

TECHNICAL ADVISORY GROUP

HAWAII PBF PROGRAM

March 23rd, 2021

1:00 PM to 2:30 PM HST

via Zoom Webconference

SPRING 2021 TAG MEETING

AGENDA

- 1:00 – Welcome
- 1:05 – Agenda and Meeting Objectives
- 1:10 – PBF Program Update
- 1:30 – HECO Updates and Discussion
- 1:50 – EM&V Activities
- 2:10 – TRM Measure Updates
- 2:20 – Q&A
- 2:30 – Adjourn



TED POPE

ENERGY
EFFICIENCY
MANAGER
TEAM



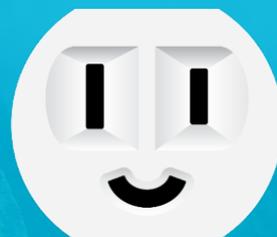
WELCOME
MEETING OBJECTIVES



BRIAN
KEALOHA
HAWAI'I ENERGY



PBF PROGRAM UPDATES AND ANNUAL REVIEW



Hawai'i Energy

**Program Update
Technical Advisory Group
March 23, 2021**

AGENDA

01 Budget Impacts

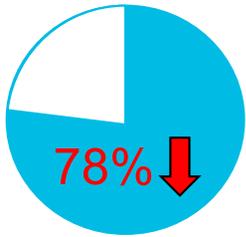
02 Progress Matrix

03 Program Updates

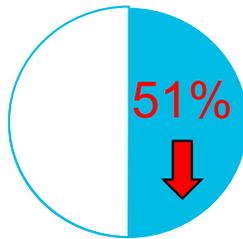
Clean Energy Technologies
Market Transformation & Economic Development
Accessibility & Affordability
Energy Optimization Initiatives

Overall Budget Reduction - \$7 Million

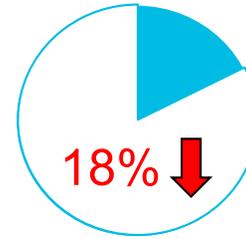
Energy Optimization
Initiatives



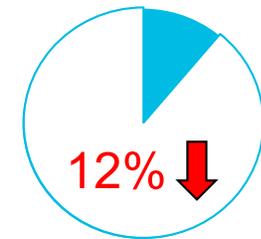
Home Energy
Reports



Market
Transformation

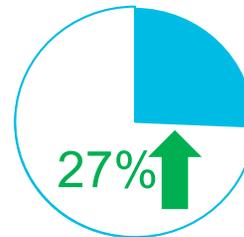


Program Administration
& Marketing



Clean Energy Technologies – No Impact

Accessibility & Affordability





Hawaii Energy

PY20 Progress Matrix

Legend			
	Meeting Goals	Making Progress	Facing Challenges

CLEAN ENERGY TECHNOLOGIES	Key Focus Area	Residential		Commercial	
		Q2	Year-end	Q2	Year-end
	First-Year Energy Reduction				
Lifetime Energy Reduction (new)					
Peak Demand Reduction					
Total Resource Benefit					

ACCESSIBILITY & AFFORDABILITY	Key Focus Area	Q2	Year-end
	Energy Advantage		
	Single & Multifamily Direct Install		
	Community-Based Energy Efficiency (new)		
	EmPOWER		
	Island Equity – County of Hawai'i		
	Island Equity – County of Maui		
	Island Equity – C&C Honolulu		

CET	Key Focus Area	Q2	Year-end
	Grid Services Ready (new)		



Hawai'i Energy

PY20 Progress Matrix

Legend



Meeting Goals



Making Progress



Facing Challenges

MTED BEHAVIOR CHANGE	Key Focus Area	Q2	Year-end
	STEM-based Student Workshops		
	Adult Learning		
	Gamification Campaigns & Competitions		
	Exhibit Educational Resources	N/A	N/A
	Sustained Outreach		
	Behavioral Insights	N/A	N/A

MTED - ENERGY IN DECISION MAKING	Key Focus Area	Q2	Year-end
	Strategic Energy Management (SEM)		

MTED CODES & STANDARDS	Key Focus Area	Q2	Year-end
	Appliance Standards Advocacy (new)		
	Improving Code Compliance	N/A	N/A
	Code-Related Training		
	Leading-edge Technologies & Strategies		

MTED - CLEAN ENERGY INNOVATION HUB	Key Focus Area	Q2	Year-end
	Innovation and Emerging Technologies		

Clean Energy Technologies

Business

- ✓ **COVID Relief increased incentives through December 31, 2020**
 - Hotel Bonus – Limited Time Offer
 - “Do more, Get More” – Bundled Incentives
 - Increased retro-commissioning rebates (4 new projects)



- Driving participation in Maui and Hawai'i Counties remains challenging due to economic downturn
- Do More, Get More incentive offering received less interest than originally anticipated – indicative of many competing priorities for business owners

Residential

- ✓ **COVID relief increased incentive levels through December 31, 2020**
 - All downstream and CEA driven programs (appliances, water heating, air conditioning)
 - Stepped down to standard rebate amounts in Q3 PY20, carefully monitoring participation levels

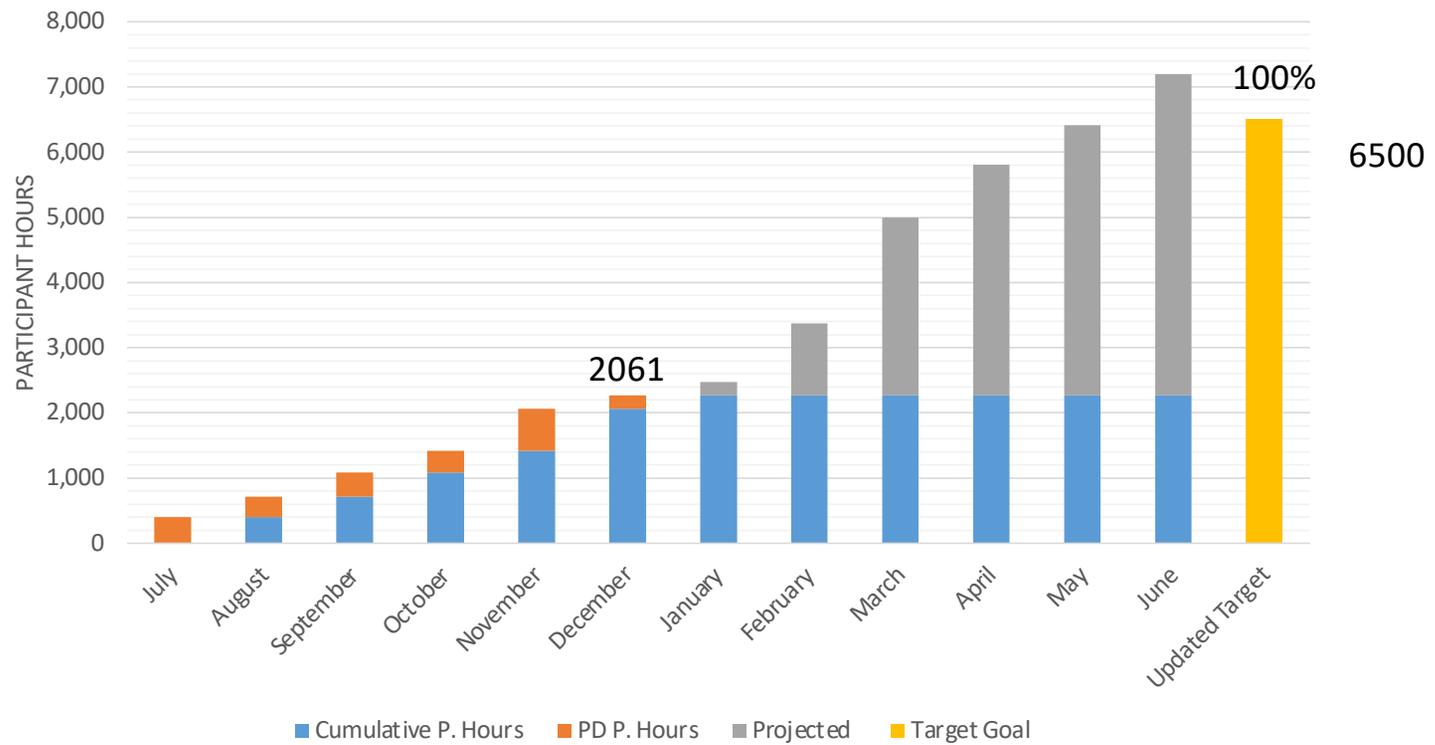


- Monitoring supply chain disruptions and retail activity closely

Pausing Home Energy Reports (March 2021) as a result of budget reductions

MARKET TRANSFORMATION & ECONOMIC DEVELOPMENT

PY20 MTED Professional Development (PD) Participant Hours



Community-Based Energy Efficiency

Objective: Engage with targeted hard-to-reach communities to increase participation in our programs and build energy literacy while also collecting relevant data/demographics



Heat Pump Water Heater Direct Installations

- 43 at Kunia Village through Hawai'i Agriculture Research Center (HARC)



Community Bulb Exchange

- 16 participating stores
- 5,108 bulbs exchanged
 - 49% Hawai'i Island
 - 27% Maui
 - 24% O'ahu
- Catholic Charities Lanakila Multi-Purpose Senior Center
 - 281 bulbs exchanged
 - 100+ seniors reached



Energy Smart 4 Homes (ES4H)

- 204 installs – 119 multi-family units and 85 single-family homes in Ko'olauloa, North Kohala and Waimanalo CBEE communities
- Collaborated with City & County of Honolulu's Office of Economic Revitalization's "City Card" program to get a link to the ES4H signup page listed on OneOahu.org website



- Customers are reluctant to open their homes to installers
- Property managers and building owners postponing until clarity around state restrictions



ACCESSIBILITY & AFFORDABILITY

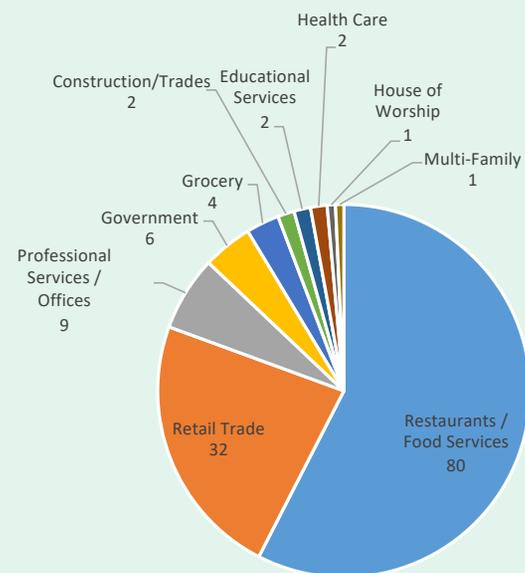
Energy Advantage (EA)

Objective: Increase the number of Energy Advantage contractors and projects



- 302 of 650 EA projects (46.5%)
- Energy Advantage for Small Businesses and Restaurants “no co-pay” started Oct. 1, 2020
- Over 1,100 Energy Advantage letters mailed directly to qualifying customers
 - 593 to Ko‘olauloa, Waimanalo, Kaimuki, ‘Aiea, Pearlridge, and Kalihi areas on O‘ahu
 - 540 to Honoka‘a, Laupahoehoe, Na‘alehu, Hawi and Waimea on Hawai‘i Island
 - We have seen an increase in customer interest due to mailer and will continue efforts
- Onboarded two new contractors in Maui County
- Re-signed Hawai‘i Island contractor as an EA CEA

- Top 3 participants by facility type made up 87% of total participation:
 - Restaurants/Food Service
 - Retail Trade
 - Professional Services/Offices



Energy Relief Grant

QUALIFICATIONS



COVID Assistance

Received Paycheck Protection Program (PPP) or Economic Injury Disaster Loan (EIDL) disbursement



Nonprofit

501(c)3 nonprofit organization



Energy Advantage

HECO Rate Schedule G, facility < 5,000 sq. ft., or multifamily affordable housing



Program Participants

PY20 EmPOWER or PY20 SEM program participants



Customers may apply for 100% cost of project up to \$25,000



Limited funding available

RESULTS

Round 1

- 204 Completed Applications
- \$3.1M Total Amount Requested
- 71 Grants Awarded Totaling \$968k

Round 2

- 261 Completed Applications (155 new and 106 rolled over from Round 1)
- \$4.6M Total Amount Requested
- 222 Grants Awarded Totaling \$1.5M



ENERGY OPTIMIZATION INITIATIVES

Residential Demand Response Ready

Objective: Support GIWH and other smart technology installations to promote grid service capable demand side resources for all customers



- Total of 332 installs, 31 in Waimanalo (via CBEE efforts)
- Began review of CTA 2045 ready pool pumps



- COVID-related restrictions continue

Commercial Demand Response Ready

Objective: Finalize GridPoint participant agreement, identify potential installation contractors and target SMB customers



- GridPoint participant agreement signed in December 2020
- Hawai'i Energy CEA on-boarded for installations
- Identified 40 customer sites for pilot recruitment



- COVID-related restrictions continue

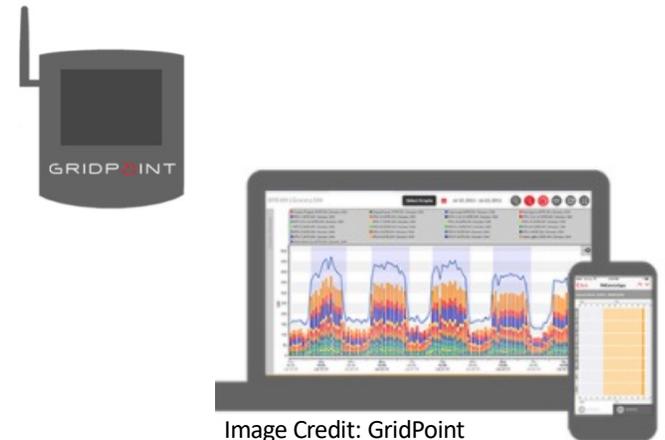


Image Credit: GridPoint



ENERGY OPTIMIZATION INITIATIVES

EV Charging Station Rebate Program

Objective: Continue deployment of state funds established through Act 142 (2019)



- Contractor and customer interest in the program remains



- Seeing a slowdown in both project completion and new project development
- Assume these are due to COVID-related economic challenges

ACTIVITY (as of 2/25/21)	FUNDING	PROJECTS
Act 142 Funding	\$400,000	
Rebates Paid (By Leidos to customers)	(\$161,500)	<ul style="list-style-type: none"> • Level 2 – 5 New, 37 Retrofit • DCFC – 1 Retrofit
Potential Rebates (Submitted applications in progress)	(\$238,000)	<ul style="list-style-type: none"> • Level 2 – 26 New, 17 Retrofit • DCFC – 2 New
Available Funds (Assuming all submitted applications result in completed projects)	\$500	
Waitlisted Projects	\$9,000	<ul style="list-style-type: none"> • Level 2 – 3 Retrofit



Mahalo!

Stay Connected

Oahu: 537-5577 (Residential) 839-8880 (Business)

Neighbor Islands: 1-877-231-8222 toll-free

www.hawaiienergy.com

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JENNIFER
BAKER
HAWAIIAN
ELECTRIC



HECO UPDATES AND DISCUSSION

Hawaiian Electric Update

Technical Advisory Group Meeting
March 23, 2021



Hawaiian Electric
Maui Electric
Hawai'i Electric Light

Topics

PBF Surcharge Update – Advanced Rate Design

LMI/EE PIM Overview – Performance Based Regulation



PBF Surcharge Update – Advanced Rate Design

Hawaiian Electric Proposal

Key Principles of Proposal

All customers who are connected to the utility grid should fairly share the total costs to provide service;

Customers should have the opportunity to save, influence, and control their bill, and;

In transition to wider participation in TOU rates, significant bill impacts to the customer should be minimized.

Key Aspects of Proposed Time-of-Use (TOU) Rate

Three-part rate

Phased roll-out with advanced meters

Commercial and Residential TOU rates

TOU per kWh charges overall recover a smaller proportion of fixed costs in the variable rate than the respective existing non-TOU rate schedules.

Designed to allow customers to control their bill by either reducing their usage of electricity or by changing when they use electricity

Surcharge

Modification to the RBA



LMI/EE PIM Performance Based Regulation

According to D&O 37507, the Low-to-Moderate Income Energy Efficiency PIM

Incent the Companies to collaborate with Hawaii Energy to deliver energy savings for LMI customers.

Incent the Companies to promote Hawaii Energy programming and to optimize load and customer interactions via tools within [the Companies'] jurisdiction such as rate design and the provision of energy usage data.

Does not incent the Companies to offer their own energy efficiency programs or to compete with Hawaii Energy.

Intended to focus on customers identified as LMI by Hawaii Energy

Requirements

Use Hawaii Energy's zip code methodology to identify LMI segment

Upside only maximum award of \$2M

Duration of three-years with annual review

Two metrics to measure PIM performance:

LMI/EE Metric 1: Delivering energy savings for eligible customers beyond an established baseline

LMI/EE Metric 2: Increasing participation rates of eligible customers in Hawaii Energy programs.



LMI/EE PIM Performance Based Regulation

Hawaiian Electric Proposal

LMI/EE Metric 1 (all savings are first-year savings)

% increase in total sector savings from [Affordability & Accessibility (“A&A”)] programs and rate design programs.

Awarded on a sliding scale (e.g., every 0.2% increase in total sector savings = \$100,000). The sliding scale percentages and amounts need to be further assessed with Hawaii Energy and other stakeholders to determine a feasible order of magnitude.

Sector includes eligible households in the designated Hawaii Energy zip codes, the target market for A&A programs.

LMI/EE Metric 2

% increase in sector participation in A&A programs and rate design programs.

The sliding scale percentages and amounts need to be further assessed with Hawaii Energy and other stakeholders to determine a feasible order of magnitude.

Sector includes eligible households in the designated Hawaii Energy zip codes, the target market for A&A programs, and customers able to self-identify as LMI customers outside of the Hawaii Energy designated LMI zip codes.



Questions?



Hawaiian Electric
Maui Electric
Hawai'i Electric Light



MARY SUTTER

ENERGY
EFFICIENCY
MANAGER
TEAM



EVALUATION
MEASUREMENT AND
VERIFICATION (EM&V)
TOPICS

EM&V UPDATE (EFFORTS SINCE OCTOBER 2020)

- Prospective studies may use past data, but inform the future
- Retrospective studies answer what happened in the past

Study	Status	Prospective	Retrospective
PY20 Mid-year TRM Update	Completed <i>(on Hawai'i Energy website)</i>	✓	
PY21 TRM	Being reviewed <i>(expected on Hawai'i Energy website in April)</i>	✓	
PY19 Verification Report	Draft final <i>(final expected on Hawai'i Energy website in April)</i>		✓
CY20 EM&V Annual and Historical Reports	Draft final <i>(final expected on Hawai'i Energy website in April)</i>		✓



SUE HANSON
TETRA TECH



PY19 VERIFICATION
PRELIMINARY RESULTS

VERIFICATION OF ALL HAWAI'I ENERGY AREAS

- Resource Acquisition
 - Clean Energy Technologies
 - Grid Optimization
- Customer Equity
 - Accessibility & Affordability
 - Island Equity
- Economic Development and Market Transformation
- Customer Satisfaction

VERIFICATION ACTIVITIES



- Clean Energy Technologies (CET)
 - Reviewed all prescriptive measures in the program tracking database to ensure appropriate inputs and calculations
 - Sampled from certain programs with further data review to dig deeper than tracking database
- Customer Equity
 - Recategorized data from CET to fit into equity metrics (e.g., saving by multifamily direct install, incentives in database by island)
- Economic Development and Market Transformation
 - Counts from substantial level of secondary data (e.g., lists of those trained)
- Customer Satisfaction
 - Received value from Hawai'i Energy's survey

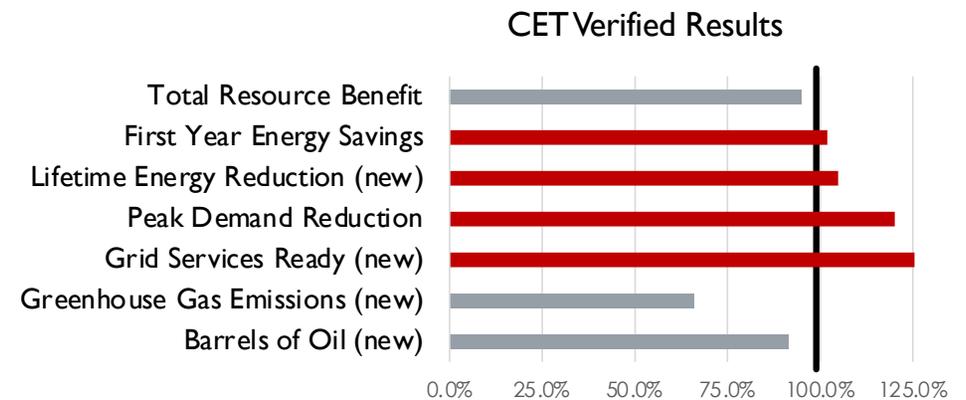


PRELIMINARY VERIFICATION RESULTS

HIGH LEVEL RESULTS AND KEY TAKE AWAYS

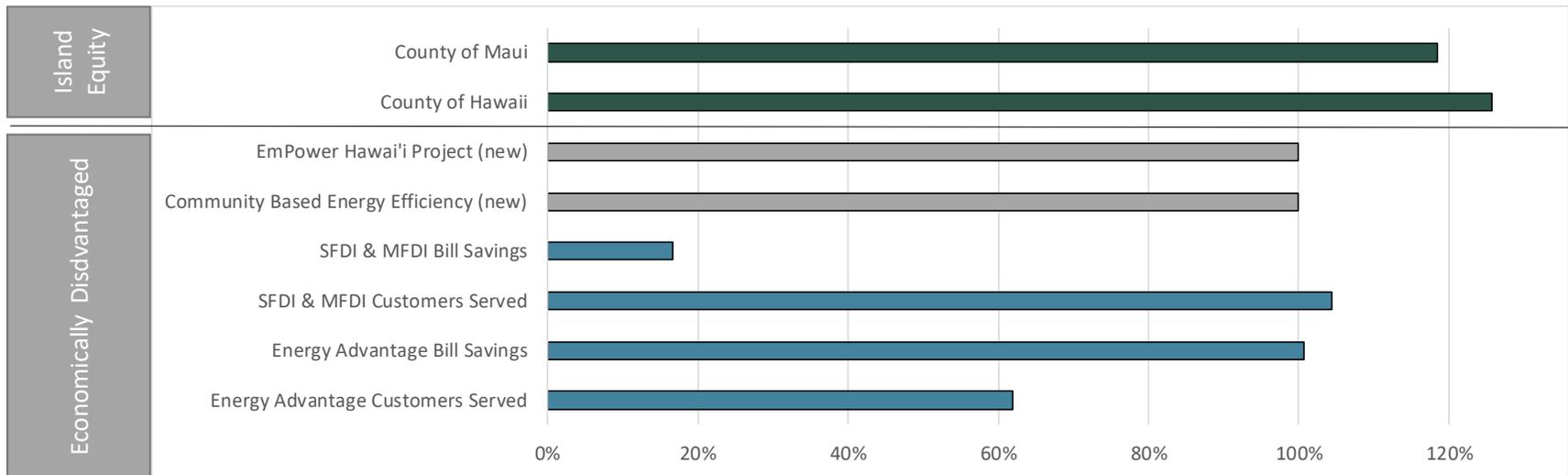
OVERARCHING COMMENTS ON VERIFICATION RESULTS

- In PY19, Hawai'i Energy met or exceeded many performance targets
- For most measures, there was close agreement with Hawai'i Energy claimed impacts
- Program tracking savings calculations need to allow for dual baselines
 - Not including the dual baseline calculations had the largest impact on lifetime savings adjustments
 - PY19 was the first-year dual baselines were presented in the Hawai'i Energy TRM
 - Hawai'i Energy is working on completing a substantial program tracking database update that will more easily allow the program to account for dual baselines



HIGH LEVEL RESULTS

ACCESSIBILITY & AFFORDABILITY



HIGH LEVEL RESULTS

ECONOMIC DEVELOPMENT & MARKET TRANSFORMATION

Key Focus Area	Details	Met Target	Did Not Meet Target
Behavior Change	STEM training hours	✓	
	Workshop training hours	✓	
	Gamification Campaigns & Competitions	✓	
	Exhibit Educational Resources	✓	
	Sustained Outreach	✓	
	Behavioral Insights	✓	
Professional Development	Training hours	✓	
Energy in Decision Making	SEM		✓
C&S	Multiple efforts	✓	
Clean Energy Innovation Hub	Companies Supported		✓

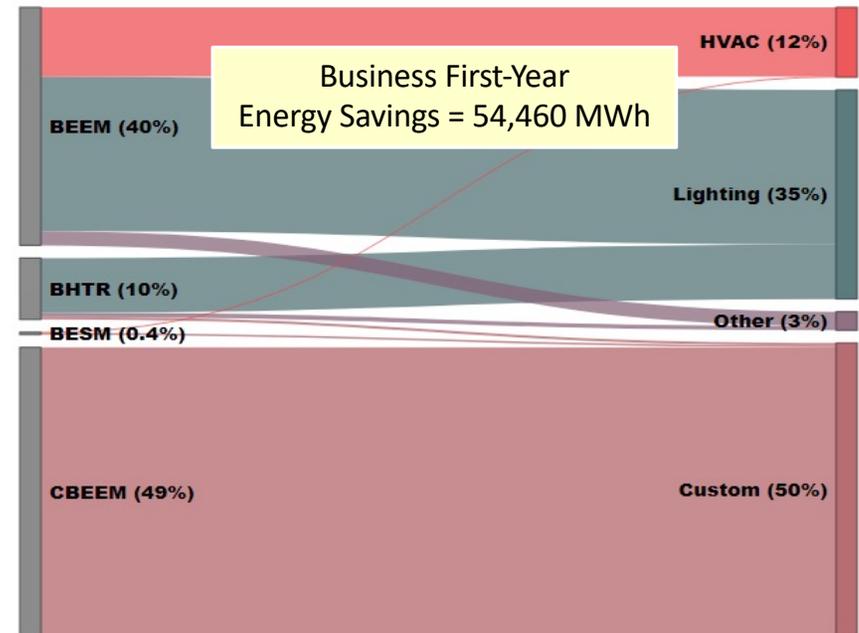
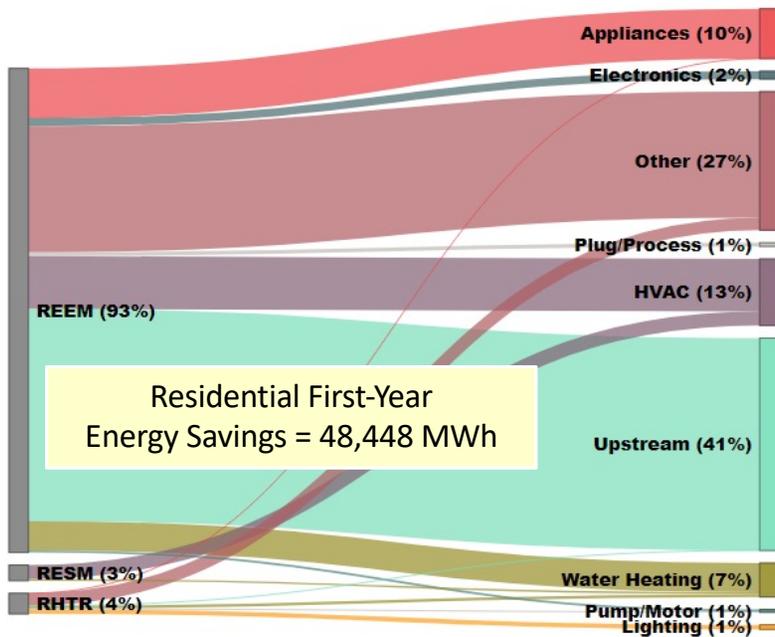
HIGH LEVEL RESULTS

CUSTOMER SATISFACTION

APPLICATION PROCESSING CUSTOMER EXPERIENCE

- Commercial Sector – 9.0 out of 10 (*did not meet target of >9*)
- Residential Sector – 9.3 out of 10 (*met target of >9*)

CLEAN ENERGY TECHNOLOGIES – MWH SAVINGS BY SECTOR



KEY TAKE AWAYS

- Through the verification activities, the following important achievements by Hawai'i Energy during PY2019 were identified:
 - Hawai'i Energy rebated more than one million energy efficient items which are now installed in homes and business throughout the state
 - The Hawai'i Energy programs, primarily through hard-to-reach efforts, saved economically disadvantaged customers nearly \$22 million on their utility bills
 - Savings from Hawai'i Energy's programs offset the use of more than 180,000 barrels of oil and avoided 107,000 metric tons of GHG emissions



KELLY
PARMENTER

APPLIED
ENERGY
GROUP



TRM MEASURES

PY20 MID-YEAR TRM – TWO UPDATED MEASURES

- General Service Lamps (GSL)
 - Shifted the effective date from PY20 to PY22 for the 45 lm/W baseline and expanded GSL definition
 - Increased % of homes with AC units from 41% to 48% per 2019 Baseline Study
 - ➔ Changes increased savings relative to the *original* PY20 TRM single baseline approach
 - *Measure-level* first-year savings for Residential LED measure increased 176% (from 12.60 to 34.74 kWh/yr)
 - *Portfolio-level* first-year savings increased about 10% compared to single baseline
 - ➔ No changes to PY20 targets, as dual baselines were already incorporated in PY20 proposal
- HVAC
 - Removed EER requirement for units < 65 kBtu/h (~5 ton)
 - ➔ Enabled the program to have about 400 more eligible units (10% of total number of units rebated)
 - ➔ Provides approximately 400k kWh in additional first year savings

PY20 MID-YEAR TRM – THREE NEW MEASURES

Commercial Refrigeration

Measure	Per-unit Peak kW Savings	Per-unit Annual kWh Savings	Effective Useful Life (years)
Evaporator motor controls ¹	0.035	303.41	15
Floating head pressure controls ²	0.010	46.55	15
Adding doors onto open cases ³	0.069	606.13	8

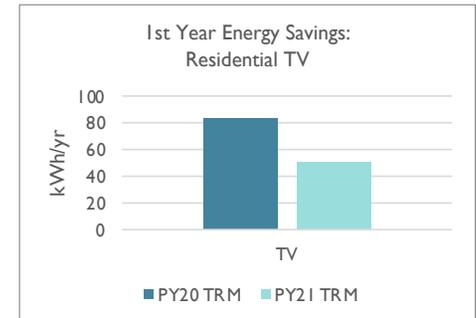
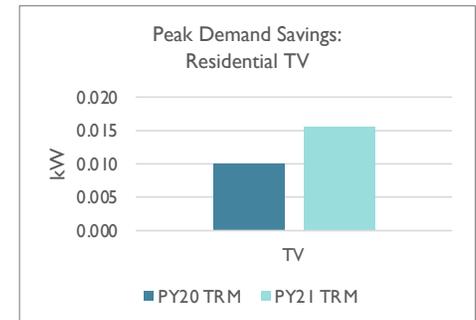
Notes:

1. Savings are per evaporator fan motor. Example shown here assumes 1/20 HP ECM installed in cooler.
2. Savings are per HP of compressor motor. Example shown here assumes a low temperature refrigeration system with unitary condenser.
3. Savings are per linear foot of refrigerated case.

PY21 TRM UPDATED MEASURES: RESIDENTIAL TV

Key Updates	Percent Change in Per-unit Impacts	Old Per-unit Impacts	New Per-unit Impacts
<ul style="list-style-type: none"> Updated to ESTAR V8.0 Revised EUL per benchmarking Used Hawaii baseline data on TV sizes Used TV load shape for coincidence factor 	$\Delta kW = +56\%$  $\Delta kWh = -39\%$  $EUL = -40\%$ 	$\Delta kW = 0.010 kW$ $\Delta kWh = 82.68 kWh/yr.$ $EUL = 10 yr.$	$\Delta kW = 0.016 kW$ $\Delta kWh = 50.67 kWh/yr.$ $EUL = 6 yr.$

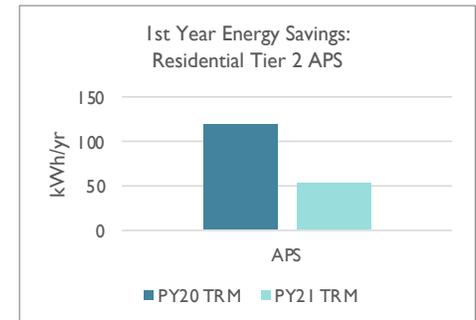
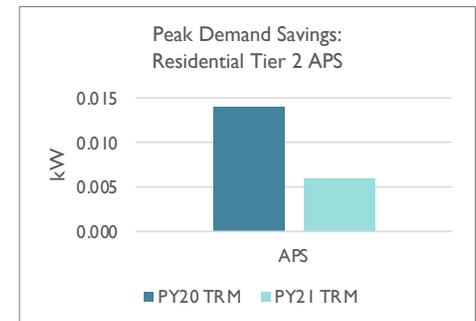
Note: Savings are per television. Example shown here assumes a weighted average of 40% non-4k and 60% 4k display resolution.



PY21 TRM UPDATED MEASURES: RESIDENTIAL ADVANCED POWER STRIP

Key Updates	Percent Change in Per-unit Impacts	Old Per-unit Impacts	New Per-unit Impacts
<ul style="list-style-type: none"> Updated approach per benchmarking Used Hawaii baseline data on home office and audiovisual plug load counts Provided deemed savings for owner-install and direct-install 	$\Delta kW = -57\%$ ↓ $\Delta kWh = -56\%$ ↓ EUL = NA	$\Delta kW = 0.014 kW$ $\Delta kWh = 119.20 kWh/yr.$ EUL = 5 yr.	$\Delta kW = 0.006 kW$ $\Delta kWh = 52.67 kWh/yr.$ EUL = 5 yr.

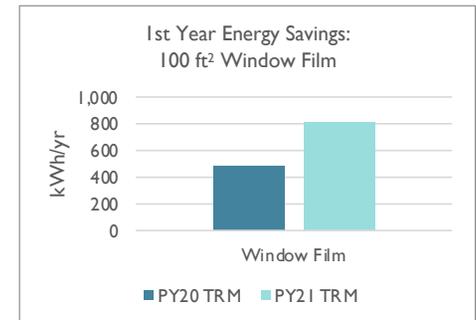
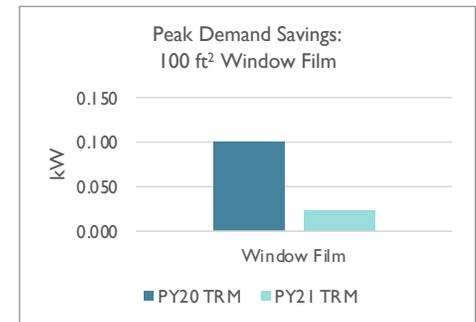
Note: Savings are per power strip. Example shown here assumes owner-installed Tier 2 qualified power strip (IR engagement sensing or active controls).



PY21 TRM UPDATED MEASURES: COMMERCIAL WINDOW FILM

Key Updates	Percent change in per-unit impacts	Old per-unit impacts	New per-unit impacts
<ul style="list-style-type: none"> Updated approach per benchmarking Used “PVWatts” tool to model hourly solar heat gain by window orientation for Honolulu Developed a semi-prescriptive calculator 	$\Delta kW = -77\%$ ↓ $\Delta kWh = +67\%$ ↑ EUL = NA	$\Delta kW = 0.100 kW$ $\Delta kWh = 487.00 kWh/yr.$ EUL = 10 yr.	$\Delta kW = 0.023 kW$ $\Delta kWh = 811.64 kWh/yr.$ EUL = 10 yr.

Note: Savings are per 100 ft² of window area. Example shown here assumes film is applied to a south-facing double pane window with no interior shade to achieve SHGC of 0.40. The building is assumed to have a packaged AC system compliant with ASHRAE 90.1-2010.



PY21 TRM NEW MEASURES

Measure	Per-unit Peak kW Savings	Per-unit Annual kWh Savings	Effective Useful Life (years)
Residential Reflective Exterior Wall Coating (“Cool Walls”) ¹	0.013	218.98	10
Residential Solar Light Tubes ²	NA	79.62	10

Notes:

1. Savings are per 1000 ft² of net surface area of cool walls. Example shown here assumes the long axis of home is in east-west direction, the home is close to neighbors, and it is cooled with a central AC system.
2. Savings are per solar light tube. Example shown here assumes a 14” diameter tube installed in a non-military home in Honolulu.

To become involved or send suggestions, email Kelly Parmenter (kparmenter@appliedenergygroup.com) and cc Mary Sutter (mary@grounded-research.com)

QUESTIONS?

Please contact Ted Pope at 510-462-0091 or tedpope@2050partners.com. Meeting materials will be posted on www.HawaiiEEPS.org