

IGP TAP Distribution Subgroup

Feedback on Distribution Planning Methodology (clarifications)

3/28/2022

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.

Clarifications on comment raised on TAP document dated 3/11/21.

1. TAP clarified that there was a general need for awareness of what protection considerations were being made as the company transitions to higher levels of IBRs, including whether there were scenarios or timeframes that current protection would not work effectively. The TAP did not propose any specific solutions, just that the need for considerations should be highlighted.
2. HECO informed the TAP they will work on material for future TAP meetings for discussion.

Distribution Analysis

1. Distribution Analysis – There was a discussion on the “most appropriate” transformer/circuit load forecast scenario that should be used to analyze distribution system criteria violations and determine associated distribution grid needs (scope and timing of capital expansion projects or non-wire alternatives)?
 - a. The TAP members noted that there is no single standard approach for this.
 - b. Forecasts must consider local variations at the circuit and station level.
 - c. Loading decisions must also include what the Company current operating practices are to ensure support for maintenance and credible contingencies.
2. Attached includes the scenarios that were analyzed in IGP. Traditionally, HECO did only one scenario for analysis, but now there are three (and more), which would cause misalignment and have pros/cons to the timing and magnitude of capital investments.
3. HECO wanted to understand whether the TAP knew of existing methodologies that dealt with these situations, but the TAP did not. However, the TAP provided the following considerations:
 - a. Analyze all scenarios to determine common investments, which may show the least-regrets. For example, replacing a piece of equipment near its end of service life if its capability is independent on the final solution approach.
 - b. If the impact of solutions varies, look at the bookend scenarios in terms of risks. Specifically, what is the impact of a missed assumption and how long would it take to address?

- c. Consider assigning probabilities to the bookend solutions and identifying the risk of not implementing the solution. For example, if an undersized transformer is selected because it is supported by a NWA solution, what is the risk of the transforming being overload anyway (e.g., probability of failure), and how long would it take to alleviate the overload (e.g., install a new transformer and/or transfer load)?
4. HECO provided an example of a project to retire Waiiau 3 & 4. To retire generation units, the Company needs to resolve transformer overloading issues under a contingency condition. There are two 138/46 kV transformers that serve the Waiiau 46 kV bus. If one of the units is down, Waiiau 3 or 4 can provide capacity to the 46 kV bus to mitigate overloading the remaining 138/46 kV transformer. If Waiiau 3 or 4 is unavailable (and one of the transformers is down), the system sheds load to mitigate overloads on the remaining transformer. When Waiiau 3 & 4 are retired (2024), will need to address these overloads.
 - a. Current solution is being worked on which is the add a new 138 /46 kV transformer at another transmission substation and perform recircuiting work to provide backup capacity. The Company has been discussing how to address this with an NWA as well.
 - b. NWA solution would be needed in the Waiiau area to address the ~20MW overload capacity, which depending on the scenario chosen will impact the needed MWs greatly. The NWA must meet the full amount in order to address the overload, otherwise will still need to shed load under the contingency scenario. The question arises if the NWA can be counted on as an operational asset, and if it cannot, can the transformer sustain the resultant overload.
 - c. The TAP asked about the timeline, which was needed to be implemented be the end of 2023. Consideration should be made to whether an NWA is feasible given the timeline and scope, compared to traditional solutions.
 - d. HECO will be putting out an RFI to determine if it is feasible to accomplish.