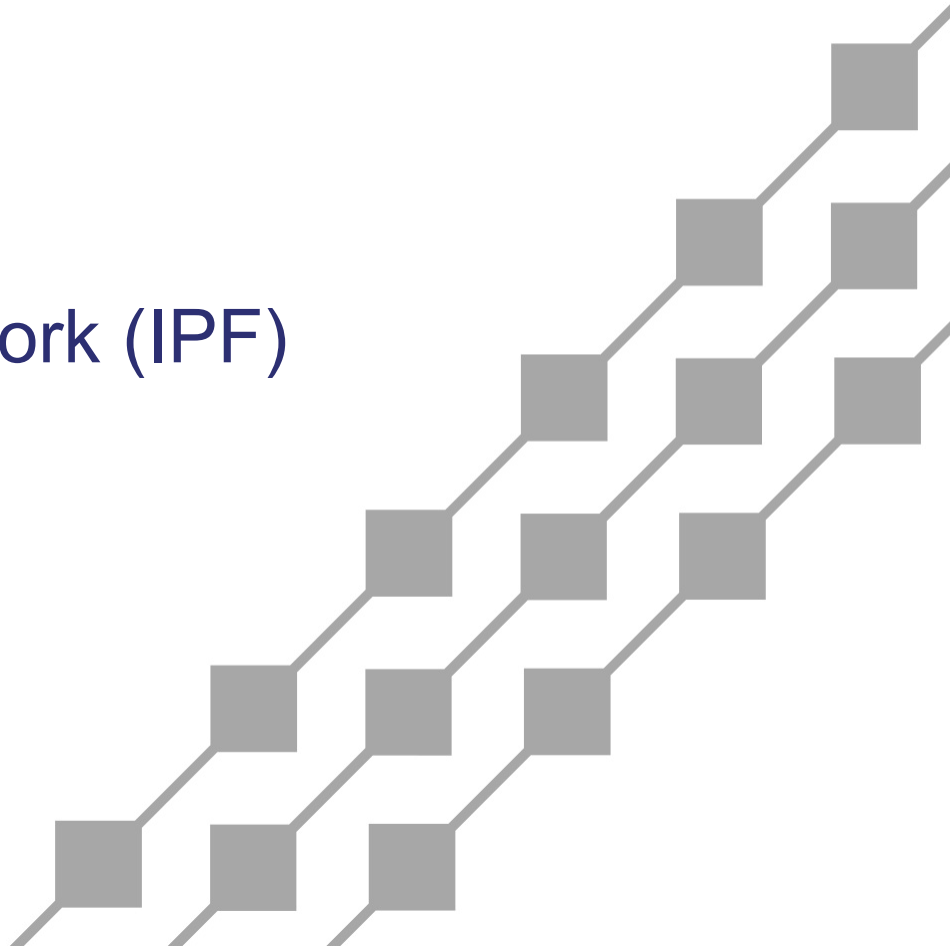




**Hawaiian
Electric**

Innovation Pilot Framework (IPF) Portfolio Update

December 7, 2022



Agenda – 1:00-2:30pm HST

- ◆ Welcome
- ◆ Status of pilot portfolio
- ◆ Update on pilot concept pipeline
- ◆ General discussion



What these meetings are trying to accomplish

- ◆ Updates on active projects
- ◆ Discussion of “pilot concepts in the pipeline”
- ◆ Collect feedback on what we are doing and how we are presenting the information



IPF website: hawaiianelectric.com/IPF

Innovation

Innovation

Share

Our Process

Submit Ideas & Proposals

Innovation Pilot

Frequently Asked Questions

Contact Us

Submit Project Proposal

We are looking for creative and innovative pilot projects for consideration under our IPF. Submit your ideas & proposals.

Innovation Pilot Framework (IPF)

On December 23, 2020, the Hawaii Public Utilities Commission ("HPUC") issued Decision and Order No. 37507 which among other things, included a Pilot Process to "foster innovation by establishing an expedited implementation process for pilots that test new technologies, programs, business models, and other arrangements."

This page provides links to the relevant orders establishing the Innovation Pilot Framework (IPF), a description of the Areas of Collaboration, as well as links and information related to approved and upcoming pilot projects.

Goals and Guiding Principles

This Framework will be guided, in part, by the Commission's overall Performance-Based Regulation ("PBR") guiding principles of (1) a customer-centric approach, (2) administrative efficiency, and (3) utility financial integrity. More specifically, the Framework is designed to achieve the following guiding principles: Innovation, Flexibility, Iteration, Collaboration, Prioritize Learning, Customer-focused, Speed and Ownership. Learn more about our Goals and Guiding Principles in the Certificate of Service document (Exhibit 1).

Areas of Collaboration (AOC)

Hawaiian Electric, in collaboration with the Commission, the Consumer Advocate, and other interested stakeholders in the PBR Docket, identified the following Areas of Collaboration (AOC) that will guide development of potential pilot projects under the IPF. In selecting projects under the IPF, we will give strong consideration to those that may directly or indirectly benefit Low-to-Moderate income (LMI) customers from across the State.

Click below for a description of each AOC. To learn more about the problem statements and goals for each area, view the IPF Workplan.

1. Decarbonization



2. Customer Resources and Services



Approved and Upcoming Pilot Projects

To maximize flexibility and foster innovation, we intend to utilize a variety of mechanisms to select pilot projects. These include, but are not limited to, discussions and inquiries initiated by us or third-party stakeholders, sole-sourced vendor collaborations, and formal requests for proposals.

[VIEW PILOT PROJECTS](#)

Public Meetings Related to Pilot Projects

As part of our ongoing commitment to transparency and sharing lessons learned about pilot projects, we will be hosting quarterly meetings. If you would like to be added to the mailing list and meeting invitations, please send an email to innovation@hawaiianelectric.com.

Date	Meeting Slides
9/6/23 at 1-2:30 p.m. HST	Pilot portfolio status update (Sept. 2023)
6/7/23 at 1-2:30 p.m. HST	Pilot portfolio status update (June 2023)
3/8/23 at 1-2:30 p.m. HST	Pilot portfolio status update (March 2023)
12/7/22 at 1-2:30 p.m. HST	Pilot portfolio status update (Dec. 2022)
8/31/22	Public stakeholder meeting to discuss Data & Analytics Clearinghouse pilot concept (Aug. 2022) (PDF)
6/1/22	Public stakeholder meeting to discuss Data & Analytics Clearinghouse pilot concept (June 2022) (PDF)
10/19/21	Stakeholder engagement meeting to develop the IPF #4 (Oct. 2021) (PDF)
9/23/21	Stakeholder engagement meeting to develop the IPF #3 (Sept. 2021) (PDF)
9/7/21	Stakeholder engagement meeting to develop the IPF #2 (Sept. 2021) (PDF)
8/24/21	Stakeholder engagement meeting to develop the IPF #1 (Aug. 2021) (PDF)

Docket Filings and Workplan

- [Innovation Pilot Framework Workplan \(PDF\)](#)
- [October 20, 2022 – PUC Order 38663 opening IPF repository docket \(Docket No. 2022-0212\) \(PDF\)](#)
- [October 20, 2022 – PUC Order 38665 establishing a protective order \(PDF\)](#)

Pilot Projects Listings

The IPF process is described in the [Pilot Process](#) filed with the Commission on July 28, 2021. The Implementation Phase will include pilot proposals filed as Notice of Intent (NOIs). Not all pilot concepts will be cost effective or show positive business cases, as assessing cost effectiveness of a scaled-up solution may be a pilot project's primary objective. The Implementation Phase will also include the execution of approved pilot projects, and the review of those approved projects for the purpose of shared learning and possible expansion.

This status board tracks the progress of new and upcoming innovation pilot projects.

Pilot Projects

Pilot Title	Status	Start Date - Target End Date	Actual/Total (thousands)	NOI/Order/Slides
Charge Up eBus Make-Ready	Active	5/7/21 - 3/31/25	\$87/\$4,232	D&O No. 37769 (PDF)
EV-J and EV-P Tariff	Active	12/30/21 - 12/31/27	\$0k/\$0	D&O No. 38157 (PDF)
Charge Up Commercial Make-Ready	Active	1/24/22 - 4/30/24	\$0k/\$4,984	D&O No. 38194 (PDF)
Data & Analytics Clearinghouse	Vetting with stakeholders/NOI submitted for review	TBD	\$0k/\$2,758	NOI (PDF) Slides (PDF)
EV Telematics	Vetting with stakeholders	TBD	TBD	Slides (PDF)

Annual Reports

- [2022 IPF Annual Report \(PDF\)](#)
- [2021 IPF Annual Report \(PDF\)](#)



Key Takeaways

Status:

- Annual Spring Revenue Report was filed on 2/28/22
Requested \$86,678 for two pilots active in CY2021
- PUC issued D&O 38654 approving the IPF Workplan on 10/19/22
- PUC opened new Docket No. 2022-0212 to receive pilot filings and issued protective order on 10/20/22
- Public website with meeting schedule and pilot status board is live at hawaiianelectric.com/IPF

Recoverable Pilot Project Costs Net Of Revenue	Hawaiian Electric	Hawai'i Electric Light	Maui Electric
eBus Make Ready Infrastructure Pilot Schedule EV-J and EV-P Tariff	\$43,339	\$26,003	\$17,336
Pilot Process Cost Recovery – Annual Net Costs	\$43,339	\$26,003	\$17,336
Pilot Process Cost Recovery – Annual Net Costs including revenue taxes	\$47,565	\$28,539	\$19,027

Active pilots:

- **Charge Up eBus:** minor changes to scope, schedule, and budget in response to customer feedback. Lessons learned on customer behavior from the eBus pilot are already helping to shape the Commercial pilot. Yellow status due to fewer than expected applicants.
- **Charge Up Commercial:** PUC provided feedback on the Company's Final Program Design Report on 10/24/22. Received 21 applications to date.

Pilot pipeline:

- **Data & Analytics Clearinghouse:** NOI filed with PUC on 10/26/22
- **EV Telematics:** Public stakeholder mtgs in Aug. 2022; drafting NOI for filing Jan. 2023
- Working on detailed scope, budget, objectives for multiple pilot concepts. Continued stakeholder mtgs TBA.

Pilot progress/health	1Q22	2Q22	3Q22	4Q22
Charge Up eBus	Green	Green	Yellow	White
EV Tariff	Green	Green	Green	White
Charge Up Commercial	White	Green	Green	White

*Yellow: some issues in scope, schedule, or budget.
Red: major issues that will take time to resolve and/or result in pilot termination

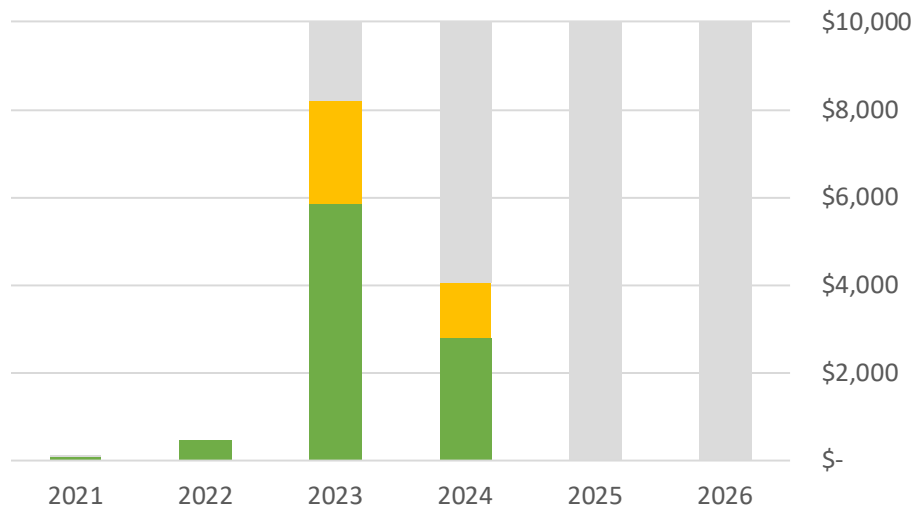


Pilots & concepts in the pipeline

Major updates since last quarter:

- No major changes to project total budgets
- No projected spend on new pilots in 2022
- **Charge Up eBus:** Shifted projected budget into 2023 due to delays and fewer applicants than planned
- **EV Tariff:** No planned spend against IPF cap
- **Charge Up Commercial:** Shifted projected budget into 2023 to account for approval date of final design report
- **Data & Analytics Clearinghouse:** NOI submitted, pending approval. Anticipating to start work in Jan. 2023.
- **EV Telematics:** Pending NOI submission/approval, anticipated to start work in 2Q2023

Innovation Pilot Framework estimated budget forecasts



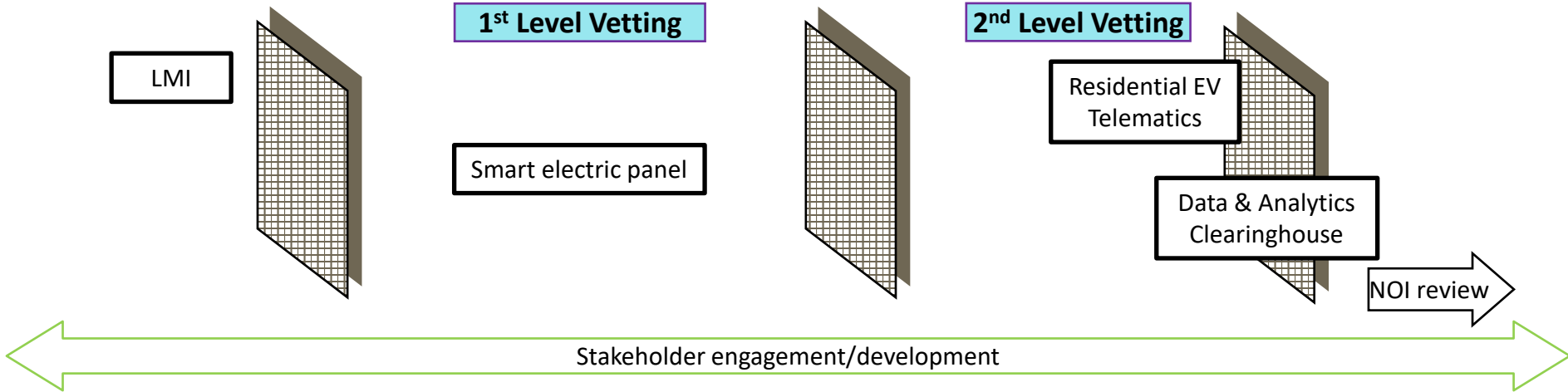
Remainder under \$10M cap		(\$, thousands)		\$ 0	\$ (0)	\$ 1,800	\$ 5,958	\$ 9,992	\$ 10,000	Total
Execution	Charge Up eBus	\$ 87	\$ 298	\$ 2,175	\$ 1,673					\$ 4,232
Execution	EV Tariff									\$ -
Execution	Charge Up Commercial		\$ 163	\$ 3,691	\$ 1,122	\$ 8				\$ 4,984
NOI submitted	Data & Analytics Clearinghouse			\$ 1,840	\$ 919					\$ 2,758
NOI in prep	Residential EV Telematics			\$ 494	\$ 328					\$ 822

*scope, schedule, and budgets for any pilot are subject to change



Innovation Pilot Framework (IPF) pipeline status board

Stage 1: New Ideas & Opportunities Gate 1: Initial Screening Stage 2: Sort & Refine Opportunities Gate 2: Assessment Screen for IPF Stage 3: Prioritize & decide Gate 3: Authorize & NOI Stage 4: Execution



Pilot Name	Est. time	Pitch status	Project plan	Budget plan	NOI status
Data & Analytics Clearinghouse	NOI filed	100% ▲	100% ▲	100% ▲	100% ▲
Residential EV telematics	2023Q1	100% ▲	100% ▲	100% ▲	75% ▲
Smart electric panel	2023Q2	50% ▲	50% ▲	50% ▲	10% ▲



Pilot Development

- ◆ Pilots are intended to be flexible and have a goal of reducing uncertainty by trialing solutions and measuring outcomes
- ◆ We will continue to reach out to stakeholder groups for specific pilot concepts
- ◆ We plan to continue having these types of ad hoc meetings when pilot concepts come into focus
- ◆ IPF is new to everyone. We are all still learning together – so please give us feedback



What's next?

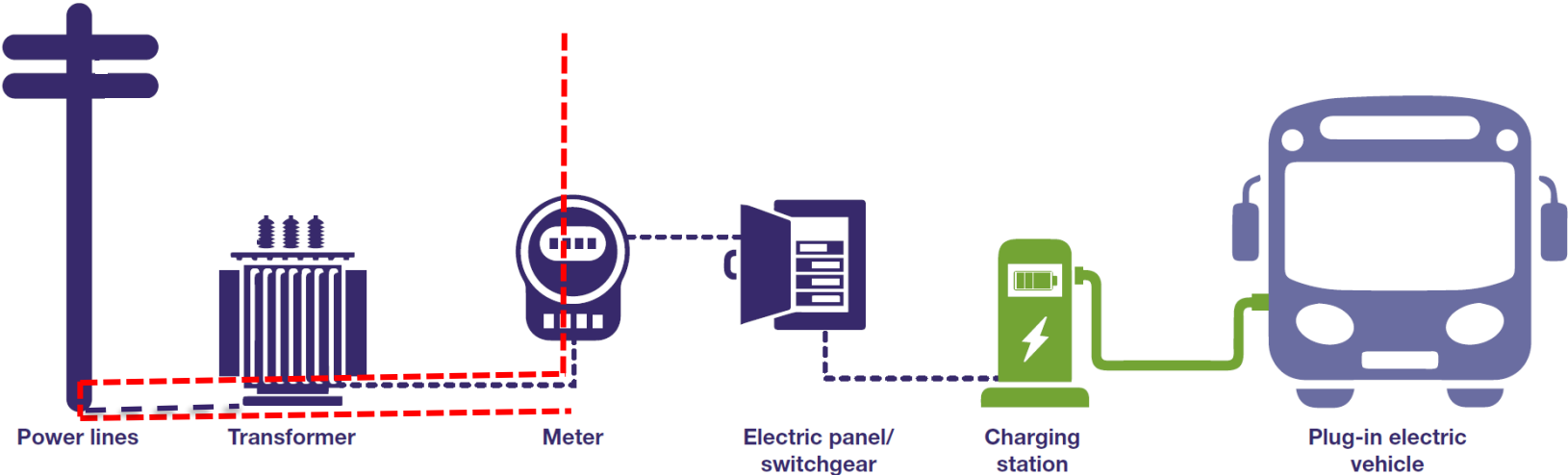
- ◆ Data & Analytics Clearinghouse is anticipated to kick off in January 2023 pending PUC approval. We will schedule meetings with participants as the pilot ramps up.
- ◆ EV Telematics pilot concept: We are still collecting feedback from stakeholders and anticipate filing an NOI in January 2023
- ◆ Annual report will be filed by 2/28/23
- ◆ Next quarterly portfolio status update meeting scheduled for 3/8/23 – let us know if you do not have that on your calendar
- ◆ Preview of a Smart Panel pilot concept in 1Q 2023
- ◆ Planning meetings with stakeholders and potential pilot participants on a few pilot concepts over next few months. Stay tuned for updates. (Note: We are likely to be added to agendas for existing meetings with certain stakeholder groups)





Project Details

Make-Ready infrastructure as it applies to eBus and Commercial pilots



Traditional Utility Infrastructure

Hawaiian Electric Owned Make-Ready Infrastructure

Hawaiian Electric Owned Public Charging

Up to 40 New Sites

- eBus (launched 2022 Q1)
- Commercial (launched 2022 Q4)



Description & Scope

Hawaiian Electric estimates that the make-ready infrastructure installed in the eBus Pilot will support up to 20 eBus charging ports at 5-10 customer sites

Objectives

- Enable and accelerate the electrification of bus fleets in the Hawaiian Electric Companies' service territories by **understanding customer behaviors and enable customers to transition faster**
- Develop ways for the Companies to support make-ready infrastructure by learning how to streamline workflows, understand resource needs for charging, and track the costs of infrastructure to develop sound cost estimates for future deployment
- Improve renewable energy integration through bus charging on the eBus tariff

Major Deliverables

- Implementation Process/Customer Journey
- Final Program Design Report & Appendices
- Annual Updates/Spring Reports
- Infrastructure for up to 20 charging ports at customer sites

Risks

- Funding and customer procurement timelines not aligned with Pilot
- Complex/lengthy landowner approval requirements & processes
- Complex/lengthy permit process
- Supply chain constraints
- Rising labor and material costs



Charge Up eBus Make-Ready

Division

EoT

Project Manager

Tandy Tabata

Milestone	Target Date	Status
Final Program Design Report	1/7/22	Complete
Pilot launch	2/7/22	Complete
Site Evaluations	5/31/22	Complete
Participation Agreements Executed	6/30/22	75%
eBus/Charging Equip. Procurement (customer)	7/31/22	60%
Design Consultant Contracts Awarded	7/31/22	30%
Final design	9/30/22	
Construction RFP Issued	1/31/23	
Complete Construction	5/31/23	
Start Data Collection	7/01/23	
Final Report	3/31/24	

Overall % Complete

42%

Updated Budget Forecast (on track)

000's	2021	2022	2023	2024	TOTAL
TOTAL	87	298	2,175	1,673	4,232

Observations & Lessons Learned

- Coming out of the pandemic, the number of bus operators ready to procure eBuses in 2022 were fewer than expected.
- State and County entities involved modifications to the standard participation agreement to align with their requirements.
- State-owned land adds significant complexity and time to seeking approvals for right of entry and grant of easement.
- Applicants' procurement timelines were delayed as a result of external factors.
- Complexity and costs can vary significantly from site to site.
- Bus operators with plans to install more than 2 ports in the near future need to be considered in the make-ready design.
- Uniqueness of each site requires a more hands-on and flexible approach.
- Some facilities may not be eligible for E-Bus rates.
- 10-year data collection commitment can be viewed by some bus operators as a significant resource burden.



Updates

- Modifications to the pilot program:
 - Increase charging port limit from 2 to 4 ports
 - Increase rate options to include EV-J and EV-P
 - Reduce data requirements from 10 to 5 years
 - Leverage internal labor in place of outside services where appropriate

Next steps

- Execute participation agreements with qualified applicants
- Re-evaluate the implementation schedule

Participation KPIs	
Applications Received	3
Site evaluations Completed	3
Applications Withdrawn or Denied	1
Participation Agreements Executed	0
Anticipated Number of eBuses	8
Anticipated Number of Make-ready Charging Ports	6

Schedule KPIs	Site 1	Site 2
Application Received	3/31/22	3/31/22
Days to execute Participation Agreement	244	244
Days in permitting review		
Days in construction		
Days to install and commission charging equipment (customer)		

Site 1: Hawaii Island – County of Hawaii Mass Transit

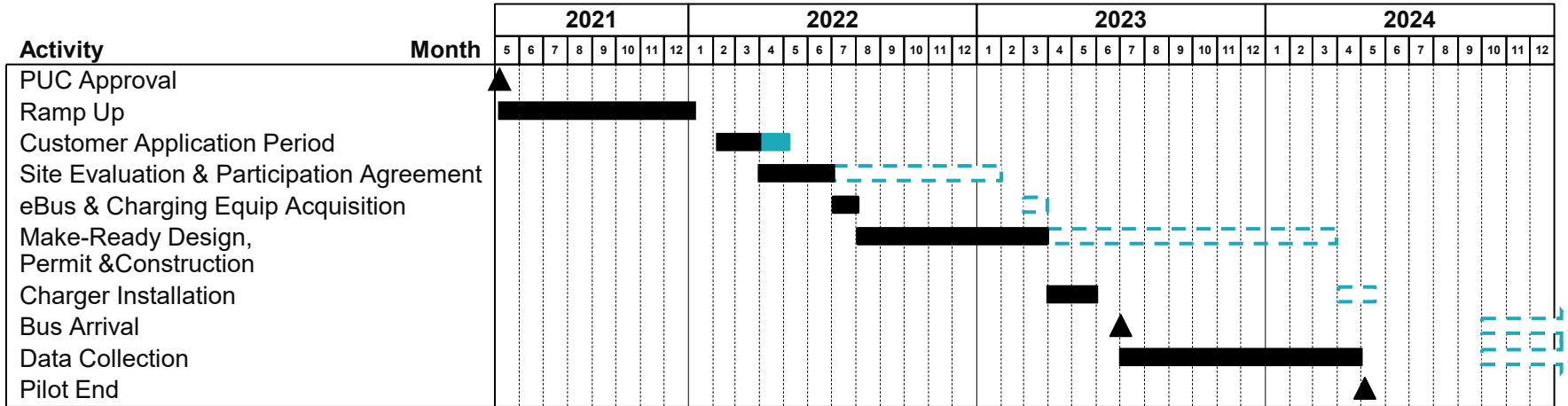
Site 2: Maui – Kahului Transit Hub

Other Metrics (when available)

- Actual pilot costs and revenue
- Charger utilization



Implementation Timeline



Considerations for Implementation Schedule Adjustments:

- eBus and Charging Equipment RFP delayed by stakeholder concerns.
- Validation of qualified buses and charging equipment impacted by RFP delays.
- Participant modifications to the Participation Agreement and landowner approvals add complexity.
- Longer bus build estimates due to supply chain issues. Currently anticipating 18+ months.
- Risk for longer than expected permit timelines.



Evaluating potential changes to the schedule as we learn with customers

Description & Scope

Provide make-ready charging infrastructure to eligible fleets, MUDs and commercial sites. Pilot will target up to 30 customer sites (est. 120 charge ports), over a 3-year period, across Hawaiian Electric, Maui Electric, and Hawaii Electric Light. Pilot will reduce upfront costs for customers seeking to install EV charging infrastructure by providing make-ready infrastructure at Hawaiian Electric's expense.

Objectives

- Install infrastructure for Level 2 charger sites
- Collect data to inform future filings
- Test new outreach strategy to speed up & increase application phase
- Define benefits & report impact to underserved communities

Major Deliverables

- Final Program Design Report
- Implementation Plan
- Annual Report
- Infrastructure for Level 2 chargers at customer sites

Risks:

- Complex/lengthy permitting processes (each island is unique) could impact installation timeline
- Rising labor and material costs
- Internal resource constraints



Implementation Timeline

Commercial Charge Up - Estimated implementation timeline based on 20 applicants (10/5/5)																																								
	2022												2023												2024												2025			
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
PUC Approval	█																																							
Pilot Design				█	█	█	█	█	█	█																														
Application Period																																								
Funding Reservation																																								
Preconstruction																																								
Design and Build																																								
Charger Installation																																								
Data Collection																																								



Milestone	Target Date	Status
Final Program Design Report	9/24/22	Complete
Pilot launch	10/25/22	Complete
Contract Management and Design Consultant RFPs Awarded	12/5/22	Complete
Site Evaluations	3/1/23	
Participation Agreements Executed	9/1/23	
Final Design	9/30/23	
Construction RFP Issued	10/1/23	
Construction Complete	6/1/24	
Start Data Collection	6/1/24	
Final Report	3/31/25	
Overall % Complete		30%

Observations & Lessons Learned

- eBus pilot informed Commercial Make Ready implementation
 - Cost cap
 - Reduce data requirement
- Anticipate 20 sites with 4-6 ports each

Next steps:

- Evaluate Applications
- Execute Participation Agreements

Updated Budget Forecast (on track)

000's	2022	2023	2024	2025	TOTAL
TOTAL	163	3,691	1,122	8	4,984



Participation KPIs	
Applications Received To Date	21
Applications Complete	10
Oahu	6
Hawaii Island	1
Maui	3
Anticipated Number of Charging Ports for Completed Applications	44
Site evaluations Completed	0
Applications Withdrawn or Denied	0
Participation Agreements Executed	0

Other Metrics (when available)

- Schedule (approved applicants)
- Actual pilot costs and revenue
- Data Collection
- Charger utilization
- Customer feedback



Description & Scope: The five-year pilot program (2022-2027) will employ a TOU rate structure that incentivizes charging during mid-day hours when there is abundant solar energy flowing into the grid. Schedule EV-J and Schedule EV-P are approved on a pilot basis, available to a max. 1,000 customers for EV-J and a max. of 500 customers for EV-P. Facilities including businesses, workplaces, and multi-unit dwellings may maintain their current commercial rate (such as Schedule J or Schedule P) or choose a new, separately metered EV rate to benefit from time-of-use (TOU) pricing (such as EV-J or EV-P). This EV TOU rate may help with bill charges resulting from high electrical demand. The biggest savings under the new rate structure are expected to result from the greatly reduced demand charges, which vary with intensity of use and can often be the largest part of a commercial customer's bill.

Objectives:

- Measure demand and impact of this type of rate structure on a pilot basis
- Rates are designed to encourage EV adoption of commercial customers while nudging behavior to charging during mid-day
- Use collected data to inform future filings and/or full-scale deployment

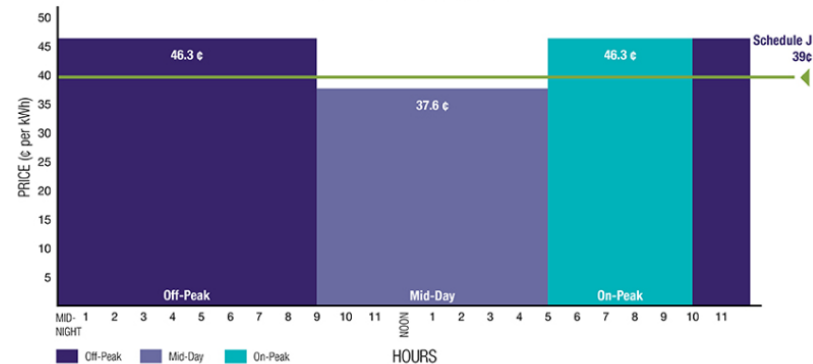
Major Deliverables:

- Annual reports

GREEN status.

No budget.
No deliverables schedule beyond annual reports.
Metrics on enrollment, usage, and revenue will be reported once customers enroll.

O'ahu EV-J Compared to Schedule J
(For illustrative purposes only*)



*Illustration reflects September 2022 rates with applicable surcharges.



Status updates:

- Approving D&O 38157 issued on 12/30/21
- Tariff sheets were filed 2/1/22
- PUC approved the final tariffs on 3/1/22 to go into effect on 3/18/22
- Zero customers have enrolled as of 11/1/22
- Filed proposed rates for Molokai and Lanai on 6/30/22 with effective date of 8/1/22

Risks:

- If slow adoption of EVs/charging stations by commercial customers, we could see low enrollment. No direct financial impact, but dataset to inform future decisions may not be as robust as desired.

Next steps:

- We are continuing to educate customers, including existing EV-F customers
- Leveraging internal resources to evaluate these opportunities

No enrollments as of 11/1/22.
Expected Q4 enrollments:
Active accounts (EV-F): min. 1, max 4
Future accounts: min. 3, max 6

Once customer are enrolled, we will report:

- Number of customers as a timeseries
(active in a given month)
 - kWh usage
 - Revenues
- (All broken down by islands and total)



Overview	<ul style="list-style-type: none">• Hawaiian Electric proposes launching EV telematics-based pilot project to incentivize EV driving and to collect data about EV customer charging behavior
Problem	<ul style="list-style-type: none">• Hawaiian Electric does not offer an active residential EV pilot project or have analytics related to residential EV usage• Reliance on ‘typical’ EV charge behavior can limit program designs and policies specific to Hawai‘i
Solution	<ul style="list-style-type: none">• Partner with EV telematics vendor to deploy digital EV platform for EV driving customers• Collect detailed data and analytics from EV telematics and networked chargers



IPF EV Telematics Pilot Concept



1. Drivers are already opted into data share arrangement via original equipment manufacturer's ("OEM") terms and conditions



2. OEMs enabled to share EV telematics data with third parties



4. Vendor/partner provides customer app where drivers can view charging and Pilot details



3. Vendor/partner collects telematics by 'scraping' from OEM APIs and through direct relationships



5. Hawaiian Electric accesses dashboards and telematics data hosted on vendor's cloud-based portal



1. Cost-Share and Incentives	<ul style="list-style-type: none">• Finalizing negotiations with cost-share partners:<ul style="list-style-type: none">– <i>Local partner</i> has proposed additional \$50 incentive for participants (i.e., increase to \$150 total cash incentive)– <i>Hawaiian Airlines</i>: Proposing special partner rate to allow participants to exchange cash award for discounted HawaiianMiles
2. Notice of Intent	<ul style="list-style-type: none">• Finalizing draft of Notice of Intent and awaiting letters of support from stakeholders• Mid-January target filing date with PUC
3. Timeline	<ul style="list-style-type: none">• Project estimated to start in Q2 2023, pending PUC approval



4. Working Group and Data Sharing	<ul style="list-style-type: none">• Establish EV Telematics working group for duration of Pilot:<ul style="list-style-type: none">– Share ongoing updates and feedback during Pilot– Determine how to share anonymized Pilot data with stakeholders (e.g., Data Clearinghouse to be considered as primary platform)
5. Vendor Management	<ul style="list-style-type: none">• Hawaiian Electric and vendor legal teams reviewing redlined master service agreement and statement of work<ul style="list-style-type: none">– Will be prepared to execute Pilot upon PUC approval



- ◆ Engage with residential customers to determine demand for smart panels
- ◆ Install panels – a percentage is reserved for LMI customers
- ◆ Measure customer behavior
- ◆ Assess potential for grid-services
- ◆ Understand true costs and benefits to of potential path(s) forward
- ◆ Potentially include commercial customers to assess costs & benefits

We are looking to understand what stakeholders may want from the data.
Please let us know what your interests are to help scope the pilot.



Support of LMI Customer Interests is Critical

Equity, Access, Affordability, and Sustainability pilots are options to ensure that everyone benefits from the clean energy transformation and no one is left behind because of where they live or their economic status. Special considerations will be given to projects for Low-to-Moderate Income (“LMI”) customers across the State. Piloting in this area is needed to further understand pathways and programs that can directly support LMI communities. The Companies intend to incorporate objectives targeting improvements for LMI customers in as many pilots as possible.

Two example pilot concepts:

Funding Portal: Create a centralized portal for LMI customers to easily access utility assistance funding options and where external stakeholders can list individual pledges on customer accounts. Ensure data sharing agreements are arranged based on company security policies.

Change for Hawaii: Allow customers to round up their monthly utility bill to the nearest dollar with all proceeds benefitting LMI customers in an affordability fund. Donation sharing will be estimated based on distribution method.





General Discussion