Hawaiian Electric

Innovation Pilot Framework (IPF) Portfolio Update

June 7, 2023

Agenda

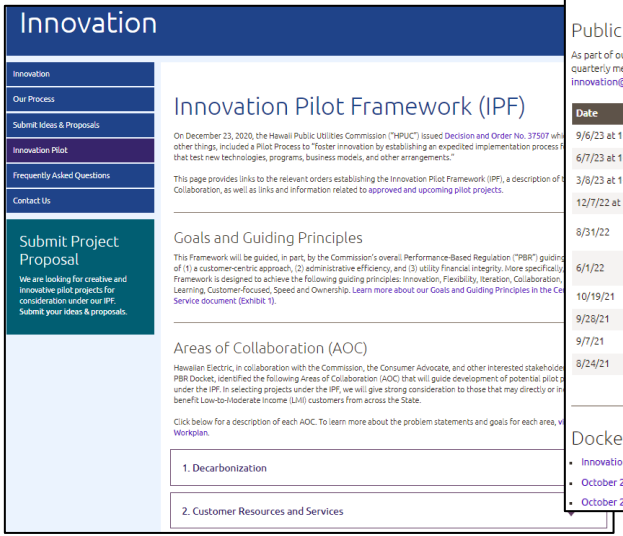
June 7, 2023 (1:00 - 2:30 PM HST)

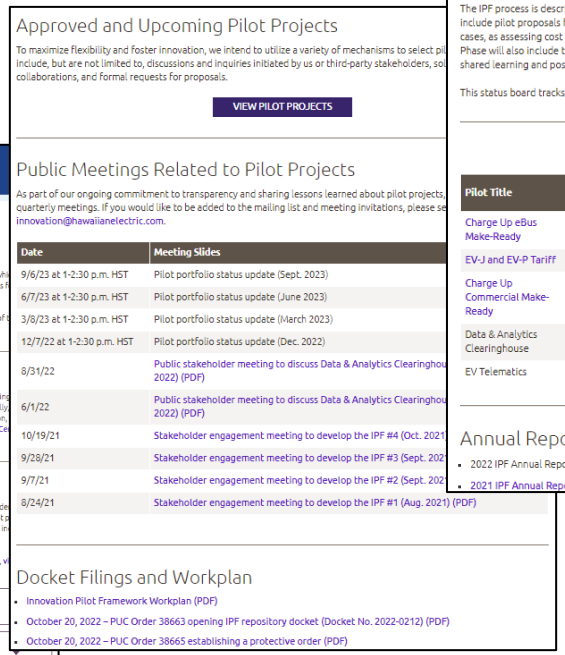
- Welcome
- Provide status updates on approved pilots
- Obtain stakeholder feedback on pilots' progress

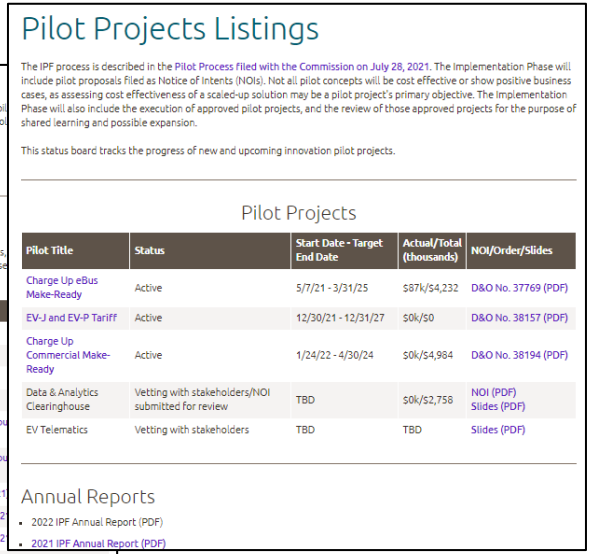
Innovation Pilot Framework Website

Website: hawaiianelectric.com/IPF

- Track progress of approved pilots
- Submit pilot ideas







Key Takeaways

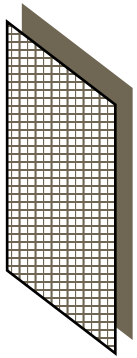
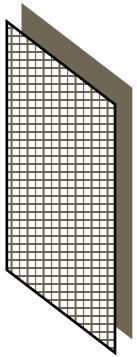
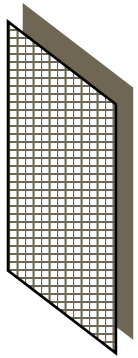
Status:

- Commission approved EV Telematics Pilot on 3/22/23 (D&O 39099)
- Per D&O 39099, Commission temporarily suspending filing of Pilot Notices pending a stakeholder meeting to discuss the Pilot Process and potential improvements. Meeting scheduled for Thursday, 6/15/23, 11-12pm

Active pilots:

- **Charge Up eBus** – Green: Fewer than expected applicants and bus operators. Changes to scope, schedule, and budget in response to customer feedback. Bus orders req. 18+ months lead time. PUC approved no-cost extension to 12/2025.
- **Charge Up Commercial** – Green: Evaluating and prioritizing sites for selection. Target 20 executed agreements by Q3.
- **EV-J and EV-P Tariff** – Green: Continued interest in enrollment, with pace limited by the installation of EV charging facilities. Working through hurdles and using a targeted outreach approach with interested customers.
- **Data & Analytics Clearinghouse (DACh)** – Green: First Program Increment initiated 3/8 and completed by 5/30. Budget on track. Technical scope expected to be delayed in Q2.
- **EV Telematics (Smart Charge Hawaii)** – Green: Public facing website is live (https://smartchargehi.ev.energy) and signups are under way. Customer outreach is ongoing (HECO and ev.energy joint marketing, press release etc.).

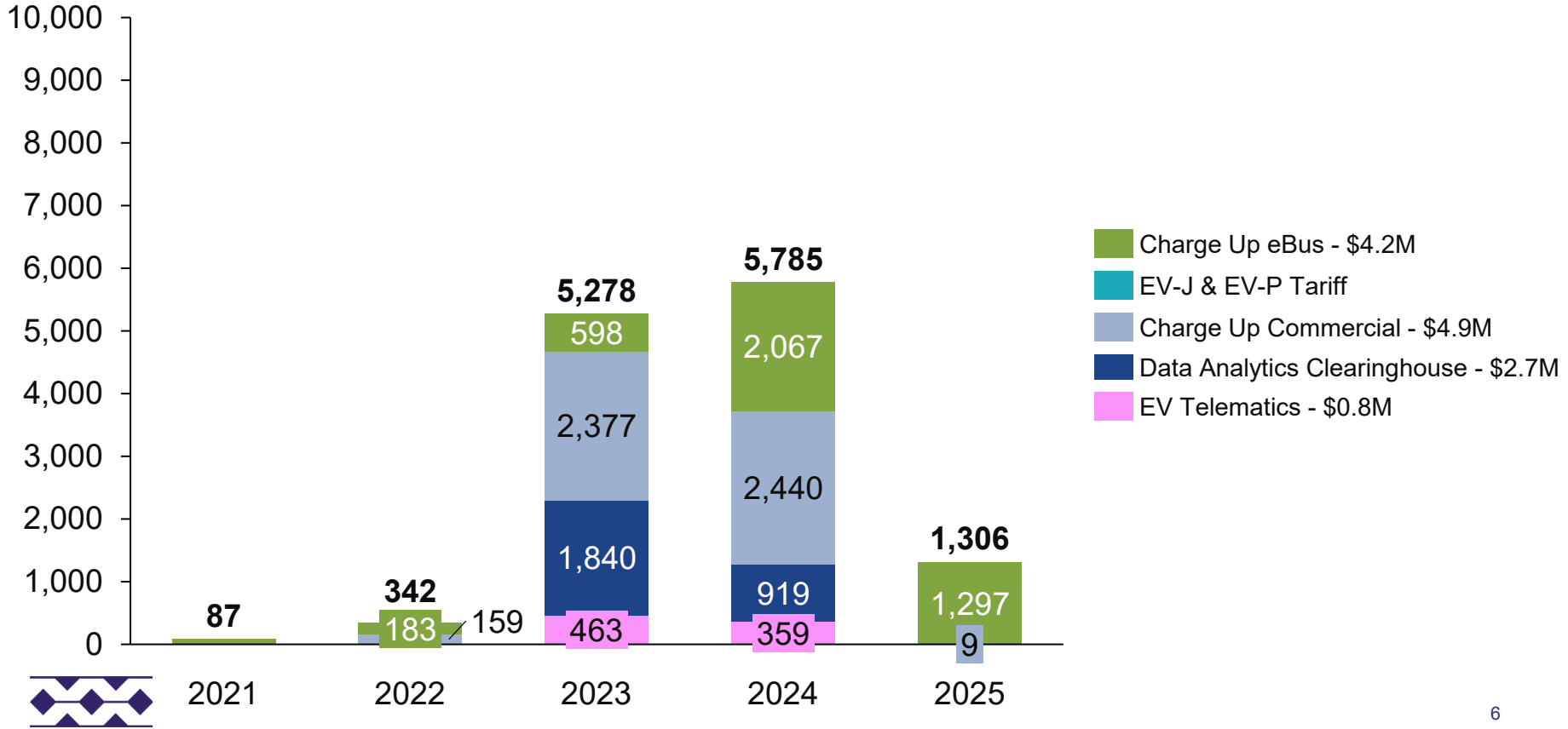
Innovation Pilot Framework (IPF) pipeline status board

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
		1st Level Vetting		2nd Level Vetting		
LMI Pilot		Smart Electric Panel				Charge Up eBus
Virtual NEM						Charge Up Commercial
Battery rental						EV-J and EV-P Tariff Pilot
Veg Mgmt						Data Analytics Clearinghouse
						Residential EV Telematics

Stakeholder Engagement

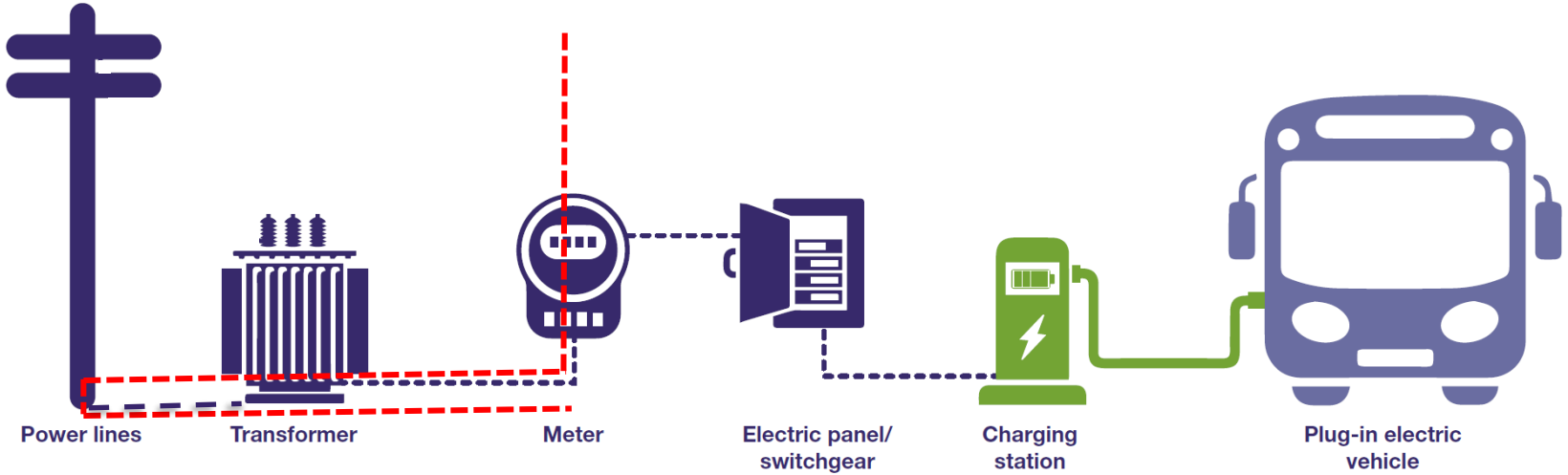
Active Pilots (latest forecast)

Amounts $000s



Project Updates

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, extended through 2025)
- 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 + Funding Reservation	3/31/23	74%
eBus/Charging Equip. Procurement (customer)	5/31/23	70%
Final Design	10/1/23	
Construction Complete	8/31/24	
Start Data Collection	4/01/25	
Final Report	3/31/26	
Overall % Complete		**66%**

Updated Budget Forecast (on track)

000's	2021	2022	2023	2024	2025	TOTAL
TOTAL	**87**	**183**	**644**	**2,045**	**1,274**	**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.

Charge Up eBus

Division	EoT
Project Manager	Tandy Tabata

Updates

- PUC approved extending pilot through December 31, 2025
- 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
- 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	5/31/22
Days to execute Participation Agreement (as of 3/31/23)	365	426
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

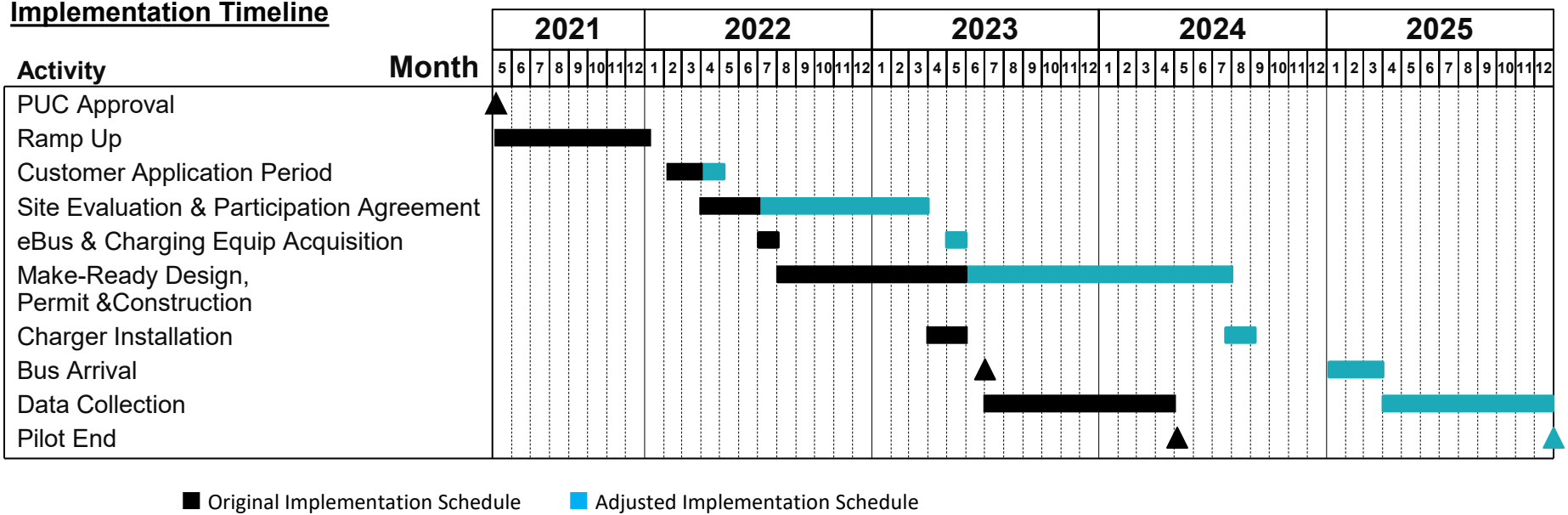
Other Metrics (when available)

- 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

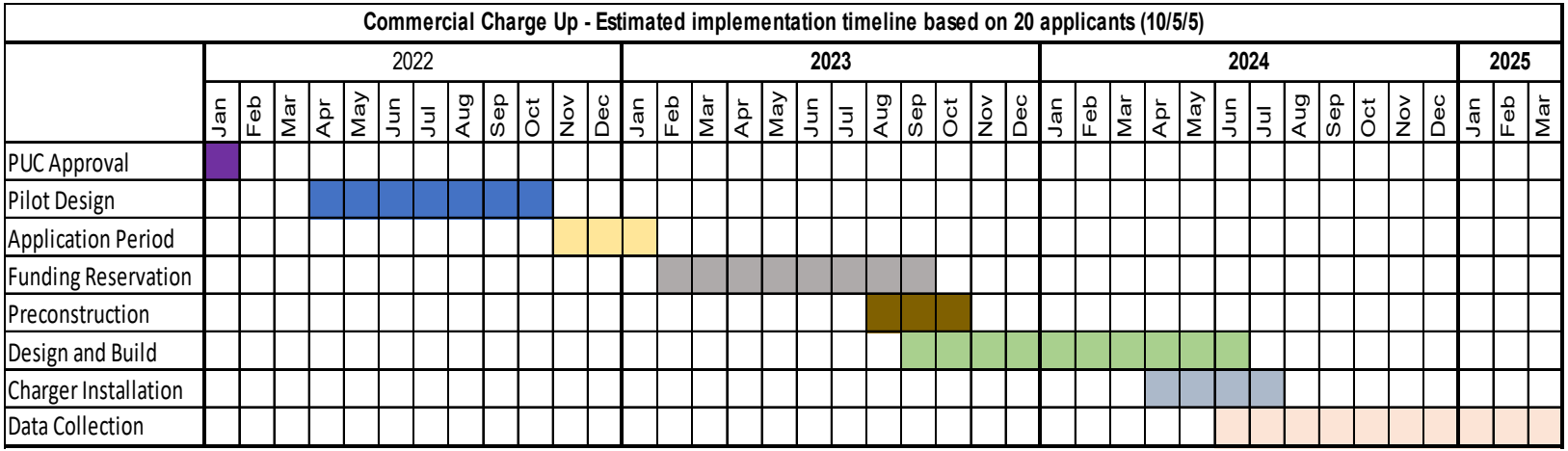
Risks:

- 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	4/30/23	95%
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		**37%**

Observations & Lessons Learned

- eBus pilot informed Commercial Make Ready implementation
  - Cost cap
  - Reduce data requirement
- Anticipate 20 sites with 4-6 ports each
- Separately metered service can add complexity

Next steps:

- Evaluate Applications
- Execute Participation Agreements

Updated Budget Forecast (on track)

000's	2022	2023	2024	2025	TOTAL
TOTAL	**159**	**2,327**	**2,489**	**9**	**4,984**

Charge Up Commercial

Division	EoT
Project Manager	Ida Taylor

Participation KPIs	
Applications Received To Date	65
Applications Complete	55
Oahu	32
Hawaii Island	9
Maui	14
Anticipated Number of Charging Ports for Completed Applications	244
Site evaluations Completed	54
Applications Withdrawn or Denied	24
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:

The five-year pilot program (2022-2027) features a time-of-use (TOU) rate structure that incentivizes mid-day charging, 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 and 500 customers, respectively. 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 (Schedule EV-J or EV-P) to benefit from TOU pricing a reduced demand charges. The biggest cost savings under EV-J and EV-P are expected to result from the reduced demand charges, which vary with intensity of use and can often be the largest part of a commercial customer's bill.

Objectives:

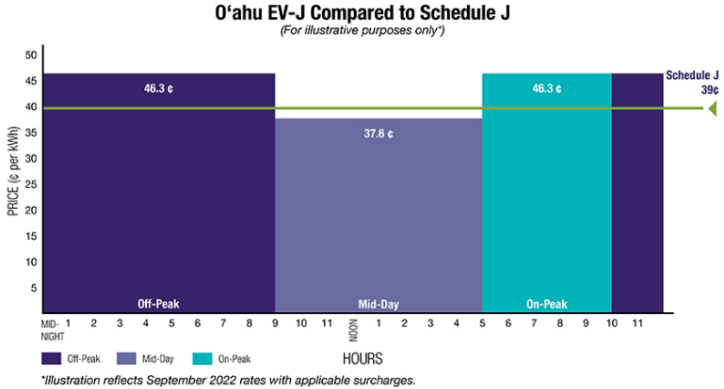
- Measure demand and impact of this type of rate structure on a pilot basis
- Rates are designed to encourage EV charger installation by commercial customers while nudging behavior to charging during mid-day
- Use collected data to inform future filings and/or full-scale deployment

Major Deliverables:

- Annual reports

GREEN status.

No budget.
No deliverables schedule beyond annual reports.



EV-J and EV-P Tariff Pilot

Division	EoT
Project Manager	Ethan Landy

Status updates:

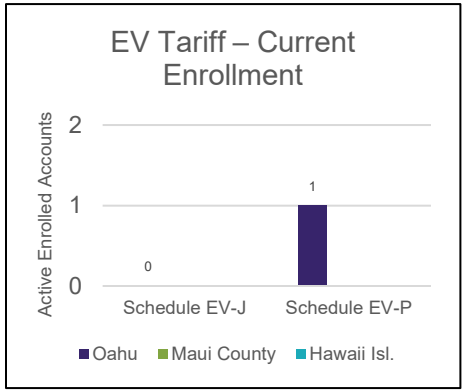
- D&O 38157 issued on 12/30/21, approving pilot
- Tariff sheets were filed 2/1/22
- PUC approved the final tariffs on 3/1/22 to go into effect on 3/18/22
- Filed proposed rates for Molokai & Lanai on 6/30/22 effective 8/1/22
- Current enrollment:
  - Oahu:
    - EV-J: (2) accounts – enrollment in progress
    - EV-P: (1) account – active
  - Maui County & Hawaii Island:
    - No enrolled accounts

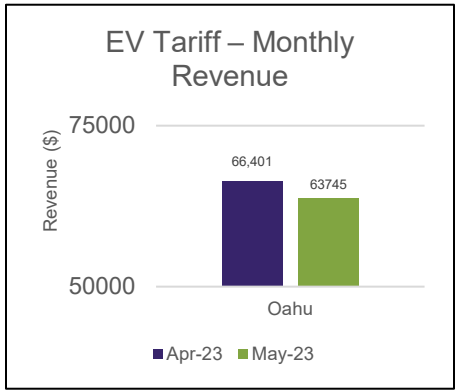
Risks:

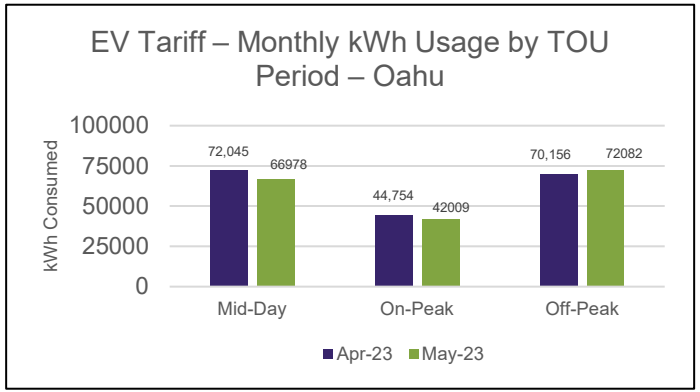
- If adoption of EVs/charging stations by commercial customers is slow, we could see low enrollment. No direct financial impact, but dataset to inform future decisions may not be as robust as desired.

Next steps:

- We are continuing to educate 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.
- We are guiding candidate customers through the enrollment process





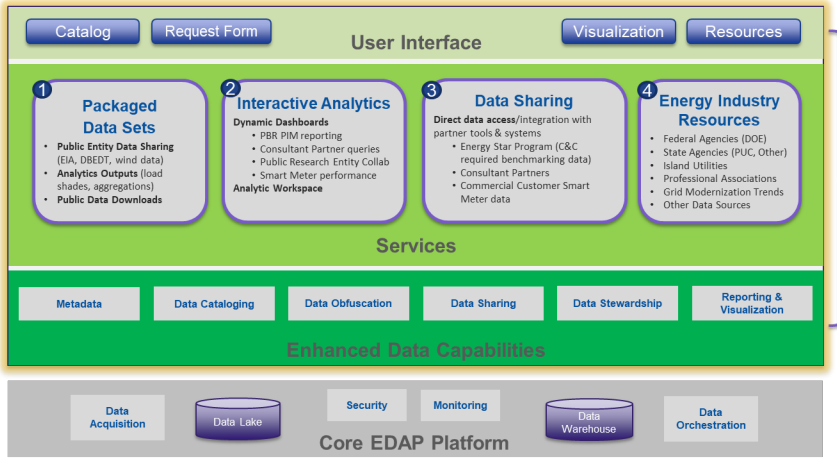


Data Analytics Clearinghouse (DACh) - Overview

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:

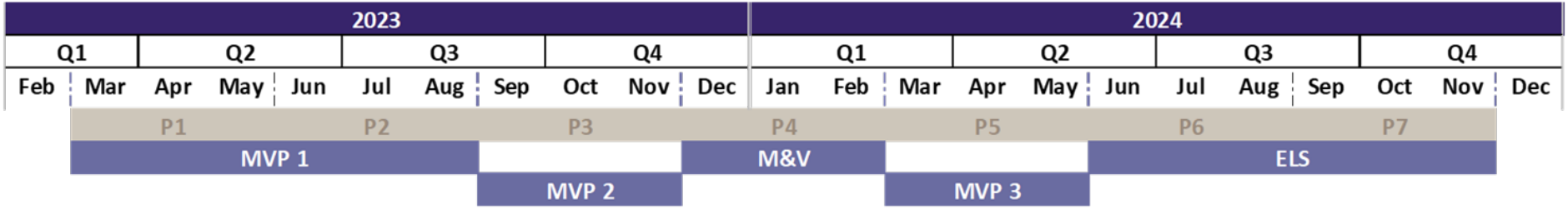
- Meet regulatory commitments & share data collaboratively
- Measure and demonstrate Clearinghouse solution model & value
- Increase data analytics maturity and useability of data as a strategic asset

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) - Timeline

Division	Enterprise Architecture & Planning
Project Manager	Joel Wasson



Status Update: Green: Program Increment 01 initiated 3/8 and complete 5/30. Budget on track; Technical scope expected to be delayed in Q2 due to resource constraints

- Project Kick-Off meeting: 2/27/23
- Program Increment 01 initiated 3/8/23
- PI 01 expected to complete 5/30/23 under budget, scope delayed

Next steps:

- External stakeholder kick-off planned for July (TBD)
- Program Increment 02 expected start June 7th

Major Deliverables	%	Target
Project START DACh	**100%**	**02/06/23**
PI-1	**75%**	**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

Updated Budget Forecast (on track)

DACh Budget Summary	2023 Total	2024 Total	2025 Total		Grand Total
Total Forecast	1,672	812	126		2,610
Budget	1,830	831	0		2,75
Var	158	20	-126		148

Residential EV Telematics Pilot

Division	EoT
Project Manager	Timur Tufail

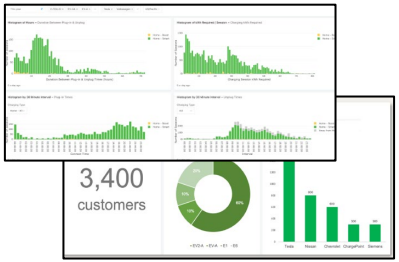
1. Drivers are already opted into data share arrangement via original equipment manufacturer's ("OEM") terms and conditions

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

Residential EV Telematics Pilot

Division	EoT
Project Manager	Timur Tufail

Description & Scope

The EV Telematics pilot (i.e., “Smart Charge Hawaii”) uses emerging technology (i.e., real-time onboard EV telematics) to collect data on EV charging metrics and provide information on EV driving habits. The Pilot includes a customer-facing interface (i.e., a free app available for download on Google and Apple stores) as well as a utility-focused application (i.e., web-based dashboards displaying real-time customer charging data) developed by a third-party technology vendor (ev.energy). Participants receive a financial incentive for signing up and participating in the Pilot.

Objectives

The purpose of the pilot is to enroll up to 2,000 EV driving participants across our service area, collect telematics data, gain visibility into EV charging behavior data, and then share the data with internal and external stakeholders.

Major Deliverables

- Participant charging behavior dashboards and raw data (cloud-based portal)
- Feedback from stakeholders on usefulness of data
- Feedback from participants in the form of surveys/focus group interviews
- Quarterly PUC and stakeholder pilot updates (e.g., participant tracking, heat maps, EV charging trends etc.)
- Annual pilot update report

Risks

- OEMs could limit access to telematics data for ev.energy
- Ev.energy could be acquired or go out of business
- Lack of participant sign-ups

(in $ 000’s)	**2023**	**2024**	**2025**	**TOTAL**
TOTAL	**$463**	**$359**	**$0**	**$822**

Residential EV Telematics Pilot

Division	EoT
Project Manager	Timur Tufail

Implementation Timeline

Milestone	Timing*	Status
Public facing webpage design signed off by Hawaiian Electric	5/23/2023	Complete
Public facing webpage live	5/24/2023	Complete
Smart Charge Hawaii customer support live	5/24/2023	Complete
FAQs and customer support responses signed off by Hawaiian Electric	5/24/2023	Complete
Press release published	5/24/2023	Complete
Monitor participant sign-ups	June/July 2023	On-track
Outreach emails sent to selected customers for enrollment	June/July 2023	On-track
Web-based data dashboard built to collect and report pilot enrollment and charging data; walk-through with EoT team	July 2023	On-track
Send out $75 enrollment incentives (or 5,000 HawaiianMiles)	December 2023	Pending
Focus group with up to 10 participants / Survey all participants	January/February 2024	Pending
Pilot close – data collection ends	December 2024	Pending
Send out the $75 completion incentives (or 5,000 HawaiianMiles)	December 2024	Pending
Post-pilot focus group with up to 10 participants / Survey all participants	December 2024 or January 2025	Pending
Wrap up, analysis and future planning	December 2024	Pending

Next Steps

- Monitor initial participant sign-ups and enrollment (first 3 months)
- Develop web-based dashboard to monitor enrollment and observe preliminary charging data (June/July)
- Conduct paid search marketing activities with ev.energy (ongoing)

*Dates may be subject to change

Participation KPI	
Total enrolled customers to date (2,000 target)	**TBD**
Oahu	TBD
Hawaii Island	TBD
Maui	TBD

Note: 238 customers have signed up and are pending enrollment as of 5/30/203.

Pilot Development

- We continue to explore pilot concepts for our pipeline but are pausing pursuing additional pilots pending Commission's meeting with interested parties and stakeholders to discuss areas of potential improvement of the Pilot Process
- Pilots are intended to be flexible and have a goal of reducing uncertainty by trialing solutions and measuring outcomes
- IPF is new to everyone. We are all still learning together – so please give us feedback

What's next?

- Commission's meeting on Pilot Process is 6/15/23 (11:00-12:00pm)
- Next quarterly IPF portfolio status update meeting is 9/6/23 (1:00-2:30pm)
  - Please let us know if you do not have that on your calendar

General Discussion