

IGP Stakeholder Technical Working Group Meeting
Wednesday, October 6, 2021
9:30am - 12:30pm
WebEx

Attendees

WebEx

Ken Aramaki, HE	Lisa Hiraoka, DCA	Kanoa Jou, HE
Alan Hirayama, HE	Mac Wodicker, ASU	Meredith Chee, HE
Li Yu, HE	Marcey Chang, DCA	Christopher Lau, HE
Marc Asano, HE	Maria Tome, HSEO	Christopher Kinoshita, HE
Andy Hoke, NREL	Matthias Fripp, Ulupono	Abel Siu Ho, HE
Barry Usagawa, BOWS	Michael Schwing, HSEO	Collin Au, HE
Chris Yunker, HSEO	Mike Wallerstein, HPUC	Amanda Yano, HE
Clarice Schafer, HPUC	Murray Clay, Ulupono	Brian Lam, HE
Dana Cabbell, SCE	Noelani Kalipi, PHOW	Robert Uyeunten, HE
David Parsons, HPUC	Paul De Martini, Newport Consulting	Therese Klaty, HE
Dean Nishina, DCA	Pete Polonsky, HPUC	Anne Fuller, HE
Emily Hyland, HDR	Rene Kamita, DCA	Jeslyn Kawabata, HE
Gerald Sumida, Carlsmith Ball	Robert Harris, Sunrun	Alyssa Nada, HE
Gina Yi, HPUC	Rocky Mould, HSEA	Kent Kurashima, HE
Grace Relf, HPUC	Rod Aoki	Kolter Kalberg, HE
Henry Curtis, LOL	Samantha Ruiz, HPUC	Jennifer Zelko, HE
Henry Chao, Quanta	Sherilyn Hayashida, DCA	Kurt Tsue, HE
Jacqui Hoover, HIEDB	Stephen Mariani, HPUC	Mahina Martin, HE
Jay Griffin, HPUC	Steven Rymsha, Sunrun	Matthew McNeff, HE
Jeremy Laundergan, EnerNex	Ted Pope, 2050 Partners	Rebecca Dayhuff
Jessie Ciulla, RMI	Terry Surles, HNEI	Matsushima, HE
Keith Yamanaka, DoD	Wren Wescoatt, PHOW	Lisa Dangelmaier, HE
Kevin Schneider, PNNL	Colton Ching, HE	Susan Char, HE
Kit Batten, ASU	Blaine Hironaga, HE	Shannon Alivado, HE
Kylie Cruz, Earthjustice	Shaun Imada, HE	James Ogata, HE
	Chad Takahashi, HE	




Agenda

- Presentation:
https://www.hawaiianelectric.com/documents/clean_energy_hawaii/integrated_grid_planning/stakeholder_engagement/working_groups/stakeholder_technical/20211006_stwg_meeting_presentation_materials.pdf
- Discuss:
 - Circuit Hosting Capacity and Locational Forecasts

- https://www.hawaiianelectric.com/documents/clean_energy_hawaii/integrated_grid_planning/stakeholder_engagement/working_groups/stakeholder_technical/20211001_location_based_distribution_forecasts_draft.pdf
- https://www.hawaiianelectric.com/documents/clean_energy_hawaii/integrated_grid_planning/stakeholder_engagement/working_groups/stakeholder_technical/20211001_distribution_der_hosting_capacity_grid_needs_draft.pdf
- System Security Analysis Process
- Renewable Energy Zone (REZ) Assessment
 - https://www.hawaiianelectric.com/documents/clean_energy_hawaii/integrated_grid_planning/stakeholder_engagement/working_groups/stakeholder_technical/20211001_renewable_energy_zones_draft.pdf

Discussion

Legend and Summary of Comments (no icon indicates clarification):

Icon	Description	Total
	Company agrees with comment and will incorporate into November 2021 Update.	3
	Company agrees with comment and will incorporate into future revision and/or other study/project.	5
	Company does not agree with comment and will not incorporate into revision.	0

Circuit Hosting Capacity and Locational Forecasts

- I. Stakeholder: How accurate has historical load data been for Hawaii and Maui in terms of forecasting?
 - a. HE: Historical load data is accurate in the sense that it is actual measured data.
 - b. HE: Forecasts include additional load growth that is known in advance (e.g., new developments, expansions, etc.). Distribution needs are driven by load growth such as customer requests.
- II. Stakeholder: How do you decide to allocate the corporate forecast for DER on each circuit? Is it evenly spread across all circuits?
 - a. HE: Using the LoadSEER model, we input the total monthly DER capacity for Oahu. The model then decides where to spatially allocate the DER. It may not necessarily be evenly distributed.

- b. HE: For the neighbor islands (Hawaii and Maui) the DER forecast is allocated based on known existing locations. We have not yet set up LoadSEER for the neighbor islands.
- III. Stakeholder: Is this focused for all DER or only solar?
 - a. HE: The hosting capacity grid needs focuses on solar.
- IV. Stakeholder: Typically, hosting capacity focuses on the noon, peak export. Is this analysis going to cover other hours?
 - a. HE: The analysis focuses on hosting capacity during the day. The intent is to move towards a more time-based analysis to account for battery systems discharging at other times of the day as battery system penetration increases.
- V. Stakeholder: Does this analysis include paired DER systems, like solar PV plus battery.
 - a. HE: The hosting capacity analysis assumes that the solar PV and battery are not exporting at the same time for paired systems.
- VI. Stakeholder: Does this assume the systems are fully exporting?
 - a. HE: No, we are not assuming 100% export. We use the most recent and available data for the analysis.
- VII. Stakeholder: Is DER growth driving the growth in grid needs?
 - a. HE: What is shown are distribution needs, not system-level needs. For the hosting capacity grid needs analysis, DER is driving the grid needs.
- VIII. Stakeholder: What about cumulative impact of smaller loads at the same time? Eventually the maximum load should be considered as well.
 - a. HE: That will be included in the next step of IGP analysis. We would be able to look at circuit and substation overloads driven by locational load growth forecasts.
- IX. Stakeholder: How is Synergi involved in the analyses?
 - a. HE: Synergi is used to model the circuit loading and DER forecasted growth to determine any thermal and voltage violations that would require mitigation. Advanced DER functions such as volt-VAR is included in the modeling
- X. Stakeholder: What about volt-watt?
 - a. HE: That is currently not incorporated.
- XI. Stakeholder: Any plans to include it?
 - a. HE: We are working with NREL to analyze AMI data. In the event of large curtailment, we are looking at ways to fix those issues if it is Company-caused.
- XII. Stakeholder: How does Synergi account for ramping from increased irradiance? Is it 100% on or off, are there any advancements?
 - a. HE: Historical irradiance data is used in the modeling. It is not 100% on or off. When possible, we will match the historical data to actual locations for the modeling. Regarding transient effects of solar production during the day, that is not being analyzed.
- XIII. Stakeholder: For Oahu, it appears in your report that you're using EPRI's DRIVE (Distribution Resource Integration and Value Estimation) tool. Could you share what you're learning about O'ahu?
 - a. HE: The tool we are using is not called EPRI DRIVE. HE worked with EPRI to develop a new probabilistic time-based hosting capacity methodology. This has



been used on screened circuits where Synergi hosting capacity updates are not enough to accommodate forecasted DER growth. Synergi is used as much as possible to assist us with our hosting capacity analysis because the EPRI tool is very time-consuming to run. In instances where the EPRI tool can be helpful, we will use it.






- XIV. Stakeholder: How will the hosting capacity needs across islands feed into the NWA process, new programs, and solicitations?
 - a. HE: In the IGP process, the grid needs identified in these analyses flow into the overall grid needs assessment step.
- XV. Stakeholder: There was also an extensive NREL study on volt-var and volt-watt impacts on high-penetration HECO feeders several years ago:
 - a. <https://www.nrel.gov/docs/fy17osti/68681.pdf>
 - b. <https://www.osti.gov/servlets/purl/1481102>
- XVI. Stakeholder: Previous presentation on how LoadSEER produces its forecasts and distributions DER:
https://www.hawaiianelectric.com/documents/clean_energy_hawaii/integrated_grid_planning/stakeholder_engagement/working_groups/distribution_planning/20200305_dp_wg_meeting_presentation_materials.pdf

Renewable Energy Zone (REZ) Assessment



- I. Stakeholder: How does steps 1 and 3 in the report tie into the presentation today? The executive summary should say that this study focuses on the processes rather than community since that doesn't happen until step 6.
 - a. HE: The intent of today's discussion is to begin steps 1-3. Clarification will be made in the revised version of the report.
- II. Stakeholder: I had asked community people to look over the report. They wondered why community concerns and issues for future transformations were absent from the study: rooftop solar, microgrids, energy storage, hydroelectric facilities, EVs, and curtailment. By not looking at these as an initial point, the less community-oriented solutions appear to be the focus of the REZ analysis. No hydro. Yet agnostic.
 - a. HE: The IGP process is intended to discuss the different options available. The intent of the REZ is to study areas where transmission upgrades or new infrastructure is required. By scoping out the need, we can discuss the various solutions available and what the community thinks about that.
- III. Stakeholder: Community wonders why only certain areas can have more rooftop solar, while you show needs for grid-scale solar and wind?
 - a. HE: The earlier presentation on circuit hosting capacity covered what needs to be done on the distribution circuit to integrate more rooftop solar. The REZ is identifying additional points of interconnection, not limited to solar.
- IV. Stakeholder: Are the costs of Transmission Network Expansions allocated between REZ zones versus the REZ enablement being allocated 100% to the respective REZ?

- a. HE: The cost estimates will be used in the IGP's RESOLVE and PLEXOS modeling steps. See slide 74 of the presentation.
-  V. Stakeholder: BESS isn't defined in the report, the word battery does not appear.
 - a. HE: Will add a definition for BESS (Battery Energy Storage System) in the report.
- VI. Stakeholder: What kind of grid-scale projects are reflected in the REZ analysis that call for transmission expansion?
 - a. HE: The REZ analysis is not based on any particular technology.
- VII. Stakeholder: So you could add about 150 MW to the Wahiawa REZ for hydro?
 - a. HE: Yes. The transmission network expansion and REZ enablement identified in the report for REZ north of Wahiawa is for 1.2 GW generation so the 150 MW generation can be part of this 1.2 GW.
- VIII. Stakeholder: Is this analysis essentially a transmission expansion planning study based on current configuration of HECO transmission systems and potential renewable portfolio based on NREL analysis?
 - a. HE: In general terms, the description is correct. The REZ analysis is looking at possible future transmission needs based upon NREL potential analysis. The enablement and expansion analysis, although still a high-level simplified analysis, did look at contingency situations in our criteria (N-1 or N-1-1).
-  IX. Stakeholder: Which REZ expansions could be most affected by extreme weather events?
 - a. HE: This analysis didn't specifically examine that. We can take a look at overlaying our Jupiter wind threat data into the analysis.
- X. Stakeholder: Is 345kV overhead only?
 - a. HE: Yes. Additional cost analysis is required for underground.
- XI. Stakeholder: For transmission projects like REZ, is there a possibility of doing a competitive procurement or are the Companies the only ones that can do this work? We'll need probably multiple REZs to get to 100% but want to get a good price for the work. To clarify, will there be a competitive bidding process for the upgrade work to get the best price? Not pushing for a separate transmission utility.
 - a. HE: This would be a challenge for us to do it ourselves. We'd bring in other third parties. Our practice is to competitively bid.
- XII. Stakeholder: Are transmission upgrade costs included in the utility scale renewable cost assumptions that go into RESOLVE?
 - a. HE: Discussed in slide 74. The plan is to include only the REZ enablement costs in the first pass to see what the model selects, then iterate to include the appropriate transmission network expansion costs.
- XIII. Stakeholder: In addition to cost per MW for REZ options, is there a rate impact figure? This will drive the DoD agencies energy programs and possibly affect results.
 - a. HE: The all-in bill impact would need to include any cost savings from enabling those new projects.
- XIV. Stakeholder: Wind off Kahe is unlikely.
 - a. HE: The wind included in the study is offshore wind. The REZ report has the details of the transmission upgrades needed for offshore wind.

-  XV. Stakeholder: Most of the proposed Oahu OSW (offshore wind) projects have been 400 MW. That might be a better case to analyze at Koolau if it makes a difference in IC/transmission expansion costs vs. 600 MW.
-  XVI. Stakeholder: Suggestion to include an overlay of publicly viewable overhead lines to the maps.
- XVII. Stakeholder: When considering REZ, are you looking at whether the resources will have the same requirements as current RFPs, mainly having paired storage be a requirement?
- a. HE: Would need to look at the production simulations. The REZ is a MW problem so if a longer duration storage (6-hr or longer) can generate at a lower MW for a longer duration that could work, especially because we need the energy more than capacity.
- XVIII. Stakeholder: The TAP did agree that it's preferable to not cut the lines for new projects.
- a. HE: We'd want to direct projects to transmission hubs.
-  XIX. Stakeholder: It isn't if, but when, we will be hit by extreme weather events, therefore, future grid architecture with microgrid capabilities is critical. I haven't heard the word resilience.
- a. HE: The scope of the study was fairly narrow as this is an initial peek into what potential requirements there would be. We'll look into how we can incorporate that into the analysis.
-  XX. Stakeholder: We also asked DOT when ripping up and repairing highways, why not put a conduit for transmission lines?
- XXI. Stakeholder: Land RFI provided capacity available on the transmission lines. Can that info be shared in an upcoming procurement?
- a. Stakeholder: We would want to know the available transmission capacity, even if there's no available substations in the area.
- XXII. Stakeholder: Have you looked at feasibility of siting at these zones?
- a. HE: NREL did screen for land use, slopes but there are still risks with project development. For example, will still need to do the costing studies and engage with communities. Need to look at grid needs and the intersection where solutions could have multiple benefits. In addition, transmission expansion could solve for potential voltage issues.
-  XXIII. Stakeholder: Would be good to integrate the solution set at the end to avoid siloed solutions where a single solution could address multiple needs.
- a. HE: Yes, we will flag those for projects that may solve more than one particular issue.
- XXIV. Stakeholder: Do REZ costs drop for zone 8 if a lower threshold is used?
- a. HE: Yes, but that would also limit what could be built.
- XXV. Stakeholder: Is feedback requested only on this presentation?
- a. HE: We are looking for feedback on the three draft reports sent last Friday, 10/1 by October 15.
- b. Stakeholder: How about feedback on the 9/23 meeting?
- i. HE: The 9/23 STWG was about the TOU supply curves that would be taken back to discuss with AEG. We would still take comments on this until October 15.

Next Steps

- Stakeholders may provide feedback on today's discussion by October 15 to ken.aramaki@hawaiianelectric.com
- Study will be filed during week of November 1.