



COLLEGE OF SOCIAL SCIENCES

HAWAII ENERGY POLICY FORUM

UNIVERSITY OF HAWAII AT MĀNOA

Docket No. 2018-0135: Hawaiian Electric Companies'
Electrification of Transportation
Strategic Roadmap

EoT Initiatives Booklet
Supplement to Excel Matrix

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Docket No. 2018-0135 Hawaiian Electric Companies' Electrification of Transportation Strategic Roadmap, Summary of Parties' Positions*

Electrification of Transportation Strategic Roadmap Initiatives

Initiative No.	Technology	Technology Segment	Description
1	LDVs, personal mobility solutions	All	Work with partners to deliver education and outreach campaigns to drivers, dealerships, fleet managers, and taxis and TNCs
2	LDVs, medium- and heavy-duty vehicles	All	Continue to electrify Hawaiian Electric fleets as availability of electrified vehicle technologies expands and the TCO comes down
3	LDVs	All	Work with partners to find ways to lower EV purchase costs
4	LDVs	All	Investigate and develop opportunities to lower customer bills in return for “smart” charging of vehicles and provision of grid services
5	LDVs	Personal Transportation	Expand access to charging for customers living in multi-unit dwellings (“MUDs”)
6	LDVs	Personal Transportation	Expand availability of workplace charging
7	LDVs	All	Expand availability of reliable public charging
8	LDVs	Personal Transportation	Engage the tourism industry
9	Buses	Transit Operators, School Districts, School Bus Contractors, Tour Bus Operators	Encourage and enable the electrification of smart charging of buses**
10	Medium and Heavy-duty vans, trucks, and off-road equipment	Goods movement, construction, military bases, first and last-mile tie-ins to HART	Encourage and enable the electrification of medium and heavy-duty vehicles and off-road equipment as technologies mature and become commercially available at reasonable cost

Near-term priorities***

*Parties selected are local government and nonprofit organizations that referenced specific EoT initiatives. Please note that page numbers indicated in this document are from the respective parties' comments.

**This category summarizes parties' that specifically listed their near-term priorities; note only County of Maui and Elemental Excelsior provided a ranking.

***Docket No. 2019-0000 (Transmittal No. 18-06), Decision and Order No. 36220 approved two pilot electric bus tariffs: Schedules E-BUS-J and E-BUS-P. The pilot tariff is limited to twenty electric bus charging accounts through December 31, 2023.

DBEDT

Initiative No.	Technology	Technology Segment	Description	DBEDT
1	LDVs, personal mobility solutions	All	Work with partners to deliver education and outreach campaigns to drivers, dealerships, fleet managers, and taxis and TNCs	
2	LDVs, medium- and heavy-duty vehicles	All	Continue to electrify Hawaiian Electric fleets as availability of electrified vehicle technologies expands and the TCO comes down	
3	LDVs	All	Work with partners to find ways to lower EV purchase costs	
4	LDVs	All	Investigate and develop opportunities to lower customer bills in return for “smart” charging of vehicles and provision of grid services	<p>Supports, as a near-term priority (p. 4). Suggests a time differentiated volumetric rate for charging (p. 4), and to expedite the rollout of time variant pricing, particularly for off-peak periods (p. 9). Comments these programs should be monitored and used to analyze charging patterns (p. 4-5).</p> <p>Comments that material (medium and long term) benefit from smart charging comes from the avoidance of infrastructure investments including battery storage (p. 9 - 10). There are also economic benefits from downward pressure on rates through increased electricity sales once there is a critical mass of adoption (p. 9). In early stages of adoption, benefit comes from short run avoided costs (from using energy that would otherwise be curtailed) but notes the need to balance using short-run vs. long-run avoided costs and benefits.</p>

5	LDVs	Personal Transportation	Expand access to charging for customers living in multi-unit dwellings (“MUDs”)	Supports, as a near-term priority (p. 4), investing in a backbone of publicly available EV chargers and in both Level 2 and fast charging infrastructure (pp. 7-8).
6	LDVs	Personal Transportation	Expand availability of workplace charging	Supports, as a near-term priority (p. 4), investing in a backbone of publicly available EV chargers and in both Level 2 and fast charging infrastructure (pp. 7-8). Recommends adding an additional priority and implementation of a workplace charging pilot program, like that identified in initiative #5. Recommends designing and implementing 1-3 pilots, external from Hawaiian Electric workplaces as identified in their initiative (p.11)
7	LDVs	All	Expand availability of reliable public charging	Supports, as a near-term priority (p. 4), investing in a backbone of publicly available EV chargers in a variety of locations to fill gaps in public charging network by third-party providers to install and reliably maintain (p. 7). Suggests a near term investment in Level 2 and fast charging infrastructure (p. 8), and that future investments should include collection of charging data and analysis to determine the optimal mix of charging infrastructure (p. 9).
8	LDVs	Personal Transportation	Engage the tourism industry	
9	Buses	Transit Operators, School Districts, School Bus Contractors, Tour Bus Operators	Encourage and enable the electrification of smart charging of buses***	Supports, as a near-term priority (p. 4). Comments direction from the Commission on the Companies’ role in smart charging of buses will help inform DBEDT’s development of the Beneficiary Mitigation Plan and avoid duplication of clean transportation efforts in the medium and heavy-duty vehicle sectors.
10	Medium and Heavy-duty vans, trucks, and off-road equipment	Goods movement, construction, military bases, first and last-mile ties to HART	Encourage and enable the electrification of medium and heavy-duty vehicles and off-road equipment as	

			technologies mature and become commercially available at reasonable cost	
Near-term priorities**				4, 5, 6, 7, 9
Additional Comments				

Division of Consumer Advocacy

Initiative No.	Technology	Technology Segment	Description	Division of Consumer Advocacy
1	LDVs, personal mobility solutions	All	Work with partners to deliver education and outreach campaigns to drivers, dealerships, fleet managers, and taxis and TNCs	
2	LDVs, medium- and heavy-duty vehicles	All	Continue to electrify Hawaiian Electric fleets as availability of electrified vehicle technologies expands and the TCO comes down	
3	LDVs	All	Work with partners to find ways to lower EV purchase costs	
4	LDVs	All	Investigate and develop opportunities to lower customer bills in return for “smart” charging of vehicles and provision of grid services	<p>Supports, comments value of grid services must be established (pp. 15-16).</p> <p>Raises concern over specialized rates as such rates should reflect the benefit provided to the grid at the time and location of delivery, and if the value of grid services is not yet established, then one-off tariffs could lead to unintended consequences for non-EV drivers (p. 16).</p>
5	LDVs	Personal Transportation	Expand access to charging for customers living in multi-unit dwellings (“MUDs”)	<p>Supports “make-ready” infrastructure (i.e. backend electrical infrastructure to connect charging station) (p. 13) as it facilitates third-party competition and reaches underserved population, but comments further analysis is needed to determine its viability.</p> <p>Requests clarification on whether MUD pilot is separate from the Direct Charge Fast Charger pilot in Docket No. 2016-0168 (p. 13) and asks for examples of potential MUD sites and associated costs (p. 14)</p>
6	LDVs	Personal Transportation	Expand availability of workplace charging	<p>Supports, pushes for consideration of Level 2 stations as opposed to relying only on direct current fast charging, but asks for details on site selection and costs (p. 14).</p> <p>Recommends establishing monitoring and reporting conditions for data collection (p. 14).</p>

7	LDVs	All	Expand availability of reliable public charging	<p>No position, acknowledges limited third-party investment, but questions role of utility in providing infrastructure (pp. 10-11), including between the utility and a subsidiary (p. 12).</p> <p>Comments capital costs should not be recovered in rate base unless charging stations enable EVs to provide grid services to the benefit of all ratepayers (p. 11). Notes the cost benefit analyses presented in the EoT Roadmap is agnostic with respect to the ownership of the charging infrastructure (p. 11).</p> <p>Encourages consideration of alternative business models (p. 11) and reevaluating market interest (e.g. through periodic auctions) (p. 12).</p>
8	LDVs	Personal Transportation	Engage the tourism industry	
9	Buses	Transit Operators, School Districts, School Bus Contractors, Tour Bus Operators	Encourage and enable the electrification of smart charging of buses***	Supports, but comments that one-off tariffs is an area of concern without a proper analysis of rate impacts and a stepwise plan, and the cost benefit analysis should be expanded to include electric buses (p. 17).
10	Medium and Heavy-duty vans, trucks, and off-road equipment	Goods movement, construction, military bases, first and last-mile tie-ins to HART	Encourage and enable the electrification of medium and heavy-duty vehicles and off-road equipment as technologies mature and become commercially available at reasonable cost	
Near-term priorities**				n/a
Additional Comments				-With regards to the cost benefit analysis and forecasts, requests a description of assumptions and methods with formulas and references intact (p. 6) and how these assumptions and CBA correspond with the EoT initiatives (p. 8). In addition, the cost benefit analysis should include sensitivity analyses based on a range of assumptions around the number of EVs and charging ports (composition and siting), and rate schedules, to assess whether all customers (even non-participating) benefit across all scenarios (p. 7-8).

-Recommends the developing a set of performance metrics for each of the initiatives, to provide clear goals, facilitate data reporting, and allow for assessing whether such initiatives are in the public interest and to prioritize them (p. 15).

-Recommends prioritizing rate design reform to facilitate the EoT process (p. 18).

County of Hawaii

Initiative No.	Technology	Technology Segment	Description	County of Hawaii
1	LDVs, personal mobility solutions	All	Work with partners to deliver education and outreach campaigns to drivers, dealerships, fleet managers, and taxis and TNCs	Supports, comments that it should be prioritized in the near term, and HECO should partner with the Counties to assist in outreach (p. 7).
2	LDVs, medium- and heavy-duty vehicles	All	Continue to electrify Hawaiian Electric fleets as availability of electrified vehicle technologies expands and the TCO comes down	
3	LDVs	All	Work with partners to find ways to lower EV purchase costs	Comments that up-front incentives and rebates should be carefully weighed and the proposed incentives are unclear and need to be described further (p. 11). Special focus should be placed on the low-income community if these incentives are considered (p. 11).
4	LDVs	All	Investigate and develop opportunities to lower customer bills in return for “smart” charging of vehicles and provision of grid services	<p>Supports (p. 6), with implementation of smart charging incentives and rates under the Grid Services Agreement as a high near-term priority across all islands (p. 7).</p> <p>Encourages expediting the definition and valuation of local distribution services to fully integrate smart charging compensation rates (p. 6). Expresses concern that since the Grid Services Agreement and Grid Services Purchases Agreements are separate from the infrastructure build-out envisioned under the EoT roadmap, their success could become uncoupled from the EoT build-out (p. 7).</p> <p>Recommends special attention should be paid to how these grid services are being tapped, how well the utility is doing in reaching out to EV owners and third-party aggregators, and how quickly adoption is occurring; comments HECO should place as high a priority on these areas as on the build-out of its own EV-related infrastructure (p. 7).</p> <p>Recommends a broad range of stakeholders to develop tariffs, potentially through advisory and working groups from the IGP process (p. 7).</p> <p>Recommends the PUC request a report from HECO on the success or failure of any similar rates and tariffs in other jurisdictions (p. 7).</p>

5	LDVs	Personal Transportation	Expand access to charging for customers living in multi-unit dwellings (“MUDs”)	
6	LDVs	Personal Transportation	Expand availability of workplace charging	Supports, as a near-term priority (p. 8). Comments that benefits must be balanced against cost of infrastructure needed, additional information is needed on HECO's plan to install and own make-readies, including the total estimated cost to ratepayers, anticipated timeline, and the degree to which entities like Counties and others can partner on workplace charging in a way that benefits County taxpayers (p. 9).
7	LDVs	All	Expand availability of reliable public charging	Supports HECO ownership of some public charging infrastructure in the near-term (p. 9), but recommends the PUC carefully weigh the role of HECO, private entities, and the counties when determining how much public infrastructure to approve (p. 9). Comments that partnership with counties for implementation of infrastructure should be considered (p. 9). Encourages PUC to require HECO to better assess the timing of the build-out of infrastructure (make-readies and HECO charging station ownership), the cost of infrastructure, as well as the cost of any upfront incentives over time (p. 10). In addition, encourages PUC to pay close attention to who reaps the benefits of the infrastructure HECO is proposing (p. 10-11). Comments finding the proper point at which to transition away from utility investment will be crucial to protecting the interest of ratepayers (p. 11).
8	LDVs	Personal Transportation	Engage the tourism industry	
9	Buses	Transit Operators, School Districts, School Bus Contractors, Tour Bus Operators	Encourage and enable the electrification of smart charging of buses***	Supports, comments that counties should be consulted on battery service agreements and e-bus tariffs (p. 10), and proposals to build and own make-readies for bus depots should be assessed for cost to ratepayers (p. 10). Distribution system upgrades should be considered in tandem with other priorities (p. 14).
10	Medium and Heavy-duty vans, trucks, and off-road equipment	Goods movement, construction, military bases, first and last-	Encourage and enable the electrification of medium and heavy-duty vehicles and off-road equipment as technologies mature and become commercially available at reasonable cost	

		mile tie-ins to HART		
Near-term priorities**				4,6
Additional Comments				<p>-Comments that many of the initiatives could be implemented differently depending upon the outcome of other interrelated dockets. Requests HECO describe how they will achieve this coordinated planning (pp. 4-5).</p> <p>-Cautions how some of the aspects of the Roadmap appear to reinforce the monopoly business model and could foreclose competition from third party entities in the EoT space (p. 5). Comments that EoT Roadmap discusses various ongoing dockets but does not address that these dockets may ultimately lead to a more competitive, market-based system for electricity even as HECO proposes to own and rate base an indeterminate amount of EoT infrastructure (p. 5).</p> <p>-Requests more details on how EoT will lower the unit cost of electricity for all as well as fixed cost allocation (p.11-13). Requests additional information on how existing EV performance facilitates rooftop PV adoption and location-based value of EVs in relation to real-time prices or locational marginal pricing (p. 14).</p> <p>-Comments as EV charging is implemented by individuals, utility data is a public resource and should be accessible to the public (p. 14).</p> <p>-Recommends the PUC ask HECO to develop plans on how distribution system upgrades will be accomplished in tandem with other priorities and as part of the IGP and RFP processes (p. 14).</p> <p>-Comments all EV corridors (including those in Hawaii County) should be considered in planning (p.14).</p> <p>-Recommends a regular and iterative stakeholder engagement as outlined in IGP (p. 6) and requests establishment of working groups to address all major EoT initiatives with near-term goals (p. 15).</p> <p>-Requests cost benefit analyses across all islands and for all major stakeholders and calculation of benefits associated with EoT adoption reported to the PUC and public annually (p. 15).</p>

City and County of Honolulu

Initiative No.	Technology	Technology Segment	Description	City and County of Honolulu
1	LDVs, personal mobility solutions	All	Work with partners to deliver education and outreach campaigns to drivers, dealerships, fleet managers, and taxis and TNCs	
2	LDVs, medium- and heavy-duty vehicles	All	Continue to electrify Hawaiian Electric fleets as availability of electrified vehicle technologies expands and the TCO comes down	
3	LDVs	All	Work with partners to find ways to lower EV purchase costs	
4	LDVs	All	Investigate and develop opportunities to lower customer bills in return for “smart” charging of vehicles and provision of grid services	Supports, as a top near-term priority (p. 2)
5	LDVs	Personal Transportation	Expand access to charging for customers living in multi-unit dwellings (“MUDs”)	Supports, as a top near-term priority (p. 2).
6	LDVs	Personal Transportation	Expand availability of workplace charging	Supports, as a top near-term priority (p. 2).
7	LDVs	All	Expand availability of reliable public charging	Supports, as a top near-term priority (p. 2).
8	LDVs	Personal Transportation	Engage the tourism industry	
9	Buses	Transit Operators, School Districts, School Bus Contractors, Tour Bus Operators	Encourage and enable the electrification of smart charging of buses***	Supports, as a top near-term priority (p. 2).
10	Medium and Heavy-duty vans, trucks,	Goods movement, construction, military bases,	Encourage and enable the electrification of medium and heavy-duty vehicles and off-road equipment as technologies mature	

	and off-road equipment	first and last- mile tie-ins to HART	and become commercially available at reasonable cost	
Near-term priorities**				4, 5, 6, 7, 9
Additional Comments				- Comments on the importance of plans and actions to be aligned with the utility's resource planning processes and other PUC-led investigatory proceedings (pp. 1-2).

County of Maui

Initiative No.	Technology	Technology Segment	Description	County of Maui
1	LDVs, personal mobility solutions	All	Work with partners to deliver education and outreach campaigns to drivers, dealerships, fleet managers, and taxis and TNCs	Supports, as a lower importance and supporting initiative (p. 2).
2	LDVs, medium- and heavy-duty vehicles	All	Continue to electrify Hawaiian Electric fleets as availability of electrified vehicle technologies expands and the TCO comes down	Supports, as a lower importance and supporting initiative (p. 2).
3	LDVs	All	Work with partners to find ways to lower EV purchase costs	Supports, as a lower importance and supporting initiative (p. 2).
4	LDVs	All	Investigate and develop opportunities to lower customer bills in return for “smart” charging of vehicles and provision of grid services	Supports, as a medium near-term priority. Comments that other initiatives (#5, 6, 7, 9) rely on rates that don't subsidize the market at the cost of other ratepayers while still allowing the market to develop. Suggests this initiative needs to be adjusted according to adoption levels, noting that a critical mass is needed for this initiative to be most effective. (p. 2)
5	LDVs	Personal Transportation	Expand access to charging for customers living in multi-unit dwellings (“MUDs”)	Supports, as a high near-term priority (p. 2). Comments that to the extent Initiative #7 and #6 are efficiently executed, there is some protection for those affected by a lack of access at MUDs (p. 2). However, if the only obstacle is the collective ownership of a condominium and their governance, this isn't an issue for the utility to solve (p. 2).
6	LDVs	Personal Transportation	Expand availability of workplace charging	Supports, as a high near-term priority (p. 2).
7	LDVs	All	Expand availability of reliable public charging	Supports, as a high near-term priority. Comments that prior to expanding public infrastructure, must first find ways to make an asset viable that had essentially no cost to the public to install (p. 1).
8	LDVs	Personal Transportation	Engage the tourism industry	Supports, as a lower importance and supporting initiative (p. 2).
9	Buses	Transit Operators, School Districts,	Encourage and enable the electrification of smart charging of buses**	Supports, as a high near-term priority, but comments that HECO should compare its ability to serve the bus market against other solutions (p. 1).

		School Bus Contractors, Tour Bus Operators		
10	Medium and Heavy-duty vans, trucks, and off-road equipment	Goods movement, construction, military bases, first and last-mile tie-ins to HART	Encourage and enable the electrification of medium and heavy-duty vehicles and off-road equipment as technologies mature and become commercially available at reasonable cost	Supports, as a lower importance and supporting initiative (p. 2)
Near-term priorities***				9,7,6,5 (loosely ordered)
Additional Comments				<ul style="list-style-type: none"> - Requests considering and continually testing alternative business models, technologies, etc. as the utility may be better qualified or position to fill certain roles (p. 1). - Comments that ratepayer-financed electric grid should not be a tool used to exclude other competitors (p. 1). - Points out that the importance of EoT plans to be aligned with other PUC proceedings such as IGP/PSIP, DER, PBR, and Grid Modernization (p. 1).

County of Kauai

Initiative No.	Technology	Technology Segment	Description	County of Kauai
1	LDVs, personal mobility solutions	All	Work with partners to deliver education and outreach campaigns to drivers, dealerships, fleet managers, and taxis and TNCs	
2	LDVs, medium- and heavy-duty vehicles	All	Continue to electrify Hawaiian Electric fleets as availability of electrified vehicle technologies expands and the TCO comes down	
3	LDVs	All	Work with partners to find ways to lower EV purchase costs	
4	LDVs	All	Investigate and develop opportunities to lower customer bills in return for “smart” charging of vehicles and provision of grid services	Supports, pointing to designing rates that incent charging concurrent to renewable generation and reflect the savings from avoiding additional bulk storage investments (p. 2)
5	LDVs	Personal Transportation	Expand access to charging for customers living in multi-unit dwellings (“MUDs”)	Supports, citing electric utilities’ central role in coordinating the optimal location of charging infrastructure relative to grid capacity and user needs (p. 1).
6	LDVs	Personal Transportation	Expand availability of workplace charging	Supports, citing electric utilities’ central role in coordinating the optimal location of charging infrastructure relative to grid capacity and user needs (p. 1).
7	LDVs	All	Expand availability of reliable public charging	Supports, citing electric utilities’ central role in coordinating the optimal location of charging infrastructure relative to grid capacity and user needs (p. 1).
8	LDVs	Personal Transportation	Engage the tourism industry	
9	Buses	Transit Operators, School Districts, School Bus Contractors, Tour Bus Operators	Encourage and enable the electrification of smart charging of buses**	

10	Medium and Heavy-duty vans, trucks, and off-road equipment	Goods movement, construction, military bases, first and last-mile tie-ins to HART	Encourage and enable the electrification of medium and heavy-duty vehicles and off-road equipment as technologies mature and become commercially available at reasonable cost	
Near-term priorities***				n/a
Additional Comments				<p>-Requests coordinating a network of standardized EV service equipment (p. 1).</p> <p>-Comments on the sensitivity of fixed utility cost allocation for EVs (p. 2).</p>

Blue Planet Foundation

Initiative No.	Technology	Technology Segment	Description	Blue Planet Foundation
1	LDVs, personal mobility solutions	All	Work with partners to deliver education and outreach campaigns to drivers, dealerships, fleet managers, and taxis and TNCs	Supports, as a near-term priority (p. 2).
2	LDVs, medium- and heavy-duty vehicles	All	Continue to electrify Hawaiian Electric fleets as availability of electrified vehicle technologies expands and the TCO comes down	
3	LDVs	All	Work with partners to find ways to lower EV purchase costs	
4	LDVs	All	Investigate and develop opportunities to lower customer bills in return for “smart” charging of vehicles and provision of grid services	Supports, as a near-term priority (p. 2)
5	LDVs	Personal Transportation	Expand access to charging for customers living in multi-unit dwellings (“MUDs”)	Supports, as a near-term priority (p.1). Comments the buildout of EV-ready parking stalls in MUDs and new construction is integral to a robust electrified transportation system (p. 1). Comments that increased charging options in MUDs is a critical step toward increase EV adoption and the timeline and scope of proposed pilots should be accelerated (p. 1).
6	LDVs	Personal Transportation	Expand availability of workplace charging	Supports, as a near-term priority (p. 1). Comments that the utility should prioritize a viable workplace charging program in the next one to three years as described in the Strategic Roadmap (p. 2).
7	LDVs	All	Expand availability of reliable public charging	Supports, as a near-term priority (p. 1). Comments the development of a backbone public charging infrastructure throughout the state is integral to a robust electrified transportation system (p. 1). Supports the utility in continuing to develop a backbone network of DC fast chargers (p. 2).
8	LDVs	Personal Transportation	Engage the tourism industry	
9	Buses	Transit Operators, School Districts, School Bus	Encourage and enable the electrification of smart charging of buses**	Supports, as a near-term priority, through the development of smart tariffs and financing mechanisms (p. 2).

		Contractors, Tour Bus Operators		
10	Medium and Heavy-duty vans, trucks, and off-road equipment	Goods movement, construction, military bases, first and last-mile tie-ins to HART	Encourage and enable the electrification of medium and heavy-duty vehicles and off-road equipment as technologies mature and become commercially available at reasonable cost	
Near-term priorities***				n/a
Additional Comments				

Elemental Exclerator

Initiative No.	Technology	Technology Segment	Description	Elemental Exclerator
1	LDVs, personal mobility solutions	All	Work with partners to deliver education and outreach campaigns to drivers, dealerships, fleet managers, and taxis and TNCs	Recommends inclusion of state and county governments, car and bike systems, and the Sustainable Transportation Coalition of Hawaii (p.1).
2	LDVs, medium- and heavy-duty vehicles	All	Continue to electrify Hawaiian Electric fleets as availability of electrified vehicle technologies expands and the TCO comes down	
3	LDVs	All	Work with partners to find ways to lower EV purchase costs	Recommends inclusion of state and county governments, car and bike systems, and the Sustainable Transportation Coalition of Hawaii (p.1). Recommends changing phrasing of initiative #3 to say "work with partners to increase EV and e-transit access options" instead of "work with partners to find ways to lower EV purchase costs" in order to be inclusive of auto-independent residents (pp.1-2).
4	LDVs	All	Investigate and develop opportunities to lower customer bills in return for “smart” charging of vehicles and provision of grid services	Supports, as near-term priority (p.2). Comments that one of the biggest barriers to EV adoption is the absence of transparent rate structures that incentivize charging in concert with grid needs. Transparent, flexible, technology-enabled pricing will give customers more options and give more residents access to EVs (p. 2)
5	LDVs	Personal Transportation	Expand access to charging for customers living in multi-unit dwellings (“MUDs”)	Supports, as a near-term priority (p.2).
6	LDVs	Personal Transportation	Expand availability of workplace charging	Supports as a near-term priority (p.2).
7	LDVs	All	Expand availability of reliable public charging	Supports, as a near-term priority (p.2).
8	LDVs	Personal Transportation	Engage the tourism industry	
9	Buses	Transit Operators, School Districts, School Bus	Encourage and enable the electrification of smart charging of buses**	Supports, as a near-term priority (p.2). Comments that there may be an opportunity for the PUC to encourage this across buses and other fleets through their regulation of motor carriers (p. 2).

		Contractors, Tour Bus Operators		
10	Medium and Heavy-duty vans, trucks, and off-road equipment	Goods movement, construction, military bases, first and last-mile tie-ins to HART	Encourage and enable the electrification of medium and heavy-duty vehicles and off-road equipment as technologies mature and become commercially available at reasonable cost	
Near-term priorities***			4,9,5,6,7 (ranked)	
Additional Comments			-Recommends as near-term actions: 1) an opening communications system and 2) an open charging system database (p. 1).	

Ulupono Initiative

Initiative No.	Technology	Technology Segment	Description	Ulupono Initiative
1	LDVs, personal mobility solutions	All	Work with partners to deliver education and outreach campaigns to drivers, dealerships, fleet managers, and taxis and TNCs	Supports, as a near-term priority (p. 3).
2	LDVs, medium- and heavy-duty vehicles	All	Continue to electrify Hawaiian Electric fleets as availability of electrified vehicle technologies expands and the TCO comes down	
3	LDVs	All	Work with partners to find ways to lower EV purchase costs	
4	LDVs	All	Investigate and develop opportunities to lower customer bills in return for “smart” charging of vehicles and provision of grid services	Supports, as a near-term priority (p. 4)
5	LDVs	Personal Transportation	Expand access to charging for customers living in multi-unit dwellings (“MUDs”)	Supports, as a near-term priority (p. 3)
6	LDVs	Personal Transportation	Expand availability of workplace charging	Supports, as a near-term priority (p. 3)
7	LDVs	All	Expand availability of reliable public charging	Supports, as a near-term priority. Comments filling in gaps in existing network of Level 2 and direct current fast chargers (p. 3).
8	LDVs	Personal Transportation	Engage the tourism industry	
9	Buses	Transit Operators, School Districts, School Bus Contractors, Tour Bus Operators	Encourage and enable the electrification of smart charging of buses**	Supports, as a near-term priority for counties - by charging stations for county fleets or with EV bus battery service agreements (p. 3).
10	Medium and Heavy-duty vans, trucks, and off-road equipment	Goods movement, construction, military bases, first and last-mile tie-ins to HART	Encourage and enable the electrification of medium and heavy-duty vehicles and off-road equipment as technologies mature and become commercially available at reasonable cost	

Near-term priorities***	1,4,5,6,7,9
Additional Comments	<p>- Disagrees that allowing HECO to put charging stations and other EoT assets in rate base would mean having non-EV drivers subsidizing EV drivers (p. 2). (Believes the opposite is true due to the economic value created by early adopters to other customers and the PSIP scenario that showed high EV adoption would lower total system cost if vehicle-to-grid was enabled at scale.)</p> <p>- Comments that HECO is the best-suited stakeholder to close the gaps in the charging station network due to its ability to do long-range planning and consider levelized costs, with PUC oversight (p. 3).</p>