

Hawai'i Energy Strategic Framework Program Years 2019 – 2021

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

The State of Hawai'i is committed to supporting this transition and has adopted several laws and policies requiring reductions in fossil-fuel use and greenhouse gas emissions, along with the 100% clean energy goal by the year 2045. In order to accelerate the adoption of clean energy technologies, the role of Hawai'i Energy as the Public Benefits Fee Administrator must evolve. This evolution must leverage the organization's core strengths and competencies to best serve individual customers, the broader customer base and the grid itself.

Over the course of the past year, Hawai'i Energy has solicited feedback from multiple stakeholder groups on the evolution of its program and elements that should be considered for the next 3-year program cycle. Additionally, the Hawai'i Public Utilities Commission has encouraged Hawai'i Energy to work collaboratively with the utility to identify cost-effective, non-wires alternatives to defer or replace utility transmission and distribution or fossil fuel generation capacity investments.

This high-level conceptual framework provides an updated framework for the 3-year program period July 1, 2019 through June 30, 2022. The framework describes the evolution of the core energy efficiency initiatives that have served as the cornerstone of the Program's successes in recent years and merit continuation until they reach a point of market saturation. It also identifies the next generation of programs and offerings that build on Hawai'i Energy's core competencies and expand into complementary initiatives in integrated demand-side management. Together, these initiatives will play a critical role in achieving the State's energy and climate goals and empower Hawai'i residents and businesses to engage in the clean energy transition.

Leveraging Hawai'i Energy's relationships, strengths, and track record on customer-focused programs and initiatives.

Hawai'i residents and businesses must navigate an increasingly complex energy landscape, with myriad new technologies and options for both buildings and transportation. Hawai'i Energy is uniquely positioned to serve as a resource to customers as they reduce their energy use and begin using electric vehicles and renewable energy. Since 2009, we have provided impartial guidance to Hawai'i families and businesses, collectively saving over 1,300 GWh. We know how to design and deliver customer-focused programs. We have longstanding relationships with equipment manufacturers and distributors, engineering firms, installers, and consultants who are key to Hawai'i's energy transition. Now, we must build on those strengths to deploy programs and services that integrate energy efficiency with other distributed energy resources to support customers with energy cost reduction while enabling buildings to become a grid resource.

To enable Hawai'i Energy to reach its full potential as a cornerstone for the State's clean energy transition, the framework and objectives for the Hawai'i Energy Program must evolve. We must expand beyond the primary focus on achieving the Energy Efficiency Portfolio Standard (EEPS) for this next cycle. No one entity can solve all these issues alone. Meeting the state goals for renewable energy and carbon neutrality will require full partnership and collaboration between Hawai'i Energy, Hawaiian Electric Companies, state and local government entities, businesses and communities.

This plan provides a set of programs and initiatives that are both forward-looking and adaptive to support and accelerate the energy transformations that are underway. The intention of these recommendations is to drive technological advances, create new business opportunities, and enable Hawai'i's clean energy markets to grow.

Program Goals and Objectives

Based on feedback from our customers and stakeholders, Hawai'i Energy has identified **Three Core Program Goals** as the foundation for our efforts over the upcoming 3-year cycle. These program goals build on the competencies and successes that have served Hawai'i Energy well over the last decade. Under each goal, we have developed specific planning objectives.

- 1. Accelerate Hawai'i's transition to clean, resilient, cost-effective energy systems.**
- 2. Include everyone in Hawai'i's clean energy system transition.**
- 3. Strengthen local communities and businesses, in turn boosting Hawai'i's economy.**

Goal 1: Accelerate Hawai'i's transition to clean, resilient, cost-effective energy systems. Earlier this year, the state committed to carbon neutrality, recognizing the risk we face as islands due to the impacts of climate change. There are several high-impact climate action strategies relating to energy, such as increasing renewable energy and reducing Hawai'i's fossil fuel generation and associated carbon emissions. Second to electric generation, the next high-impact area for cutting carbon emissions is accelerating electric vehicle adoption. Third, buildings are a major source of carbon pollution due to inefficiency and waste. Driving deep savings in buildings while making them smarter and a resource for the grid is critical to facilitate higher penetration of renewable energy.

A recent paper published in September 2018 by Amory Lovins of the Rocky Mountain Institute (RMI) entitled "Energy efficiency can address climate change, drive prosperity, and strengthen national security" highlighted that the size and cost of the potential resource base of energy efficiency is much larger and cheaper than previously believed. The paper states that the potential for energy efficiency has been massively understated and its cost overstated, by analyzing not whole buildings, vehicles, and factories, but rather focusing only on their individual parts, thus missing valuable ways to help the parts work together to save more energy at lower cost. The Hawai'i Energy Program will continue to evolve to a more holistic approach to program delivery through integrated design and proactive planning, this will allow us the State to realize

the full value of energy efficiency while also integrating electric vehicles and distributed energy resources.

Objective 1: Reduce energy (kWh) usage and shift demand (kW) in alignment with EEPS.

Objective 2: Reduce carbon emissions from buildings and transportation.

Objective 3: Transform buildings into a smart, resilient, grid resource.

Goal 2: Include everyone in the clean energy transition. With Hawai'i already being one of the most expensive places in the country in which to live, reducing monthly energy costs is important for our families and businesses. According to Aloha United Way's ALICE® (Asset Limited, Income Constrained, Employed) report released last year, 165,013 households (37%) are ALICE households living in financial hardship while another 47,066 households (11%) live below the poverty level. Our ALICE population represents people who have one or multiple jobs but struggle to afford basic necessities to remain stable and self-sufficient. Reducing energy costs is a necessity, not a luxury, for these families. Hawai'i Energy's programs intend to increase investment for the ALICE population, as well as small businesses and other hard-to-reach customer segments, to ensure that no one is left behind in Hawai'i's clean energy transition.

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

Goal 3: Strengthen local communities, businesses, and boost Hawai'i's economy. Hawai'i Energy's programs and services have already helped to reduce greenhouse gas reductions and scale clean energy, not just to address climate change but to help create economic opportunities and jobs, and to deliver immediate benefits to public health. Hawai'i has the highest electricity rates in the country, meaning any savings through energy use reduction immediately go to the bottom line of businesses, helping the State's economy. According to the 2018 study, "Transcending Oil," published by the Rhodium Group, the shift to clean energy has already had an impact on our economy. More money is staying in Hawai'i and the State has twice as many residents employed in the clean energy sector than in conventional energy. According to a 2017 Department of Energy report entitled "U.S. Energy and Employment Report", there are over 10,000 Hawai'i residents employed in clean energy. Over half of those employees, 5,100, are specifically employed in energy efficiency. It's important for Hawai'i Energy to continue to drive economic development and job creation in the clean energy field, as well as other businesses that need to reduce their energy costs in order to grow.

The Rhodium Group study also points out that the faster Hawai'i reaches its clean energy goal, the more money that will stay in Hawai'i. To support these outcomes, Hawai'i Energy will continue to identify areas where transformative changes in the marketplace can accelerate the adoption of clean energy technologies. We will increase invest in workforce development and training, which is vital to growing clean energy businesses and supporting robust clean technology supply channels.

Objective 5: Influence long-lasting changes through strategic interventions to overcome market barriers.

Objective 6: Enable smart energy choices through increasing energy awareness and literacy.

Objective 7: Develop a dynamic, data-driven ten-year program roadmap that fosters innovative solutions

The following sections summarize the proposed programs and initiatives for PY2019-2021. These programs have been arranged by the core goal they supports. While there is inevitably overlap of these goals and objectives, we have created this framework to align each program with the area it most directly supports. As we go to market with these programs, the offerings to our customers and Clean Energy Allies will be seamless and not divided out this in manner. To help define program alignment to these goals, here is a short summary:

- **Accelerate a clean energy transition.** These services form the core of Hawai'i Energy programs and offerings to help residents and businesses save energy and adopt energy efficiency while supporting other customer-sited, distributed energy resources.
- **Include everyone in the clean energy transition.** These services focus on engaging “hard-to-reach” sectors, such as low and middle-income households and ensuring they have access to clean energy technologies and can participate in Hawai'i's energy transition.
- **Strengthen local communities and businesses.** These services focus on business development and market transformation by accelerating customer awareness and market adoption of innovative clean energy technologies and services.

Each section describes the types of programs and services that will be offered (e.g., commercial and residential services, data-driven services, financing) and provides examples of go-to-market strategies that package together multiple offerings into a compelling value proposition for customers.

1. Accelerate Clean Energy Transition

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

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

The programs are designed to keep customers connected to the grid and minimize grid defection, especially from larger customers who have the financial means and the ability to do so.

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

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

1.1 Clean Energy Transition - Commercial Programs

Summary	<p>Hawai'i Energy is aligning with current industry trends and best practices to move beyond traditional incentive programs, and incorporate more comprehensive commercial offerings. This shift will not only allow the Program to promote deeper energy savings, but also provide better customer support in light of the evolving grid needs. The Hawai'i Energy program transition incorporates an intentional focus on energy services to assist customers with the planning, design and evaluation of energy efficiency options. We view PY19-21 as the critical timeframe to capture deeper energy savings while preparing customers for the dynamic role they will play in the grid of the future. Our holistic approach will focus on connecting customers with our extensive network of available resources; this may include financing services, Clean Energy Allies and/or the distributors and manufacturers that influence the local supply chain. We will focus on services addressing the barriers (beyond financial) that prevent deeper savings from occurring.</p> <p>Key initiative areas include:</p> <ul style="list-style-type: none"> • Commercial Clean Energy Advisory Services • Energy Efficiency Financing • Commercial New Construction and Ultra Low Energy Buildings • Strategic Energy Management, Continuous Energy Improvement • Grid Services Ready
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Commercial Clean Energy Services

PY19 Programs	Program Objectives and Details
Energy Advisory Services	<ul style="list-style-type: none"> • Over the last decade, Hawai'i Energy's Energy Advisor team has come to understand the complexity around getting commercial energy efficiency projects to move forward. Even in the situations where funding is not a

	<p>barrier, there are often constraints around access to information, limited time and human resources to oversee a project, lack of executive buy-in and complicated procurement processes.</p> <ul style="list-style-type: none"> • They have also developed strong relationships with customers who have relied on them as their trusted advisor. While direct Program incentives remain important, it is even more critical that Hawai'i Energy's Energy Advisors act as champions for the customers. This can include: <ul style="list-style-type: none"> ○ Connecting their customers with Hawai'i Energy's Clean Energy Allies that best fit the customer's objectives; ○ Assistance outlining and addressing technical and financial barriers and identifying solutions for these issues, which are tailored to the unique challenges that face different sectors and/or facility types; and ○ Serving as the "Seal of Approval" with upper management, providing an unbiased, third-party perspective in the decision making process of both the project and the contractor selection. • To better empower our Energy Advisors and the engineering team that supports our customers and Clean Energy Allies, the Program will look to do the following in order to drive deeper energy savings: <ul style="list-style-type: none"> ○ Increase and enhance the capacity and resources within Hawai'i Energy's tool lending library in order to serve more customers in more ways; ○ Provide increased technical assistance at scoping, design, and review stages of project; ○ Provide guidance on procurement best practices and strategies; ○ Assist with financing options and conversations with decision makers to move projects forward; ○ Develop clean energy strategies and services targeted at specific business sectors (e.g. Restaurants, Grocery, etc.); ○ Increase the amount of "influence only"/"claim only" savings where the Energy Advisors focus on influencing investment in projects and removing other barriers, rather than providing rebates.
<p>Clean Energy Ally (CEA) Driven Projects</p>	<ul style="list-style-type: none"> • CEA's are valuable contractors and service providers who partner with us to deliver energy efficiency and renewable energy products and expertise directly to Hawaiian residents and businesses. Over 400 Clean Energy Allies, representing the design, engineering, and contractor communities, act as a force multipliers for HE's initiatives. They build workforce capacity and provide direct economic benefit to the state. • In addition to the continuation of standard efficiency programs driven by the allies, Hawai'i Energy will also encourage and incentivize comprehensive energy service companies who drive "Buildings as a Grid Resource" Programs that are further outlined below. • Hawai'i Energy will increase funding on energy studies focused on driving deeper savings beyond lighting to enable Clean Energy Allies to help deliver needed data and information for customers to make smart energy investment.

	<ul style="list-style-type: none"> • We will expand the CEA “Energy Insiders” top performer program that provides additional benefits and incentives for high performing contractors. • The program will look to create an “enhanced” tier of contractors that meet a higher level of requirements. This is currently done in the Energy Advantage program for small businesses and has worked well. The program would expand this to be able to bundle solutions to make the process easier and more accessible to commercial customers.
<p>Commercial New Construction</p>	<ul style="list-style-type: none"> • 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. These types of complimentary 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. It is 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. Historically, the one-year program cycles have limited the influence of incentives due to lack of alignment with the 5-10 year construction planning cycles. • These offerings can also include incentives focused on whole building performance for optimizing interactive efficiencies within the various building systems, or incentives for less complex projects affecting one or two systems. This may also include increased or bonus incentives for higher target levels (e.g. LEED certified or green building tiers) • Additionally, we 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.
<p>High-performance Buildings / Ultra-Low Energy Buildings</p>	<ul style="list-style-type: none"> • The path to our low carbon, clean energy future relies on the reduction of emissions from the existing commercial building stock. This will require a holistic approach to building management in order to drive deeper retrofits. • Hawai’i Energy will offer a tiered incentive framework to promote higher efficiency equipment along with optimized systems and processes. The framework will include a top-tier deep retrofit package that can combine building automation systems with other distributed energy resources like energy storage, smart inverters, and workplace charging. • Incentives will be offered on a prescriptive or pay-for-performance basis depending on the technology and strategies for energy reduction. • This will require expanded education and training offerings beyond traditional energy efficiency measures to include whole building modeling, Net Zero Energy buildings, energy management systems, demand response and energy storage. These efforts will align with the Program’s Strategic Energy Management and Continuous Energy Improvement approach outlined below under “Behavior, Insights, and IDSM Optimization Services.”

Energy Efficiency Financing	<ul style="list-style-type: none"> • Upfront costs are often the largest barrier in moving forward with a project. While lighting projects typically provide an attractive and quick enough ROI for investment, the deeper energy saving measures are left on the table. Due to competing needs for capital within an organization, having options to eliminate upfront costs and a positive cash flow is critical. • Hawai'i Energy will need to leverage available financing products more effectively in order to drive deeper retrofits. Through industry partnerships we will provide access to innovative financing packages designed to overcome the cost barriers associated with efficiency projects. We will utilize our existing network to connect customers with the financing agencies that are most suited to their needs. • One proposed approach is to utilize Program incentives to offer “below market” financing through interest rate buy-downs, making the financing terms more attractive and easily accessible. In conversations with several of the local banks at the start of PY18, there is interest in this option. The program would also provide technical review of projects to help the banks eliminate the engineering risk of the project (something they have no idea how to do, thus raises interest rates) so the bank can focus on the credit risk of the customer (which they do every day). There are a number of successful programs operating in this space, including AlabamaSAVES. • Rocky Mountain Institute believes the greatest opportunity in energy efficiency financing is Energy as a Service (EaaS) contracts. Similar to a traditional power purchase agreement for PV, EaaS, is an all-inclusive subscription based pricing model that allows business to pay as you go and keeps the project financing off the balance sheet. Hawai'i is already seeing lighting as a service contracts being proposed and we anticipate the product offerings will expand to other commercial energy efficiency in the near future. The program would look to support this by redesigning incentives to maximize participation. • The program is also considering providing loan-loss reserves to help customers that do not have ideal credit to be able to access energy efficiency financing. We are in conversation with other sources of funding to see if these other funds could be used. • The program will continue to look for ways to leverage GEMS, particularly for state government and non-profit customers where GEMS is allowed to provide financing.
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Behavior, Energy Insights and IDSM Optimization Services

PY19 Programs	Program Objectives and Details
Strategic Energy Management and Continuous Energy Improvement	<ul style="list-style-type: none"> • Strategic Energy Management (SEM) is a holistic approach to energy management. Through continuously improving energy performance, businesses are able to increase cost savings year after year. A SEM program is established and implemented in partnership with the customer, creating a culture of Continuous Energy Improvement (CEI). This approach improves productivity, overall facility operations, as well as impacting organizational culture around energy.

	<ul style="list-style-type: none"> • These efforts assist customers in managing and improving energy use over time through behavioral and operational changes while generating leads for traditional resource acquisition projects. CEI emphasizes equipping and enabling energy teams, managers and staff to impact energy consumption through behavioral and operational change. The key difference is achieving energy savings through sustained organizational change (behavior and work processes) rather than discrete, energy-saving projects. This approach increases the likelihood that all cost-effective measures are installed. • We have already started establishing a “force multiplier” cohort of businesses to share ideas and build synergy around common challenges, analogous internal processes, and/or similar organizational traits. This work has grown out of our support for Hawai’i Green Growth’s Sustainability Business Forum, which includes 15 leading businesses in the community that have committed to HGG’s Green your Business Initiative by offering the CEI program to these organizations. We will continue to increase sharing and learning across organizations through hosted events geared at sharing best practices. • Since every employee is also a residential customer, Hawai’i Energy is committed to engaging employees in behavioral changes that lead to energy performance improvement at home as well as what can be impactful in the workplace.
Grid Services Ready	<ul style="list-style-type: none"> • Incentive stacking can jumpstart adoption of Demand Response technologies, particularly when customers are making purchasing decisions on equipment with a 10 – 20 year life. It is important the programs help prepare the customers for future DR programs offered by the utility. Incentives in this area would not be tied to a reduction of kWh usage. • Deployment of grid-connected, battery energy storage systems have immediate DR value, while also driving peak demand reductions. Energy storage can help address short term issues with temporal values of energy efficiency and better position customers to adjust their load profile in preparation for the application of Time-of-Use rates. • We will also include kW heavy incentives for thermal energy storage systems to encourage daytime load while reducing evening cooling loads. These may be ice or chilled water HVAC system focused. • Deployment can be ramped around specific locational grid needs based on direction from the utility or the PUC. • Targeted opportunities with the City & County of Honolulu and other customers where resiliency is critical with the opportunity to provide grid services during non-emergency event. The Program will seek specific opportunities to leverage ratepayer funding with other funding sources to create community resiliency hubs.
Energy Optimization Advanced Energy Insights	<ul style="list-style-type: none"> • Hawai’i Energy has engaged with a number of commercial customers through benchmarking and data analytics efforts over the last five years. We will continue to provide customer-focused data analytics services and energy insights to support clean energy choices and drive customer action. • We will expand benchmarking and energy optimization services for connected devices to enhance locational and temporal energy savings to support grid needs. We will also leverage detailed energy use data to inform targeted technologies for customer and grid benefit.

	<ul style="list-style-type: none"> • The Program will continue to partner with local organizations to support the sharing and analysis of energy data in order to help inform policy
Electrification of Transportation	<ul style="list-style-type: none"> • EV charging infrastructure is far behind EV adoption, EV charging will increase usage and could be paired well with energy efficiency programs when targeted appropriately. The utility is more focused on the “make-ready” infrastructure rather than the charging stations, making this an area for collaboration and integration with Hawai’i Energy’s other customer work. • Presently, the greatest opportunity for near term impact is in workplace charging, especially at workplaces utilizing energy during the daytime hours. • The Program has successfully launched and leveraged other funding sources through Ulupono Initiative to increase the incentive to businesses invest in EV charging infrastructure at their location. The program has received significant interest and inquiries for participation, showing the market need for such a program. • The Program will continue to evaluate growth in EV Microgrid and VTG opportunities.

Supply Chain Engagement

Distributor/ Midstream	<ul style="list-style-type: none"> • Hawai’i Energy will expand successful supply chain efforts in lighting to a broader range of technologies including HVAC, motors and refrigeration. • We will continue to evaluate emerging technologies for inclusion into program and adoption into the marketplace. • This includes enhanced involvement with trade allies and supply chain partnerships to influence purchasing patterns within the supply chain.
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Go To Market Design Examples

Commercial Office Program

- Office/building energy audit
- Literacy/training for property management
- Incentive for property management firm
- Bundled and increased incentives for deeper retrofits
- Incentives for DR integration with Building Management Systems and energy storage
- Periodic limited time bonus for early adopter
- Workplace EV charging incentive
- Build in efficiency expenses into CAM
- Creative financing such as efficiency as a service model so payments come from CAM fees
- Marketing program to highlight facility and property manager/owner
- Contest to win feature in PBN as Hawaii Energy’s most-improved facility of the quarter or year

High locational value program

- Paired with residential program (below)
- Bonus, limited time incentives
- Direct install for small businesses
- New measures unique to situation/area

1.2 Clean Energy Transition – Residential Programs

<p>Summary</p>	<p>In the current triennial program period Hawai'i Energy has invested in a new strategic transition towards a comprehensive residential energy services program. The PY19-21 framework introduces several new initiatives for residential energy services, while also introducing some new supply channel (manufacturers, distributors, contractors, retailers) partnerships to improve cost-effectiveness of financial incentives, increase stocking and access to energy efficient technologies, and streamline the engagement and incentive process to increase the impact of the programs. This comprehensive residential program strategy will help to advance new state residential energy codes and standards, increase targeted energy efficiency measures, and increase the rate of adoption of new clean energy technologies including connected appliances, electric vehicles, energy storage and renewable energy. Key new initiatives include:</p> <ul style="list-style-type: none"> • Residential new construction program • Energy Behavior and Data Insights Initiatives • Heat Pump Water Heater Enhanced Incentives • Connected IDSM programs (e.g. Smart Thermostats) • Retailer and Distributor Midstream programs • Clean Energy Ally Training Platform • Targeted Neighbor Island Community Partnerships • Comprehensive Multi-family Initiatives <p>These programs and initiatives are designed to support an evolving clean energy system in Hawai'i, create resilient local economies and homes, and increase clean energy jobs and businesses in the state.</p>
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Residential Clean Energy Services

PY19 Programs	Program Objectives and Details
<p>Residential New Construction & Retrofits</p>	<ul style="list-style-type: none"> • Hawai'i Energy will expand its engineering design support and incentives for high efficiency home building designs and systems that can incorporate EV charging, connected appliances and energy storage. • This can include partnerships with Hawai'i housing agencies and developers to package energy efficiency with PV+Storage solutions and EV chargers as they are being installed. • The Program will also align its market transformation initiatives to track compliance with IECC 2015 adoption for new construction and building retrofits.
<p>Clean Energy Ally (CEA) Driven</p>	<ul style="list-style-type: none"> • The CEA program acts as a force multiplier for Hawai'i Energy's initiatives by building workforce capacity and impact through tailored training and incentives. • Hawai'i Energy will go beyond customer incentives to offer parallel or tiered incentives to distributors and contractors for increasing stocking, sales and installation of high efficiency and clean energy technologies.

	<ul style="list-style-type: none"> • The Program will develop targeted initiatives to increase the penetration of equipment that can provide grid benefits beyond efficiency. This may include: <ul style="list-style-type: none"> ○ Accelerating heat pump water heater (HPWH) adoption with increased incentives and added bonuses for controls. Studies in California have found that HPWHs present an opportunity to address the growing duck curve. ○ Promoting the installation home energy monitors and connected devices (e.g. smart thermostats). ○ Supporting grid-interactive water heaters installations that align with utility demand response initiatives. ○ Strategic electrification tiered incentives for battery storage and installation of EV chargers through our working with PV + Storage CEAs. • Financing and data analytics services to provide sales tools to contractors to sell comprehensive energy retrofits and improve access to all residential households
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Direct Consumer Purchases

PY19 Programs	Program Objectives and Details
Online Energy Marketplace	<ul style="list-style-type: none"> • The development of a robust online energy marketplace will increase the availability and affordability of emerging high efficiency and “grid-forward”/connected products and streamlined enrollment for load management services • This online marketplace will provide customer-focused information to support clean energy choices and comparison of various products.
Retail Clean Energy Products	<ul style="list-style-type: none"> • Hawai’i Energy will also expand the number of retailer and distributor/dealer midstream programs providing point-of-sale, instant rebates at brick and mortar locations. These incentives for lighting, washers, dryers, heat pumps and consumer electronics help to increase stocking and sales of the most efficient equipment while also reducing the cost of Hawai’i Energy back-end processes. Additionally, these promoted products receive valuable floor space in the show room, making them more visible to customers. • The Program will create bonus packages to support new homeowner/renter comprehensive upgrades. These will include enhanced incentives for bundling water heating, cooling, appliances and lighting. We will also enhance our early retirement appliance programs targeting removal of secondary refrigerators and upgrading inefficient cooling, dehumidifying and air purifying equipment. • The Program will explore retailer partnerships for the installation of EV charging stations and identify opportunities to incentivize the sales of the most efficient EV chargers. • Hawai’i Energy will establish enhanced lighting and appliance offerings through partnerships with organizations serving hard-to-reach communities and lower income households (e.g. Foodbank, aggregating small local grocers and hardware).

Behavior, Energy Insights and IDSM Optimization Services

PY19 Programs	Program Objectives and Details
Behavior Engagement	<ul style="list-style-type: none"> Hawai'i Energy will leverage our existing energy behavior engagement platform and home energy reports to support awareness and adoption of clean energy technologies (EVs, PV + storage and high efficiency technologies).
Advanced Energy Insights	<ul style="list-style-type: none"> We will continue to provide customer-focused data analytics services and customized household energy insights to support clean energy choices and drive customer action. We will also leverage this detailed household energy use data to inform targeted technologies for customer and grid benefit.
Energy Optimization	<ul style="list-style-type: none"> Hawai'i Energy will explore optimization services for connected devices incentivized through the program in order to enhance locational and temporal energy savings to support grid needs.

Go To Market Design Examples

Multifamily Unit Dwelling (not low income)

- Smart appliance bulk purchase program
- Focus on water heating end-use: Heat pump first, grid interactive second
- Incentives to owner/property manager for replacement of energy efficient appliances
- Electric Vehicle charging station incentive
- Load shifting literacy & training
- Online marketplace
- Smart technologies for the home
- Package with GEMS financing if needed

High locational value program

- Emergency crisis response; remote communities, non-wires alternatives
- Paired with commercial program (above)
- Bonus, limited time incentives
- New or increased measures (such as air purifiers on Hawaii Island)
- Free direct install of certain measures

New construction program

- Set incentive that is Performance based or menu based above code
- Bonus incentives for EV readiness, EV charging stations, smart appliances, and storage

2. Include everyone in Hawai'i's clean energy system transition

Equity is more than a tenet of fairness and an honored principle of ethics, it also has tremendous strategic value as a leverage point to amplify the impact and benefits of Hawai'i Energy's activities. Years of research have determined that low-income, minority, low-income multifamily, and renter households in the U.S. spend a greater proportion of their income on utilities than the average family. According to a report released this summer by the American Council for an Energy Efficient Economy (ACEEE)¹, ACEEE identified energy efficiency as an underutilized strategy that can help reduce high energy burdens by as much as 25-30%, resulting in hundreds of dollars in annual energy bill savings for some households. These funds could be better used towards food, medicine, education, and other more crucial needs. With 48% of Hawai'i households living in financial hardship or below poverty levels, this represents a great opportunity to reduce high energy burdens and redirect high energy bill savings to other crucial household expenses. Honolulu ranks 2nd nationally with 35% of households in urban Honolulu being multifamily, second only to New York City according to a 2017 ACEEE study². This represents a total of over 107,000 multifamily households with 93% of these households being renters. Adding to the problem, over 65% of these units were built in 1979 or earlier. Freddie Mac reports nationally that only 10% of recently constructed multifamily rental units have rents that would be considered affordable for most renters, with a similar trend likely in Hawai'i.

Since ALICE households are more likely to rent than own, it is fair to reason that a large amount of multifamily renters are in need of assistance to make ends meet and reduce their energy consumption. Even if multifamily building owners are incentivized to pursue building upgrades, they must be convinced that they will have a future positive return on their investment or that upgrades will minimize the risk that building expenses will increase. To be effective, Hawai'i Energy must be able to consistently provide multifamily owners with reliable information that they can use to make investment decisions. Benefits of multifamily energy efficiency can also include "higher property value, reduced maintenance costs, greater levels of comfort, improved appliance and equipment performance and lifespan, and improved health and safety" (Cluett and Amann 2015, 7). Owners, especially those of multifamily affordable housing, who receive this information are more likely to secure project financing from a lender. You will see an increased focus of this in our new program designs.

In PY18, Hawai'i Energy was selected to participate in a five-month SMALLIFY Accelerator Program offered by the Hawai'i Leadership Forum. This rapid innovation lab integrates design thinking, lean start up, business model generation and entrepreneurial leadership into an innovation capacity building process to validate, iterate and launch solutions to larger challenges. Hawai'i Energy has committed to exploring the barriers and opportunities to design and deliver the right set of programs to maximize participation and energy savings low-income and heard-to-reach communities in Hawai'i.

Similarly, small businesses are critical to the health of local economies, generating more than half of net new private sector jobs³. The barriers to their participation in clean energy solution programs include lack of staff, time, money, limited awareness of program offerings and energy efficiency benefits. With the right

¹ Ross, L., Ariel Drehobl, and Brian Stickle. *The High Cost of Energy in Rural America: Household Energy Burdens and Opportunities for Energy Efficiency*. Washington, DC: American Council for an Energy-Efficient Economy (ACEEE), July 2018. <http://aceee.org/sites/default/files/publications/researchreports/u1806.pdf>

² More Savings for More Residents: Progress in Multifamily Housing Energy Efficiency. Stefen Samarripas, Dan York, and Lauren Ross. February 2017 Report U1702 <https://aceee.org/sites/default/files/publications/researchreports/u1702.pdf>

³ Drehobl, A., and Brian Stickle. *Lifting the High Energy Burdens in America's Largest Cities: How Energy Efficiency Can Improve Low-Income and Underserved Communities*. Washington, DC: American Council for an Energy-Efficient Economy (ACEEE), November 2016. <http://aceee.org/sites/default/files/publications/researchreports/u1602.pdf>

combination of energy efficiency measures, small businesses can redirect money spent on their utility bills toward strengthening their bottom line.

Focused investments can generate significant savings by addressing the social and economic opportunity energy costs of historically underserved and hard to reach customers. As the PBF administrator, Hawai'i Energy is uniquely positioned to deliver deeper savings and achieve higher participation within these communities. Focusing on empowering all business and residential communities to participate in Hawai'i Energy's clean energy programs will result in increased investments in local economies, skilled job creation, improved household health and safety, reduced energy burden, better environmental stewardship, and other positive individual and community benefits.

Special consideration will be given to maximize participation by customers in this segment to reduce or eliminate any negative impact of the Public Benefits Fee on their utility bill.

2.0 Accessibility and Affordability

Summary	<p>Hawaii Energy will significantly expand the diversity and depth of low-income/HTR energy efficiency programs; collect, track and report demographic data on program participation; leverage existing programs; and create strategic partnerships with other community action partners already serving the LI/HTR markets.</p> <p>These communities include low-income households, rural communities, renters, multi-unit building owners, kupuna, military veterans, small businesses, non-profits and other underserved, vulnerable and geographically isolated segments.</p> <p>Decision-makers must prioritize between utility bills and other necessities to run a household or a business. These segments of the population may or may not receive efficiency information, much less be able to act on the information received. It is incumbent on Hawaii Energy to explore and discover and articulate the what, why and how to connect with these historically elusive audiences with energy efficiency programs that can lead to greater economic, social, and environmental health/resilience.</p>
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Programs and Services

PY19 Program Areas	Program Objectives and Details
Enhanced programs and incentives and delivery approaches	<ul style="list-style-type: none"> • Turnkey, integrated services – develop a portfolio of strategies and programs bundled to maximize low-income energy efficiency benefits, energy savings and participation and tailored to the needs of local communities. Hawai'i Energy will coordinate delivery with other organizations with existing relationships to LI/HTR markets to best align and scale programs impacts, and energy literacy. • Subsidized Housing Strategy – provide a comprehensive package of engineering services, financing and financial incentives, and other informational resources tailored to individual organizational or household needs. The Hawai'i Energy program will seek out low-income households, including renter- and owner-occupied, in single- and multi-family buildings and target existing and upcoming projects in transitional, affordable, and other subsidized housing. • Split-Incentive Strategy - Design a targeted program aligned with the replacement cycle for appliances in sub-metered rental units by landlords and property managers to support investments in high efficiency appliances even when the tenant pays the energy bill. • Direct to Consumer Purchases – Develop distribution partnerships for efficient products with public and private human services entities, health organizations, food banks, and other non-profit agencies such as Aloha United Way, Hawaii Community Foundation, and Habitat for Humanity. • Heat Pump Water Heating Initiative - Water heating is the largest single residential load in Hawai'i households, however in apartments and other multi-family unit dwellings solar thermal is often not an option. Hawai'i Energy will assess opportunities for centralized and in-unit heat-pump water heaters to provide significant energy savings and address potential market and technology barriers. • Multi-family unit appliance trade-up and comprehensive building retrofit programs – Expand measures to include water heating, replacement of window air conditioners, smart appliances, building controls, EV charging and other common area upgrades. • Financing Packages - Utilize GEMS funding for on-bill repayment for Hawai'i Energy supported technologies and services to address barriers to participation and affordability. • Expansion of the EmPOWER program for non-profit organizations – After a strong launch in PY18 with five non-profits, continued expansion of measures beyond lighting and additional nonprofits. This cohort approach provides engineering and financial support, along with education and reporting to increase energy literacy and remove typical barriers to participation from nonprofit agencies. • Expansion of Energy Advantage beyond lighting: <ul style="list-style-type: none"> ○ Food service/commercial kitchen equipment for restaurants and other similar customers ○ Package unit and split system replacements ○ Refrigeration

Building Energy Awareness & Literacy	<ul style="list-style-type: none"> Valuing Energy Improvements – Provide facility owners, landlords and property managers with pre/post (2 years) engineering, data analytics and energy literacy support to properly monetize and fund clean energy improvements. Document benefits with partners to assess impacts of clean energy improvements on property value, comfort, and renter affordability and retention. Multifamily Behavior Initiative - Engage renters/tenants in partnership with affordable housing providers to increase energy awareness and action. Community Action Group (CAG) Partnerships – Foster long-term relationships with high-performing CAGs with built-in communication channels and relationships with households, building owners, and small businesses to expand access to energy literacy programs, services and clean energy products. Early stage discussions to work in partnership with Aloha United Way and their cohort of nonprofits they are funding to drive financial literacy with low income residents. Energy savings is an important component to financial literacy and we are exploring if we can leverage these organizations to help educate and provide solutions to our ALICE families.
Data tracking	<ul style="list-style-type: none"> Collect participant demographic data on program participation to evaluate program impact, level of service and design of programs. Assess energy and non-energy program metrics that best achieve desired outcomes for low-income and HTR customers through Hawai'i Energy clean energy program services.

Go To Market Design Examples

Low income / Hard-to-Reach

- Home energy audit
- Bundled and increased incentives to landlords, renters and small businesses for replacement energy efficient appliances
- Limited time increased incentives to encourage early adopters
- Financing resources for homeowners and landlords
- Free or discounted energy efficient products
- Energy Efficiency education for landlords, property managers, renters, homeowners and small businesses
- Smart technologies for the home and business
- Online marketplace
- Education and training for community action groups that work with these communities

Non-profit organizations

- Site energy audit
- Literacy/training for staff
- Funding – GEMS, REAP, revolving loan fund or financing packages through local banks, fundraising training
- Online Marketplaces
- Recognition program
- Affinity programs – discount to HANO membership for implementing efficiency measures, automatic X points towards grant submissions to Foundations that score higher for energy efficient applicants, etc.

3. Strengthen local communities and businesses, in turn boosting Hawai'i's economy

Market transformation programs provide strategic interventions to create lasting efficiencies, ultimately paving the way for the integration of clean energy solutions. Hawai'i Energy plays a critical market transformation role in equitably serving all residents and businesses by developing a comprehensive, long term strategy for introducing new IDSM technologies and energy services, building workforce capacity, and providing the data, knowledge and training necessary for identifying the “best fit” clean energy choices.

Hawai'i Energy's Economic Development and Market Transformation initiatives help to build a critical pipeline for the Commercial and Residential programs with rapid prototyping of innovative program designs, evaluation of new clean energy technologies and the development of impactful Clean Energy Ally training and incentive programs.

We have gathered feedback from many key stakeholders, trade allies and individual customers and businesses to develop a market transformational plan that will ensure that all individuals and businesses benefit from the rapid transition to clean energy. It will serve as a directional tool for aligning Hawai'i Energy's longer-term investments with utilities in Hawai'i, as well as supporting and informing individual county and state level energy initiatives. Although energy efficiency continues to serve as a primary driver to Hawai'i Energy programs, necessary investments in new technologies and services to create comprehensive, building-level, clean energy solutions will accelerate a decarbonized future for Hawai'i.

3.0 Economic Development and Market Transformation

<p>Summary</p>	<p>Hawai'i Energy's PY19-21 Economic Development and Market Transformation program incorporates several core forward-focused initiatives to align with the state's policy goals for 100% Clean Energy by 2045. These initiatives include developing a clean energy collaboration technology hub for the rapid evaluation, design and prototyping of innovative emerging technologies and services; establishing a comprehensive clean energy training and behavior framework for trade allies and customers; and constructing the internal team, program portfolio framework and data analytics to support a “living” 10-year Hawai'i Energy roadmap to inform new strategies and investments.</p> <p>Hawai'i Energy will leverage and invest in the strength of its clean energy ally contractor network, conduct external market scans to identify key trends and best practices and build on organizational experience in leading market transformation programs, and support the design of fully integrated clean energy buildings to optimize customer and grid benefits in Hawai'i.</p>
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Strategy and Planning (Data & Analytics)

PY19 Programs	Program Objectives and Details
<p>Strategy and Planning</p>	<ul style="list-style-type: none"> Strategic planning efforts will align immediate IDSM core program initiatives with interim goals and long-term policy objectives and outcomes - including sufficiently stable commitment in markets for 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.
<p>Hawai'i Energy Long-Term Planning Tools</p>	<ul style="list-style-type: none"> Hawai'i Energy will build a forward-looking dynamic planning tool to model a comprehensive suite of new clean energy programs, services and technologies to inform annual and long-term program investments.

Data & Analytics Platforms	<ul style="list-style-type: none"> Hawai'i Energy's data & analytic platforms piloted in 2018 will be integrated in residential and commercial IDSM programs to provide identification, targeting, and evaluation services in addition to direct energy services savings. This will leverage an installed base of connected residential and commercial 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.
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Clean Energy Solutions Innovation Hub

PY19 Programs	Program Objectives and Details
Clean Energy Solutions Team	<ul style="list-style-type: none"> These efforts will focus on identifying, evaluating and piloting new emerging technologies and services to fill pipeline for future Hawai'i Energy programs. We will develop a stage-gate process to capture and assess new emerging technologies and services prior to launching in core Hawai'i Energy programs. This will focus on accelerated partnerships with utilities, the Elemental Excelerator, and federal, state and county agencies for identifying and deploying new Clean Energy Collaboration efforts and leveraging external funding to build out the speed and scale for evaluating emerging technologies/services.
Grid-Interactive Technologies and Services	<ul style="list-style-type: none"> We will partner with customers and utilities to test grid-interactive technologies, including water heaters, home and business energy management systems, smart thermostats, and targeted grid-service renewable energy and storage solutions.

Clean Energy Transformation – Supply Chain and Customer Literacy

PY19 Programs	Program Objectives and Details
Codes and Standards	<ul style="list-style-type: none"> Hawai'i Energy will provide architects and building contractors professional training and engineering support services to address market barriers for building compliance with county level adoption of IECC 2015. We will also continue to lead quarterly Energy Efficiency Codes Coordination (EECC) stakeholder meetings and provide analytical support to advance state building and appliance standards and evaluate voluntary adoption of stretch codes for high efficiency and "EV/PV/Storage ready" buildings. Hawai'i Energy will develop aggressive voluntary energy performance specifications to stretch state and local energy codes and standards for equipment and buildings.
Clean Energy Ally Program	<ul style="list-style-type: none"> Hawai'i energy will expand the technical and financial services provided in the Clean Energy Ally program. These include: <ul style="list-style-type: none"> Building out the technical support and training for CEAs to expand capabilities to market and sell energy efficiency and other IDSM services and technologies to their customers; Identifying emerging technologies and trends in the industry to guide trade allies' transition into the clean energy market; Developing a trade ally feedback loop to provide input on improving program results and participation; and Developing an awards and recognition program for the top performing CEA's.

Clean Energy Literacy	<ul style="list-style-type: none"> • Hawai'i Energy will couple hard-to-reach community workshops and presentations with enhanced engagement efforts, such as targeted audits, surveys, and gamification environments for a deeper educational impact. • We will continue to support STEM/STEAM road mapping 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. • Hawai'i Energy will develop a permanent interactive, immersive exhibit for all Hawai'i residents to fully visualize the state's ambitious clean energy goals. Bringing together an array of external stakeholders with different expertise and perspectives will form the innovative process of crafting both an entertaining and educational experience. • In order to drive deeper program penetration, we will establish a nudge unit to integrate practical behavioral insights and design across all resource acquisition and market transformation programs.
Professional Development/ Technical Training	<ul style="list-style-type: none"> • Following county adoption of IECC 2015, we will continue to provide outreach and education to AEC community. • This will include support growing the industry knowledge base around sale, purchase and valuation of energy and resource efficient homes through training licensed real estate professionals. This will help facilitate the enhanced valuation of such properties through awareness of the hidden benefits to the homeowner over time. • We will continue to provide energy workforce training in hard-to-reach areas, especially with the aid of remote technology, and work with agencies and nonprofits to provide retraining for laid off workers seeking skills to build new careers. • Hawaii 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). • The Program will build on its positive relationship with the University of Hawai'i to create noncredit certificate in energy.
Supply Channel Engagement	<ul style="list-style-type: none"> • We will engage in supply channel mapping for shifting purchasing, stocking, sales and accessibility of clean energy technologies to all Hawai'i residents and businesses.

Go To Market Design Examples

Smart Water Heater Initiative (Test)

- Partner with utility for Grid-Interactive Water Heater and heat pump water heater assessment
- Leverage CEA with PV/Storage and HVAC contractors
- Water heater must be grid connected and available for DR and load shifting participation
- Load shifting literacy & training
- Direct install of other energy efficiency equipment if opportunity exists.

Solar Peak Load Targeting

- Expand installation of customer-owned residential and commercial load disaggregation metering
- Integrate data analytics into locational program planning and community initiatives
- Limited time increased incentives for targeted loads
- Load shifting literacy & training

Classroom to Community Engagement

- Interactive Clean Energy exhibit
- STEM / STEAM clean energy curriculum development and gamified engagement
- Enroll schools in commercial Continuous Energy Improvement program
- Parent Q&A session with Hawaii Energy and local CEA for tackling home energy improvement

Evolving how the program will be measured

To achieve the aggressive and longer-term state energy goals, Hawai'i Energy is proposing the development of new 3-year performance metrics with annual reporting on progress indicators. The proposed 3-year performance metrics and progress indicators will incorporate national best-practices to value the benefits and drive adoption of a broader suite of integrated demand side management initiatives including energy storage, demand response and electrification of transportation. The metrics will focus on simultaneously supporting the aggressive state energy policy goals, while prioritizing equity of services at the sector, island and state levels. Although historically an important focus of Hawai'i Energy, we will include feedback from the Consumer Advocate and other stakeholders to best inform program designs to support equal access to clean energy technologies and services.

It is important to remember that the lifetime cost of saved energy of the portfolio to date is under 3 cents per kilowatt-hour. These new efforts to support the program goals, including driving for deep energy efficiency savings, will not be the same as in past years. Certain program offerings may not have any kilowatt-hour savings and instead support other policies such as carbon reduction and peak demand reduction. This is why the redefining of the metrics is a critical component to this direction.

For each of the three focus Core Program Areas, the existing metrics, weighting, and proposed evolutions will better align with and accelerate towards the State's longer-term energy goals. This area will require more work with the Commission and other stakeholders to come up with an agreeable set of metrics to best measure program impact; but we offer this as an initial starting point for the discussion.

TABLE 1. ACCELERATE HAWAII’S TRANSITION TO CLEAN, RESILIENT, COST-EFFECTIVE ENERGY SYSTEMS

Clean Energy Solutions represents the primary focus and majority of current performance metrics with a total weight of 70% for the current triennial program period. Hawai'i Energy proposes the following adjustments to this focus area's metrics:

Total Resource Benefit (TRB in \$'s)
 Standardized tracking of the comprehensive cost and benefit impacts of Hawai'i Energy's activities is a best practice for managing and measuring portfolio performance. Changes to more effectively value the tradeoff of renewables, electrification of transportation, non-electric fuels notably natural gas and gasoline, and non-energy benefits including jobs, water use savings, health and broader societal costs are required and include:

- Updating calculations to include energy and non-energy benefits aligned with state clean energy, economic and grid resiliency goals.
- Establish triennial TRB targets at state, county, city and sector levels (residential and hard-to-reach).
- Evaluate cost-effectiveness at the sector level (commercial, residential and low-income) including both resource acquisition (cost/benefits) and market transformation activities (costs).

First-Year Energy Savings (kWh)
 First year energy savings continue to serve as an important progress indicator for energy efficiency performance, but more "sophisticated"⁴ impacts would be informed by triennial EEPS EE targets through analysis and strategic planning initiatives to:

- Include interactive effects (e.g., renewables, storage and load shifting, and electrification of transportation).
- Account for time and locational attributes of targeted EE in cost-effectiveness screening (kW, kWh).

Peak Demand Savings (kW)
 A shift from a traditional customer peak demand reduction to a more dynamic metric for assessing Programs capacity to serve as a "non-wires" alternative and support high penetration of renewables and electrification of transportation. The targeted locational and time-based metrics would be established based upon potential studies, load forecasts, and specific utility capacity needs.

Existing (PY16-18)		Considering for PY19-P21		
Annual Performance Metric	Weight	3-Year Target Metrics (<i>Performance Requirement</i>)	Annual Progress Indicators (<i>Reporting Requirements</i>)	Long-term Goals (Market Transformation)
Total Resource Benefit (TRB, \$)	TBD	Total TRB ⁵ County/City/ Sector TRB	Demonstrate annual progress towards 3-Year Targets: <ul style="list-style-type: none"> • State/County/City • Sector <ul style="list-style-type: none"> ○ Residential ○ LI/Hard-to-Reach 	EEPS: 70% Clean Energy by 2030, 30% (4,300 GWh) savings through EE by 2030).
First-Year Energy Savings (KWh)	TBD	Total kWh Targeted kWh	Demonstrate annual progress towards 3-Year Targets.	By 2030, energy use intensity (EUI ⁶) is XX% of today.

⁴ It is increasingly the case that to treat all kWh and kW savings the same, independent of characteristic factors (such as the time, location, and responsive flexibility of those savings) is to reduce the visibility and accuracy of the costs and benefits in a smarter, more resilient energy system. With higher penetrations of distributed generation, storage, and flexible and responsive load management, EE performance targets can and should better reflect this emerging paradigm by incorporating these factors into program design, delivery, and reporting.

⁵ We propose development of TRB specifically tailored to Hawai'i in accordance with the recommended guidance of the **National Standard Practice Manual for Assessing Cost-Effectiveness of Energy Efficiency Resources**, available at https://nationalefficiencyscreening.org/wp-content/uploads/2017/05/NSPM_May-2017_final.pdf.

⁶ Essentially, the Energy Use Intensity (EUI) expresses a building or system's energy usage as a function of size, service level, or other characteristics such as square footage, or performance indicator such as gallons of hot water, miles traveled or GDP.

Peak Demand Savings (kW)	TBD	Targeted Peak kW*	<p>Demonstrate annual progress towards 3-Year Targets.</p> <p>Update targeted locations based on state / utility prioritization.</p>	<p>By 2030, costs of energy use are XX% of business-as-usual long-term planning system forecasts.</p> <p>By 2030, societal savings return on Hawai'i Energy investments are X.X.</p>
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TABLE 2. INCLUDE EVERYONE IN HAWAII’S CLEAN ENERGY SYSTEM TRANSITION

This focus area, also known as “*Hard-to-reach customers, communities, and the energy burdened*” represents a total 17% weighting in current performance metrics in PY18. Hawaii Energy proposes the following evolutions to this focus area’s existing metrics:

Percent of spend for counties and city of Honolulu (% of \$’s)

Creating balanced targets that are appropriately representative of costs and opportunities can manage equity interests. The revisions proposed to the Total Resource Benefit (TRB) performance metric associated with the *Clean Energy Solutions* focus area above can be leveraged to more effectively align budgetary targets with benefits to gain market efficiencies through broader portfolio integration and Improve the overall level and ability to serve equity objectives.

Small business and multifamily customers served and energy saved (#, kWh)

Participation rates and impact show breadth and depth of service coverage. Hawaii Energy recommends that milestones are developed to better serve current and future equity interests. The purposeful intent of evolving this metric is to develop data analytics tools to map underserved and statewide energy at-risk factors and representation, so that:

- energy burden factors are incorporated into planning targets,
- TRB cost-effectiveness revisions appropriately account for the greater return from energy savings due to increased rates of economic activity and reinvestment and additional avoided costs associated with serving and saving energy for lower income customers (e.g. systemic costs like arrearage reductions and other economic impacts).

Existing - PY18		Considering for PY19-P21		
Annual Performance Metric	Weight	3-Year Target Metrics <i>(Performance Requirement)</i>	Annual Progress Indicators <i>(Reporting Requirements)</i>	Long-term Goals <i>(Market Transformation)</i>
Percent of spend for islands of Hawaii, Maui, and the city and county of Honolulu (\$)	TBD	Minimum Spending (\$) target at county and sector level – see associated TRB target <ul style="list-style-type: none"> • County/City • Sector <ul style="list-style-type: none"> ○ Residential ○ Low income 	Demonstrate annual progress towards 3-Year Targets.	All residents experience the benefits of the energy system transition, with equitable representation in program spend and benefits (TRB \$).
Number of small business and multi-family customers served and energy saved, (#, kWh)	TBD	Minimum participation by small and hard-to-reach businesses (defined kW or kWh threshold)	Update targeted locations based on state / utility prioritization.	By 2030, reduce energy burden on low income customers by XX%.

TABLE 3 STRENGTHEN LOCAL COMMUNITIES AND BUSINESSES

This focus area, also known as “*Strategic Planning, Market Transformation, and Economic Development*” represents a total 13% weighting in current performance metrics in PY18. Hawai’i Energy proposes the following evolutions to this focus area’s metrics:

Stable & Strategic Market Support

Markets function more efficiently with better information and confidence in near and mid-term outlooks. These factors reduce risks and costs associated with volatility and uncertainty that dampen adoption and supply-chain uptake of clean energy solution products, skills and awareness. An increase in the stability & strategic support provided by Hawai’i Energy program activities is necessary to accelerate the market conditions to efficiently drive and sustain market transformation in 3 key areas:

- Supply Chain – trusted relationships, investment and experience
- Collaboration – share resources to enhance value with partners
- Innovation – vet and deploy new approaches and technologies

Measurement and Tracking

There are more comprehensive and consistent ways to plan and manage program strategic market development activities. Planning for, and measuring of market transformation impacts and progress can be made more reliably useful with data-driven approaches based on:

- Retail and distributor sales data
- Advanced home and business energy monitoring systems
- Energy cultures survey instruments (what people “Have”, “Think”, and “Do”)

Balance Opportunity & Risk

Spending caps can bound and balance resource risks with more ambitious investments in opportunities within a framework that can flexibly adapt to rapidly changing conditions.

Existing - PY18		Considering PY19-P21		
Annual Performance Metric	Weight	3-Year Target Metrics (<i>Performance</i> Requirement)	Annual Progress Indicators (<i>Reporting</i> Requirements)	Long-term Goals (Market Transformation)
Customer Satisfaction				
Behavior modification (hours, events, videos)	TBD	Minimum spending (\$) target for non-resource acquisition activities Targets, # of: <ul style="list-style-type: none"> • “Clean Energy Allies” (e.g. BPI certifications or in-network partners) • “Demand Management Ready” products installed, or customers served • “Clean Energy Collaboration” projects Milestone Achievement: <ul style="list-style-type: none"> • “Energy Culture” baseline, trends, and target reports • Code compliance report 	Demonstrate annual progress towards 3-Year Targets, Summarize program activities/data contributed toward milestone achievement. Develop a data-driven clean energy strategy roadmap.	Follow a data-driven 5 – 10 year clean strategy roadmap to project, manage, and drive the state’s transition to less expensive, more resilient, and cleaner energy system.
Professional development & technical training (hours)	TBD			
Energy in decision making (participating orgs, groups)	TBD			
Codes and standards (hours, events, reports)	TBD			
Clean Energy Collaboration (projects)	TBD			

Other Planning Considerations

In order to facilitate the review of this document, the following baseline assumptions are provided for reference:

- PY18 operated at a 40/60 split between residential and commercial due to declining lighting impacts. The new triennial plan will seek to return to the **45/55 split** as the program has planned around in the past.
- There have been savings reductions in both the **TRM and NTG ratios**, particularly in lighting and peer group program. This will reduce savings in PY19 and beyond.
- Additionally, a reduction in **system loss factor** (approximately 5.4% from Program level savings) with further reduce savings.
- Anticipating **avoided cost updates** in the future:
 - Reduction in cost of IPP procurements
 - How /when to include:
 - Temporal values
 - Locational values
 - Carbon benefits
 - Other non-energy benefits
- **HSWAC** is now forecasted to have partial completion in the upcoming triennial. The program will need to start managing for this \$7+ Million obligation, particularly in the last year of the triennial.

Coordination with the Hawaiian Electric Companies

We know that this broader set of objectives will require increased collaboration with the Hawaiian Electric Companies. We are committed to investing in these collaborative efforts to most efficiently and cost-effectively deploy Hawai'i Energy resources, better engage trade allies, businesses and residential customers, and accelerate the investment and adoption of the clean energy technologies. Together these investments will keep more dollars in Hawai'i's economy and reduce customer energy costs, as well as ensure increased grid benefits to achieve a 100% renewable energy system.

We also recognize timing is a challenge with respect to Hawaiian Electric Companies' Integrated Grid Resource Planning process with the filing of Hawai'i Energy's 3-year program plan. Hawai'i Energy is committed to developing both short term and long term coordinated strategies to provide the best resources and results to Hawai'i businesses and families.

Hawai'i Energy is participating in five of the IGP working groups (distribution planning, forecast assumptions, grid services, competitive procurement, and resilience) as well as the IGP Stakeholder Council to ensure coordination. Hawai'i Energy recognizes the need for greater collaboration in the next triennium and will be dedicating additional resources to support longer-term coordination and strategic planning.

Planning Budget

The programs have been operating at a significantly reduced budget over the PY16-18 triennial period. This has limited our ability to invest in the future pipeline of projects. As discussed above, the program will need to refocus on a number of areas where funding had been reduced in the past in order to increase deeper savings penetration. **We will be proposing an average annual budget of around \$39 Million for PY19-21** in order to have the proper funding to continue significantly contributing to the Energy Efficiency Portfolio Standard. Given the planned reduction in lighting, along with the considerations outlined above, savings are going to cost more. In spite of all of this, energy efficiency remains the lowest cost resource.

Figure 1: PY19-21 Core Program Goals Breakdown reflect the redesigned budgeted allocations for each of the three Core Programs Goals. We are proposing a slightly higher budget for our core energy efficiency programs, along with an increased investment in accessibility and affordability in addition to new program initiatives. These changes indicate the evolving direction of Hawai'i Energy's portfolio to reflect a fine-tuning of existing EE programs while expanding greater reach into traditionally hard-to-reach communities and incentivizing new program areas such as demand response, storage, and electrification of transportation. This demonstrates a meaningful increase from 17% to 21% in Accessibility & Affordability, while maintaining Market Transformation & Economic Development at 8% of the portfolio.

Figure 1

