Generator Interconnection Feasibility Study

Generation Description

- The [redacted] generators are existing generators; however, the generator owners are seeking to increase the allowable generation export to 142 MW in winter seasons and 140 MW in summer seasons.
- The [redacted] generators have been modeled in the FRCC power flow models with a combined peak generating capability of 125 MW in both summer and winter seasons.

Interconnection Points Evaluated

Point(s) of interconnection requested for study by interconnection customer:

A. Point of receipt is 0.11 miles from PEF's Brookridge substation 115 kV bus on the transmission line connecting PEF's Brookridge substation 115 kV bus and the [redacted] site.

Models

The model series studied for power flow was the FRCC 2008 revision 5 model series. The model years studied were 2009 summer, 2009 winter, 2016 summer, and 2016 winter. The expected worst case scenario was modeled which is with both of the generators at [redacted] modeled at their peak output and loads in the immediate vicinity of the site were modeled as out of service.

Generator Interconnection Queue

The 2016 summer and winter seasons were examined to determine the impact of the [redacted] generators in the presence of the relevant prior queued generation at PEF's proposed Levy nuclear plants, generation at PEF's Suwannee Plant, and another large third party generator in the region.

Generator Interconnect Studies (GIS) for previously queued generation interconnection requests in the form of Feasibility and System Impact Studies are currently be conducted in accordance with FERC rules and are prioritized by their queue positions to determine the assignment of required interconnection facilities and transmission upgrades to accommodate their requested interconnections. Since these studies are not complete, the facilities and upgrades required for these earlier queued requests were not included in the base cases used in this study.

These other studies will ultimately result in a more accurate list and description of the required interconnection facilities and transmission upgrades that may be assigned to these earlier queued requests. Once the required transmission upgrades of all relevant prior queued generator interconnection requests are identified, PEF will, if necessary, re-study this interconnection request to verify the study results.

Transmission Service Request Priority List Issues

A review of transmission service requests in the FRCC coordinated priority list was performed, and it was determined that the only TSRs in the time frame of the model years under study that could have an impact on the study results were transactions associated with the Levy units. These transactions were included in the 2016 cases.

Analyses performed

ACCC power flow analyses of the base case and the transfer case were performed to determine the impact of the incremental generation increase of the interconnection on the transmission system in the area. The base case and the interconnection option case were compared to determine if the interconnection option created thermal overloads or voltage violations, or exacerbated existing thermal overloads or voltage violations. All single element contingencies in the Progress Energy Florida (PEF area 2) and Seminole Electric Cooperative, Inc. (SECI area 12) areas were run in ACCC. The entire FRCC footprint (areas 1-17, and 19) was monitored for thermal and voltage violations.

Short Circuit analysis was not performed at this time since these are existing generators and per [redacted] assurances, no material changes have been made to the generators, generator step-up transformers, or the interconnection. However, PEF has requested additional data from [redacted] regarding their generator step-up transformers, and this information will be incorporated into a complete short circuit analysis to be performed for the system impact study of the CP&L generators.

ACCC Screening Criteria

The following screening criteria were used for screening ACCC thermal results:

- GSU transformers were excluded from consideration.
- System-intact overloads must be greater than 100 percent of rate A.
- Post-contingency overloads must be greater than 100 percent of rate B.
- Post-contingency overloads that are improved by the interconnection were excluded.
- In the option cases, the post-contingency overloads must have been made worse than the base case by 3% or greater.

The following screening criteria were used for screening ACCC voltage results:

- Buses in PEF and SECI were monitored for values outside of the range 0.9 – 1.05 p.u.
- Buses in FPL were monitored for values outside the range 0.95-1.06 p.u.
- All other monitored areas were monitored for values outside of the range 0.95 – 1.05 p.u.
- Crystal River Plant (3522) bus voltage, 230 kV bus voltage must remain above 232.4kV, or 1.0104 p.u.
- Generator buses and buses with nominal voltage below 69 kV were excluded from consideration.
- Absolute change in post-contingency bus voltage between base case and the option cases must be greater than 0.005 p.u.

Conclusions:

Study Results

Thermal:
There were no thermal violations identified in any of the seasons studied that were caused by the interconnection of the [redacted] generators using option A.

Voltage:
There were no voltage violations identified in any of the seasons studied that were caused by the interconnection of the [redacted] generators using option A.

Short Circuit:
Short circuit analysis will be performed in the system impact study for this request with updated data

Third Party Impact:
There were no third party impacts identified in any of the seasons studied that were caused by the interconnection of the [redacted] generators using option A.

Costs:
No transmission upgrade costs were identified to accommodate this interconnection request.

Note that these results are based on the current PEF GIS and transmission service requests which include requests preceding the CP&L GIS request. To the extent that one or more of these requests are modified or withdrawn, the results presented in this analysis may no longer be valid and/or may change materially. PEF will advise the customer of any changes associated with the preceding GIS requests that may require a re-study of this GIS request.