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Independent System Operator

2020 RNA: Preliminary Results for Further Simplified Neighboring Areas Scenario

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Resource Planning

Joint ESPWG/TPAS

July 23, 2020

Background

- **Feb 27 ESPWG/TPAS [link]**
  - Discussed assumption matrix and previewed external simplification
- **March 16 ESPWG/TPAS/LFTF [link]**
  - Proposed changes to Base Case modeling
  - Provided initial details on scope for scenario on further simplifying the external regions representation
- **May 22 ESPWG/TPAS [link]**
  - Provided update on system topology
  - Described assumptions for the external region model
    - Including initial thoughts alternative capacity models

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Scenario Description

- **This scenario will evaluate the effect of:**
  - Removing all load and generation from external regions
  - Inserting capacity resources in each external region
    - The amount of capacity can be varied based upon feedback
  - Removing interfaces between external regions
    - This prevents modeled capacity from looping through other regions

NOTE: RNA scenarios are for information only

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Scenario Goals

- **If successful, this new model could be used for future resource adequacy analysis in MARS, where:**
  - Effects of assistance from external regions can be discreetly measured
    - Including measuring NY self-assistance through the external regions
  - The amount of available assistance capacity in each neighboring region becomes a study assumption
    - These values are not expected to be recalibrated from a more complex model

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Scenario Development

Case Preparation

- **The 2020 RNA 1st pass Base Case was used as the basis for this evaluation**
  - Results for this case were presented at June 19 ESPWG/TPAS [link]
- **Adjustments Performed:**
  - Remove all load and generation from each external region
  - Remove pool-to-pool ties between the external regions
  - Disable capacity resources modeling UDRs from being able to return to the host external region
    - NOTE: emergency assistance over these interfaces is still allowed

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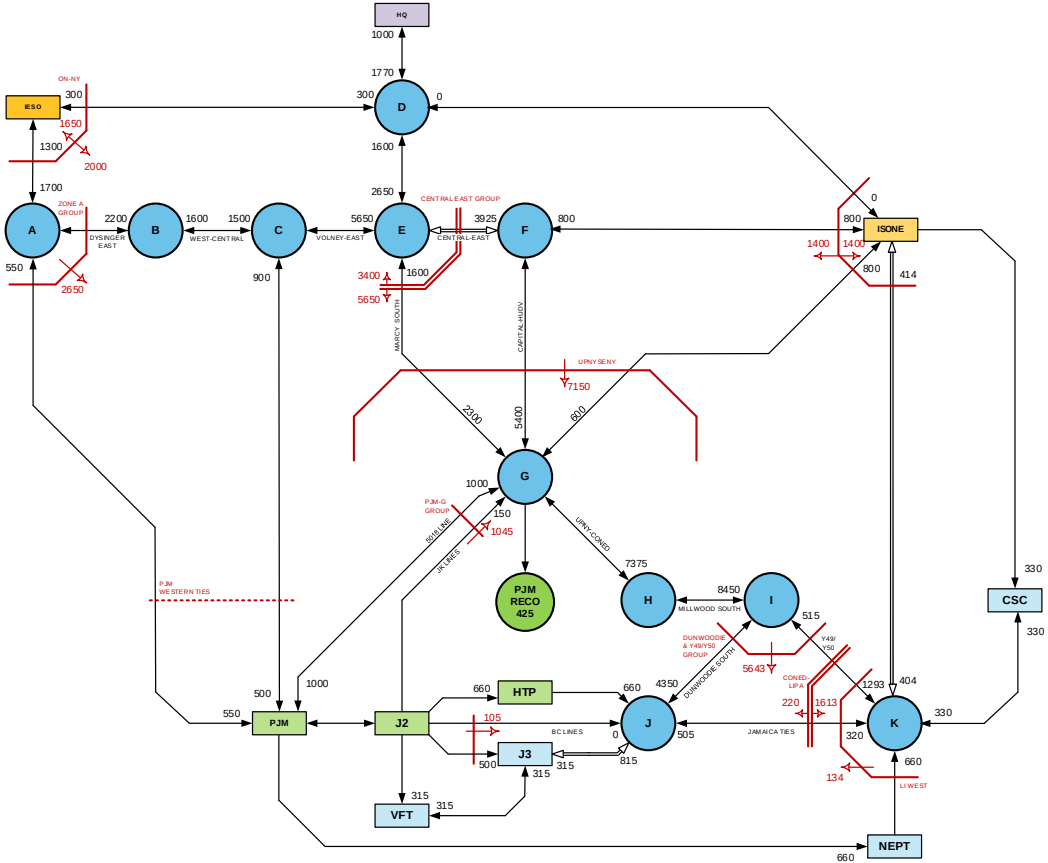
Draft Topology for 2020 RNA Further Simplified External Scenario: Study Years 2024-2030



Notes

1. PJM to NY emergency assistance (EA) assumption for calculating the PJM-NY Western ties, PJM-G Group, and ABC Line Group flow distribution limit: 1500MW

Legend

- Interface
- Unidirectional Interface
- Interface w/ Dynamic Ratings
- Interface Group
- Interface Group w/ Dynamic Ratings
- Monitoring Interface Group
- xx "Dummy Bubble" i.e. no load

NOTE: An interface is considered to not have a MW limitation if no number is specified

For Stakeholder Discussions Only

Testing Capacity Injections

- **A case was run for each external region testing different capacity adjustments to gauge system response**
  - Adjustments were performed until the non-UDR interfaces were at their maximum value, less capacity transactions
  - The capacity resources were modeled as always available for simplicity in this phase
- **After reviewing results, a series of coupled capacity adjustments were tested**
  - 300 MW in HQ
  - *x* MW in each other external region (e.g. 900 MW in IESO, ISONE, PJM)

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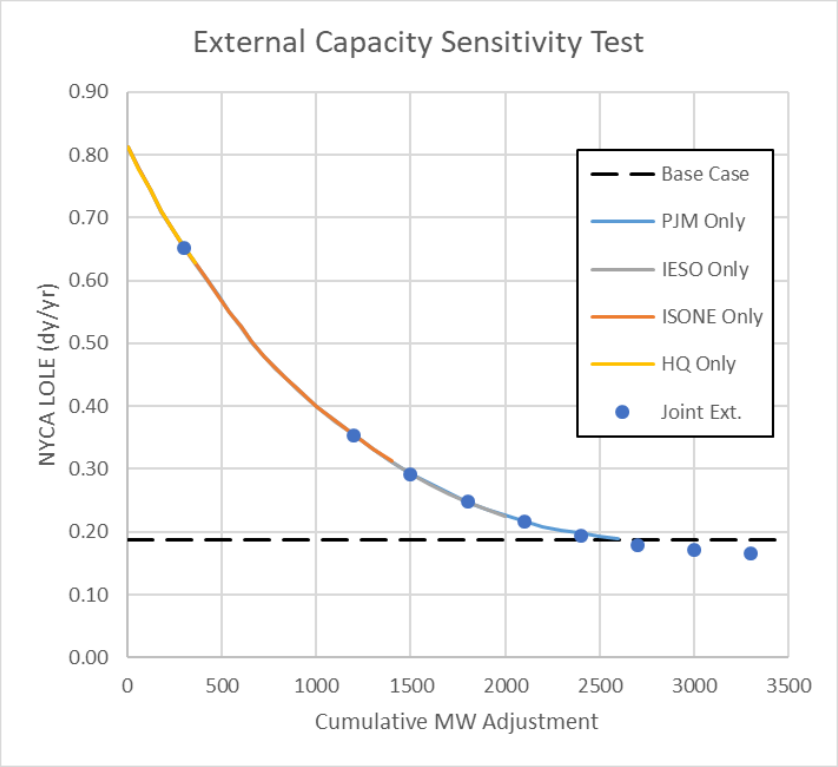
Testing Capacity Injections - Results



Observations

- The LOLE is largely independent of the source region, but,
- Multiple regions are needed due to import limits into NY

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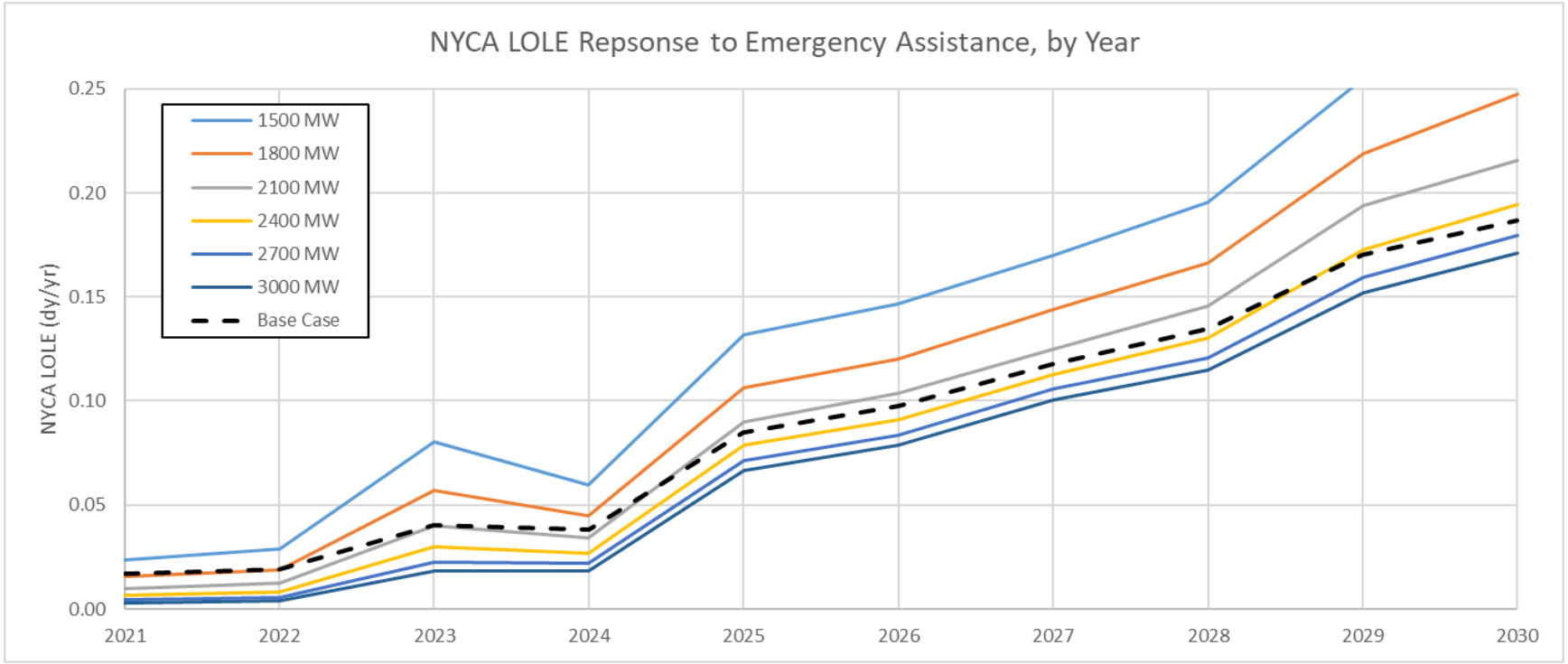
Preliminary Results

Preliminary Scenario Results



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Additional Notes

- **Model results are largely independent to which external region the capacity is sourced in, but is subject to:**
  - Internal NY interface limits
  - Interface limits on specific external ties
- **Model Runtime Performance is better with this model**
  - Approximately 20% faster when compared to the Base Case
  - Performance does vary as a function of LOLE; however, even the initial case with an LOLE of 0.812 was approximately 5% faster

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Next Steps

Next Steps

- **Continue to evaluate the capacity resource mix and evaluate alternative models for capacity resources**
  - See Appendix A of this presentation for more information
- **While this presentation focused on the overall results, many questions are still outstanding, such as:**
  - How is the distribution of LOLE effected? Does it converge faster?
  - How do different interface limits affect the observed results?
  - How do different load levels affect the observed results?

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Questions?

Our mission, in collaboration with our stakeholders, is to serve the public interest and provide benefit to consumers by:

- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policymakers, stakeholders and investors in the power system

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Appendix A: External Capacity Assumptions (From May 22 ESPWG)

External Capacity Assumptions

- This scenario removes the load and generation model used in the RNA Base Case analysis
- Instead, capacity resources are added to each external area, as described on subsequent slides
  - This capacity will be available as emergency assistance during hours where there is not enough New York Control Area generation to serve load

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Capacity Transactions

	Base Case	Scenario
Capacity Purchases	Model purchases from external regions, including ties between pools	No Change
Capacity Sales	Model sales to external regions, including flow on ties between pools	Model loss of capacity from sale, continue to allocate flow on ties between pools
Wheels	Model 300 MW wheel from HQ to ISONE through NY, including flow on ties between pools	Model impact of 300 MW wheel on ties between pools but not the capacity transaction
RECO Load	Model up to 425 MW flow from PJM through NY BPS	No Change

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External Capacity Models

- **The following types of models will be evaluated:**
  - Always Available Units
  - Units with a forced outage rate
  - Units subject to a probability distribution function
- **Additional methods to limit capacity during high load periods will be evaluated, such as:**
  - Limiting pool-to-pool transfers during peak load hours

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Guidelines for Setting Available Capacity

- **Pool-to-Pool Limits (based on 2024 topology):**
  - From IESO, 2000 maximum import from interface group
  - From HQ, 1770 maximum import from interface
  - From ISONE, 1400* maximum import from interface group
  - From PJM, 2600* maximum import from interfaces
- **Additionally, an overall emergency assistance import limit of 3500 MW continues to be applied**
  - This value excludes capacity purchases

* Excludes UDRs

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