

## IGP Stakeholder Council Meeting

Thursday, October 28, 2021

8:00am - 11:00am

WebEx

### Attendees

#### WebEx

Aidan Tuohy, EPRI	Kenton Suzuki, HE
Alex de Roode, COM	Kevin Schneider, PNNL
Andy Hoke, NREL	Kirsten Turner, HSEO
Audrey Newman	Kurt Tsue, HE
Barry Usagawa, BWS	Kylie Wager Cruz, Earthjustice
Brian Lam, HE	Mahina Martin, HE
Christopher Kinoshita, HE	Marc Asano, HE
Christopher Lau, HE	Marisa Chun, HE
Collin Au, HE	Mathew McNeff, HE
Colton Ching, HE	Mike Wallerstein, HPUC
Dan Lum, HE	Murray Clay, Ulupono
David Parsons, HPUC	Noelani Kalipi, PHOW
Dean Nishina, DCA	Paul De Martini, Newport Consulting
Greg Shimokawa, HE	Rebecca Dayhuff Matsushima, HE
Henry Curtis, LOL	Rick Pinkerton, HE
Isaac Kawahara, HE	Rick Rocheleau, HNEI
Isaac Lum, HE	Riley Ceria, HE
Jacqui Hoover, HIEDB	Robert Harris, Sunrun
James Abraham, HE	Robert Uyeunten, HE
Jennifer Zelko, HE	Robin Kaye
Jeremy Laundergan, EnerNex	Rocky Mould, HSEA
Jerry Sumida, Carlsmith Ball	Shelee Kimura, HE
Kahikina Burgess, HE	Therese Klaty, HE
Keith Yamanaka, DoD	Wren Wescoatt, PHOW
Ken Aramaki, HE	Yoh Kawanami, HE

### Agenda

- Introduction and Background
  - Where we are in the Process
  - Review of Stakeholder Council Discussions to-date
- TAP Update – Andy Hoke
- Purpose and Objectives
- Reliability Context and Discussion

- Next Steps

## Discussion

### I. TAP Update

#### a. Andy Hoke: Chair of IGP Technical Advisory Panel (TAP)

- i. The TAP has three sub-committees to allow each member to focus on their area of expertise, prevent members from being overwhelmed and to facilitate a more timely turn around for TAP feedback.
- ii. TAP's written feedback will be color coded. Black is informational, red suggests revising before PUC review, and blue is consider revising in future steps or iterations of the IGP process.
- iii. TAP Distribution Sub-committee
  1. Stakeholder: Biggest take-away is to look into the protection aspects in more detail.
- iv. TAP Transmission Sub-committee on REZ
  1. Stakeholder: REZ's are highly controversial and need more community input
    - a. HE: We agree. The purpose of REZ for modeling is to see from a technical point of view if developing REZ's make sense. We are planning to seek community input on the REZ.
  2. Stakeholder: Greater community input is needed in grid architecture.
    - a. Stakeholder: Given the progress we need to make by 2030, should have started on REZ 5 years ago. Need to start working with community and legislature to build understanding ASAP. Without these, path to 100% will be slower and potentially impossible.
    - b. HE: We are actively working on this piece.
    - c. HE: The technical information that we are developing is a critical piece to have the right discussion with stakeholders and communities. It is important information to have with the broader discussion on energy, such as what is the best use for land? Is its best use for electricity, agriculture. These are the types of conversations that have to happen and the REZ study is important information for the discussions.
  3. Stakeholder: What is the status of REZ's?

- a. HE: We have done some technical analysis that includes resource potential at the different locations. We've taken that and done some technical analysis to assess by region, if we want to make use of energy that is there and use it to its potential then what kind of infrastructure is required to integrate with the rest of the grid. This includes the transmission required, costs, and time. It also allows us to have a more complete discussion with community. The collective footprint of a resource isn't just the generator but the transmission lines it may require as well.
    - b. HE: The REZ's resource location and requirements that were identified doesn't negate the need for voltage, power flow in Kahului. The REZ work on Maui would be on top of the existing work.
  - b. TAP Resource Adequacy and Modeling Sub-committee
    - i. HE: The TAP resource adequacy subcommittee will be meeting soon to discuss the ERM criteria.
- II. Reliability Discussion
  - a. HE: Loss of largest unit is also called Rule 1. Need to take into account the units you have available and units you have on scheduled maintenance and ensure enough generation is available to serve peak load if the largest unit was suddenly not available.
  - b. Stakeholder: Being on the smallest island that experienced some outages, why is there no information listed for Lāna'i?
    - i. HE: Lāna'i and Moloka'i in the past were based loss of largest unit. That's the criteria we used to use. The energy reserve margin that we are moving to now looks at the ability to serve load under all hours of the day rather than only at the peak. For Lāna'i and Moloka'i, we have proposed a 60% target which is higher than the other islands. Due to the size of the islands, every resource is bigger in proportion.
  - c. Stakeholder: Firm power is impacted by not only supply chain distribution but on our path to 100% clean energy, how are we going to manage this need for reliability and trying to get to 100% quickly. Without getting too zoomed out, it's something worth discussing, this tradeoff between retiring Kahului while also knowing it is a good firm option for Maui. We are looking at firm renewables as opposed to just intermittent. Another topic is equity specifically around siting. Who benefits from reliability? For example, how is Hana's compared to Wailuku and where do these projects get sited to provide reliability for system? Whose backyard does it go in for the sake of others?
    - i. HE: Both things are important for the Stakeholder Council to discuss. I think the first one on ensuring reliable generation, is I think something

that we can talk about today. We also didn't want to get ahead of ourselves, we wanted to make sure we are aiming for the right level of reliability.

- d. Stakeholder: Interested in generation and T&D resilience. Would add wildfire impacts the transmission/distribution systems. The reliance of critical infrastructure (water, wastewater, etc.) on power after a hurricane and the long anticipated recovery period is a serious potential vulnerability. Disruption of power from T&D impacts can result in disruption of water delivery to power generation boilers in traditional firm power. Looking forward to that discussion.
- e. Stakeholder: Tier one would pay higher rates for higher reliability? Or would everyone pay for just Tier one?
  - i. HE: Maybe the broader question is should IGP plan for one level of reliability for the system or different levels of reliability in the system. Generally when we talk about generation resource adequacy we are talking about enough reliable generation to serve load on the entire system.

MENTI poll: What Reliability objectives should we consider over the near-term (i.e. 10 years)?

- f. Stakeholder: Concerned about power lines. How do you prioritize these different elements? What criteria would you use?
- g. Stakeholder: ERM requires that we look at each hour. Why can't generation look at reliability the same way?
  - i. HE: Can you expand on that? When we look at each hour of each day, we are looking at the availability of a generator.
  - ii. Stakeholder: If you have a generator that works perfectly from 5AM-5PM and another that covers the other half, then hours wouldn't matter.
  - iii. HE: When we are talking about firm generators, we are also talking about being about to dispatch a certain amount of energy on command.
  - iv. Stakeholder: So solar with battery would be firm?
    - 1. HE: It can contribute to the system but not for the same amount as a firm power plant. Its output may decrease based on cloud coverage while firm power would not have that issue. We want to plan for the days that are more uncommon and a little more extreme.
    - 2. Stakeholder: I get nervous with people talk about PV with 4hr battery as firm. If you have 2 or 3 days of rainy weather in a row, your batteries will be empty, so we need to be careful to differentiate between improving reliability with batteries versus being truly firm and they are very different things.
  - v. Stakeholder: Practically all storage in the US is pumped storage hydro.
  - vi. Stakeholder: Would you consider PSH a firm or quasi-firm?

1. Stakeholder: It depends on how long the duration is. The longer it is then the closer it is to being firm. Even if PSH has days of storage though, it is still not firm. I think the debate is whether base load generation is still a thing. In other words, something that needs to run all the time. It is different from firm.
- vii. Stakeholder: The PV plus battery does an excellent job of replacing firm power in Hawaii's current grids, including bridging long periods of poor weather, partly because we do have other firm resources currently available. This allows significant reduction of fossil fuel use and even some retirements. However, 4 hour storage will not allow elimination of all firm power. I agree that defining those limits and determining what characteristics of firm power are needed, is very important.
- h. HE: Maybe the objective is to ensure we are looking at developing a robust system, understand weather impacts and how to mitigate them. Potentially firm generation is a resource to address that. Part of it may be resource diversity rather than only one technology.
- i. Stakeholder: There is a difference between firm and battery storage. I would not necessarily say baseload and firm are completely different. I would say they at best mean similar things. What you are looking for something that is available 24/7 that can be called upon when needed. Frasier Institute looked at if Canada could go 100% renewable. Grid stability is a dimension that needs to be addressed.
  - i. HE: I think we need to define what we mean when we say firm. We mean a generator that is available 24/7 when called upon. Battery is not, by our definition, because it is dependent on weather.
- j. Stakeholder: In the context that HE provided, we have to identify priorities. I think we are not in disagreement that service such as health care are required. What is the criteria for whether something is firm or not. Some key priorities need to be addressed then looked at through the lens of geographical events.
- k. HE: What I'm hearing is location, diversity, T&D resiliency to get power to load, understanding the weather impacts/variability, lots of comments on cost and different levels or reliability, and resilience of critical customers.
  - i. Stakeholder: I think the objective is to provide steady energy to most of the people most of the time at the most affordable rates.
  - ii. Stakeholder: On objectives, it almost looks like you were looking for a number. This discussion sort of makes it clear that that is a hard thing to do with all the variables. In your list, and its hard to keep objectives separate from methods, something that has been helpful is to think about framing the objective as firm vs. variable can help people understand the parts you need to fill. I found that discussion really helpful. Maybe there is a configuration that can be firm if it puts us

through 40 days of rain. What is the role of the customers ourselves in reliability? It kind of opens up a different way of thinking about energy and Hawaiian Electric's services to customers. For example, the new Ford EV truck, one of the things they say, the battery is so big you can plug your house into it. How does that factor into resilience? How does that change your thinking about reliability? Does not have to come from a central power plant.

- I. Stakeholder: When we're assessing what our storage options are to firm up intermittent renewables, we want to also be thinking what are the lifecycle cost of it and are there any auxiliary benefits. PSH may have high initial cost but lower lifecycle cost. PSH may also provide a fire mitigation resource that we could access if there was a fire in the area, or a drought mitigation resource. There's also the environmental and supply chain issues associated with the technology. If we're dependent on electric batteries and we need to switch them out every 10 years, and we're relying on batteries from China is that as secure as PSH?
- m. Stakeholder: Not all megawatts are created equal, I think that is going to change going forward. Right now, 4 hour paired PV and storage may work but that may change in the future. If we reduce reliability to firm vs non-firm, we may miss some things that aren't captured by that.

### **Prioritize Reliability Objectives**

MENTI Poll: What strategies or capabilities are needed to support reliability objectives?

- I. Stakeholder: Does the context assume that reliability for core priorities have been agreed upon - e.g. hospitals, wastewater, water, traffic lights, etc.?
- II. Stakeholder: Reliability should be defined for all (not just wind) generation and system changes for each.
  - I. HE: I think part of the discussion is whether the renewable fuels are developed in state.
    - a. Stakeholder: Different fuels have different reliability, for example sustainable biomass vs biofuel. Sustainable biofuels may provide critical needs during extreme weather events.
    - b. Stakeholder: What is the outlook for "green hydrogen" being viable?
      - i. Stakeholder: Green hydrogen certainly works on the tech side but it's still expensive. Industry analysts seem to think it will be cost competitive in 5-10 years.
      - ii. HE: Green hydrogen can be thought of as a fuel. It's not a resource but adds to load if produced locally. It would need to be paired with a generator to produce electricity.
  - II. Stakeholder: What is the timeline for the microgrid study? Would that finish in time to inform the resilience portion of IGP?

- a. HE: The project we are working on is to map the locations of critical customers and infrastructure. We are still in the early stages. The target to complete the first map for Oahu is the end of next year.
- b. HE: There is a lot of work done in the resilience working group to identify customer clusters so we have that data point as well.
- c. Stakeholder: There are two pieces: 1) what communities are at the end of transmission lines and 2) what are critical areas, i.e. fire department, hospital in close proximity to each other.
  - i. Stakeholder: State Energy Office is working with FEMA to identify those emergency services.
- d. Stakeholder: On geographical diversities, it's not to just look at rural areas but to see if there are certain areas that have different levels of reliability. Kind of going into the socio-equality within communities. Maybe there are some not so squeaky wheels that are having issues not getting addressed.
- e. HE: For upgrades that would serve a smaller area, would the entire rate base pay for that?
  - i. Stakeholder: For example, downtown has that secondary network. What if there is an area that wants higher reliability, that may be something where only those people would pay for it.
  - ii. Stakeholder: All the DoD are doing the same thing you are doing. We are looking at how do we deal with extreme weather events. In the end, we decided we are going to just power the base. Reliability has to be the same for everyone. Everyone should have access to reliable power. If we have a building that needs more reliability, then we would add a backup generator.
- f. Stakeholder: How do you determine what degree of reliability a particular community or area wants? Has the utility done any work on this?
  - i. HE: Can be done as community engagement continues in this process.
- g. Stakeholder: Are you willing to accept a lower reliability for a cut in electric bill?
  - i. Stakeholder: Disagree with having different reliability for different customers. There should be the same level of reliability for everyone.
- h. HE: When we had a focus group discussion, our customers have an expectation that the power is going to always be on no matter what.
- i. Stakeholder: Everyone can agree to a base level of reliability to supply their needs. But just as operators of databanks require more reliability, you can pay for more that is above the standard rate. Cell phones for example have different plans, similar to reliability. There can be a basic plan and added fees for added benefits.
  - i. Stakeholder: How would that work? DoD, for example, would ask for a second feeder and pay for it. These decisions would change the grid.
  - ii. Stakeholder: Could be similar to interruptible loads.

- iii. Stakeholder: For the State, in addition to the baseline level, critical infrastructure would need to have the capability to provide service through a disruption whereas a residential area may not have that.
- III. Stakeholder: What role does the deployment of on-site emergency generators to critical facilities play into generation and grid reliability.
- IV. Stakeholder: On the discussion of reliability, cost, and self-reliance vs utility reliance, community consultation and setting priorities helps manage expectations. If the community is allowed to set the priorities and then the utility provides feedback, that would be very powerful. It would increase community responsibility.
  - a. Stakeholder: Self-reliance vs utility reliance, your sharing of your focus group is really helpful and also not surprising. My comment about community consultation happens when you get a community together to get them to talk about setting expectations. I think that is a useful concept and maybe as you think about this plan, revisiting what is in what tier, because I can imagine that conversation on Molokai, people would be quick to say hospitals, schools, and business. If you give the community feedback on how you are applying their priorities that would be very useful so people do not feel like they are at the mercy of a black box.

### Next Steps

- Stakeholders may provide feedback on today's discussion to [igp@hawaiianelectric.com](mailto:igp@hawaiianelectric.com).