New England Bulk Power System List Updates

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Presentation Agenda

- Bulk Power System Testing Background
- Updates to BPS Determinations
- NPCC Process for BPS List Revisions

BULK POWER SYSTEM TESTING BACKGROUND

Bulk Power System Testing: Purpose

- The Northeast Power Coordinating Council (NPCC) requires the identification of buses that are part of the Bulk Power System (BPS)
- Some NPCC criteria apply only to BPS buses or BPS elements
  - Directory 1: Design and Operation of the BPS
  - Directory 4: System Protection Criteria
- BPS classifications are determined through a performance-based test, as described in NPCC Document A-10*

*https://www.npcc.org/Standards/Criteria/A-10-Revised%20Full%20Member%20Approved%20December%2001,%202009%20GJD.pdf

Bulk Power System Testing: System Conditions

- A comprehensive BPS assessment was performed for New England in 2019 for the 2021 study year
  - A report on this assessment has been posted to the PAC website*
  - The last comprehensive assessment was performed in 2016
  - System conditions studied assumed the latest available modeling data for New England and neighboring areas:
    - Includes all SEMA/RI upgrades, and the retirement of Pawtucket Power
    - Generation additions, retirements, or transmission changes planned after 2021 were not included
- In New England, BPS testing results are strongly influenced by interface transfers and system stresses
  - Twelve "standardized" cases have been used since 2015
  - Generally, interfaces in the area under stress are set to 100% of their unmargined limits; interfaces outside the area under stress are set to 90% of their margined limits
  - Further detail available in the 2019 Bulk Power System Classification Assessment, or in a 2015 PAC presentation**

* https://www.iso-ne.com/committees/planning/planning-advisory/
**https://www.iso-ne.com/static-assets/documents/2015/07/a6_new_england_bps_assessment_presentation.pptx

Bulk Power System Testing: The Test

- Apply a three-phase fault to the bus under test
- Assume no protection system action at the bus under test
  - The fault must be cleared by protection systems at remote buses, which typically results in slower fault clearing
- Both system stability and the possibility of cascading overloads/voltage collapse are examined
- In New England, any of the following results classify the bus under test as BPS
  - Uncontrolled system separation or widespread transient instability
  - Net loss of source greater than 1200 MW
  - Net loss of load greater than 1200 MW
  - Widespread undamped oscillations

UPDATES TO BPS DETERMINATIONS

Updates to BPS Determinations: Additions

- Five buses will be added to the BPS list
  - Reasons for these additions include planned transmission upgrades, changes to protection schemes, and a reduction in inertia in Nova Scotia and New Brunswick
  - Two of these buses were previously identified as BPS in the Proposed Plan Application (PPA) for the SEMA/RI transmission upgrades
- These five BPS buses are identified in the 2019 BPS assessment report

Updates to BPS Determinations: Removals

- Seven buses will be removed from the BPS list
  - Reasons for the removals include generation retirements, dynamic model changes, and other system changes since 2016
- Four buses were previously identified as newly BPS in the PPA study for the SEMA/RI transmission upgrades, but will not be added to the BPS list
  - At one bus, actual protection system settings at a remote bus are different than what was assumed in the PPA study
  - At the other three buses, a recently updated, more accurate model for the Barnstable SVC changes the test result from BPS to non-BPS
- All of these buses are identified in the 2019 BPS assessment report

NPCC PROCESS FOR BPS LIST CHANGES

NPCC Process for BPS List Changes

- An annual update to the BPS list is performed each December
  - The changes described in this presentation and the 2019 BPS assessment report will be reflected in the 2019 update
- BPS list changes for the current and near-future system become official after review by the NPCC Task Force on System Studies (TFSS) and a vote by the NPCC Reliability Coordinating Committee (RCC)
  - TFSS also keeps track of future BPS list changes identified that result from future system changes
- These changes will be presented to TFSS at their November 2019 meeting
- RCC vote on yearly BPS list update typically occurs in February

Questions