



Siting, Authorization of Construction and Extension of Networks

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Overview

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- Application of Federal Standards at the regional level for Bulk Electric System
- Transmission Certification Filings at the State level
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Context

- The US Electricity Grid is made up of three interconnections.
- The eastern interconnect, of which Maine and New England are a part is the largest.
 - It spans 39 different states, some of which have retained a vertical integration utility structure, others of which have implemented unbundling.
 - Responsibility for planning and coordination is split among 29 different "planning authorities," some of which may be vertically integrated utilities, others of which may be RTOs or balancing authorities.





Context

- With this many parties involved in planning such a highly integrated network, there is a need for uniform planning and reliability standards on the Bulk Electric System (BES).
- FERC has final authority over the standards.
- NERC is the entity that develops and enforces the standards.
- This presentation will focus on how our region, New England, applies the standards, and how the responsibility for the extension of networks is split between the state, utilities, and generators.





Federal Standards

- Mandatory Transmission Planning Standards (TPL) have been in continuous development by the North American Electric Reliability Corporation (NERC) since 2006. The most recent and current version were approved by the FERC in October 2013.
- The standards allow for some regional interpretation, but at a minimum they require the planning areas to conduct annual planning assessments;
 - Must examine the operation of the transmission system over a five year projected period of operation





Federal Standards

- Must consider peak and off-peak system operation during one of the five study years.
- Must include any known system additions or retirements (generation or transmission).
- Must study the system under a range of credible conditions
- Must examine whether, under conditions tested, the system performs acceptably compared to thermal, voltage, and stability standards when subjected to prescribed contingencies.
- If system performance falls below established standards, TSO must submit a "Corrective Action Plan" describing how requirements will be met.





Regional Application of Federal Reliability Standards

- ISO New England (ISO-NE), the Regional Transmission Operator (RTO) is responsible for oversight of transmission planning in New England.
- As an RTO, ISO-NE must have an open and transparent transmission planning process.
- The planning process has 4 stages;
 - A "Needs Assessment Scope of Work" is developed. It identifies the part of the New England grid that will be studied, the planning horizon over which the study will be conducted, and the assumptions under which the electric load flow modelling will be conducted. The scope of work is reviewed and commented on by stakeholders. Comments are addressed by the ISO





Regional Application of Federal Reliability Standards (ctd.)

- 2. Once the Scope of Work has been developed, the study is conducted and results "Needs Assessment", identifying system performance deficiencies under study conditions is published. Stakeholder comments are received and responded to by ISO and/or the utility/ TSO responsible for facilities
- 3. A "Transmission Solutions Study" is prepared. The study identifies one or more means of addressing any identified system performance deficiencies. Comments on the solutions study are received from stakeholders and addressed by the study team.





Regional Application of Federal Reliability Standards (ctd.)

- 4. The "Proposed Project Plan" is developed and submitted for approval "Proposed Project Approval." After the project has been reviewed and commented on by all, it is incorporated into the "Regional System Plan."
- After a transmission project has been incorporated into the regional system plan, the TSO whose territory is affected must pursue implementation of the solutions.
- It is at this stage that TSOs will file for project review and approval with their state regulatory authorities.





Transmission Certification Filings at the State level

- In Maine, TSOs must petition for a Certificate of Public Convenience and Necessity (CPCN) for transmission lines capable of operating at 69 kV or greater.
- TSOs must notify the Commission if they intend to construct a "minor" transmission facility or rebuild or relocate a line that will become or remain at 69 kV or above. The Commission may then require the TSO to submit a CPCN petition.
- Before filing a CPCN, TSOs must file an independent Non Transmission Alternatives (NTA) analysis





Transmission Certification Filings at the State level

- The CPCN process establishes filing requirements and standards for the review and issuance of approval for project development.
- MPUC Rule Chapter 330 establishes the filing requirements.
 - Section 6 of the rule describes what must be included in the filing; Maps of where facility will be located, a one line diagram of the facility, a description of the facility, the proposed corridor, the effects on public health, scenery and recreational and environmental values. Cost estimates must be provided as well as alternative routes. TSO must discuss alternatives (including EE, DR, and DG) to transmission line construction as part of Corrective Action Plan.





Transmission Certification Filings at the State level

- MPUC Rule Chapter 330 contains the CPCN filing requirements.
 - Section 7 of the rule describes how the analysis of the facility addresses the reliability of the transmission system as a whole and the capability of the system to serve existing and projected loads. The analysis must;
 - Clearly identify all standards and design criteria used to evaluate the effects on system reliability and capability.
 - Clearly identify all assumptions and data used in the analysis including load flow modelling and system topography.
 - The Commission has recently attempted to streamline review of facilities that are under our authority by developing standardized "safe harbor" planning assumptions.





Generator interconnections and facilities that do not require certification processes

- In Maine, generator location and interconnection to the grid both require approval by environmental regulators, but not the MPUC.
 - This may be different from other states that have siting councils.
 - Generator interconnection to the Bulk Electric System is reviewed in a System Impact Study (SIS) by the ISO-NE and the host TSO.
- Distribution network expansion is not directly reviewed by the Commission.





Conclusions

- The planning standards at the federal level will continue to evolve.
- There is a great deal of work being done in New England to standardize and improve the transmission planning process.
 - Energy efficiency and distributed generation program impacts have been included in the long term peak forecasts
 - A regional transmission planning process manual and technical manual are being standardized
- Maine is trying new approaches to examining Non Transmission Alternatives (NTAs) to transmission needs.