Installed Capacity Subcommittee

White Paper Scope for

External Control Area Modeling

Problem Statement

The New York State Reliability Council ("NYSRC") Installed Reserve Margin ("IRM") Study appropriately recognizes the benefit of New York's regionally interconnected electric grid. The connections among the New York Independent System Operator ("NYISO") and Hydro Quebec ("HQ"), Independent Electricity System Operator for Ontario ("IESO"), ISO New England ("ISO-NE"), and the PJM Interconnection ("PJM") provide mutual benefits and strengthen grid reliability. The IRM Study explicitly models these interconnections and allows the New York Control Area (NYCA) to receive "emergency assistance" from neighboring regions.

The NYSRC IRM Study also appropriately constrains the emergency assistance that New York can receive so as not to overstate the amount of assistance New York could receive from its neighbors. The primary constraint on emergency assistance is the NYSRC's process posturing each of our neighbors at their minimum reserve margin and just meeting the Loss of Load Expectation ("LOLE") criterion, effectively reducing as-found capacity levels in neighboring control areas. Additional constraints exist. These include the assumption that peak loads in New York and neighboring regions are coincident, and a maximum hourly emergency assistance limit of 3,500 MW, which is based in part on the availability of reserves in neighboring control areas.

While past studies have produced reasonable IRM results, stakeholders have observed recent volatility in the NYCA IRM vis-a-vis external control area modeling data and adjustment methods. This volatility contributed to the NYSRC's decision to fix (*i.e.*, hold unchanged from the prior year) the external area models for the 2019 IRM study and to revisit (and update) how emergency assistance levels were constrained for the 2020 IRM study.

This whitepaper aims to develop external control area representations that produce stable, transparent, and intuitive levels of emergency assistance from our neighbors for conducting the 2022 IRM Study.

Project Scope

Conceptually, the following options could simplify how the NYSRC models emergency assistance from external control areas:

1. Directly specifying the amount of emergency assistance we expect from neighboring regions (*e.g.*, ISO-NE for the NYCA)
2. Simplified external control area topology representations (*e.g.*, PJM)
3. Simplified external load and resource and load representations (*e.g.*, PJM)
4. Discontinuing the practice of modeling emergency assistance (*e.g.*, IESO)
    a. This option will not be explored further in this whitepaper

Organizations outside of the NYSRC and NYISO rely upon these concepts to varying degrees when establishing reserve margins for their respective electric grids, including within FERC jurisdictional markets (*e.g.*, PJM, ISO-NE).

This NYSRC whitepaper will evaluate the following, independent, models. Each of the models will be developed with input from the NYSRC Installed Capacity Subcommittee ("ICS"). The NYSRC ICS may then select models for more rigorous testing, including comparative IRM calculations using prior years' IRM technical study results. This study scope acknowledges and considers the impact of external control area models on downstream processes, such as the NYISO's determination of Installed Capacity Import Rights. The study will:

1. Model each neighboring external control area as a single bubble and with emergency assistance that is available consistent with historically available emergency assistance, and
2. Maintain current external area models but eliminate interconnections between external control areas to avoid capacity wheeling.

Project Deliverables

The NYSRC ICS will produce a whitepaper summarizing the problem statement, project scope, potential models, and justification for those potential models (including a brief summary of how New York's neighbors model emergency assistance). The whitepaper will also recommend whether the NYSRC Executive Committee ("EC") should adopt updated external control area representations and any applicable next steps. Project scoping, establishing the modeling assumptions, and initial modeling results are expected to be presented in 2020. Final results and NYSRC action on a final whitepaper are expected in 2021.

Project timing

- January 2020 (COMPLETED)
  - NYSRC ICS approves the whitepaper scope, as discussed herein
  - NYSRC EC provides feedback on scope and next steps
- February 2020
  - NYSRC ICS reviews proposed modeling assumptions
  - NYSRC EC provides feedback on progress-to-date and next steps
- March 2020
  - NYSRC ICS review results of initial modeling efforts
  - NYSRC EC provides feedback on progress-to-date and next steps
- April-December 2020
  - NYSRC ICS review results of subsequent modeling efforts
  - NYSRC ICS drafts whitepaper results and identifies next steps (*e.g.*, testing on additional IRM base cases, modifying the project scope)
- 2021
  - NYSRC EC reviews and acts on the final external area modeling whitepaper