Updates to System Studies

Incorporating Changes in Criteria and Assumptions into Ongoing Assessments

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Purpose

- To update stakeholders on necessary updates to Needs Assessments due to changes in criteria and assumptions
- To provide a plan for model review to expedite studies

Introduction

- New England has made substantial investments in the transmission system across all six states, providing for a reliable system that has also:
  - Increased the efficiency of the wholesale power markets which has allowed the most efficient and most economic generation to be utilized, resulting in lower electricity prices for the region
  - Significantly reduced air emissions
  - Significantly reduced congestion costs
  - Eliminated out-of-market must-run contracts
- Due to the evolution of national planning standards, standards for New England were reviewed and revised accordingly
- The growth of distributed resources and energy efficiency remains strong

Recent and Upcoming Changes in Long-term Planning Assumptions and Criteria

- Significant changes to criteria and assumptions used in long-term reliability assessments have occurred, are in progress, or will occur in 2017, and include
  - Changes to Planning Procedure 3
  - Incorporating probabilistic planning for selecting generator dispatch scenarios
  - Updated information on
    - Load forecast
    - Energy Efficiency forecast
    - Photovoltaics forecast
    - Changes in resources through the Forward Capacity Market (FCM)
  - Review of methodologies for NPCC Bulk Power System (BPS) classification testing
- Incorporation of the changes identified above on determining system needs may be substantial
  - Likely to change the system concerns that need to be addressed
  - Likely to change the year of need for remaining system concerns
- These changes have caused the ISO to revisit its timeline for updating certain transmission planning studies

Planning Procedure 3

- Changes to Planning Procedure 3 (PP-3), “Reliability Standards for the New England Area Pool Transmission Facilities”, were made effective on February 10, 2017
- The changes that reduced the types of contingencies required for second contingency testing have the greatest potential to impact the identification of system needs
  - For example, the following are no longer required to be tested as the second contingency:
    - Loss of two adjacent circuits on a multiple circuit tower
    - Permanent phase to ground fault with breaker failure
  - These second contingencies eliminated in PP-3 must still be tested as part of NPCC requirements, but solutions are only necessary when they impact NPCC-defined BPS facilities

Probabilistic Dispatch

- The ISO has been working with stakeholders at the PAC over the past year on a method to incorporate probabilistic dispatch methods into Needs Assessments
- The ISO expects that in late spring enough work will have been completed to begin incorporating probabilistically based local dispatches into the base system conditions that are used in Needs Assessments
- More work will be done over time to review other aspects of incorporating probabilistic methods into Needs Assessments, but there is no reason to delay its use in setting up local dispatches

Forward Capacity Market and Forecast Updates

- Forward Capacity Auction 11 was held in early February
- Retirement de-list bids are due near the end of March
- Updates to the load forecast, energy efficiency forecast, and the photovoltaic forecast are under way and will be completed in Q2

Bulk Power System Testing

- Bulk Power System classification testing is required per NPCC Document A-10, Classification of Bulk Power System Elements
  - Currently, New England has approximately half of the BPS classified substations within NPCC
- The ISO is reviewing its testing assumptions versus other Areas within NPCC for consistency
  - If the results of the review indicate a significant inconsistency between New England and the rest of NPCC, the ISO will update the necessary BPS classification testing using modified assumptions
- Depending on the outcome of this review, NPCC's Regional Reliability Reference Directory #1, Design and Operation of the Bulk Power System, could apply to a different list of facilities

Transition Plan

- It would be unproductive for studies to be updated at this point, knowing the upcoming changes in inputs and their potential impact on the identification of system needs
- Maine (ME), New Hampshire (NH) and Eastern Connecticut (ECT)
  - Solutions have not been finalized
  - Further development work on solutions will be paused until the needs and the time-sensitivity of those needs are re-established
- Southeastern Massachusetts/Rhode Island (SEMA-RI)
  - Solutions to the needs that arise with three years (time-sensitive) have been identified and those are moving forward
  - The study to establish remaining needs will be performed using updated assumptions with the solutions to the previously identified time-sensitive needs in place
  - The minimum load evaluation of SEMA/RI will continue after the needs have been adjusted to account for the revisions to PP-3

Expediting Study Updates

- Many stakeholders have expressed concerns with the amount of time required to complete a Need Assessment. The ISO has long shared this concern and has worked to identify areas for improved efficiency, including discussions with other planning areas
- One area that the ISO has identified for improvement is model development
  - The current process:
    - Is administered in series, rather than in parallel
    - Provides for a potentially inefficient stakeholder review process
    - Restarts model development for each study in New England
- To expedite the study updates, the ISO is proposing to modify its process for model development

Proposed Process to Expedite Model Creation

- The ISO proposes to create a set of generic cases and an associated study files for use in the studies to support identification of needs, including the Maine, New Hampshire, ECT and SEMA/RI studies
  - ISO would initially work with Transmission Owners (TOs) and other facility owners to update the system topology modeling data
    - No resulting competitive advantage, since dispatches and transfers used in specific studies would not be discussed, developed or available at this point in the process
    - Allows multiple areas of the system to be updated in parallel rather than waiting for the ISO to complete the entire model and then provide it to others for review
  - Once system topology is addressed, the generic cases and associated study files will be updated by ISO with the latest load, energy efficiency, photovoltaic and resource data and post them for stakeholder review
  - The ISO would then create the models and associated files specific to each study, including dispatch and transfers
- If successful, there may be opportunities for a set of generic cases and associated study files to be produced each year that would be utilized for any needs assessments over the subsequent year long period

Study Updates

- Once the system models are created, then detailed study scopes for each area will be posted and discussed with stakeholders
- Needs Assessments will be performed until the point where further information is necessary
  - Example – if the BPS classification testing effort is not complete, needs will not be published since they may be modified depending on the results of that effort
- Once Needs Assessments are completed, work on solutions to those identified needs will occur
  - Solution development for any time-sensitive needs is expected to be accelerated compared to past efforts
    - Significant work has already been done to develop solutions that address the previously identified time-sensitive needs
    - In cases where the needs are the same or less than what had previously been identified, previously developed solutions, or portions thereof, will be utilized

Questions