Hawaiian Electric

Innovation Pilot Framework (IPF) Portfolio Update

March 8, 2023

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
- 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.

Share

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 a 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)
9/28/21	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 Intents (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	$87k/$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:

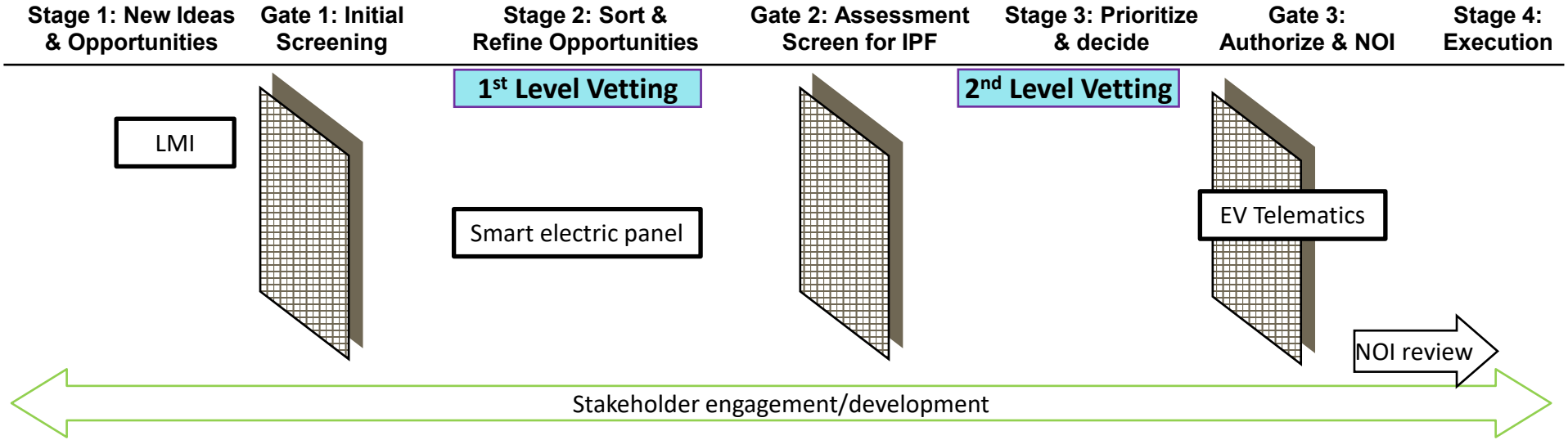
- PUC issued D&O 38654 approving IPF Workplan on 10/19/22.
- PUC also opened repository docket (Docket No. 2022-0212) and protective order on 10/20/22.
- Annual report for 2022 filed on 2/28/23. Total request for cost recovery is $342k.
- Public website with meeting schedule and pilot status board is live at hawaiianelectric.com/IPF

Active pilots:

- **Charge Up eBus** – Yellow: Fewer than expected applicants. Changes to schedule in response to customer delays. Bus orders req. 18+ months lead time. Accordingly, we requested NCE to 12/2025.
- **Charge Up Commercial** – Green: 50 app's received. 28 site evals complete. Target up to 20 executed agreements by Aug. We are observing slower fleet transition readiness compared to personal EV transition.
- **EV-J and EV-P Tariff** – Green: Multiple large installations are in the service request process to be energized this year. Working through hurdles and using a targeted outreach approach with interested customers. All Charge Up Commercial participants will be enrolled in this rate.
- **Data Analytics Clearinghouse (DACh)** – PUC approved DACh NOI on 12/8/22. Finalized contract negotiations with TekSystems in Feb.

Pilot Status	1Q22	2Q22	3Q22	4Q22
Charge Up eBus				
EV-J and EV-P tariff				
Charge Up Commercial				
Data Analytics Clearinghouse				

Innovation Pilot Framework (IPF) pipeline status board

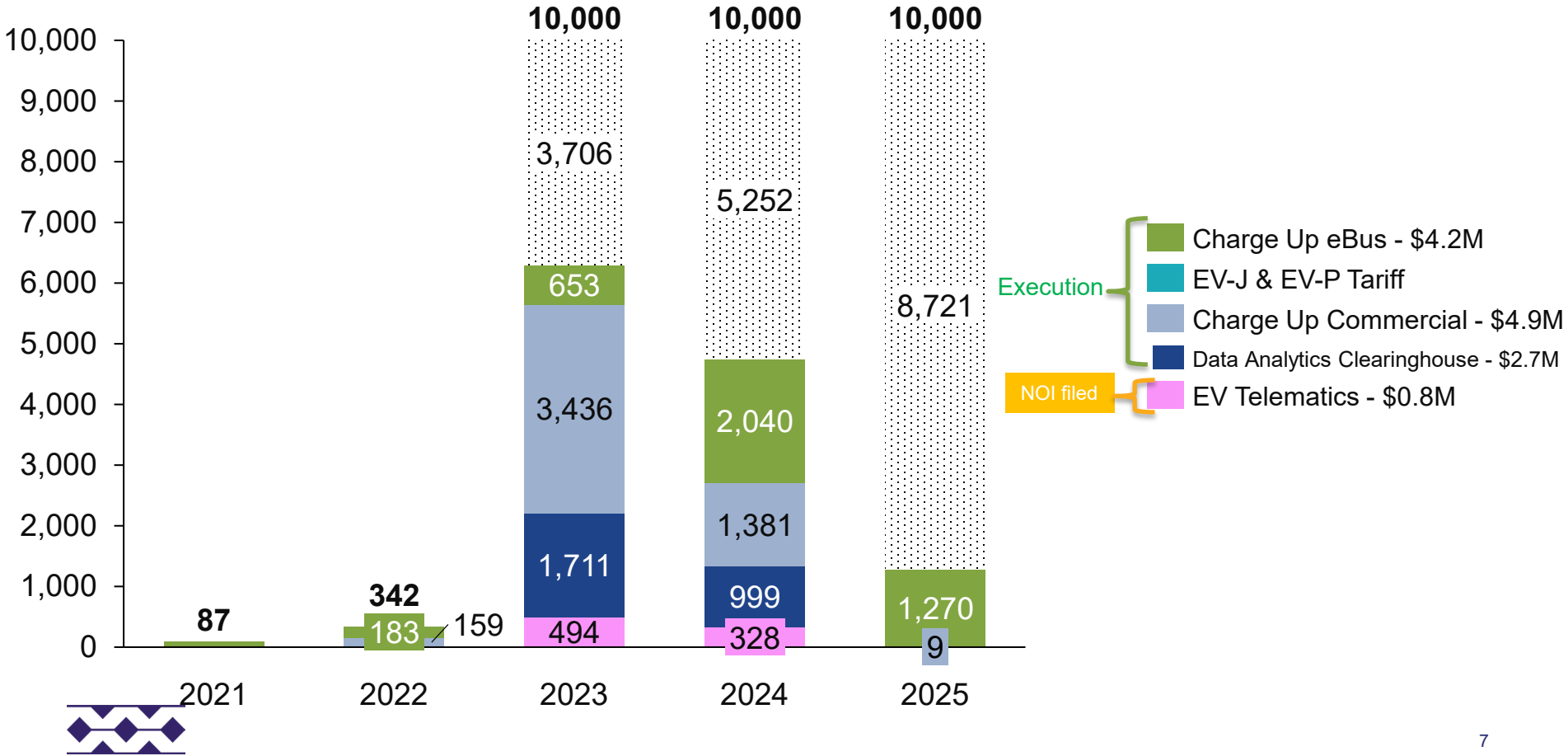


Pilot pipeline:

- Working on detailed scope, budget, objectives for three pilot concepts:
  - **EV Telematics**: NOI filed on 2/6/23
  - **Smart Electric Panels**: Internal vetting and stakeholder meetings → NOI filing 2Q23

Active Pilots and NOIs under review (latest forecast)

Amounts $000s



Pilot Development

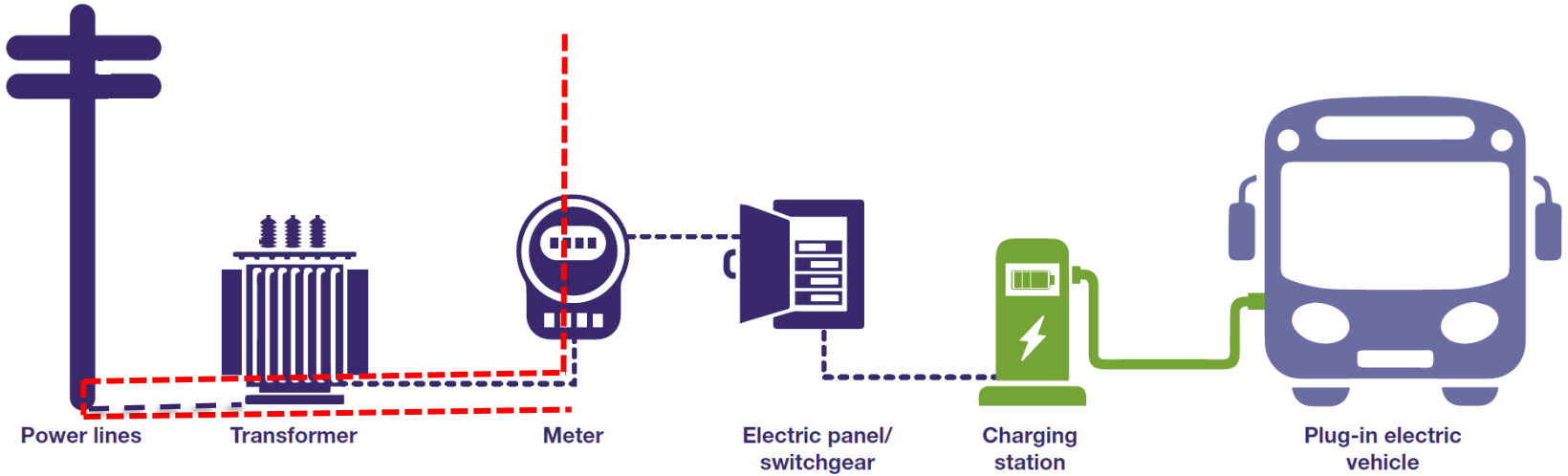
- Pilots are intended to be flexible and have a goal of reducing uncertainty by trialing solutions and measuring outcomes
- We will continue to reach out to stakeholder groups for specific pilot concepts
- We plan to continue having these types of ad hoc meetings when pilot concepts come into focus
-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

What's next?

- Next quarterly portfolio status update meeting scheduled for 6/7/23 – let us know if you do not have that on your calendar
- Target filing Smart Electric Panels pilot in 2Q 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)

Charge Up eBus

Division	EoT
Project Manager	Tandy Tabata

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

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 + Funding Reservation	6/30/22	Delayed
eBus/Charging Equip. Procurement (customer)	7/31/22	Delayed
Design Consultant RFP	7/31/22	Delayed
Final design	9/30/22	Delayed
Construction RFP	1/31/23	Delayed
Complete Construction	5/31/23	
Start Data Collection	7/01/23	
Final Report	3/31/24	

Budget

As of 2/24/23

$000s

Recorded		Updated Forecast			
2021	**2022**	**2023**	**2024**	**2025**	**Total**
$ 87	$ 183	$ 653	$ 2,040	$ 1,270	$ 4,232

Schedule

- Requested a no cost extension to the implementation schedule in the Annual Update Report to the PUC, filed 2/28/23.

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.

Charge Up eBus

Division	EoT
Project Manager	Tandy Tabata

Updates

- Modifications to the pilot program:
  - Increase charging port limit from 2 to 4 ports to provide flexibility to customers procuring more buses.
  - Increase rate options to include EV-J and EV-P, which expands options for customers that do not have a host meter and those on Moloka`i or Lana`i.
  - Reduce data requirements from 10 to 5 years to alleviate customer administrative and financial concerns.
  - Leverage internal labor in place of outside services where appropriate to build expertise and create a seamless workflow.

Next steps

- Execute participation agreements with qualified applicants
- Explore an extension request for the E-Bus Tariff, which is set to expire December 2023.

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 (as of 2/24/23)	330	330
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

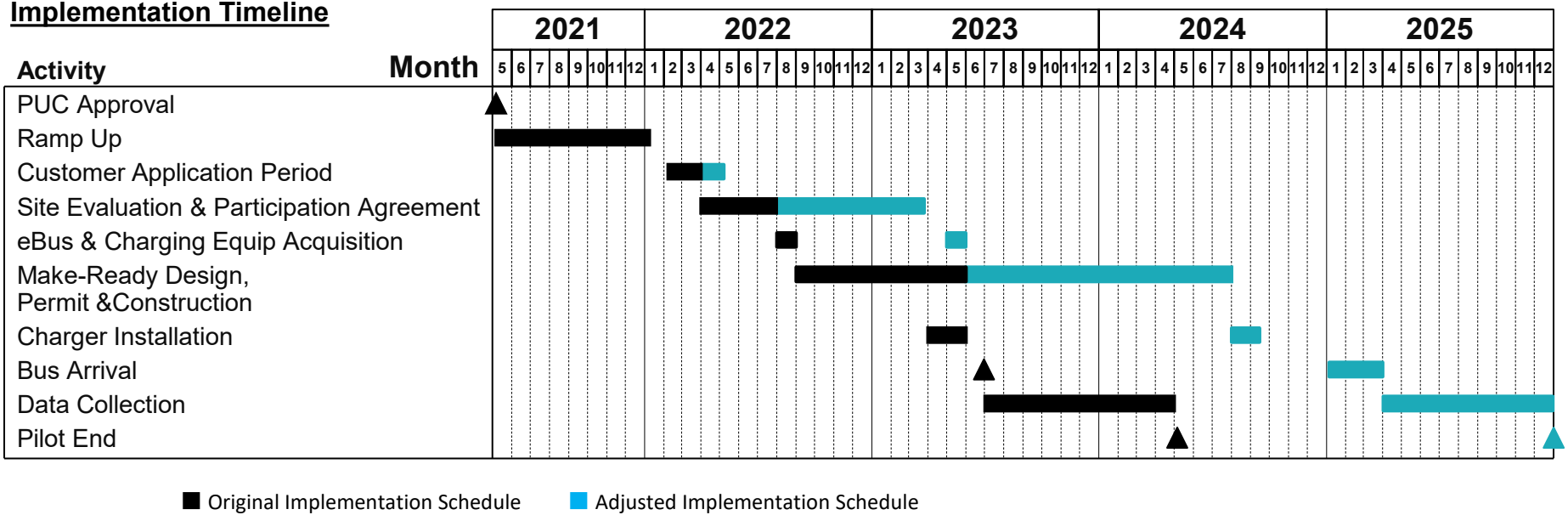
Other Metrics (when available)

- Actual pilot costs and revenue
- Charger utilization

Charge Up eBus

Division	EoT
Project Manager	Tandy Tabata

Implementation Timeline



Factors contributing to the need 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.

Charge Up Commercial

Division	EoT
Project Manager	Ida Taylor

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

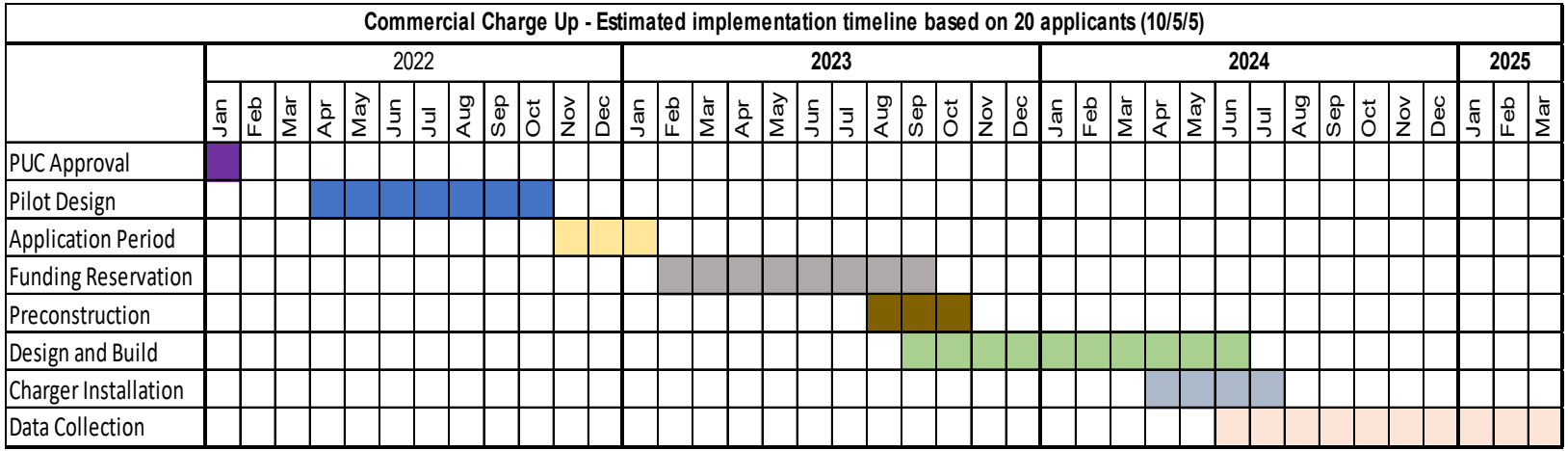
Risks

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

Charge Up Commercial

Division	EoT
Project Manager	Ida Taylor

Implementation Timeline



Charge Up Commercial

Division	EoT
Project Manager	Ida Taylor

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	On Track
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	

Budget

As of 2/24/23

$000s

Recorded		Updated Forecast			
2021	**2022**	**2023**	**2024**	**2025**	**Total**
$ -	$ 159	$ 3,436	$ 1,381	$ 9	$ 4,984

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

Charge Up Commercial

Division	EoT
Project Manager	Ida Taylor

Participation KPIs	
Applications Received To Date	61
Applications Complete	50
Oahu	28
Hawaii Island	9
Maui	13
Anticipated Number of Charging Ports for Completed Applications	222
Site evaluations Completed	28
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

EV-J and EV-P Tariff Pilot

Division	EoT
Project Manager	Ethan Landy

Description & Scope:

- Five-year pilot program (2022-2027), encompassing Rate Schedules EV-J and EV-P, which are approved on a pilot basis.
- Separately-metered commercial accounts (businesses, workplaces, multi-unit dwellings, etc.) serving exclusively EV charging can qualify to enroll in Schedules EV-J or EV-P
- Schedules EV-J and EV-P are available to a max. 1,000 customers for EV-J and a max. of 500 customers for EV-P.
- Schedules EV-J and EV-P are time-of-use (TOU) rates, which incentivize charging during mid-day hours when increased solar energy is flowing into the grid.
- It is expected that the greatest savings from Schedules EV-J and EV-P will result from the reduced demand charges, which vary with intensity of use and can often be the largest part of a commercial EV customer's bill.

Objectives:

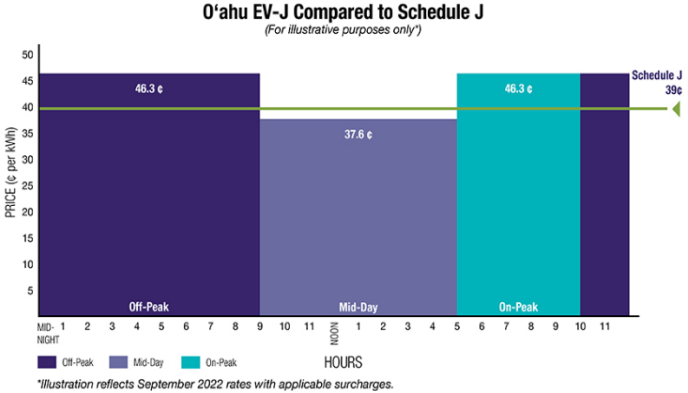
- Measure demand and impact of this type of rate structure on a pilot basis
- Rates are designed to encourage EV adoption of commercial customers while encouraging mid-day charging behavior
- Use collected data to inform future filings and/or full-scale deployment

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 and are energized.



EV-J and EV-P Tariff Pilot

Division	EoT
Project Manager	Ethan Landy

Status updates:

- One customer (on Oahu) has enrolled in Schedule EV-J as of 2/28/23 in anticipation of completing the installation of their EV charging station hub. This customer's service is not yet energized, so there is no consumption, nor any revenue to report.

Risks:

- Slow adoption of charging stations by commercial customers, or long development timelines for charging infrastructure could lead to 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 internal stakeholders and customers about the rates, including existing EV-F customers, and customers requesting new EV charging installations.
- We are reviewing internal processes to facilitate enrollment in the rates.

Current Enrollment:

- One customer (EV-J, Oahu) has enrolled as of 1/30/23. Account active, but no consumption, nor revenue since service is not yet energized.

Expected Q2 enrollments:

- Active accounts (EV-F, J, P): min. 0, max 5
- Future accounts: min. 0, max 1

Reporting:

- Once customers are enrolled and energized, we will report (total, and by island):
  - Number of customers (active in each month)
  - kWh usage
  - Revenues

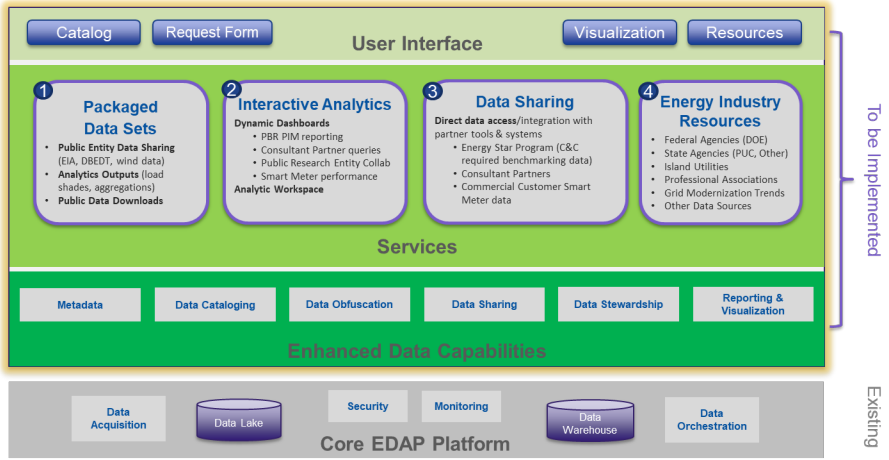
Milestone	Date
Approving D&O 38157 issued	12/30/21
Tariff sheets filed	2/1/22
Final tariffs approved by PUC	3/1/22
Tariffs in effect, EV-J & EV-P open for enrollment on O'ahu, Maui and Hawai'i Isl.	3/18/22
Proposed tariffs for Moloka'i and Lāna'i filed	6/30/22
Schedules EV-J & EV-P in effect and open for enrollment for Moloka'i and Lāna'i	8/1/22

Data Analytics Clearinghouse (DACh) - Overview

Division	Enterprise Architecture & Planning
Project Manager	Joel Wasson

Description & Scope:

- A **cloud-based clearinghouse** of published Hawaiian Electric data and analytical insights
- Built upon **existing Hawaiian Electric investments** in a modern, secure Enterprise Data Analytic Platform (EDAP)
- Usable in a **self-service and collaborative manner** by external stakeholders focusing initially on Pilot Participants (public agencies) through four key services:
  1. Packaged Data Sets
  2. Interactive Analytics
  3. Data Sharing
  4. Energy Industry Resources
- Support **benchmarking, compliance, energy utilization decision-making,** and other data analysis & reporting needs



Objectives:

- Meet regulatory commitments & share data collaboratively
- Measure and demonstrate Clearinghouse solution model & value
- Increase data analytics maturity and useability of data as a strategic asset

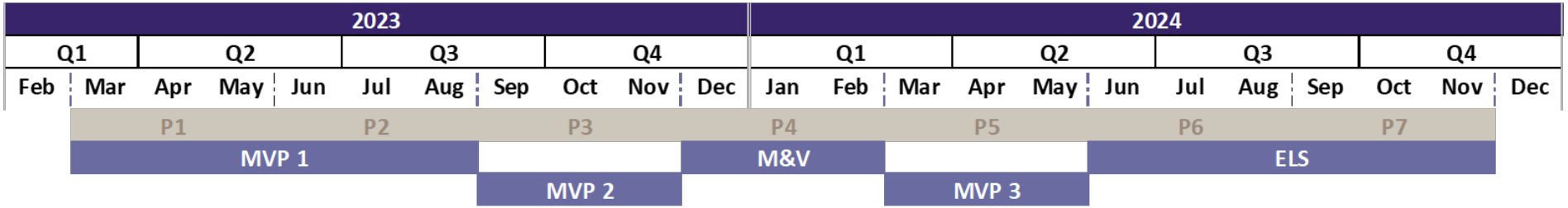
Major Deliverables:

- Deliver on key use cases through execution of three iterative Minimum Viable Product releases
- Enable a secure and effective data architecture to support key Clearinghouse services
- Establish a business operating model for the Clearinghouse

Data Analytics Clearinghouse (DACh) - Overview

Division	Enterprise Architecture & Planning
Project Manager	Joel Wasson

Data Analytics Clearinghouse Feature Roadmap



Status Update:

- Approving "D&O 38753," Docket 2022-0212 issued on 12/08/22
- Preliminary work to establish system integrator SOW initiated 01/02/23 with SOW finalized 02/06/23
- No costs were incurred in 2022

Next steps:

- Project Kick-Off meeting: 02/27/23
- Program Increment 01 scheduled from 02/27/23 to 05/30/23
- External stakeholder kick-off planned for late April to May

Major Deliverables	%	Target
Project START DACh	**100%**	**02/06/23**
PI-1	**0%**	**05/30/23**
PI-2 & **MVP R1**; Minimum Viable Product Release 1	**0%**	**08/30/23**
PI-3 MVP R2; Minimum Viable Product Release 2	**0%**	**12/04/23**
PI-4 & DACh **Usability Analysis**	**0%**	**03/07/24**
PI-5 & MVP R3 Minimum Viable Product Release 3	**0%**	**06/07/24**
PI-6 ELS Phase 1 Operational Support	**0%**	**09/04/24**
PI-7 ELS Phase 2 Operational Support (TBD)	**0%**	12/02/24

EV Telematics Pilot Concept

Division	EoT
Project Manager	Timur Tufail

Overview	• Hawaiian Electric proposes launching EV telematics-based pilot project to incentivize EV driving and to collect data about EV customer charging behavior
Problem	• 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	• 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

EV Telematics Pilot Concept

Division	EoT
Project Manager	Timur Tufail

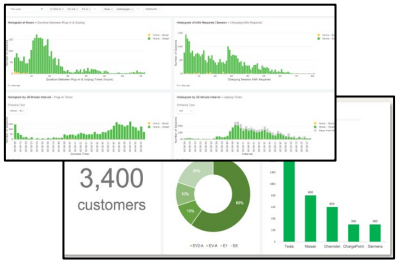
1. Drivers are already opted into data share arrangement via original equipment manufacturer's ("OEM") terms and conditions

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

ev. energy

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

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



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

EV Telematics Pilot Updates

Division	EoT
Project Manager	Timur Tufail

1. Notice of Intent	• **NOI filed 2/6/23.** • **Received PUC IRs on 2/24/23.**
2. Timeline	• Project estimated to start in Q2 2023, pending PUC approval.
3. Partner Contracts	• Hawaiian Electric and pilot partner legal teams reviewing respective contracts in preparation for execution upon PUC approval of pilot.

Smart Electric Panel – early pilot concept

Smart Electric Panels provide data on energy usage and control of electric panel circuits.

- Use this technology to gather detailed energy usage data in various residential customer segments
- Assess discretionary residential load for TOU rates and grid service programs
- Understand how customer access to their real-time energy usage affects behavior
- Survey customers on panel acceptance
- Target 20% for LMI customers
- Capture costs
- Share results with stakeholders and contractors to enable this technology for rates and grid service programs
- Assess potential studies with commercial customers and other islands

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.

DER Regulatory Background

- DER Docket (2019-0323)
  - New tool to support ARD TOU development
  - New tool to inform potential new DER/DR programs
  - Potential new avenue to enable customer participation in DER/DR programs

Smart Electric Panel – Why a Pilot?

- The primary deliverable is data collection and analysis to inform rates and services
- The pilot report will inform stakeholders and third-parties on customer energy usage and cost of smart panels
- The faster IPF regulatory process could leverage existing rebates
- Leverage existing programs to enhance customer education
- Smart panels are emerging technologies
- Inform potential for other smart panel pilots

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