Locality Exchange Factor

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Probabilistic Locality Exchange Factor Objectives

Evaluate how much capacity, in addition to the deterministic LEF, can be moved to Rest of State for a capacity sale from any capacity Locality within the NYCA to any neighboring system

The methodology developed should:

- Maintain a NYCA LOLE less than or equal to 0.100 Days / Year
- Represent the sale as realistically as possible
- Be applicable to any sale from any NYCA capacity Locality to any neighboring system
- Be stable and predictable

Probabilistic LEF Analysis and Proposals

1. 2016/17 GE Analysis explicitly modelling the sale of capacity from a specific generator in GHIJ to ISONE *(Presented by GE June 2017, August 2017)*
2. NYTO Simplified Probabilistic LEF Proposal Formula *(Originally Presented August 2017, GE Initial Presentation March 2018)*
3. Consolidated Edison 2018 Simplified LEF Proposal (*Alternative Proposal Discussed with GE)*

2016/17 GE Analysis

- Approach consistent with maintaining a NYCA LOLE less than or equal to 0.100 Days / Year
- With further development, could provide a realistic representation of the sale
- With further development, could be scalable to be applicable to any sale from any NYCA capacity locality to any neighboring system.
- However, the complexity of the approach would make its application difficult in a production environment and there are concerns with the stability of this modeling approach.

NYTO's 2017 "Simplified LEF Proposal"

Recap of the Proposal:

The NYTO's approach relies on the correlation of loss of load.

1) The proposal considers two types of loss of load events; those in which there is a simultaneous event in both the NY and NE control areas and those in which there is only a loss of load event in NY.
2) An LEF would be calculated for each type of event.
3) Ultimately, an effective LEF based on the weighted average of the LEF for each event type would be determined.

NYTO's 2017 "Simplified LEF Proposal"

GE Review of the Proposal:

- Loss of Load: The probability of simultaneous loss of load does not account for those events which would have occurred in NY had the exporting unit not been available to serve NY's capacity needs.
  - The probability of a simultaneous need for the exporting unit can be substituted for the probability of simultaneous loss of load, however, calculating this probability introduces complexity equal to the explicit modelling effort.
- Confirmation of .1 LOLE: If a simple way to estimate correlation of need could be developed, and a consensus reached on the formulation, a process would still need to be developed to ensure that an LOLE of 0.100 Days / year is maintained.
  - In order to be able to confirm .100 Days/year is satisfied, a valid representation of the sale is required, introducing complexity equal to the explicit modelling effort.
- Forced Outage Rate: The NYTOs and GE disagree on the treatment of the exporting generator's forced outage rate in the simplified formulation.
- Concerns on scalability and stability.

Consolidated Edison 2018 Simplified LEF Proposal

Summary of the Proposal:

1) Increase the transfer capability on the binding interface into the capacity locality by the amount of deterministic counter flow produced by the sale
2) Shift perfect capacity from within the locality upstream of the constraint until the initial LOLE is restored

Consolidated Edison 2018 Simplified LEF Proposal

GE Review of the Proposal:

This approach was considered in the initial modelling efforts performed by GE, but was not used for two main reasons:

1) The perfect capacity assumption overstates the availability of increased transfer capability. Given that the transfer capability is increased independent of both the availability of the exporting generator and ISONE's need for that generator, it is possible that the capacity shifted out of the Locality would not be able to return to the Locality in an emergency.

2) The emergency assistance logic utilized by the NYSRC in the IRM database assumes support from neighboring regions is assigned proportional to each region's need. Removing capacity from a Locality increases that Locality's need, thus increasing the emergency assistance it will receive from neighboring regions. While it is expected that the emergency assistance from the region receiving the sale may increase if the capacity exported is not needed by that neighbor, it is not expected that NY would rely more heavily on other neighbors.

Consolidated Edison 2018 Simplified LEF Proposal

GE Review of the Proposal Continued:

In addition, consistent with the concerns regarding the TO's Simplified LEF Proposal there are several concerns with the Consolidated Edison Simplified LEF Proposal.

- Confirmation that .100 Days/year is satisfied.
- Overly simple representation of the sale.
- Concerns on scalability and stability, including that the methodology would not be applicable to a sale from a locality where the interface into that locality is not binding in the MARS model.

Locality Exchange Factor Stability

With all proposed probabilistic approaches, a concern remains about the stability of the calculated probabilistic LEF from year to year. The methodology must be applicable across all combinations of localities/external control areas and not vary significantly given the size of the sale and given that there may be month to month variations.

GE MARS utilizes several simplifications because it is intended to model system reliability where the impacts of such simplifications are small.

Measuring the impact of a relatively small sale, modeled in significantly more detail than the rest of the system, may result in volatility with minor changes in modelling or assumptions.