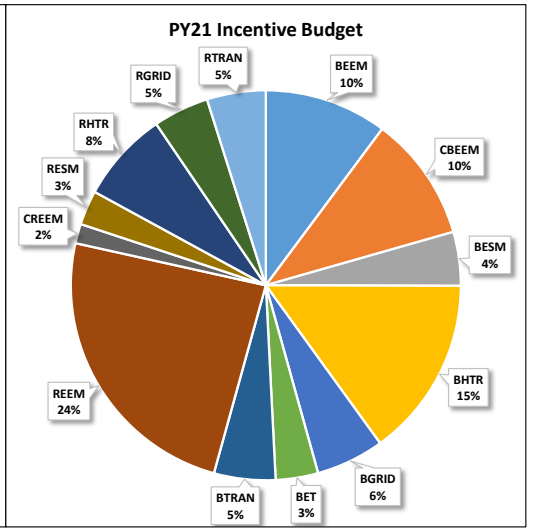
	CUSTOMER LEVEL SAVINGS									PROGRAM LEVEL SAVINGS								
	PY19			PY20			PY21			PY19			PY20			PY21		
	1st Year Demand Savings (kW)	1st Year Energy Savings (kWh)	Lifetime Energy Savings (kWh)	1st Year Demand Savings (kW)	1st Year Energy Savings (kWh)	Lifetime Energy Savings (kWh)	1st Year Demand Savings (kW)	1st Year Energy Savings (kWh)	Lifetime Energy Savings (kWh)	1st Year Demand Savings (kW)	1st Year Energy Savings (kWh)	Lifetime Energy Savings (kWh)	1st Year Demand Savings (kW)	1st Year Energy Savings (kWh)	Lifetime Energy Savings (kWh)	1st Year Demand Savings (kW)	1st Year Energy Savings (kWh)	Lifetime Energy Savings (kWh)
RHTR	**332**	**1,308,001**	**16,062,469**	**174**	**830,295**	**11,535,413**	**155**	**803,159**	**11,514,052**	**348**	**1,369,546**	**16,818,261**	**182**	**869,363**	**12,078,193**	**163**	**840,950**	**12,055,827**
Community Program	**5**	**50,000**	**750,000**	**10**	**100,000**	**1,500,000**	**15**	**150,000**	**2,250,000**	**5**	**52,353**	**785,290**	**10**	**104,705**	**1,570,580**	**16**	**157,058**	**2,355,870**
Measures & Services	5	50,000	750,000	10	100,000	1,500,000	15	150,000	2,250,000	5	52,353	785,290	10	104,705	1,570,580	16	157,058	2,355,870
Technical Support	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Downstream	**69**	**421,751**	**6,949,969**	**69**	**421,751**	**6,949,969**	**69**	**421,751**	**6,949,969**	**72**	**441,595**	**7,276,988**	**72**	**441,595**	**7,276,988**	**72**	**441,595**	**7,276,988**
Clothes Dryers - Bulk Purchase	2	8,279	115,906	2	8,279	115,906	2	8,279	115,906	2	8,669	121,360	2	8,669	121,360	2	8,669	121,360
Clothes Washers - Tier I - Bulk Purchase	1	5,704	62,739	1	5,704	62,739	1	5,704	62,739	1	5,972	65,691	1	5,972	65,691	1	5,972	65,691
Heat Pumps	5	41,105	616,575	5	41,105	616,575	5	41,105	616,575	6	43,039	645,587	6	43,039	645,587	6	43,039	645,587
Refrigerator Bulk Purchase	41	277,360	4,992,480	41	277,360	4,992,480	41	277,360	4,992,480	43	290,411	5,227,393	43	290,411	5,227,393	43	290,411	5,227,393
SWH Direct Install	6	39,838	717,084	6	39,838	717,084	6	39,838	717,084	6	41,713	750,825	6	41,713	750,825	6	41,713	750,825
Window AC with Recycling - Bulk Purchase	14	49,465	445,185	14	49,465	445,185	14	49,465	445,185	14	51,792	466,132	14	51,792	466,132	14	51,792	466,132
Grid Services	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Demand Response	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Storage	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EoT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Technical Support	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Multifamily Direct Install	**105**	**341,250**	**3,412,500**	**43**	**138,846**	**1,388,461**	**32**	**104,135**	**1,041,346**	**110**	**357,307**	**3,573,070**	**45**	**145,379**	**1,453,793**	**34**	**109,034**	**1,090,344**
Audit Services	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Measures	105	341,250	3,412,500	43	138,846	1,388,461	32	104,135	1,041,346	110	357,307	3,573,070	45	145,379	1,453,793	34	109,034	1,090,344
Site Visit Fee	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Single Family Direct Install	**153**	**495,000**	**4,950,000**	**52**	**169,698**	**1,696,984**	**39**	**127,274**	**1,272,738**	**160**	**518,291**	**5,182,914**	**55**	**177,683**	**1,776,833**	**41**	**133,262**	**1,332,624**
Audit Services	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Measures	153	495,000	4,950,000	52	169,698	1,696,984	39	127,274	1,272,738	160	518,291	5,182,914	55	177,683	1,776,833	41	133,262	1,332,624
Site Visit Fee	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RGRID	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Grid Services	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Demand Response	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Storage	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EoT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Technical Support	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RTRAN	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Transformation	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Residential	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	FINANCIALS								
	PY19			PY20			PY21		
	Incentive Budget	Total Resource Benefit (TRB)	Total Resource Cost (TRC)	Incentive Budget	Total Resource Benefit (TRB)	Total Resource Cost (TRC)	Incentive Budget	Total Resource Benefit (TRB)	Total Resource Cost (TRC)
RHTR	**$ 1,850,901**	**$ 4,515,073**	**$ 6,402,901**	**$ 1,976,914**	**$ 2,899,486**	**$ 6,838,414**	**$ 2,148,818**	**$ 2,796,703**	**$ 7,442,443**
Community Program	**$ 450,000**	**$ 156,205**	**$ 1,250,000**	**$ 650,000**	**$ 312,409**	**$ 2,250,000**	**$ 850,000**	**$ 468,614**	**$ 3,250,000**
Measures & Services	200,000	156,205	1,000,000	400,000	312,409	2,000,000	600,000	468,614	3,000,000
Technical Support	250,000	-	250,000	250,000	-	250,000	250,000	-	250,000
Downstream	**$ 447,500**	**$ 1,551,127**	**$ 2,237,500**	**$ 447,500**	**$ 1,551,127**	**$ 2,237,500**	**$ 447,500**	**$ 1,551,127**	**$ 2,237,500**
Clothes Dryers - Bulk Purchase	25,000	30,664	125,000	25,000	30,664	125,000	25,000	30,664	125,000
Clothes Washers - Tier I - Bulk Purchase	25,000	17,037	125,000	25,000	17,037	125,000	25,000	17,037	125,000
Heat Pumps	75,000	137,678	375,000	75,000	137,678	375,000	75,000	137,678	375,000
Refrigerator Bulk Purchase	125,000	1,071,342	625,000	125,000	1,071,342	625,000	125,000	1,071,342	625,000
SWH Direct Install	160,000	153,842	800,000	160,000	153,842	800,000	160,000	153,842	800,000
Window AC with Recycling - Bulk Purchase	37,500	140,564	187,500	37,500	140,564	187,500	37,500	140,564	187,500
Grid Services	**$ 219,151**	**$ -**	**$ 219,151**	**$ 328,726**	**$ -**	**$ 328,726**	**$ 438,302**	**$ -**	**$ 438,302**
Demand Response	65,745	-	65,745	93,139	-	93,139	120,533	-	120,533
Energy Storage	87,660	-	87,660	115,054	-	115,054	142,448	-	142,448
EoT	43,830	-	43,830	71,224	-	71,224	98,618	-	98,618
Technical Support	21,915	-	21,915	49,309	-	49,309	76,703	-	76,703
Multifamily Direct Install	**$ 302,250**	**$ 1,145,760**	**$ 1,004,250**	**$ 226,688**	**$ 466,181**	**$ 753,188**	**$ 170,016**	**$ 349,636**	**$ 564,891**
Audit Services	73,125	-	73,125	54,844	-	54,844	41,133	-	41,133
Measures	175,500	1,145,760	877,500	131,625	466,181	658,125	98,719	349,636	493,594
Site Visit Fee	53,625	-	53,625	40,219	-	40,219	30,164	-	30,164
Single Family Direct Install	**$ 432,000**	**$ 1,661,981**	**$ 1,692,000**	**$ 324,000**	**$ 569,769**	**$ 1,269,000**	**$ 243,000**	**$ 427,327**	**$ 951,750**
Audit Services	67,500	-	67,500	50,625	-	50,625	37,969	-	37,969
Measures	315,000	1,661,981	1,575,000	236,250	569,769	1,181,250	177,188	427,327	885,938
Site Visit Fee	49,500	-	49,500	37,125	-	37,125	27,844	-	27,844
RGRID	**$ 657,453**	**$ -**	**$ 657,453**	**$ 986,179**	**$ -**	**$ 986,179**	**$ 1,314,906**	**$ -**	**$ 1,314,906**
Grid Services	**$ 657,453**	**$ -**	**$ 657,453**	**$ 986,179**	**$ -**	**$ 986,179**	**$ 1,314,906**	**$ -**	**$ 1,314,906**
Demand Response	197,236	-	197,236	279,417	-	279,417	361,599	-	361,599
Energy Storage	262,981	-	262,981	345,163	-	345,163	427,344	-	427,344
EoT	131,491	-	131,491	213,672	-	213,672	295,854	-	295,854
Technical Support	65,745	-	65,745	147,927	-	147,927	230,109	-	230,109
RTRAN	**$ 1,387,658**	**$ -**	**$ 1,387,658**	**$ 1,387,658**	**$ -**	**$ 1,387,658**	**$ 1,387,658**	**$ -**	**$ 1,387,658**
Transformation	**$ 1,387,658**	**$ -**	**$ 1,387,658**	**$ 1,387,658**	**$ -**	**$ 1,387,658**	**$ 1,387,658**	**$ -**	**$ 1,387,658**
Residential	1,387,658	-	1,387,658	1,387,658	-	1,387,658	1,387,658	-	1,387,658

	PY19					PY20					PY21				
	Program Incentive Split	Avg $ / kWh	Avg $ / Lifetime kWh	Levelized Incentive Cost of Saved Energy	TRB / TRC	Program Incentive Split	Avg $ / kWh	Avg $ / Lifetime kWh	Levelized Incentive Cost of Saved Energy	TRB / TRC	Program Incentive Split	Avg $ / kWh	Avg $ / Lifetime kWh	Levelized Incentive Cost of Saved Energy	TRB / TRC
Business Program	56%	$ 0.242	$ 0.017	$ 0.026	3.09	55%	$ 0.252	$ 0.015	$ 0.025	3.23	54%	$ 0.266	$ 0.016	$ 0.025	3.24
Residential Program	44%	$ 0.271	$ 0.035	$ 0.045	2.24	45%	$ 0.306	$ 0.034	$ 0.045	1.67	46%	$ 0.281	$ 0.031	$ 0.041	1.85
Overall	100%	$ 0.254	$ 0.022	$ 0.031	2.73	100%	$ 0.274	$ 0.020	$ 0.030	2.55	100%	$ 0.272	$ 0.020	$ 0.030	2.61







Transformational Incentives	PY19	PY20	PY21	Total	% of Budget
RESIDENTIAL PROGRAMS					
RTRAN	**$1,387,658**	**$1,387,658**	**$1,387,658**	**$4,162,974**	**48.9%**
Program Management	**$291,710**	**$291,710**	**$291,710**	**$875,129**	**10.3%**
Program Management	$291,710	$291,710	$291,710	$875,129	10.3%
Behavior Change	**$431,765.09**	**$431,765.09**	**$431,765.09**	**$1,295,295.26**	**15.2%**
Community Education Support, Events	$236,709.00	$236,709.00	$236,709.00	$710,127.01	8.3%
Youth Energy Education and Events	$104,077.67	$104,077.67	$104,077.67	$312,233.01	3.7%
Enhanced Engagement (Gamification)	$52,356.00	$52,356.00	$52,356.00	$157,068.00	1.8%
Exhibit Educational Resources, Sustained Outreach, Behavioral Insights	$38,622.41	$38,622.41	$38,622.41	$115,867.24	1.4%
Professional Development and Technical Training	**$125,654**	**$125,654**	**$125,654**	**$376,963**	**4.4%**
Clean Energy Ally Support	$10,471	$10,471	$10,471	$31,414	0.4%
Targeted Ally Training Opportunities	$10,471	$10,471	$10,471	$31,414	0.4%
Targeted Participant Training Opportunities	$10,471	$10,471	$10,471	$31,414	0.4%
Educator Training and Grants	$94,241	$94,241	$94,241	$282,722	3.3%
Strategy & Planning	**$215,786**	**$215,786**	**$215,786**	**$647,358**	**7.6%**
Long-term Strategic Planning & Data Analytics	$215,786	$215,786	$215,786	$647,358	7.6%
Codes and Standards	**$104,712**	**$104,712**	**$104,712**	**$314,136**	**3.7%**
Codes Training, Technical Support, Advocacy	$104,712	$104,712	$104,712	$314,136	3.7%
Clean Energy Innovation Hub	**$218,031**	**$218,031**	**$218,031**	**$654,092**	**7.7%**
Innovation and Emerging Technologies	$187,560	$187,560	$187,560	$562,679	6.6%
Energy Water Nexus	$30,471	$30,471	$30,471	$91,414	1.1%
COMMERCIAL PROGRAMS					
BTRAN	**$1,450,027**	**$1,450,027**	**$1,450,027**	**$4,350,081**	**51.1%**
Program Management	**$235,602**	**$235,602**	**$235,602**	**$706,806**	**8.3%**
Program Management	$235,602	$235,602	$235,602	$706,806	8.3%
Behavior Change	**$15,686**	**$15,686**	**$15,686**	**$47,058**	**0.6%**
Community Education Support, Events	$15,686	$15,686	$15,686	$47,058	0.6%
Professional Development and Technical Training	**$475,085**	**$475,085**	**$475,085**	**$1,425,256**	**16.7%**
Clean Energy Ally Support	$127,233	$127,233	$127,233	$381,699	4.5%
Targeted Ally Training Opportunities	$253,960	$253,960	$253,960	$761,879	8.9%
Targeted Participant Training Opportunities	$37,590	$37,590	$37,590	$112,771	1.3%
Energy Industry Workforce Development	$56,302	$56,302	$56,302	$168,907	2.0%
Strategy & Planning	**$123,576**	**$123,576**	**$123,576**	**$370,728**	**4.4%**
Long-term Strategic Planning & Data Analytics	$123,576	$123,576	$123,576	$370,728	4.4%
Energy in Decision Making	**$298,452**	**$298,452**	**$298,452**	**$895,357**	**10.5%**
Strategic Energy Management, Customer Engagement	$267,248	$267,248	$267,248	$801,744	9.4%
Rural Water/Wastewater Support	$31,204	$31,204	$31,204	$93,613	1.1%
Codes and Standards	**$102,883**	**$102,883**	**$102,883**	**$308,650**	**3.6%**
Codes Training, Technical Support, Advocacy	$50,527	$50,527	$50,527	$151,582	1.8%
Standards Enhancement and Leading Edge Tech	$52,356	$52,356	$52,356	$157,068	1.8%
Clean Energy Innovation Hub	**$198,742**	**$198,742**	**$198,742**	**$596,227**	**7.0%**
Innovation and Emerging Technologies	$198,742	$198,742	$198,742	$596,227	7.0%

APPENDIX D - KEY REPORTING ASSUMPTIONS*

Technical Resource Manual (TRM)

All energy efficiency programs need to estimate the amount of energy and demand that is saved for standard measures. This allows an effective program to promote these standard measures across markets with an incentive amount that is appropriate for the amount of energy and/or demand that is saved. Hawai'i Energy maintains these energy saving estimates in the TRM.

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

There are four main reasons to update TRM values:

- *New Measure Additions* – As new technologies are introduced to the Hawai'i Energy portfolio, they will be characterized and added to the manual. In addition, new program design and new areas of interest (e.g., Market Transformation) may result in the need for new measure characterization.

- *Existing Measure Updates* – Updates will be required for a number of reasons. Examples include increase in the federal standard for efficiency of a measure; new information from field tests; altered qualification criteria; increase in measure priority; changes in program delivery (e.g., direct installation to point-of-sale); move from custom to deemed or vice versa; decrease in measure cost; or a new evaluation that provides a better value of an assumption for a variable. As programs mature, characterizations need to be updated to meet the changes in the market and the program.

- *Retiring Existing Measures* – Existing TRM measures may be removed from the Hawai'i Energy portfolio when the economics of a measure become such that it is no longer cost-effective or the free-rider rate is too high, or for other reasons. Before retiring an existing TRM measure, there should be agreement among the Commission, EEM, Hawai'i Energy, and the EM&V Consultant.

- *Third-Party Measurement and Verification (M&V) Contractor TRM Review* – Periodically, the EM&V Consultant will provide a review of the current TRM and make recommendations based on current market research, in-field savings verification of measures, and evolving program priorities. Updates and improvements are then made in collaboration with the EEM, Hawai'i Energy, and the Commission and then implemented in the subsequent program year.

Overview of the TRM Derivation

Each measure in the TRM includes a description of the baseline case and the high-efficiency case for the measure. The energy saved is the difference between the energy use for the baseline case and the energy use for the high-efficiency case. Similarly, the peak demand reduction is the difference between the coincident peak demand for the baseline case and the coincident peak demand for the high-efficiency case. For some measures and

* Due to the annual review process associated with Technical Reference Manual (TRM) and the metric assumptions that it encompasses, only PY19 information will be presented in this section. With the exception of avoided cost, PY20 and PY21 assumptions are not expected to deviate significantly from those of PY19.

program delivery approaches, a dual baseline is needed to account for baseline changes that occur during the life of the measure. Lifetime energy savings reflect the cumulative saving accrued for the life of the measure.

Customer level energy and peak demand estimates are a function of many variables. When practical, assumptions for key variables used in the estimation approaches are based on Hawai'i specific data. Where Hawai'i data is not available or it is cost-prohibitive to obtain, data from similar programs in similar climate zones is used with appropriate adjustments based on engineering judgment.

The savings estimates used in the initial Hawai'i Energy TRM were drawn largely from the KEMA Evaluation Report for 2005 through 2007. At that time, the KEMA report was the most recent information available on specific markets. The values contained within that report were built upon previous evaluation reports and in-field measurements.

Because that report used "average" field measured data instead of generalizable engineering equations to estimate savings for many measures, the approaches provided in the TRM attempted to develop savings calculations based on typical measure characteristics. The primary use of the KEMA report values was to guide development of the first TRM, including market assumptions, especially for the baseline energy use, to more accurately estimate the typical savings. Over the years, updates have been made to some measures and aspects of the TRM to reflect program modifications, evolving market conditions, changes to codes and standards, and availability of newer data from program evaluations and benchmarking against industry best practices.

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

- *Uniform Methods Project*
- *U.S. Department of Energy*
- *Environmental Protection Agency*
- *American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)*
- *International Energy Conservation Code*
- *California Public Utilities Commission, Database for Energy Efficiency Resources (DEER)*
- *Regional Technical Forum, Library of Unit Energy Savings Measures*
- *Multiple Technical Reference Manuals for jurisdictions across the U.S.*

Factors Determining Program Level Savings

Program Level savings are those directly attributed to Hawai'i Energy actions (i.e. separating out the impacts that are a result of other influences, such as consumer self-motivation or free-riders[1]). Measures are calculated at the Customer Level in the TRM. By applying island-level system loss factors, shown in **Table C1**, System Level savings are calculated. Applying a net-to-gross ratio, listed in **Table C2**, to System Level savings provides Program Level savings.

Application of System Loss Factors

The amount of energy saved at a customer site is not equal to the amount saved at the electric utility plant supplying the energy to that site. There are system losses in generation, transmission and the distribution of energy from the power plant to the site, which result in larger savings at the power plant than at the customer site. The Program applies a "system loss factor" (provided by HECO, MECO and HELCO) to account for this larger impact on the system. System loss factors do not vary by measure, but by island, and are listed in **Table C1**.

Table C1
System Loss Factors

Hawai'i	6.3%
Lāna'i	4.3%
Maui	5.0%
Moloka'i	8.5%
O'ahu	4.2%

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

[1] Free-riders are ratepayers or participants who received an incentive and/or education by the Program, but the incentive and/or education did not play a role in their decision to purchase or receive the savings measure.

Net-to-Gross Ratio

Determining Program Level savings also includes applying a Net-to-Gross (NTG) ratio to System Level energy savings numbers. These values recognize the differences in Program-driven savings between the various categories of measures. The values to be used in PY19 are provided in **Table C2**.

Table C2
Net-To-Gross Factors

Program	Description		NTG
BEEM	Business Energy Efficiency Measures	All BEEM Measures	0.75
CBEEM	Custom Business Energy Efficiency Measures	All CBEEM Measures	0.75
BESM	Business Services and Maintenance	All BESM Measures	0.95
BHTR	Business Hard-to-Reach	All BHTR Measures	0.91
REEM	Residential Energy Efficiency Measures	Peer Group Comparison	1.00
REEM	Residential Energy Efficiency Measures	Upstream LED	0.50
REEM	Residential Energy Efficiency Measures	All Other REEM Measures	0.79
CREEM	Custom Residential Energy Efficiency Measures	All CREEM Measures	0.65
RESM	Residential Services and Maintenance	All RESM Measures	0.92
RHTR	Residential Hard-to-Reach	All RHTR Measures	1.00

Notes:

1. In addition to the PY19 TRM NTG table above, the triennial plan bottom-up tables have two expanded initiatives:
   BET: Business Emerging Technologies initiative will utilize CBEEM NTG factor of 0.75.
   BGRID: Business Grid-Service Ready initiative NTG factor estimated at 1.0. Final value TBD.
2. Preliminary PY19 TRM drafts discussed an NTG of 0.43 for residential solar water heating (SWH) projects. At the time, this NTG was conservatively incorporated into the triennial plan bottom-up tables. The Program has since recommended that this figure be revisited in the next TRM revision, and that for PY19, REEM SWH projects should continue to use the 0.79 REEM NTG factor. Final decision TBD.

Development of Avoided Costs

As mentioned previously, the primary overall economic benefit to the State of Hawai'i is the avoided cost of the energy that is saved. The total avoided cost of all the energy that is saved is called the Total Resource Benefit (TRB). To estimate the TRB for individual measures or for the total savings for the Program, the cost per MWh supplied and the system capacity cost per kW need to be estimated into the future. **Table C3** shows the 25 year utility avoided cost. The methodology behind avoided cost calculations are currently under review; thus, the values presented in this section utilize previously approved estimates. The avoided cost values are expected to change within the three-year cycle.

Table C3

Discount Rate	Factored EEPS	Escalation Rate
6%	76%	3%

			Utility Avoided Cost*		NPV for each Year		NPV Cumulative from Final Year	
Year	Period	NPV Multiplier	$/kW/yr	$/kWh/yr	$/kW/yr	$/kWh/yr	$/kW	$/kWh
2019	1	1.00	$ -	$ 0.181	$ -	$ 0.181	$ -	$ 0.181
2020	2	0.94	$ 904.0	$ 0.187	$ 853	$ 0.176	$ 853	$ 0.357
2021	3	0.89	$ 986.0	$ 0.192	$ 878	$ 0.171	$ 1,731	$ 0.528
2022	4	0.84	$ 856.0	$ 0.198	$ 719	$ 0.166	$ 2,450	$ 0.694
2023	5	0.79	$ 750.0	$ 0.204	$ 594	$ 0.162	$ 3,044	$ 0.856
2024	6	0.75	$ 663.0	$ 0.210	$ 495	$ 0.157	$ 3,539	$ 1.013
2025	7	0.70	$ 590.0	$ 0.216	$ 416	$ 0.153	$ 3,955	$ 1.166
2026	8	0.67	$ 527.0	$ 0.223	$ 350	$ 0.148	$ 4,305	$ 1.314
2027	9	0.63	$ 474.0	$ 0.230	$ 297	$ 0.144	$ 4,602	$ 1.458
2028	10	0.59	$ 1,020.0	$ 0.236	$ 604	$ 0.140	$ 5,206	$ 1.598
2029	11	0.56	$ 1,066.0	$ 0.244	$ 595	$ 0.136	$ 5,801	$ 1.734
2030	12	0.53	$ 964.0	$ 0.251	$ 508	$ 0.132	$ 6,309	$ 1.866
2031	13	0.50	$ 875.0	$ 0.258	$ 435	$ 0.128	$ 6,744	$ 1.994
2032	14	0.47	$ 795.0	$ 0.266	$ 373	$ 0.125	$ 7,117	$ 2.119
2033	15	0.44	$ 724.0	$ 0.274	$ 320	$ 0.121	$ 7,437	$ 2.240
2034	16	0.42	$ -	$ 0.282	$ -	$ 0.118	$ 7,437	$ 2.358
2035	17	0.39	$ -	$ 0.291	$ -	$ 0.114	$ 7,437	$ 2.472
2036	18	0.37	$ -	$ 0.300	$ -	$ 0.111	$ 7,437	$ 2.583
2037	19	0.35	$ -	$ 0.308	$ -	$ 0.108	$ 7,437	$ 2.691
2038	20	0.33	$ -	$ 0.318	$ -	$ 0.105	$ 7,437	$ 2.796
2039	21	0.31	$ -	$ 0.327	$ -	$ 0.102	$ 7,437	$ 2.898
2040	22	0.29	$ -	$ 0.337	$ -	$ 0.099	$ 7,437	$ 2.997
2041	23	0.28	$ -	$ 0.347	$ -	$ 0.096	$ 7,437	$ 3.093
2042	24	0.26	$ -	$ 0.358	$ -	$ 0.094	$ 7,437	$ 3.187
2043	25	0.25	$ -	$ 0.368	$ -	$ 0.091	$ 7,437	$ 3.278

Proxy Avoided Cost Developed

The Program's avoided cost is calculated based on the PY2015 PBFA Contract Renewal Guidelines to use an initial $0.161/kWh avoided cost figure for 2015 and escalate it at 3% per year. The capacity impact was based on the utility revised avoided costs, shown in **Table C4**. The capacity avoided cost for the Program takes into account a prorated demand value based on O'ahu demand achievements of 76% in PY13, as shown in **Table C5**. Only O'ahu's avoided capacity cost is used in the avoided cost calculations. Hawai'i and Maui Counties are both assumed to have zero or negligible capacity avoided cost for the purposes of the calculations. **Table C4** provides capacity values through year 2033, after which the Program assumes zero additional capacity avoided cost for the remaining years to provide the 20-year avoided cost list in **Table C3**.

Table C4
Avoided Costs Attachment A From Waiver Docket 2013-0056
EEPS (2013-0056) Avoided Capacity Cost

EEPS avoided cost with 15% non energy cost benefit added included in Energy price forecast

HECO

P2_100vs110

Year	Energy $/MWH	Capacity $/KY-Yr
2014	192	0
2015	196	0
2016	230	0
2017	233	0
2018	243	0
2019	253	0
2020	260	1,189
2021	273	1,298
2022	295	1,126
2023	297	987
2024	314	872
2025	326	776
2026	328	694
2027	346	624
2028	357	1,342
2029	358	1,403
2030	373	1,269
2031	391	1,151
2032	397	1,046
2033	420	953
	Levelized	Levelized
	273	812
	$/MWH	$/kW-yr

HELCO

H2_100vs110

Year	Energy $/MWH	Capacity $/KY-Yr
2014	225	0
2015	226	0
2016	232	0
2017	241	0
2018	248	0
2019	258	0
2020	271	0
2021	280	0
2022	306	0
2023	319	0
2024	332	0
2025	346	0
2026	359	0
2027	376	0
2028	390	0
2029	407	0
2030	425	0
2031	448	0
2032	465	0
2033	493	0
	Levelized	Levelized
	296	0
	$/MWH	$/kW-yr

MECO

M2_100vs110

Year	Energy $/MWH	Capacity $/KY-Yr
2014	192	0
2015	219	0
2016	220	0
2017	223	0
2018	226	0
2019	232	0
2020	238	0
2021	243	0
2022	267	0
2023	276	0
2024	288	0
2025	295	0
2026	306	0
2027	317	0
2028	329	0
2029	341	4,902
2030	356	5,647
2031	370	5,126
2032	394	4,671
2033	416	4,269
	Levelized	Levelized
	257	1361
	$/MWH	$/kW-yr

Table C5

PY13 System Level Demand Impacts - kW		
Oahu	16,481	76.43%
Hawaii	2,469	11.45%
Maui	2,597	12.04%
Molokai	8	0.04%
Lanai	8	0.04%
Total	21,563	100.0%

Customer Bill Savings Estimate

For this triennial, the Program will endeavor to reduce the cost burden of electricity especially for Hawai'i's lower income, multifamily dwelling residents. This is reflected in our goal to achieve $16,693,335 in electric bill reduction for customers through our MFDI measures over the next three years. This amount was calculated based on a historical spilt of 60% of MFDI projects impacting utility rate schedule "R" residential meters, and 40% of MFDI projects impacting commercial utility meters, primarily rate schedule "J" accounts. Thus, the target bill savings was arrived at through the equation:

(Average 2016 through 2018 utility schedule "R" rate per kWh) * (Triennial MFDI kWh savings) * (60%) +
(Average 2016 through 2018 utility schedule "J" rate per kWh) * (Triennial MFDI kWh savings) * (40%).