BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF HAWAII

In the Matter of PUBLIC UTILITIES COMMISSION Instituting a Proceeding to Investigate the Issues and Requirements Raised by, and Contained in, Hawaii's Public Benefits Fund, Part VII of Chapter 269, Hawaii Revised Statutes.	)	DOCKET NO. 2007-0323

RESPONSE TO ORDER # 36708

(1) APPROVING THE HAWAII ENERGY PROGRAM TRIENNIAL PLAN FOR PROGRAM YEARS 2019-2021,
(2) APPROVING THE PUBLIC BENEFITS FEE BUDGET FOR PROGRAM YEARS 2019-2021, AND
(3) SETTING THE PUBLIC BENEFITS FEE SURCHARGE

LEIDOS, INC. (LEIDOS)

AS THE PUBLIC BENEFITS FEE ADMINISTRATOR

Hawaii Energy (Public Benefits Fee Administrator)

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Introduction: Hawai'i Energy Triennial Plan, Modifications, Improvements and Additions

Hawai'i Energy is pleased to provide the following response to Order no. 36708 approving the Hawai'i Energy Program Triennial Plan for Program Years 2019 - 2021. Hawai'i Energy appreciates that "the commission finds that the initiatives proposed in the Triennial Plan are appropriate and seek to cost-effectively capture energy efficiency savings, optimize grid utilization (thus enabling potential future reductions in utility capital investments and maintenance expenses for transmission and distribution assets), reduce peak demand (thus reducing the requirements for generating capacity to serve peak load), reduce the cost of compliance with environmental regulations, and reduce electricity consumption."[1] While the program offerings are often dynamic and in response to market opportunities, we also recognize that additional detail and modifications on key elements of the PY19-21 Triennial plan will provide increased clarity for stakeholders and allow for better evaluation of Program performance.

The modifications and improvements requested are included herein for the following areas:

1. **Additional details and justification for Energy Optimization Initiatives (EOI)**
2. **Additional details and justification for Market Transformation and Economic Development (MTED) core area initiatives**
3. **Improved metrics to evaluate performance**
4. **PBFA to work with commission staff and stakeholders to develop a robust and detailed 10-Year Plan**
5. **PBFA and Hawaiian Electric Companies prioritized collaboration efforts**

Actions taken to respond to Commission's approval order:

Since the Commission's Order issued on October 25, 2019, Hawai'i Energy has been working closely with many stakeholders on the development of this document. Efforts included multiple meetings with the Energy Efficiency Management (EEM) team and commission staff to discuss the details of the plans for EOI initiatives as well as additional clarifications around MTED categories, metrics and budget areas. As suggested, Hawai'i Energy also solicited input on program design and logic models from national agencies like Northwest Energy Efficiency Alliance (NEEA), Vermont Energy Investment Corporation (VEIC), the Better Buildings Residential Network and the American Council for an Energy-Efficient Economy (ACEEE).

It is clear that throughout the country, energy efficiency programs are facing a similar transition and challenges as traditional metrics are not sufficient to support the rapid transition to a clean energy future. Further reiterating the need for a holistic approach to program design and a planning process that remains flexible and iterative.

The Program continues to refine its logic models and strategies in the key MTED focus areas to ensure they represent the thought process and desired outcomes to support program evaluation while actively proceeding with implementation to achieve stated goals and metrics. Over-emphasis on the logic model

[1] See Order No. 36708, Pg. 24, Docket No. 2007-0323

can consume time and resources, oversimplify market conditions and limit program flexibility.[2] In light of the rapid and dynamic energy transition occurring across the state, Hawai'i Energy is committed to evolving with customer and stakeholder needs to support the integration of clean energy technologies that are also optimized for grid utilization.

Additionally, Hawai'i Energy has been working closely with Hawaiian Electric's Customer Energy Resources (CER) group to revise the existing Collaboration Framework document as the foundation for our prioritized collaboration efforts. We anticipate the collaboration framework will also be a living document to allow for ongoing program evolution as needed.

The following outlines the major modifications to the PY19-21 Triennial Plan that comprise the remainder of the document:

MODIFICATION 1:

REVISED MARKET TRANSFORMATION AND ECONOMIC DEVELOPMENT SECTION

(to replace Section 2.3 pgs. 37-47 in its entirety)

Feedback received noted some confusion regarding how the Market Transformation and Economic Development text aligned with the proposed performance metrics and budget categories. This is natural given the intentional intersection of the three core program areas in achieving the objectives of the Triennial Plan. Hawai'i Energy recognizes that in an effort to synthesize the MTED efforts more broadly, we inadvertently created some confusion in some portions of the Triennial Plan. As such, we have re-categorized the original Triennial Plan text so that it can be tied out more directly. In addition, some questions were raised about how Accessibility & Affordability initiatives relate to MTED initiatives. In many cases, they are complementary or the one in the same, and these areas have been noted.

New program implementation pages and logic models have been created and are included in Modification #2 Revised Appendix B (see below).

MODIFICATION 2:

REVISIONS AND ADDITIONS TO APPENDIX B with Logic Models for Energy Optimization Initiatives and Market Transformation and Economic Development

As directed, Hawai'i Energy has revised the **Appendix B** Program Implementation Pages for the three main **Energy Optimization Initiatives – demand response ready, energy storage and electrification of transportation,** with additional detail and justification to support expanded scope and increased budget. Specifically, we have noted barriers and risks and expanded the implementation discussion. Where possible, the Program included specific milestones and program schedule. Each of the EOI implementation pages is followed by the associated logic model that highlights potential outcome based metrics and longer term implementation objectives. It is important to highlight that many of these initiatives can be improved with better data as well as increased collaboration with Hawaiian Electric – both a priority for Hawai'i Energy.

[2] https://www.energy.gov/eere/analysis/program-evaluation-program-logic#three

For **Market Transformation and Economic Development**, program implementation pages and logic models have been included for the key focus areas: **Behavior Change**, **Professional Development** and **Technical Training**, **Energy In Decision Making**, **Codes and Standards**, and the **Energy Innovation Hub**.

MODIFICATION 3:

UPDATED APPENDIX C- SUMMARY PRESENTATION OF PROGRAMS (BOTTOM UP MODEL)

The updated bottom up model highlights the overall program savings with changes that have been applied since original submission in May 2019. These changes include:

- Residential SWH NTG correction from 0.43 to 0.79.
- Implemented new avoided cost values from PY19 TRM v1.2.
- Implemented new TRB calculation method from PY19 TRM v1.2; TRB now based on net customer-level savings instead of program-level savings.
- Budget changes
    - Reductions
        - PY19 BGRID EoT: Reduced to $80,000.00
        - PY19 RGRID EoT: Reduced to $0.00
        - PY19 REEM Online Marketplace Admin: Reduced to $0.00
    - Shifts
        - BHTR Energy Storage: $35,784.76 from PY19 to PY20
        - BGRID Energy Storage: $107,354.61 from PY19 to PY20
        - RHTR Energy Storage: $29,278.44 from PY19 to PY20
        - RGRID Energy Storage: $87,835.65 from PY19 to PY20

MODIFICATION 4:

EVOLVING COLLABORATION FRAMEWORK WITH HAWAIIAN ELECTRIC

This section includes the key areas of the evolving collaboration framework outlining the priority initiatives:

- Customer Energy Resources & Energy Optimization
- Low Income Customer Assistance
- Electrification of Transportation
- On-line Marketplace and Utility Energy Efficiency Offerings
- Long Term Forecasting

MODIFICATION 5:

OUTLINE FOR 10 YEAR PLAN CREATION

In the Approval order of Hawai'i Energy's Triennial Plan, the Commission agreed that a dynamic, data-driven ten-year program roadmap that fosters innovative solutions is a valuable objective for the Triennial Plan. Hawai'i Energy will be working with Commission staff to develop a more robust work plan, including a specific timeline and specific deliverables in the development of the 10-year plan. This document provides an outline for the Hawai'i Energy long-term resource planning process, details around the Hawai'i Energy long-term resource planning process, and the proposed timeline.

MODIFICATION 1:

REVISED MARKET TRANSFORMATION AND ECONOMIC DEVELOPMENT SECTION

2.3 Economic Development & Market Transformation

Hawai'i Energy's market transformation programs provide strategic interventions in the market in order to create lasting efficiencies and pave the way for the integration of clean energy solutions. These 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 comprehensive interventions - 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 focus areas are highlighted below**. In most cases, Hawai'i Energy's Market Transformation efforts complement either the Clean Energy Technology or Accessibility & Affordability programs to provide a more comprehensive approach in reaching residents and businesses.

- **Behavior change** initiatives targeted to specific sectors with an emphasis on accessibility and affordability and youth audiences
- **Establishing comprehensive professional development & technical training** for Clean Energy Allies, energy managers, facility operators who buy and/or operate equipment, educators, and others who influence decision making.
- **Energy in decision making** for serving specific communities and large energy users in developing comprehensive energy management strategies to incorporate into business practices.
- **Codes and standards support** to drive energy savings in both public and private sectors.
- **Developing a clean energy solutions innovation hub** for the **design and prototyping of innovative emerging technologies and services**; in coordination with the utilities, the PUC and other public and private stakeholders.
- **Data Driven Strategy: 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.

Hawai'i Energy approaches Market Transformation program design as a foundational part of Accessibility & Affordability and will target those households, businesses, geographies or sectors for whom these economic and social benefits 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 FOCUS AREA: Behavior change (Clean Energy Literacy)

A. 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.

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. When executed effectively, these enhanced engagement practices, such as the gamification of energy efficiency and conservation concepts in a micro-website platform and/or development of interactive tabling displays, motivate participants while creating "sticky," lasting behavior change and establishing a shared sense of purpose in reaching a common goal.

B. 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.

C. 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.

D. 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.

E. Community Based Energy Efficiency (CBEE)

To increase adoption of energy efficiency solutions in hard-to-reach communities, Hawai'i Energy will build upon its new Community-Based Energy Efficiency (CBEE) program. The CBEE framework targets a specific hard-to-reach community and is designed to span residential and commercial offerings in an integrated way, allowing communities to access bundled services of energy-saving opportunities, installation services, grid services, and access to program incentives with a turn-key delivery approach. By emphasizing partnerships with affordable housing providers and local nonprofits and Community Action Groups with existing strong ties and relationships of trust, the CBEE program is closely integrated with other Accessibility and Affordability efforts

2.3.2 FOCUS AREA: Professional Development & Technical Training

A. Clean Energy Ally (CEA) Support

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..

CEAs as 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**.**

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.

B. Targeted Ally Training Opportunities

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.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 the 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).

C. Targeted Participant Training Opportunities

As we look to build capacity amongst trade allies so they can sell efficiency projects, we also recognize that decision-makers must have the skill sets to scope, approve, procure and

manage energy-saving projects. Training will focus on both technical and business skills, and will include:

a) Building Operator Certification (BOC)

The Northeast Energy Efficiency Council's (NEEC) Building Operator Certification (BOC®) program is a comprehensive, nationally-recognized energy efficiency training and certification in commercial building operations and maintenance and includes topics, such as measuring and benchmarking energy performance, efficiency in HVAC and lighting systems, indoor environmental quality, and building scoping for operational improvement. Designed for facilities maintenance and engineering professionals from early career to management level, this rigorous eight-week, 56-hour course involves class time, homework assignments and a final examination to formally earn the credential.

b) Certified Energy Manager (CEM)

This Association of Energy Engineers national certification, which is a well-regarded credential in the energy industry, represents the leading edge in best practices and efficient technology and help energy professionals in Hawai'i's workforce continually upgrade their skills. Topics include energy auditing, energy codes and standards, building energy use and performance, energy accounting, rate structures, economic analysis methods, life cycle cost accounting, maintenance, lighting, HVAC systems, controls, insulation, and third-party building certifications. Participants will be recruited from a variety of backgrounds including utility employees, state employees, consulting firms, HVAC companies and other Energy Services companies. The Program expects that those with the credential will be force multipliers for spreading awareness in their companies and facilities and participating in Hawai'i Energy programs.

c) Real Estate Technical Assistance and Certification

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.

d) 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.

D. Educator Training and Grants

a) 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.

b) Professional Development for Public School Teachers in Energy and STEAM
Hawai'i Energy will work with ENGIE Services to provide educator training through the accredited Department of Education (DOE) three-credit professional development courses titled *Teaching Energy with Science, Technology, Engineering, Art, and Mathematics* (STEAM). This offering will engage K-12 teachers in energy efficiency curriculum across the state of Hawai'i. The course hosts inquiry-based learning experiences that translate directly back into the classroom and equips teachers with the resources, knowledge, and skills to teach about energy efficiency and Hawai'i's energy issues. The course supports the implementation of relevant, real-world energy education, and develops teachers' ability to incorporate STEAM pedagogy into the classroom.

c) Training for Architecture and Engineering Students on Energy Efficiency in Front-End Design
Hawai'i Energy will 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 out.

2.3.3 FOCUS AREA: Energy in Decision Making

A) Strategic Energy Management

Strategic Energy Management (SEM) efforts are detailed in section *2.1 Clean Energy Technologies* under the *Energy Advisory Incentive Offers* heading. The following activities will fall under our Transformational SEM efforts in PY19:

- Impacting behavioral and organizational culture around energy through educational workshops for employees

B) Rural Water and Wastewater Support

In PY19, Hawaii Energy will continue to advance efficiency in the water-energy nexus. Details are outlined in section *2.1 Clean Energy Technologies* under the *Energy Advisory Incentive Offers* heading. Transformational water-energy nexus activities will include

b. Provide training for new water-saving technologies as applicable
c. Developing and implementing strategies with municipal water and wastewater organizations to overcome barriers to implementing efficiency measures.
d. Deepen relationships with contractors working in the water-energy nexus to increase awareness of energy efficient options from design through implementation

2.3.4 FOCUS AREA: Codes & Standards

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.

A) 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.

B) 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.

C) 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.

D) 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.

E) 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.

F) 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.

2.3.5 FOCUS AREA: Clean Energy Solutions Innovation Hub

The Program will focus on developing innovative projects and incorporating emerging technologies with public and private entities to assess the potential for market adoption and to design future program initiatives.

A) 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. These efforts will provide an innovation arm for Hawai'i Energy to outline and facilitate program support needs, build pipeline, perform company due diligence and monitor project deployment.

B) 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 in the residential sector. 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.

2.3.6 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.

Further program design details and logic models can be found in Appendix B

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%

MODIFICATION 2:

REVISIONS AND ADDITIONS TO APPENDIX B with Logic Models for Energy Optimization Initiatives and Market Transformation and Economic Development

REVISED APPENDIX B: ENERGY OPTIMIZATION INITIATIVES

Per the Commission's Order No. 36708, "Energy Optimization" initiatives include: (a) metering and monitoring services, (b) incentive offers for grid service capable technologies that enable customers to participate in demand-response programs, (c) incentive offers for customer-sited energy storage systems, (d) incentive offers to promote electric vehicle charging infrastructure.

Updated "blue pages" and logic models for the following focus areas:

- **Demand Response Ready**
- **Energy Storage**
- **Electrification of Transportation**

Program Category	**Energy Optimization Initiatives** **Demand Response Ready**
Program Description	Over the last three years, Hawaii Energy has worked closely with the Hawaiian Electric Demand Response team to identify and pilot technologies that have potential to provide energy savings for customers and load flexibility for the grid. These integrated demand side management pilots have highlighted collaboration opportunities in program planning, implementation and marketing. Looking forward to PY19-21, Hawai'i Energy is committed to providing foundational incentives to support the demand response programs as they continue to expand through the GSPA model. Hawai'i Energy will explore different incentive mechanisms and opportunities to align with aggregators efforts to target specific technologies and/or diverse customer segments. The following are technologies that may be appropriate for such delivery: • Commercial and residential **smart thermostat technologies** that provide both energy efficiency and enable demand response participation. • **HVAC controls** that provide both energy efficiency and enable demand response participation for medium and large commercial facilities. • **Grid-interactive water heaters** • Heat pump water heaters with controls
Target Audience	***Residential*** • Residents – single family and multifamily dwellings. • Residents in geographies with specific grid needs, and/or customers needing increased assistance to facilitate accessibility or affordability. • Households looking to install PV+ Storage. ***Commercial*** • Sites with significant cooling loads. • Sites with EV-charging banks.
Key Partners	• The Hawaiian Electric Companies, specifically the Customer Energy Resources (CER) team • Elemental Excelerator and their cohort companies • GSPA companies (demand response aggregators) • Local installers

Barriers & Risks	***External Barriers*** • Lack of interval data. Lack of locational and temporal data. • Limited penetration of controlled technologies in households. • Customer confusion over programs and benefits between DR and EE programs. ***Program Risks*** • Unanticipated constraints in DR-capable equipment manufacturing and market availability needed to reach installation goals within target period. • Potential for stranded assets if customers do not participate in current or future grid services programs. • Limited availability of avoided cost variables for consideration in cost effectiveness evaluation • Project/program timelines may not be in sync with program schedule due to delays in contracting. • As the Hawaiian Electric Companies further define their DR programs, Hawai'i Energy will need to evolve its efforts to remain in coordination with their implementation.
Infrastructure Needs	• New metrics for evaluating the overall success of the programs beyond the number of installations completed. • Temporal values for load flexibility. • Aggregator programs open for customer sign-up.

Implementation Strategy	***Key Deliverables and Milestones***
	
	PY19-PY20
	• GIWH:
	  o Support identification and/or verification of hard to reach customers for Hawaii Energy incentives.
	  o Support grid-interactive water heater installation projects with additional energy efficiency information for customers.
	  o Process received granular data through GIWH for internal program planning and analysis.
	  o Work with HECO CER team to evaluate variables to measure overall cost effectiveness of installations.
	• Emerging Tech
	  o Engage in exploratory pilot programs with emerging technology vendors, i.e. Span.io, Lumin, etc.
	• Market Support
	  o Identify other technologies

	o Engage with DR equipment vendors with projects in Hawai'i, specifically large military installations underway. o Support the local market to increase availability of residential demand response capable devices (like smart thermostats) through Hawai`i Energy's retail program. o Analyze opportunities for heat pump water heaters to • PY20-PY21 o Continue to identify opportunities to increase accessibility and affordability for other grid service ready technologies. o Analyze equipment installation trends from phase one and offer increased incentives on specific DR-capable equipment types to cultivate additional projects. o Support other technologies targeted by GSPA participating contractors. ***Program Purpose/Long Term Strategy:*** Promote and maximize the installation of demand response capable equipment through monetary incentives coupled with customer education and vendor engagement. The demand response ready initiatives will have natural tie-ins with Hawai'i Energy's other optimization of energy storage and electrification of transportation. Hawai`i Energy's support in the propagation of DR-capable equipment will provide a solid foundational resource for which the utility can draw from for the ultimate implementation of their DR program.
Costs	**BGRID** Grid Services PY19 Demand Response Ready Budget: $241,066 PY20 Demand Response Ready Budget: $341,510 PY21 Demand Response Ready Budget: $441,954 **Total BGRID Budget:** $1,024.530 **BHTR** Grid Services PY19 Demand Response Ready Budget: 80,355 PY20 Demand Response Ready Budget: 113,837 PY21 Demand Response Ready Budget: 147,318 **Total BHTR Budget:** $341,510 **RGRID** Grid Services PY19 Demand Response Ready Budget: $197,236 PY20 Demand Response Ready Budget: $279,417 PY21 Demand Response Ready Budget: $361,599 **Total RGRID Budget:** $838,252

	RHTR Grid Services PY19 Demand Response Ready Budget: $65,745 PY20 Demand Response Ready Budget: $93,139 PY21 Demand Response Ready Budget: $120,533 **Total RHTR Budget:** $279,417
Benefits	• Increased penetration of flexible, controllable load. • Increased customer energy savings coupled with participation in grid service programs. • The total accumulated benefits of Hawai'i Energy's support for demand response is difficult to quantify without the development of new metrics in this field.

Energy Optimization Initiatives - Demand Response Ready

Program Purpose

Increasing need for grid flexibility: Promote and maximize the installation of demand response capable equipment through monetary incentives coupled with customer education and vendor engagement. Hawai`i Energy's support in the propagation of EE/DR-capable equipment will provide a solid foundational resource for which the utility can draw from for the ultimate implementation of their DR program.

Barriers

- Lack of interval data. Lack of locational and temporal data.
- Limited penetration of controlled technologies in households.
- Customer confusion over programs and benefits between DR and EE programs.
- Synchronization of project timeline with Hawai'i Energy's program year.
- Equipment manufacturing constraints from program partners.

Activities

Ongoing collaboration with HECO CER team to promote integrated demand side management for customers. Increase understanding of demand response technical requirements and aggregation.

Incentive support for Equipment vendors, installation contractors and/or customers. Priority targeting for customers needing increased Accessibility and Affordability.

Market Support: manufacturer, retail, contractor and customer engagement and education about IDSM

Program Outputs

Coordinated efforts on customer targeting and cost benefit analysis.

Hawaii Energy Incentives coupled with customer education and vendor engagement to promote EE/DR capable technologies.

Short Term Outcomes (PY19-21)

Grid Interactive Water Heater (GIWH) installations for customers needing additional incentives to increase accessibility and affordability.
Additional technologies identified to support value stacking of EE and grid services under GSPA model.
Increased customer engagement in both EE and DR programs.
Collaborative efforts to quantify the benefits of program support with HECO, PUC and other industry stakeholders.

Medium Term Outcomes (5 years)

Collections of DR-capable commercial sites that are ready for DR program enrollments through Hawaiian Electric's chosen aggregators.
Partnerships formed and timelines synchronized with national manufacturers and local installers who are the tip of the spear in driving EE and DR-equipment adoption.
Low-income and hard-to-reach housing communities are equipped with grid-interactive water heaters.
Increased retail stock of residential smart thermostats and DR-capable home appliances within the local Hawaii market.
Residential adoption trend data are collected and lessons learned from implementation are compiled.

Long Term Outcomes (10 years)

Commercial and residential integrated demand side resources will be leveraged jointly to facilitate increased distributed generation and provide dynamic grid balancing, creating a flexible and resilient electric grid of the future.

Program Category	**Energy Optimization Initiatives** **Energy Storage Program**
Program Description	The PUC has emphasized in multiple dockets that "the electricity industry in Hawaii is in a period of dramatic transition, from centralized fossil-fuel based generation to renewable energy and distributed technologies. In addition, changing customer preferences and expectations require the State's electric utilities to adapt and develop new ways to meet customer needs and achieve the State's energy goals". Hawai'i Energy's expansion into energy optimization initiatives comes from stakeholder input and ultimate approval by the PUC to help accelerate distributed energy resources in areas that have been identified as core competencies of the program. Energy storage is becoming an increasingly important technology to allow for greater integration of more renewable generation in order for Hawai'i to achieve its 100% clean energy mandate. In addition to load shifting, storage can provide a number of grid services while also helping increase community resiliency. Of the various storage technologies, customer sited battery storage can be used to provide a variety of services at the distribution level as well as behind the meter. We also anticipate that these customer resources will be able to provide capacity and ancillary services such as voltage and frequency regulation as technology and utility programs are developed. Current revenue streams that can be captured include emergency back-up, utility peak load shaving and capturing PV generation to offset on-site use or smart grid export. Other than avoided demand cost charges, battery storage can bring positive revenue by replacing back up emergency generators for commercial buildings in the form of lower lifetime costs. With grid hosting capacity, social equity and resilience aspects in mind, incentives for battery storage will be designed to align customer benefits with grid benefits. Related efforts to this program include Hawai'i Energy's participation in the IGP working groups, specifically the Non-Wires Alternative soft launch in the Distribution Planning Working Group.
Target Audience	**Business:** Large commercial customers including those located in HECO/MECO/HELCO identified areas which are grid congested or have other locational value to distributed solutions, customers that Hawai'i Energy has identified as requiring increased access and affordability needs as well as facilities that provide critical infrastructure to support resiliency. Energy Service Companies (ESCOs) and other partners serving large commercial customers with comprehensive solution packages that may include energy storage and help garner customer participation in Hawai'i Energy programs. **Residential:**

	Residential meters that are on low hosting capacity circuits, and/or defined as requiring increased accessibility and affordability efforts.
Key Partners	• Hawaiian Electric Companies, Customer Energy Resources department • Aggregators and their subcontractors • Office of Climate Change, Sustainability and Resilience (OCCSR) • Honolulu Fire Department • Solar energy industry and battery suppliers
Barriers & Risks	• Current lack of clear price signals for locational and temporal avoided distribution capacity and shifted energy. • Cost, although batteries have come down in price, remains cost prohibitive (long payback period) based on existing rate schedules and programs. • Customers not on TOU rate schedules may see overall increase in energy usage for battery alone installations. • Delays in program design and implementation • Limited market opportunity and customer uptake is outside the program's control and mainly falls on the unique situation of each customer's capital improvement budget, financing capability, ability to commit and possibly stuck waiting on public funds or grants. • OCCSR has filed for use of funding that was appropriated through Act 12 (2018) related to disaster relief appropriation. Also awaiting funding from HIEMA that would help carry out projects at City and County facilities. • Schools make excellent resiliency hubs and shelters but are state owned and further engagement is necessary, timeline is uncertain. • There are innate difficulties and challenges for the utility in trying to do valuation at a distribution level, technical and in terms of accountability. Hawai'i Energy deems there to be value in gathering as much data as possible through pilot efforts and collaborate with the utility to the full extent possible. • Cost effectiveness of the Grid Service Purchase Agreement (GSPA) and compensation scheme for customers is also done without factoring in incentives so insuring Hawai'i Energy is helping to drive the market while ensuring funds are spent effectively is critical.
Infrastructure Needs	• 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. • Infrastructure limitations (i.e. smart inverters/aggregators for grid services, virtual power plants, etc.)

	• Alignment with DER docket proceeding and other relevant dockets
Implementation	Key Deliverables and Milestones: **PY19-PY20**: Implement pilot projects to quantify customer benefits and grid benefits, if possible. Evaluation of program criteria and implementation will continue parallel with pilot projects with various customers. A focus on hard-to-reach customers will be made and exploration of opportunities available. *Business pilot deliverables*: Energy storage deployments at critical infrastructure such as a hospital and fire station. Also deployments in identified regions that face upgrades with potential for avoided utility investment. In order to best identify near-term projects, a Request for Information concerning commercial battery storage projects will likely be issued to see which projects can be immediately supported within PY19-20 and meet targeting criteria for these pilots. *Residential pilot deliverables*: Residential energy storage deployments on a saturated circuit to alleviate grid constraints. Specific targets depend on opportunity available and customer participation. *External Influences*: Availability of circuit level forecasting by HECO and the 2020 Grid Needs document to help inform program planning. **PY21:** Results of pilot program to inform an official program launch with program material and more strategic targeting of customers as well as working with key partners to strategize on deployment of energy storage. *External Influences*: Development and completion of IGP planning process which runs parallel with the DER docket and advanced rate design docket. HECO's current PSIP has up to 119 MW of customer sited DERs forecasted by 2025, Hawai'i Energy to provide support as able. New code developments such as Net Zero Appendix in 2021 IECC. Long term strategy: Incumbent on energy storage pilot results and shifting landscape for valuation of DERs on the grid, the energy storage program will increase customer resources that can participate in grid programs as well as support resiliency for homes and critical infrastructure while providing grid benefits.
Cost	**BHTR:** Grid Services PY19 Energy Storage Budget: $71,355 PY20 Energy Storage Budget: $176,407 PY21 Energy Storage Budget: $174,103 Total BHTR Budget: $421,865

	BGRID Grid Services PY19 Energy Storage Budget: $214,066 PY20 Energy Storage Budget: $529,220 PY21 Energy Storage Budget: $522,310 Total BGRID Budget: $1,265,596 **RHTR** Grid Services PY19 Energy Storage Budget: $58,382 PY20 Energy Storage Budget: $144,333 PY21 Energy Storage Budget: $142,448 Total BHTR Budget: $345,162 **RGRID** Grid Services PY19 Energy Storage Budget: $175,145 PY20 Energy Storage Budget: $432,998 PY21 Energy Storage Budget: $427,344 Total BGRID Budget: $1,035,488 TOTAL TRIENNIAL INCENTIVE BUDGET: **$3,068,111**
Benefits	• Utility peak demand savings based on battery charge/discharge schedule. • Possible customer bill savings (if on TOU rate schedule, economics of battery system) • Increased hosting capacity on secondary feeder circuit (may not be quantifiable in pilot time frame) • Data to inform future program design and hopefully provide value to HECO's forecasting and distribution model efforts.
Reference Programs	**Business:** **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.

SMUD
Commitment to Operate program – One time incentive of $600-$5,000 for interconnection process.

Residential:

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.

Sacramento Municipal Utility District (SMUD)
Commitment to Operate – One time incentive of $300-$600. To help with the utility interconnection process. This optimizes for renewable self-consumption and time of day pricing which isn't necessarily best for the grid. Next level is Smart Energy Optimizer Program.

Smart Energy Optimizer – One time incentive of $500-$1,000 and $10/month. This provides a price based dispatch signal to align customer retail benefit with grid needs and allows the utility control of 51% of the battery capacity.

Green Mountain Power

Bring Your Own Device program – Initial upfront incentive is $850 per kW with a minimum duration of 3 hours at full capacity rating. An additional $150 per kW for eligible systems in a grid-constrained area as defined by GMP will also be made

	available. Applicable to both battery and solar PV or standalone battery installations. Failure to perform as required will subject customers to a flat monthly charge of $9.65 per kW and other fees (integration and communication fee by utility, $2.50 and any manufacturer's communication fee will be added to bill). Batteries must be between 2 and 10 kW with ongoing bill credits ranging from $44 to $110 per month.

Energy Optimization Initiatives - Energy Storage

Program Purpose

Increasing need for grid flexibility: Energy storage has been identified as a solution for integrated renewable energy onto the electric grid by matching generation with load as well as providing voltage, capacity and ancillary services at different levels of the grid. However, the current value propositions of storage captured today are limited to savings by reducing peak demand charges and backup power during power outages. The objective of an energy storage incentive would be to leverage current and future value stacks in a cost effective way to support the state's sustainability and resiliency goals.

Barriers

- Current cost-effectiveness metrics make it difficult to incentivize technology solutions for integrating renewables on the grid that do not provide energy or demand savings.
- Current battery storage systems installed are not automatically enrolled in grid service programs, lack of sufficient rates and programs to capture all installations.
- Utility grid service programs are still in the RFP stage with offerings by aggregators not fully developed making planning and cost-benefit analysis challenging.

	Pilots			Full program offering
Activities	To carry out pilot programs in PY19-20 with focuses on • Resilience • Equity • Homes and businesses on circuits with low hosting capacity.	Support GSPA efforts and work in conjunction with vendors and aggregators to ensure customer sited DERs are grid-tied and capable of participating in grid service programs. • Support targeting of customers by aggregators for wide spread impact of programs	Work with partners at the counties and state to prioritize and strategize hardening of "critical infrastructure"; utilizing energy storage for increased resilience as backup power Work with partners to identify variables for cost benefit tests of HE pilot efforts	Launching full program offering for all participants with qualifying criteria and varying incentive levels and offerings for targeted customers.
Program Outputs	• Successful pilots will demonstrate value stacking and potential case studies for different energy storage use cases. Otherwise, lessons learned will inform future program offerings.			All customers will be able to participate in utility grid service programs; Hawai'i Energy can support aggregators in identifying controllable grid interactive devices including battery storage.
Short Term Outcomes (PY19-21)	• Evaluating pilots to determine feasibility of program offerings and incentive levels; depending on success and outcomes of pilot programs, develop programs and criteria around critical infrastructure and hard-to-reach, expanding to outer islands. • Quantifying customer economic benefits to battery storage installation, data for rate case analysis of TOU rates, evaluation of peak demand reduction benefits (similar to Massachusetts programs) • Batteries incentivized by the Program for installation will help increase accessibility and affordability for customers requiring additional assistance and will be able to participate with aggregators for the utility as Phase 2 RFP aggregator(s) are selected.			
Medium Term Outcomes (5 years)	• Significantly more customer sited energy storage systems online that can participate in grid programs via aggregator • Backup power for resiliency in homes as well as critical infrastructure. • Reduced initial cost of energy storage due to market uptake and incentives available	• More customer options in terms of energy storage technology offerings and utility programs and rates to choose from • Customers are incentivized to participate in grid programs, interconnection barrier is low hence minimizing potential for grid defection • Permitting process improves as familiarity with energy storage technology increases and plan approvers get experienced	Considering results of pilots and industry landscape, decision made by HPUC whether battery storage incentives are necessary and/or beneficial for customer grid participation. This will inform the programs expansion for all customers to participate with metrics to support incentive spend.	
Long Term Outcomes (10 years)				• Participation in grid programs by customers becomes standard practice as new DERs come online. • Customers requiring additional support to ensure accessibility and affordability of battery storage are active participants. • Evaluation of cost-effectiveness for Hawai'i Energy programs include consideration of non-energy benefits (e.g. metrics such as for resilience, carbon offset, etc.)

Program Category	**Energy Optimization Initiatives** **Electrification of Transportation**
Program Description	While energy efficiency programs have traditionally focused primarily on conserving energy, a growing number of state- and utility-run efficiency programs have begun to promote electrification of transportation (EoT) through incentives and technical assistance to provide benefits to electric customers, the utility grid, societal health and wellness, and the environment. While transportation electrification does not reduce energy consumption, it can facilitate greater integration of renewable energy, enhance grid efficiency and reliability by leveraging the flexibility of electrified vehicles. Additionally workplace charging during daytime hours can bring value to the grid by encouraging charging during high periods of renewable generation and outside of the utility's system peak. With an Electric Vehicle Charging Station incentive, customers are encouraged to install charging stations throughout the state to create a more comprehensive EV charging infrastructure that supports increased EV ownership while concurrently encouraging charging during off-peak hours at the workplace and other publicly accessible areas. For PY19-21, Hawai'i Energy will expand the reach of the program beyond just workplaces to include other commercially metered infrastructure, such as municipal lots. Through HB1585, signed into law as Act 142 by Governor David Ige, the State of Hawai'i provided the Public Utilities Commission (PUC) a total of $400,000 over two fiscal years for EV Charging Station incentives. Hawai'i Energy has been selected by the PUC as the third-party administrator of these state-funded incentive funds. Hawai'i Energy will administer this state-funded rebate program for qualified applicants on O'ahu, Maui County, Hawai'i Island, and Kaua`i to install multi-port, networked Level 2 EV charging stations and Level 3 DC fast-charging stations. While Act 142 covers many applications for EV Charging Stations, the program will continue to look for ways to use ratepayer funding to encourage participation and access by low-income families, especially as the cost of used electric vehicles decrease substantially. This creates an entry point for ALICE families to consider EV ownership if access to charging is available. The Program will continue to evaluate growth in Demand Response programs and work with Hawaiian Electric to identify areas of potential collaboration. In the more distant future, we will evaluate 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.

	Business: 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. **Residential:** 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	**Business:** • Commercial workplaces, including but not limited to office buildings, retail centers, mixed use buildings, hotels, restaurants, warehouses, bus companies • Multi-unit dwellings, including but not limited to condominiums and apartment buildings • Facilities & locations whose occupancy levels peak during the midday **Residential:** • Residents – multifamily • Clean Energy Allies • N.B.: Single-family residences and individually-owned parking spaces are not eligible for Act 142 funding. Program is evaluating whether opportunities exist for the program to assist low-income and ALICE families through EVCS incentives or addressing other barriers.

Key Partners	• Government and Utility (e.g., Public Utilities Commission, county/state/federal legislators, HECO EOT department, State Energy Office, Kaua`i County Office of Economic Development, Kauai Island Utility Cooperative) • Private sector collaborators (e.g., Ulupono Initiative, Blue Planet Foundation, agencies serving low-income/hard-to-reach communities) • EV associations (e.g., Drive Electric Hawai'i, Sustainable Transportation Coalition of Hawai'i) • EVCS Clean Energy Allies and other vendors, installers and contractors • Energy Efficiency Funding Pilot Program to include EVCS installation provided by a Channel Partner • Businesses offering EVCS services, such as: o Pacific Current and Evercharge focus on multi-unit dwellings and outfitting individually owned parking stalls o Forth Mobility and Chargeway proposing turnkey solutions for EV sales, ownership, and maintenance • EV manufacturers and dealerships • EV technician trainers (e.g., University of Hawaii island-wide system and other private training businesses) Hawaiian Electric Companies, CER department
Barriers & Risks	• Lack of charging infrastructure, and associated range anxiety • Limited awareness, understanding, and enthusiasm for electrified vehicles • EVCS equipment and installation cost • Increased upfront cost of EVs over comparable gas powered vehicles • Emerging alternative vehicle technology (Hydrogen Fuel Cell) • Lack of equipment standardization across electric vehicle manufacturers • Lack of availability and diversity of electric vehicle inventory in Hawai'i • Lack of support from local automobile dealerships due to decreased service department income from EVs, lack of understanding on EV sales process, and low inventory of EVs • Battery life and cost of replacement
Infrastructure Needs	• Back-end IT support to receive and distribute state funding • Outer island staff support on Maui and Hawai'i Island; Kaua`i island support by local government and businesses

Implementation	Key Deliverables and Milestones

For State-funded incentives:

- Update rebate applications with all the new/confirmed program requirements for FY2019-2020 and FY 2020-2021
- Establish incentive application review and approval process, determining how to verify all of the program eligibility and technical requirements as well as necessary documentation required by the applicant.
- Develop customer-facing materials which vary depending on the program and eligible participants. This often includes:
    - Program application
    - Program marketing and educational materials
    - Updated website with the above materials
- Notify Clean Energy Allies (CEA) and partners listed above of the launch date, program requirements and eligibility, application process and deadlines, etc.
    - Leverage Kaua`i partners to market launch date, market to relevant associations and audiences, and to sign up local contractors
- Develop script for call center representatives to address questions and inquiries.
- Train our Energy Advisors and engineers on O'ahu, Maui and Hawai'i Island on new program requirements and eligibility

For residential programs:

- The incentive 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.
- The Program will additionally explore opportunities to incorporate EVCS incentives into related programs such as EV adoption and ownership outreach and education, energy efficiency financing pilot programs, locational and target-audience specific energy storage pilot programs, low-income and hard-to-reach programs, and market transformation outreach and education initiatives.

Cost	**BHTR:** Grid Services PY19 EoT Budget: $53,570 PY20 EoT Budget: $87,052 PY21 EoT Budget: $120,533 Total BHTR Budget: $261,155 **BGRID** Grid Services PY19 EoT Budget: $80,711 PY20 EoT Budget: $261,155 PY21 EoT Budget: $361,599 Total BGRID Budget: $703,465 **RHTR** Grid Services PY19 EoT Budget: $43,380 PY20 EoT Budget: $71,224 PY21 EoT Budget: $98,618 Total BHTR Budget: $213,672 **RGRID** Grid Services PY19 EoT Budget: $0 PY20 EoT Budget: $213,672 PY21 EoT Budget: $295,854 Total BGRID Budget: $509,526
Benefits	**Business:** • 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 10,000 and counting EV-owning ratepayers in the state. **Residential:** • Increased penetration of electric vehicles and access to charging data • The program will build off the PY18 EV charging pilot to expand into multi-family 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.
Reference	(1) **Colorado** The state of Colorado offers both state-funded tax rebates toward the

Programs

purchase or leasing of EVs and incentives toward the installation of EV charging stations. (http://cleanairfleets.org/programs/charge-ahead-colorado)

Its state EVCS incentives include:

- Colorado Energy Office will fund:
  - 80% of the EVCS up to the following maximums:
    - Level 2 EVCS (dual-port) EVCS: $9,000
    - Level 3 (DC Fast-Charging, multi-port) EVCS: $30,000
  - Private nonprofit and for-profit corporations, government, universities, public transit agencies, multi-unit dwellings in Colorado outside of the seven country Denver metro area
- Regional Air Quality Council (RAQC) will fund:
  - 80% of the EVCS up to the following maximums:
    - Level 2 EVCS (dual-port) EVCS: $9,000
    - Level 3 (DC Fast-Charging, multi-port) EVCS: $30,000
  - Private nonprofit and for-profit corporations, government, universities, public transit agencies, multi-unit dwellings

Its tax rebates for purchasing/leasing EVs has a phase-out plan:

- 2019: $5,000 (purchase), $2,500 (lease)
- 2020: $4,000 (purchase), $2,000 (lease)
- 2021: $2,500 (purchase), $1,250 (lease)

(2) California

(a) **Sacramento Municipal Utility District (SMUD)** is offering rebates for commercial customers to purchase and install Level 2 EVCS and DC fast-chargers at their business. Eligible applicants may receive up to $120,000 per project for public access DC fast chargers and up to $1,500 per Level 2 EVSE installed at multi-unit dwellings or workplaces. Up to 20 Level 2 EVSE may be installed per business location. (https://www.smud.org/en/Going-Green/Electric-Vehicles/Business)

SMUD is also offering residential customers a $599 rebate or a free Level 2 EVCS. Rebates or chargers are available to SMUD residential customers with the purchase or lease of a new EV. To be eligible, completed applications must be postmarked within 180 days of the date of purchase or lease of the PEV. Additional terms and conditions apply. (https://www.smud.org/en/residential/environment/plug-in-electric-vehicles/drive-electric-incentive-application.htm)

(b) **Santa Barbara County Air Pollution Control District -** The District's Innovative Technologies Group promotes the application of clean fuels and energy projects and seeks proposals from public entities, tax-exempt nonprofit organizations, and private entities to help expand the County's Electric Vehicle Charging Infrastructure. Its EVCS Infrastructure Program provides grant funding to help cover all or a portion of the purchase and/or installation costs of electric vehicle (EV) charging stations. (http://www.ourair.org/wp-content/uploads/SBCAPCD-EVCS-Application.pdf)

Grant funding is limited to the purchase and/or installation of the following:

- (i) Grants for Level 2 Electric Vehicle Charging Stations to public entities or tax-exempt nonprofit organizations:
  - Up to $10,000 per charging station (where a single charging station may have one or more charging ports)
- (ii) Grants for Level 3 Electric Vehicle Charging Stations (DC fast charger) to public entities or tax- exempt nonprofit organizations:
  - Up to $20,000 per charging station (where a single charging station may have one or more charging ports)
- (iii) Grants for Level 2 Electric Vehicle Charging Stations to private entities:
  - Up to $7,500 per charging station (where a single charging station may have one or more charging ports)
- (iv) Grants for Level 3 Electric Vehicle Charging Stations (DC fast charger) to private entities:
  - Up to $15,000 per charging station (where a single charging station may have one or more charging ports).

(3) Vermont

Vermont has several types of incentives for commercial and residential applicants, tying in some of the rebates to purchasing an EV, renting an EV charging station, and utilizing the utility's EV rates to move toward charging during off-peak load.

(a) The Vermont Department of Housing and Community Development (DHCD) provides funding to governments, businesses, non-profit organizations, homeowner associations, electric utilities, and EVSE providers for the cost and installation of eligible EVSE. Funding is available for up to 60% of project costs, with a maximum of $150,000

per project site. This grant program is funded by Vermont's portion of the Volkswagen Environmental Mitigation Trust. (https://accd.vermont.gov/community-development/funding-incentives/electric-vehicle-supply-equipment-evse-grant-program)

(b) The Burlington Electric Department (BED) provides rebates of $400 toward installation of a qualifying WiFi enabled EVSE for customers that enroll in BED's Residential EV Rate. Eligible applicants must have purchased or leased an all-electric vehicle (EV) after January 22, 2019, and have purchased qualifying EVSE within 60 days of the acquisition of the EV. (https://www.burlingtonelectric.com/evrate)

(c) Electric Vehicle Supply Equipment (EVSE) Incentives – Green Mountain Power: GMP residential customers are eligible for a free Level 2 EVSE when they purchase a new all-electric vehicle (EV). Residential customers that already own an EV may rent a Level 2 EVSE station at a low monthly fee. In addition, customers may enroll in GMP's EV Unlimited Plan for unlimited EV charging during off-peak hours at a flat monthly fee. For more information about these incentives, see GMP's In-Home Level 2 EV Charger website.

Energy Optimization Initiatives - Electrification of Transportation

Program	Business	Residential
Program Purpose	· Hawai'i depends on fossil fuels for its energy needs more than any other state in the US, sending billions of dollars out of its local economy while its residents pay some of the highest gasoline prices for internal combustion engine (ICE) vehicles that increase greenhouse gas emissions into the environment. · Hawai'i has the second fastest adoption rate of electric vehicles (EV) ***per capita*** after California. Yet, the percentage of EVs out of all registered vehicles in the state is very low. In September 2019, there were 10,003 registered EVs of the 1,083,258 total registered vehicles in the state (or, 0.92%). That number has since decreased to 8,546 EVs of the total 1,082,601 registered vehicles (or, 0.79%) for the month of October 2019. · EV adoption is challenged by issues such as the higher up-front purchase costs of EVs with comparative internal combustion engine (ICE) vehicles powered by fossil fuel based gasoline, range anxiety experienced by EV owners finding open and working charging stations between destinations, and lack of easily available and user-friendly information informing the EV sales and ownership experience.	
Inputs	· State of Hawai'i/PUC Act 142 funding for EVCS rebates · Business Program budget for EoT programs · Business Program budget for EE incentives · Market Transformation budget for EoT · Hawai'i Energy staff time · EV community partners funding and time · Technology vendors and installers	· Residential Program budget for EoT programs · Residential Program budget for EE incentives · Market Transformation budget for EoT · Hawai'i Energy staff time · EV community partners funding and time · Technology vendors and installers
Activities	· Administer EV Charging Station rebate program for Level 2 and DC Fast-Charging electric vehicle charging stations (EVCS) with Act 142 state funding throughout the state, including Kaua`i County · Market rebate program throughout the state via website, social media, presentations to industry organization and building associations, and collaboration with HECO EOT and other EV related organizations · Participation in EV-related events and organizations (e.g., sustainability fairs, annual auto show, etc.) · Identify opportunities to design and/or participate in EV-related programs by leveraging EVCS incentives to support EV adoption · Identify opportunities to support utility's DR-ready programs via EVCS rebate program · Identify opportunities to educate the public about EVs (e.g., benefits of ownership, as a grid resource/peak shifting, etc.) and electrification of transportation · Include EVCS installation in Energy Efficiency Funding Pilot Program requirements for participating Channel Partners · Bundle energy efficiency measures with EVCS outreach	· *To administer EV Charging Station rebates with PBF funding for single-family and multi-unit residential dwellings in Hawaiian Electric service area* · *Bundle energy efficiency measures with EVCS outreach*
Program Outputs	· EVCS website with rebate applications, Frequently Asked Questions (FAQ) sheets, and other reference resources · EVCS rebate program presentations for tailored and general audiences · Increased numbers of Level 2 and DC Fast-Charging electric vehicle charging stations installed throughout the state, including Kaua`i, at commercial buildings · Increased access to EVs and charging infrastructure for low-income and hard-to-reach communities · Increased collaboration with HECO EOT and EV associations · Increased Clean Energy Allies participating in rebate programs, esp., on Kaua`i · Customers will be encouraged to utilize TOU rates, adding net increase in consumption of energy thus increased costs · Better understanding of demand for EVs and EVCS usage for Hawaii Energy, PUC, government officials and EV related associations	· Increased numbers of electric vehicle charging stations (Esp., Level 2) installed throughout the state (in Hawaiian Electric service areas) in residential multi-unit dwellings and other residentially metered locations · Increased access to EV and charging infrastructure for low-income and hard-to-reach communities
Short Term Outcomes (PY19-21)		

Number of Level 2 and/or DC Fast Charging EVCS that can be funded	PY19 ($150,000)	PY20 ($250,000)
New Level 2 EVCS ($4,500/EVCS)	33 units	55 units
Retrofit Level 2 EVCS ($3,000/EVCS)	50 units	83 units
New DC Fast Charging EVCS ($35,000/EVCS)	4 units	7 units
Retrofit DC Fast-Charging EVCS ($28,000/EVCS)	5 units	8 units

· Act 142 funds completely expended on Level 2 and DC Fast-Charging EVCS installations (See above table)

· Increased access to charging stations and reduced range anxiety for EV owners
· Increased collaboration and knowledge-sharing with HECO EOT and other EV community partners to develop pilot program criteria to advance EV adoption throughout the state, including low-income and hard-to-reach communities
· Increased education and awareness about EV ownership and charging infrastructure
· Increased participants able to participate in demand response ready programs for the utility
· EV technician pool developed and strengthened
· EV sales pool developed and strengthened
· Increased energy efficiency measures implemented at EVCS applicant sites

Medium Term Outcomes (5 years)	· Hawaii residents, businesses, investors, and government/policy-makers educated about EVs, EV charging stations, EV charging station incentives, demand response ready opportunities with the utility, and utility's electrification of transportation roadmap · Creating grid service opportunities by leveraging demand response programs · Rate structure modification by the utility to help better integrate energy efficiency and EoT efforts

Long Term Outcomes (10 years)	· Increased availability/market share and adoption of electric vehicles · Additional investments to advance EV sales, maintenance, and supported products and technologies · Increased and diversified number of jobs supporting EV industry · Increased ownership and access to EV's by low-income and ALICE families · Reduced fossil fuel use in light- and heavy-duty vehicle transportation sector	· Reduced emission of greenhouse gas and other pollutants · Increased avoided fuel impacts · Reduced impact on the grid during peak periods · Create economic benefits for all customers: adopters and non-adopters · Energy security, through reduced reliance on imported fossil fuels · Reduced exposure to noise pollution and particulate emissions

REVISED APPENDIX B: MARKET TRANSFORMATION AND ECONOMIC DEVELOPMENT

Updated "blue pages" and logic models for the following focus areas:

- **Behavior Change (Clean Energy Literacy)**
- **Professional Development and Technical Training:**
    - **Clean Energy Ally Program Support**
    - **Professional Development and Technical Training for CEAs and Participants**
    - **Professional Development Degree Program Support**
- **Energy in Decision making:**
    - **Strategic Energy Management**
    - **Water Energy Nexus**
- **Codes and standards**
- **Clean Energy Solutions Innovation Hub**

Program Category	**Economic Development & Market Transformation** **FOCUS AREA: Behavior Change (Clean Energy Literacy)**
Program Description	Behavior change programs build energy awareness and education for all residents to create lasting efficiencies and allow for a deeper understanding of energy efficiency and clean energy concepts. The program focuses on strengthening relationships & connections, and transformative messaging especially to hard-to-reach communities in low-income, underserved, vulnerable, and geographically isolated populations. Components and resources to support positive behavior change outcomes include workshops and presentations, science, technology, engineering, and mathematics (STEM) based student workshops and sponsorships, gamification campaigns and competitions, exhibit educational resources, sustained outreach, and behavioral insight interventions. **Workshops and Presentations** *STEM Based Youth and Student Workshops* Hawai'i Energy's investment in youth audiences is fundamental in building a knowledgeable, informed, and empathetic future generation. STEM education is a critical component in preparing the next generation of students with the knowledge and skills needed to solve complex programs and pursue STEM careers that will help Hawai'i achieve its energy efficiency and clean energy goals. Youth and student workshops equip youth-based organizations and students with the knowledge and tools to solve future energy issues. Additionally, Hawai'i Energy sponsors science, technology, engineering, and mathematics (STEM) events, conferences and forums for youth-based organizations and student groups. *Adult Learning* Teaching energy literacy to relieve the energy burden on underserved, hard-to-reach, and isolated communities is the core of the behavior change focus area. Hawai'i Energy's community workshops and presentations are designed to translate the often-confusing concepts behind energy usage and reduction to the average consumer. **Gamification Campaigns and Competitions** Gamification enhances engagement and creates multiple channels of communication between the customer and Hawai'i Energy. It also fosters interest in energy efficiency concepts and provides both digital and tactile-driven

	engagement. Gamification campaigns may immerse online participants in real-world scenarios requiring virtual behavior change or more traditional hands-on projects and activities to reduce energy use. **Exhibit Educational Resources** Hawai'i Energy will convene with 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 energy efficiency and clean energy goals. The exhibit will help Hawai'i residents identify innovations in clean energy technologies and visualize solutions for the state's energy future. **Sustained Outreach** Sustained outreach builds upon Hawai'i Energy's foundation of existing relationships with hard-to-reach community groups who have participated in past energy efficiency literacy offerings. Sustained outreach aims to strengthen these relationships by offering continued engagement with community groups to create longer lasting positive behavior changes. **Behavioral Insights** Behavioral insights track the number of effective market interventions that affect customer choice and positive behavior change. The focus area will incorporate behavioral science principles to explore how to encourage customers to make the right energy choice.
Target Audience	**Communities needing increased support for Accessibility and Affordability** • Income constrained households (e.g., Asset-Limited Income-Constrained Employed (ALICE), poverty-level, low income) • Neighbor island & rural communities • Senior/elderly community (kupuna) • Community action groups that reach homeless, transitional, and other underserved, underrepresented, vulnerable populations **Schools and Youth Organizations** • Hawai'i Department of Education K-12 schools, charter schools, and independent schools • Youth service organizations

Barriers & Risk Identification	• Time constraints and competing priorities to attend events/courses/workshops • Lack of awareness of the financial and environmental benefits of energy efficiency among the hard-to-reach communities • Lack of awareness of Hawai`i Energy's services • Insular communities suspicious of external organizations and services • Challenges in identifying and reaching community organizers and decision-makers • Slow development of relationships with related community action organizations and residents • Challenge in leveraging external funding sources
Cost	*See Market Transformation Budget Table following this section for budget breakouts.*
Benefits / Projected Impact	**Residents** • Increased awareness and knowledge of energy efficiency concepts • Increased customer participation in resource acquisition programs • Empowered decision-making in reducing utility bill expenses • Increased economic well-being • Increased Hawai'i Energy brand awareness and strengthened relationship with the customer • Reduced tenant turnover • Increased youth academic achievement and enrollment in STEM degrees **Societal** • Increased partnerships, cross-collaboration, and mutual benefits among like-missioned organizations • Economic development benefits, e.g., stronger local economy, jobs creation, increased personal income and savings, and state GDP benefits • Preservation of affordable and low-income housing • Improved air quality, comfort, and reduced healthcare costs • Environmental impact mitigation • Increased energy security and resiliency
Implementation Strategies	**Workshops and Presentations** *Adult Learning* Community workshops and presentations are provided in a group setting and delivered using local facilitators and internal resources employing creative

presentation styles to teach energy-saving habits in a fun, relatable manner. Ideal audiences include hard-to-reach communities, local community organizations, and employees of businesses.

STEM Based Youth and Student Workshops

Hawai'i Energy and program allies deliver STEM/STEAM workshops in public, charter, and independent schools for students and youth through energy efficiency presentations and workshops. These events are supplemented with continued student-led projects and hands-on activities, such as games, infographics, videos, and social media platforms. Additionally, Hawai'i Energy sponsors large STEM/STEAM based events across the state to promote and advance the importance of energy conservation and efficiency.

Gamification Campaigns and Competitions

Gamification efforts are implemented through digital platforms and face-to-face group interactive settings. Online learning environments, such as microsites, social media, and e-mail marketing platforms reinforce energy efficiency concepts and generate 'sticky' behavior from campaigns and contests. Group gamification approaches engage adults and youth utilizing both digital and tactile methods to create a fun, participatory learning environment. These tools enable more productive interactions between facilitators and the audience and provide timely feedback on individual or collective progress towards a goal.

Exhibit Educational Resources

The initial exploratory phases of a clean energy exhibit will outline a framework to visualize the state's energy efficiency and clean energy future including discovery and identification potential public, private, and other community stakeholders. The diverse network of stakeholders will bring together varying expertise and perspectives, which will shape the process of crafting prototype that will provide an immersive, tactile, and educational experience.

Sustained Outreach

Sustained outreach establishes an on-going energy literacy engagement offered to community groups. An intentional tailored approach, formalized through a participation agreement, is developed to best meet the needs of the community. Routine and/or successive activities will build on learned concepts to help affect long-lasting change.

Key Partners	**Behavioral Insights** Behavioral insights help examine ways to improve program impacts by boosting participation, improving cost-effectiveness, and streamlining program design. Market interventions will be developed to influence customer behavior and inform the decision-making process. Historical program data will be used to identify opportunities for evaluation and external data analytics services may be utilized to assist in measuring impacts.
	• Nonprofits & community action groups • Community leaders • Program allies and subcontractors working on behalf of Hawai'i Energy • Public and private organizations • Educational institutions • Property managers • Retailer partners • Hawaiian Electric Companies • Clean energy allies

Market Transformation & Economic Development - Behavior Change

Program Purpose	With nearly half of state's population not able to afford a basic household budget, Hawai'i Energy must assist to increase energy awareness and literacy for all residents to encourage long-lasting changes at home, work, and school.					
Current State/ Barriers	48% ALICE Population resulting in economic instability. Needs for utility bill assistance. Lack awareness energy saving opportunities and lack of access to program information. Limited knowledge of HE and resources. Hawai'i ranks near bottom on STEM related careers. Lack of local talent in STEM fields. Grid of the future, knowledge based economy. retain local talent and attract external talent to increase economic development					
	Workshops and Presentations		**Gamification and Competitions**	**Exhibit Educational Resources**	**Sustained outreach**	**Behavioral Insights**
Activities	Design and implement adult learning workshops focusing on building energy literacy and exploring the financial benefits of energy saving efforts Work with community organizations to increase accessibility to workshop resources	Work with subcontractors and stakeholders to bring STEM based student workshops to schools Expand energy efficiency curriculum within workshops	Continue to build out microsite learning environment platform with energy efficiency content Use outreach events to promote competitions and campaigns	Stakeholder collaboration to brainstorm and design energy educational exhibit for display.	Recruitment of community organizations to commit to ongoing Hawai'i Energy presentations	Programmatic interventions with specific behavioral science interventions to encourage customers to make the right energy choices
Activity Metrics	Number of participant-hours of training	Number of participant-hours of training	Number of participants	Number of events Number of reports Number of prototypes	Number of participation agreements	Number of program interventions
Program Outputs	Residents who have not participated in Hawaii Energy programs attend workshops. Re-engagement with previous workshop attendees to provide updated information.	STEM based energy efficiency engagement with students.	Robust gamification platform with community recognition	Exhibit conceptualization Exhibit prototype	Organizations/groups committed to ongoing energy literacy presentations	Identification and testing of specific behavioral interventions.
Short Term Outcomes (PY19-21)	Increased awareness of energy saving opportunities and participation in program focus areas Adults understand and can articulate concepts of clean-energy policy Participants take action to save energy based on concepts learned from event Referrals of energy literacy programs to other organizations, friends, and families	Increased knowledge base to complete school/community campaigns and projects Energy bill savings at home from student-led activities	Increased understanding on energy saving opportunities and participation in program focus areas Increased Hawai'i Energy brand awareness	Determination of stakeholder receptiveness for collaboration Critical stakeholder feedback for development of overall exhibit framework	Increased frequency of successive workshops to build on learned concepts Strengthened relationship with community	Definition of programmatic barriers to participation Increased participation in programs Increased awareness of energy-saving technologies
Medium Term Outcomes (5 years)	Higher quality tenancy and reduced tenant turnover Reduction in bill delinquency Willingness to try new energy-saving technologies Increase engagement with programmatic offerings	Increased students STEM competency around energy efficiency and clean energy concepts Increased interest and preparation for post-secondary education majors, especially hard-to-reach youth Increased academic achievement	Increased program participation and customer engagement Increase in repeat customers participating in the Program	Increased access to energy education resources Strengthened community connections with public and private sector Sustained statewide investment in public outreach for exhibit	Willingness to engage in multiple program offerings Knowledgeable residents committed to energy savings	Increase the ease of program participation Data insights from behavioral intervention(s) to inform evidence-based decision-making for the programs
Long Term Outcomes (10 years)	Knowledgeable adult learners committed to energy savings and being advocates in the community Increased economic well being Communities have increasing trust in Hawai'i Energy	Increase percentage of students graduating with STEM degrees and pursuing future careers in clean energy Increased enrollment in two-year and four-year colleges Increase percentage of hard-to-reach students in STEM fields	Motivation for customers to make smart energy choices	Statewide awareness of 2045 clean energy goals Statewide increase in jobs created in the clean energy sector	Community advocates acting as multipliers for energy efficiency and clean energy Increased economic well being	Customers make consistent choices for more energy-efficient technologies

Program Category	**FOCUS AREA: Professional Development & Technical Training** **A. Clean Energy Ally (CEA) Program Support**
Program Description	The Clean Energy Ally (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.
Target Audience	• Current Clean Energy Ally network • Energy professionals such as architects, engineers, contractors, manufacturers, and distributors who provide energy efficient goods & services Hawaiian Electric ratepayers
Key Partners	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)
Barriers to Implementation	• Lack of knowledge on Hawaii Energy program • Additional onboarding and documentation may deter potential allies from participating in program
Infrastructure	**Staffing** • Business Alliances Advisor to oversee CEA program development and program delivery • Program Support Specialist to provide CEA program support • Marketing & Communications to provide marketing collateral, audio, visual support • IT support for CEA portal design/development/maintenance • Business & Technical Team to provide advisory support **CEA Portal** • New CEA registration • Online orientation for new CEAs • Access to marketing material, incentive worksheets and application, and co-op advertising and event application
Implementation	Key Deliverables **Recruit & Motivate Allies**

	• Recruit energy professionals to register for CEA program • Communication for program updates, upcoming events, and workshops received through monthly CEA newsletter • Expand program offerings & bonus/limited-time offers • Enhance CEA Portal and CEA Search portal to increase usability **Marketing & Event Support** • Guidelines and processes for Co-op Advertising and Co-Op Events for CEAs **Networking Opportunities** • Enhance Exhibitor and Sponsorship opportunities at annual Innovation Symposium hosted by Hawaii Energy **Ongoing project-specific advisory support** • Project/Sector-Specific consultation provided by Energy Advisors **Feedback & Acknowledgement** • Expand the Energy Insider Rewards offering to include additional benefits • Recognize top-performing CEAs at the Innovation Symposium
Cost	*See Market Transformation Budget Table following this section for budget breakouts.*
Benefits	**Recruit and Motivate Allies** – steady stream of program applicants and increased involvement with Program. Allies are well-versed with Program. **Support Program and Technical Training for Allies** – CEAs serve as an extension of HE's incentive program and are technically competent regarding energy efficient equipment **Marketing & Event Support** – Increase lead generation and increase use of co-op advertising/event funding **Ongoing project-specific advisory support** – CEAs view Hawaii Energy as trusted energy advisor **Feedback & Acknowledgement** – Customers choose to primarily hire allies with "CEA seal" (EIR benefit); increase CEA program participation

Market Transformation - Professional Development Clean Energy Ally Program

Program Purpose	The Clean Energy Ally (CEA) program serves as a force multiplier for Hawaii 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 Hawaii Energy rebates and program offerings.							
Current State/ Barriers	Lack of knowledge on HE program; limited resources on EE equipment available; additional onboarding & documentation may deter potential allies from participating in program							
Activities	Recruit allies & Explain/promote CEA & other HE programs	Support program & technical training; certification for allies	Provide marketing & event support to allies	Provide networking opportunities	Provide ongoing project-specific advisory support	Provide feedback and acknowledgment	Conduct Orientation for Specialty (Advanced Programs)	Expand program offerings + bonuses/limited-time offers
Program Outputs	Personal contacts made; Trade associations contacted; Events attended in collaboration with other organizations; Registration with application completed; Completed registrations (completion includes watching CEA orientation video); Business entries in program directory by island & trade;	Attendance at technical training/certification courses; Diversity of trainings attended; Certifications awarded; Subsidies provided to allies to attend trainings; Differentiated directory listing	Co-op advertising & event guidelines and processes; Co-op advertising & event funding applied for and provided; Co-op ads run (via print, TV, radio, direct mail, other); "Brandable" collateral Co-op events occur with Hawaii Energy rep support	Event advertisements and invitee lists; Number & variety of networking events; Allies attendance at networking events; Innovation Symposium held by HE	Advising services; Project/Sector-specific consultations	Energy Insider Rewards program (EIR); "Top of the list" on vendor directory; Award presented at annual Innovation Symposium	Specialty program trainings held across islands; In-person/webinar attendance; Completed Specialty (Advanced Programs) orientation; CEA listed on online vendor directory	New programs offerings; Limited time offers; Expanded programs
Short Term Outcomes (PY19-21)	Ally company profile registered; Individual ally registered (Organization User); Allies understand fundamentals of HE & EE programs Allies know which measures have incentives Ally company listed in directory Customers find directory as useful Sign-ups for orientation trainings increase; Individual ally sign-up increases Ally company understands HE program & EE rebates Allies regularly promote EE equipment to customers; Allies value and regularly promote HE's programs to customers; Allies motivated and willing to fill out HE paperwork; Allies complete HE applications correctly and only for qualifying equipment; Allies make use of CEA resources; Customers understand program/benefits of EE/incentives; Greater customer satisfaction; Allies (not HE staff) primarily assist customers w/ applications; CEA directory includes allies representing all HE programs	Allies fluent with HE EE programs, requirements, and processes; Allies find trainings beneficial; Allies have enhanced technical knowledge/skills; Allies earn relevant certifications Allies apply new knowledge/skills to "upsell" EE, cross-sell w/ other HE programs; Allies have higher inspection pass rates; Allies increase trust in HE	Allies see value of co-branding with HE; Allies apply for co-op advertising Allies apply for co-op events Allies utilize marketing resources provided by HE Customers learn about new technology and HE program Allies increase trust in HE; Allies use co-branded collateral; Allies run co-op ads; Allies host co-op events; Allies use HE resources; Allies present EE equipment/services; Customers increase trust in HE	New contacts established with complementary allies; Networking with prospective customers; Allies build trust with HE; Allies build credibility with new customers; Allies see value in attending Innovation Symposium, Increased participation at Innovation Symposium Allies working with new partners; Customers increase trust in allies and HE; More allies learn of and enlist in CEA program; New leads generated for allies Additional & refined marketing resources available; Increased use of marketing materials and co-op advertising; Increased co-op events; Increased knowledge of HE program and EE equipment;	Allies get needed assistance; Allies feel supported and appreciated; Allies use program resources to prepare for customer meetings; Customers get needed assistance; Allies are empowered and make mid-project course corrections; Allies fully understand program rules, procedures, and forms, and increasingly view working with the program as standard practice Allies find support beneficial to making EE sales and completing projects; Allies have positive opinion of program;	Allies understand individuals' impact to HE's success; Allies feel valued by HE program; Increased EIR sign-ups Allies recognized for their excellence at HE-sponsored events; Allies recognized for active participation in program (EIR)	Allies understand HE fundamentals ; Allies understand Specialty (Advanced Programs) and importance Allies understand benefits of Specialty (Advanced Programs) & EE equipment Ally completes orientation & listed in vendor directory Allies promote EE equipment and Specialty (Advanced Programs) to applicable customers; Allies value and regularly promote HE's programs to customers; Allies motivated and willing to fill out HE paperwork; Allies complete HE applications correctly and only for qualifying equipment; Customers understand program/benefits of EE/incentives;	Allies attend HE-held events to learn more about special offerings; Allies find value in special offers; Allies understand parameters of special offers
Medium Term Outcomes (5 years)	Heavy customer use of directory/customers find directory a valuable resource; (Future) Allies sustain interest in program and sign-up for program update trainings Steady stream of program applicants Increased CEA involvement with program (i.e. Energy Insider Rewards, Innovation Symposium) Increase in projects submitted Allies are technically competent regarding EE equipment; Allies capably offer end users greater variety of EE options; More EE projects pass onsite verifications and QA/QC; Allies meet or exceed program QA/QC requirements; Allies find selling EE profitable Allies continue to sign up for technical trainings	Allies can explain NEBs to customers; Customers understand benefits of EE equipment; Customers include NEBs in decision-making process; Allies motivated and willing to fill out HE paperwork; Customers more satisfied with sales process/increase trust in allies and HE; ●Sell more EE equipment; ●Refer most customers to HE programs;	Increased lead generation; Shorter sales cycle		Allies integrate the HE program/mission into their standard practices; Hawaii Energy finds program easier to administer; Allies more motivated to make EE sales & to participate in program; Allies find upselling EE is good for business / EE portion of business grows; Allies have increasing trust in Hawaii Energy; Allies share learnings; Improved customer satisfaction with program experience	Allies as a peer group understand their impact to HE's success; Ally recognized as outstanding ally at annual Innovation Symposium	Greater customer satisfaction; Allies (not HE staff) primarily assist customers w/ applications; CEA directory includes allies representing all HE programs; Heavy customer use of directory/customers find directory a valuable resource; Allies sustain interest in Specialty (Advanced Programs) and sign-up for program update trainings;	Increase Ally participation in special offers; Allies become well-versed with HE program; Allies find value & promotes HE program; Allies make use of available resources
Long Term Outcomes (10 years)	Allies serve as an extension of HE's EE programs:		Allies view HE as beneficial networking resource; Allies establish long-term relationships with complementary businesses; EE becomes standard practice for allies; Allies find Innovation Symposium valuable for business		EE becomes standard practice for allies; Allies find EE helps grow their businesses	Customers recognize, trust, and rely on CEA "seal" as a designation for high-quality allies; Customers chose to hire only/primarily allies with CEA "seal;" High customer satisfaction with allies; Allies find CEA designation helps grow their businesses; CEAs' excellence/high standards widely recognized within the industry Allies find value in submitting projects; Increase in CEA participation (i.e. increase projects)	Allies serve as an extension of HE's EE programs: ●Sell more EE equipment; ●Refer most customers to HE programs; Allies view HE as trustworthy Increase in projects submitted by Allies Increase participation in HE program CEA directory includes all programs offered by HE	

Program Category	**FOCUS AREA: Professional Development & Technical Training** **B & C. Clean Energy Ally and Targeted Participant Training**
Program Description	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 through technical trainings and vendor presentations. This in turn will help Allies successfully educate and support their customers and improve their energy efficiency operations through energy-saving projects. On the participant side, professional development offerings also target those who are in positions of influence to affect energy decisions in homes and businesses. These include building operations and engineering staff, architects and designers, those entering or currently in the energy workforce, and teachers. The program offers technical trainings, workshops and certifications that advance knowledge of energy efficient technologies as well as provide valuable, portable professional credentials for participants. (Most trainings are attended by a mix of trade allies/contractors and energy professionals). This activity area also includes energy-industry workforce development, including supporting fellowship opportunities for young professionals to enter the field of clean energy. 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. The Program will also provide trainings to County building departments and other officials to help with understanding and enforcement of the code. Finally, 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.
Target Audience	Trade allies who participate in the Clean Energy Ally program or are potential participants. Professionals in the energy efficiency field or with decision-making authority regarding capital improvements and home renovations including building operators, facility managers, engineers, architects, owners, real estate professionals.
Key Partners	• University of Hawai'i Mānoa (Outreach College) • University of Hawai'i Maui College (Sustainable Living Institute of Maui) • Hawai'i State Energy Office (State Department of Business, Economic Development, and Tourism)

	• Association of Energy Engineers (National) • Franklin Energy (Formerly Build It Green)
Barriers & Risks	• Time and opportunity cost of attending training: Participants attending training during the workday, or are giving up personal time (for weekend offerings). • Professional development and training costs and fees are an oft-cited barrier. Though the Program typically sponsors a majority of the training tuition, the co-pay may still be a barrier for small companies or sole proprietor/contractors. • Training delivery method may be a barrier for some participants- ie attending an in-person training may be preferable to some, but might represent a barrier for geographically remote locations. • Participants may not be aware of Hawaii Energy's offerings and their value to their staff and operations. • For emerging technologies and practices, participants may feel skeptical of the value of the training or feel that they will wait until the market demand is more established rather than be early adopters or innovators. • Contractor or participants' organization may not be supportive of continuing education or provide opportunities for advancement for those who seek certifications and credentials. • Real estate transaction and process is very time sensitive with competing priorities. Explaining the value of energy efficiency will take a solid knowledge base and sensitivity to client and market.
Infrastructure Needs	• Application process and easy to use registration mechanism for courses • Means for participants to evaluate the course • Means of tracking if the information was implemented in the workplace. • Tracking of participants' names, email addresses and companies; adding participants to databases to inform them of future opportunities. • Ongoing survey and information gathering to assess needs and interests of trade allies and participants so that appropriate workshops and trainings can be designed.
Implementation	Key Deliverables and Milestones: **PY19-PY20**: In partnership with key allies, provide 10,000 participant hours of high-quality technical training. Expand the topics to include emerging technologies e.g., networked lighting controls, non-energy benefits of lighting, smart buildings. Offer trainings for real estate appraisers. **PY21:** Continue expanding technical training offerings and utilizing technology to make delivery more convenient for geographically hard to

	reach customers. Expand real estate trainings to cover all islands and help to create a network of realtors who are knowledgeable about how to implement energy upgrades and market efficient homes as well as appraisers who can accurately represent their value. Introduce a pilot program for home inspectors to evaluate homes' efficiency and key energy and sustainability metrics. Long term strategy: Foster a growing core group of industry professionals who look to Hawai'i Energy as the trusted source for professional development and keeping up to date with emerging technology. Transform real estate market to quantify and recognize the long term value of energy and resource efficiency and the importance of non-energy benefits to homeowners.
Cost	*See Market Transformation Budget Table following this section for budget breakouts.*
Benefits	• Increased participation (in participant hours) in workshops, certification courses, trainings. • Increased participation (in sectoral and position diversity) in workshops, certification courses, trainings. • Increased knowledge of energy efficient technologies and best practices or how to sell these efficient technologies • Increase in number of professionals who are knowledgeable and engaged around clean energy and sustainable facilities management • Career advancement and higher compensation for participants who seek continuing education and professional development.
Reference Programs	Midwest Energy Efficiency Alliance http://www.mwalliance.org/initiatives/training-education/commercial-training Northwest Water and Energy Education Institute https://www.nweei.org/professional-development/

Market Transformation - Professional Development and Technical Training: CEA Training, Participant Training

Program Purpose	Making it easier for trade allies to sell energy efficiency has many benefits for both the trade ally, and the Program. Providing program support, sales coaching, and technical training through regular contact can give trade allies the tools to be effective ambassadors for rebate programs. Increasing the number of building operations staff who have technical and practical knowledge will empower them to make smart choices about energy efficiency and participate in retrofit programs for energy efficient equipment. Increasing the number of designers, architects and engineers who have technical and practical knowledge will empower them to meet and exceed the IECC 2015 code, make smart choices about energy efficiency and participate in new construction or retrofit programs Increasing the energy literacy of real estate professionals so that they can better evaluate and market energy and resource-efficient homes.			
Current State/ Barriers	Hawai'i's distance from the mainland and generally small market make it more difficult and costly to access a diversity of professional and technical training offerings. Smaller companies do not have the resources to seek out and pay for advanced training for employees.			
Activities	Identify and market advance technical training workshops for Clean Energy Allies Offer sales and business development training for Clean Energy Allies Provide low to no-cost registration	Identify, develop and market workshops and trainings for working professionals in building/facilities management Enhance online and distance learning courses and workshop options Provide low to no-cost registration	Offer IECC 2015 training to highlight code changes and how to exceed code. Provide low to no-cost registration	Provide Green Realtor designation training and Green Appraiser training. Provide low to no-cost registration
Activity Metrics	Number of participant-hours of training Satisfaction with training; participants' perception of their	Number of participant-hours of training Number of participant-hours of training; demographics of	Number of participant-hours of training	Number of participant-hours of training Number of third party labeled green homes
Program Outputs	Increased access to information about energy saving opportunities and how to participate in program focus areas	Increased number of courses, registrants and certifications issued (if applicable) Increased participation especially among geographically remote or harder to reach targets	Design community has access to information on changes in the energy conservation code and strategies to meet and exceed code.	Real estate agents, home inspectors and appraisers educated about the financial, occupant and environmental benefits of an energy-efficient home.
Short Term Outcomes (PY19-21)	More contractors who are well-versed in leading edge energy efficient equipment and best practices for usage, and how to communicate the benefits to customers, as well as how to participate in Hawai'i Energy incentive programs.	Increased knowledge of energy efficient technologies and practices	Increased industry knowledge of energy efficient design	Increased number of listings feature sustainable / energy criteria
Medium Term Outcomes (5 years)	Increase in sales of energy-efficient equipment and profitability of CEAs	Increased participation in incentive programs; career advancement for participants	Increased participation in incentive programs to drive more efficient new construction.	Energy efficient homes are labeled with third party certification; green MLS tool is built to identify highly efficient and labeled homes. Industry professionals value and seek out certifications that are sponsored
Long Term Outcomes (10 years)	Supply chain shifts to increase market share for energy efficient equipment in the State of Hawai'i.	Ongoing implementation of knowledge gained; re-certification or credential maintenance if applicable. Employers recognize the value of the training and exhibit a preference for individuals who have undergone training.	Higher percentage of permitted building designs are exceeding code. Ability to track and claim savings for code compliance and training effort towards EEPS.	Energy-efficient and green homes are labeled; energy efficient homes are appraised at a premium in the local market; consumers look for sustainable criteria when buying a home

Program Category	**FOCUS AREA: Professional Development & Technical Training** **D. Educator Training and Grants**
Description	The Educator Training and Grants program offers professional development for teachers to engage students in science, mathematics, engineering, (art), and technology (STEM/STEAM) curriculums focused on energy efficiency and clean energy subjects. The training builds workforce capacity in the education sector and gives teachers opportunities to strengthen knowledge base, skill level, and overall effectiveness in the classroom. Training educators reinforces energy concepts and guides students to develop a better understanding of the State's evolving energy climate while introducing pathways into STEM careers.
Target Audience	Educators and administrators: • Hawai'i Department of Education (HDOE) public schools, especially in hard-to-reach communities • Charter schools • Independent schools
Barriers & Risk Identification	• Time constraints and competing priorities to attend professional development training • Lack of awareness of the salary advancements associated with successful completion • Lack of marketing support and outreach to increase participation • Slow development of relationships with academic institutions • Challenge in leveraging external funding sources, as appropriate
Cost	*See Market Transformation Budget Table following this section for budget breakouts.*
Benefits / Projected Impact	• Teachers improve STEM content knowledge • Increase in energy curriculums and portfolios implemented in the classroom • Increase in energy curriculums and portfolios implemented in the classroom • Teacher salary advancement through approved HDOE curriculum • Students show improvement in academic achievement • Increased number of students pursuing and graduating in STEM related degrees • Increased teacher retention

	• Increased enrollment in two-year and four-year colleges • Increased percentage of hard-to-reach students in STEM fields • Advancement and evolution of DOE Next Generation Science Standards
Implementation	Hawai'i Energy collaborates with program allies to implement educator professional development training for public, charter, and independent schools. For Hawai'i Department of Education (HDOE) public schools, an approved course is delivered through the Professional Development: Educate, Empower, Excel (PDE3) program to train K-12 educators on how to develop and integrate an energy efficiency and clean energy curriculum into the classroom. The PDE3 course aligns with the state's Next Generation Science Standards (NGSS) and incorporates inquiry-based learning methods that enhance the student learning experience. The course instruction is provided in multi-day workshops followed by online training and one-on-one support to assist teachers in developing teacher-specific portfolios that are then approved by State administrators. This rigorous process gives educators the tools and creativity to craft relevant lesson plans and meaningful content than can be applied to real-world situations as well as the confidence to teach the main principles of energy efficiency, conservation, and clean energy to their students. While the primary focus of educator professional development will be delivered through public schools, charter and independent schools may be offered similar training and course content based on need and availability.
Key Partners	• Program allies • Public, charter, and independent schools • Nonprofit organizations • Community action groups • After school programs • State and local agencies

Program Category	**FOCUS AREA: Professional Development & Technical Training** **D. Training and Grants – Workforce Development**
Program Description	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. On the participant side, professional development offerings also target those who are in positions of influence to affect energy decisions in homes and businesses. Hawaii Energy provides support for the Facilities Management degree program offered through University of Hawaii-West Oahu (UHWO). The goal of the program is to expand the workforce in facilities management and create a new generation of professionals who are poised to make positive improvements in their facility's operations and maintenance.
Target Audience	Undergraduates seeking four-year degrees (Bachelor's of Business Administration, Bachelor's of Applied Science) with a concentration in Facilities Management.
Key Partners	• University of Hawai'i – West O'ahu • International Facilities Management Institute (IFMA) Hawai'i Chapter
Barriers & Risks	• Facilities management is not a well-known career path on either the business administration path or the technical/applied science path. • Mentorship and internship opportunities to keep students engaged and provide exposure to potential employers. • Careful planning is needed ensure that energy and sustainability are woven into the course requirements for a strong foundation.
Infrastructure Needs	• Marketing and outreach to recruit majors into the degree programs • Mentorship and internship opportunities to assist with job placement • Means of tracking students' career progression and keeping them engaged with the Program when they enter the workforce • Tracking of participants' names, email addresses and companies; adding participants to databases to inform them of future opportunities. • Ongoing survey and information gathering to assess needs and interests of trade allies and participants so that appropriate workshops and trainings can be designed.
Implementation	Key Deliverables and Milestones: **PY19-PY20**: Provide funding support for Sustainable Facilities Professional credential; provide sponsorship for other technical trainings on HVAC,

	lighting, controls, and other topics, which are open to FM program students.
Cost	*See Market Transformation Budget Table following this section for budget breakouts.*
Benefits	• Increase in number of facilities management professionals who are knowledgeable and engaged around clean energy and sustainable facilities management • Career advancement and higher compensation for participants who seek continuing education and professional development.
Reference Programs	Villanova University https://www1.villanova.edu/villanova/professionalstudies/continuingstudies/faccred.html Wentworth Institute of Technology https://wit.edu/continuing-ed/programs/bachelor-associate/bachelor-science-facility-management Arizona State University: https://fmacademicregistry.org/fm-educational-programs/arizona-state-university/ University of California Berkeley extension: https://extension.berkeley.edu/public/category/courseCategoryCertificateProfile.do?method=load&certificateId=17363777

Market Transformation - Professional Development - Educator Training

Program Purpose	Offer subsidized professional development courses for teachers to engage students in science, mathematics, engineering, (art), and technology (STEM/STEAM) curricula focused on energy efficiency and clean energy subjects. The training builds workforce capacity in the education sector and gives teachers opportunities to strengthen knowledge base, skill level, and overall effectiveness in the classroom.
Current State/ Barriers	Hawaii's students have very limited classroom exposure to energy curricula and very few have a solid understanding of concepts related to efficiency and conservation or climate change, which leads to low energy literacy when they become adult consumers. Hawaii ranks toward the bottom nationally in science and math as well as students majoring in STEM subjects in college. Teachers face time constraints and competing priorities to attend professional development training as well as financial barriers to seeking continuing education. Few know how to teach about energy in an engaging, 21st century learning framework that is aligned with core standards required by the State of Hawaii Department of Education.
Activities	Teacher professional development workshops
Activity Metrics	Number of participant-hours of training Number of energy related lessons presented in classroom per year
Program Outputs	Teachers develop classroom lesson(s) to use with their students.
Short Term Outcomes (PY19-21)	Educators' knowledge of energy efficiency increases Increased energy literacy among participating students Energy bill savings at home from student initiated activities and actions
Medium Term Outcomes (5 years)	Increase number of non-STEM educators incorporating STEM principles in the classroom Educators receive salary class advancement from additional professional development credit Student engagement in energy or climate related activities or programs (e.g. Energy Summit) Increase percentage of hard-to-reach students in STEM fields
Long Term Outcomes (10 years)	Knowledgeable adult learners committed to energy savings and being advocates in the community Increased enrollment in two-year and four-year colleges Students become educated adult consumers of energy in their own households Increased percentage of students graduating with STEM degrees and pursuing future careers in clean energy

Market Transformation - Professional Development - Degree Program Support

Program Purpose	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. On the participant side, professional development offerings also target those who are in positions of influence to affect energy decisions in homes and businesses. Hawaii Energy provides support for the Facilities Management degree program offered through University of Hawaii-West Oahu (UHWO).	
Current State/ Barriers	Limited access to secondary eduction in facilities management	
Activities	Provide foundational financial support for the establishment of sustainability-focused Facilities Management concentrations in four-year degree programs (Bachelor's in Applied Science; Bachelor's in Business Administration) in partnership with UH West O'ahu and International Facilities Management Association (IFMA) Hawai'i Chapter, as well as providing ongoing planning support for the program.	Provide nationally standardized certificate program in Sustainable Facilities Management (Sustainable Facilities Professional, SFP) primarily targeted at degree program students but also open to the community/public.
Activity Metrics	Number of students entering the degree program.	Number of participant-hours of training
Program Outputs	Emerging building management and facilities professionals who are knowledgeable about energy-efficient technologies and building operations best practices	
Short Term Outcomes (PY19-21)	Increased awareness of energy saving opportunities in facilities management and engineering	
Medium Term Outcomes (5 years)	Students find opportunities to apply energy efficiency in internship settings or the workplace.	New retrofit projects for lighting, HVAC, and participation in other incentive programs
Long Term Outcomes (10 years)	New retrofit projects for lighting, HVAC, and participation in other incentive programs; deeper engagement with Program in through other types of participation (SEM program participation by their company, Symposium attendance); participants' adoption of policies and protocols at facilities where graduates work. Students and graduates attend other Program technical trainings and certification courses to continue their education.	Green workforce development: jobs in facilities management created. Employers recognize value of degree and credential.

Program Category	**FOCUS AREA: Energy in Decision Making** **A. Strategic Energy Management (SEM)**
Program 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 beginning with executive buy-in and includes things such as staff training, , energy studies, joint marketing promotions and integrating incentive payments with the customers' financial tracking systems. SEM promises to deliver deeper and more sustained savings through a relationship that lasts anywhere from 6 to 36 months. The SEM program is a structured initiative 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 SEM becomes ingrained in the organizations' cultures. Working to support the customer to schedule and plan capital projects on a budget timeline also helps to ensure projects are informed and deliberate decisions. Heightened awareness and engagement by participating customers will be the driver for identifying deeper savings opportunities as well as creating a multiplier effect for energy-conscious behavior at work and at home.
Target Audience	Targeting participation from State & county governments, hospitals, target large customers w/ MV90 data, industrial sector.
Key Partners	Organizations using ISO 50001, Hawai'i Green Growth/Sustainable Business Forum
Barriers & Risks	• 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.
Infrastructure Needs	• Hawai'i Energy dedicated staff time • Time to develop workshop materials specific to customer. This includes engineering time spend developing energy models. • As required, energy project tracking software (i.e. GRITS)
Implementation	**PY19:** 7 participants by June 30th 2020 **PY20-21:** additional participants each year thereafter

Cost	No cost for participation by the customer other than time commitments. Traditional rebates and custom rebates are available for customers are they go through the process of identifying opportunities and projects. **BTRAN**: Strategic Energy Management, Customer Engagement PY19 Transformation Incentive Budget: $267,248 PY20 Transformation Incentive Budget: $267,248 PY21 Transformation Incentive Budget: $267,248 Total PY19-21 Budget: $801,744 **BESM**: Operational Savings & Capital Projects - Influenced - Non-incentive Efforts PY19 BESM Incentive Budget: $200,000 PY20 BESM Incentive Budget: $200,000 PY21 BESM Incentive Budget: $200,000 Total PY19-21 Budget: $600,000
Benefits	Verifiable savings may be claimed through billing or other data analysis as appropriate. A 200,000 kWH goal for each year has been identified; attributed to the ECMs accomplished as result of this engagement to include energy savings identified in Energy Audits conducted for each SEM participant. Enhanced awareness by company employees and opportunity for deeper retrofits with leadership buy in. Estimated first year energy savings from SEM participant projects (also within BESM portion of bottom up model) **PY19: 250,000 kWh** **PY20: 340,000 kWh** **PY21: 620,000 kWh**
Reference Programs	Consultations with VEIC, Leidos as well as using ENERGY STAR resources and local energy savings companies who have experience working with the State of Hawaii.

Energy in Decision Making - Strategic Energy Management program

Program Purpose	To empower organizations and large energy users to strategically implement energy efficiency projects and drive deeper savings. By offering to assist customers in planning and developing their own SEM plan, positive loops can be established that enable savings to finance future projects, as well as recognition and commitment within an organization to pursue clean energy and efficiency as standard business practice.		
Barriers	• Organizations who have no dedicated energy champion, no company wide energy policy, or non-commitment by leadership feel lack of necessary support to implement energy conservation in a cost-effective, strategic manner. • Facility maintenance is often a low priority item and often overlooked by organizations struggling to manage multiple facilities, have under-staffed facility maintenance crews • Quantifying savings or benefits is challenging without interval data.		
	New SEM participants	Past SEM Participants	Collaboration with External Organizations
Activities	Find and engage large organizations and customers that meet program criteria and stand to benefit from program offerings	Continue to drive efficiency projects with past participants by staying engaged, checking in and providing bill analytics, information of new rebate offerings, etc.	Leveraging partnerships such as with Hawai'i Green Growth's Sustainable Business Forum to gain access to larger target audiences and "influencers" in the market who have participated.
Program Outputs	•'Energy and demand savings from energy efficiency projects by new and past participants		
Short Term Outcomes (PY19-21)	• Strong relationships with large customers that lay the foundation for future projects, Hawai'i Energy being a trusted advisor, knowledge retainer for organizations in the case of employee turnover. • 7 participants as a goal for PY19, additional participants in following years		
Medium Term Outcomes (5 years)	• Projects continue to come down the pipeline as equipment is replaced and organizations make strides in budgeting and planning for energy efficiency and customer sited resources.		
Long Term Outcomes (10 years)	• Influencing business organizations show successful models for business through energy management, energy efficiency and environmental stewardship. • Incorporating energy efficiency into budgeting and planning cycles becomes standard practice for all businesses.		

Program Category	**FOCUS AREA: Energy in Decision Making** **B. Rural Water and Wastewater Support**
Program Description	Support for rural water utilities, wastewater treatment 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. The best example of such a collaboration to date has been with the Department of Water Supply on the island of Hawai‘i which faces unique challenges with the large expanse of required coverage and poor cellular reception for leak detection and tracking. By supporting the purchase and upkeep of loggers on Hawai‘i, reduced the amount of water pumped in turn reduces the amount of electricity needed to pump, lowering costs that are passed onto customers. 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. Historically, Hawai‘i Energy provided kits to water utilities that measured electricity and a flow meter to estimate electricity cost per pumped unit of water. Support for these types of efforts may resume depending on need by rural water utilities.
Target Audience	Water utilities, municipalities, wastewater treatment plants on Hawai‘i, Honolulu, and Maui counties. Large commercial water users.
Key Partners	• Department of Water Supply (Hawai‘i, Maui County) • Board of Water Supply (O‘ahu County) • Hawai‘i Rural Water Association • American Water Works Association • Commission on Water Resource Management
Barriers & Risks	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.
Infrastructure Needs	• Depending on need of rural and/or municipal water utilities, Hawai‘i Energy can increase support for this area with more equipment available to borrow and more dedicated staff time. • Water data in the form of water audits have been provided by the customer and are crucial to proving the cost effectiveness of measures such as leak detection.

	• Trainings on energy and water efficiency specific to water utilities may increase level of support possible
Implementation	**PY19:** Continue to support purchase of newer leak detection loggers with greater range. Savings methodology will continue to be modified as more loggers are added to the system, catching more leaks in the early stages and reducing energy costs passed onto customers. **PY20-21:** Future work with Board of Water Supply on O'ahu is anticipated as well as outreach to outer island utilities. Working with HRWA and the Commission on Water Resource Management will help to drive conversation on support for rural water utilities.
Cost	**Leak detection support:** 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 cost savings for water utilities. **BTRAN**: Rural Water/Wastewater Support PY19 Transformation Incentive Budget: $31,204 PY20 Transformation Incentive Budget: $31,204 PY21 Transformation Incentive Budget: $31,204 Total PY19-21 Budget: $93,613 **RTRAN**: Energy Water Nexus PY19 Transformation Incentive Budget: $30,471 PY20 Transformation Incentive Budget: $30,471 PY21 Transformation Incentive Budget: $30,471 Total PY19-21 Budget: $91,414 **BESM**: Energy-Water Nexus (consists of) - County Leak Detection Support - County Water Energy Studies - Rural Water Utility Support PY19 BESM Incentive Budget: $132,500 PY20 BESM Incentive Budget: $166,250 PY21 BESM Incentive Budget: $200,000 Total PY19-21 Budget: $498,750
Benefits	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. Estimated first year energy savings (also within BESM portion of bottom up model)

	PY19: 397,050 kWh **PY20: 463,225 kWh** **PY21: 529,400 kWh**

Program Category	**FOCUS AREA: Codes & Standards**
Program 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. Activities may include: • Promotion of next cycle of IECC or stretch code with partner organizations. • Education and outreach through events and workshops targeting design and planning community. Similar to training, industry opposition to rising costs is identified as barrier to adoption of stricter codes. **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. Activities may include: o Training for architecture, engineering & construction (AEC) design community o Training for permit office plan reviewers o Additional resources for plan review for energy code compliance o Potential incentives for AEC design community to indicate methods of compliance • 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.

	Appliance Standards Appliance retailers
Key Partners	• Building code: Departments of Planning and Permitting (DPPs), Office of Climate Change, Sustainability and Resiliency (CCSR), State Energy Office (SEO), Blue Planet Foundation (BPF), External consultants (i.e. Kolderup Consulting, New Buildings Institute (NBI), Vermont Energy Investment Corporation (VEIC), etc.) • Appliance Standards: Appliance Standards Awareness Project (ASAP), Blue Planet Foundation (BPF)
Barriers & Risks	Barriers to implementation: • Raised upfront costs on new construction. • Perception of reduced customer choice for appliance standards • Lack of uniformity among counties and a uniform process across state and counties for adoption • Complexity of new code and the need to train staff accordingly. Loss of expertise as veteran plan reviewers retire. • Internal organizational processes that could slow down code adoption cycle in relevant agencies. Risks: • Unforeseen complications or delays in code adoption extends timeline and affects program and training design • County amendments may seek to alleviate stricter code provisions to be optional
Infrastructure Needs	**Program Design** Consider role of C&S in Program Resource Acquisition for clear tracking and reporting **Tracking and Reporting** Create C&S savings tracking and reporting scheme within backend systems to match and support EEPS reporting and tracking **Staffing** Internal Staffing, time spent by external consultants for advice on code related-topics **Evaluation** Third party experts (sub-contracted) who can conduct Delphi panel and interview industry and market participants to evaluate contribution of Hawai'i Energy to

	influencing adoption of new codes, raising compliance to new building code. i.e. TAG,
Implementation	Key Deliverables and Milestones: **PY19**: 100 hours of professional development training; conduct four Energy Efficiency Codes Coordination meetings with summary report at year end. EM&V contractor to evaluate Codes and Standards program attribution of savings to PY19 and beyond. **PY20-PY21:** Future target metrics to be established as evaluation of prior year is done. More work in code adoption and compliance for 2018 IECC.
Cost	**Code Adoption and Compliance Enhancement Activities:** **BTRAN:** Codes Training, Technical Support, Advocacy Standards Enhancement and Leading Edge Tech PY19 Transformation Incentive Budget: $102,883 PY20 Transformation Incentive Budget: $102,883 PY21 Transformation Incentive Budget: $102,883 Total PY19-21 Budget: $308,650 **Appliance Standards:** **RTRAN:** Codes Training, Technical Support, Advocacy PY19 Transformation Incentive Budget: $104,712 PY20 Transformation Incentive Budget: $104,712 PY21 Transformation Incentive Budget: $104,712 Total PY19-21 Budget: $314,136
Benefits	**Code Compliance** • Code trainings will increase knowledge base among design professionals, improving compliance and acceptance by the industry for improved standard practices. • 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. **ESTIMATED Claimed attribution of savings from Code Compliance** (also within BESM portion of bottom up model): **PY19: 1,200,000 kWh** **PY20: 2,400,000 kWh**

PY21: 3,600,000 kWh

Appliance Standards

- Protect Hawai'i consumers from inefficient products
- Protect renters

ESTIMATED Claimed attribution of savings from Appliance Standards (Also within RESM portion of bottom up model):

(Note: Appliance standards are due to be effective January 1st, 2021 and PY20 claims the first half of 2021 until June 30th, 2021).

PY20: 8,000,000 kWh
PY21: 16,000,000 kWh

Savings Calculations:

	Total			
	PY2019	**PY2020**	**PY2021**	**Total**
Appliance Standards Savings Attribution	0	7,956,300	15,912,600	23,868,900
Energy Code Compliance Savings Attribution	1,199,475	2,398,950	3,598,425	7,196,850
Total	1,199,475	10,355,250	19,511,025	31,065,750

Reference Programs	DBEDT 2018 Code Compliance study

Program Logic Model: Codes & Standards

	Code Development & Adoption			Code Compliance		
Program Purpose	To support the adoption and compliance of new codes and standards in the State of Hawai'i. Hawai'i has historically suffered from outdated building codes with strong pushback by industry for raising first costs in new construction. Hawai'i Energy aims to elevate industry awareness of savings by newer codes, support ongoing adoption of new codes and collaborating with the State Energy Office to target areas of low code compliance.					
Inputs	Transformational budget, Stakeholders (e.g. community organizers, realtors, building owners, design, construction and engineering firms, county building departments, etc.)			Building industry	Architects, Engineers, construction designers	Planning & Permitting departments
Barriers	Lack of uniformity among counties and a uniform process across state and counties for adoption		Incremental cost and complexity of new code	Incomplete or limited knowledge of new code requirements	Drivers of non-compliance	Drivers of non-enforcement
Activity Type	Outreach/Promotion/ Advocacy	Stakeholder engagement	Resources and support	Compliance studies, identification of adequate and relevant training, industry and planning department feedback for non-compliance and non-enforcement, gap analysis		
Action	Participate with SBCC and promote existing training opportunities	Advocate for enhanced code development and adoption with industry organizations, trade groups and energy efficiency contractors	Lead EECC committee, develop & deploy resources for industry	Develop programs to improve areas of low compliance	Develop interventions to address feedback	
Program Outputs	More proponents for energy codes	Facilitate energy code adoption, address stakeholder concerns, facilitate discussion around innovative energy code practices for future adoption or integration with Program		New collaborations national code organizations and other C&S programs	Engage key stakeholders to address gap analysis findings	
Short Term Outcomes (PY19-21)	Widespread awareness of code & changes by architects, builders and planning departments.	Adoption of code enhancement proposals by Department of Planning & Permitting New code passed into law with amendments becomes part of the standard code adoption process in all counties		Compliance study results used to inform planning efforts within the C&S sector	Develop/modify new construction programs to target areas of low compliance Pilot new construction programs to influence design state projects Claim savings for higher efficiency new construction above code	
Medium Term Outcomes (5 years)	Continued outreach for upcoming new codes, 2021 IECC Net Zero appendix as a stretch code	All counties are on 2021 IECC with amendments. Ensuring energy efficiency is first before renewable energy for net zero construction		Measurable increase in code compliance	Widespread impact on current building construction practices Design community and planning departments equipped with training, resources & tools to maximize code compliance and verification	
Long Term Outcomes (10 years)	Codes and standards programs are no longer focused on adoption and compliance but pushing the bar for smarter, grid-interactive buildings.					

Program Category	**FOCUS AREA: Clean Energy Solutions Innovation Hub**
Program Description	As the electric industry is undergoing a fundamental transformation due to advances in technology, changing customer preferences, and market developments, technology and innovation continue to help drive this change. As the portfolio continues its transformation away from lighting, Hawai'i Energy seeks to accelerate the adoption of new energy-saving technologies. At a customer level, buildings are becoming smarter and more connected which can help address the increasing need for flexibility in energy demand. As the program also helps reduce GHG emissions from non-renewable generation sources, the rapid growth of distributed energy resources are helping to drive this market transformation and is a growing area for the Hawai'i Energy program. The Clean Energy Solutions Hub is the formalization of Hawai'i Energy's ongoing programmatic efforts to bring innovative projects and emerging technologies to customers in order to assess the potential for market adoption. Emerging technologies are new, energy-efficient technologies, systems, or practices with significant energy savings potential that have not yet, for a variety of reasons, achieved sufficient market share to be considered self-sustaining or commercially viable. Emerging technologies may include prototypes, pre-commercial or recently commercialized equipment, as well as software, design tools, or energy services. In our efforts to build a pipeline of innovative projects incorporating emerging technologies, we will continue our ongoing work with the Elemental Excelerator (EEx). This includes companies targeting increased equity and access, smart grid technology innovations, energy efficiency, demand response, and water and/or agricultural efficiency with energy savings. Our investment will take in various different forms, depending on the maturity of the company and/or technology. We could provide incentive funding for demonstration projects for customers or matching funds for investment into projects from accelerators. Given these new technologies have an increased risk of delivering 1st year and especially lifetime savings, the intent of this funding is to be tied less to savings goals and tied more to market transformation to drive innovation as the program seeks solutions that can drive deeper energy savings.
Target Audience	• Commercial and residential customers • Companies providing innovative customer side solutions • Technology accelerators
Key Partners	• Elemental Excelerator • Hawaiian Electric • Ulupono Initiative

	• University of Hawai‘i • Hawai‘i based technology start-up accelerators • Hawai‘i Natural Energy Institute
Barriers & Risks	• Customer concerns around installation of new technologies • Increased cost of new technology prior to commercialization • Increased risk on energy savings realization • Customer confusion and ability to evaluate new technologies • Publicly available information on true performance of technologies • Lack of trusted energy advisor (without Hawai‘i Energy participation)
Infrastructure Needs	• Partnerships • Metering, monitoring, and other data collection requirements to determine performance of new technologies installed • Engineering and R&D support • Increased collaboration • Place to share emerging technology reports/analysis
Implementation	Key Deliverables and Milestones: **PY19** Hawai‘i Energy will work with partners to build project/company pipeline for PY20 project. This includes exploration of companies meeting ideal innovation profile in categories of distributed energy resources, electrification of transportation, building efficiency and water efficiency/conservation. In addition, Hawai‘i Energy will continue to explore the water energy nexus with residential customers through educational and transformational messaging delivered at community outreach events. Hawai‘i Energy through its Energy Advisors will discuss emerging technologies being considered by customers and evaluate whether it warrants program investment to encourage evaluation and adoption. **PY20 – PY21** Depending on pipeline and project readiness, the Program could include a new Innovation RFP to formally request companies and technologies that provide innovative and yet to be adopted solutions in Hawai‘i. This could take on several different forms, including working with Elemental Excelerator to leverage and align with new cohort solicitations to identify energy efficiency and other integrated DSM opportunities.

Cost	*See Market Transformation Budget Table following this section for budget breakouts.*
Benefits	• Formalized process for evaluating and integrating emerging technologies into program and portfolio • Network of global partners to support identification of new opportunities and share best practices • Partnerships to evaluate financial viability of proposals.
Reference Programs	Hawai'i Energy Annual Reports PY15- PY18. Pilot work with Elemental Excelerator's portfolio companies: People Power, Ibis, Pono Home, Shifted Energy and Kevala. Northwest Energy Efficiency Alliance: https://neea.org/our-work/emerging-technologies VEIC: https://www.veic.org/what-we-do/our-expertise/emerging-technologies

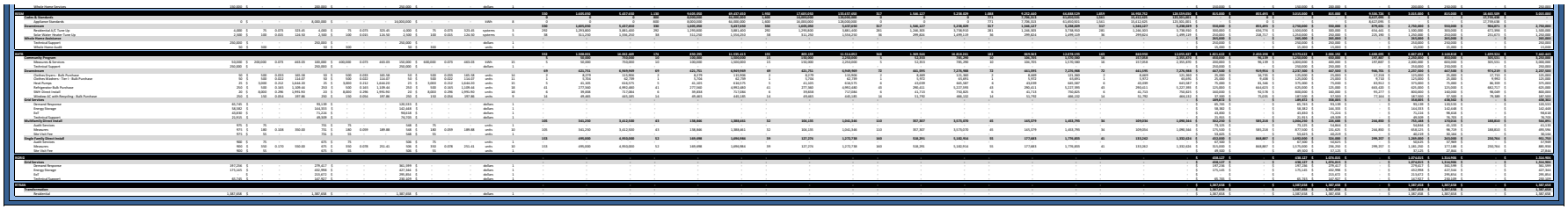
Market Transformation: Clean Energy Solutions Innovation Hub

Program Purpose	The Clean Energy Solutions Hub is the formalization of Hawai'i Energy's ongoing programmatic efforts to bring innovative projects and emerging technologies to customers in order to assess the potential for market adoption.	
Current State/Barriers	As the electric industry is undergoing a fundamental transformation due to advances in technology, changing customer preferences, and market developments, technology and innovation continue to help drive this change. As the portfolio continues its transformation away from lighting, Hawai'i Energy seeks to accelerate the adoption of new energy-saving technologies.	
Activities	Continue ongoing work with the Elemental Excelerator (EEx), identifying new companies targeting increased equity and access, smart grid technology innovations, energy efficiency, demand response, and water and/or agricultural efficiency with energy savings	Create new partnerships with start up accelerators and the University of Hawaii entities promoting innovation and emerging tech
Program Outputs	Investment will take various different forms, depending on the maturity of the company and/or technology. We could provide incentive funding for demonstration projects for customers or matching funds for investment into projects from accelerators.	
Short Term Outcomes (PY19-21)	Formalized process for evaluating and integrating emerging technologies into program and portfolio Network of global partners to support identification of new opportunities and share best practices Partnerships to evaluate financial viability of proposals.	
Medium Term Outcomes (5 years)	Market transformation to drive innovation as the program seeks solutions that can drive deeper energy savings, grid benefits, accessibility and affordability and increase resilience.	
Long Term Outcomes (10 years)	Market transformation to drive innovation as the program seeks solutions that can drive deeper energy savings, grid benefits, accessibility and affordability and increase resilience.	

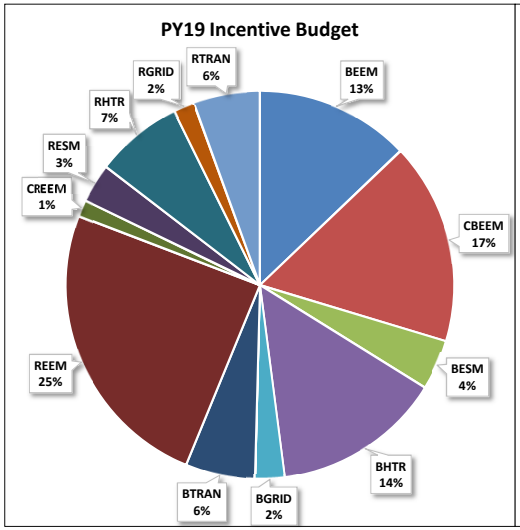
MODIFICATION 3:

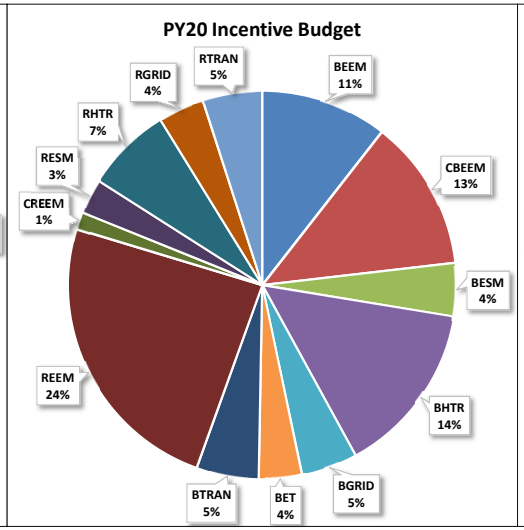
UPDATED APPENDIX C- SUMMARY PRESENTATION OF PROGRAMS (BOTTOM UP MODEL)

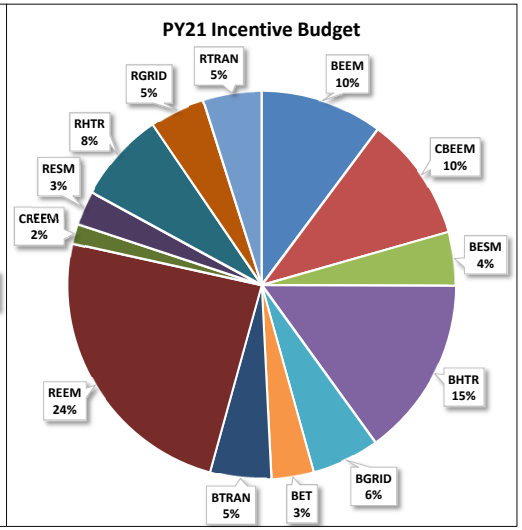
HAWAII ENERGY INCENTIVES	PY19 Quantity	PY19 Incentive per Unit	PY19 Demand Savings per Unit (kW)	PY19 Energy Savings per Unit (kWh)	PY20 Quantity	PY20 Incentive per Unit	PY20 Demand Savings per Unit (kW)	PY20 Energy Savings per Unit (kWh)	PY21 Quantity	PY21 Incentive per Unit	PY21 Demand Savings per Unit (kW)	PY21 Energy Savings per Unit (kWh)	Unit
BUSINESS PROGRAM													
BEEM													
Accounting													
Contractor Bonus	150,000	$ -	-	-	200,000	$ -	-	-	250,000	$ -	-	-	dollars
Building Envelope													
Window Film - New	50,000	$ 1	0.001	4.87	50,000	$ 1	0.001	4.87	50,000	$ 1	0.001	4.87	sqft
Window Film - Replacement	22,711	$ 0	0.001	4.87	22,711	$ 0	0.001	4.87	22,711	$ 0	0.001	4.87	sqft
HVAC													
A/C & Condensing Units: Packaged (Tier 1) - Air Cooled - <65,000	68	$ 100	0.243	1,649.66	68	$ 100	0.243	1,649.66	48	$ 100	0.243	1,649.66	tons
A/C & Condensing Units: Packaged (Tier 1) - Air Cooled - >=135,000 <240,000	33	$ 100	0.133	901.08	36	$ 100	0.133	901.08	25	$ 100	0.133	901.08	tons
A/C & Condensing Units: Packaged (Tier 1) - Air Cooled - >=240,000 <760,000	71	$ 100	0.105	712.50	78	$ 100	0.105	712.50	55	$ 100	0.105	712.50	tons
A/C & Condensing Units: Packaged (Tier 1) - Air Cooled - >=65,000 <135,000	50	$ 100	0.108	734.69	45	$ 100	0.108	734.69	32	$ 100	0.108	734.69	tons
A/C & Condensing Units: Packaged (Tier 2) - Air Cooled - <65,000	4	$ 175	0.125	849.57	4	$ 175	0.125	849.57	3	$ 175	0.125	849.57	tons
A/C & Condensing Units: Packaged (Tier 2) - Air Cooled - >=135,000 <240,000	31	$ 175	0.134	908.31	34	$ 175	0.134	908.31	24	$ 175	0.134	908.31	tons
A/C & Condensing Units: Packaged VRF - Air Cooled (Existing Facility) - <65,000	7	$ 250	0.058	394.98	8	$ 250	0.058	394.98	5	$ 250	0.058	394.98	tons
A/C & Condensing Units: Packaged VRF - Air Cooled (Existing Facility) - >=240,000 <760,000	42	$ 250	0.048	290.05	42	$ 250	0.048	290.05	29	$ 250	0.048	290.05	tons
A/C & Condensing Units: Packaged VRF - Air Cooled (New Construction) - <65,000	7	$ 250	0.058	394.98	7	$ 250	0.058	394.98	5	$ 250	0.058	394.98	tons
A/C & Condensing Units: Split (Tier 1) - Air Cooled - <65,000	23	$ 100	0.271	1,841.56	23	$ 100	0.271	1,841.56	16	$ 100	0.271	1,841.56	tons
A/C & Condensing Units: Split (Tier 2) - Air Cooled - <65,000	8	$ 175	0.238	1,612.35	8	$ 175	0.238	1,612.35	6	$ 175	0.238	1,612.35	tons
A/C & Condensing Units: Split VRF - Air Cooled (Existing Facility) - <65,000	120	$ 250	0.120	812.32	120	$ 250	0.120	812.32	84	$ 250	0.120	812.32	tons
A/C & Condensing Units: Split VRF - Air Cooled (Existing Facility) - >=135,000 <240,000	55	$ 250	0.085	580.35	55	$ 250	0.085	580.35	39	$ 250	0.085	580.35	tons
A/C & Condensing Units: Split VRF - Air Cooled (Existing Facility) - >=240,000 <760,000	25	$ 250	0.048	290.05	25	$ 250	0.048	290.05	18	$ 250	0.048	290.05	tons
A/C & Condensing Units: Split VRF - Air Cooled (Existing Facility) - >=65,000 <135,000	86	$ 250	0.084	573.22	86	$ 250	0.084	573.22	60	$ 250	0.084	573.22	tons
Chiller - Air Cooled - <150	520	$ 45	0.038	479.81	468	$ 45	0.038	479.81	374	$ 45	0.038	479.81	tons
Chiller - Air Cooled - >=150	585	$ 45	0.032	394.64	526	$ 45	0.032	394.64	421	$ 45	0.032	394.64	tons
Chiller - Centrifugal - <150	350	$ 45	0.015	684.35	315	$ 45	0.015	684.35	252	$ 45	0.015	684.35	tons
Chiller - Centrifugal - >=150 <300	468	$ 45	0.011	716.60	421	$ 45	0.011	716.60	337	$ 45	0.011	716.60	tons
Chiller - Centrifugal - >=300 <400	380	$ 45	0.001	616.27	342	$ 45	0.001	616.27	274	$ 45	0.001	616.27	tons
Chiller - Centrifugal - >=400 <600	1,378	$ 45	0.001	576.86	1,240	$ 45	0.001	576.86	992	$ 45	0.001	576.86	tons
Chiller - Positive Displacement - >=150 <300	255	$ 45	0.036	684.35	255	$ 45	0.036	684.35	204	$ 45	0.036	684.35	tons
Chiller - Positive Displacement - >=300 <600	850	$ 45	0.008	648.52	850	$ 45	0.008	648.52	680	$ 45	0.008	648.52	tons
Chiller - Positive Displacement - >=75 <150	140	$ 45	0.011	93.16	140	$ 45	0.011	93.16	112	$ 45	0.011	93.16	tons
Controls: Guest Room Energy Management System	2,242,500	$ 75	0.274	872.29	2,018,250	$ 75	0.274	872.29	1,614,600	$ 75	0.274	872.29	kWh
Heat Pumps: Packaged (Tier 1) - Air Cooled - <65,000	7	$ 100	0.243	1,649.66	7	$ 100	0.243	1,649.66	6	$ 100	0.243	1,649.66	tons
Heat Pumps: Split (Tier 1) - Air Cooled - <65,000	9	$ 100	0.271	1,841.56	8	$ 100	0.271	1,841.56	7	$ 100	0.271	1,841.56	tons
Heat Pumps: Split VRF - Air Cooled - <65,000	117	$ 250	0.088	596.98	105	$ 250	0.088	596.98	95	$ 250	0.088	596.98	tons
Heat Pumps: Split VRF - Air Cooled - >=135,000 <240,000	35	$ 250	0.137	929.29	32	$ 250	0.137	929.29	29	$ 250	0.137	929.29	tons
Heat Pumps: Split VRF - Air Cooled - >=240,000	48	$ 250	0.053	318.32	43	$ 250	0.053	318.32	38	$ 250	0.053	318.32	tons
Heat Pumps: Split VRF - Air Cooled - >=65,000 <135,000	28	$ 250	0.177	1,202.42	25	$ 250	0.177	1,202.42	22	$ 250	0.177	1,202.42	tons
VFD - Air Handler Fan	178	$ 50	0.081	518.73	160	$ 50	0.081	518.73	144	$ 50	0.081	518.73	hp
VFD - Chilled Water Pump	540	$ 80	0.115	669.33	486	$ 80	0.115	669.33	437	$ 80	0.115	669.33	hp
VFD - Condenser Water Pump	760	$ 80	0.115	669.33	684	$ 80	0.115	669.33	616	$ 80	0.115	669.33	hp
VFD - Garage Exhaust Fan	300	$ 0	0.700	1,819.50	240	$ 0	0.700	1,819.50	192	$ 0	0.700	1,819.50	hp
Lighting													
Controls: Occupancy Sensor	2,104	$ 20	0.005	36.60	1,683	$ 20	0.005	36.60	1,347	$ 20	0.005	36.60	sensors
Fluorescent: Delamping without Reflectors - 2 ft. Lamp	2	$ 3	0.007	38.73	2	$ 3	0.007	38.73	2	$ 3	0.007	38.73	lamps
Fluorescent: Delamping without Reflectors - 3 ft. Lamp	18	$ 4	0.011	55.68	18	$ 4	0.011	55.68	18	$ 4	0.011	55.68	lamps
Fluorescent: Delamping without Reflectors - 4 ft. Lamp	250	$ 5	0.014	75.04	250	$ 5	0.014	75.04	250	$ 5	0.014	75.04	lamps
LED: A-Series - Pin Base	400	$ 4	0.007	37.70	200	$ 4	0.007	37.70	-	$ 4	0.007	37.70	lamps
LED: A-Series - Screw/GU Base	1,500	$ 2	0.015	81.92	750	$ 2	0.005	30.82	-	$ 2	0.005	30.82	lamps
LED: Corn Cob - >220W	10	$ 45	0.458	2,452.64	10	$ 45	0.458	2,452.64	10	$ 45	0.458	2,452.64	lamps
LED: Corn Cob - 150-219.9W	15	$ 35	0.213	1,142.23	15	$ 35	0.213	1,142.23	15	$ 35	0.213	1,142.23	lamps
LED: Corn Cob - 35-149.9W	50	$ 25	0.107	571.11	50	$ 25	0.107	571.11	50	$ 25	0.107	571.11	lamps
LED: Corn Cob (Exterior) - <35W	50	$ 20	0.040	266.50	50	$ 20	0.040	266.50	50	$ 20	0.040	266.50	lamps
LED: Corn Cob (Exterior) - >220W	20	$ 45	0.434	2,870.00	20	$ 45	0.434	2,870.00	20	$ 45	0.434	2,870.00	lamps
LED: Corn Cob (Exterior) - 150-219.9W	5	$ 35	0.202	1,336.60	5	$ 35	0.202	1,336.60	5	$ 35	0.202	1,336.60	lamps
LED: Corn Cob (Exterior) - 35-149.9W	20	$ 25	0.101	668.30	20	$ 25	0.101	668.30	20	$ 25	0.101	668.30	lamps
LED: Directional (MR16) - Screw/Pin Base	645	$ 5	0.018	97.59	548	$ 5	0.002	12.93	466	$ 5	0.002	12.93	lamps
LED: Directional (PAR20) - Screw/Pin Base	368	$ 5	0.013	69.87	313	$ 5	0.002	11.26	313	$ 5	0.002	11.26	lamps
LED: Directional (PAR30) - Screw/Pin Base	1,031	$ 5	0.019	104.61	876	$ 5	0.003	17.78	876	$ 5	0.003	17.78	lamps
LED: Directional (PAR38) - Screw/Pin Base	605	$ 5	0.019	102.00	514	$ 5	0.004	23.85	514	$ 5	0.004	23.85	lamps
LED: Exit Sign - New LED Fixture	288	$ 15	0.032	283.30	288	$ 15	0.032	283.30	288	$ 15	0.032	283.30	signs
LED: Linear Type A - 2 ft. Lamp	834	$ 3	0.001	7.59	834	$ 3	0.001	7.59	834	$ 3	0.001	7.59	lamps
LED: Linear Type A - 3 ft. Lamp	20	$ 4	0.003	16.61	20	$ 4	0.003	16.61	20	$ 4	0.003	16.61	lamps
LED: Linear Type A - 4 ft. Lamp	54,404	$ 4	0.005	29.89	54,404	$ 4	0.005	29.89	54,404	$ 4	0.005	29.89	lamps
LED: Linear Type B - 2 ft. Lamp	220	$ 3	0.002	13.52	220	$ 3	0.002	13.52	220	$ 3	0.002	13.52	lamps
LED: Linear Type B - 4 ft. Lamp	7,000	$ 4	0.006	35.82	7,000	$ 4	0.006	35.82	7,000	$ 4	0.006	35.82	lamps
LED: Linear Type C - 2 ft. Lamp	2,439	$ 5	0.002	13.52	1,220	$ 5	0.002	13.52	610	$ 5	0.002	13.52	lamps
LED: Linear Type C - 3 ft. Lamp	12	$ 8	0.004	22.54	12	$ 8	0.004	22.54	12	$ 8	0.004	22.54	lamps
LED: Linear Type C - 4 ft. Lamp	19,015	$ 8	0.006	35.82	9,508	$ 8	0.006	35.82	4,754	$ 8	0.006	35.82	lamps
LED: Refrigerated Case Lighting - 5 ft. retrofit kit	88	$ 50	0.039	276.50	88	$ 50	0.039	276.50	88	$ 50	0.039	276.50	fixtures
LED: Refrigerated Case Lighting - 6 ft. retrofit kit	89	$ 50	0.049	346.97	89	$ 50	0.049	346.97	89	$ 50	0.049	346.97	fixtures
LED: Troffer - 1 ft. x 4 ft. (Linear Retrofit Kits)	2,414	$ 14	0.012	63.10	2,414	$ 14	0.012	63.10	2,414	$ 14	0.012	63.10	fixtures
LED: Troffer - 1 ft. x 4 ft. (Luminaries for Ambient Lighting; Integrated Retrofit Kit)	3,202	$ 20	0.012	63.10	3,202	$ 20	0.012	63.10	3,202	$ 20	0.012	63.10	fixtures
LED: Troffer - 2 ft. x 2 ft. (Linear Retrofit Kits)	3,363	$ 10	0.015	79.71	3,363	$ 10	0.015	79.71	3,363	$ 10	0.015	79.71	fixtures
LED: Troffer - 2 ft. x 2 ft. (Luminaries for Ambient Lighting; Integrated Retrofit Kit)	229	$ 20	0.015	79.71	229	$ 20	0.015	79.71	229	$ 20	0.015	79.71	fixtures
LED: Troffer - 2 ft. x 4 ft. (Linear Retrofit Kits)	3,972	$ 20	0.031	164.16	3,972	$ 20	0.031	164.16	3,972	$ 20	0.031	164.16	fixtures
LED: Troffer - 2 ft. x 4 ft. (Luminaries for Ambient Lighting; Integrated Retrofit Kit)	3,094	$ 50	0.031	164.16	3,094	$ 50	0.031	164.16	3,094	$ 50	0.031	164.16	fixtures
LED: U-bend Type A - 2 ft. x 2 ft. Conversion Kit	47	$ 10	0.015	76.86	47	$ 10	0.015	76.86	47	$ 10	0.015	76.86	lamps
LED: U-bend Type A - 4 ft. Lamp Equivalent	243	$ 4	0.011	54.56	243	$ 4	0.011	54.56	243	$ 4	0.011	54.56	lamps
LED: U-bend Type B - 4 ft. Lamp Equivalent	2	$ 4	0.013	66.43	2	$ 4	0.013	66.43	2	$ 4	0.013	66.43	lamps
LED: U-bend Type C - 2 ft. x 2 ft. Conversion Kit	428	$ 15	0.017	88.72	428	$ 15	0.017	88.72	428	$ 15	0.017	88.72	lamps
LED: U-bend Type C - 4 ft. Lamp Equivalent	370	$ 8	0.013	66.43	370	$ 8	0.013	66.43	370	$ 8	0.013	66.43	lamps
Midstream													
Controls: Occupancy Sensor	24	$ 20	0.005	36.60	24	$ 20	0.005	36.60	24	$ 20	0.005	36.60	sensors
Fluorescent: Delamping with Reflectors - 4 ft. Lamp	5	$ 10	0.014	75.04	5	$ 10	0.014	75.04	5	$ 10	0.014	75.04	lamps
LED: A-Series - Pin Base	800	$ 4	0.007	37.70	400	$ 4	0.007	37.70	-	$ 4	0.007	37.70	lamps
LED: A-Series - Screw/GU Base	5,000	$ 2	0.015	81.92	2,500	$ 2	0.005	30.82	-	$ 2	0.005	30.82	lamps
LED: Corn Cob - <35W	381	$ 20	0.043	227.75	381	$ 20	0.043	227.75	381	$ 20	0.043	227.75	lamps
LED: Corn Cob - >220W	415	$ 45	0.458	2,452.64	415	$ 45	0.458	2,452.64	415	$ 45	0.458	2,452.64	lamps
LED: Corn Cob - 150-219.9W	289	$ 35	0.213	1,142.23	289	$ 35	0.213	1,142.23	289	$ 35	0.213	1,142.23	lamps
LED: Corn Cob - 35-149.9W	348	$ 25	0.107	571.11	348	$ 25	0.107	571.11	348	$ 25	0.107	571.11	lamps
LED: Decorative (Candelabra, 25W) - Screw/GU Base	4	$ 2	0.008	45.58	4	$ 2	0.001	4.35	4	$ 2	0.001	4.35	lamps
LED: Directional (MR16) - Screw/Pin Base	4,000	$ 5	0.018	97.59	3,400	$ 5	0.002	12.93	3,400	$ 5	0.002	12.93	lamps
LED: Directional (PAR20) - Screw/Pin Base	1,500	$ 5	0.013	69.87	1,275	$ 5	0.002	11.26	1,275	$ 5	0.002	11.26	lamps
LED: Directional (PAR30) - Screw/Pin Base	5,700	$ 5	0.019	104.61	4,845	$ 5	0.003	17.78	4,845	$ 5	0.003	17.78	lamps
LED: Directional (PAR38) - Screw/Pin Base	1,000	$ 5	0.019	102.00	850	$ 5	0.004	23.85	850	$ 5	0.004	23.85	lamps
LED: Directional (PAR40) - Screw/Pin Base	20	$ 5	0.019	102.00	20	$ 5	0.019	23.85	20	$ 5	0.019	23.85	lamps
LED: Exit Sign - New LED Fixture	2,000	$ 15	0.032	283.30	2,000	$ 15	0.032	283.30	2,000	$ 15	0.032	283.30	signs
LED: Linear Type A - 2 ft. Lamp	1,719	$ 3	0.001	7.59	1,719	$ 3	0.001	7.59	1,719	$ 3	0.001	7.59	lamps
LED: Linear Type A - 3 ft. Lamp	140	$ 4	0.003	16.61	140	$ 4	0.003	16.61	140	$ 4	0.003	16.61	lamps
LED: Linear Type A - 4 ft. Lamp	175,000	$ 4	0.005	29.89	75,000	$ 4	0.005	29.89	50,000	$ 4	0.005	29.89	lamps
LED: Linear Type A - 4 ft. T5 Lamp	170	$ 4	0.004	20.88	170	$ 4	0.004	20.88	170	$ 4	0.004	20.88	lamps
LED: Linear Type A - 8 ft. Lamp	90	$ 7	0.007	36.77	90	$ 7	0.007	36.77	90	$ 7	0.007	36.77	lamps
LED: Linear Type B - 2 ft. Lamp	300	$ 3	0.002	13.52	300	$ 3	0.002	13.52	300	$ 3	0.002	13.52	lamps
LED: Linear Type B - 4 ft. Lamp	10,000	$ 4	0.006	35.82	8,000	$ 4	0.006	35.82	6,400	$ 4	0.006	35.82	lamps
LED: Linear Type B - 8 ft. Lamp	164	$ 7	0.008	42.70	164	$ 7	0.008	42.70	164	$ 7	0.008	42.70	lamps
LED: Linear Type C - 4 ft. Lamp	5,699	$ 8	0.006	35.82	2,850	$ 8	0.006	35.82	1,425	$ 8	0.006	35.82	lamps
LED: Refrigerated Case Lighting - 5 ft. retrofit kit	50	$ 50	0.039	276.50	50	$ 50	0.039	276.50	50	$ 50	0.039	276.50	lamps
LED: Refrigerated Case Lighting - 6 ft. retrofit kit	90	$ 50	0.049	346.97	90	$ 50	0.049	346.97	90	$ 50	0.049	346.97	lamps
LED: Troffer - 1 ft. x 4 ft. (Luminaries for Ambient Lighting; Integrated Retrofit Kit)	17	$ 20	0.012	63.10	17	$ 20	0.012	63.10	17	$ 20	0.012	63.10	fixtures
LED: Troffer - 2 ft. x 2 ft. (Linear Retrofit Kits)	146	$ 10	0.015	79.71	146	$ 10	0.015	79.71	146	$ 10	0.015	79.71	fixtures
LED: Troffer - 2 ft. x 2 ft. (Luminaries for Ambient Lighting; Integrated Retrofit Kit)	734	$ 20	0.015	79.71	734	$ 20	0.015	79.71	734	$ 20	0.015	79.71	fixtures
LED: Troffer - 2 ft. x 4 ft. (Linear Retrofit Kits)	943	$ 20	0.031	164.16	943	$ 20	0.031	164.16	943	$ 20	0.031	164.16	fixtures
LED: Troffer - 2 ft. x 4 ft. (Luminaries for Ambient Lighting; Integrated Retrofit Kit)	906	$ 50	0.031	164.16	906	$ 50	0.031	164.16	906	$ 50	0.031	164.16	fixtures
LED: U-bend Type A - 4 ft. Lamp Equivalent	1,723	$ 4	0.011	54.56	1,723	$ 4	0.011	54.56	1,723	$ 4	0.011	54.56	lamps
LED: U-bend Type B - 4 ft. Lamp Equivalent	24	$ 4	0.013	66.43	24	$ 4	0.013	66.43	24	$ 4	0.013	66.43	lamps
Plug/Process Load													
Case Night Cover	48	$ 10	-	48.14	48	$ 10	-	48.14	48	$ 10	-	48.14	ft
Controls: Anti-Sweat Heater	53	$ 40	0.036	343.34	53	$ 40	0.036	343.34	53	$ 40	0.036	343.34	ft
Transformers	250	$ 1,750	1.500	11,500.00	400	$ 1,750	1.500	11,500.00	500	$ 1,750	1.500	11,500.00	units
Pumps and Motors													
Booster Pumps	250	$ 80	0.420	4,414.28	225	$ 80	0.420	4,414.28	203	$ 80	0.420	4,414.28	hp
Booster Pumps - No VFD	30	$ 80	0.335	3,523.08	27	$ 80	0.335	3,523.08	24	$ 80	0.335	3,523.08	hp
ECM Fan Motor - A/C Fan Coil	1,400	$ 55	0.027	232.14	1,260	$ 55	0.027	232.14	1,134	$ 55	0.027	232.14	motors
ECM Fan Motor - Refrigeration	200	$ 85	0.001	9.30	180	$ 85	0.001	9.30	162	$ 85	0.001	9.30	motors
Pool pumps	50	$ 225	0.427	3,733.88	45	$ 225	0.427	3,733.88	41	$ 225	0.427	3,733.88	hp
Premium Efficiency Motor - 1800 RPM (4-pole) - TEFC	7	$ 75	0.028	46.46	7	$ 75	0.028	46.46	7	$ 75	0.028	46.46	hp
Submetering													
Condominium Unit - Actual Savings	184	$ 150	-	-	184	$ 150	-	-	184	$ 150	-	-	units metered
Small Business - Actual Savings	15	$ 150	0.240	1,080.00	15	$ 150	0.240	1,080.00	15	$ 150	0.240	1,080.00	units metered
Water Heating													
Heat Pump Water Heater - Replace Electric Resistance Water Heater - 5 to 11.25 Tons	2	$ 120	0.210	1,644.00	2	$ 120	0.210	1,644.00	2	$ 120	0.210	1,644.00	units
Heat Pump Water Heater - Replace Heat Pump Water Heater - > 11.25 Tons	1	$ 65	0.030	943.00	1	$ 65	0.030	943.00	1	$ 65	0.030	943.00	units
Heat Pump Water Heater - Replace Heat Pump Water Heater - 5 to 11.25 Tons	2	$ 65	0.030	943.00	2	$ 65	0.030	943.00	2	$ 65	0.030	943.00	units
Solar Water Heater - Replace Electric Resistance Water Heater	4	$ 250	1.800	3,108.73	4	$ 250	1.800	3,108.73	4	$ 250	1.800	3,108.73	systems
Solar Water Heater - Replace Heat Pump Water Heater	1	$ 250	1.800	3,108.73	1	$ 250	1.800	3,108.73	1	$ 250	1.800	3,108.73	systems
CBEEM													
Commercial Custom													
Custom	128,375	$ 17,010	0.000	1.00	128,375	$ 17,010	0.000	1.00	128,375	$ 17,010	0.000	1.00	kWh
Custom Controls	1,343,169	$ 177,970	0.000	1.00	1,343,169	$ 177,970	0.000	1.00	1,343,169	$ 177,970	0.000	1.00	kWh
Custom HVAC	3,299,708	$ 437,211	0.000	1.00	3,629,679	$ 480,932	0.000	1.00	3,629,679	$ 480,932	0.000	1.00	kWh
Custom Lighting	25,850,000	$ 3,425,125	0.000	1.00	20,680,000	$ 2,740,100	0.000	1.00	16,544,000	$ 2,192,080	0.000	1.00	kWh
Custom Miscellaneous	652,732	$ 86,487	0.000	1.00	456,913	$ 60,541	0.000	1.00	319,839	$ 42,379	0.000	1.00	kWh
Custom Pumps & Motors	27,010	$ 3,579	0.000	1.00	24,309	$ 3,221	0.000	1.00	21,878	$ 2,899	0.000	1.00	kWh
Custom Refrigeration	419,833	$ 55,628	0.000	1.00	377,850	$ 50,065	0.000	1.00	340,065	$ 45,059	0.000	1.00	kWh
BESM													
Codes & Standards													
Adoption & Compliance	1,200,000	$ -	-	-	2,400,000	$ -	-	-	3,600,000	$ -	-	-	kWh
Energy Study Grant													
Design Assistance	40,000	$ -	-	-	45,000	$ -	-	-	45,000	$ -	-	-	dollars
Energy Audit	15	$ 5,000	-	-	15	$ 5,000	-	-	15	$ 5,000	-	-	units
Energy Study Assistance	5	$ 20,000	-	-	5	$ 20,000	-	-	5	$ 20,000	-	-	units
Energy-Water Nexus													
County Leak Detection Support	150	$ 550	0.265	2,647.00	175	$ 550	0.265	2,647.00	200	$ 550	0.265	2,647.00	units
County Water Energy Studies	50,000	$ -	-	-	50,000	$ -	-	-	50,000	$ -	-	-	dollars
Rural Water Utility Support	-	$ -	-	-	20,000	$ -	-	-	40,000	$ -	-	-	dollars
Strategic Energy Management													
Operational Savings & Capital Projects - Influenced - Non-incentive Efforts	4	$ 50,000	6.250	62,500.00	7	$ 28,571	4.857	48,571.43	12	$ 16,667	5.167	51,666.67	cohorts
Whole Building Assistance													
Metering & Monitoring	50,000	$ -	-	-	150,000	$ -	-	-	150,000	$ -	-	-	dollars
Retro|Re-Commissioning - Re-Commissioning	5	$ 15,000	-	-	5	$ 15,000	-	-	5	$ 15,000	-	-	units
Retro|Re-Commissioning - Retro-Commission	5	$ 15,000	-	-	5	$ 15,000	-	-	5	$ 15,000	-	-	units
Technical Support	300,000	$ -	-	-	350,000	$ -	-	-	350,000	$ -	-	-	dollars
BHTR													
Commercial Kitchen													
Commercial Ice Machine - IHR 101-300	1	$ 100	0.092	804.83	2	$ 100	0.092	804.83	2	$ 100	0.092	804.83	units
Commercial Ice Machine - IHR 301-500	2	$ 100	0.128	1,116.90	3	$ 100	0.128	1,116.90	5	$ 100	0.128	1,116.90	units
Demand Control Ventilation - Kitchen Fan	450	$ 700	0.452	2,633.61	495	$ 700	0.452	2,633.61	495	$ 700	0.452	2,633.61	hp
Reach-In Freezer - Glass Door - 30<V<50 (2 Door)	1	$ 150	0.442	3,869.00	2	$ 150	0.442	3,869.00	2	$ 150	0.442	3,869.00	units
Reach-In Freezer - Glass Door - 50<V (3 Door)	2	$ 200	0.775	6,789.00	3	$ 200	0.775	6,789.00	3	$ 200	0.775	6,789.00	units
Reach-In Freezer - Solid Door - 15<V<30 (1 Door)	1	$ 250	0.099	868.70	2	$ 250	0.099	868.70	2	$ 250	0.099	868.70	units
Reach-In Freezer - Solid Door - 30<V<50 (2 Door)	1	$ 275	0.197	1,728.28	2	$ 275	0.197	1,728.28	2	$ 275	0.197	1,728.28	units
Reach-In Refrigerator - Glass Door - 15<V<30 (1 Door)	2	$ 200	0.077	671.60	3	$ 200	0.077	671.60	3	$ 200	0.077	671.60	units
Reach-In Refrigerator - Solid Door - 0<V<15 (1 Door)	1	$ 250	0.030	259.70	2	$ 250	0.030	259.70	2	$ 250	0.030	259.70	units
Reach-In Refrigerator - Solid Door - 30<V<50 (2 Door)	3	$ 300	0.090	790.23	5	$ 300	0.090	790.23	5	$ 300	0.090	790.23	units
Steam Cooker - 5 Pans	2	$ 750	3.800	16,611.25	3	$ 750	3.800	16,611.25	3	$ 750	3.800	16,611.25	units
EMPOWER Non-profit													
HVAC & Other	115,000	$ 75,000	-	-	218,500	$ 100,000	-	-	415,150	$ 150,000	-	-	kWh
Lighting	714,286	$ 75,000	-	-	535,714	$ 150,000	-	-	535,714	$ 150,000	-	-	kWh
Technical Support	50,000	$ -	-	-	50,000	$ -	-	-	50,000	$ -	-	-	dollars
Energy Advantage													
Cost Adder for Fixtures out of the reach of a 10' Ladder - Flat Rate	4,375	$ -	-	-	4,375	$ -	-	-	4,375	$ -	-	-	dollars
HVAC Packaged - Air cooled - Flat Rate - <65,000	500,000	$ 250,000	0.000	1.00	500,000	$ 350,000	0.000	1.00	500,000	$ 450,000	0.000	1.00	kWh
Lighting - Flat Rate - <65,000	8,214,285	$ 2,400,000	0.000	1.00	8,214,285	$ 2,500,000	0.000	1.00	8,214,285	$ 2,500,000	0.000	1.00	kWh
Grid Services													
Demand Response	80,355	$ -	-	-	113,837	$ -	-	-	147,318	$ -	-	-	dollars
Energy Storage	71,355	$ -	-	-	176,407	$ -	-	-	174,103	$ -	-	-	dollars
EoT	53,570	$ -	-	-	87,052	$ -	-	-	120,533	$ -	-	-	dollars
Technical Support	26,785	$ -	-	-	60,267	$ -	-	-	93,748	$ -	-	-	dollars
Multifamily Direct Install													
Audit Services	400	$ 75	-	-	300	$ 75	-	-	225	$ 75	-	-	units
Measures	400	$ 180	0.108	350.00	300	$ 180	0.059	189.88	225	$ 180	0.059	189.88	units
Site Visit Fee [MFDI]	400	$ 55	-	-	300	$ 55	-	-	225	$ 55	-	-	units
BGRID													
Grid Services													
Demand Response	241,066	$ -	-	-	341,510	$ -	-	-	441,954	$ -	-	-	dollars
Energy Storage	214,066	$ -	-	-	529,220	$ -	-	-	522,310	$ -	-	-	dollars
EoT	80,711	$ -	-	-	261,155	$ -	-	-	361,599	$ -	-	-	dollars
Technical Support	80,355	$ -	-	-	180,800	$ -	-	-	281,244	$ -	-	-	dollars
BET													
SWAC Infrastructure													
SWAC Integration	0	$ 0	0.255	3,089.00	3,335	$ 300	0.255	3,089.00	3,335	$ 300	0.255	3,089.00	tons
BTRAN													
Transformation													
Commercial	1,450,027	$ -	-	-	1,450,027	$ -	-	-	1,450,027	$ -	-	-	dollars
RESIDENTIAL PROGRAM													
REEM													
Accounting													
Accounting	299,497	$ -	-	-	299,497	$ -	-	-	299,497	$ -	-	-	dollars
Downstream													
Central AC Retrofit	20	$ 750	0.452	1,760.26	50	$ 750	0.452	1,760.26	50	$ 750	0.452	1,760.26	units
Garage Freezer Bounty (Customer Incentive)	500	$ 75	0.093	811.85	1,000	$ 75	0.093	811.85	1,000	$ 75	0.093	811.85	units
Garage Freezer Bounty (Recycler Incentive)	500	$ 50	0.093	811.85	1,000	$ 50	0.093	811.85	1,000	$ 50	0.093	811.85	units
Pool VFD Controller Pumps	200	$ 100	0.099	867.21	500	$ 100	0.099	867.21	500	$ 100	0.099	867.21	units
PV Water Heating	50	$ 750	0.460	2,057.09	150	$ 750	0.460	2,057.09	150	$ 750	0.460	2,057.09	units
Refrigerator (with Recycling of Old)	4,000	$ 150	0.088	767.93	4,000	$ 150	0.088	767.93	4,000	$ 150	0.088	767.93	units
Solar Attic Fans	250	$ 50	-	158.29	250	$ 50	-	158.29	250	$ 50	-	158.29	units
VRF Split System AC <2 tons	2,000	$ 150	0.081	1,288.71	2,000	$ 150	0.081	1,288.71	2,000	$ 150	0.081	1,288.71	units
VRF Split System AC >3 tons	500	$ 250	0.092	1,676.92	500	$ 250	0.100	2,112.21	500	$ 250	0.100	2,112.21	units
VRF Split System AC 2-3 tons	200	$ 250	0.100	2,112.21	500	$ 250	0.100	2,112.21	500	$ 250	0.100	2,112.21	units
Whole House Fans	400	$ 75	0.102	316.58	400	$ 75	0.102	316.58	400	$ 75	0.102	316.58	units
Window AC with Recycling (Customer Incentive)	500	$ 50	0.054	197.86	1,500	$ 50	0.054	197.86	1,500	$ 50	0.054	197.86	units
Window AC with Recycling (Recycler Incentive)	500	$ 40	0.054	197.86	1,500	$ 40	0.054	197.86	1,500	$ 40	0.054	197.86	units
Advanced Power Strip - Tier I	2,500	$ 17	0.007	62.37	2,500	$ 17	0.007	62.37	2,500	$ 17	0.007	62.37	units
Air Purifiers	750	$ 20	0.045	390.50	750	$ 20	0.045	390.50	750	$ 20	0.045	390.50	units
Midstream													
Clothes Dryers	2,500	$ 35	0.033	165.58	2,500	$ 35	0.033	165.58	2,500	$ 35	0.033	165.58	units
Clothes Washers - Tier I	2,500	$ 30	0.022	114.07	2,500	$ 30	0.022	114.07	2,500	$ 30	0.022	114.07	units
Clothes Washers - Tier II	2,000	$ 30	0.030	156.80	2,000	$ 30	0.030	156.80	2,000	$ 30	0.030	156.80	units
Clothes Washers - Tier III	500	$ 40	0.034	176.37	500	$ 40	0.034	176.37	500	$ 40	0.034	176.37	units
Dehumidifiers	525	$ 20	0.049	429.71	525	$ 20	0.049	429.71	525	$ 20	0.049	429.71	units
Dishwashers	1,000	$ 30	0.003	37.00	1,000	$ 30	0.003	37.00	1,000	$ 30	0.003	37.00	units
Electronics - Soundbars	1,000	$ 8	0.002	44.26	1,000	$ 8	0.002	44.26	1,000	$ 8	0.002	44.26	units
Electronics - TVs	35,000	$ 10	0.010	82.68	35,000	$ 10	0.010	82.68	35,000	$ 10	0.010	82.68	units
Smart Thermostats	150	$ 20	-	138.03	150	$ 20	-	138.03	150	$ 20	-	138.03	units
Advanced Power Strip - Tier I	500	$ 10	0.007	62.37	500	$ 10	0.007	62.37	500	$ 10	0.007	62.37	units
Advanced Power Strip - Tier II	750	$ 15	0.014	119.20	750	$ 15	0.014	119.20	750	$ 15	0.014	119.20	units
Online Marketplace													
Aerator Bathroom	250	$ 1	0.018	6.40	250	$ 1	0.018	6.40	250	$ 1	0.018	6.40	units
Aerator Kitchen	100	$ 2	0.030	55.75	100	$ 2	0.030	55.75	100	$ 2	0.030	55.75	units
LED	2,500	$ 5	0.006	34.11	2,500	$ 5	0.002	12.60	2,500	$ 5	0.002	12.60	lamps
LED Smart Bulb	200	$ 20	0.006	34.11	200	$ 20	0.002	12.60	200	$ 20	0.002	12.60	lamps
LED Specialty	500	$ 10	0.006	34.11	500	$ 10	0.002	12.60	500	$ 10	0.002	12.60	lamps
Shipping & Admin	-	$ -	-	-	150,000	$ -	-	-	150,000	$ -	-	-	dollars
Showerhead	150	$ 3	0.079	73.18	150	$ 3	0.079	73.18	150	$ 3	0.079	73.18	units
Switch Plug	250	$ 20	0.003	26.85	250	$ 20	0.003	26.85	250	$ 20	0.003	26.85	lamps
Heat Pumps	200	$ 250	0.212	1,644.20	200	$ 250	0.212	1,644.20	200	$ 250	0.212	1,644.20	units
Solar Water Heater (SWH) Incentive	1,250	$ 750	0.296	1,991.90	1,250	$ 750	0.296	1,991.90	1,250	$ 750	0.296	1,991.90	systems
Peer Group Comparison													
Peer Group Comparison - Quarterly Paper Report	2,484,000	$ 1,300,000	0.002	4.42	2,235,600	$ 1,430,000	0.002	4.42	2,012,040	$ 1,573,000	0.002	4.42	units
Upstream													
Solar Water Heater Interest Buy down	50	$ 750	0.296	1,991.90	50	$ 750	0.296	1,991.90	50	$ 750	0.296	1,991.90	systems
LED	600,000	$ 1	0.006	34.11	500,000	$ 1	0.002	12.60	400,000	$ 1	0.002	12.60	lamps
LED Bulb Replacement	50,000	$ 3	0.006	34.11	50,000	$ 3	0.002	12.60	50,000	$ 3	0.002	12.60	lamps
LED Smart Bulb	25,000	$ 10	0.006	34.11	35,000	$ 10	0.002	12.60	45,000	$ 10	0.002	12.60	lamps
LED Specialty Lamps	150,000	$ 2	0.006	34.11	150,000	$ 2	0.002	12.60	150,000	$ 2	0.002	12.60	lamps
CREEM													
Residential Custom													
Emerging Tech	150	$ 600	0.120	1,200.00	150	$ 600	0.120	1,200.00	150	$ 600	0.120	1,200.00	units
New Construction	50,000	$ -	16.667	166,666.67	60,000	$ -	16.667	166,666.67	70,000	$ -	16.667	166,666.67	dollars
Whole Home Retrofit	250	$ 200	0.040	400.00	250	$ 200	0.040	400.00	250	$ 200	0.040	400.00	units



	PY19					PY20					PY21				
	Program Incentive Split	Avg $ / kWh	Avg $ / Lifetime kWh	Levelized Cost of Saved Energy	TRB / TRC	Program Incentive Split	Avg $ / kWh	Avg $ / Lifetime kWh	Levelized Cost of Saved Energy	TRB / TRC	Program Incentive Split	Avg $ / kWh	Avg $ / Lifetime kWh	Levelized Cost of Saved Energy	TRB / TRC
Business Program	56%	$ 0.239	$ 0.017	$ 0.026	1.88	55%	$ 0.254	$ 0.015	$ 0.025	2.06	54%	$ 0.266	$ 0.016	$ 0.025	2.14
Residential Program	44%	$ 0.255	$ 0.032	$ 0.041	1.39	45%	$ 0.302	$ 0.033	$ 0.043	1.10	46%	$ 0.275	$ 0.030	$ 0.040	1.25
Overall	100%	$ 0.246	$ 0.021	$ 0.030	1.67	100%	$ 0.274	$ 0.020	$ 0.030	1.64	100%	$ 0.270	$ 0.020	$ 0.030	1.74







MODIFICATION 4:

EVOLVING COLLABORATION FRAMEWORK WITH HAWAIIAN ELECTRIC

Evolving the Collaboration Framework with Hawaiian Electric

As a result of ongoing stakeholder feedback, Hawai'i Energy's Triennial Plan has expanded to include support for other areas of customer-sited Integrated Demand Side Management (IDSM) solutions beyond energy efficiency. In the Public Utilities Commission's (PUC) approval of Hawai'i Energy's Triennial Plan, the Commission noted that the initiatives proposed are "appropriate and seek to cost-effectively capture energy efficiency savings, optimize grid utilization (thus enabling potential future reductions in utility capital investments and maintenance expenses for transmission and distribution assets) reduce peak demand (thus reducing the requirements for generating capacity to serve peak load) reduce the cost of compliance with environmental regulations, and reduce electricity consumption."

Separately Hawaiian Electric recently established its Customer Energy Resources (CER) department to increase customer adoption of rooftop solar, energy storage, and programs and procurements that compensate these customers for active and passive control of these and other assets. Additionally, to streamline customer engagement while enhancing and expanding the customer experience, Hawaiian Electric will be launching an Online Marketplace, that will include the sale of energy efficient products to customers and offer tools to find contractor information for products such as electric vehicles (EV).

Also in the approval order of the Triennial Plan, the PUC directed Hawai'i Energy and Hawaiian Electric to prioritize collaboration[1] on areas that overlap. While not providing any prescriptive requirements, the PUC stated that the existing framework should be used as a starting point. Hawai'i Energy and Hawaiian Electric agree that the need for an augmented collaboration framework has grown as Hawai'i's evolving energy landscape has become increasingly complex, and a coordinated customer experience is of critical importance for an effective clean energy transition.

The Consumer Advocate and the PUC expressed their concern about the potential for duplicative activities and the need for improved collaboration. The PUC suggested "the existing framework and such forums be used as a starting point to resolve any issues related to potential duplication," and that "the commission and commission staff will monitor the ongoing collaboration efforts." Both Hawai'i Energy and Hawaiian Electric agree there is an increased necessity for collaboration to ensure overlapping initiatives are complementary rather than competitive. Successful collaboration will allow customer dollars paid through electric rates to be

[1] See page 33: "The commission directs the PBFA and the Hawaiian Electric Companies to prioritize collaboration efforts."

leveraged to advance the state's clean energy initiatives, provide a seamless customer experience, and ultimately help Hawai'i achieve its clean energy goals more cost effectively and as rapidly as possible. In pursuit of the same clean energy goals Hawai'i Energy and Hawaiian Electric seek an efficient collaboration so that the time, effort and cost of collaborating does not erode the relative value of having overlapping efforts.

Accordingly, Hawai'i Energy and Hawaiian Electric have been actively working on an actionable approach and to update the collaboration framework with the aim of best supporting each other's efforts. The organizations have met on several instances since the approval of the Triennial Plan, which included two presentations to Hawaii Energy from Hawaiian Electric's director of CER-Operations (CERO), and director of CER-Programs (CERP). The elements of the updated framework are discussed in the sections below and are continuously being updated by both organizations.

The framework defines three requisite elements to address for all collaboration initiatives. Both Hawai'i Energy and Hawaiian Electric will ensure that the three elements in this section appear as the minimal agenda items in all collaboration discussions and essential to any reporting.

The three elements are:

- **Program Conceptualization & Development**
- **Marketing & Customer Experience**
- **Data Definition & Exchange**

1) Program Conceptualization & Development

Collaboration teams will work to explore, design and develop mutually-beneficial efforts for each priority area. In some cases, this may look more programmatic -- such as in CER, Energy Optimization and Electrification of Transportation (EoT) initiatives. In areas such as Long-term Forecasting, this may take the form of developing accord on shared objectives and timelines and the establishment of processes and methodologies to deliver on these shared objectives and timelines. One of the goals is to facilitate customer-sited solutions as part of the 100% clean energy formula.

2) Marketing & Customer Experience

Each priority initiative -- with the possible exception of Long-term Forecasting -- will result in both Hawai'i Energy and Hawaiian Electric reaching out to customers. Understanding

how this will happen and developing collaborative and complementary strategies to do so will not only lend itself to cost efficiencies but will also go a long way to minimize customer confusion. Identifying the potential duplicative or parallel outreach efforts is the first step as the collaboration teams meet and discuss initiatives to pursue. Once these have been identified, teams will work to define approaches that minimize confusion and foster cost efficiencies.

Recent market research conducted by Hawai'i Energy showed several items of note regarding marketing and communications:

- *A majority of customers understand Hawai'i Energy's rebate programs to be part of Hawaiian Electric company initiatives.*
- *"The electric utility" was the #3 most-trusted source of information on energy efficiency, Hawaii Energy was the #2, and friends & family were #1.*

This research helps us to better understand the existing confusion by customers and the need to coordinate messaging to ensure there isn't further confusion. The research also shows that both Hawai'i Energy and Hawaiian Electric are trusted sources of information on energy efficiency. When messaging is aligned, it can have a greater impact on influencing customer behavior to make smart energy choices.

3) Data Definition & Exchange

Data is at the center of many of the priorities. This may take the form of customer profile data, consumption/demand data, customer preference data, and avoided cost data, and other data types identified at a later time. While there are current practices and channels in place for data sharing, data types will need to expand, and data sharing will need to extend to bi-directional data sharing. In areas such as the online marketplace, for example, it would be prudent for customer profile data to be consistent between the Hawaiian Electric customer portal and the Hawai'i Energy Home Energy Reports customer portal to ensure consistent information and recommendations are being offered to customers, and that the customer experience is seamless across points of entry.

Priority Initiatives

Hawai'i Energy has identified the following areas as priority initiatives with opportunities for increased collaboration and coordination:

- **Customer Energy Resources & Energy Optimization**

- **Low Income Customer Assistance**
- **Electrification of Transportation**
- **On-line Marketplace and Utility Energy Efficiency Offerings**
- **Long Term Forecasting**

As a living document, the list of priority initiatives are neither fixed nor finite and will be updated accordingly by the collaboration team. Each initiative contains a description that includes a summary of the overall subject matter, desired outcomes of the collaboration, and points of concern and/or duplication. Areas that elicit duplication and/or discrepancies are opportunities for further discussion and/or intervention from the PUC to offer clarification.

1) Customer Energy Resources & Energy Optimization Initiatives

This priority focuses on efforts to work with commercial and residential customers to identify resources and behaviors that can be deployed and otherwise implemented to optimize customer and grid value. Per the Commission's Order No. 36708, "Energy Optimization" initiatives include: (a) metering and monitoring services, (b) incentive offers for grid service capable technologies that enable customers to participate in demand-response programs, (c) incentive offers for customer-sited energy storage systems, (d) incentive offers to promote electric vehicle charging infrastructure.

Desired Outcomes of the Collaboration

Hawaiian Electric Companies:	Hawai'i Energy:
• Ensure that the quality of power at customer facilities meets tariff requirements as new energy efficiency and renewable technologies are deployed • Agreement on what the costs and benefits are of any additive contributions from Hawaii Energy to the Companies' CER programs. • Agreement on whether there are any impact benefits (i.e. kWh reduction or load shifting) from additive contributions from Hawaii Energy. • Ensure that efforts do not result in stranded assets that are not DR-ready.	• Access to data required for program design – including but not limited to temporal and locational values of energy. • Increased access to energy optimization initiatives for hard to reach customers and communities. • Identify pathways for equipment utilization for grid services, particularly on neighbor islands where an Aggregator model is not currently being deployed. • Jointly collaborate on opportunities where Non-Wires Alternatives are an attractive option. • Assistance from Hawaiian Electric to quantify reduced Greenhouse Gas Emissions based on generation sources.

	• As critical infrastructure and community resiliency hubs are identified and prioritized by Hawaiian Electric and other stakeholders, work together to help reduce load and increase resiliency at these facilities.

Points of Concern and Potential Duplication of the Collaboration

Hawaiian Electric Companies:	Hawai'i Energy:
• Duplication of customer touch points if Hawaiian Electric and Hawai'i Energy do not coordinate, which negatively impacts the customer experience. • If devices that are provided rebates are not able to enroll in a Hawaiian Electric CER program could turn into a stranded asset that does not reap load flexibility and load shifting benefits. • Unaligned cost-benefit evaluations from the same CER programs or technologies.	• Identifying the most productive ways to engage in planning conversations with Hawaiian Electric. Hours spent in the Integrated Grid Planning process has yielded nothing tangible for Hawaii Energy to date. • In areas where Hawai'i Energy and Hawaiian Electric disagree, determining how these issues will be resolved and what level of PUC involvement is required, given Hawai'i Energy has a PUC approved Triennial Plan to commence Energy Optimization Initiatives.

2) Low Income Customer Assistance

The Accessibility and Affordability core includes incentives specifically targeting low-income and hard-to-reach (HTR) communities, incentives for direct installation service packages, appliance trade-up, comprehensible building retrofits, and heat pump water heaters (HPWH). 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. 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.

In its approval order of the Triennial Plan, the PUC noted, "The commission has consistently emphasized the importance of expanding program offerings that allow for greater engagement from low-income and HTR sectors" and further, that "The commission finds that the

proposed Triennial Plan's core focus on accessibility and affordability is responsive to the commission's guidance."

Both Hawaiian Electric and Hawai'i Energy have had programs, rates, or offerings to help reduce the energy burden to this group of customers. The initiatives discussed herein 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, it has been challenging to reach low-income populations who face unique barriers to participating, including lack of access to 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 household technology upgrades. This priority is aimed at reducing the energy burden to low income electricity customers through education, financial incentives, and access to energy efficient equipment.

Desired Outcomes of the Collaboration

Hawaiian Electric Companies	Hawai'i Energy
• Ensure affordability of electricity for our low-income customers through combined offerings for the HTC customer • Ensure customer equity for clean energy programs	• Providing data to Hawai'i Energy on households that could benefit from these services based on agreed upon criteria (e.g., Liheap, medical assistance). • Increase energy and financial literacy as well as program access to help reduce monthly energy costs. • Work together in communities to drive meaningful and systematic changes on energy to reduce the financial burden of electricity bills.

Points of Concern and Potential Duplication

Hawaiian Electric Companies:	Hawai'i Energy:
• None to date	• None to date

3) Electrification of Transportation

EoT explores multiple facets within Hawaiian Electric's EoT portfolio. It is likely that the efforts and collaboration to be discussed within this topic will be centered around deployment of EV charging assets.

Desired outcomes of the Collaboration

Hawaiian Electric	Hawai'i Energy
• Implement make-ready charging infrastructure pilots • Provide education for customers around EV purchase	• Provide comprehensive IDSM solutions for homes and businesses, including vehicle charging. • Reduce the cost of electrical infrastructure upgrades required for the installation of EV charging stations by reducing load through energy efficiency. • Reduce the burden of increased energy costs of EV charging through bundling with other energy efficiency opportunities. • Determine how to best support the utilities' stated EoT objective to "Leverage the proposed DR program to offer drivers and fleet operators incentives for "smart" charging and provision of other grid services". • Determine how to best support the utilities' stated EoT objective to "Leverage technologies and data collection proposed in the GMS and DER dockets to enable EV drivers as "prosumers" who support DER adoption and broader grid reliability." • Determine how best to support HECO's stated EoT objective to "maximize the value of EVs to customers and as a resource to the grid."

Points of Concern and/or Duplication of the Collaboration

Hawaiian Electric Companies:	Hawai'i Energy:
• Market confusion if Hawaii Energy is supporting many of Hawaiian Electric's EoT objectives. • Market confusion around different EV charging pilots and programs.	• Market confusion around free commercial EV chargers being offered under Hawaiian Electric efforts versus Hawai'i Energy commercial and workplace charging rebate program.

4) Online Marketplace and Utility Energy Efficiency Offerings

The Hawai'i Energy online marketplace originated in 2014 and has served mainly as a fulfillment mechanism for energy efficient products like LED bulbs, showerheads, aerators and advanced power strips. While Hawai'i Energy has explored a number of options for further marketplace expansion, the cost associated with these tools proved cost prohibitive in relation to the incremental energy savings estimated from these enhancements. The primary emphasis is grounded in an online store that Hawai'i Energy has been managing that will transfer to Hawaiian Electric when Hawaiian Electric expands it into a more robust service, the Uplight Energy Marketplace, which will include Hawaii Energy in the customer experience. Considerations around the overall online experience are anticipated. Additionally, Hawaiian Electric is contemplating offering energy efficiency services. Meetings have been held with the PUC, the Consumer Advocate, and Hawai'i Energy around a commercial energy efficiency offering being considered by Hawaiian Electric.

Desired Outcomes of the Collaboration

Hawaiian Electric Companies	Hawai'i Energy
• Ensure both parties mutually leverage the benefits of the Uplight On-line Marketplace • Offer a better customer experience through instate rebates at the point of sale while recognizing Hawai'i Energy • Ensure customer data information continues to be consistent between Hawai'i Energy and Hawaiian Electric when information is presented to the customer – such as in the case of the Home Energy Report.	• Increased participation in online marketplace and the online portal • Coordinated co-branding and communication where applicable • Understanding of the amount of ratepayer funding being utilized by Hawaiian Electric in areas of energy efficiency and the associated benefit to ratepayers. • Understanding of revenue generation mechanism from purchases made on the marketplace and how it will be used to offset the overall cost of administering the marketplace and portal. • Agreement on what the costs and benefits of any additive contributions from

	Hawaiian Electric to Hawai'i Energy's energy efficiency programs. • Product cross promotion.

Points of Concern and/or Duplication of the Collaboration

Hawaiian Electric Companies:	Hawai'i Energy:
• Duplication of customer portal and information provided in the portal. • Discrepancy with data provided in each organization's portal. • Brand confusion due to co-branding which was a concern of Hawai'i Energy's in the past prior to the Triennial Plan.	• Duplication of customer touch points and customer confusion if Hawaiian Electric and Hawai'i Energy do not coordinate. • Duplication of technical resources and assistance. • Market confusion by participating Clean Energy Allies and potential concerns about a level playing field with utility offerings. • Preferential treatment to one firm in the marketplace for energy efficiency services rather than enabling an open market • Concern that Clean Energy Allies have a fair and competitive marketplace to ensure the broadest portfolio of services needed to reach EEPS.

5) Long-term Forecasting

This priority is focused on developing a long term forecast for energy efficiency and defining procedures to incorporate these forecasts into Hawaiian Electric's long-term Integrated Grid Planning.

Desired Outcomes of the Collaboration

Hawaiian Electric Companies:	Hawai'i Energy:
• Under development	• Under development

Points of Concern and/or Duplication

Hawaiian Electric Companies:	Hawai'i Energy:
• Under development	• Under development

Collaboration Methodology & Schedule

The foregoing sections represent the first stage in the evolved collaboration process, whereby priority initiatives and points of concern and areas of duplication – or opportunities for improvement -- are identified to develop a comprehensive list. Moving forward, Hawai'i Energy and Hawaiian Electric will focus on the above priority initiatives and opportunities for improvement through a collaborative process that will be based on regularly scheduled meetings at mutually-agreeable intervals by the individuals tasked to lead the initiative by each organization. These intervals will be modified as dictated by the progress or status of the respective priority areas. This schedule can change on the basis of the progress and status of each priority. Furthermore, both organizations have committed to internal meetings monthly with the priority leads as a means of gathering status, identifying challenges and helping to address those challenges by cultivating internal resources necessary to do so. At this time, Hawai'i Energy and Hawaiian Electric intend to provide a bi-annual update to the PUC and Consumer Advocate on progress and results from this collaborative process.

MODIFICATION 5:
OUTLINE FOR 10 YEAR PLAN CREATION

Hawai‘i Energy 10-Year Plan Creation

In the Approval order of Hawai‘i Energy’s Triennial Pan, the Commission agreed that a dynamic, data-driven ten-year program roadmap that fosters innovative solutions is a valuable objective for the Triennial Plan. Hawai‘i Energy will be working with Commission staff to develop a more robust workplan, including a specific timeline and specific deliverables in the development of the 10-year plan. As directed by the Commission, Hawai‘i Energy will continue its ongoing collaborative efforts with stakeholders to solicit feedback on the development of the 10-year plan, including during the forthcoming Technical Advisory Group meetings.

Outline for Hawai’i Energy Long-term Resource Planning Process

Objectives from Triennial Plan

- Constructing the internal team, program portfolio framework and data analytics to support a “living” 10-year Hawai‘i Energy roadmap to inform new strategies, investments and resources.
- 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.
- 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 product of the ongoing conversations.

Hawai’i Energy Long-term Resource Planning Process serves as a “living plan” to guide program investments of resources for achieving savings targets and includes engagement with relevant parties to:

- Align and inform state and utility resource plans based on active updates to Hawai’i Energy program strategies
- Support targeted city and county level resource planning and initiatives
- Optimize and maximize operational plans at the program and sector level aligned with annual budgets and energy savings goals for the performance period
- Track performance benchmark indicators for the performance period
- Guide plans and budgets for support services and activities
- Support reporting on compensation and performance award structure

Decision making throughout the process is supported by:

- Market Potential Study being conducted by AEG – Anticipated January 2020

- Hawaiian Electric Integrated Grid Plan – Anticipated summer 2021
- Other relevant utility initiatives or Commission Decision and Orders, particularly in the areas of IDSM
- City and County of Honolulu's Resiliency Strategy
- Other relevant County initiatives
- Identification of technology shifts, markets, baseline considerations that may be impacted by new codes and standards, and evolving avoided costs
- Hawaii Natural Energy Institute's study to provide estimates for the lifecycle greenhouse gas emissions of various energy products and production technologies in Hawai'i.
- State of Hawai'i planning outcomes around 2045 carbon neutrality
- Rate and bill impacts
- Other relevant evaluations and market studies
- Prior budgets, goals, and performance metrics

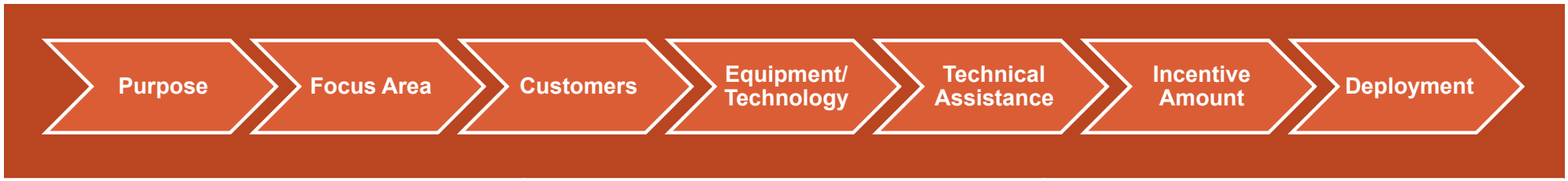
Proposed Timeline

Hawai'i Energy proposes the following timeline for the plan creation and will work with Commission staff to refine this timeline as needed.

- January 2020 – Internal launch of planning process and meetings with VEIC
- February 2020 TAG meeting – Review of potential study, discussion on elements of the 10-year plan and data sets available or needed for plan creation. Energy TRM, prior evaluations, data analytics and market insights.
- May/June 2020 – Stakeholder meeting to prioritize plan deliverables and data sets
- Q3 2020 – Available data sets are used to
- Q4 2020 – Draft 10-Year Plan shared with Commission staff
- Q1 2021 – Adjustments made to the 10-Year Plan and shared with TAG and other stakeholders and gather input for further refinement
- Q2 2021 – Hawaiian Electric Integrated Grid Plan completed
- Q3 2021 – Update draft 10-Year Plan based on IGP outcomes and stakeholder feedback
- December 2021 – Hawai'i Energy 10-Year Plan submitted

MODIFICATION 6:
PROGRAM IMPLEMENTATION PROCESS AND CHECKLIST

Program Implementation Process



OPERATIONAL PLANNING

* TRM
* Incentive Amount Design
* Content
  - Program requirements, eligibility, FAQ sheets, etc.
* Research
* Payment Processing
  - PBF and/or external funding sources
* Tracking & Reporting
  - Energy Savings and NEBs
* Corporate Review & Approval

OUTREACH & ENGAGEMENT

* Contractor Communications
* Customer Communications
* Launch Mechanism
* Market Transformation
  - Professional Development & Training
  - Community Outreach
  - Accessibility & Affordability

MARKETING & COMMUNICATIONS

* Internal – w/MarCom
  - Website, newsletters, print materials, social media
  - Timeline
* External – w/MarCom & External Partners
  - Press releases, newsletters, print materials (magazine articles, flyers, etc.)
  - Event flyers, presentations, participation
  - Timeline

STRATEGIZE

Strategize

- [ ] Define Who/What/When/Where/Why (e.g. Logic Model), define success for this measure.
- [ ] Market Research (e.g. target customers)
- [ ] Final idea for implementation

IMPLEMENT

Operationalize

- [ ] TRM measure
- [ ] Measure Eligibility & Requirements
- [ ] Incentive amount design
- [ ] Payment processing (EPMIS, correct program bucket, etc.)
- [ ] Tracking & Reporting (what data is desired, EPMIS capabilities, etc.)
- [ ] Leidos corporate requirements (e.g. Participant Agreements)

Outreach/Enagement

- [ ] Contractor communications
- [ ] Customer communications
- [ ] Content (FAQs, etc.)
- [ ] Scaling mechanism (e.g. how to increase market awareness)
- [ ] Reference Hawai‘i Energy Event Support Checklist

Marketing & Communication

- [ ] Website
- [ ] Newsletters
- [ ] Print Material
- [ ] Social Media
- [ ] Media Launch

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing RESPONSE TO ORDER 36708 BY LEIDOS, INC. AS THE PUBLIC BENEFITS FEE ADMINISTRATOR will be duly served upon the following parties, by personal service, hand delivery, and/or U.S. mail, postage prepaid, and properly addressed pursuant to HAR § 6-61-21(d) on the date below.

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