IGP Stakeholder Technical Working Group Meeting

Thursday, June 17, 2021
10:00am - 1:00pm
WebEx

Attendees

WebEx

Colton Ching, HE
Marc Asano, HE
Christopher Lau, HE
Talin Sokugawa, HE
Alex de Roode, Maui County
Andy Hoke, NREL
Ari Gold-Parker, E3
Cara Goldenberg, RMI
Clarice Schafer, HPUC
Dan Wilson, Integral Analytics
David Parsons, HPUC
Genevieve Lillis, RMI
Gerald Sumida, Carlsmith Ball
Gina Yi, HPUC
Grace Relf, HPUC
Henry Curtis, LOL
Jeffrey Burke, APS
Joshua Hambrick, Telos Energy
Kat Hofland, ASU
Kevin Schneider, PNNL
Kylie Cruz, Earthjustice
Marcey Chang, DCA
Michael Schwing, HSEO
Mike Wallerstein, HPUC
Noelani Kalipi, PHOW
Paul De Martini, Newport Consulting
Pete Polonsky, DOE
Rene Kamita, DCA
Rick Rocheleau, HNEI
Robert Harris, Sunrun
Rocky Mould, HSEA
Rod Aoki, Rod S. Aoki Law
Samantha Ruiz, HPUC
Scott Smith, Integral Analytics
Sean Morash, EnerNex
Sherilyn Hayashida, DCA
Stephen Mariani, HPUC
Steven Rymsha, Sunrun
Terry Surles, HNEI
Ken Aramaki, HE
Li Yu, HE
Alan Hirayama, HE
Chad Takahashi, HE
Jon Sakata, HE
Christopher Kinoshita, HE
Collin Au, HE
Amanda Yano, HE
Brian Lam, HE
Robert Uyeunten, HE
Therese Klaty, HE
Anne Fuller, HE
Kolter Kalberg, HE
Alyssa Nada, HE
Kent Kurashima, HE
Shuk Han Chan, HE
Lisa Dangelmaier, HE
Lisa Giang, HE

Discussion

I. DER Saturation and the Addressable Market
   a. HE: In a high scenario for DER, should we increase the addressable market for landlord/tenant?
   b. Stakeholder: Townhomes are challenging with permitting. Bill 58 could lead to an increase in uptake. There are pockets of schedule-R (multi-family residences) that are not currently reachable in the DER market, and this has more to do with a lack of available programs for these customers. It's more of a policy issue than a DER supply issue. Specifically, there are AOAOs that are not currently reachable.
   c. Stakeholder: Would there be other incentives aside from bill credits that could be provided to customers in multi-family residences?
   d. Stakeholder: Perhaps it could look like a bill credit to both the resident and the AOAO.
   e. Stakeholder: Suggestion to disaggregate the data – split out the residential sector into townhouses, renters, single family.
      i. HE: How do we define the market for these segments?
      ii. Stakeholder: Interested in seeing the interdependencies between the different pools.
   f. Stakeholder: For the bookend, one way is to remove the addressable market constraints. In the load forecasts, do you do any segmentation for different customers or is it just by rate class?
      i. HE: For the high bookend, we could adjust the addressable market constraints such as removing owner-occupied or looking at Schedule R customers as a whole
   g. Stakeholder: Could you have growth rates for different segments or is it looking at the rate class overall?
      i. HE: Generally treated as schedule R. The forecast isn't broken down by segment (single family, townhomes, etc.). Even if we segment by single family, multi family, there's still a question on what the addressable pool is.
      ii. HE: How do we reach the saturation point? What is the timing?
   h. Stakeholder: Do NREL solar potential studies cover any of these markets?
      i. HE: The NREL study determined the amount of solar that could be put on rooftops. It didn't necessarily look at it by type of customer.
   i. Stakeholder: What is the size of the system? Is there a technical potential limit for the market?
      i. HE: The size of the system is currently driven by self-consumption. Adding an incentive for export as mentioned earlier would provide incentive for larger systems.
      ii. HE: The technical limit is high. A curve for the adoption rate that reaches the technical limit could be assumed. Want to add context that the

technical potential assumes all roofs are covered. What year would the technical potential be reached?

iii. Stakeholder: Different ways to define a customer – by their available rooftop space or their load.

j. Stakeholder: In terms of bookends, there is significant uncertainty in EV adoption, EE adoption, base load forecast. While looking at all the different layers may be great info, when considering bookends, we should see if the extreme high and low ends materially change the plans at all. If all it does is shift the timing of the resources but doesn't significantly change the overall outcome, then looking at all these various layers and seeing the effect it has may not matter. You may be doing a lot of analysis by looking at the various layers that may be covered by just looking at the extreme high and low bookends.

i. Stakeholder: The impact of DER sems insignificant compared to EE in terms of load.

ii. Stakeholder: If I have greater EV adoption, then I need to generate more electricity. If I more aggressively adopt DER, could reduce grid scale resources that are needed. But does it materially change what resources are built? Running bookends on sublayers doesn't seem useful to me.

iii. Stakeholder: Agree that bookends are useful.

iv. HE: We would like to simplify the high and low forecasts driven by policies or endpoint forecasts.

v. HE: I think we are in agreement with what Rick is saying with regards to the bookends. Making significant changes compared to the base case, that's where the value is. Want to get stakeholder feedback on how to do it, that the makeup is understood and it's agreed to as a construct.

k. Stakeholder: Are we looking at bookends from the perspective of capturing untouched markets, such as rental properties? How much DER should be included in load versus how much is export?

i. HE: After a certain year, future DER would be dispatchable.

ii. Stakeholder: How would we look at defining resource diversity?

iii. HE: We could take a look at different weather conditions, prolonged poor sun exposure or wind, to measure the impacts to the existing portfolio.

II. LoadSEER

a. Stakeholder: At what point in the IGP process is LoadSEER run?

i. HE: We're running it now to forecast DER at the circuit level.

ii. Stakeholder: Essentially, it is run before RESOLVE?

iii. HE: Yes, that is correct.

b. Stakeholder: On slide 20, how do changes to the corporate forecast and at the circuit level inform each other, especially when you have new service requests for large loads?

i. HE: The corporate forecast takes into consideration new, large loads that impact the system-level load. The circuit level loads are granular, looking at the load impacts on a particular substation and circuit. The corporate and circuit level forecasts may not necessarily align, due to the corporate

forecast having other considerations not related to the circuit-level forecast.

c. Stakeholder: What happens if you add up all of the circuit-level loads and it exceeds the corporate forecast? What is the feedback loop?
    i. HE: It would be possible for the aggregate of the circuit-level loads to be larger than the corporate forecast, however, there is risk of over-building the system. The circuit level loads are used to determine loading on a substation versus corporate-level load is looking at the entire system where there is much more load diversity.
    ii. HE: The bookends would be used to address that load uncertainty.
d. Stakeholder: If you turn on functions in LoadSEER to avoid double counting and there are additional resource identified, would the corporate forecast be adjusted?
    i. HE: Underlying load for a given circuit is driven by historical data, layered on top is the geospatial allocation including growth rate at the corporate level. On top of that are service requests, which are generally larger than underlying load growth.
e. Stakeholder: How does LoadSEER evaluate the savings of adding DERs to a circuit?
    i. HE: The first way, is when Distribution Planning finds violations on a circuit that doesn't meet planning criteria. The solution to that issue often has an associated cost, and that cost may be remedied by a DER or NWA, and not necessarily a traditional utility solution, e.g., new substation or line upgrade.
f. Stakeholder: Is it possible to incorporate the needs identified by LoadSEER into RESOLVE?
        1. HE: We would need to think about this more.

III. Electric Vehicles and IGP – Presentation by Kylie Cruz, Blue Planet Foundation

a. BP: Recommendations for creating a high bookend with 100% EVs by 2045.
    i. HE: We can look at the 100% EVs by 2045. We may have to think about how to forecast to 100% ZEV by 2045.
        1. HE: Initial thought is to just do a straight line between where we are now and 100% ZEV by 2045.
b. HE: One thing we may need to discuss more is regarding medium- and heavy-duty vehicles. Our forecast is primarily for light-duty vehicles.
    i. Stakeholder: The state energy office that is in charge of incorporating the 2050 goal for medium- and heavy-duty vehicles.
c. Stakeholder: We would like to look at the potential for EVs to do other services aside from load modifying, but this is more forward-thinking.
    i. HE: We can think more about this but would probably need more info regarding what services they could provide and by when at what times of the day.
    ii. HE: We would need more information about the types of services EVs can provide and performance metrics (e.g., time of day charging).

iii. Stakeholder: For now, I would be weary of thinking of V2G because there are many issues such as cycling of the EV battery. It may be difficult to near impossible to define EVs as a resource/grid service due to several factors – charging location disputes, determining charging hours, types of vehicles, etc. In California, there have been many issues around these topics.

d. HE: I think by August, we can probably try to include the managed charging and 100% ZEV by 2045. We will have to look a little more into the medium and heavy-duty information that is out there. V2G and EV as a selectable resource is probably not something that can be considered this round but will be something for future consideration.
e. Stakeholder: Still sees a potential issue of a large volume of EVs charging at the same time in a particular hour. In a managed charging case, where you have the EVs set on a timer to begin charging, there could be load impacts of doing this. It might be worthwhile to do a bookend to visualize these impacts.
f. Stakeholder: How would workplace charging fit into the managed charging profile? We aren't seeing an increase in load during the daytime.
    i. HE: We will follow up with E3 to see what was assumed for the daytime charging profile. Note that what is being presented is an average, so there is more variability when looking at the individual day.
    ii. Stakeholder: It might be beneficial to think about what type of EV charging profile is desired and how that could impact the market, programs, and system.

IV. Bookend Sensitivities
a. Electric Vehicles
    i. HE: Any thoughts on how to develop the low forecast for EV adoption?
    ii. Stakeholder: Avoid labeling it as a slower adopter.
    iii. Stakeholder: Would it be possible to look at the corresponding EV sales in comparison to the EV load forecast?
b. DERs
    i. HE: We plan on updating system cost projections using NREL ATB for all scenarios
    ii. HE: May we get your thoughts on considering extended tax credits for the market forecast?
    iii. Stakeholder: It seems to make sense as a realistic possibility.
    iv. HE: In the longer term, is it reasonable to consider an export program extension in the base case? As well as in the high bookend scenario?
    v. Stakeholder: Yes.
    vi. HE: Are there any other programs that you want to include as a long-term program?
c. Energy Efficiency
    i. Stakeholder: Perhaps it would be useful to consult AEG for load and supply curves and adoption forecasts.
d. Time-of-Use

i. HE: Faster adoption case would use the managed EV charging profile. For a lower adoption case, we would use the unmanaged EV charging profile and look at what percentage of adoption begins to have significant impacts to the system (threshold requirement). Are there any other thoughts on the time-of-use assumptions we could use for the modeling?
ii. Stakeholder: It seems like the managed EV charging is more of a policy call, instead of a driver for why customers would buy an EV. It would be beneficial to show a comparison between the unmanaged and managed EV charging case to identify the value of EV adoption.
iii. Stakeholder: Is there a way to incorporate the AMI forecast?
iv. HE: We have considered this, and perhaps looking at the percentage of customers that would opt-out of TOU program after a certain year.
v. Stakeholder: Has KIUC any data on the opt-out?
vi. HE: We may have data that we can work with.

Areas of Consensus

- DER Schedule-R forecast contains customer groups that are not currently addressed by the available DER programs. Consideration should be given to expanding the addressable market for DER adoption, assuming that new programs would facilitate access to other segments of the market.
- Before looking at the impact that the individual forecasted layers have on the resource plan, we should look at the aggregated bookend case first to see if the resource plan changes materially.
- Makes sense to look at the 100% EV by 2045 for the high EV adoption bookend. We must think about the timing of how we get to 100% ZEV by 2045, but one idea is to just straight-line where we are now and 2045.
    - Provide additional information/explanation on the EV managed charging shapes
- Evaluate the TOU layers based on AMI rollout schedules

Parking Lot Items

- Separating DER Schedule-R forecast into individual customer types:
    - Single Family Residences
    - Multi-Family Residences
    - Rentals
- Incorporating LoadSEER needs into RESOLVE
- Modeling EVs as a selectable resource in RESOLVE
    - Defining the services EVs can provide.
    - Modeling EV as a selectable resource and V2G

Next Steps

- Topics for our next meeting:
    - Deep dive into the inputs and assumptions for each sensitivity
- If anyone would like to present on any of the topics at a future meeting, please let us know.
- Stakeholders may provide feedback on today's discussion to IGP@hawaiianelectric.com