TECHNICAL ADVISORY GROUP

HAWAII PBF PROGRAM

June 27, 2024
9:30 a.m. to 11:30 p.m.

Hawai‘i Energy offices at 45 N. King Street, Suite 500, Honolulu (with virtual option via Teams)

REMINDERS

- Remote participants, please mute your lines when you aren't speaking – we'd like to keep the lines open so you can easily join the conversation
  - You may also use the "raise hand" or chat functions
- Please identify yourself and your organization when speaking
- We encourage participants to ask questions and contribute their constructive comments
  - Silence during a discussion implies agreement

COMMISSION WELCOME

AGENDA & INTRODUCTIONS

JENNIFER BARNES

ENERGY EFFICIENCY MANAGER TEAM

AGENDA

- 9:30 – Agenda & Introductions
- 9:40 – Final Findings from PY22 Verification
- 10:10 – Custom Project Guidance Document Update
- 10:30 – Hawai‘i Energy Strategic Roadmap
- 10:55 – Valuing Benefits to Society
- 11:20 – Wrap up
- 11:30 – Adjourn

INTRODUCTIONS BY ORGANIZATION

FINAL FINDINGS FROM PY22 VERIFICATION REPORT

ALEX CHAMBERLAIN

APPLIED ENERGY GROUP

SUMMARY OF VERIFICATION ACTIVITIES

CET

Tracking Database Replication

- All deemed and semi-deemed measures
- First-year kWh, lifetime kWh, and peak demand kW
- Total Resource Benefits ($)

Desk Reviews & Onsite Visits

- Simple (BEEM, BHTR, REEM, RESM, and RHTR)
- Complex (CBEEM, CREEM)
- Excluded BESM and upstream lighting

Grid Services & GHG Emissions

- Count of grid services-eligible measures
- kWh/kW conversion to barrels of oil & tons of GHG

Non-CET

Affordability & Accessibility

- Economic Disadvantaged
  - *BHTR and RHTR*
  - *Community-based energy efficiency (CBEE)*
- Island Equity

Market Transformation & Economic Development and Customer Satisfaction

- Reviewed workshop attendance and other supporting documents
- Results of Medallia (business) and in-house survey results

LMI PIM Awards*

- *Awards go to HECO, not Hawai‘i Energy
- Associated with RHTR and A&A programs

DEFINITIONS

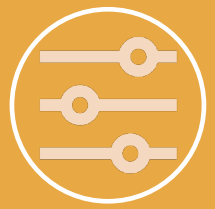
Three different sets of data in the verification report:

- **Reported** or "claimed" program accomplishments by Hawai'i Energy in terms of energy savings and associated performance awards
- **Verified** energy savings and performance awards verified by EM&V contractor (AEG)
  - Reflects adjustments made to savings claimed through verification efforts (savings replication, desk reviews, on-site visits)
- **Targets:** goals as stipulated in triennial plan, against which PBFA awards are determined (which may be energy savings, number of products, tons GHG reductions, etc.)
  - For some metrics, there is just a single numeric target that must be met or exceeded
  - For others, there is a 90% minimum that allows for a partial award (or the full award for meeting or exceeding the target)
  - Both claimed and verified savings adhere to the same targets

CLEAN ENERGY TECHNOLOGIES (CET) KEY TAKEAWAYS

Hawai‘i Energy’s implementation of the TRM algorithms for prescriptive programs was near perfect.

We made minimal impactful TRM adjustments, leading to TRM adjustment factors close to 1.0 for all programs.



AEG verified 101% of Hawai‘i Energy’s energy savings.

Despite a variety of adjustments across many projects and programs, Hawai‘i Energy achieved 101% of claimed first-year savings and 100% of claimed peak demand reduction, attesting to Hawai‘i Energy’s database accuracy.

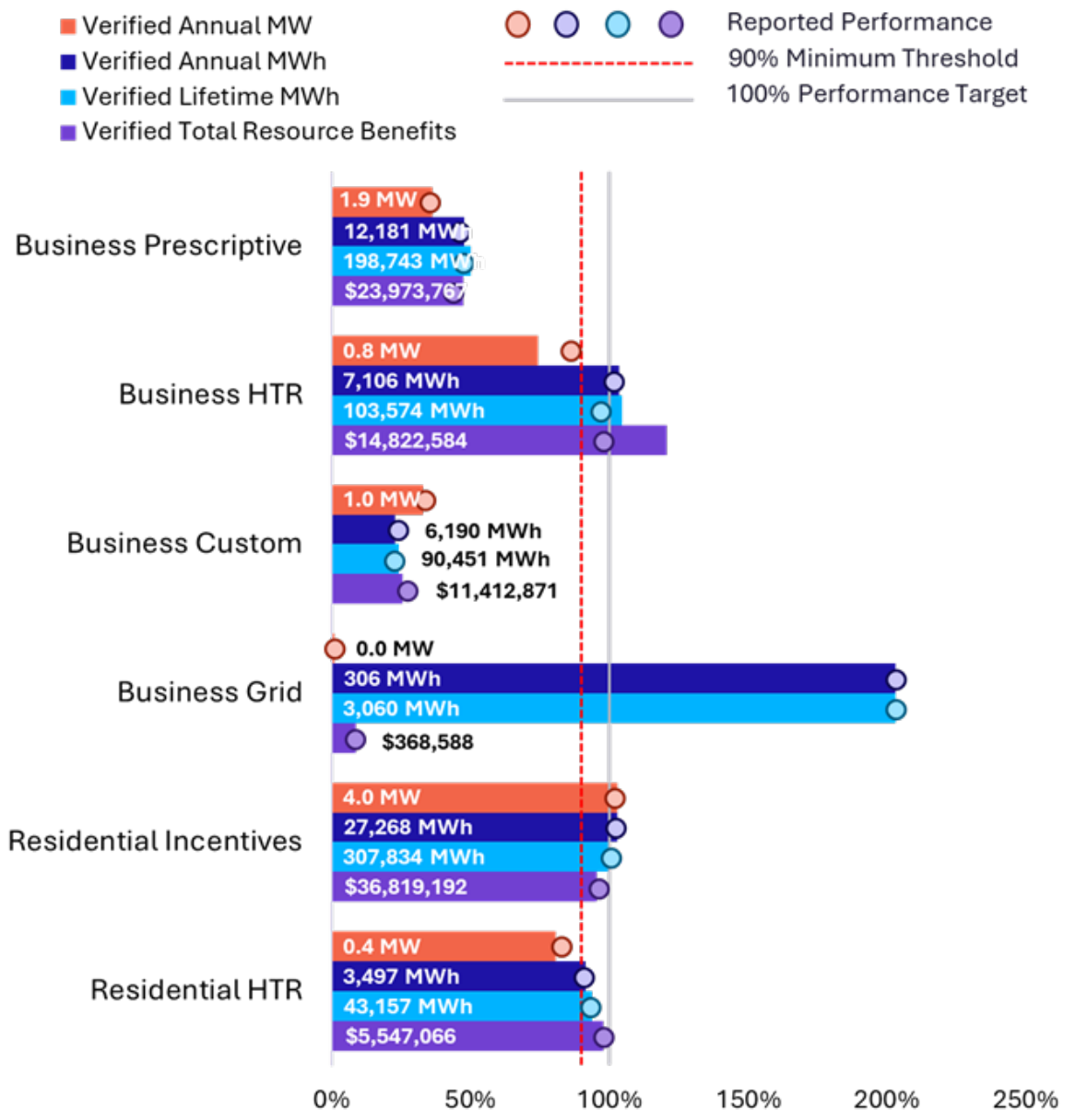
Hawai‘i Energy did not meet its target for Grid Service Ready measures.

Measures included grid-interactive water heaters, smart devices, and equipment that supports demand response (DR).

After achieving 200% of its target in PY21, Hawai‘i Energy fell short in PY22 due primarily to high hotel occupancy, causing project delays.

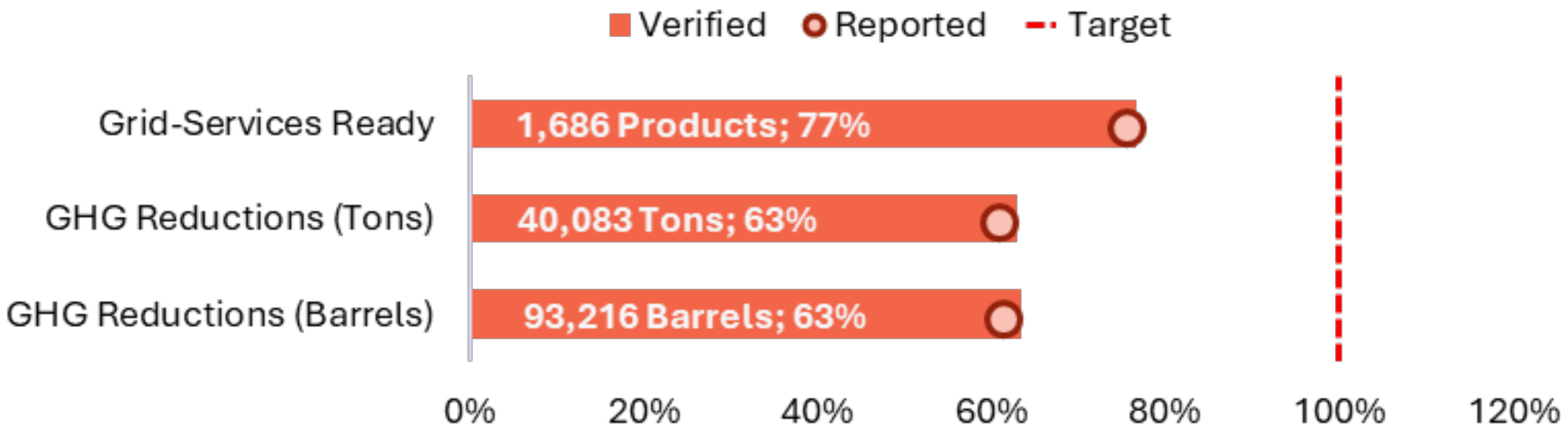
CET KEY TAKEAWAYS

- **Business Prescriptive** and **Business Custom** programs fell short of all CET targets.
- For **Business Hard-to-Reach** programs, Hawai‘i Energy claimed awards for each CET category except peak demand reduction. In addition to verifying those awards, AEG verified realization rates in excess of 100% for lifetime energy savings and TRBs, increasing those awards to their full amounts.
- Hawai‘i Energy achieved CET awards for all **Residential Hard-to-Reach** and **Residential Incentives** categories except for peak demand reduction for RHTR. AEG’s verification decreased the sum of residential awards slightly.



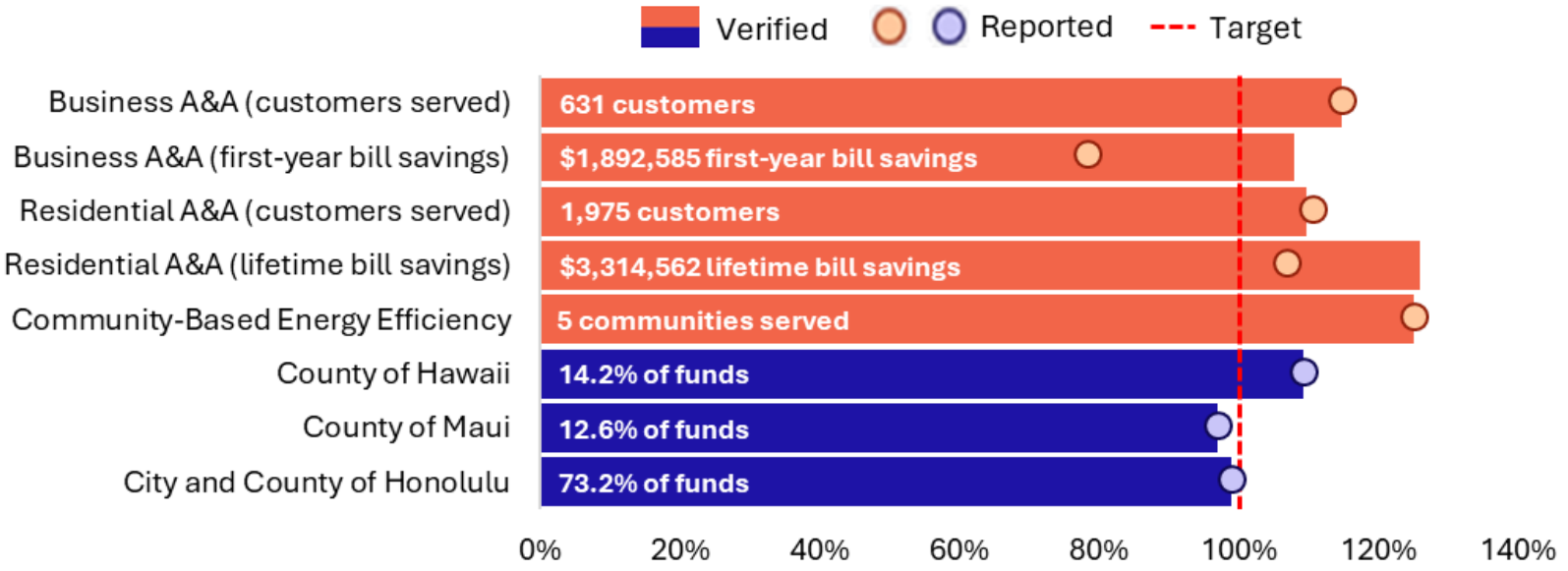
CET KEY TAKEAWAYS

- Hawai‘i Energy substantially exceeded the Grid Services Ready target in PY20 and PY21 but fell 23% short in PY22.
- GHG Reductions targets were not achieved, consistent with CET energy savings awards.



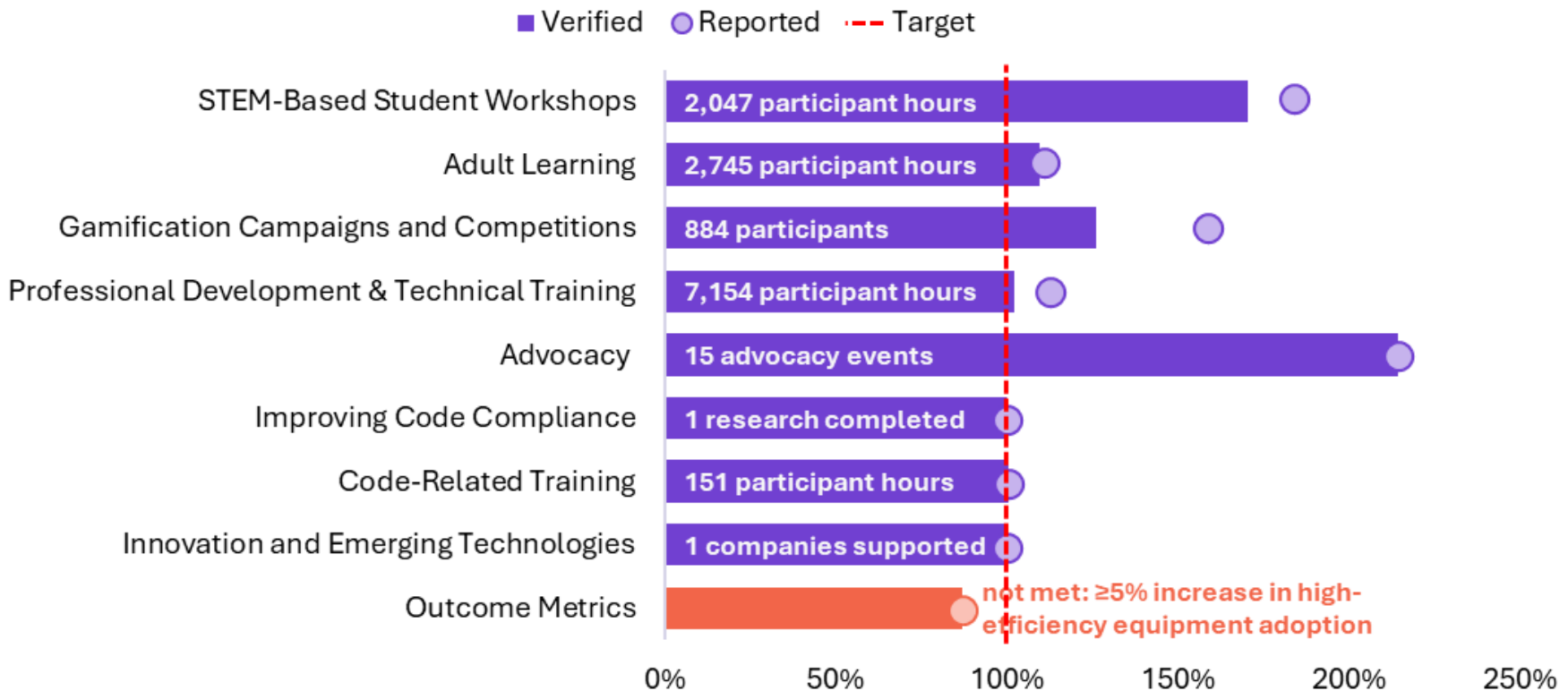
AFFORDABILITY & ACCESSIBILITY KEY TAKEAWAYS

- **Hawai‘i Energy achieved all Economically Disadvantaged performance targets, even for Business A&A first-year bill savings.**
  - However, like in PY21, Hawai‘i Energy fell short of its Maui funding target, which resulted in missing all Island Equity awards.



MARKET TRANSFORMATION & ECONOMIC DEVELOPMENT (MTED) KEY TAKEAWAYS

- **Hawai‘i Energy met or exceeded all MTED targets** except for “Outcome Metrics,” a new measurement of high-efficiency commercial kitchen equipment adoption.



LOW-TO-MODERATE INCOME (LMI) PERFORMANCE INCENTIVE MECHANISM (PIM)

- The LMI PIM came into effect in PY21 and seeks to incent Hawaiian Electric to collaborate with Hawai‘i Energy in the delivery of energy savings to LMI customers.
- AEG calculated the LMI PIM awards associated with the RHTR and A&A programs implemented by Hawai‘i Energy.
- The approach aims to calculate the additional net benefits customers received for RHTR and A&A initiatives by comparing first-year energy savings, peak demand savings, participation, and first-year bill savings targets to the verification results.
- Because of significant energy savings shortfalls, only an LMI PIM award for participation was achieved.

RECOMMENDATIONS

Adhere to the documentation requirements provided in Custom Project Guidance Document.

Hawai‘i Energy adhered to Custom Project Guidance better than it did in PY21 but still leaves room for improvement, especially with respect to justification for early retirement projects.

Improve Energy Advantage documentation and data accuracy in tracking database.

Due to a database error, reported coincidence factors (CFs) routinely exceeded 1.0, inflating claimed demand reductions. Additionally, it can be difficult to parse and process project documentation.

RECOMMENDATIONS

Indicate the year/vintage of the baseline on projects for which the baseline case depends on the calendar year.

For example, the PY22 TRM has different guidance for ductless split system AC units installed in calendar years 2022 and 2023. Without project documentation it can be difficult to ascertain the correct baseline.

Set the Refrigeration Efficiency target as a 5% increase over the previous year's participation.

In PY21, Hawai'i Energy fell short of its target; in PY22, the original missed target was increased by 5%, further distancing the goalposts.

TRM STATUS AND NEXT STEPS

PY24 TRM v1 – Approved and Posted

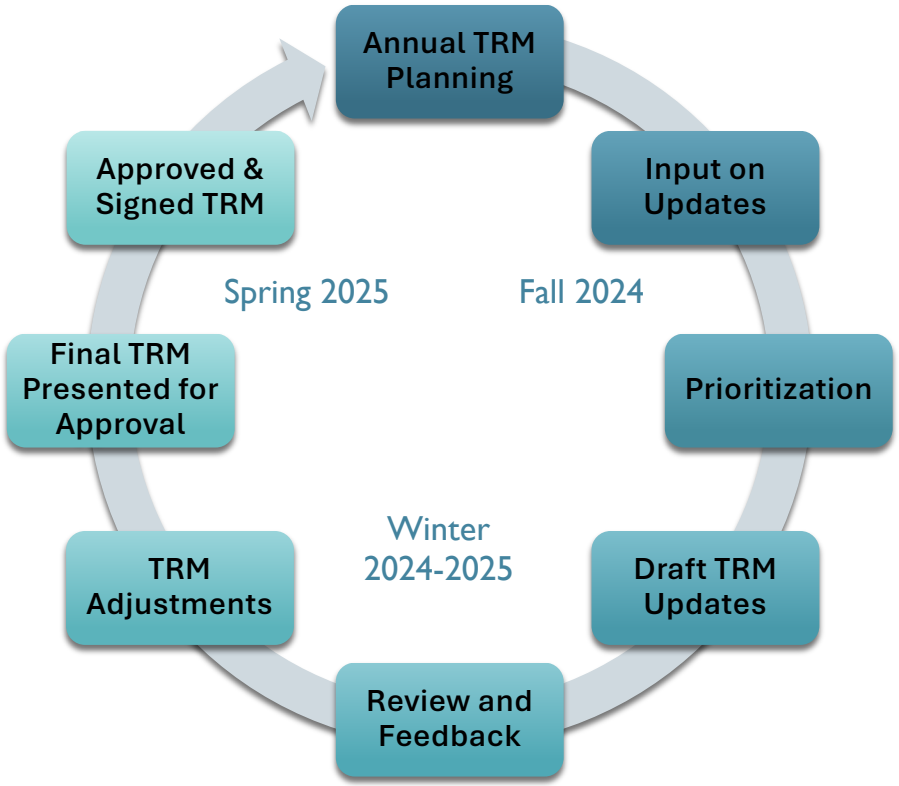
- 2 new measures: horticulture lighting and distribution transformer
- 6 measure updates: 3 residential & 3 commercial
- Updates to emission rates in GHG calculator
- Updates to codes & standards tracker
- Sunset dates for lighting measures with fluorescent baselines (HI HB 192 Act 225)
- Sunset dates for VFD pool pumps (10 CFR 431.485)

PY24 TRM v2 (Mid-year Update)

- To be conducted in Fall 2024, as needed and if approved by the HPUC
- Potential content to update:
  - Any new measures of interest for PY24
  - Any needed corrections or clarifications

PY25 TRM v1

Will follow the annual TRM update workflow:



CUSTOM PROJECT GUIDANCE DOCUMENT UPDATE

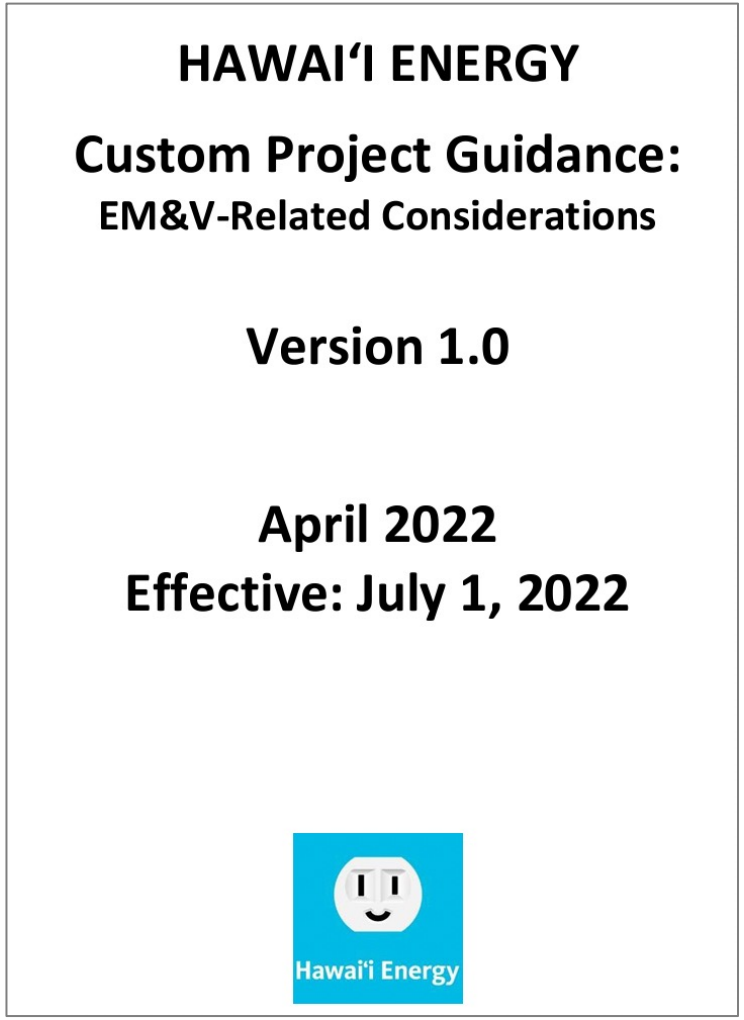
JENNIFER BARNES

ENERGY EFFICIENCY MANAGER TEAM

BACKGROUND

Evaluation guidelines for custom projects were developed in 2022 to supplement the Technical Reference Manual (in effect as of July 1, 2022)

- The document provides guidance regarding documentation, data collection and analysis for EM&V of custom projects
- The **goal** is that the documentation and savings calculations must be sufficiently **transparent** to allow another analyst to assess program eligibility, understand the savings analysis, and be able to **replicate** calculations if needed



BACKGROUND

There was an expectation that the guidance would be **updated periodically** to:

- address program modifications,
- incorporate findings during the verification process,
- align with updates to the TRM or TRM Framework, or
- other future input from the EM&V Contractor, EEM, TAG, HPUC or Hawai‘i Energy

The goal of the review process was to strike an appropriate balance between ensuring transparency and verification of savings calculations and not over burdening customers with excessive documentation requirements

2024 UPDATES TO THE GUIDANCE DOCUMENT - SUMMARY

1	Set a **minimum threshold for M&V** requirements
2	Replace **standard industry practice** as the baseline case
3	Change **early retirement justification and replacement useful life** to reflect real world conditions
4	Update **itemized invoice requirements** based on what is typically available
5	Develop a process for a more **"embedded" EM&V process** for review of custom projects

The updates we are recommending are those that either Hawai'i Energy or the EEM consultant flagged as possible areas for improvement, and are consistent with practices used in other jurisdictions

(1) MINIMUM THRESHOLD FOR M&V

Update:

- Set a minimum threshold for conducting M&V on custom projects (v. the current guideline that implies it is always required).
- Considerations in addition to project size: size of the project savings, expected uncertainty, and calculation methods.

Rationale for update:

- Performing M&V on small savings projects or where there are small uncertainty levels does not provide ratepayer benefits in relation to the M&V cost.
- Similarly, reducing M&V requirements on small savings projects or where there is small uncertainty levels benefits ratepayers by allowing Implementer costs to generate additional and more accurate savings on other projects.

(3) EARLY RETIREMENT / REPLACEMENT USEFUL LIFE

Update:

- Eliminate the age of equipment as a factor in determining early retirement (rely on customer attestation, which is included as an option in the current guidelines).
- Consider adopting a standard replacement useful life that is not dependent on the age of equipment (such as 1/3 of the EUL).

Rationale for update:

- Age of equipment is difficult to determine / verify, and it does not indicate how much longer the measure would last.
- Often if the age of equipment is estimated to exceed the EUL, it would not qualify for early retirement (which has a lower baseline and leads to additional savings v. replace on burn out). The EUL is the median age of equipment, so 50% of equipment will exceed the value.

(2) STANDARD INDUSTRY PRACTICE BASELINE

Update:

- Eliminate the use of standard industry practice (SIP) as a baseline option and use Code and/or ASHRAE 90.1. If neither of these apply, then use existing conditions.

Rationale for update:

- There are often multiple predominant technologies of varying efficiencies making it difficult to determine the true SIP efficiency.
- SIP baseline policy is a deterrent to energy efficiency activity.
- The cost of determining SIP in these cases is often more than the ratepayer benefit.

(4) ITEMIZED INVOICE REQUIREMENT

Update:

- Explicitly allow options where itemized invoices are not available, such as scope of work or design documents with a final paid invoice.
- Goal of having this information are to ensure that the measure(s) was installed and establish the customer cost.

Rationale for update:

- A lack of itemized invoices is likely more common than the "limited exceptions" or 10% noted in the guidelines.
- Requiring itemization of the energy efficiency measure in an invoice requires additional contractor work and is a deterrent to participation.

(5) EMBEDDED EM&V FOR CUSTOM PROJECTS

Update:

- Set up a process where the program submits custom projects for review by the EM&V contractor before projects are approved.
- This process could be done on a batch basis such as once per month.
- The ex post EM&V process would be streamlined for these projects (to ensure efficiency).

Rationale for update:

- Reduce risk / uncertainty for the program by providing EM&V input before projects are approved.
- Improve tracking of project information with more real-time review and discussion with EM&V.
- Better evaluation realization rates.

NEXT STEPS

- EEM to **finalize updates** to the custom guidance document, taking into account TAG feedback and discussions with HPUC.
- The updated guidance document will be **posted on Hawai'i Energy's web**site (where the current guidelines are located):
- https://hawaiienergy.com/wp-content/uploads/Custom-Project-Guidance.pdf

HAWAIʻI ENERGY STRATEGIC ROADMAP

CAROLINE CARL

LEIDOS/HAWAIʻI ENERGY

2030 STRATEGIC ROADMAP

Program Years 2022-2030

Hawai'i Energy

Hawai'i Energy will be a **reliable resource that empowers consumers to use energy wisely, creates pathways for the adoption of clean energy solutions, and spurs green economic growth.** To achieve its vision, Hawai'i Energy will:

Hawai'i Energy

Incentivize the adoption and advancement of clean energy technologies to achieve the following by 2030:

- **Contribute to Hawai'i's Energy Efficiency Portfolio Standards (EEPS) goal[3] by reducing the amount of electricity used in the state by 1,100-1,200* GWh from 2022-2030**
- **Provide over 21 MW of flexible peak load reduction**

Encourage the pursuit of smart, optimized buildings

Increase customer participation, especially for those experiencing higher energy burdens, lower energy literacy, limited access to programs, and fewer financial means

Evolve market transformation efforts to capture energy savings and enhance workforce capacity by driving business and project development

[3] Energy Efficiency Portfolio Standards, Hawai'i Revised Statutes §269-96, www.capitol.hawaii.gov/hrscurrent/vol05_ch0261-0319/hrs0269/hrs_0269-0096.htm#:~:text=%5B%C2%A7269%2D96%5D%20Energy,energy%2Defficiency%20programs%20and%20technologies.

DEVELOPING THE 2030 STRATEGIC ROADMAP

ROADMAP DEVELOPMENT - BACKGROUND

Beginning in mid-2020, the Strategic Roadmap project was a collaborative effort between select members of Hawai‘i Energy’s team, PUC commissioners and staff, the EEM and Evaluation, Measurement and Verification (EM&V) teams, and Hawai‘i Energy’s consultants Brio and VEIC.

State Government	County Government	Private	Nonprofit	Other EE Programs
Hawai‘i PUC	City & County of Honolulu – Office of Climate Change, Sustainability & Resiliency	Hawaiian Electric	Blue Planet Foundation	Efficiency Vermont
Hawai‘i State Energy Office	County of Maui	2050 Partners (EEM)		Energy Trust of Oregon
State Consumer Advocate	County of Hawai‘i	Hawai‘i Energy’s Strategic Advisory Board		Northwest Energy Efficiency Alliance
	County of Kaua‘i			NW Natural

Table 1: Stakeholders interviewed for Strategic Roadmap

ROADMAP DEVELOPMENT – GUIDING PRINCIPLES

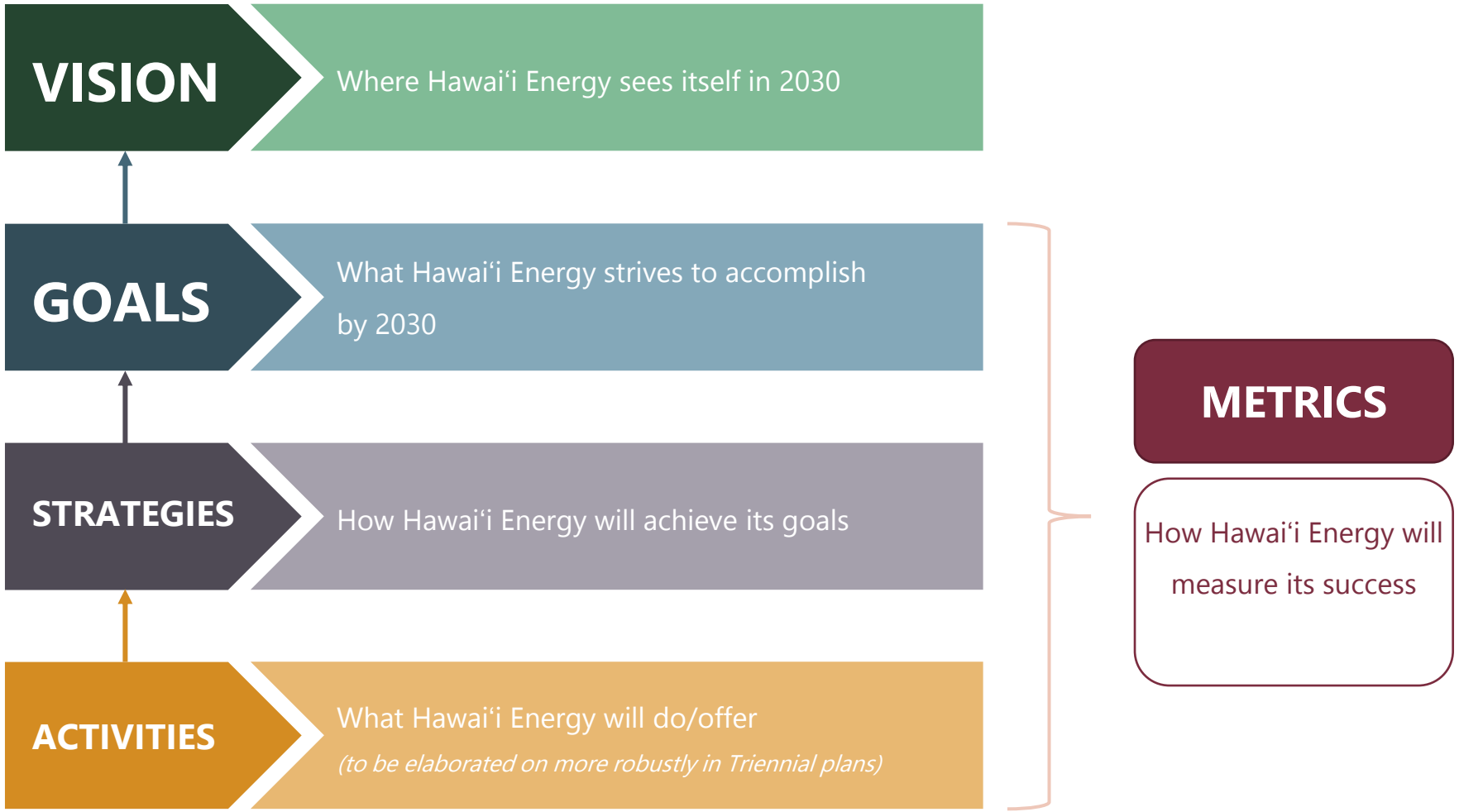
The team used the following guiding principles to shape the development of the Strategic Roadmap and guide the implementation of all tactics and actions listed herein.

- Deliver benefits that shape a cleaner, more resilient future for island residents and businesses
- Reduce the energy burden for Hawai'i's residents and businesses
- Serve as excellent stewards of public resources while avoiding duplicative efforts
- Foster a culture of flexibility to nimbly respond to market forces and opportunities
- Provide quality customer service
- Operate with diversity, equity and inclusivity top of mind
- Cultivate robust relationships with stakeholders and partners
- Leverage data in planning and decision-making
- Innovate to accelerate impact

ROADMAP DEVELOPMENT – FRAMEWORK

Structure and Definitions

The following framework illustrates how each element of the Roadmap works together:



THE ROADMAP: HAWAIʻI ENERGY IN 2030

VISION – WHERE HAWAIʻI ENERGY SEES ITSELF IN 2030

Be a reliable resource that empowers consumers to use energy wisely, creates pathways for the adoption of clean energy solutions, and spurs green economic growth.

GOALS - WHAT HAWAIʻI ENERGY STRIVES TO ACCOMPLISH BY 2030

Hawaiʻi Energy will focus its programs and technical expertise over the next ten program years on the following goals:

Electricity Use Reduction
Incentivize the adoption and advancement of clean energy technologies to achieve the following by 2030:

- Contribute to Hawaiʻi's Energy Efficiency Portfolio Standards (EEPS) goal by reducing the amount of electricity used in the state by 1,100-1,200 GWh from 2022-2030

Flexible Peak Load Reduction

- Flexibly reduce the state's peak load by 21 MW

Smart Optimized Building Stock
Encourage the pursuit of smart, optimized buildings

Improved Energy Equity
Increase customer participation, especially those who are experiencing higher energy burdens, lower energy literacy, limited access, and fewer financial means

Enhanced Economic Opportunities
Evolve market transformation efforts to capture energy savings, influence positive behavioral changes, and boost workforce capacity by driving business and project development

STRATEGIES - HOW HAWAIʻI ENERGY WILL ACHIEVE ITS GOALS

Hawaiʻi Energy will aim to achieve its goals utilizing the following **fourteen strategies**, categorized under current Core Areas:

Clean Energy Technologies & Energy Optimization Initiatives

- Influence consumers to choose the most efficient technologies
- Target the most energy-intensive end uses for efficiency and load management
- Drive adoption of grid-edge solutions
- Expand development of collaboration framework(s) with stakeholders to align efforts and keep energy efficiency and peak demand reduction top of mind

Accessibility & Affordability

- Design and deploy programs that help renters and landlords overcome challenges to adoption of energy-efficient and other clean energy solutions
- Collaborate with industry to identify and engage LMI / ALICE customers to reduce energy burden
- Provide targeted efficiency technology solutions and incentives to hard-to-reach businesses and nonprofits to offset the high cost of operations
- Identify and offer financing solutions for underserved populations to increase program participation

Market Transformation & Economic Development

- Influence behavior change and increase energy literacy
- Provide resources and opportunities in support of workforce development
- Deploy strategic interventions to support energy-efficient product availability throughout supply chain
- Leverage external funding for the development of a green workforce
- Partner with market actors to amplify program offerings and cultivate Hawaiʻi Energy's reputation as a trusted ally
- Support the adoption and implementation of enhanced energy codes and appliance standards – establishing savings attribution for program efforts undertaken

STRATEGIES → ACTIVITIES EXAMPLE

Hawai'i Energy

Hawai'i Energy will aim to achieve its goals utilizing the following strategies, categorized under current Core Areas:

Clean Energy Technologies & Energy Optimization Initiatives

- Influence consumers to choose the most efficient technologies
- **Target the most energy-intensive end uses for efficiency and load management**
- **Drive adoption of grid-edge solutions**
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Accessibility & Affordability

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STRATEGIES → ACTIVITIES EXAMPLE – CLEAN ENERGY TECHNOLOGIES AND ENERGY OPTIMIZATION

Strategies	Strategic Partners (non-PUC/EEM)	Near-Term (PY22-24)	Mid-Term (PY25-27)	Long-Term (PY28-30)
Target the most energy-intensive end uses for efficiency and load management	• Clean Energy Allies • HECO • Project Developers • State and county agencies • Large customers	**Deploy contractor networks to meet the needs for installation and regular system maintenance**	Develop a robust maintenance network to help realize a full suite of value from CET deployment	Ongoing
		Build out new construction programs prioritizing early energy modeling	Deploy new construction program enhancements with targeted rebates for opportunities identified by energy modeling	Ongoing
		Incorporate energy and non-energy benefits when demonstrating customer value for projects	Continue to refine the valuation of non-energy benefits	Ongoing
		Work with HECO to identify target accounts to mitigate grid/system constraints	Refine customer targeting based on HECO's Integrated Grid Planning findings	Evaluate and refine customer targeting efforts

STRATEGIES → ACTIVITIES EXAMPLE – CLEAN ENERGY TECHNOLOGIES AND ENERGY OPTIMIZATION

Strategies	Strategic Partners (non-PUC/EEM)	Near-Term (PY22-24)	Mid-Term (PY25-27)	Long-Term (PY28-30)
Drive the adoption of grid-edge solutions	• HECO • Technology companies (e.g., GridPoint) • EV charging station contractors/retailers • Grid-Interactive Efficient Building Working Group • State and county agencies	**Coordinate with existing aggregators to target customers with efficiency and load flexibility for identified grid services**	Explore opportunities for Hawai'i Energy to act as an aggregator Pilot aggregator activities initiated by the Hawai'i Energy programs Streamline customer experience when connecting demand-side technologies for load flexibility (i.e., simplify communication protocols, increase Hawai'i Energy's guidance during integration)	Ongoing
		Amplify HECO's efforts related to capacity reduction, grid balancing, load shifting and shedding. Establish a mechanism to value stack with efficiency rebates	Ongoing	Ongoing

STRATEGIES → ACTIVITIES EXAMPLE – CLEAN ENERGY TECHNOLOGIES AND ENERGY OPTIMIZATION

Strategies	Strategic Partners (non-PUC/EEM)	Near-Term (PY22-24)	Mid-Term (PY25-27)	Long-Term (PY28-30)
(continued) **Drive the adoption of grid-edge solutions**	• HECO • Technology companies (e.g., GridPoint) • EV charging station contractors/retailers • Grid-Interactive Efficient Building Working Group • State and county agencies	**Increase EOI educational campaigns**	Review effectiveness of campaigns/refine strategy	Ongoing
		Support expanded clean transportation market by growing uptake and customer familiarity with advanced charging infrastructure	Refine alternative fuel rebate programs to align with evolving market trends	Evaluate necessity of alternative fuel rebate programs based on availability of alternative fuel infrastructure network

STRATEGIES → ACTIVITIES EXAMPLE

Hawai'i Energy

Hawai'i Energy will aim to achieve its goals utilizing the following strategies, categorized under current Core Areas:

Clean Energy Technologies & Energy Optimization Initiatives

- Influence consumers to choose the most efficient technologies
- Target the most energy-intensive end uses for efficiency and load management
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- Expand development of collaboration framework(s) with stakeholders to align efforts and keep energy efficiency and peak demand reduction top of mind

Accessibility & Affordability

- Design and deploy programs that help renters and landlords overcome challenges to adoption of energy-efficient and other clean energy solutions
- **Collaborate with industry to identify and engage LMI / ALICE customers to reduce energy burden**
- Provide targeted efficiency technology solutions and incentives to hard-to-reach businesses and nonprofits to offset the high cost of operations
- Identify and offer financing solutions for underserved populations to increase program participation

Market Transformation & Economic Development

- Influence behavior change and increase energy literacy
- Provide resources and opportunities in support of workforce development
- Deploy strategic interventions to support energy-efficient product availability throughout supply chain
- Leverage external funding for the development of a green workforce
- Partner with market actors to amplify program offerings and cultivate Hawai'i Energy's reputation as a trusted ally
- Support the adoption and implementation of enhanced energy codes and appliance standards – establishing savings attribution for program efforts undertaken

STRATEGIES → ACTIVITIES EXAMPLE – ACCESSIBLITY AND AFFORDABILITY

Strategies	Strategic Partners (non-PUC/EEM)	Near-Term (PY22-24)	Mid-Term (PY25-27)	Long-Term (PY28-30)
Collaborate with industry to identify and engage low- to moderate-income / ALICE customers to reduce energy burden	• Aloha United Way • Consumer Advocate • Federal, state and county agencies • Healthcare industry and providers • HECO • Social services providers	**Increase coordination with national programs specializing in renter initiatives**	Ensure ongoing refinement of local program offerings in alignment with best practices	Ongoing
		Increase targeting efforts with strategic partners to refine qualifying participant characteristics and increase the granularity of targeting through data sharing	Ongoing Expand partnerships	Ongoing
		Highlight a suite of energy and non-energy benefits across the Social Determinants of Health (SDOH)	Evaluate effectiveness and track national trends to inform local efforts	Incorporate SDOH in future program design and planning
		Leverage housing agency relationships to explore customized in-unit packages to upgrade all installed equipment	Pilot customized in-unit package incentive program with housing agencies	Evaluate success

STRATEGIES → ACTIVITIES EXAMPLE

Hawai'i Energy

Hawai'i Energy will aim to achieve its goals utilizing the following strategies, categorized under current Core Areas:

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- **Deploy strategic interventions to support energy-efficient product availability throughout supply chain**
- Leverage external funding for the development of a green workforce
- Partner with market actors to amplify program offerings and cultivate Hawai'i Energy's reputation as a trusted ally
- Support the adoption and implementation of enhanced energy codes and appliance standards – establishing savings attribution for program efforts undertaken

STRATEGIES → ACTIVITIES EXAMPLE – ACCESSIBLITY AND AFFORDABILITY

Strategies	Strategic Partners (non-PUC/EEM)	Near-Term (PY22-24)	Mid-Term (PY25-27)	Long-Term (PY28-30)
Deploy strategic interventions to support energy-efficient product availability throughout the supply chain	• Clean Energy Allies • Distributors • Federal, state and county agencies • Retailers • Suppliers	**Review existing programs and identify which are well suited for broader applications of market transformation principles**	Partner with organizations outside of Hawai'i on regional and national MT efforts	Continue to evaluate and evolve MT framework to enhance economic development impacts
		Identify and launch a MT pilot to influence product stocking behaviors using best practices (e.g., market research, impact analysis, MT theories, and logic modeling)	Evaluate and iterate pilot efforts to maximize impact and fundamentally change what products are stacked	Assess overall economic impacts, savings generated and future MT potential
		Identify program value proposition for midstream and upstream market channels, such as incentive levels, marketing and customer awareness	Leverage established market channels to drive value proposition for both their business and customers to increase long-term adoption of clean energy technologies	Assess and evaluate effectiveness; modify as needed

METRICS - HOW HAWAIʻI ENERGY WILL MEASURE ITS SUCCESS

GOAL	METRIC	HOW METRIC IS MEASURED	WHO GATHERS METRIC DATA	WHEN METRIC RESULTS ARE AVAILABLE	NEAR-TERM (PY22-24)	MID-TERM (PY25-27)	LONG-TERM (PY28-PY30)	TOTAL
Electricity Use Reduction	Energy Savings (MWh, MW)	Methods in Verified Savings Report	Hawaiʻi PUC	Annually	329,960 MWh	375,360 MWh	397,800 MWh	**1,103,120 MWh**
					30,650 MWh*	30,650 MWh*	30,650 MWh*	**91,960 MWh***
					54.4 MW	62.2 MW	66.4 MW	**183 MW**
					5.2 MW*	5.2 MW*	5.2 MW*	**15.6 MW***
Flexible Peak Load Reduction	Potential MW reduction	Engineering estimates or research on grid-edge solutions	Hawaiʻi Energy	Annually	6.5 MW	7.4 MW	7.8 MW	**21.7 MW**
Smart Optimized Building Stock	Increase in DER-ready technologies with potential time and location value to the grid	Projects/ demand management products installed, or customers served	TBD	Annually	4,700	5,340	5,650	**15,690**

Table 3a: Roadmap Metrics – Electricity Use Reduction, Flexible Peak Load Reduction and Smart Optimized Building Stock

*Based on 20% of attribution from codes & standards

METRICS - HOW HAWAIʻI ENERGY WILL MEASURE ITS SUCCESS

GOAL	METRIC	HOW METRIC IS MEASURED	WHO GATHERS METRIC DATA	WHEN METRIC RESULTS ARE AVAILABLE	NEAR-TERM (PY22-24)	MID-TERM (PY25-27)	LONG-TERM (PY28-30)	TOTAL
Improved Energy Equity	Energy savings in Residential and Business Hard-to-Reach programs (MWh, MW)	Methods in Verified Savings Report	Hawaiʻi PUC	Annually	35,000 MWh	39,800 MWh	42,200 MWh	**117,000 MWh**
					5 MW	6 MW	6 MW	**17 MW**
Enhanced Economic Opportunities	# of participants	Methods in Verified Savings Report	Hawaiʻi PUC	Annually	4,500	4,500	4,500	**13,500**
	Change in behaviors	Research (TBD)	TBD	Baseline needed and then every three years	TBD	TBD	TBD	**TBD**
	Amount of external funding leveraged (in $) that goes towards the development of a green workforce	Sum of leveraged funds (with description)	Hawaiʻi Energy	Annually	$300,000	$300,000	$300,000	**$900,000**

Table 3b: Roadmap Metrics – Improved Energy Equity and Enhanced Economic Opportunities

ALIGNMENT

The following table showcases how the goals, strategies and metrics are connected:

Strategies are color coded to identify which current Core Program Area they serve

CET & EOI | A&A | MTED

GOALS	Electricity Use Reduction	Flexible Peak Load Reduction	Smart Optimized Building Stock	Improved Energy Equity	Enhanced Economic Opportunities		
METRICS / STRATEGIES	Energy Savings (MWh, MW)	Potential MW reduction	Increase in market saturation of DER-ready technologies with potential time and location value to the grid	Energy Savings in Residential and Business Hard-to-Reach programs	# of Participants	Change in behaviors	Amount of external funding leveraged (in $) that goes towards the development of a green workforce
Influence consumers to choose the most efficient technologies	●			●			
Target the most energy-intensive end uses for efficiency and load management	●	●					
Drive adoption of grid-edge solutions	●	●	●				
Expand development of collaboration framework(s) with stakeholders to align efforts and keep energy efficiency and peak demand reduction top of mind	●	●					

Table 4a: Alignment – Clean Energy Technologies & Energy Optimization Initiatives

ALIGNMENT

Hawai'i Energy

The following table showcases how the goals, strategies and metrics are connected:

Strategies are color coded to identify which current Core Program Area they serve

CET & EOI | **A&A** | MTED

GOALS	Electricity Use Reduction	Flexible Peak Load Reduction	Smart Optimized Building Stock	Improved Energy Equity	Enhanced Economic Opportunities		
METRICS / STRATEGIES	Energy Savings (MWh, MW)	Potential MW reduction	Increase in market saturation of DER-ready technologies with potential time and location value to the grid	Energy Savings in Residential and Business Hard-to-Reach programs	# of Participants	Change in behaviors	Amount of external funding leveraged (in $) that goes towards the development of a green workforce
Design and deploy programs that help renters and landlords overcome challenges to adoption of energy-efficient and other clean energy solutions	●	●		●			
Collaborate with industry to identify and engage LMI / ALICE customers to reduce energy burden				●			
Provide efficient technology solutions and incentives to hard-to-reach businesses and nonprofits to offset the high cost of operations	●	●		●			
Identify and offer financing solutions for underserved populations to increase program participation				●			

Table 4b: Alignment – Accessibility & Affordability

ALIGNMENT

The following table showcases how the goals, strategies and metrics are connected:

Strategies are color coded to identify which current Core Program Area they serve

CET & EOI | A&A | **MTED**

GOALS	Electricity Use Reduction	Flexible Peak Load Reduction	Smart Optimized Building Stock	Improved Energy Equity	Enhanced Economic Opportunities		
METRICS / STRATEGIES	Energy Savings (MWh, MW)	Potential MW reduction	Increase in market saturation of DER-ready technologies with potential time and location value to the grid	Energy Savings in Residential and Business Hard-to-Reach programs	# of Participants	Change in behaviors	Amount of external funding leveraged (in $) that goes towards the development of a green workforce
Influence behavior change and increase energy literacy				●	●	●	
Provide resources and opportunities in support of workforce development						●	
Deploy strategic interventions to support energy-efficient product availability throughout supply chain					●		
Leverage external funding for the development of a green workforce							●
Partner with market actors to amplify program offerings and cultivate Hawai‘i Energy’s reputation as a trusted ally					●		
Support the adoption and implementation of enhanced energy codes and appliance standards – establishing savings attribution for program efforts undertaken					●		

Table 4c: Alignment – Market Transformation & Economic Development

NEXT STEPS

ONGOING / INTERIM REPORTING

PY 2023: Initial release of the Roadmap document with outreach to participating stakeholders and posting on HawaiiEnergy.com

PY 2024+: Utilize as a resource in the development of future Triennial Plans

Continue to identify opportunities for growth and areas of future expansion for programs

Report on progress to PUC/EEM
(frequency to be decided by all parties at a later time)

Beyond 2030: Update the Roadmap, as needed, to meet new and changing needs/goals to support the state's 2045 mandate

Hawai'i Energy

Hawai‘i Energy is honored to be in the position to envision the path to 2030 for the organization.

VALUING BENEFITS TO SOCIETY

JENNIFER BARNES

ENERGY EFFICIENCY MANAGER TEAM

OBJECTIVES

- Overall Objective:

Determine whether & how to create a framework to capture societal benefits in the PBFA portfolio, including which societal benefits to capture & the method for valuing them

- Today's Objective:

Frame the topic & prepare for soliciting TAG input in the October meeting

MORE OPTIONS FOR VALUING SOCIETAL COST BENEFITS

Simple & Easy to Execute ⟷ Complex to Execute

Leverage Goal Setting Process

Establish Carve Outs or Minimums for Desired Customers, Sectors or Measures

Incorporate into Avoided Costs

Use a Societal Discount Rate in the Calculation of Avoided Costs

Incorporate Societal Benefits into Avoided Costs

Develop New Framework

Develop New Societal Cost Test

CARVE OUTS & MINIMUMS

CARVE OUTS & MINIMUMS

Carve outs and minimums are methods for ensuring that minimum levels of spending or savings come from desired customer groups or sectors of interest

Hawai‘i Energy has several metrics to drive desired impacts

These could be revised to better drive the PBFA portfolio to deliver societal benefits

Additional metrics or carve outs could be added

SELECT HAWAIʻI ENERGY METRICS

CET Performance Award

- First-year Energy Savings (kWh)
- Lifecycle Energy Savings (kWh)
- Demand Savings (kW)
- Total Resource Benefit ($ - TRB)*

Includes targets for business & residential hard-to-reach customers

Non-CET Performance Award

- Demand Flexibility (new in PY22)**
- GHG Emissions/Barrels of Oil (multiplier)
- Island Equity – spending levels by island
- A&A - # customers served & $ bill savings
- Customer satisfaction – 1-10 scale
- Community Based Energy Efficiency - # communities served

*TRB = the NPV of the avoided costs of customer-level savings
**No award amount tied to this at this time

USING A SOCIETAL DISCOUNT RATE IN THE CALCULATION OF AVOIDED COSTS

DETERMINATION OF AVOIDED COSTS IN TRM

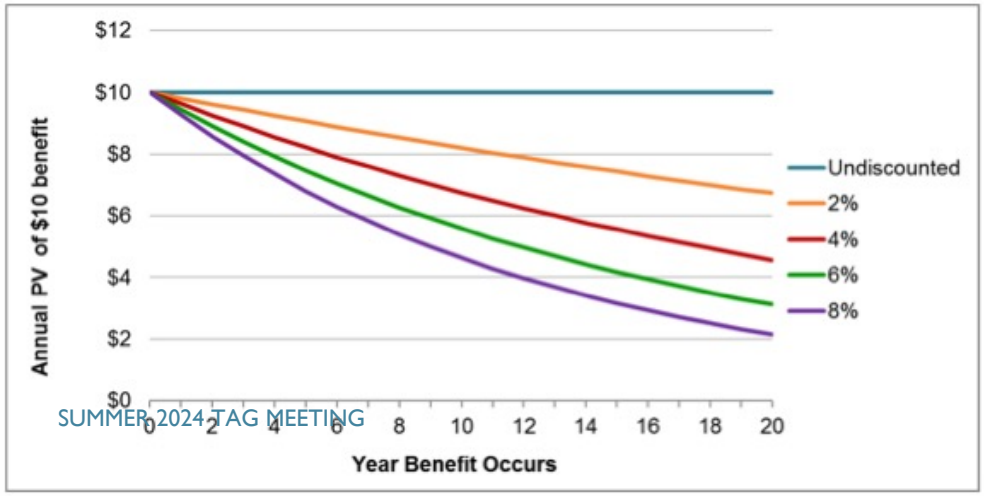
Absent an IGP capacity expansion model simulating distributed electricity resources competing against conventional generation options, avoided costs are determined by escalating the island-specific avoided cost of energy over the measure lifetime, then discounting the stream back to present value.

Parameter	Value	Notes
Avoided Cost of Energy	• Oahu - $0.114 • Maui - $0.153 • Hawai‘i - $0.167	PY22 values
Escalation Rate	3%	Used to escalate the values between years
Discount Rate	6% (current)	Used to determine the net present value of savings

SOCIETAL DISCOUNT RATE

- Applying discount rates turns benefits and costs in different years into comparable values
- A lower discount rate puts greater emphasis on the societal impacts of the program on future generations.

Type of Discount Rate	Indicator	Typical Values
Societal	Societal cost of capital	<0% to 3%
Low-risk	Interest rate on 10-year US Treasury Bond	-1.0% to 3%
Utility Customers on Average	Customer's cost of money	Varies
Publicly-owned Utility	POU cost of borrowing	3% to 5%
Investor-owned Utility	IOU cost of borrowing	5% to 8%



INCORPORATING SOCIETAL BENEFITS INTO THE AVOIDED COSTS

EXAMPLES FROM OTHER STATES

- Arkansas' TRC accounts for non-energy costs and benefits associated with water savings, other fuels, participants' equipment replacement costs, participant measure costs, and additional non-energy benefits (NEBs) for low-income customers.

- Colorado's TRC accounts for avoided costs of compliance with emissions regulations and benefits associated with improved public health, participant health and environmental benefits. Additional non-energy benefits (NEBs) may be included in a 10% adder as determined by the commission.

- Delaware's TRC accounts for avoided environmental compliance costs, reduced emissions, and improved participant health. Delaware also accounts for other non-energy benefits of productivity (avoided O&M costs), non-primary fuel benefits, and water savings.

DISCUSSION

- As stated above, the EM&V contractor and EEM developed a method for estimating an annual avoided cost value for each island
  - This annual value format does not allow for time-dependent valuations, such as GHG emissions reductions valuations
- The TSB working group within the TWG explored developing 8760 avoided cost streams
  - Concluded that it would be possible to extract an 8760 proxy value for avoided cost from the IGP data but that it would take a lot of work
  - Additional work would be required to develop GHG or societal adders
- Bottom line is that this approach requires developing both the 8760 avoided costs *and* the societal adders; need to balance this with the benefits of this approach over others

DEVELOPING A NEW SOCIETAL COST TEST

SOCIETAL COST TEST (SCT) OVERVIEW

The SCT is structurally similar to the TRC, but expands the scope of included costs to those that impact society as a whole, not just the utility and its ratepayers.

- TRC as primary B/C test
- SCT as a secondary test to enhance overall understanding of of costs and benefits

Impact	TRC	SCT
Electric utility system	✓	✓
Other fuel impacts	✓	✓
Host customer impacts	✓	✓
Societal impacts		✓

SOCIETAL COST TEST (SCT) OVERVIEW

The SCT could be helpful in supporting the tracking of progress towards equity and justice goals

- HPUC Energy Equity and Justice Docket
- State legislature Act 238 Climate Mitigation (the costs of inaction)

SCT attributes to consider including:

- Applying a societal discount rate that is lower than the utility cost of capital
- Adding benefits that reflect the societal costs of electricity generation (GHG and/or air quality adder)

Suggest a test period of data gathering, calculations and sensitivity testing

- Data availability and reliability is a limiting factor
- Constraints in quantifying things that are difficult to quantify
- Report on progress at next TAG

Pros & Cons

Setting Minimums or Carve Outs		Adjusting Discount Rate for AC		Incorporating Social Benefits into Avoided Costs		Adding a Societal Cost Test	
Minimum levels of program activity or budget spent for the benefit of specific customers or sectors		Changing the discount rate used to determine avoided costs from the current 6% (utility WACC) to 3% (societal discount rate)		Incorporating societal benefits into the existing avoided cost framework		Developing a SCT to be used to assess the effectiveness of the PBFA portfolio from a societal perspective	
Pros	**Cons**	**Pros**	**Cons**	**Pros**	**Cons**	**Pros**	**Cons**
Ensures that HTR customers receive a share of program benefits Easy to implement through Hawai‘i Energy goal setting	Does not “value” the benefit but rather ensures min. levels of support May need to complete a contract change order if the change is significant	Simple to execute using existing framework	Would apply only to the calculation of TRB Would change the criteria for assessing the entire PBF portfolio, including programs not targeted for A&A	Developing hourly avoided costs would be a significant undertaking	Currently, the avoided costs are a single annual value for each island and not 8760 Unclear the degree to which societal benefits are available	Would allow certain parts of the PBF portfolio, such as A&A, to be assessed separately from programs for market-rate customers Hawai‘i Energy would be able to drive A&A efforts through higher levels of financial support	Would require more effort and resources to develop Unclear the degree to which inputs are available

NEXT STEPS & WRAP UP

JENNIFER BARNES

ENERGY EFFICIENCY MANAGER TEAM

QUESTIONS?

- Please contact Jennifer Barnes at 510-756-1501 or jenniferbarnes@2050partners.com.
- Meeting materials will be posted on www.HawaiiEEPS.org