

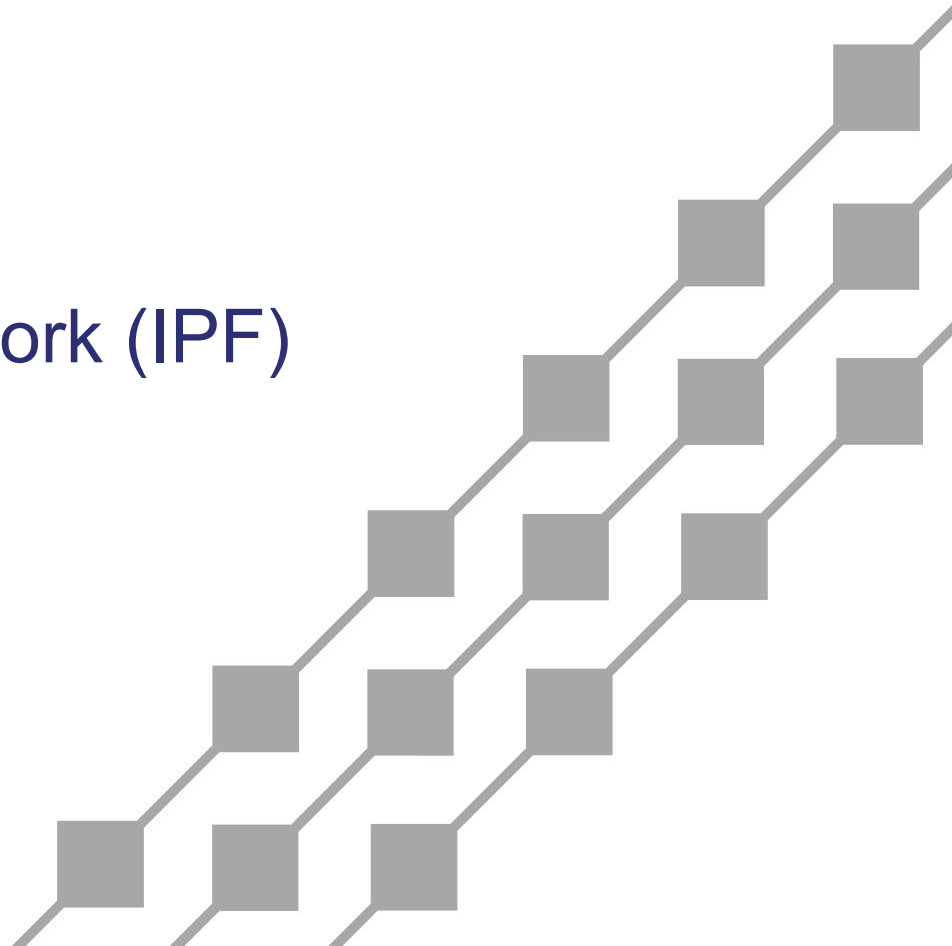
FOR DISCUSSION PURPOSES ONLY



**Hawaiian
Electric**

Innovation Pilot Framework (IPF) Portfolio Update

December 4, 2024



Agenda

December 4, 2024 (1:00 - 2:30 PM HST)

- ◆ In-flight pilot updates
- ◆ Status of IPF pipeline





In-Flight Pilot Updates

Key Takeaways

Status:

- Charge Up eBus and Charge Up Commercial: Expect to file pilot extension request

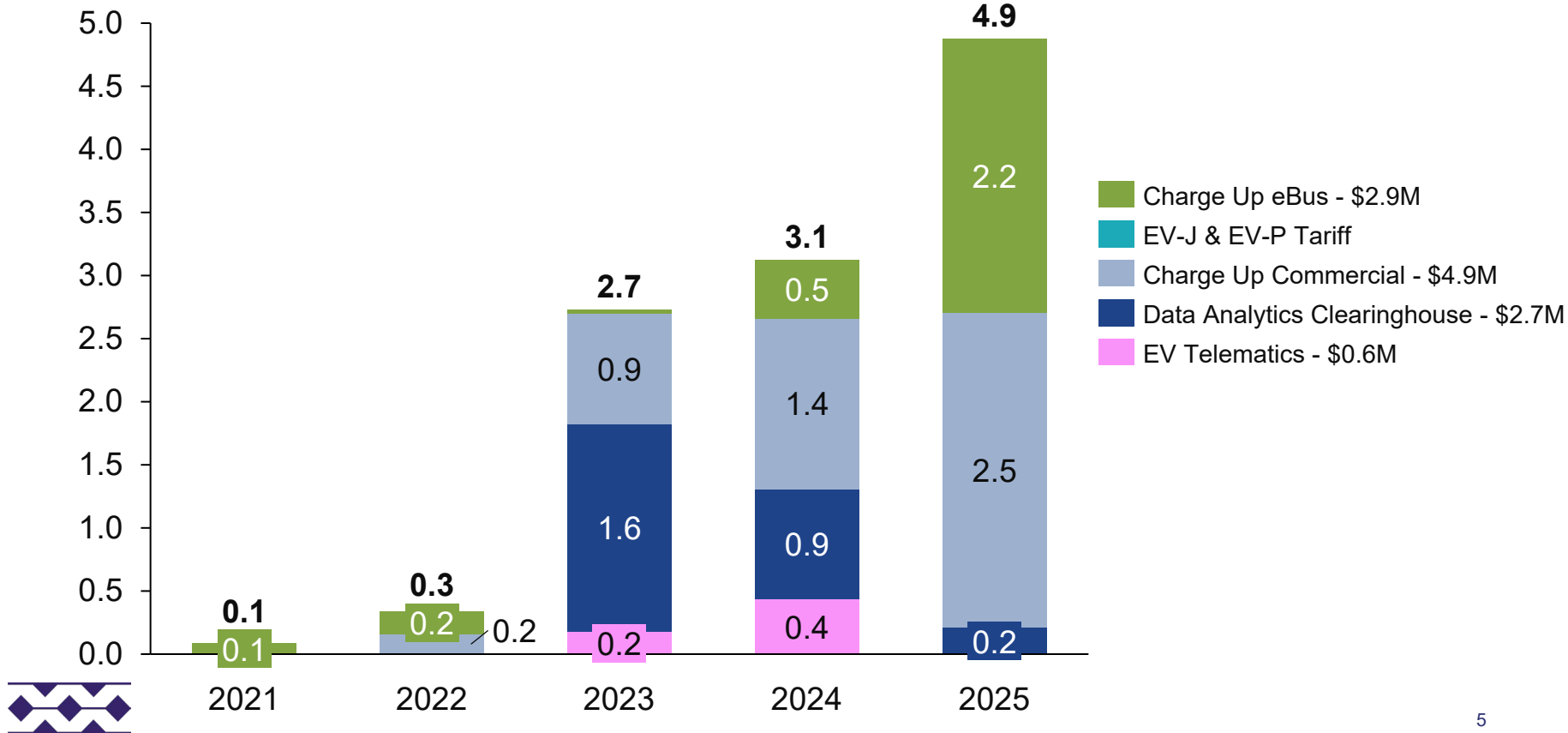
Active pilots:

- **Charge Up eBus** – **Yellow**: Executed 3 Participation Agreements. 1 permit approved, 1 pending permit approval.
- **Charge Up Commercial** – **Yellow**: Executed 15 Participation Agreements, 15 Designs, and completed construction at 1 site. Tracking for 17 total sites.
- **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**: Program Increment 06 completed. PI 07 expected to be completed in Dec. 2024.
- **EV Telematics (Smart Charge Hawaii)** – **Green**: Large data set uploaded into DACH (will be refreshed after pilot ends). Pilot incentives for new EV drivers will not be offered after 11/30. Focus interviews of EV drivers completed. Post-pilot feedback survey being drafted.



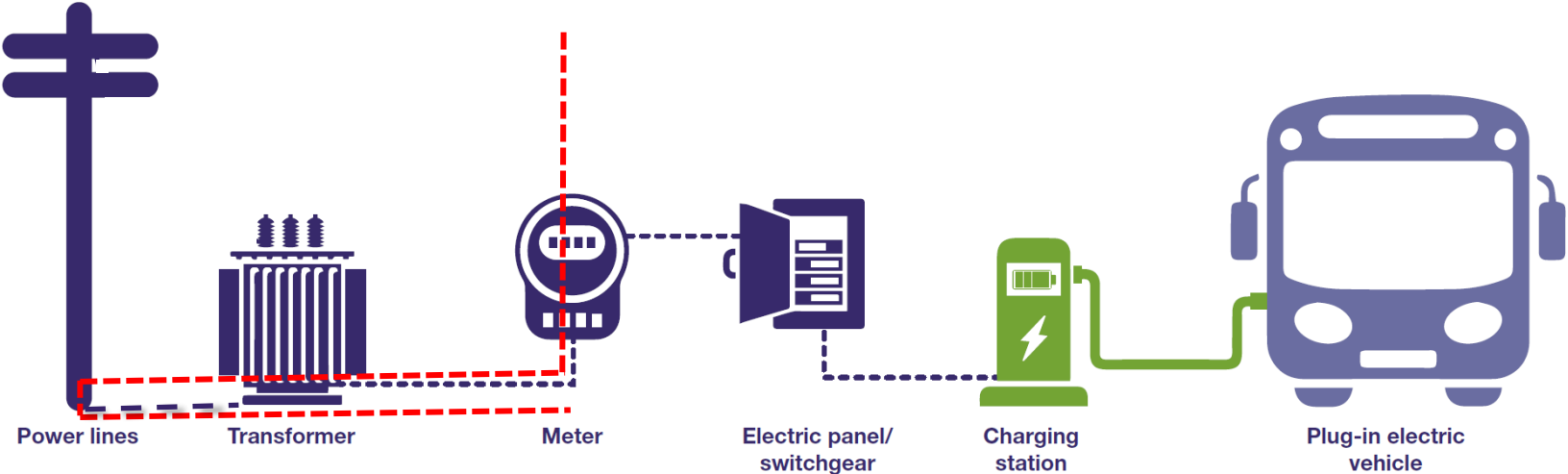
Active Pilots (latest forecast)

\$millions



Totals may not foot due to rounding

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

Anticipate 3 eBus and 17 Commercial Sites

- eBus (launched Q1 2022, extended through 2025)
- Commercial (launched Q4 2022, extended through 2025)



Description & Scope

Hawaiian Electric estimates that the make-ready infrastructure installed in 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.

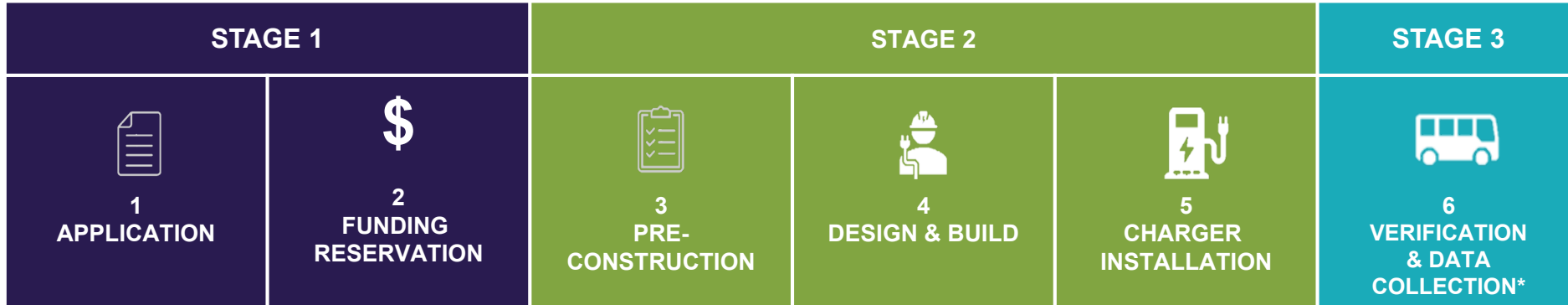
Major Deliverables

- Implementation Process/Customer Journey
- Final Program Design Report and 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 and processes
- Complex/lengthy permit process
- Supply chain constraints
- Rising labor and material costs





5 applicants

3 agreements



- 1 permit approved;
construction RFP in progress
- 1 pending permit approval
- 1 pending design revisions



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	12/30/23	Complete
eBus/Charging Equip. Procurement (customer)	12/30/23	Complete
Make-Ready Final Design	6/30/24	92%
Make-Ready Construction	6/30/25	
Charging Equipment Installation (customer)	8/31/25	
Data Collection	9/01/25	
Final Report	3/31/26	
Overall % Complete		64%

Updated Forecast (on track)

U2411

\$000s	2021	2022	2023	2024	2025	TOTAL
TOTAL	87	183	29	464	2,169	2,932



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 requested modifications to the standard participation agreement to align with their requirements, thus extending the time to execute.**
- State-owned land adds significant complexity and time to seeking approvals for right of entry and grant of easement.
- **Applicants' procurement timelines 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/Open Items

- Expect to file a request to extend the pilot through December 31, 2026.
- E-Bus-J and E-Bus-P Pilot rates end December 31, 2024. Pending approval to allow make-ready applicants to remain on original E-Bus Pilot rates for the 10-year commitment.
- **Modifications to the pilot program to date**
 - 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
 - Extended pilot through December 31, 2025

Other Metrics (when available)

- Actual pilot costs and revenue
- Charger utilization

Participation KPIs	
Applications Received	5
Site evaluations Completed	3
Applications Withdrawn or Denied	2
Participation Agreements Executed	3
Anticipated Number of eBuses	9
Anticipated Number of Make-ready Charging Ports	10

Schedule KPIs (as of 12/4/24)	County of Hawaii Mass Transit	Kahului Transit Hub	Ka Waihona Charter School
Application Received	3/31/22	3/31/22	3/6/24
Days to execute Participation Agreement	854 Executed	613 Executed	145 Executed
Days in permitting review	Design pending revisions and customer approval	158 Approved	33
Days in construction			
Days to install and commission charging equipment (customer)			



Description & Scope

Provide make-ready charging infrastructure to eligible fleets, MUDs and commercial sites. Pilot is targeting 17 customer sites (est. 72-80 charge ports), across Hawaiian Electric, Maui Electric, and Hawaii Electric Light. Pilot will reduce upfront costs for commercial 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
- Develop actual pilot costs and lessons learned to inform future filings
- Increase enrollment in commercial EV rates
- Collect data to inform future filings

Major Deliverables

- Final Program Design Report
- Implementation Plan
- Annual Report
- Make Ready Infrastructure for Level 2 chargers at up to 17 sites

Risks:

- Complex/lengthy permitting processes (each island is unique) could impact installation timeline
- Complex/lengthy landowner approval requirements and processes
- Long material lead times



Milestone	Target Date	Status
Final Program Design Report	9/24/22	Complete
Pilot launch	10/25/22	Complete
PUC Response	11/25/22	Complete
Contract Management and Design Consultant RFPs Awarded	12/5/22	Complete
Site Evaluations	10/1/24	Complete
Participation Agreements Executed	12/31/24	88%
Final Design	3/1/25	88%
Make-Ready Construction Complete	6/1/26	6%
Charger Installation Complete	7/1/26	6%
Data Collection	12/31/26	
Final Report	3/31/27	
Overall		61%

Updated Forecast (on track)

\$000s	2022	2023	2024	2025	TOTAL
TOTAL	159	878	1,353	2,497	4,888

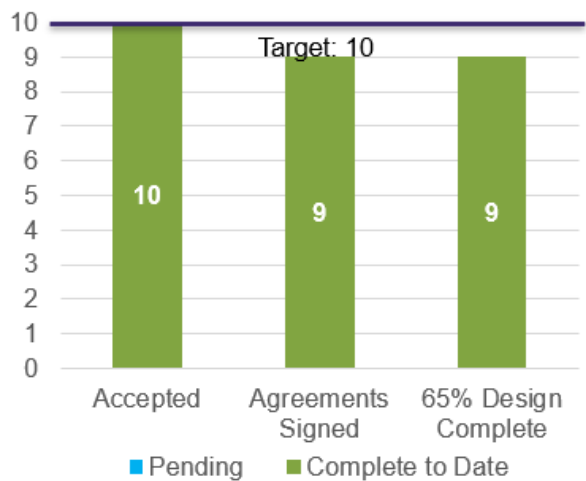


Observations & Lessons Learned

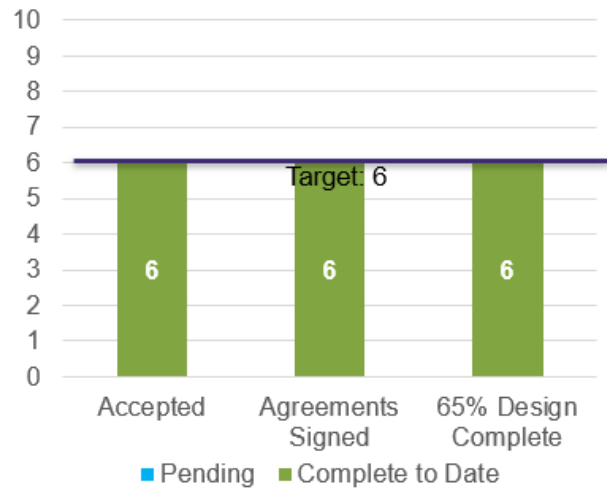
- eBus pilot informed Commercial Make Ready implementation
 - Cost cap
 - Reduce data requirement
- Anticipate 17 sites with 4-6 ports each
- Separately metered service can add complexity
- Duration from Pilot acceptance to executed agreement was longer than anticipated
- License Agreement more appropriate than Grant of Easement
- Customer withdrawals due to
 - 10-year commitment period and uncertainty in customer plans for the site
 - Incremental costs above the cap
- Permit approval is longer than expected

2024 Target: 17 agreements

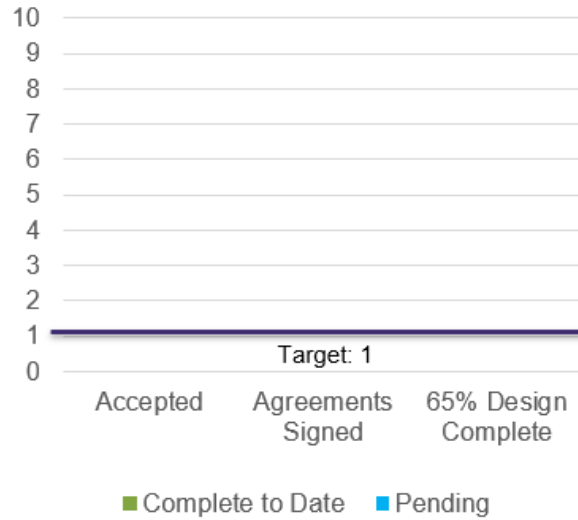
Oahu



Maui



Hawaii Island



*Pending items are awaiting customer signature/approval



Updates

- Expect to file extension request to extend the pilot through 12/31/2026
- Make Ready construction complete at first site:



Next steps:

- Execute participation agreements with remaining applicants
- Finalize site designs
- Schedule construction upon permit approval



Applications	#
Applications Received	80
Applications Complete	69
Oahu	39
Hawaii Island	10
Maui	20
Site Evaluations/Visits Completed	67
Applications Accepted	26
Applications Denied	36
Applications Withdrawn	16
Applications Pending	1
Participation Agreements Executed	15

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:

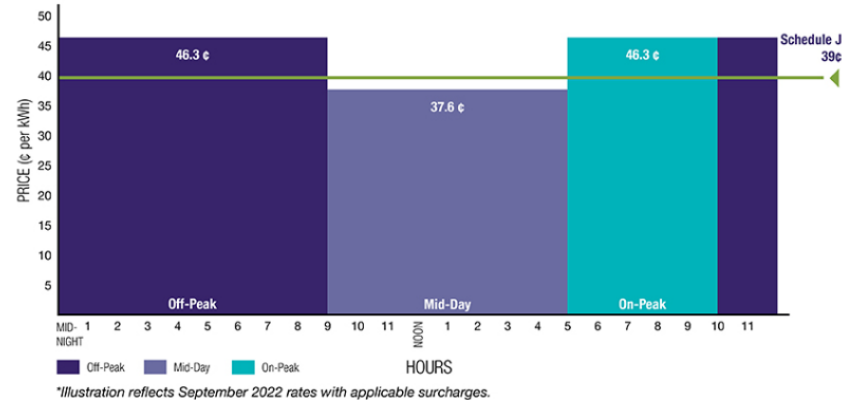
- Annual reports



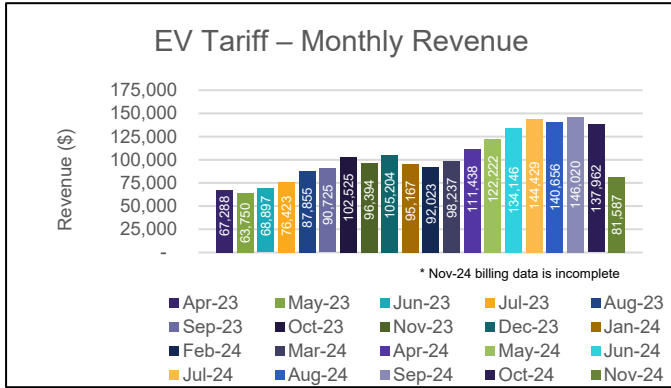
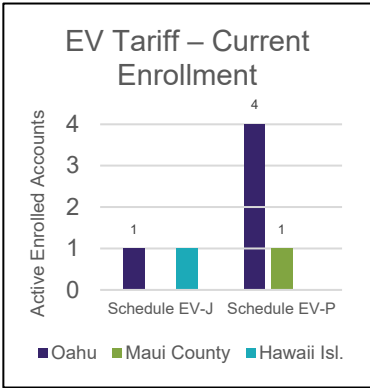
GREEN status.

No budget.
No deliverables schedule beyond annual reports.

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

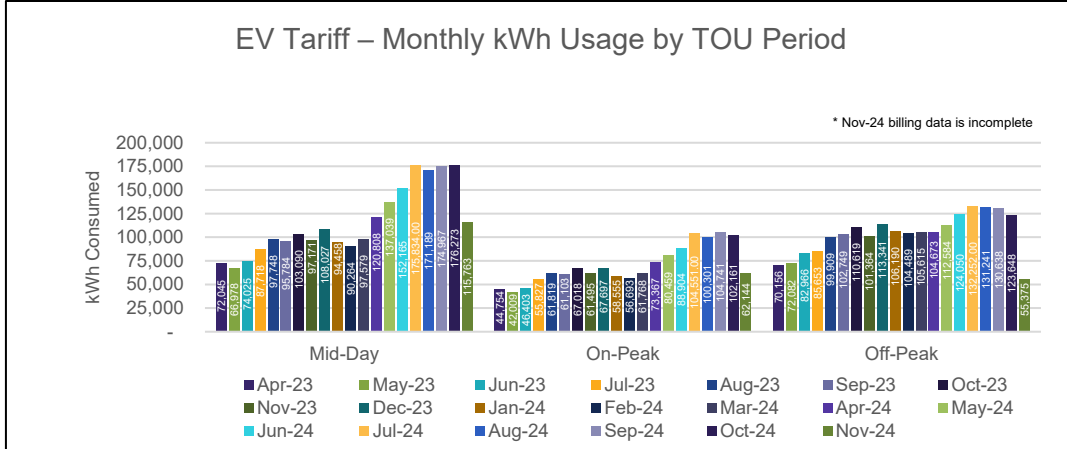


EV-J and EV-P Tariff Pilot



Key Risks & Takeaways:

- Sustained interest from eligible customers.
- Enrollment is limited by rate of EV charging infrastructure development. No direct financial impact, but dataset to inform future decisions may not be as robust as desired.
- We are continuing to evaluate ways to increase enrollment.
- Despite customer interest, the infrastructure cost for a separately-metered service remains a barrier to enrollment for some.
- There is an opportunity to increase enrollment by using revenue-grade submetering to disaggregate EV charging loads from other loads.



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: 1 account
 - EV-P: 4 accounts (1 new enrollee)
 - Maui County:
 - EV-P: 1 account
 - Hawaii Island:
 - EV-J: 1 account
- Continuing to explore ways to facilitate enrollment process

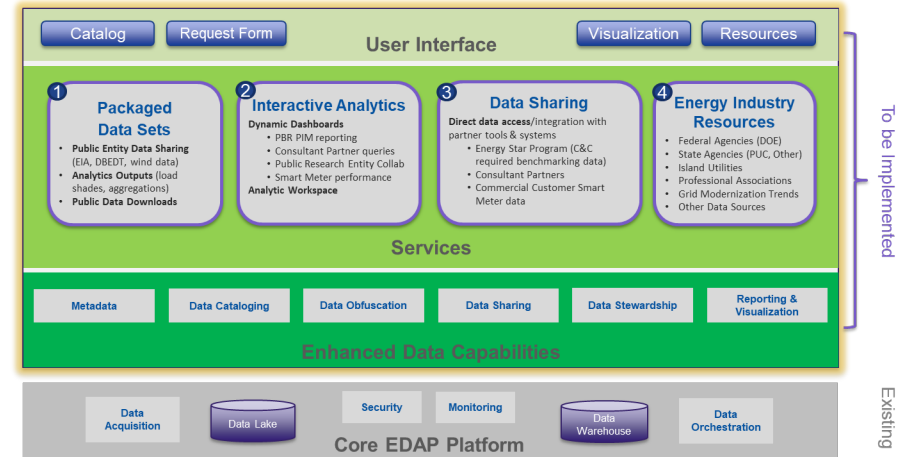


Description & Scope:

- 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 and reporting needs

Objectives:

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

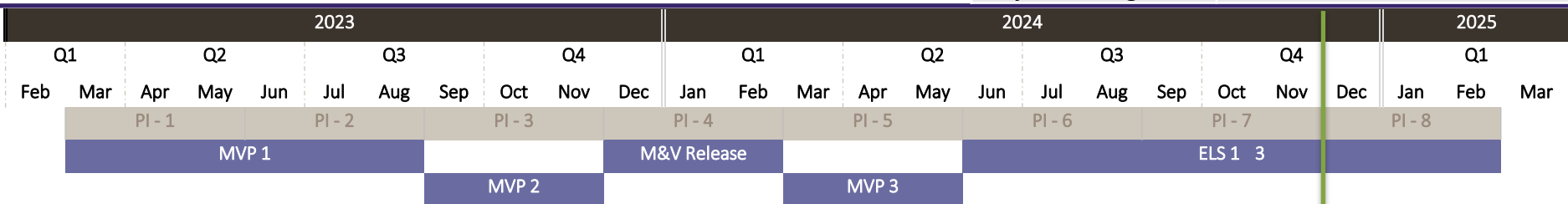


Major Deliverables:

- 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 (Nov-24): ████████

Program Increment 07 in progress with expected completion Dec

- The DACH web-portal has been replaced with a Power BI Service Workspace that will provide the dashboard sharing functionality
- Several infrastructure enhancements are in progress and expected to conclude with PI-8
- Collaborative Office Hour sessions have produced several requests for additional data to support PRE use cases. These will be evaluated for 2025 implementation and include:
 - Replacement of current AMI Dataset to increase data passing anonymization tests; Monthly Billed Energy Data View; Inclusion of Program Participation beyond current PV program; Inclusion of other recording meter data; Vulnerable Populations; Government Accounts – Non-Anonymized Data

Next steps:

- PI-8 expected to start in Dec and run through Feb/March with dates and costs TBD
- Draft Annual Pilot Update indicating direction for clearinghouse functions in 2025
- Continue Office Hours on a Monthly basis in 2025 for PREs

Major Deliverables	%	Start	Target
Project Initialization	100%	2/6/23	2/27/23
PI-1	100%	2/27/23	5/30/23
PI-2 & MVP R1	100%	5/31/23	8/29/23
PI-3 & MVP R2	100%	8/30/23	12/3/23
PI-4 M&V Release	100%	12/4/23	3/1/24
PI-5 & MVP R3	100%	3/4/24	5/31/24
PI-6 ELS - 1	100%	6/3/24	8/30/24
PI-7 ELS - 2	70%	9/23/24	12/13/24
PI-8 ELS - 3 (TBD)	0%	TBD	TBD

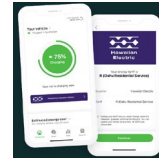
Budget Forecast (on track) – Total budget \$2,758

\$000s	2023	2024	2025	Total
Updated Forecast	1,628	892	209	2,729

Budget reduced for cleared actuals in 2023. Total forecast expected to be under project budget with final revision updated when PI-8 planning complete ²⁰



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



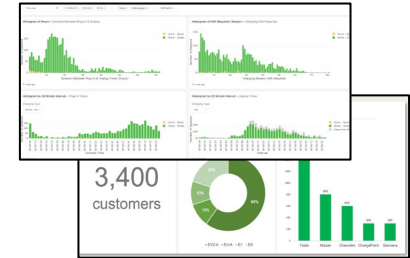
4. Vendor/partner provides customer app where drivers can view charging and Pilot details



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



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



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

Updated Forecast (on track)

\$000s	2023	2024	TOTAL
TOTAL	\$177	\$533	\$710



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 - November 2024	Complete
Outreach emails sent to selected customers for enrolment	June/July 2023	Complete
Web-based data dashboard built to collect and report pilot enrollment and charging data; walk-through with EoT team	July 2023	Complete
Send out \$75 enrolment incentives (or 5,000 HawaiianMiles)	October/November 2023	Complete
Focus group with up to 10 participants / Survey all participants	April - November 2024	Complete
Pilot close – data collection ends	December 2024	Pending
Send out the \$75 completion incentives (or 5,000 HawaiianMiles)	December 2024 / January 2025	Pending
Post-pilot survey all participants	December 2024	Pending
Wrap up, analysis and future planning	December 2024	Pending



*Dates may be subject to change

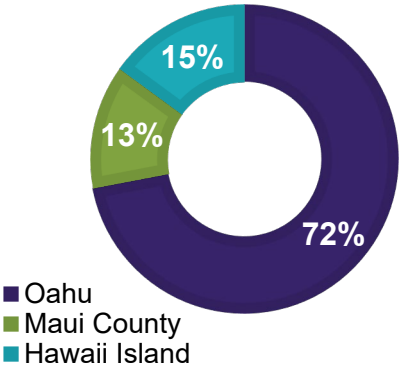
Enrollment Details

(As of 11/26/2024)

Connected Drivers*



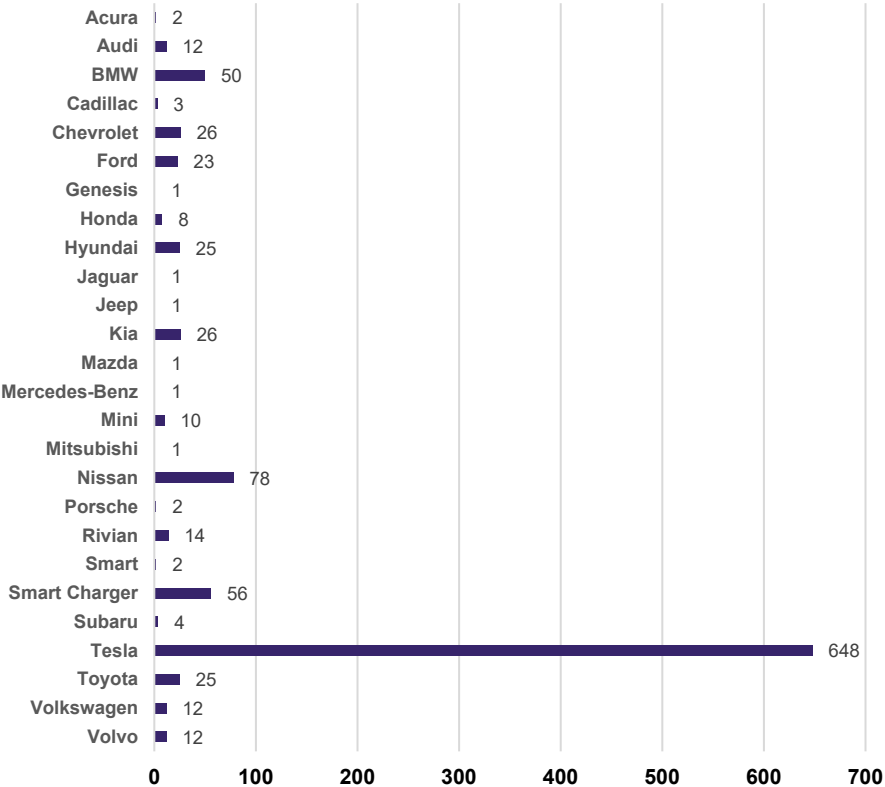
Service Area Distribution



* Includes Smart Chargers



EV Makes



Pilot Updates

- **Completed one-on-one focus interviews with 10 Smart Charge Hawaii participants:**
 - Findings to be presented to Hawaiian Electric in December 2024 and will be included in annual IPF report
- **Mid-year refresh of telematics uploaded into Data Analytics Clearinghouse:**
 - Complete pilot data to be uploaded after pilot ends in December 2024
- **SCHI sign-ups will continue through 12/31; however, incentives for new drivers will not be offered after 11/30**
 - Drivers will be able to continue using ev.energy's app after pilot ends
 - Hawaiian Electric will no longer have access to ongoing telematics data or ev.energy's online platform after pilot ends
- **Preparing post-pilot driver feedback survey:**
 - ev.energy targeting first week of December 2024 for distribution
 - Feedback will be incorporated in the annual IPF report





Pilot Pipeline

Innovation Pilot Framework (IPF) pipeline status board

Stage 1: New Ideas
& Opportunities

Gate 1: Initial
Screening

Stage 2: Sort &
Refine Opportunities

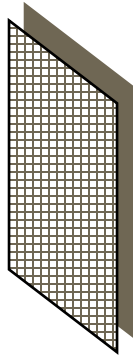
Gate 2: Assessment
Screen for IPF

Stage 3: Prioritize
& decide

Gate 3:
Authorize & NOI

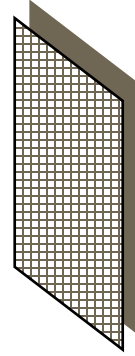
Stage 4:
Execution

1st Level Vetting

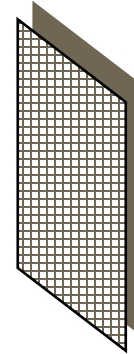


Immersive Learning

Falling Conductor



2nd Level Vetting



Charge Up
eBus

Charge Up
Commercial

EV-J and EV-P
Tariff Pilot

Data Analytics
Clearinghouse

Residential EV
Telematics

Stakeholder Engagement



What's next?

- ◆ Next quarterly IPF stakeholder meeting: Mar. 19, 2025 (1:00-2:30pm)
- ◆ Save the dates (2025):
 - June 18 (1:00-2:30pm)
 - Sept. 17 (1:00-2:30pm)
 - Dec. 10 (1:00-2:30pm)



Innovation Pilot Framework Website

Website: hawaiianelectric.com/IPF

- General information
- Track progress of approved pilots
- Submit pilot ideas via the online form

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.

Innovation Pilot Framework

On December 23, 2020, the Hawaii Public Utilities Commission ("the Commission") issued a Pilot Process to "foster innovation by establishing that test new technologies, programs, business models, and other approaches that may be beneficial to customers and the state."

This page provides links to the relevant orders establishing the Innovation Pilot Process, as well as links and information related to approved pilot projects.

Goals and Guiding Principles

This Framework will be guided, in part, by the Commission's overall IPF of (1) a customer-centric approach, (2) administrative efficiency, and (3) innovation. The Framework is designed to achieve the following guiding principles: Innovation, Customer-Focused, Speed and Ownership. Learn more about the Framework in the Innovation Pilot Framework Service document (Exhibit 1).

Areas of Collaboration (AOC)

Hawaiian Electric, in collaboration with the Commission, the Consumer Protection Docket, identified the following Areas of Collaboration (AOC) under the IPF. In selecting projects under the IPF, we will give strong preference to projects that benefit Low-to-Moderate Income (LMI) customers from across the State.

Click below for a description of each AOC. To learn more about the Pilot Process, click on the "Learn More" link.

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 solicit pilot projects. These mechanisms include, but are not limited to, discussions and inquiries initiated by us or third-party stakeholders, public stakeholder meetings, 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 hold quarterly meetings. If you would like to be added to the mailing list and meeting invitations, please email innovation@hawaiianelectric.com.

Date	Meeting Slides
9/6/23 at 1-2:30 p.m. HST	Pilot portfolio status update (PDF)
6/7/23 at 1-2:30 p.m. HST	Pilot portfolio status update (PDF)
3/8/23 at 1-2:30 p.m. HST	Pilot portfolio status update (PDF)
12/7/22 at 1-2:30 p.m. HST	Pilot portfolio status update (PDF)
8/31/22	Public stakeholder meeting to discuss pilot projects (PDF)
6/1/22	Public stakeholder meeting to discuss pilot projects (PDF)
10/19/21	Stakeholder engagement meeting (PDF)
9/28/21	Stakeholder engagement meeting (PDF)
9/7/21	Stakeholder engagement meeting (PDF)
8/24/21	Stakeholder engagement meeting (PDF)

Docket Filings and Workplan

[Innovation Pilot Framework Workplan \(PDF\)](#)

- October 20, 2022 – PUC Order 38663 opening IPF repository
- October 20, 2022 – PUC Order 38665 establishing a protected pilot process

Pilot Projects Listings

The IPF process is described in the Pilot Process filed with the Commission on July 26, 2021. The Implementation Phase will include pilot proposals filed as Notice of Intent (NOI). 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 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)
eBUS	Active	5/7/21 - 3/31/25	\$0K/\$0	D&O No. 38157 (PDF)
eBUS	Active	5/7/21 - 3/31/25	\$0K/\$4,984	D&O No. 38194 (PDF)
eBUS	Active	5/7/21 - 3/31/25	\$0K/\$2,758	NOI (PDF) Slides (PDF)
TBD	Active	5/7/21 - 3/31/25	TBD	Slides (PDF)

Submit Your Ideas & Proposals

Please use this form to complete a submission to Hawaiian Electric's Innovation team. All information submitted through this web portal should be non-confidential. At the end of the form, you may indicate that you are interested in participating in our Innovation Pilot Framework. Our team will review all submissions and distribute information materials upon the completion of the appropriate subject matter requests for an initial assessment. All personal data including your name, address, email address, and other information that you provide in your submission to our Innovation website will be kept confidential and used only for the purpose of processing and responding to your submission. If we are interested in learning more about your company, technology, or products, we will contact you to discuss how to proceed with next steps. However, but not limited to execution of non-disclosure agreements, scope discussions, negotiations, etc.

You will receive a direct email reply from the Innovation team within 10 business days from the date of your submission. For more information on these next steps, please see our process.

Contact Information: *

* First Name * Last Name
 Title * Email
 * Business Phone * Mobile Phone
For non-US citizens or legal residents of the United States, please provide your country of citizenship or residency (or legal residence).
 Country (optional)

The foregoing is being requested to assist Hawaiian Electric in determining whether there may be export rules and regulations that may apply to the submission of your information.

Company Information:

* Company Name
 * Business Address
 * City * State
 * Zip Code * Country
 * Business Website
 * Company Description
 No. of Full Time Employees:

Technology Innovation Idea/Product Submission:

A. Select the priority area and specify which initiative applies to your innovative technology or solution that meets our technology needs.





THANK YOU