

IGP Solution Evaluation and Optimization Working Group (Meeting #12)

Tuesday, June 30, 2020

1:00pm - 3:00pm

WebEx

Attendees

WebEx

Christopher Lau, HE	Matthew Richwine, Telos Energy	Diwakar Tewari, HE
Dale Murdock, EnerNex	Michael Schwing, HSEO	Gemini Yau, HE
Marc Asano, HE	Rick Whisman, Nexamp	Greg Shimokawa, HE
Addison Li, HE	Robert Harris, Sunrun	Isaac Kawahara, HE
Chris Antonio, HE	Steven Rymsha, Sunrun	Isaac Lum, HE
Roderick Go, E3	Terry Surlles, HNEI	Joanne Ide, HE
Ari Gold-Parker, E3	Wren Wescoatt, Progression Hawaii	Kenton Suzuki, HE
David Parsons, HPUC	Offshore Wind	Marisa Chun, HE
Jay-Paul Lenker, HPUC	Noelani Kalipi, Progression Energy	Meredith Chee, HE
Clarice Schafer, HPUC	Paul De Martini, Newport Consulting	Peter Young, HE
Gina Yi, HPUC	Christopher Kinoshita, HE	Robert Uyeunten, HE
Grace Relf, HPUC	Collin Au, HE	Richard Wang, HE
Mike Wallerstein, HPUC	Amanda Yano, HE	Therese Klaty, HE
Gerald Sumida, Ulupono/Carlsmith Ball	Sorapong Khongnawang, HE	Yoh Kawanami, HE
Jacqueline Ennis, HPUC	Brian Lam, HE	
Jeremy Laundergan, EnerNex	Christin Chang, HE	
Josh Steiner, Salt River Project	Daniel Lum, HE	
Kylie Cruz, Earthjustice/Blue Planet Foundation	Dean Oshiro, HE	

Agenda

- Welcome and Ground Rules
- Discussion of Transmission Planning Criteria and Services
- Review Stakeholder Comments on SEOWG Deliverable
- Next Steps

Objectives for Today's Meeting

- Develop a greater shared understanding of the Transmission Planning Criteria and Services
- Clarify comments received on the SEOWG deliverable

Discussion

I. Solution Sourcing Diagram

- a. No comments.

II. Role of Stakeholders

- a. No comments.
- b. The SEOWG will close after the working group deliverable is final.
- c. The Technical Advisory Panel (TAP) will provide oversight of the Grid Needs Assessment in the first year of the IGP cycle, and the Distribution Needs in the second year of the IGP cycle.
 - i. TAP to periodically report out to the Stakeholder Council.
 - ii. Stakeholder Council to preview the IGP Review Point document material prior to the filing.
- d. The Independent Observer (IO) will have oversight of the IGP RFP and contract negotiations.

III. Transmission Planning Criteria and Transmission Needs

- a. Stakeholder: Could you please describe how you are determining the Distribution needs and how that is being implemented into the Transmission modeling?
 - i. HECO: In our current PSS\E models, we update it annually, including updating the DGPV capacity at the feeders and buses. We capture the ride-through and frequency response characteristics in the model. We have begun looking at PSCAD modeling capabilities for DGPV, but it is still under development.
- b. Stakeholder: How do you apply the DER at the distribution level into transmission modeling?
 - i. HECO: We look at how the distribution services are applied to the bulk system needs. In terms of mitigating local voltage issues, that is not a feature of the transmission model.
- c. Stakeholder: How much load shedding do you allow now?
 - i. HECO: For the loss of our largest generator per island, the criteria for load shedding is 0% on Oahu, and 15% on Hawaii and Maui.
- d. Stakeholder: How are the load shedding issues being mitigated?
 - i. HECO: The system is designed to prevent load shedding. However, the system is becoming increasingly complex with the addition of DGPV and with the removal of traditional generators, we lose inertia on the system. The frequency response requirement can help with mitigating this issue and stabilize the system in events where frequency is impacted.
 - ii. Stakeholder: It sounds like the performance criteria is being updated and improved.

- e. Stakeholder: Regarding the 0.5 seconds for the FFR to activate, could you please describe more about that response time? In the Stage 2 RFP, the required response time was 0.2 seconds. How do those compare?
 - i. HECO: The differences in the response time differ by the minimum required cycles for the inverter to respond.
- f. Stakeholder: Have any changes been made for the UFLS system?
 - i. HECO: On Hawaii and Maui, we have made changes to accommodate system changes. For Oahu, we look at what are the typical circuit loadings during the daytime and evening, then move circuits around as needed to improve the system FFR needs. We review this on an annual basis.
- g. Stakeholder: Does this functionality require BESS inverters to have grid-forming capabilities?
 - i. HECO: Not necessarily. The grid-forming attributes are accounted for by other mechanisms such as inverters in droop mode to provide the capabilities of grid-forming mode.
- h. Stakeholder: RESOLVE modeling doesn't handle modeling voltage support. How are you planning on modeling that?
 - i. HECO: To meet the reliability need, we would want to analyze the solutions against each other to determine the least-cost best-fit solution.
- i. Stakeholder: How would you model utility-scale inverter-based resources' voltage support needs?
 - i. HECO: We have reactive power requirements in the Purchase Power Agreement (PPA). There exists a range of requirements for voltage support, for example, leading and lagging power factor in the range of 0.85-0.9. We also review the voltage requirements in the interconnection studies.
- j. Stakeholder: In terms of the Protection System, could you talk more about those needs at the transmission and distribution levels?
 - i. HECO: We have requirements to clear faults on the distribution system in a timely manner, as well as the fault current issues at the transmission level. We've been looking more into our system short-circuit needs and as that develops, we will have more to talk about in the future.

IV. Grid Needs Assessment and Solution Evaluation

- a. Trampoline Example – A flat trampoline canvas represents the voltage of the grid at stable level, the springs holding the canvas to the frame represent grid strength. A person standing on the trampoline causes the canvas to deflect, which represents a change in the grid voltage and stability. As you remove springs from the trampoline, the trampoline canvas becomes weaker and unstable, similarly the grid will experience more voltage and current issues as we retire synchronous units. If the person walks around or more people are added

and springs are removed, the trampoline will become even more unstable, symbolizing the weakening of the grid until it breaks.

- b. Stakeholder: Are there models for the grid forming and have there been any inputs provided by BESS manufacturers?
 - i. Stakeholder: Suggested manufacturers with grid-forming capabilities – SMA, etc.
 - 1. HECO: One of the challenges we constantly face is finding information on new technologies and finding ways to include that into our modeling ahead of everyone else.
- c. Stakeholder: Grid forming is still very much new and undefined in the industry. How are you planning on defining this for Hawaii, would you write a specification?
 - i. HECO: Generally, it will be a learning process for everyone. There is a lot to be gained from the study process and learning what the capabilities are from the Stage 2 RFP.
- d. Stakeholder: Are you doing any sensitivities for the transmission planning requirements? For example, increasing the integration of DER resources.
 - i. HECO: We are proposing two sensitivities in the SEOWG deliverable to analyze expanding the transmission system and leaving the transmission system as-is and measuring the available space for distributed generation.
 - ii. Stakeholder: The concept of shadow pricing for grid services seems useful here too.
 - iii. HECO: In the future, if there is a large capacity of DER generation in one location without transmission line capabilities, the question becomes how to bring that energy to the load center, as opposed to building DER generation at the load center.

V. Solution Evaluation Methodology

- a. Modeling Objectives
 - i. Initial Evaluation – Avoided Cost Screening
 - ii. Detailed Evaluation – Optimal Portfolio
 - iii. Stakeholder: Would you be using RESOLVE exclusively to perform the evaluation?
 - 1. HECO: No, we would use RESOLVE and PLEXOS models in combination.
 - iv. Stakeholder: Suggestion to include discussion of how this methodology compares to the Stage 2 RFP evaluation process.

1. HECO: The evaluation in the Stage 2 RFP is not something we could necessarily share in order to abide by the Code of Conduct of the RFP.
 2. Stakeholder: Understood, we should preserve the integrity of the Stage 2 RFP evaluation.
- v. Stakeholder: In the detailed evaluation, you've mentioned the proposals would be modeled in groups, can the models evaluate proposals individually as well?
1. HECO: Yes, the avoided cost screening in the initial evaluation would evaluate the proposals individually, then in the detailed evaluation, we would model combinations of those selected proposals.

VI. Additional Comments

- a. Stakeholder: Would we be able to have copies of the slide deck?
 - i. HECO: Yes, we can send it to you, and it will also be posted to our IGP website soon.

Next Steps

- Continue working with the TAP to vet the concepts proposed in the SEOWG deliverable.
- Feedback may be submitted to – IGP@hawaiianelectric.com, or Chris Lau christopher.lau@hawaiianelectric.com