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PUBLIC UTILITIES
COMMISSION

The Honorable Chair and Members of the
Hawai'i Public Utilities Commission
465 South King Street, First Floor
Kekuanaoa Building
Honolulu, Hawai'i 96813

Dear Commissioners:

Subject: Docket No. 2018-0135 ≈ EoT Strategic Roadmap
Companies' Electrification of Transportation Workplan

In accordance with Order No. 36448 *Providing Guidance and Directing the Hawaiian Electric Companies' to File a Workplan*,¹ filed July 31, 2019 in the subject proceeding, the Companies respectfully submit herewith their Electrification of Transportation (EoT) Workplan.

Sincerely,

Kevin M. Katsura
Director
Regulatory Non-Rate Proceedings

cc: Division of Consumer Advocacy

¹ The "Hawaiian Electric Companies" of "Companies" are Hawaiian Electric Company, Inc., Maui Electric Company, Limited and Hawaii Electric Light Company, Inc.

EoT Workplan

I. Introduction

In accordance with the Commission’s Order No. 36448 (“Order 36448”) issued on July 31, 2019, in Docket No. 2018-0135, the Hawaiian Electric Companies (“Companies”)¹ hereby submit their Electrification of Transportation 18-month Workplan (“EoT Workplan” or “Workplan”). Consistent with Commission guidance, the Companies’ Workplan establishes a schedule to implement the Companies’ Electrification of Transportation Strategic Roadmap (“EoT Roadmap” or “Roadmap”),² with a focus on EV rate design and make-ready charging infrastructure in the near-term.

As set forth by the Commission in its Order, “[a]s the HECO Companies pursue the initiatives identified in the EoT Roadmap, thus moving from planning to implementation, the Commission would like additional details on how the HECO Companies intend to implement the EOT Roadmap in the short-term (e.g., over the next 12-18 months), considering the discussion and guidance herein.”³ The Commission noted that “[s]uch information will help to inform the Commission’s review of requests for approval and may additionally help to inform planning efforts of several stakeholder groups. The Commission therefore directs the HECO Companies to file a Workplan within 90 days of the date of this order, in which the Companies indicate how they intend to implement the EOT Roadmap, with a focus on EV Rate Design and Charging Infrastructure in the short-term, consistent with the discussion and guidance herein.”⁴

The Companies’ EoT Roadmap outlines the Companies’ proposed role to optimize, facilitate, accommodate, and integrate EoT within their service areas according to near-, medium-, and long-term actions. The Roadmap also establishes guiding principles that drive the Companies’ priorities with respect to programs and policies. Over time, these guiding principles have evolved due to continued feedback and changing regulatory guidance. Exhibit A, attached hereto, sets forth the Companies’ guiding principles that will be incorporated when developing the various rate designs and make-ready programs identified in this Workplan as well as a summary of relevant EoT regulatory background.

The following Workplan focuses on the Companies’ near-term goals, incorporating Commission guidance, and reprioritizing various near-term actions first established in the EoT Roadmap to better align with current objectives. While the Companies’ overarching priorities exist at a high level, the Companies draw upon almost ten years of engagement in the EV space. Through rates

¹ The “Hawaiian Electric Companies” or “Companies” are Hawaiian Electric Company, Inc., Maui Electric Company, Limited (Maui Electric), and Hawai’i Electric Light Company, Inc.

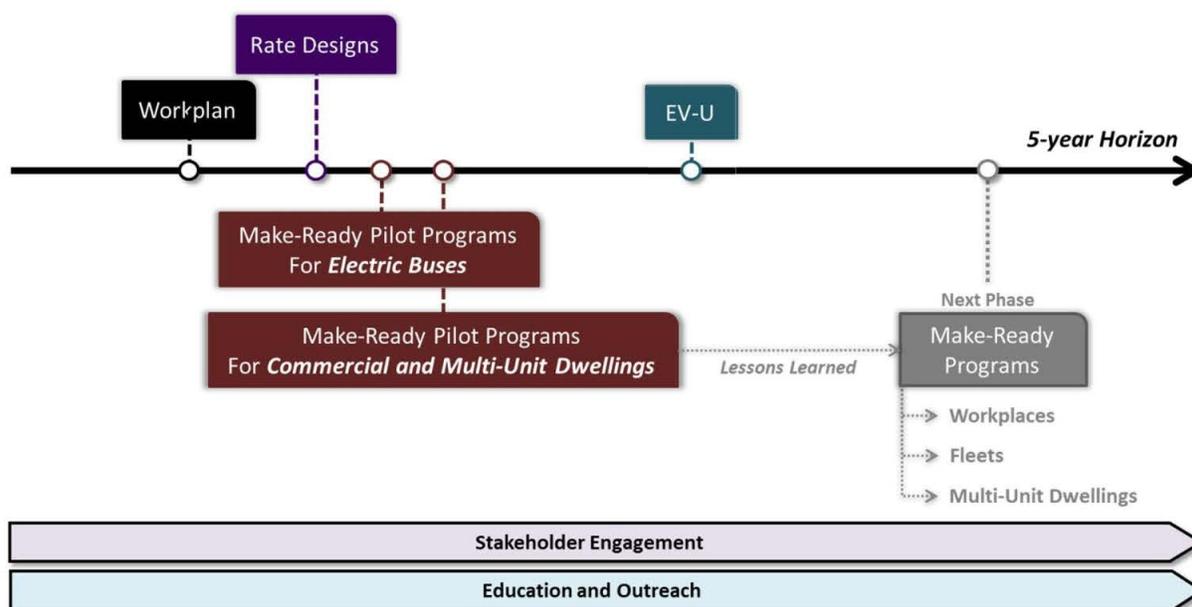
² See Docket No. 2016-0168, Electrification of Transportation Strategic Roadmap, filed March 29, 2018.

³ Order 36448, at 19-20.

⁴ Id.

and infrastructure, education and outreach, and fleet and bus electrification, the Workplan will continue the near-term efforts already underway while bringing more transparency to the Companies' vision extending through the near-term and beyond. With this insight, the Companies focus on implementation with a clear path to achieve its near-term goals. Figure 1 below illustrates a path for the near-term actions discussed in more detail in this submittal and how these actions will continue in the medium-term. The intent of this overview is to provide a slightly broader visual picture of the proposed rate and program deployment discussed further herein.

Figure 1: Near-Term Actions (5-year Horizon)



II. Discussion: Implementation of Near-Term Actions

EV adoption is forecasted to increase regardless of utility programs; however, new electrification programs can accelerate this growth and steer customer behavior to align with state energy goals and grid needs, creating a symbiotic relationship between EVs and utility services. Company programs can also create a structure for future programs when technology, resources, and business cases evolve by helping to identify customer and grid needs over time. This relationship will help mitigate potential challenges resulting from increased electricity demand while increasing the various benefits that EVs can provide. The Roadmap's broader vision identified near-term actions that would comprise most of the Companies' efforts in the following one to three years. Generally, the near-term actions are: educate and conduct outreach; identify grid service opportunities; electrify the Companies' fleets; deploy and support charging infrastructure; and support bus fleet electrification. This Workplan incorporates the Roadmap's near-term actions into the Commission's guidance and planned approach over the next 18 months.

Roadmap Initiatives 4, 5, 6, and 7⁵ identified the development of EV charging rates incentives and deploying additional vehicle charging infrastructure as key to incentivizing EV adoption by giving customers surety and a clear value proposition to adopt electric transportation. The Roadmap establishes that the availability of new and more effective “smart” charging rates will not only bring value to the grid, but also value, convenience, and choices to customers. Similarly, deploying make-ready infrastructure that incorporates smart meters and demand response (“DR”) technology where appropriate, will provide customers, site hosts, and third-party businesses a simpler, lower-cost option to install charging infrastructure that in aggregate, will also help bring value to the grid. The Companies also plan to leverage lessons learned while electrifying their own fleet and operating public DC fast charging infrastructure to support the deployment of make-ready pilots. This section will address the Companies’ near-term plans related to rate design and make-ready program development and how they align with current rates and programs in the next 18 months. Section III below, provides an overview of the Companies’ anticipated filings and timeline.

A. Rate Design

As set forth in the Roadmap, the Companies seek to “investigate and develop opportunities to lower customer bills in return for ‘smart’ charging of vehicles and provision of grid services.”⁶ The Companies continue to investigate longer-term smart charging technology opportunities, such as:

- Battery-paired charging demonstrations, which could potentially reduce the peak load and grid impacts of fast charging;
- Testing the integration of lower capacity charging (i.e., “Level 1” charging) to mitigate and address grid impacts;
- Evaluation of various EV charge station manufacturers/types, including vehicle-to-grid (“V2G”) capability using Companies’ fleet and employee volunteer vehicles at base yards.

The Companies continue to support the development of new EV technology through internal demonstrations, the existing Schedule EV-U DC fast charging pilot, as well the ongoing grid service DR aggregator efforts underway.⁷ As part of these efforts, the EoT team will support the evaluation of bids and help verify EV performance against the grid service requirements, as well as investigate the make-ready requirements to support these technologies as the market matures. In the near-term, the Companies will effectuate this Roadmap initiative primarily

⁵Roadmap Initiative #4: Investigate and develop opportunities to lower customer bills in return for ‘smart’ charging of vehicles and provision;

Roadmap Initiative #5: Expand access to charging infrastructure for residents of multi-unit dwellings (MUDs);

Roadmap Initiative #6: Expand access to workplace charging;

Roadmap Initiative #7: Expand availability of reliable public charging;

⁶ See Roadmap Initiative #4, Roadmap, at 76.

⁷ See generally, Docket No. 2017-0352.

through the development of time-of-use (“TOU”) rates, which also align with the Commission’s guidance directing the Companies to focus on rate design. As discussed further herein, the Companies will evaluate existing rates and propose new rates in the form of TOU rates as part of an overall package of EoT rate design. These smart charging rates will incorporate outcomes from the Companies’ Advanced Rate Design Strategy (“ARDS”), where applicable.⁸ These rate designs will also seek to establish program participation requirements that leverage advanced metering deployment as well as facilitating make-ready programs that potentially include demand response equipment capability requirements. This strategy will help ‘future proof’ third-party EV infrastructure and facilitate data collection to expand visibility into the effectiveness of rate designs.

Commission Order 36448 stated that “while the Companies recognized there are opportunities to lower customer bills in return for smart charging and provision of grid services, there is little discussion of rate design principles, best practices, or the impact of rate design on EV adoption and on the cost of electricity. The Commission notes the fundamental importance of the cost of electricity in the adoption of EVs, and for electrification of transportation in general.”⁹ The Commission directed the Companies to “prioritize rate design in the short-term, and to revisit currently available rates as part of the ARDS. Consistent with the commission's comments in Docket No. 2018-0422, EV rates should: (1) incentivize charging when there is extra generation on the grid, (2) send appropriate price signals to current and potential EV drivers, and (3) be tailored to each island's specific grid needs.”¹⁰ This directive will require testing to arrive at viable rate structures that achieve the Commission’s objectives and therefore the Companies envision establishing a suite of pilot rates to support various EV customer segments.

In order to ensure customer adoption, the Companies will endeavor to establish sufficiently clear and valuable price signals to motivate customers to make a behavioral change. Drawing on the principles set forth herein, the Companies intend to develop a suite of pilot rate proposals aimed at enhancing customer options and addressing changing customer demands. Filing a suite of EV rates will provide the Commission and Consumer Advocate a more complete EV rate landscape to evaluate at the same time. The Companies chose to lead with the rate design efforts because they will underpin future program development, such as the make-ready program and help the Companies evaluate future infrastructure and incentive programs by understanding potential revenues to be collected via the proposed pilot rates.

⁸ Docket No. 2019-0323, Instituting a Proceeding to Investigate Distributed Energy Resource Policies Pertaining to the Hawaiian Electric Companies, Advanced Rate Design Strategy, filed on September 25, 2019. Due to the timing of these EoT filings, the Companies will seek to incorporate guidance from the ARDS and other relevant dockets as they are finalized to ensure proper alignment. Thus, the Companies anticipate submitting updates to approved rates after orders are issued in those dockets where appropriate.

⁹ Id. at 15-16.

¹⁰ Id. at 16.

1. Evaluation of Current Rates

The Companies will begin by evaluating the effectiveness of existing EV rates and determine whether to replace or add new rates to meet additional market segments. The existing EV rates that the Companies will evaluate are:

- 1. TOU-RI** –TOU-RI is typically a whole home rate, but it also allows for a separately metered EV charging station under the rate. At the end of 2018, 102 of the 2382 customers enrolled in this rate indicated they owned an EV upon enrollment. However, the Companies have received comments from customers and stakeholders stating that the TOU-RI rate does not incentivize EV adoption because the lowest rate period is during the day when a large proportion of people are away from home and at work, and the non-fuel energy rate during the overnight period = when residential EV owners would like to charge an EV – may be higher than the regular residential non-fuel energy rate.¹¹ The Companies will explore the current TOU rate and look for innovative ways to both incentivize renewable energy use and enable greater customer-focused charging rates.
- 2. TOU EV** = This is a legacy rate that has been closed to new enrollment since September 2016 and is set to expire on September 30, 2020. Despite this rate being closed to new customers, it has had a relatively higher adoption rate over its lifetime, with 351 customers currently still registered in TOU EV. The rate’s high uptake is likely due to the lowest price occurring during the overnight period, which aligns with a larger subset of customer usage profiles who work during the day. The Companies will evaluate this rate and the participation of TOU EV as part of its overall review of residential TOU rates to determine whether a new or different pricing scheme would better suit residential customers.
- 3. E-BUS-J and E-BUS-P** – This rate was recently approved and has been identified as a good starting point for new rate design strategy. Currently there is one bus fleet customer participating on this rate. The Companies are also working with EPRI and a school bus operator to demonstrate and understand how their bus operations and charging schedule may integrate with daytime renewable generation. Based on the initial positive feedback, the Companies will evaluate this rate to determine if similar rate designs could be expanded to other customer segments.
- 4. EV-U** = EV-U is the foundational rate for the Companies’ DC Fast Charging program and will be evaluated for effectiveness as well as opportunities to improve behavioral incentives and the customer experience. The Companies acknowledge that EV-U and EV-MAUI would not be included in the pilot rate proposal suite, due to the timing of those dockets, and the desire to continue gathering data from the EV-MAUI program (assuming

¹¹ For example, in October 2019, Hawaiian Electric’s off-peak non-fuel energy rate for Schedule TOU-RI is 15.4397 cents/kWh, while the Schedule R non-fuel energy rates range from 10.6812 cents/kWh to 13.7121 cents/kWh.

approval) in order to develop a suitable rate design to support the two programs into the future, and possibly merging the two programs if justified at a later date. That said, the Companies anticipate making price adjustments to EV-U and EV-MAUI in the intervening period to gather data on pricing sensitivities prior to a formal program filing for EV-U in the 2021 timeframe.

5. **EV-F** = From the onset of the EV-U DC Fast Charger program, the Companies have offered EV-F as a separately metered commercial non-demand service up to 100 kW. As of the end of 2018, 11 customers were participating in Schedule EV-F. Electrify America has recently designated Honolulu in their Cycle 2 investment plan with an aim to install a limited number of 150 kW DC fast charging stations. The changing market needs will require the Companies to explore ways to improve the rate design and find a natural market segment or develop a complete replacement with a new rate design.

2. Pilot Rate Suite

Upon evaluation of the current EV rates, the Companies will evaluate at a minimum, the following rates to determine whether they should replace or stand alongside the Companies existing rates:

1. **High Capacity Charging** – The Companies have had several conversations with third-party charging developers requesting the development of a rate that would enable economic deployment of higher capacity charging infrastructure and address the concerns regarding demand charges as part of a rate incentive.¹² The national trend has been towards increased deployment of charging stations in aggregated “hubs.” This strategy can help limit construction costs and possibly take advantage of demand mitigation measures such as charge-rate step downs when multiple vehicles are plugged in at the same time. These trends along with increasing charging capacities are driving demand for higher-capacity facilities that can utilize rates that address demand charges.
2. **Commercial TOU** = This rate is designed to address the commercial market segment and intended to apply to the chargers deployed as part of the Companies’ make-ready charging infrastructure pilots, discussed further below.¹³ This rate will provide support to third-party markets and commercial customers to provide separately metered EV charging rates which can lower the cost to charge for charging behavior which best serves the grid. The Companies conceive this rate to be used in targeted use cases to inform future expanded make-ready programs and help the Companies determine the potential costs, implications, and participation parameters for broader programs in the future. The Companies anticipate requiring make-ready program participants subscribe to this rate as a precondition to program participation.

¹² This rate is conceived to provide a rate for site hosts and/or charging providers, who will have control over the final price signal to end users.

¹³ The eBus make-ready would leverage the approved pilot bus rates (Schedules E-BUS-J and E-BUS-P).

- 3. Residential TOU** = Drawing on the experience of the previous two EV residential rates, the Companies will evaluate ways to improve customer incentives to charge during high renewable production hours, while aligning with customer use cases to increase rate adoption and utilization. Based on feedback, it appears that prior residential rates have been less popular with customers when they are not necessarily aligned with their typical use case. While some customers can take advantage of a daytime incentive rate like TOU-RI, it is not clear that the majority of EV drivers can save money by using this rate if they cannot charge at home during the daytime. Based upon the Companies' experience with the previous residential EV rates, it appears that modifications to slightly decrease the overnight rate may create an incentive to increase use of the rate. The Companies will continue to test ways to provide customers value and simple rate choices to further support EV adoption and facilitate near-term charging behavior that best support the grid.

As further defined in Section III, below, the Companies intend to submit their rate evaluation and proposed rate suite in the second quarter of 2020.

3. Future Rate/Market Solutions (Medium-Term)

Beyond the near-term timeframe, the Companies will continue to explore new rate designs and market solutions that can increase customer choice, improve customer engagement, and create new market development opportunities in the next three to five years (i.e., medium-term). Future rate designs will require insights gained from the near-term pilot rates discussed above to establish the need, support the concepts, and provide a backdrop for comparison. Future rate designs should also leverage advanced meters and demand response functionality where appropriate. For discussion purposes only, the Companies anticipate exploring, at minimum, the following rate design/market solution concepts:

- 1. Customer-Flexible Charging Options** = The Companies will explore new opportunities to enhance the customer experience by leveraging existing company-owned charge stations to allow new ways to pay for charging while incentivizing mid-day charging. For example, investigating mechanisms to allow customers to pay for charge sessions at company-owned charging stations on their home bill. Because this payment concept requires leveraging company-owned charging stations, this rate will require the disposition of the EV-U program before development.
- 2. Locational Grid Support Charging/Pricing Pilot** = The Companies will explore partnering with site hosts to evaluate certain locations with high solar excess generation on the weekends. A small pilot using commercial rates to incentivize EV charging during these times may help test rate sensitivity to use excess energy for public charging. This effort could also include possible company-owned infrastructure to facilitate rate deployment, testing, and data gathering.

- 3. Prepaid Public Charging** = In an effort to increase customer choice, the Companies will explore developing a prepaid charging program for site hosts with public charging stations. This prepaid service could explore discounted prices for bulk purchases of energy, and increased discounts for charging during mid-day periods. This rate design would combine both a behavioral incentive with an adoption incentive for transportation network company drivers, condominium tenants, and high-mileage drivers.

B. Charging Infrastructure Deployment/Support

Since 2014, the Companies have deployed charging infrastructure to support the growth of EVs in their service territories. In the Roadmap, the Companies state that they will continue their efforts by:

Jumpstart[ing] charging infrastructure buildout in segments where there is not currently a business case or slow adoption for private sector engagement, or where split ownership incentives or other barriers need to be addressed. Specifically, we propose the following efforts:

- Creating partnerships to spur charging solutions in workplaces and [multi-unit dwellings (“MUDs”)], which currently face challenges due to conflicting incentives between owner, manager, and driver, as well as permitting challenges and significant upfront cost. MUDs are an important focus for unlocking EV adoption across the islands, and the focus on workplace charging will enable the Companies to align charging with grid needs and make use of increased solar resources. This will include piloting the provision of make-ready infrastructure where this is cost-effective for [Companies’] customers, incentivizing third-party charging providers to build charging infrastructure.
- Owning and operating a critical backbone of public DC fast chargers, beginning with the 25 metered accounts already approved, to ensure a constant, reliable charging network for all light-duty EV customers that is sufficient to remove range anxiety, providing charging alternatives for drivers who cannot conveniently charge at home (such as MUD tenants), and promote EV adoption
- Collecting and using data from existing and future charging solutions to enhance customer experience, inform future needs and siting, and increase the value that EoT provides to the grid.¹⁴

These efforts align with the Commission’s guidance directing the Companies to focus on charging infrastructure in the near-term, specifically make-ready infrastructure. As discussed further herein, the Companies will develop a series of multi-phase make-ready programs to learn how to

¹⁴ Roadmap at 65-66.

best deploy and leverage infrastructure and technology while integrating new customer loads onto the system.

1. Make-Ready Infrastructure Programs¹⁵

Commission Order 36448 stated that “[w]hile the commission expects that the Companies will continue to develop public charging options through the existing pilot program and the conditionally approved acquisition of the EVOhana charging station network (Docket No. 2018-0422), the commission would also like the Companies to identify and evaluate opportunities to support electrification of transportation through ‘make-ready’ infrastructure as a short-term priority.”¹⁶ The Commission noted that “‘make-ready’ infrastructure can support various charging options, and can assist in accelerating the transition to an electrified transportation system. While workplace charging, MUD, and other public charging opportunities are still of importance and should not be neglected, the commission believes the HECO Companies should identify and evaluate ‘make-ready’ infrastructure opportunities in the short-term.”¹⁷

To begin, the Companies will continue the work started in the *Electric Vehicle Critical Backbone Study: Planning Methodology* (“Backbone” or “Backbone Study”) and over the next several months will engage with stakeholders to evaluate various use cases/market segments, charging technology and geographic locations to identify a proposed subset of infrastructure that will support and/or validate a multi-phase make-ready request.¹⁸ The make-ready program is conceived to initially address three market segments (electric bus (“eBus”), commercial, and MUD) with a limited number of participants in the initial pilots. Because the eBus make-ready pilot involves a limited number of eligible participants and requires specifically tailored program design for specific construction requirements to match each eBus operators’ needs, the Companies have chosen to place the eBus make-ready pilot on a separate track from the commercial and MUD make-ready pilots, with a separate filing date and schedule as set forth in Section III, below.

The eBus make-ready would leverage the recently approved new pilot bus rates (Schedules E-BUS-J and E-BUS-P), while the commercial and MUD make-ready filing will leverage the proposed commercial rate pilot discussed above to support targeted make-ready pilots and better inform the consideration of larger programs. These rates will be critical to help the Companies determine the potential cost impacts of the programs, customer needs, and understand the potential for cross-subsidization to be evaluated prior to requesting an expansion of the pilots. The make-ready pilots will allow the Companies to evaluate the effectiveness of the proposed

¹⁵ For purposes of this discussion, “make-ready” is defined as infrastructure includes all necessary electrical infrastructure required up to, but not including, the charging equipment itself. This may include upgrades to transformers and service capacity and/or running new service drops. It may also include trenching and running conduit and cable to specific areas of a host site.

¹⁶ Order No. 36448 at 18-19.

¹⁷ Id. at 19.

¹⁸ On July 30, 2019, the Companies filed their *Electric Vehicle Critical Backbone Study: Planning Methodology* in Docket No. 2018-0135.

approach and learn how to best achieve program goals. These pilots will conclude with a filing to the Commission evaluating the measurements of success and lessons learned and will serve as the foundation for an expanded phase of the pilots, which will increase the number of participants moving forward.

A phased rollout is prudent because there are several considerations and design concepts that need to be evaluated and/or included as part of the make-ready programs. The Companies will leverage small initial pilots to determine the best approach to enter the expanded phase, leveraging lessons learned while developing and addressing the program design concepts and considerations. Some considerations and concepts would benefit from real-world testing before full-scale implementation, while others would only come into play at larger scale. The Companies seek to efficiently engage in pilot learning efforts before undertaking administrative expenditures and expanded program development and analysis that are associated with larger-scale deployment.¹⁹

Under the umbrella of the make-ready pilot applications, the Companies will evaluate and propose various deployment strategies and foster engagement with various market segments. These pilots will provide learning opportunities for the Companies and enable greater breadth of program coverage at the onset. These pilots will also leverage resources from partners to reduce the cost impact of the overall program. The following pilot concepts will be evaluated for possible inclusion in the make-ready pilot applications:

- 1. Electric Bus Charging Pilot** – The availability of new pilot bus rates (Schedules E-BUS-J and E-BUS-P) provide the bus operators the ability to lower their operating costs and provide a backdrop for make-ready deployment. Currently, there are a handful of electric buses in operation on O’ahu, and the City and County of Honolulu also completed an electric bus demonstration, both of which can provide insight and data for bus operators seeking to convert their fleets. In the near-term, the Companies will develop a separate pilot program filing for electric bus fleets, such as the planned electric shuttle bus services for the consolidated rental car facility at the Daniel K. Inouye International Airport, to support the installation of infrastructure for electric bus charging at bus depots. A possible alternative pilot could focus on tourist routes and reap an additional benefit of increased visibility for the visitor industry. The Companies will seek partners to develop a complete

¹⁹ There are numerous considerations and concepts that require the Companies’ evaluation and preparation for make-ready program design. The Companies have developed experience in several aspects; however, the formalization and operationalization of such concepts will require additional time and resources. Examples of such considerations include: policies for behind the meter infrastructure ownership; demand response functionality requirements; maintenance/operation requirement liability; interconnection requirements; preferred vendor list development; mandatory participation durations for site host; development of an application, review, verification process; program ramp up period; internal logistics and labor; reporting metrics; company-owned option and potential transfer of ownership; low/moderate income qualification and participation; website/ form development; education/outreach; legal documents and review process; qualifications for non-residential customers; matching the program’s guidelines with existing and future EV adoption; identification of sites that provide long dwell-time parking (where cars are typically parked for four hours or more); grant of easement from the property owner for make-ready; validation of proof of purchase of qualified charging equipment; site evaluation for proposed charging station locations; review/approval of property site plan; review of civil plan with existing utilities; compliance with Americans with Disabilities Act requirements; charging power level standards; and integration with other incentives.

strategy for deployment and leverage existing eBus rates where appropriate. In the medium- to long-term horizon, the Companies will continue to work closely with bus operators to understand infrastructure challenges to determine whether they can provide additional infrastructure or program support.

- 2. Commercial Charging Pilot** = The Companies will identify a limited set of potential commercial partners to collaborate on a charging make-ready pilot. Leveraging various commercial use cases for make-ready will be instrumental in learning how businesses and organizations would operationalize EV charging, and help the Companies deepen their understanding of deployment issues. A commercial make-ready pilot could be targeted in the form of a fleet pilot that employers may leverage for employee workplace charging. This could help increase the Companies' understanding of potential issues that facility managers face when trying to provide solutions for their customers. It is conceived this pilot would initially target government locations, since many local government fleets have committed to transition their fleets to alternative fuels. The initial phase will help the Companies examine implications of larger-scale implementation of charging infrastructure in commercial settings.
- 3. MUD Charging Pilot** – The Companies will identify a limited number of participating MUD hosts to partner in this initial pilot with the intention to deploy EV charging infrastructure in common-areas, focusing on existing facilities that can provide varying learning opportunities for the Companies. For example, the Companies will seek to partner with MUDs of various types, such as high-rise, walk-up, and townhomes if available. Anecdotally, early discussions with potential site hosts have shown a willingness to collaborate on identifying various issues and solutions to bring increased charging capability to MUDs. Many potential site hosts have confirmed that their tenants have consistently asked for electric vehicle charging at their parking facilities.

2. Existing Charging Infrastructure Programs

In addition to the make-ready, the Companies have existing charging infrastructure programs underway. While the Companies do not anticipate submitting a programmatic filing regarding these current programs during the next 18 months, the Companies intend to evaluate the underlying rates for both EV-U and proposed EV-MAUI as part of the overall rate evaluation discussed above and prepare for a future submittal to address the next phases of Company-owned charging infrastructure. That said, the Companies also anticipate making changes to the pricing structure of EV-U and EV-MAUI (if approved), to test various pricing sensitivities and gather data in the intervening period between the rate evaluation and the programmatic filing in early 2021. The following is a short summary of the Companies' existing and pending charging infrastructure programs.

- 1. Public DCFC (EV-U)** = As of this filing, the Companies have 17 DC fast charging stations throughout their service territories. The current pilot program is due to terminate in mid-

2023. As part of the Commission’s approval of the extension of this pilot, the Commission directed the Companies to indicate its long-term strategy for this program prior to the expiration of the pilot.²⁰ Preliminarily, the Companies will explore the underlying rate design as part of its overall rate evaluation efforts detailed above and will test various price sensitivities, but will reserve their programmatic request for this program until early 2021.²¹

2. **EV-MAUI** = At the time of this filing, the Commission has not yet issued a decision regarding the proposed EV-MAUI tariff. However, if approved, in line with Commission guidance to evaluate all EV related tariffs and assuming approval, the Companies will review EV-MAUI as part of the comprehensive review of tariff schedules moving forward. Also, in the event the EV-MAUI tariff is approved, the Companies anticipate testing rate sensitivities in the intervening period prior to a comprehensive program filing for EV-U sometime in early 2021. If approved and supported by data, the Companies would consider EV-U and EV-MAUI together in the EV-U program filing to determine whether the program and rates should be combined to improve the customer charging experience on Maui.

C. Outreach and Education

Program and stakeholder engagement not only serve to educate the customers, but also provides an avenue to better understand various customers’ and drivers’ needs. This information is necessary in the design of programs and underpins several efforts in the EoT area. Also, the availability of make-ready and rate programs will enhance the Companies ability to serve as a trusted energy advisor to the community.

A key element of rate deployment and a make-ready program will require program-specific education and outreach, in addition to the Companies’ ongoing general clean transportation education efforts. From the Companies’ perspective, there are two aspects of education and outreach: 1) general, and 2) programmatic. General education and outreach entails

²⁰ “In order to assist the transition from the pilot to longer-term tariffs or programs, the commission directs the Companies to include in the 2022 Annual Report a discussion of post-pilot alternatives, to the extent such alternatives are not discussed in the Companies’ ‘Electrification of Transportation’ strategy. The report shall include a discussion of the Companies’ intentions related to their Schedule EV-U facilities. For example, alternatives may include dismantling the facilities, selling the facilities to third-parties, or operating the facilities under more permanent tariffs. (fn. 199: The commission notes that alternatives may be available to the Companies aside from removing Schedule EV-U facilities when the pilot terminates and encourages the Companies to pursue such alternatives.”). Decision and Order No. 34592, Docket No. 2016-0168, filed June 2, 2017, at 60.

²¹ EV-U/EV-F Annual Report = The Companies will continue to submit its annual report for EV-U/EV-F through the pilot period. For the 18-month period established in this Workplan, the Companies would file its annual report in March of 2020, and again in 2021.

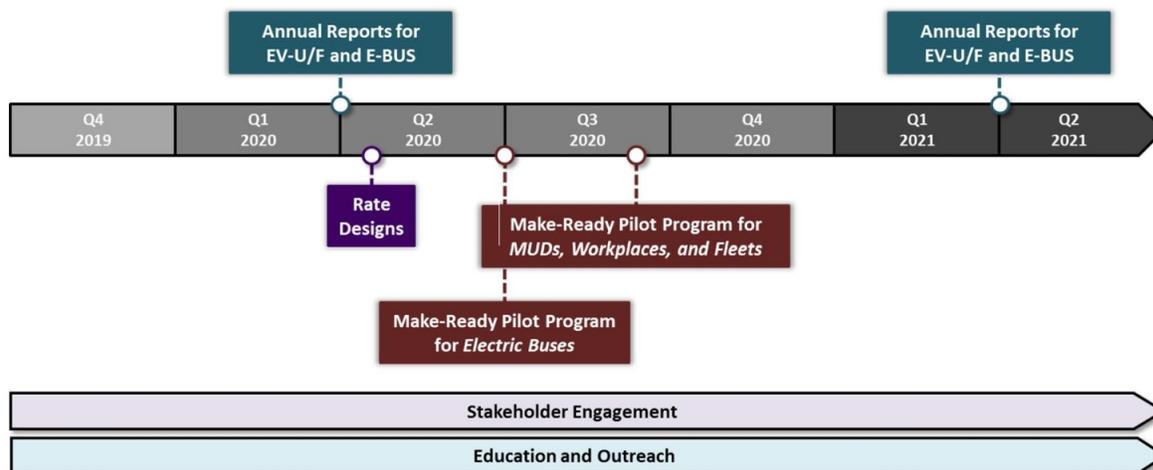
communicating the importance and benefits of electrification as well as providing resources to the public about external policies and opportunities to reduce barriers of adoption.²²

Programmatic education and outreach primarily consist of communication about utility programs or rates, which tend to be more specific and with an explicit goal or outcome for the customer. Both aspects of education and outreach are very important at this early stage in market development and the Companies anticipate general education and outreach to become increasingly the responsibility and focus of other agencies and organizations over time as the market matures. Conversely, as the Companies’ programmatic and rate offerings grow in size and scope, there will be an increased need to conduct education and outreach for these specific programs, as well as guide customers with their options of rates and programs. For example, the Companies will need to develop communication campaigns to garner participation in make-ready programs as well as communicate EV rate options for interested customers. There may always be a degree of overlap between general and programmatic outreach; however, the Companies expect programmatic education and outreach will become an increasing obligation as programs are deployed.

III. Summary of Filings and Anticipated Near-Term Schedule

Figure 2 below outlines the Companies’ regulatory schedule for the next 18 months.

Figure 2: Regulatory Filing Schedule



With respect to the Commission’s guidance to focus on rates and make-ready in the near-term, the Companies envision the deliverables to be filed in three separate filings with the Commission.

²² The Companies have developed strong partnerships with members of the Drive Electric Hawai’i group, and have undertaken several general outreach and educational efforts that support an expanded role of EoT in the community. Some examples of outreach efforts that the Companies have engaged in related to EoT are: First Hawaiian International Auto Show; National Drive Electric Week; community events (i.e., Hawaiian Electric’s Clean Energy Fair, Kapolei Sustainability Fair); ride and drive events; dealership outreach; industry partnerships; development of collateral/educational materials; legislative policy support; public communications; facilitation of industry stakeholder meetings.

The first filing will include a suite of EV rate designs that evaluate, validate, and potentially modify existing EV-specific rates in addition to proposing new/innovative rates and pricing structures. This “rate design” filing will also include lessons learned and analyses from existing rates; customer survey results; and feedback from internal and external stakeholders garnered during the development process. As discussed above, the rate design filing will include an evaluation of the following existing and potential new rates in Table 1 below:

Table 1: Summary of Rates

Segment	Rate	Existing Rates	Continuing and Proposed Rates
Residential	Residential TOU EV	✓	
	TOU-RI	✓	✓
	Residential TOU		✓
Commercial	EV-F	✓	
	E-BUS-J	✓	✓
	E-BUS-P	✓	✓
	High Capacity Charging		✓
	Commercial TOU		✓
Company-Owned	EV-U	✓	✓
	EV-MAUI*		✓

The Companies anticipate submitting this “rate design” filing with the Commission around the second quarter 2020.

The second filing will develop a framework for electric bus make-ready infrastructure pilot program based on best practices from other jurisdictions and tailored to the needs of each bus operator. The Companies also anticipate submitting this eBus make-ready filing with the Commission around the second quarter 2020.

The third filing will establish a multi-phase framework for EV make-ready infrastructure programs based on best practices from other jurisdictions and tailored to local needs by leveraging stakeholder input and feedback from surveys. As currently conceived, the framework would establish a preliminary limited pilot that will identify goals, timelines, objectives, and metrics of success for the pilot phase. The framework would also establish a timeline to submit an expanded phase request which will evaluate the lessons learned in the preliminary pilot phase as well as include a target market assessment, eligible target market size, infrastructure ownership options, program timeline, application, implementation and evaluation process, business case evaluation, grid services support, cost recovery mechanism, stranded asset risk evaluation, and education and an outreach plan. In parallel with the make-ready pilot development, the Companies will review and evaluate public comments of the EoT Strategic Roadmap and Critical Backbone Study: Planning Methodology, specifically pertaining to electric charging infrastructure. Building upon the backbone study engagement efforts, the Companies will

continue to work with key stakeholders to garner information from each stakeholder group on design considerations and desired outcomes for the proposed pilot programs and rate design development. At a minimum, the make-ready pilots will focus on Commercial and MUD markets discussed above. The Companies anticipate submitting this commercial and MUD make-ready filing with the Commission around the third quarter 2020.

Also, as mentioned above, the Companies will file its annual report for EV-U/EV-F as well as for Schedules E-Bus-J and E-Bus-P in March of 2020, and again in 2021. At the conclusion of the initial phases of the rate and make-ready pilots (to be detailed in the actual pilot applications), the Companies will submit an evaluation of program goals, objectives and outcomes as well as lessons learned and make a recommendation regarding the next phase design and considerations for the programs.

I. EoT Regulatory Background

A. Background of Current Docket

In 2012, the Companies filed their initial request to own and operate public DCFC stations to:

- Facilitate the development of the EV market, and in turn, support the transition of the fossil-fueled transportation industry to clean energy;
- Enable the public charging of EVs during the daytime;
- Prepare for the increased integration of EV charging on the grid, and;
- Allow the HECO Companies to provide public DC fast charging service to EV end-users in areas that lack EV charging infrastructure in order to minimize “range anxiety”.¹

In 2013, the Commission approved the Companies’ request to own and operate public DCFC stations, establishing tariffs EV-F and EV-U.² In Docket No. 2016-0168 in response to the Companies’ request to extend the public DCFC pilot, the Commission acknowledged that the pilot continues to “align with clear State policy objectives related to supporting EV adoption and reducing fossil fuel use in transportation.”³

In Docket No. 2016-0168, the Commission also directed the Companies to file their Electrification of Transportation strategy.⁴ In response, the Companies filed their EoT Roadmap outlining ten key initiatives, three of which address the need to install and maintain charging infrastructure.⁵ In that strategy document, the Companies stated that there would be a need to identify a critical backbone of infrastructure, which would represent a subset of the total charging infrastructure needed to support the growth of EVs.

On July 30, 2019, the Companies filed their Backbone Study. As discussed in the Companies’ EoT Roadmap, providing “a critical backbone of reliable, public utility-owned chargers as the launching point from which the broader electric transportation and third-party charging market in Hawai‘i can expand and solidify” is instrumental to optimize, facilitate, accommodate, and

¹ Schedule EV-F, Commercial Public Electric Vehicle Charging Facility Service Pilot, and Schedule EV-U, Commercial Public Electric Vehicle Charging Service Pilot for each of the Hawaiian Electric Companies were approved by Decision and Order No 31338 (“D&O 31338”), filed July 1, 2013 in Transmittal Nos 13-07 and 13-08, consolidated.

² Id.

³ Docket No. 2016-0168, Decision and Order No. 34592, filed June 5, 2017.

⁴ “Accordingly, the Commission will require the Companies to file their ‘Electrification of Transportation’ strategy by or before March 31, 2018. In the programmatic filing, the Companies shall include a discussion of the following issues: (1) the intended extent of the Companies’ participation in ‘Electrification of Transportation’ efforts in the Companies’ service territory; (2) how the Companies can foster opportunities within the Companies’ service territory for third parties in the EV charging market; (3) how the Companies’ ‘Electrification of Transportation’ strategy and efforts will interface with the Companies’ efforts related to demand response software, programs, and planning; (4) how the Companies’ ‘Electrification of Transportation’ strategy fits in with other dockets and related efforts, including dockets examining demand response (e.g., Docket No. 2015-0412) and distributed energy resources (Docket No. 2014-0192); and (5) how the Companies can ensure that tariffs provide for adequate flexibility as technology, the market, and other factors evolve within the EV landscape.” Id. at 59.

⁵ See Initiative 5, 6, and 7 in Docket No. 2016-0168, Electrification of Transportation Strategic Roadmap, filed March 29, 2018.

integrate EoT within its service area. To that end, the Companies submitted the methodology and tool to identify a Critical Backbone as defined in the EoT Roadmap for development as part of their charging network expansion (i.e., make-ready and potential EV-U) plans, to be discussed in a subsequent filing.

B. EoT Rate Design Regulatory Background

In addition to the regulatory background leading up to this filing, the Companies have nearly ten years' experience in developing EV specific rates, with varying degrees of success. The Companies agree with the Commission that rates are one of the most important components of utility engagement and support for EVs and will strive to achieve greater levels of success in the next rate design exercise. The following is a short summary of the Companies' EV rate history.

In 2010, the Commission approved three electric vehicle pilot rates, titled TOU EV, EV-R, and EV-C (collectively "EV Pilot Rates") for a three-year pilot period until September 30, 2013, pursuant to the Commission's Decision and Order, filed on September 30, 2010.⁶ The EV Pilot Rates consisted of two residential rate options and a commercial rate option:

1. **Schedule TOU EV** (Residential Time-of-Use Service with Electric Vehicle Pilot) if for a residential customer that elects to combine EV charger load with all other household electrical loads under one meter;
2. **Schedule EV-R** (Residential Electric Vehicle Charging Service Pilot) is for a residential customer that elects to have a separate electric meter installed for the exclusive purpose of charging batteries for on-road EVs; and
3. **Schedule EV-C** (Commercial Electric Vehicle Charging Service Pilot) is for commercial customers utilizing a separate electric meter for exclusive use of charging batteries for on-road EVs.

Upon completion of the five-year pilot period and the Companies' request to extend the pilot rates to 2020, the Commission determined that the EV Pilot Rates had "not fully achieved its intended objectives," and found with respect to TOU EV:

The Companies' most recent data reveals a steady increase in the number of Schedule TOU EV participants in HECO's service territory from 199 to 281 to 310, an increase in Schedule TOU EV participants in HELCO's service territory from five to eight, and a steady increase in the number of Schedule TOU EV participants in MECO's service territory from 26 to 32 to 35. The commission approves as just and reasonable the Companies' request to extend Schedule TOU EV. Such an extension; however, is subject to the commission's adoption of a different rate design as part of its review of the Companies' Distributed Generation

⁶ Decision and Order, Transmittal No. 10-05, filed on September 30, 2010 (Commissioner Leslie H. Kondo, dissenting). The EV Pilot Rates were re subsequently extended for two successive years pursuant to Order No. 31455, filed on September 24, 2013, as amended by Order No. 31469, filed on October 2, 2013; and Decision and Order No. 32316, filed on September 29, 2014 respectively.

Interconnection Plan (Docket No. 2014-0192) or Integrated Demand Response Portfolio Plan (Docket No. 2007-0341). The commission denies the Companies' corresponding request to close Schedule TOU EV to any new customers after September 30, 2015. Instead, Schedule TOU EV will remain in effect ending the commission's adoption of a different rate design. In taking such action, the commission reaffirms its previous findings in Decision and Order No. 32316, as follows: The Companies' results reveal that: (1) pilot Schedule TOU EV was successful in influencing or encouraging electric vehicle owners to charge their vehicles during off-peak periods; and (2) the charging of electric vehicles was consistently conducted during the off-peak periods to avoid having to pay higher time-of-use rates when charging outside of the off-peak periods, i.e., effective price signals. Based on these results, it appears that pilot Schedule TOU EV is achieving the underlying objective of encouraging the charging of electric vehicles during off-peak periods, when the demand for energy is lower. Conversely, pilot Schedule TOU EV, in and of itself, is not a "primary driver" in accelerating or promoting the adoption of electric vehicles within the State. (citing Decision and Order No. 32316, at 35 (footnotes and citations omitted)).⁷

With respect to Schedule EV-R, the Commission stated:

The Companies most recent data indicates a decrease in participants in HECO's service territory from seven to five, no participation in HELCO's service territory, and a single participant in MECO's service territory. The commission denies the Companies' request to extend Schedule EV-R for an additional five years, until June 30, 2020. Simply put, contrary to the Companies' expectations, the number of Schedule EV-R participants is dismal (six in total). The low number of participants, in turn, appears attributable to the additional expense and effort residential customers must incur to install a separate, dedicated meter at their residence in order to charge their electric vehicle. The Companies, in effect, have not proven that it is just and reasonable to extend Schedule EV-R for an additional five years. As a result, consistent with the Companies' alternative request, the commission will allow Schedule EV-R to remain in effect for an additional sixty days beyond September 30, 2015, i.e., until November 29, 2015, for the purpose of transitioning existing Schedule EV-R participants to an alternative, applicable rate schedule. For the affected Schedule EV-R participants who must remove their separate, dedicated meters, HECO and MECO shall clearly explain to said participants: (A) that Schedule EV-R was a pilot program of limited duration; and (B) the reasons for terminating Schedule EV-R.⁸

⁷ Decision and Order No. 33165, Docket No. 2015-0342, at 31-32.

⁸ Id. at 32-33.

With respect to Schedule EV-C, the Commission stated that the “Companies’ most recent data shows the lack of participants in all three of the Companies’ service territories. The commission approves the Companies’ request to terminate Schedule EV-C, as of October 1, 2015. Since there have been no customers/subscribers to Schedule EV-C for at least sixteen months or longer, the termination of said schedule is just and reasonable.”⁹

In Decision and Order No. 33165, the Commission also suspended the Companies’ proposed replacement rates (Schedules TOU EVD, EV-RD, and EV-CD), pending the Commission’s decision-making in the Companies’ Distributed Generation Interconnection Plan proceeding (Docket No. 2014-0192) or Integrated Demand Response Portfolio Plan proceeding (Docket No. 2007-0341). As a result, the Commission approved the interim TOU-RI rate which supplanted the Companies replacement rate request and instead levied a TOU rate incorporated features summarized as follows:

1. A shortened ‘peak’ period from eight hours (4pm-12am), to five hours (5pm-up to 10pm), and an expanded mid-day period (9am-up to 5pm), which provides a better representation of the current system peak period and allows the residential TOU rate design to align with an effective electric vehicle TOU rate design;
2. A re-allocation of a portion of fixed generation, transmission, and distribution fixed costs to the off-peak period to adjust for the increase in price differentials caused by the shortened peak period;
3. A removal of proposed restrictions on eligibility to allow all residential customers to opt-in to the Interim TOU Program, up to a Program cap of 5,000 customers;
4. Alignment of the TOU rate structure with respect to periods and rates across time-varying tariffs available for residential customers to present a simplified, manageable approach to understanding and TOU rates.¹⁰

The Commission also noted that the rate was intended to be “technology-agnostic, and are not designed to incent any particular technology or product offering. First and foremost, the rate design is targeted to shift customers’ energy usage behavior to better align electricity demand with system costs and needs.”¹¹ The Commission also noted that “[t]hese TOU time periods shall be uniform for all residential customers who participate in the Interim TOU Program, including those who install customer-sited DER, such as solar PV or electric vehicles. A broad consensus of stakeholders recommended that the TOU time periods be uniform to avoid customer confusion and to make administration and management of the program easier and less costly for the HECO Companies.”¹² The

⁹ Id. at 33.

¹⁰ Decision and Order No. 33923, Docket No. 2014-0192, at 29.

¹¹ Id. at 30.

¹² Id. at 31.

Commission also noted that the rate “will improve the attractiveness of the interim TOU rate for EV owners who may be inclined to charge their vehicles during typical working hours, and is consistent with the intent of the Interim TOU Program to reduce peak demand and increase load when solar generation is abundant.”¹³ The Commission also noted that:

[T]he HECO Companies’ Interim TOU tariff shall be available to all residential customers, including those with electric vehicles. Participants who are under the current EV-TOU Schedules may remain under their respective current EV-TOU Schedule; however, no new applicants may enroll in any of the existing EV-TOU Schedules. Any new residential EV participant who wishes to participate in a time-varying tariff must enroll in the Interim TOU Program. Participants in the current EV-TOU Schedules may opt to switch to the Interim TOU Program at any time; however, once a participant opts-in to the Interim TOU Program, the customer will not be allowed to re-enroll in any of the current EV-TOU Schedules. Similarly, if an EV participant chooses to leave the Interim TOU Program, he or she will not be allowed to re-enroll in the Interim TOU Program.¹⁴

Subsequently, the Commission issued Order No. 33976, clarifying Order No. 33923 to state that “[c]ustomers with electric vehicles may enroll in the interim TOU program solely for the purpose of charging their electric vehicles, while continuing to pay for their residential electrical use under another applicable rate schedule.”¹⁵

Most recently, in Decision and Order No. 36220, the Commission approved Transmittal No. 18-06, establishing Schedule E-BUS-J, Commercial Electric Bus Charging Facility Service Pilot; and Schedule E-BUS-P, Commercial Electric Bus Charging Facility Service Pilot.¹⁶ As stated by the Companies in their application, “[t]he rate designs offered energy discounts during mid-day when there is an abundant amount of solar energy, as well as off-peak, when the BEBs [i.e., battery electric buses] are not in use. Demand charges are not applied to these time periods to further encourage charging during these optimal periods. To discourage charging during peak hours, the tariffs impose an energy premium and an incremental demand charge in excess of the customer’s host meter.”¹⁷ “If customer’s host meter demand charge is 300 kW, anything over 300 kW during on-peak hours will be assessed demand charge; for example, if customer uses 325 kW during on-peak hours, the customer will be assessed demand charge for 25 kW (325 kW minus 300 kW).”¹⁸

In deriving the energy discounts and energy premium for their respective service territories, the Companies stated: “[t]o determine the energy discounts during mid-day and off-peak, the

¹³ Id. at 34, fn. 96.

¹⁴ Id. at 45-46.

¹⁵ Order No. 33976, Docket No. 2014-0192, filed October 17, 2016.

¹⁶ Decision and Order No. 36220, Transmittal No. 18-06, filed March 20, 2019.

¹⁷ Transmittal No. 18-06, at 9, including n.14.

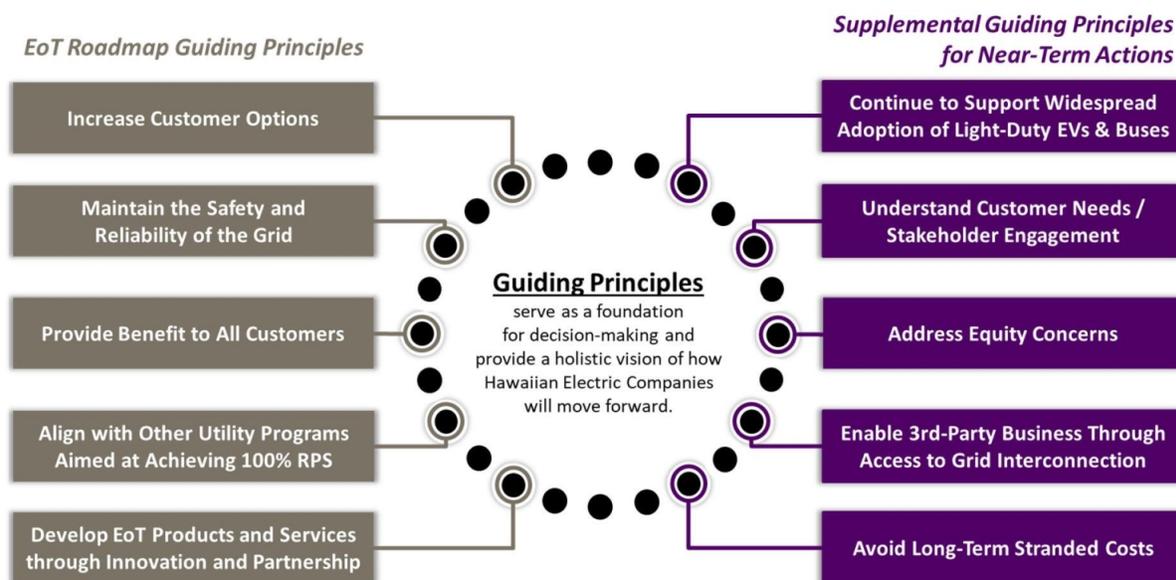
¹⁸ Id.

Companies evaluated other [Hawai'i] Commission-approved TOU programs. [T]he proposed 25% mid-day and 15% off-peak energy discounts are in line with but not as generous as other [Hawai'i] Commission-approved TOU programs. The Companies calculated the energy premium necessary for on-peak hours to be revenue neutral based on the recent class load study for each schedule and island.”¹⁹

C. Guiding Principles for Near-Term Actions

The EoT Roadmap established several guiding principles that served as a foundation for decision-making through the development of the Roadmap. Over time, the Companies have added new principles that will continue to guide decisions and programmatic efforts. The following supplemental guiding principles aim to provide an inexhaustive foundation for decision-making and are also linked to various near-term actions established herein. Figure 3 below, provides an overview of the guiding principles.

Figure 3: Guiding Principles



Continue to Support Widespread Adoption of EV-Light-Duty Vehicles and Buses

At the heart of the Companies’ EoT efforts lies a desire to anticipate, leverage, and support the paradigm shift away from internal combustion vehicles towards electrified transport. Such a transition implies that many modes of transportation will be electrified over time; however, the scope of this Workplan is limited to light-duty vehicles and buses, due to the relative maturity of those markets over other vehicle classes. The Companies will continue to partner with key stakeholders on developing policy initiatives that will support and foster growth in the light-duty vehicle segment as well as support electric fleet conversion, where available. A key factor will

¹⁹ Id. at 11.

require continued outreach to original equipment manufacturers (“OEMs”) to facilitate and encourage EV sales in Hawai‘i, while offering engagement opportunities to improve outreach to customers. Bus fleet operators can similarly benefit from engagement with OEMs to discover the benefits of electrification and various logistical and infrastructure challenges associated with a fleet transition. The Companies are uniquely situated to open communication channels and provide guidance regarding energy needs and potential options to save money.

There are multiple opportunities to develop and test business models that will support the EV market, and the Companies intend to gather data to support multiple market segments. A key role that the Companies can play is to provide insight into opportunities that third-parties can leverage to bring electrification to the market in an efficient and attractive manner. For example, the Companies are exposed to numerous customer inquiries regarding EoT and EVs, and over time certain commonalities tend to arise. The Companies can leverage this experience with vendors and solution providers to communicate and possibly facilitate new business development opportunities where appropriate. In addition, the Companies can develop programs which leverage other incentives, such as the state charging infrastructure rebates to further lower customer cost and support adoption and third-party development.

Given the guidance from the Commission, it is clear that a key component of electrification will lie in the development of rates that not only incentivize EV adoption, but also support the grid and encourage energy usage during periods of lower generation costs. The success of the EoT transition lies in part in the successful deployment of rates that not only compete with gasoline but provide a cheaper alternative that makes a compelling argument for conversion to EoT. Where appropriate, the proposed tariffs are conceived to require separate meters to facilitate data gathering and additional understanding. Another key area of development lies in supporting the large population of potential EV drivers who live in Multiple Unit Dwellings (MUDs). MUDs typically lack adequate EV charging infrastructure and present a significant barrier to adoption of EVs, particularly when charging behavior shows a preference to charge at home. The Companies will continue to explore efficient actions that will address this significant barrier such as the make-ready program discussed in this filing.

The Companies are aware that the cost impact of such a large-scale transition to electric transportation can be significant. Therefore, the Companies are looking to leverage third-party funding and use key partnerships to mitigate infrastructure costs.²⁰ This will be imperative as part of any future rollout of rates that incentivize third party investments in EoT. The Companies can also leverage economies of scale and market power to create standards and interoperability to drive down costs. In lockstep with multiple stakeholders, the Companies will continue to pursue legislative policies that will support EoT in the near and long term. Policy development is a vital element in creating the foundation for change in the transportation sector. Sending the

²⁰ For example, the recently passed Act 142 (2019), (which establishes among other things, a rebate program for installation of eligible new or upgraded multi-user electric vehicle charging systems) may provide opportunities to reduce infrastructure costs for certain projects.

proper signals to the state shows that clean transportation is a priority for the ongoing vitality of the state.

Understand Customer Needs / Stakeholder Engagement

Ultimately, everything that the Companies do is for their customers, and transportation represents a new area of focus for the Companies. It is important to understand customers' values and priorities when developing new programs and rates. The Companies will continue to utilize various customer engagement methods to optimize utility offerings. The Companies have issued customer surveys at EV-related events and through other channels. Ongoing pilots can test EV rate sensitivities and thresholds for behavioral change as well as understand overall customer demand for particular programs. Gaining further insight into the Companies' customer behavior will enhance the ability to develop robust and meaningful programs that customers find value in. In particular, the Companies continue to explore ways to find out where customers charge, specific barriers to underserved communities, challenges facing MUD dwellers as well as ongoing satisfaction with existing programs and rates. These and other insights will help the Companies determine what elements and key considerations should be included in a particular program. Other insights will help the Companies gather data for business model analysis to determine optimal deployment strategies and new ways to engage in the community as well as new businesses. The Companies intend to continue a leadership role in the Drive Electric Hawai'i group in order to foster ongoing relationships and communicate with other stakeholders regarding EoT as well as partner with key stakeholders to support and foster smart EV policy development.²¹

Address Equity Concerns

There are clear benefits associated with a transition to clean transportation, and it is important to support programs and policies that help underserved communities that are often impacted the most by transportation-related pollution and spend a higher amount of their income on gas and public transit fares. From the Companies' standpoint, there are several opportunities to align efforts that help address equity concerns. Understanding the diverse mobility needs of communities across the Companies' service territories will require different solutions to support EV adoption and use. For example, rural areas may focus more on vehicle ownership with higher range battery or hybrid electric vehicles as opposed to scarce ride sharing or public transit; whereas communities in more densely populated areas may benefit from policies and programs that focus more on ride sharing or mass transit where vehicle ownership is less practical.

The Companies can assist in deploying charging infrastructure and improve communication and outreach to underserved communities. In particular, the Companies will explore ways to reach low-income communities through the make-ready program as well as look for ways to incentivize adoption in underserved markets. Possible opportunities that the Companies will explore is

²¹ Drive Electric Hawai'i is a coalition of eight public, private and nonprofit organizations with a shared vision of supporting and promoting electrification transportation options in Hawai'i.

deployment in MUDs, establishing rates to support ride sharing and transportation network companies, and expanding support for city bus fleets as they transition to electric buses.

Education and outreach is also needed to ensure that low-income communities also understand the benefits of clean transportation and learn about opportunities to participate. Effective community engagement for EoT will require continued partnerships with key stakeholders to ensure EV materials and messages are relevant and available in key languages. Public officials, particularly those representing low-income communities, can also benefit from continued education and outreach to familiarize them with the benefits of EVs. The Companies will explore partnerships that can foster better relationships with disadvantaged communities to ensure that these important segments of the population are included in the clean transportation vision.

Enable 3rd-Party Business Through Access to Grid Interconnection

The Companies cannot foster the transition to clean transportation alone and it is imperative that third-parties take an active role for a successful outcome. The Companies' position in the market can help enable new economic opportunities and lay the foundation for increased investments in the EoT space. The Companies anticipate that the make-ready program discussed above, and others like it will create significant support and incentives for new business. Other new program opportunities that can help spur new economic activities are supporting high-capacity commercial rates, developing preferred vendor/equipment lists that specify widely accepted standards and interoperability, and supporting/facilitating infrastructure installation services. The Companies will build coalitions to work together in a coordinated manner and leverage EoT industry resources and enable EoT partners to provide value to customers.

Avoid Long-Term Stranded Costs

EoT is a new area of business for the Companies and therefore raises concerns over long-term stranded costs. However, the Companies seek to address some of these concerns by beginning with pilot projects for major programs and seeking to future-proof infrastructure by requiring advanced metering to collect data for program evaluation and improvement, and demand response functionality as a threshold for participation in a Companies' program. The Companies can also lead by supporting the validation and standardization of equipment to best serve customer needs and improve the overall experience. Similarly, there are concerns over cross-subsidization between rate classes; however, it is important to consider when evaluating the potential costs of supporting EoT is that the load and revenues associated with this transition reflect incremental load that would not otherwise exist. Therefore, the cost to support this new load should be managed and mitigated such that it benefits all customers by contributing to fixed costs over time. Based on the evaluation set forth in the Roadmap, the Companies anticipate that the costs of serving this new load will be significantly less than the revenue generation potential, which should create an opportunity to make prudent and efficient investments that support and amplify the growth of EVs. It may also incentivize the transition to occur at a faster pace and provide economic benefits to all customers sooner. Some of the investments that the

Companies could consider would be to: (1) develop rates that minimize demand charges for a period of time in order to incentivize third party infrastructure investments; (2) Leverage economies of scale, where possible, to create efficiencies via standardization and interoperability to drive down costs; and (3) evaluate utility-owned infrastructure options in make-ready program development to both increase the reach of deployment and ensure an equitable dispersal of infrastructure across various customer classes.