

Hawai'i Powered



Expanding DER in a High-DER system

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Director, Integrated Grid Planning



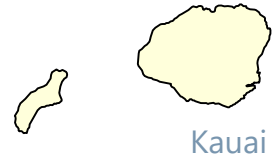
Hawaiian
Electric

October 2025

Hawaiian Electric today

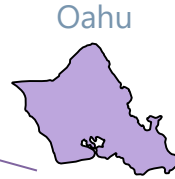
Serving the State of Hawaii for 133 years

Over 95% of state's population served by Hawaiian Electric and its subsidiaries



Kauai

Oahu
Customers: 308,721

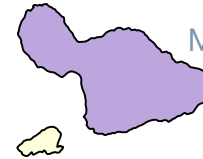


Oahu



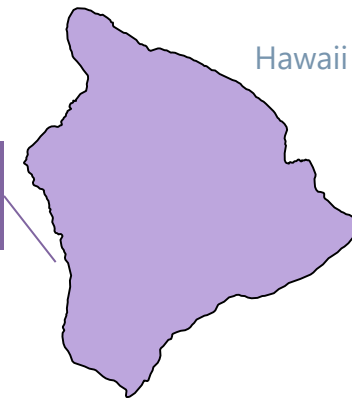
Molokai

Lanai



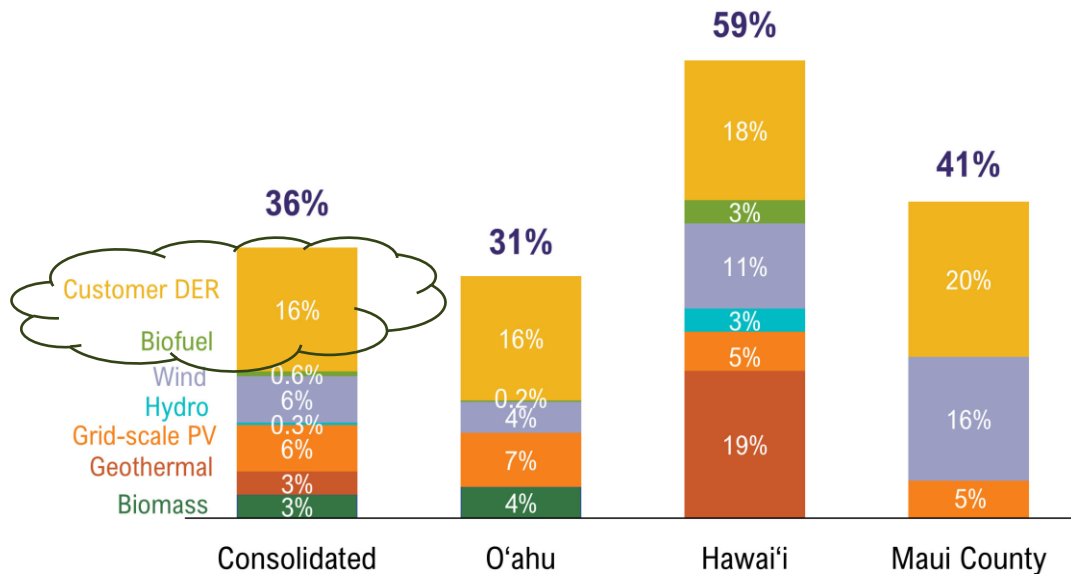
Maui

Maui County
Customers: 73,788



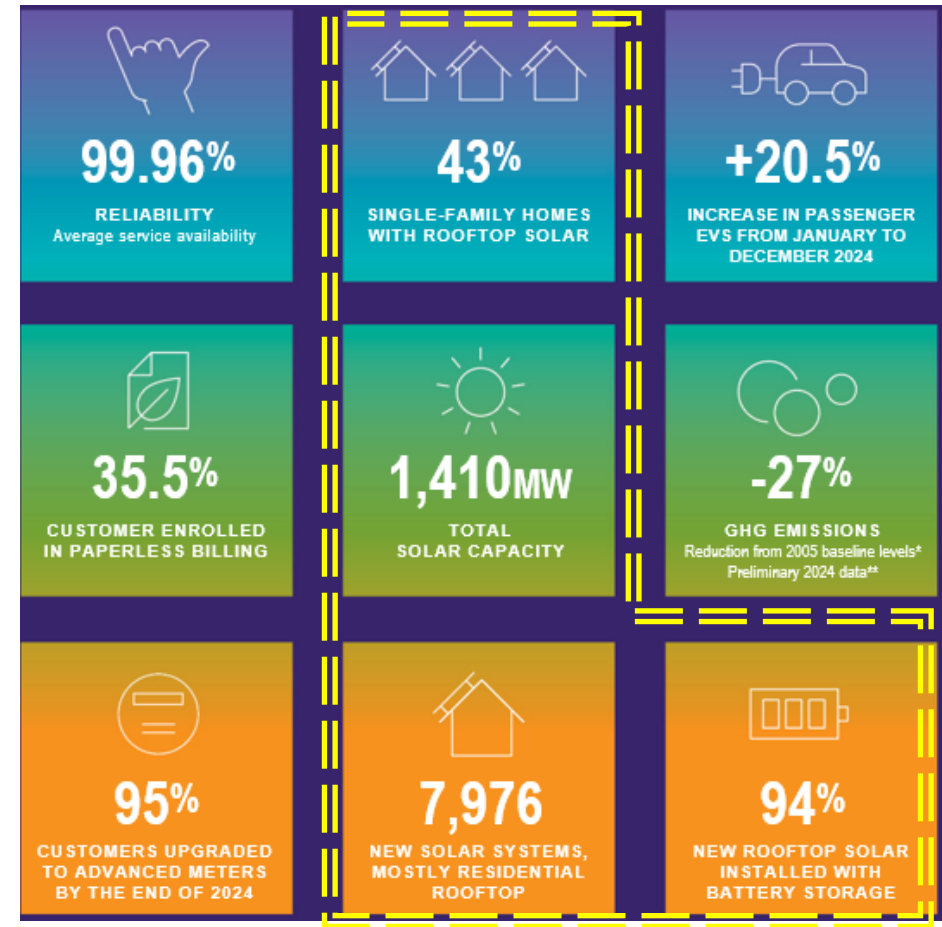
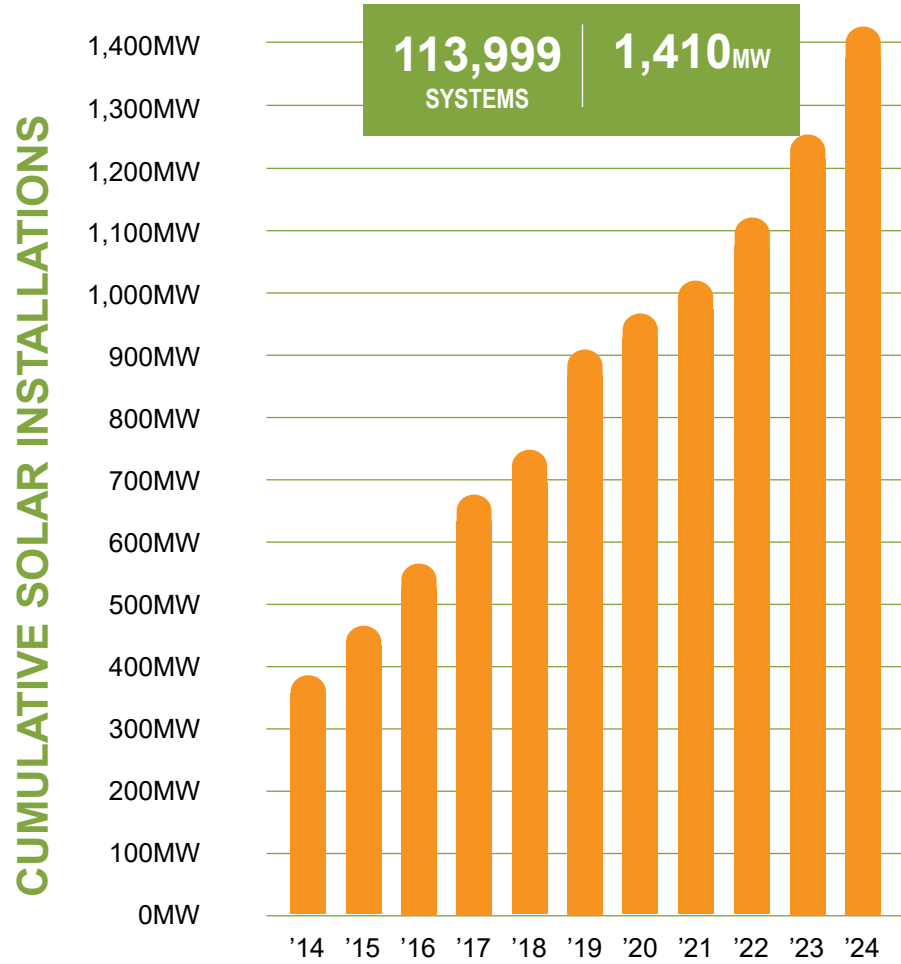
Hawaii

Hawai'i Island
Customers: 88,103



Note: All data as of 12/31/23 unless otherwise noted

Customer DER Adoption as of 2024



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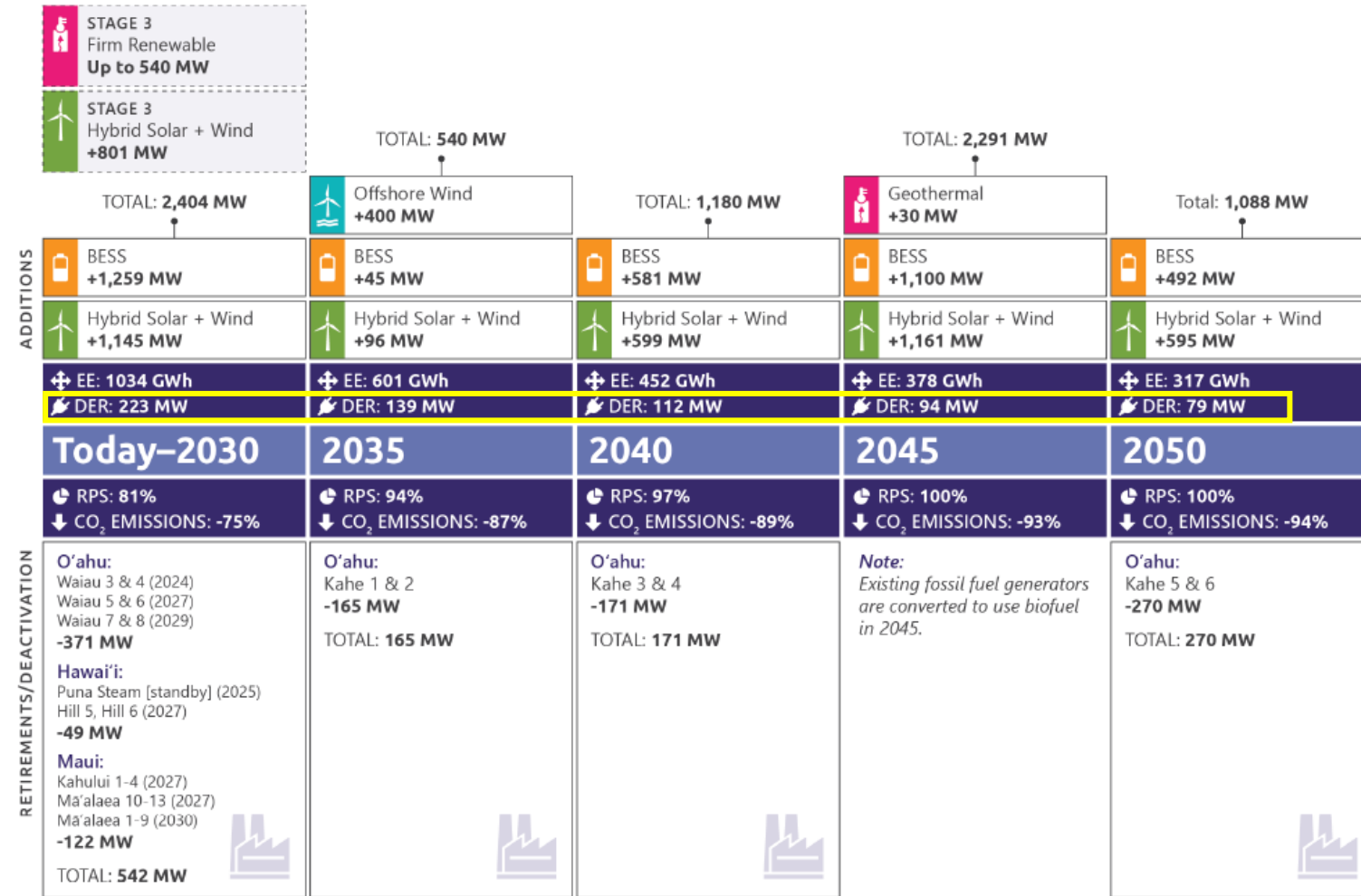
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Integrated Grid Plan

Plan calls for rapid additions of solar and wind generation, expansion of the transmission system, continued growth in DERs, and the addition of firm generation (including geothermal).

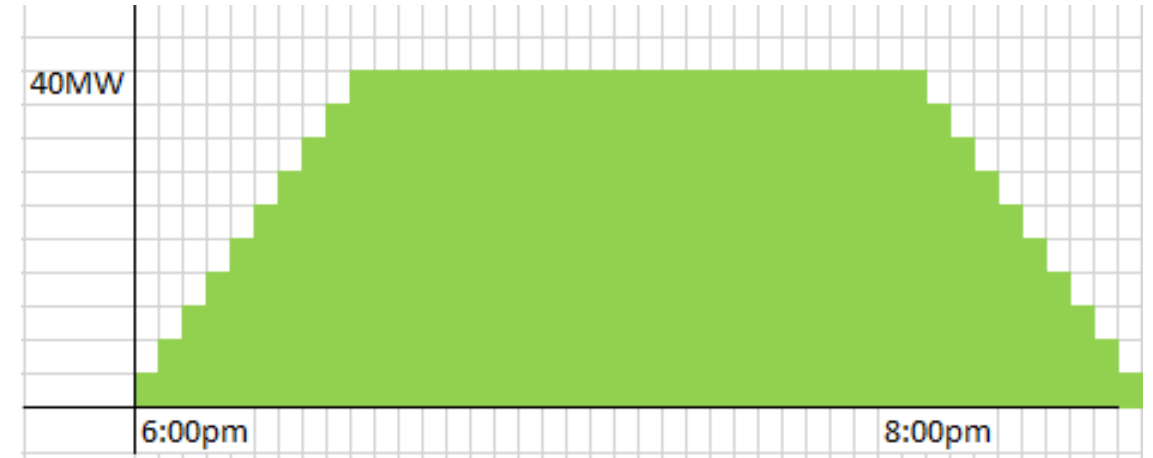
This portfolio would allow for desired fossil generation retirements and to meet decarbonization goals in a reliable and resilient fashion.

Request PUC approval of the plan to allow for faster regulatory process and execution of projects and programs.



Major additions of renewable resources will also require expansion of transmission and distribution

Example of incentive to support the peak Scheduled Dispatch Program

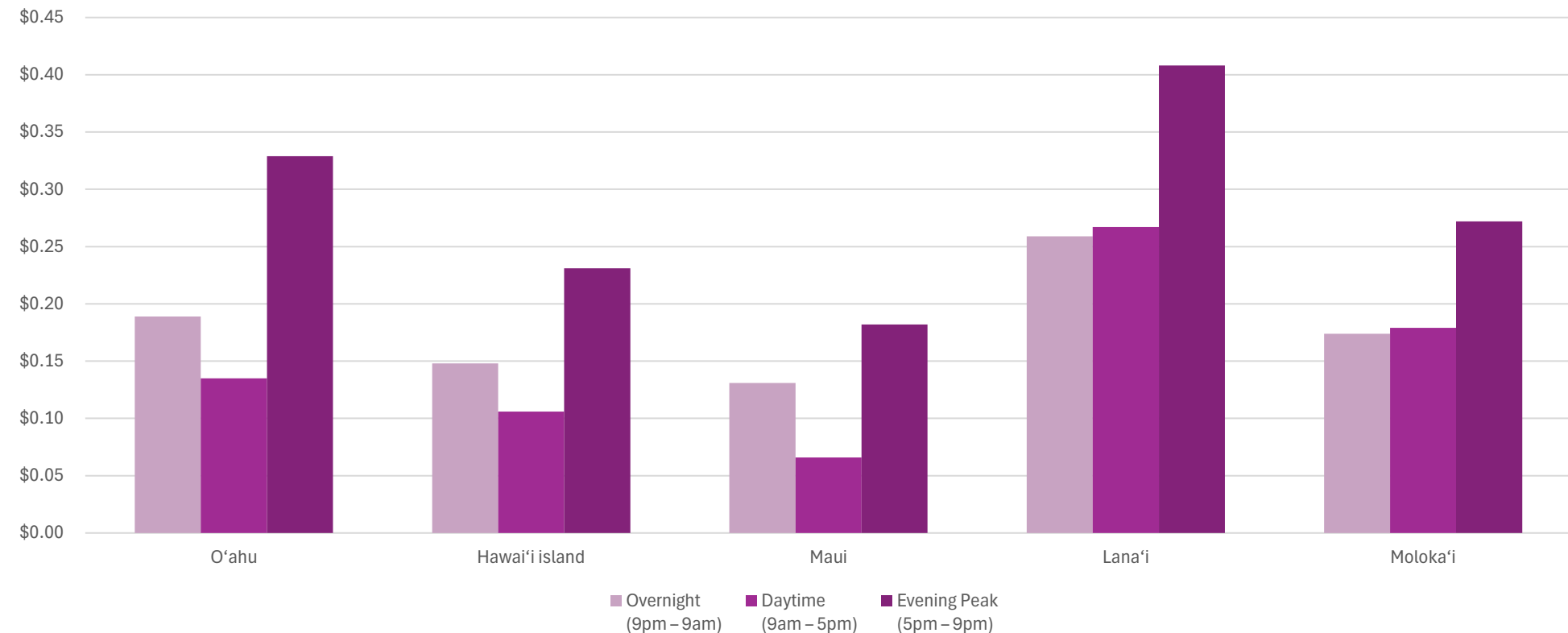


Scheduled Programs must be designed carefully to not jeopardize the grid stability.

Rather than all resource dispatching exactly at 6pm, the Battery Bonus program is designed for incremental scheduled dispatch (2MW/min).

Incentive: \$850/kW one-time, \$5/kW monthly.

Current Export Credits: Time Varying Rates



Smart Renewable Energy (SRE) - Export rates for 2024-2026			
Island	Overnight (9pm - 9am)	Daytime (9am - 5pm)	Evening Peak (5pm - 9pm)
Oahu	18.9 cents/kWh*	13.5 cents/kWh*	32.9 cents/kWh*
Maui	13.1 cents/kWh*	6.6 cents/kWh*	18.2 cents/kWh*
Lanai	25.9 cents/kWh*	26.7 cents/kWh*	40.8 cents/kWh*
Molokai	17.4 cents/kWh*	17.9 cents/kWh*	27.2 cents/kWh*
Hawaii Island	14.8 cents/kWh*	10.6 cents/kWh*	23.1 cents/kWh*

Long-Term Planning for DER



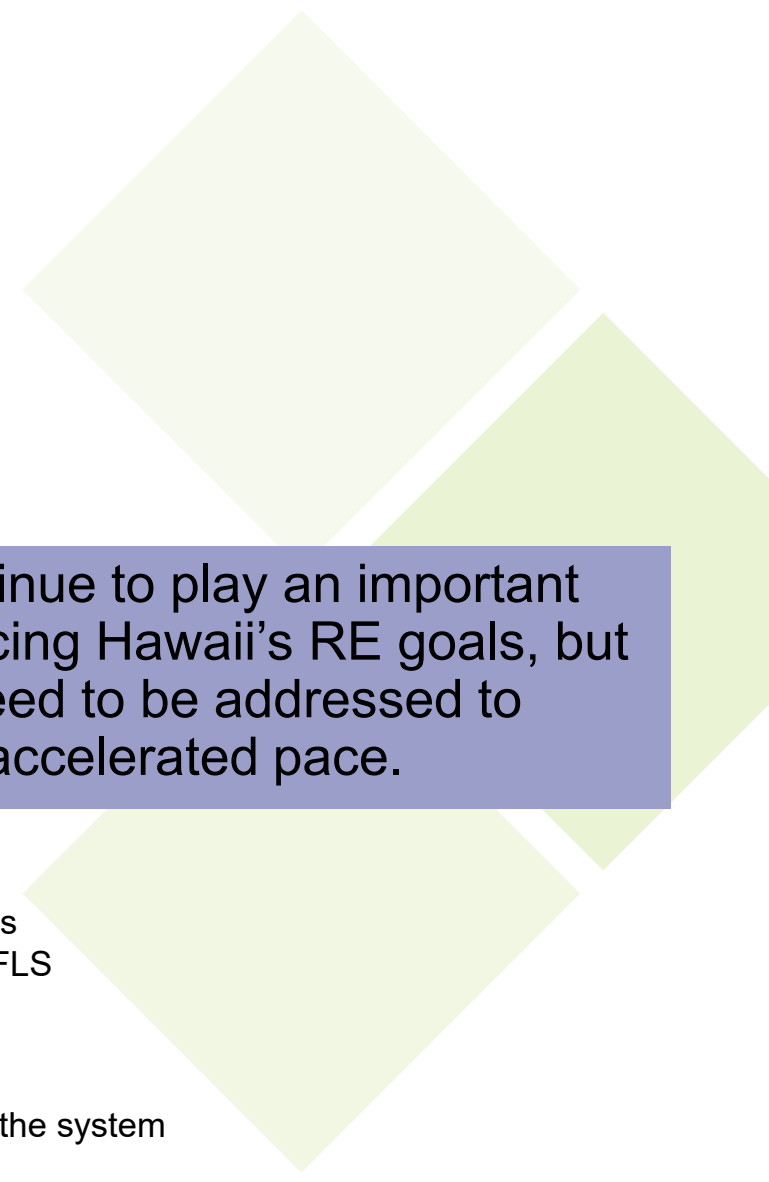
Opportunities

- New Customer Programs (BYOD)
- Advanced Capabilities
- Improved Dynamic Modeling
- Increased Loads



Challenges

- Equity & Market Saturation
- Dist, Sub, Trans Hosting Capacity requiring costly upgrades
- Stability Impacts (Ride-Through, Momentary Cessation, UFLS effectiveness)
- System Hosting Capacity (Generation Min Loads)
- Reliable Operation & Cost-Effective Controls
- Advanced inverter capabilities will impact other aspects of the system (Protection, Power Quality)



DER will continue to play an important role in advancing Hawaii's RE goals, but challenges need to be addressed to continue the accelerated pace.

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Mahalo for your time

Questions?

Learn More

 hawaiianelectric.com/clean-energy-Hawaii/integrated-grid-planning

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Example of DER use case

	Metric	Battery Bonus Program ⁷²
Overview	Primary Drivers	Resource Adequacy Decarbonization
	Grid Services	Capacity (Reduction)
	Resource Type	New Battery Storage w/Solar
	Customer Market Segment	Oahu Residential & Commercial, Maui Residential & Commercial
	Participating OEMs	OEM Agnostic Battery
	MW Enrolled	Oahu: 46.8 MW Maui: 8 MW
	Customers Enrollments ⁷³	~4,000
VPP Roles and Responsibilities	Resource Offtaker	Hawaiian Electric
	Program Operator	
	Customer Enrollment	
	Customer Payment Channel	
Customer Experience	Device Owner	Customer or Third-Party
	Participation Incentives	Up-front: \$850/kW Monthly Flat Rate Credit: \$5/kW of committed peak capacity Monthly Export Credit (available for non-net energy metering customers)
	Participation Requirements	Non-optional dispatch, required 10-year enrollment contract
	DER Control	OEM autonomously device-controlled dispatch without customer override
	Dispatch Timing	Frequency: Annual, daily 6–8:30 p.m. Duration: 2 hours Scheduling: Fixed 2-hour schedule established by HECO