



**Hawaiian
Electric**

Overview of Innovation Pilot Framework

September 28, 2021



Where are we heading?

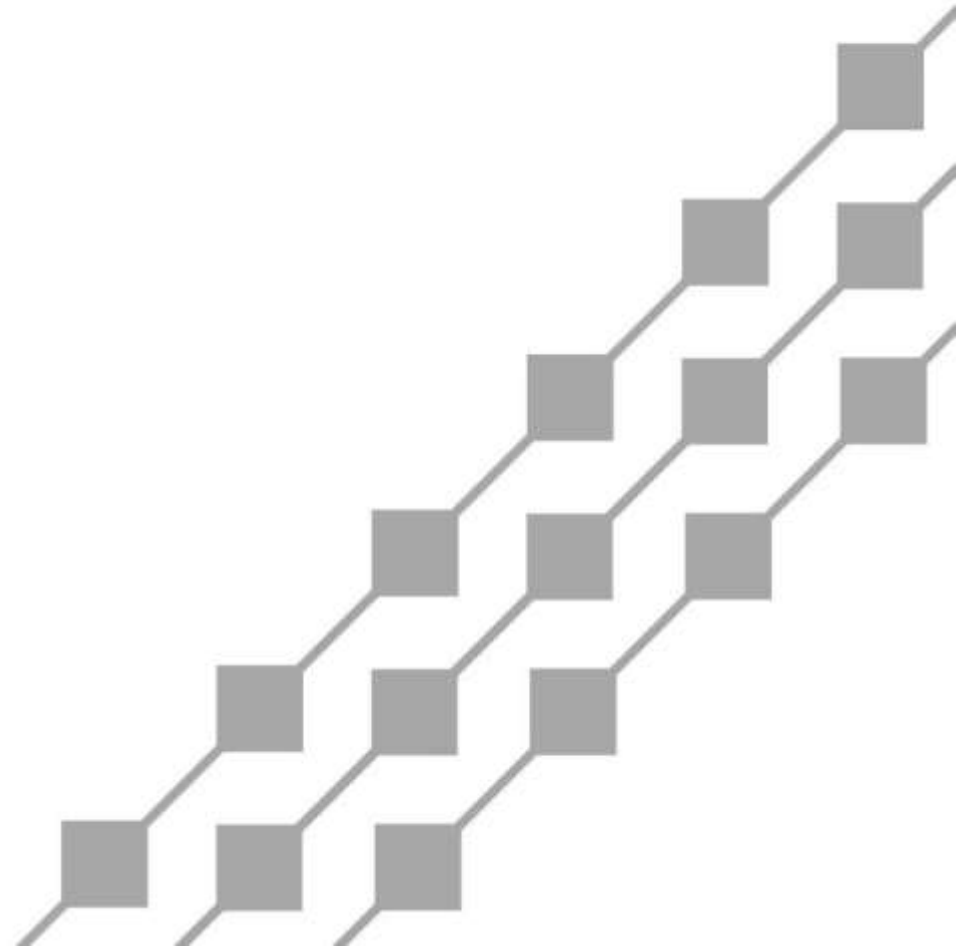


| | | | |
|---|---|---|---|
| <p>Outline priorities and Areas of Collaboration</p> <p>Examples from draft Workplan. Is current version the right level of detail?</p> <p>Discuss criteria</p> | <p>(Optional) Entire group, or break into subgroups?</p> <p>Topics:</p> <ul style="list-style-type: none"> - unique challenges & opportunities for LMI projects - local testing capabilities - Any other topics? | <p>Company to walk through a draft Workplan</p> <p><i>We remain open to having discussions between meetings and to get feedback before filing</i></p> | <p>Company to submit a Workplan to PUC</p> <p><i>**This is not the final version! There will be future iterations. The intent is to remain flexible and open to good ideas.</i></p> |
|---|---|---|---|



Shifting to getting continuous input from other stakeholder meetings, not just this group. Continues to be an open-door policy.

Priorities & AOCs



From PBR

Table 2. Suggested Priority Outcomes

| Regulatory Goal | Regulatory Outcome | |
|-----------------------------|--------------------|-----------------------------------|
| Enhance Customer Experience | Traditional | Affordability |
| | | Reliability |
| | Emergent | Interconnection Experience |
| | | Customer Engagement |
| Improve Utility Performance | Traditional | Cost Control |
| | Emergent | DER Asset Effectiveness |
| | | Grid Investment Efficiency |
| Advance Societal Outcomes | Traditional | Capital Formation |
| | Emergent | Social Equity |
| | | GHG Reduction |
| | | Electrification of Transportation |
| | | Resilience |



Empowering Hawai'i to Thrive, Together

OUR DECLARATION

Hawaiian Electric, by 2025, shall be one of the most progressive and highest-performing companies in the world, serving the energy needs of each person in Hawai'i with purpose, compassion, empathy, and aloha for our fellow humans and our natural environment.

We commit to be the best in all we do. We turn our Hawai'i spirit and our connectedness with others to our community's advantage. We act with boldness and urgency, without fear of failure. Our highest priority is to build a sustainable Hawai'i in which our children and grandchildren, our communities, our customers, and employees will thrive, together. We succeed by providing exceptional service to our customers and integrating and aligning our actions with those of other businesses and organizations. We drive ourselves and others to higher levels of achievement than ever before.

Most Progressive and Forward-Thinking Energy Company in the World

Highest Performance in Customer Service, Operational Excellence, and Financial Results

Mālama Hawai'i

Human-Centered Internally and Community-Centered Externally

A Company of and for Hawai'i, Relentlessly Dedicated to Serving the People and Caring for its Environment

Strategic Plan Framework

Focusing on these three areas creates a positive cycle that strengthens our company in a way that earns the trust of our many stakeholders

Create Customer Value

- ◆ Improve Customer Experience
- ◆ Expand Service Offerings
- ◆ Achieve Affordability & Equity



Build a Stronger Hawai'i

- ◆ Drive Climate Change Mitigation & Adaptation
- ◆ Activate Community Leadership & Alignment
- ◆ Strengthen Infrastructure



Strengthen Company Foundation

- ◆ Reinforce Safety Culture
- ◆ Develop High-Performance Workforce
- ◆ Manage Financial Stability & Efficiency



Where We See Our Company in 2025

By 2025, we envision our company being recognized as best-in-class in the following areas:



Driver of Economic and Societal Change



Decarbonized and Resilient Electric System



Strong Company Culture



Trusted Energy Partner



Financial Strength



Proposed level of detail in the Workplan

- ◆ Workplan should have “Sufficient level of detail”
 - Enough detail so NOIs are not a total surprise
 - vs Be concise

- ◆ Reminder:
 - November will be version 1
 - NOI’s will contain more details.



Live walkthrough some example pilot illustrations

*For illustration purposes only.
Not a final list.*




AOC summary screenshot



- ▶ **A. Decarbonization**
- ▶ **B. Customer Energy Resources and Services**
- ▶ **C. Beneficial Electrification incl. EOT**
- ▶ **D. Data Sharing, Access, and Analytics**
- ▶ **E. Technology Innovations and Cyber Security Improvements**
- ▶ **F. Resilience and Reliability**
- ▶ **G. Affordability and Equity**



CER #1. Increasing the adoption of electrified solutions for commercial operations.

 We have contemplated pilots that provide customer with the information they need to make informed decisions about switching from gas to electric through an “Online Marketplace” and help them make the switch. The pilot would curate information about all-electric devices (e.g., lawnmowers, stovetops, heat pumps, forklifts) and link to case studies from the pilot programs so other customers know the benefits of operating an all-electric version of their device when it is time to replace the old one. This can help customers assess the switching cost and perhaps help transition to an equivalent cost of ownership basis by financing some of the up-front cost in a rent-to-own model for example. A pilot in this area would aim to build the website, test different marketing channels, curate information on the best options, and evaluate different financial incentives.



★ 4 NOI details

The image shows a sequence of five document thumbnails, numbered 1 to 5 from left to right. Each thumbnail contains text and some graphical elements. Thumbnail 2 is highlighted with a blue border. A large, semi-transparent 'DRAFT' watermark is overlaid across the center of the thumbnails.

- Thumbnail 1: Text-heavy page with a header and several paragraphs.
- Thumbnail 2: Text-heavy page with a header and several paragraphs, highlighted with a blue border.
- Thumbnail 3: Text-heavy page with a header and several paragraphs.
- Thumbnail 4: Text-heavy page with a header and a grid of orange and black cells.
- Thumbnail 5: Text-heavy page with a header and a grid of black and white cells.



EOT #3. Technologies and business models that increase EV adoption, affordability, and ease-of-use. Pilot opportunities include:

- i. One pilot idea is to understand EV customer behavior, involves purchasing smart plugs to convert conventional Level 1 dumb chargers into smart devices where we can measure and understand EV customer charging behaviors in order to tailor tariffs or other business models and enable easy on-ramps to enroll new customers in DR programs or TOU rates.
- ii. Another pilot concept involves exploring and understanding customer preferences for a residential subscription charging model. For example, installing Level 2 chargers at homes and testing price points for “charged EV as a service” instead of billing customers for those kWh as part of a regular bill. Understanding customer charging behavior and which prices incentivize certain behaviors can open up many possibilities for full-scale programs.



R&R #4. Testing business models, technologies, contractual agreements, etc. to use both utility and customer assets to increase resilience.

- i. Exploration of microgrids to offer reliability services during normal operations while providing resilience to critical infrastructure after unforeseen events. Reducing uncertainty in how to value and fairly compensate participants in such a program (e.g., microgrid services tariff).
- ii. Increase grid and community resilience through the assessment, design, and deployment of critical customer hubs (CCH)



Affordability #1. Achieving affordability in the energy transition without putting additional burden on LMI families

A pilot project could involve subsidized energy storage solutions for LMI customers. For example, offering the battery for free to customers that qualify under the Hawaii Energy Assistance Program (HEAP), but charging other customers a higher fee for the same battery. This is to help ensure that all customers can make the energy transition and not only those who can afford to participate.

The Company could also preferentially target LMI customers when launching pilot programs. For example, offering utility-owned batteries to LMI customers. Customers would immediately benefit from lower energy bills due to the on-site battery, but the utility can also spread the benefits to other customers by installing batteries in areas of the grid that are more congested or would benefit from grid services in some other way.

LMI customers as a cohort will likely have different preferences and behaviors compared to the broader customer base. A pilot would evaluate different sets of incentives and customer preferences for utility-owned batteries that power a building during power outage but serve grid needs the rest of the year. Another objective would be to get empirical evidence to determine how much the building owner vs tenants in a multi-unit dwelling should be compensated.

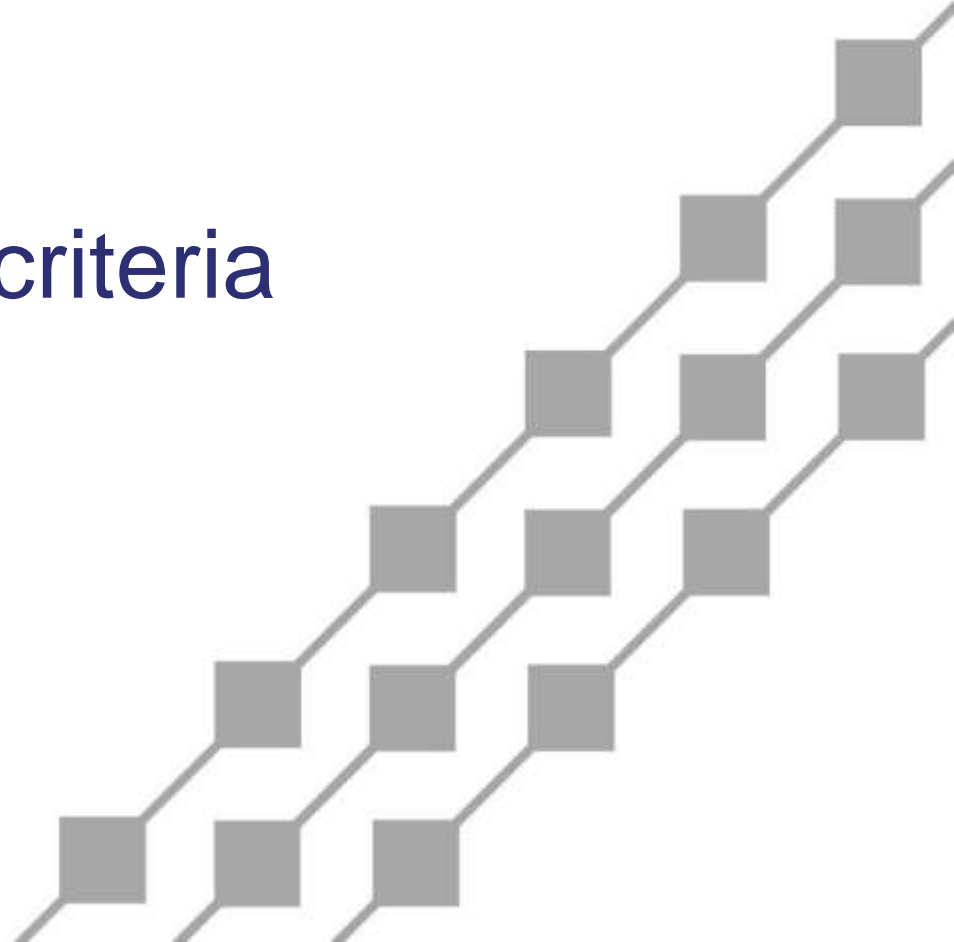


EOT/R&R: The use of EVs to support the grid

There is a whole range of pilot concepts that can explore various aspects of V2G(rid), V2B(uilding), and V2H(ome) solutions. Many groups have ideas around V2X, but very few have actually been put to the test. This means that there is a lot of literature, but little empirical data. Putting any number of the hypothetical claims to the test could provide all parties with valuable information on what actually works vs which aspects are over-hyped. It would also elucidate new questions and cost-benefit tradeoffs that are currently unknowns. We can design a pilot in this area to test things we think may have value. One example pilot project is to use Ford F-150 Lightning trucks as backup power during after a hurricane or other grid-outage. Quantifying the value of that resource on a per-truck-basis could help the state determine incentives to socialize the cost in return for improved community resilience in the wake of a storm



Discussion about criteria



Innovation Pilot Process general parking lot

Possible additions to Principles

Overall goals

Expanding the capacity of HECO to innovate. Create a practice and culture of innovation

Desire to achieve quick and informed decisions

Lot of cheap experiments implies quick approval (cheap = price cap (ficom))

Collaboration with stakeholders, startups could be a way to speed up and reduce risk

Not all pilots are the same. Possibly buckets: quick vs longer term objectives

Leverage existing initiatives to start new

"Community focused" to make a larger umbrella

Renewables focused. New gen. decommissioning

Path to accelerate refined ideas? What defines "shovel ready"?

How to balance clear reporting with meaningful reporting. Streamlining short and sweet filings

bringing DOT to the conversation can be helpful but tension with more cooks in the kitchen

Look for opportunities to match funds with Federal infrastructure Bill

Potential tension: Speed, Flexibility. Discuss at a future meeting in more details

Balancing between the objective of the pilots. Some pilots focused on scaling vs other

Portfolio of options across the 3-year time frame. Certain tech will take longer than others

Cost-share requirements. Timing of Fed apps + Approvals vs

Clarity of communication is important

Continuous (Annual?) updates to the Workplan and Pilot Process

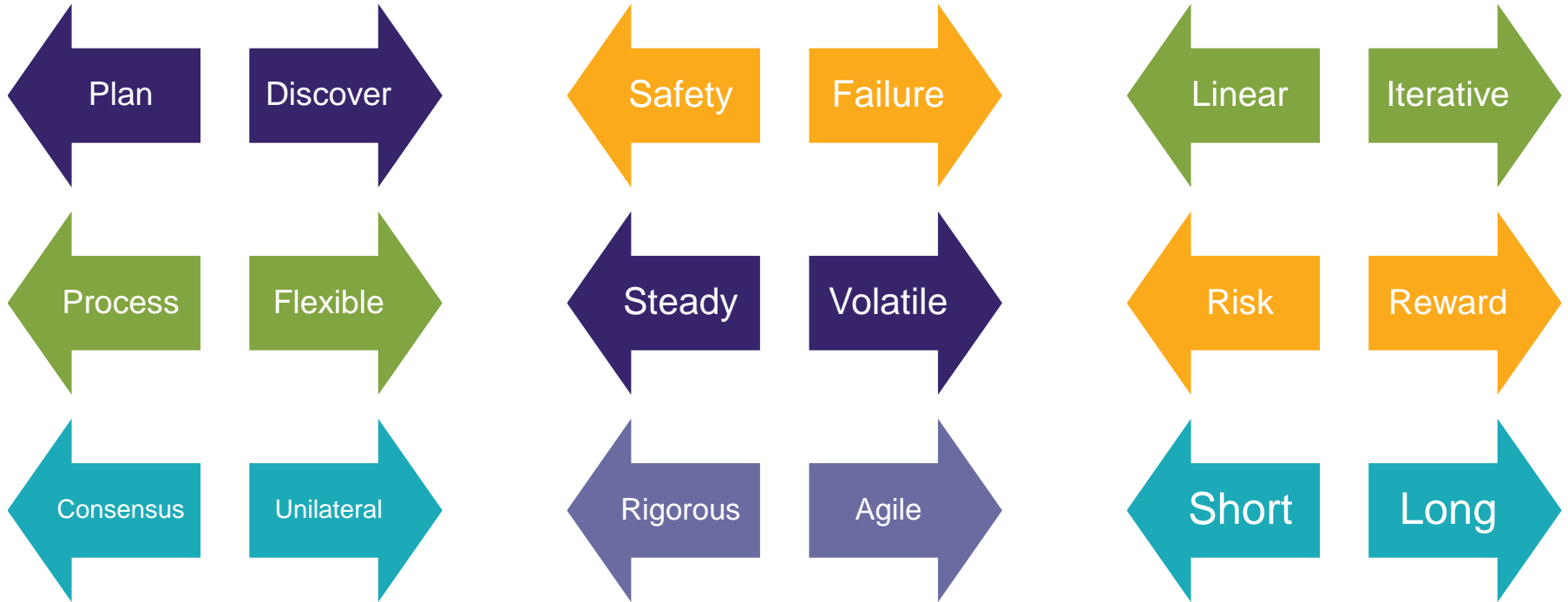
Prioritize Near-term wins. Not just technologies, but also business models

What defines a great pilot project?

| IMPACT | INTEGRATION | OVERSIGHT | PROVIDE LEARNING | SPEED | COLLABORATION | COMMUNITY ENGAGEMENT | FEASIBILITY |
|--------|-------------|-----------|------------------|-------|---------------|----------------------|-------------|
| High | Low | High | High | High | High | High | High |
| High | Low | High | High | High | High | High | High |
| High | Low | High | High | High | High | High | High |
| High | Low | High | High | High | High | High | High |
| High | Low | High | High | High | High | High | High |



Dichotomy of innovative pilots (examples)

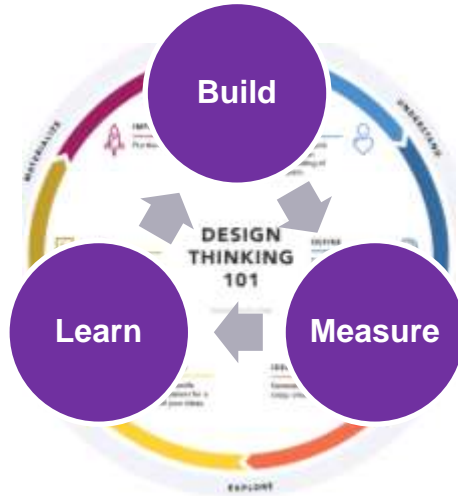


We will need to maintain balance as we proceed. Prioritize learning.

Draft screening criteria

ROI = proof of future impact

One size won't fit all
& learn by iteration



- Impact:
 - How important is the problem?
 - Impact if problem is solved?
 - How much uncertainty does pilot reduce?
- Desirable:
 - Do customers want this?
 - Value prop for all stakeholders?
- Viable:
 - Should we do this?
 - How competitive is the market?
- Feasibility:
 - Can we do this? Why now?
 - Can proposed budget do enough?
- Prioritize cheap & quick pilots



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Mahalo for your time!

