

IGP Solution Evaluation and Optimization Working Group Meeting #15

Friday, February 26, 2021

1:00pm - 3:00pm

WebEx

Attendees

WebEx

Christopher Lau, HE

Marc Asano, HE

Amanda Yano, HE

Brian Lam, HE

Christopher Kinoshita, HE

Christin Chang, HE

Christopher Kinoshita, HE

Clarice Schafer, HPUC

Collin Au, HE

Dale Murdock, EnerNex

Diwakar Tewari, Leidos

David Parsons, HPUC

Gerald Sumida, Carlsmith

Ball/Ulupono

Gina Yi, HPUC

Grace Relf, HPUC

Greg Shimokawa, HE

Henry Curtis, Life of the
Land

Isaac Kawahara, HE

Jeremy Laundergan,
EnerNex

Ken Aramaki, HE

Li Yu, Quanta Technology

Lisa Hiraoka, DCA

Marcey Chang, DCA

Marisa Chun, HE

Michael Schwing, HSEO

Mike Wallerstein, HPUC

Noelani Kalipi, Progression

HI Offshore Wind

Pete Polonsky, HPUC

Rene Kamita, DCA

Richard Rocheleau, HNEI

Robert Harris, Sunrun

Robert Uyeunten, HE

Steven Rymsha, HE

Sorapong Khongnawang,
HE

Terry Surles, HNEI

Wren Wescoatt,

Progression HI Offshore

Wind

Agenda

- Discuss summary of stakeholder feedback on Grid Needs Assessment (GNA)

Discussion

- I. Selected GNA Stakeholder Feedback - Grid Services Definition Methodology
 - a. Stakeholder: A portfolio approach may address the issue we have identified, one resource dominating the portfolio?
 - i. HECO: In the initial feedback on the regulating reserve rule, it was mentioned that we should consider the wind, solar, and DER together rather than disaggregating them. If one resource ramps up when another ramps down, then they would net out with less regulation needed. However, the proportion of solar, wind, and DER in the portfolio may change over time.

In our regulating reserve calculation, we are accounting for the reserve requirements of the existing and planned portfolio as well as the incremental requirements associated with resources that RESOLVE selects in the resource plan. If RESOLVE chooses to build a solar heavy portfolio, the reserve requirements are defined separately for each resource type in the event the model skews toward one resource.

- b. Stakeholder: For the different grid service definitions, will you include the analytical basis for determining those in the next iteration of the GNA?
 - i. HECO: Yes, the second draft will try to define all services.
- c. Stakeholder: How will the value of these grid services be determined?
 - i. HECO: Each grid service requirement is an input into the RESOLVE model. The resources are characterized whether they can or cannot provide a service. The model will solve for the grid service requirements in addition to other requirements such as RPS. In solving for these requirements, the model will create a set of dispatch and the marginal unit to provide a service provides the marginal cost. The modeling results include marginal avoided costs for each grid service (e.g., inertia, FFR, upward regulation, downward regulation). From there we can see why a new resource was built by the grid services it is providing.

In the evaluation, we are planning to incorporate into the resource plan, small incremental capacities of representative resources (PV, PV+BESS, wind) to have a sense of how that resource may be dispatched along with the marginal avoided costs for each service it can provide to understand the benefit of the resource. We would then compare this benefit to the proposal cost from the RFP to understand its cost benefit.

- d. Stakeholder: The avoided cost for each grid services will be calculated every five years? Why five years rather than annual?

- i. HECO: We adjusted the planning horizon based on stakeholder feedback to look at the first 10 years annually, then every 5 years thereafter. The resource optimization model will have a hard time to solve when run annually. The adjustment to the horizon places a greater emphasis on the near term while every 5 years still give longer term insight. Running annually through 2050 would take a long time. PLEXOS will look at the annual 8760 for the resources identified in RESOLVE.
- e. Stakeholder: Why are you starting the modeling in year 2025?
 - i. HECO: The 2025 assumption is based on the first year when new resources like onshore wind, grid-scale PV, batteries, and synchronous condensers could be built and in-service. Resources that have a longer lead time, such as offshore wind or thermal resources, could be built in the 2028-2030 timeframe.
 - ii. Stakeholder: Would be interested in looking at the resource selection in the earlier years.
 - 1. HECO: In RESOLVE, the horizon begins in 2025 since that is the first year a resource can be built. In PLEXOS, we will be modeling every year from 2021-2050. We could consider other resources sooner or shift the first 10 years of the horizon.
- f. Stakeholder: Does RESOLVE and/or PLEXOS consider T&D for new resources?
 - i. HECO: Interconnection costs are captured in the capital costs for new resources in RESOLVE. Interconnection costs will be developed to interconnect renewable potential zones. These can be modeled as separate resources in RESOLVE to include the specific interconnection cost and build limits for a particular zone. We are still working on developing these renewable energy zones. DER could have a potentially lower interconnection cost.
 - ii. Stakeholder: How is generation planning and T&D planning integrated here?
 - iii. HECO: The goal is to identify where distribution upgrades are needed and encourage development in those areas. If there are still unresolved needs, those could be addressed by procurement or programs.
- g. Stakeholder: Are you thinking about upgrading existing or adding new transmission or distribution systems?
 - i. HECO: Upgrading for resilience reasons?
 - 1. Stakeholder: In general, for all reasons.
 - 2. HECO: For example, if it is aging infrastructure, then it is a part of our base capital expenditures. If it is a resilience type investment, we proposed a resilience framework in the updated IGP workplan and would like to begin discussions in the Stakeholder Council. For interconnection costs, this goes back to the renewable energy zone concept that we are trying to incorporate into RESOLVE. Distribution would go through our NWA (non-wires alternatives) process, to determine if DERs could defer distribution upgrades.

- h. Stakeholder: If we look into the goal of 100% renewables then we would need new transmission. Are there discussions about where new transmission infrastructure will be located?
 - i. HECO: Once we have the interconnection costs for new transmission determined for the renewable energy zones, those can be passed into RESOLVE for the resource planning.
 - ii. Stakeholder: As an example, there is concern about wildfires on Maui and the impact it will have on existing utility infrastructure. Where are concerns like this being addressed?
 - 1. HECO: We would need to discuss this as part of our resilience strategy, in terms of whether it means relocating certain infrastructure, upgrading equipment to harden the system, etc.

- II. Selected GNA Stakeholder Feedback - Sensitivity Analysis
 - a. HECO: We plan to look at the bookend scenarios through RESOLVE. New scenarios that emerge from the DER docket can also be reviewed.
 - b. Stakeholder: Are you looking at a most probable case?
 - i. HECO: Yes, that is represented by the base case as a reference.
 - ii. Stakeholder: Yes, if the base case is the most probable and the bookends reflect the outer bounds.
 - c. Stakeholder: Will you be working TOU into the base case?
 - i. HECO: Can re-run the model after those programs are finalized out of the ARDS track. We will make an initial assumption on TOU in the base case moving forward.
 - d. Stakeholder: Has the TOU for EV profile been shared?
 - i. HECO: Working to provide a set of input workbooks for non-forecast related inputs. Managed EV charging will be included. The O’ahu workbook has already been published on our website.

- III. Selected GNA Stakeholder Feedback - Grid Service Model Mechanics
 - a. Stakeholder: Would be good to model weather. Hazy periods of the year with low wind. 40 days of rain.
 - i. HECO: Intend to address that through the sensitivity analyses. An appendix in the GNA will list the sensitivities that will be addressed including low renewable generation periods from days to several weeks using historical data.
 - b. Stakeholder: In California, we’re looking at rising temperature from the standpoint that past temperature may not be representative of the future.
 - i. HECO: The FAWG and load forecast did consider a warming trend based on the working group feedback.
 - c. Stakeholder: Most of the focus has been on demand but there’s also an effect on generation. Global warming could affect wind speeds and cloud cover.
 - i. HECO: That’s a good point, where relying on historical data may be different than what is expected in the future.

- d. Stakeholder: Suggestion to consider generation plan for extreme weather events, e.g., sudden snowfall like in Texas, temperature rise/fall, etc.
 - i. HECO: We could fold this into our low renewable generation scenario.
 - e. Stakeholder: Can the model also select DERs outside of the forecast?
 - i. HECO: Yes, we're trying to model and cost out a DER aggregator.
 - f. Stakeholder: Where does the 10% cost for the DER aggregator come from?
 - i. HECO: The DER aggregator is based on the capital costs for a residential PV and residential BESS plus a 10% adder for customer acquisition.
 - ii. Stakeholder: Would these costs be so expensive that the DER aggregator is not selected?
 - 1. HECO: Open to feedback on an appropriate cost that should be used.
 - iii. Stakeholder: A sensitivity where grid-scale resources are limited may result in aggregated DER being part of the plan.
- IV. Selected GNA Stakeholder Feedback - Transmission Needs
- a. Stakeholder: Did you include other forms of land use or community acceptance/ into the renewable energy zones?
 - i. Stakeholder: The NREL tool is an initial screening tool, however land use, community acceptance and other factors would then need to be taken into account.
 - ii. HECO: In the 2020 NREL Potential study for the five islands, there is a table in the document which describes all of the exclusion zones and land-use types. We have this posted on our website as a reference.
 - b. Stakeholder: Is there going to be an explanation of how the transmission constraint is determined in the GNA to identify available transmission capacity?
 - i. HECO: We will look at the current capacity of the system, the renewable energy potential in that zone from the NREL analysis, and analyze the transmission needs for those zones. We are still working on this.
 - ii. Stakeholder: How is the transmission constraint modeled in RESOLVE?
 - 1. HECO: The transmission system isn't explicitly modeled in RESOLVE. We can capture transmission costs as part of the resource costs for RESOLVE. We would expect to see higher project costs if transmission upgrades are required.
 - c. Stakeholder: Is there a process to develop these renewable energy zones, anyone from the IPP community?
 - i. HECO: Yes, we can share that with the group. As an example, NREL determined a lot of potential on O'ahu in the central area around excluded agricultural land. That would be something we could provide for stakeholder feedback.
 - d. Stakeholder: In the initial modeling results from several months ago, offshore wind on Oahu was selected in later years, probably to meet higher RPS goals. As with any project, there could be delays, therefore you might not want to wait until the last few years to allow offshore wind to be built. Perhaps that can be

moved up? It would be important to include some strategic thinking into the timing of achieving RPS goals sooner. Perhaps, a sensitivity of reaching 5 years ahead of schedule or 10 years ahead of schedule to meet the RPS.

i. HECO: We can look at that, especially with the transition to RPS-A.

V. Additional Comments

a. Stakeholder: Have all stakeholder comments been addressed? Did you only address the comments shown here today?

i. HECO: We've addressed all of the comments and will provide a follow up document to supplement today's meeting slides.

b. Stakeholder: When do you plan on issuing the revised GNA document?

i. HECO: No hard deadline yet but plan to issue in a couple of weeks.

Summary and Next Steps

- Issue second draft of the Grid Needs Assessment document.
- Issue comment tracker with disposition and response to feedback received.
- Any additional comments or questions?
- Stakeholders may provide feedback on today's discussion to IGP@hawaiianelectric.com, or Chris Lau christopher.lau@hawaiianelectric.com