

IGP TAP Distribution Subgroup
Feedback on Distribution Planning Methodology
10/11/2021

TAP members: Kevin Schneider (PNNL, Chair), Dana Cabbell (SCE), Debra Lew (ESIG), and Aiden Tuohy (EPRI).

TAP feedback and comments are divided into three categories:

1. Informational – no action needed.
2. Suggest revising study before finalizing.
3. Consider feedback for future portions of the IGP process.

High level comments.

- The forecast and analysis stages were well documented, but the solution stage is not addressed in the same level of detail.
- Where the first two stages have detailed discussions of the process, the solution stage basically states, “Do some analysis and implement the “simplest” solution.”
- Nowhere was protection mentioned. Since this is an essential aspect of distribution systems its omission raises a number of questions.

General comments

- High level description of the overall planning process, which seems consistent with SCE at the level of detail described.
- An observation within this section is in the last paragraph – HE expects new service requests (load growth) arise during the calendar year and therefore expects the need to modify the forecasts in the middle of the planning cycle. At SCE we also know and expect customers to submit new load growth project requests throughout the year, but our forecasting process, in its current state, is very inflexible and doesn’t allow easy adjustments throughout the planning year. Quite often we have to implement manual workarounds to incorporate new load growth projects or even push the evaluation until the following planning cycle because we cannot rerun the forecast process. HECO’s ability to modify forecasts during the planning process is an efficient method to identify new load growth projects.
- The capacity evaluation portion of this section. The high level description of base case and contingency (N-1) evaluation seems to be very similar to SCE’s. What is not clear is whether they do time-series evaluation or extract certain load points (peak, min load/max gen., etc.) from the forecasted yearly 8760 profiles to run single-point load flows. Time-series load flow is a big challenge we (SCE) are currently facing with CYME’s performance issues, so it’s interesting to know if this other load flow tool (Synergi by DNV-GL) is capable of better performance.
- The forecast process described in subsection 3.2 is very similar to what we do at SCE. It looks like they have system level forecasts (Company’s corporate load forecasts) of various components (DER, EE, EV, etc.) that they disaggregate down to circuits by integrating geospatial factors, historian data, historical and forecast weather, and customer billing information. They also describe that historically it was done based on non-coincidental peaks and now they utilize 8760 hourly profiles for that. The rest of the details described in this section, including profile cleansing, use of representative profiles, and plans for future refinement of these representative profiles is pretty much in-line with SCE’s process.

- What stood out is the statement that they “create circuit- and transformer-level forecasts”. This appeared like they do very granular forecasts, down to distribution transformer level. However, reading through the rest of the document, it seems what was probably meant “transformer-level” as bank- or substation transformer-level forecast. It would be helpful to clarify. We (SCE) are currently piloting distribution transformer level forecasting process within the SAS tool, with expectation that the forecast process would be simplified and potentially allow more flexibility for continuous integration of new load growth throughout the planning cycle.

Technical editing comments

- Page 7 - Define AEG
- Page 21 - Overlaid is spelled wrong
- Figure 2 - Text is illegible
- Figure 10 – Test is illegible

Technical comments

- Page 7 - It would be helpful if the source of “Company’s corporate load forecasts” could be specified in a bit more detail. If it’s internal forecast that HECO develops solely by themselves, they probably have a lot of flexibility what to include (TE and BE) and magnitudes for each year to better correlate with the actual load growth project requests. The California Energy Commission’s IEPR forecast, that SCE is required to use, significantly limits our flexibility of forecast process (disaggregation and reconciliation), ability to introduce changes, such as new growth, and ability to initiate capital upgrades when customers may need them vs. when IEPR “suggests” they are needed.
- Page 10 - Not that you need to include it, but wondering what risk level they plan the distribution system for. Is it 1 in 10 year as showing figure 5?
- Page 11 - Mentions evaluating voltage in annual planning process but does not indicate if this is done via load flow simulation or otherwise. I think this is implied with Synergi analysis discussion later, but not clear here.
- Page 12 - HECO's hosting capacity analysis appears to be a blend of SCE's DER-driven Grid Reinforcement Study, and SCE's ICA, however, it is only performed for a single point in time, not time-series. This may be addressed with the use of the EPRI tool, but without mentioning that here it seems that the use of a single point in time could be limiting.
- Page – 13 HECO is in the process of working with EPRI to expand its hosting capacity to be time-series, probabilistic distribution of DER growth, and to consider smart inverter functions. 2020 Q2 (?) is indicated as the timeframe for enhancements discussed. I believe this is already complete and the tool is in use based on current conversations.
- Page 16 – Similar to previous comment, what is the percentage/percentile use for the threshold here?
- Page 14 - The new EPRI methodology for HC sounds like it could reflect dynamic HC in which a DPV could be curtailed upon certain system conditions, or not curtailed upon other conditions. Or mitigated by that same user later installing storage or their neighbor installing storage. But it’s not that explicit. Can this be clarified? This is a different issue than probabilistic analysis.
- Page 18 – OptaNode Grid2020 units mentioned, but no context of discussion is provided.
- Page 22 - I think stakeholders only care about “cost”, not “complexity”. They’ll want you to start with cheapest solutions and work your way up. They probably don’t care that much if it’s complex.
- Page 22 – Similar to previous comment, more complex= more expensive might generally be true, but it does not seem very rigorous. The argument could be made that more complex analysis, with more complex deployment, could reduce costs in the long run. This is the classic capital vs. O&M type discussion.
- Page 25 – Section 5.4 seems to just be floating with no transition or clear connection. Was it meant to be a complete list of common wires solutions?