

IGP Solution Evaluation and Optimization Working Group (Meeting #8)

Wednesday, February 12, 2020

1:00pm - 3:30pm

American Savings Bank Tower, Training Room 1

Attendees

In-person

Christopher Lau, HE

Vladimir Shvets, HE

Dale Murdock, Newport
Consulting

Rebecca Dayhuff-

Matsushima, HE

Greg Shimokawa, HE

Isaac Kawahara, HE

Christopher Kinoshita, HE

Collin Au, HE

Amanda Yano, HE

Sorapong Khongnawang,
HE

Brian Lam, HE

Clarice Schafer, HPUC

Gina Yi, HPUC

Kylie Wagner, Earthjustice

Robert Harris, Sunrun

Nohea Hirahara, HE

Daniel Lum, HE

Wren Wescoatt,
Progression HI Offshore
Wind

Kylie Wage Cruz,

Earthjustice

Christin Chang, HE

WebEx

Diwakar Tewari, Leidos

Dean Oshiro, HE

Dean Nishina, DCA

Erik Kvam, REACH

Roderick Go, E3

Jeremy Laundergan,
EnerNex

Joanne Ide, HE

Kanoa Jou, HE

Kenton Suzuki, HE

Marcey Chang, DCA

Matt Richwine, Telos
Energy, Inc.

Meredith Chee, HE

Mike Wallerstein, HPUC

Nicholas Miller,
HickoryLedge

Paul De Martini, Newport
Consulting

Rene Kamita, DCA

Robert Uyeunten, HE

Steven Rymsha, Sunrun

Therese Klaty, HE

Objectives for Today's Meeting

- Clarify how the sensitivities discussed in the previous meeting will be modeled.
- Discuss proposed modeling information with stakeholder input.
- Introduce NWA evaluation that was developed for IGP Soft Launch.

Agenda

- Welcome and Ground Rules
 - SEOWG Deliverables and Schedule
 - Today's Objectives
- Modeling Sensitivities in the Grid Service Needs Analyses
- Proposed Methodology for NWA Evaluation Developed for Soft Launch
- Next Steps

Discussion

I. IGP Solution Sourcing Process

- a. No comments

II. Modeling Sensitivities Discussion

- a. Sensitivity 1: DER Program Freeze – Any comments? Is the intent stated correctly?
 - i. Stakeholder: Is this the same assumptions as what was presented in the last FAWG meeting?
 1. HECO: No, this is a separate assumption to contrast between what is shown in the DER market forecast in the FAWG and no DER market uptake, to determine the value of DER uptake.
 - ii. Stakeholder: How about performing a similar sensitivity using an energy efficiency forecast?
 1. HECO: We are considering this as an additional sensitivity.
- b. Sensitivity 3: Legacy NEM Self-Consumption Load Shift – Any comments?
 - i. Stakeholder: We're trying to determine the potential value of having DER customers switch to a self-consumption operation, as opposed to just a battery backup mode.
 - ii. Stakeholder: The intent here is to not focus on market potential of how many customers would purchase a battery for their NEM system. It's focused on the potential value of having this load shape on the system. The battery envisioned here is a 4-hour load-shifting storage.
 - iii. HECO: When we say paired, we mean PV is the only source that will charge the battery. This could be modeled for a 1 for 1 capacity of PV and battery.
 - iv. Stakeholder: If we shifted a large percentage, larger than 10%, we could see the impact of it on the grid. See the excess energy being stored in battery and used for peak. What would the load shape be. What would

the value be, and would that make a 4-hour battery attractive to customers?

- c. Sensitivity 4: Load Shift Bring Your Own Device – Any comments?
 - i. Stakeholder: Would there be value for a resource that would provide capacity?
 - ii. Stakeholder: I think of this as a virtual power plant compared to sensitivity 3 which has batteries behind the meter. A program that can provide grid resources could be a load build. Create a way to model other load shaping benefits.
 - iii. HECO: Are you suggesting a BYOD that can be grid charged?
 - iv. Consultant: Is this interpreted as existing customers or new customers, or a combination of both?
 - 1. Stakeholder: It could be both, we'd have to define what the program would look like for new customers.
 - v. Consultant: Would there be a reserve portion of the BYOD that can be used for other grid services? How would you size the storage and for which customer class? 30-40% reserves for grid services?
 - vi. Stakeholder: I don't have a full sense of duration for battery. It depends if you are making a market for capacity. Was thinking broadly and not from a contractual point of view. My focus is on the long term as the marketplace develops.
 - vii. Stakeholder: If the idea for each sensitivity is to get the value, in sensitivity 3, we are saying X percent of the current customers add storage which add supply. They will now generate their own power. Sensitivity 4 is X% of customers add a new storage device that the company can dispatch. We would need to come up with a number for how many are going to add.
 - viii. Stakeholder: I would argue to just go for a high number just to see what the value is. The higher number will show possible value, then we can backtrack and see what is possible.
 - ix. Stakeholder: Whatever % it is, is it linear, will the math work out, just trying to quantify a value. Assume that the battery always has full capacity at 7pm for example.
 - x. Stakeholder: Practically, does it matter if its new PV + Storage?
 - xi. Stakeholder: How do tax credits play a role in this?
 - 1. HECO: It will matter; paired and unpaired systems have different tax incentives. Paired systems are contingent on the generating source, however there may be greater flexibility in standalone storage that can be grid-charged and can be used more often.
 - xii. Stakeholder: What is this sensitivity for? Is it just storage? Then it's a sink. If it's with PV, then it might not be.
 - xiii. Stakeholder: For #4, I am thinking with storage is more interesting.
- d. Sensitivity 5: DGPV Excess Energy Capacity Dispatch – Any comments?

- i. Stakeholder: The customers' level of participation could be higher. What if you have legacy systems that are curtailed to allow more PV on the grid?
- ii. HECO: Are we allowing the DGPV to be curtailed?
 - 1. Stakeholder: We would need to couple a battery with DGPV to allow for energy capture during curtailment. Without the battery, there wouldn't be enough incentives to participate.
- iii. HECO: If they're capable of being curtailed, but there is battery uptake, then technically the DGPV is never curtailed?
 - 1. Consultant: Are we trying to get a net difference by reducing overall DGPV output by adding a battery? Is there value in that? We'd need to first determine the difference between a non-curtailable NEM customer's output and that customer basis with a battery. What is the value of adding the battery? Then, determining the value of the types of services that battery can do.
- e. Sensitivity 6: EV Low Load Factor Analysis – Any comments?
 - i. Stakeholder: This is assuming the cost of energy is expensive. EV customers may adopt more storage coupled with PV. This load is not going to be seen as much on the grid.
 - ii. Stakeholder: This is probably different from forecasted assumptions. There could be a risk if expected EV load is not there because of customer self-charging.
 - iii. HECO: We may need to table this until we get the EV forecast from the FAWG.
 - iv. Stakeholder: Three situations 1) EV grid-charging at night 2) EV charging during night with battery (driving battery purchases) 3) EV charging during the day.
 - 1. HECO: Is this is meant to be managed charging, coincident with the peak?
- f. Sensitivity 7: EV High Load Factor Analysis – Any comments?
 - i. Stakeholder: Not related to coincident peak, this is more how do you charge EVs in an optimal way. Combination of time differential rates and grid services.
 - ii. Stakeholder: Would have to determine if there is value in doing something before, we talk specifics. Would it be better to have 100 MW distributed vs utility scale. Difference would be residents would be paying for projects. Distribution scenario may have non-dollar benefits.
 - iii. Stakeholder: How well do RESOLVE and PLEXOS capture locational characteristics?
 - 1. HECO: We can create resource blocks that represent locations. We can also add cost adders to reflect transmission costs.
 - iv. Stakeholder: Is there a resilience benefit to distributed vs centralized energy and does the modeling take that into account?

1. HECO: Resilience may be considered in how we form the RFPs or as a non-price consideration in the RFP evaluation.
- v. Stakeholder: Isn't the RWG looking at this stuff?
 1. HECO: They are looking at where key customers and what their resilience needs are.
- vi. Stakeholder: So 3 different scenarios:
 1. People charging at night with no storage;
 2. People charging at night and buy storage; and
 3. People charging during the day.
- g. Sensitivity 8: Transmission Constrained (Land Only) – Any comments?
 - i. HECO: Our understanding was to identify what drives offshore wind?
 - ii. Stakeholder: This was a reaction to the fact that there is opposition on land use. Similar to the undersea cable. It's not going to be easy to do, with the visibility and natural impacts, however this is considered as an alternative to limited land space.
- h. Sensitivity 9: Frequency Responsive Load Bank – Any comments?
 - i. Stakeholder: The intent was a paradigm shift. If all regulation is handled by load banks and flywheels to unlock a large capacity that has been denied. Probably cannot model it but adding it to the discussion.
- i. Sensitivity 10: Grid Charge Load-Shift Need for Extended Periods of Low Wind and Solar – Any comments?
 - i. Stakeholder: The intent here was if we have a lot of distributed storage, there could be some benefit to it. As for duration, a week is a long time. There may be some infrastructure savings from distributed storage?
 - ii. Stakeholder: Are there any procurements that include grid charging?
 1. HECO: Yes, our current Stage 2 RFP includes grid-charged storage options.
 - iii. HECO: Should there be any unit retirement considerations here that we need to account for? After units are retired, what will charge these batteries? The timing would matter.
 - iv. Stakeholder: I would be interested to see them separately. For example, just solar and battery, and just wind and battery. Wind is more unpredictable with storage where solar with storage is predictable. Another scenario would be without both.
- j. Where did the sensitivity about grid defection go?
 - i. Stakeholder: Not looking at it all or just no modeling it?
 - ii. HECO: Not sure what would be modeled.
 - iii. Stakeholder: There are rate impacts to the rate payers. I think it is a market risk we have to look at as part of rate design. I just wanted to add it to the discussion.
 - iv. Stakeholder: What would the benefit be if we were to do a defection sensitivity. Does it show stranded assets? Would there be value in knowing what projects will not be added due to lower load.

III. Additional Information

- a. No comments.

IV. IGP Soft Launch Update

- a. HECO: The evaluation for the NWA is a separate process, and we're looking to get your comments on this.
 - i. HECO: In the Soft Launch Detailed Evaluation step, the intent was to evaluate the need with the most interdependencies first because several circuits are involved, then solve for the remaining needs.
 - ii. Consultant: So the intent is to show a priority order for solutions on certain circuits?
 - 1. HECO: Yes.

V. Additional Comments

- a. Consultant: It appears there may be overlap across several sensitivities in terms of how a battery (paired and unpaired) could be fully utilized by a DER program, existing or future. There is danger in moving away from a technology-agnostic DER program and limit or prescribe a DER program for battery energy storage.
- b. HECO: How would you define a program, what are the things expected of a program?
 - i. HECO: What we're trying to do here is not specify a program, but to identify behaviors that can be built out in a program. We want to know, how do we model that, and understand that value.
 - ii. HECO: Why bundle, what are the aspects that make that helpful?
 - iii. Stakeholder: The term program is intended to be broad and the method by which we would create it could be through pricing, or tariffs, etc.
 - iv. Stakeholder: At this point, it's too soon to identify the vehicle to provide the solution, at this time it's more to identify what we are measuring in the modeling.
- c. Stakeholder: Is there a way to put projects at the transmission level on an apples-to-apples comparison to DERs at the distribution level?
 - i. Stakeholder: The objective is just to find the value of those resources.
- d. Stakeholder: How well do the RESOLVE and PLEXOS models capture the locational value of the resources?
 - i. HECO: The models don't do this explicitly. What we can do is assign resource blocks and cost adders for specific locations to assess value of locating a project in a place where T&D upgrades are triggered.
- e. Stakeholder: How is resilience captured in the model? For example, battery fires that impact utility infrastructure, would that be considered as a sensitivity?
 - i. HECO: The RESOLVE and PLEXOS models would not directly be capable of modeling that.

- ii. Stakeholder: Another consideration would be how do you think about where you place certain resources so that during an event, they don't cause additional impacts to utility infrastructure.
- iii. Stakeholder: Isn't the Resilience Working Group focused on determining locational impacts to existing infrastructure?
 - 1. HECO: They did identify major events that would impact each island.
- f. HECO: We're still collecting comments for the deliverable write up, please feel free to submit. The comments will be incorporated into a redline of the deliverable that will be distributed and discussed in the next meeting.

SEOWG Deliverables and Schedule

1. SEOWG deliverable draft sent to stakeholders for review
 - Awaiting comments on draft
2. Description of the optimization methodology to be used for proposed solutions that may address multiple resource/grid needs
 - Due 6/1/2020 (to be informed by Stage 2 RFP)

SEOWG Upcoming Meetings Schedule

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| Meeting 9 – March 16, 2020 | Continue review of the SEOWG deliverable Discuss any next steps |
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Next Steps

- Next Meeting – March 16, 2020 (tentative)
 - Revise deliverable draft to provide additional description of the methodology used to identify Grid Service Needs based on working group feedback.
- Feedback may be submitted to – IGP@hawaiianelectric.com, or Chris Lau christopher.lau@hawaiianelectric.com