Demand Flexibility in Performance-Based Regulation: Hawaii's Experience

Grace Relf, Hawaii Public Utilities Commission NARUC - NASEO Webinar on Grid-Interactive Efficient Buildings March 15, 2025

Presentation Roadmap

- The context in Hawaii
- Hawaii's PBR framework
- Grid Services Incentives
- Advanced Metering Incentives
- Key Takeaways



Setting the stage: System Needs

- Resilience is key
- Flexibility becomes increasingly important with renewable deployment
- Challenges in replacing aging fossil fuel capacity with delayed renewables









Setting the stage: State Policy

- 100% carbon neutrality goal by 2045
- Climate change emergency declaration
- Renewable Portfolio Standard of 100% by 2045



NEW ROOFTOP SOLAR

INSTALLED WITH

BATTERY STORAGE



RENEWABLE PORTFOLIO STANDARD PROGRESS



Setting the stage: Regulatory Context

- Regulated entities:
 - Vertically integrated investor-owned utilities on each island together, the Hawaiian Electric Companies (HECO)
 - Kauai Island Utility Cooperative (KIUC)
 - Independent energy efficiency administrator Hawaii Energy
- HECO is now regulated under Performance-Based Regulation (PBR)





Stakeholder Engagement for Guiding Principles

Goal	Priority Outcome		
Enhance Customer Experience	Traditional	Affordability	
	Пациона	Reliability	
	Emorgont	Interconnection Experience	
	Emergent	Customer Engagement	
Improve Utility Performance	Traditional	Cost Control	
	Emergent	DER Asset Effectiveness	
		Grid Investment Efficiency	
	Traditional	Capital Formation	
Advance Societal Outcomes		Customer Equity	
	Emergent	GHG Reduction	
		Electrification of Transportation	
		Resilience	

Hawaii's PBR Framework

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	• A 5-year multi-year rate plan
Revenue Adjustment	 Allowed revenues adjusted annually for inflation and a customer return
Mechanisms	 An Exceptional Project Recovery Mechanism to for extraordinary projects
	New PIMs
Performance Mechanisms	 Shared savings mechanisms for cost-effective procurement of renewable energy generation and grid services
	 Portfolio of reported metrics and scorecards
Other Mechanisms	 An expedited pilot framework to encourage innovation
	 Safeguards to protect the utility and customers

Performance Incentive Mechanisms (PIMs)

PIM	Objective
RPS-A	Accelerate achievement of Renewable Portfolio Standards (RPS) goals
Grid Services	Expedite the acquisition of grid services capabilities from distributed energy resources (DER)
Interconnection Approval	Improve customers' experience by incenting faster interconnection times for DER systems <100 kW
LMI Energy Efficiency	Encourage customer engagement, equity, and affordability by delivering energy savings for low-and moderate-income (LMI) customers
AMI Utilization	Promote customer engagement by accelerating the number of customers with advanced metering infrastructure (AMI) enabled to support time-varying rates, energy efficiency, and next generation DER programs

Grid Services PIM

PIM Rewards	Oahu	Maui	Hawaii Island
Load Reduction	\$25.60 / kW	\$70.80 / kW	\$70.80 / kW
Load Build	\$6.30 / kW	\$18.00 / kW	\$18.00 / kW
Fast Frequency Response	\$13.30 / kW	\$39.40 / kW	\$37.10 / kW

 In 2022, HECO is claiming \$36,000 in rewards for acquiring 5.6 MW of load reduction

Grid Services Metrics

Hawaiian Electric, Percentage and Total MW of DER Systems Capable of Providing Grid Services, Semi-Annual



Total MW of DER Systems Capable of Providing Grid Services

---- Percentage of DER Systems Capable of Providing Grid Services



Related Customer Tariffs and Programs

HECO's DER Programs

- Emergency Demand Response & Bring Your Own Device: provides upfront rebates for batteries scheduled to dispatch during peak hours
- Quick Connect: Expedited interconnection of DER systems on circuits with available hosting capacity
- Grid Service Purchase Agreements: payments to third-party aggregators providing demand-side grid services

Hawaii Energy Programs

- Working with subcontractors on grid-service purchase agreements to integrate efficiency and demand response resources
- Collaborating with HECO to further promote Affordability and Accessibility programming



Advanced Metering Infrastructure

- Full deployment expected 2024
- Companies are required to track all costs and benefits
- Costs are recovered as a "major project" expense, net of benefits
- Methodology for quantifying benefits expected 2024



Figure 7 – Map of Oahu AMI Meters Installed



Advanced Metering Infrastructure (AMI) PIM

- Reward for customers with AMI delivering at least 2 of 3 identified benefits of AMI:
 - Customer authorization to share data with 3rd parties
 - Customer enrollment to receive energy usage alerts
 - Customer enrollment in a next generation DER or time-of-use program
- Potential rewards are between \$1 \$2 million for meeting the following targets (% of total customers delivering at least 2 benefits):
 - 2021: 2.5 5%
 - 2022: 10 15%
 - 2023: 20 30 %

AMI PIM Performance

- Companies have requested modifications to the PIM citing challenges to benefit implementation
- Requested modification of the target denominator
- Requested modification to the benefits included

2021 AMI Utilization PIM Performance

Number of customers by Company with advanced meters installed and delivering the benefits listed below, divided by number of total customers, by end of year.

Benefit Category	HECO	MECO	HELCO
"Customer Authorization" Benefit	0.00%	0.00%	0.00%
"Energy Usage Alert" Benefit	0.03%	0.02%	0.03%
"Program Participation" Benefit	0.08%	0.08%	0.03%
At least two of the benefits listed above	0.001%	0.00%	0.00%



Key Takeaways

- Well-designed PBR can help reduce utility capital bias
- PIMs can be a key driver for promoting deployment of demand-side resources
- Policy and regulatory prioritization outside of PBR are also key
- PBR mechanisms should aim for continuous learning and improvement
- Track our progress!
 - https://www.hawaiianelectric.com/about-us/performance-scorecards-and-metrics



Mahalo!

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References:

- HECO 2020 Sustainability Report:
 - <u>https://view.hawaiianelectric.com/2020-2021-sustainability-report/page/1</u>
- Hawaii Natural Energy Institute Slides:
 - <u>https://dms.puc.hawaii.gov/dms/DocumentViewer?pid=A1001001A21D20B55511</u>
 <u>F00164</u>
- Hawaii's PBR Framework; Docket No. 2018-0088
 - <u>https://puc.hawaii.gov/energy/pbr/</u>
- Hawaii Energy:
 - <u>https://hawaiienergy.com/</u>
- Distributed Energy Resources Policy Exploration; Docket No. 2019-0323
 - <u>https://dms.puc.hawaii.gov/dms/dockets?action=search</u>



Performance Incentive Mechanisms

PIM	Objective	Potential Reward	Penalty
RPS-A	Accelerate achievement of Renewable Portfolio Standards (RPS) goals	 \$20/MWh 2021-2022 \$15/MWh 2023 \$10/MWh remainder of term 	 \$20/MWh for every MWh under the RPS
Grid Services	Expedite the acquisition of grid services capabilities from DERs	• \$1.5 million	No penalty
Interconnection Approval	Improve customers' experience by incenting faster interconnection times for DER systems <100 kW	• \$3 million	 Maximum penalty is \$900,000
LMI Energy Efficiency	Encourage customer engagement, equity, and affordability by delivering energy savings for low-and moderate-income (LMI) customers	• \$2 million	 No penalty
AMI Utilization	Promote customer engagement and DER asset effectiveness by accelerating the number of customers with advanced meters enabled to support time-varying rates and next generation DER programs	• \$2 million	• No penalty

Categories of AMI Benefits

- Reliability
 - Identify & restore power outages
 - DER integration
- Economic
 - Reduce operating costs
 - Increased customer programs and tools
- Customer Satisfaction
 - Energy usage portal & data access
 - Improved billing accuracy



Figure 15 – Map of Maui County AMI Meters Installed

