

Hawaiian Electric Maui Electric Hawai'i Electric Light

Electrification of Transportation

Light Duty Electric Vehicle Adoption

Carbon Offset Symposium Hawaii State Capitol Auditorium



We view EoT as a high priority--it has a significant impact on RPS, climate change, energy security, and grid modernization





We cannot go it alone—it's a *kākou* thing

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Five near term action steps in our strategy...

Near-term action steps	Hawaiian Electric Role	Partner Role
Boosting EV adoption by working with automakers, dealerships and advocates to lower the cost and educate customers		
Accelerating the buildout of charging infrastructure, especially in workplaces and multi-unit dwellings. Providing a critical backbone of reliable, public utility-owned chargers as the launching point from which the broader electric transportation and third party market in Hawaii can expand and solidify. Identifying and providing make-readies in gap areas to create opportunities for third party chargers that optimize grid and customer locations to meet driver needs	•	•
Supporting bus operators in transitioning to electric with targeted outreach and programs that reduce the upfront cost and provide practical charging solutions		
Creating grid service opportunities by leveraging demand response programs and rates that incentivize EV charging to align with grid needs and save money for both drivers and all grid customers	٩	٢
Coordinating with ongoing grid modernization and planning efforts to ensure smooth integration of EVs into energy delivery networks and maximizing use of renewable resources	•	Ċ

We need everyone working together towards transitioning to this clean energy future

By 2045 we forecast that on O'ahu one in two vehicles will be electric, on Maui ~ 60% and Hawai'i Island ~40%

Hawai'i is rated <u>#2 nationally</u> for electric vehicle adoption per capita!

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CO₂ emissions are forecasted to reduce significantly, <u>slowing</u> <u>climate change</u> and <u>increasing energy security</u> by importing less fossil fuels

O'ahu example in 2030, incremental LDV EV load ONLY

O'ahu forecasted # of ports and charging infrastructure cost

Forecasted public charging ports and light duty EV adoption

Charging infrastructure Cost Assumptions¹

Includes cost of purchasing and installing EVSEs at three type of locations—residential, workplace and public

- <u>Residential:</u> conservative estimate that a level 2 EVSE is purchased at each home by a EV driver. Purchase and installation of \$2300, annual reduction of 1.9%/year
- Public ports (from forecast):
 - DC fast charging ports: 1 DCFC port per DCFC (assume ~ 13%). Purchase and installation of ~\$130k, annual reduction of 1.9%/year
 - Public L2 and Workplace L2: 2 ports per L2
 - Public L2 purchase and installation of \$25k, annual reduction of 1.9%/year
 - Workplace L2 purchase and installation of \$8k, annual reduction of 1.9%/year

Charging infrastructure is ~ 24-30% of overall cost

Economic costs and benefits to O'ahu per personal light duty electric vehicle, NPV 2018-2045 Non-managed charging Smart charging \$2017/ vehicle Net benefit: Net benefit: 32% Electricity supply cost to serve EVs \$2577 per vehicle \$3401 per vehicle 12,000 increase Incremental upfront vehicle cost for EVs Charging infrastructure cost Avoided vehicle gagoling 10,000 VehicleO&M savings Federal EV tax credit 8,000 6,000 4,000 2,000 0 Benefit Benefit Cost Cost

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