

Regional Planning Needs and Solutions



*IPSAC WebEx – Revision 1 corrects the date on
the bottom of slide 2*

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Purpose:

This presentation provides an update on ISO New England's (ISO-NE) regional system planning evaluations of the New England system

- Access to Planning Advisory Committee (PAC) materials containing Critical Energy Infrastructure Information (CEII) is required to access some of the ISO's materials on transmission planning. Those stakeholders with CEII access do not require any further action. If you do not have access to ISO-NE's PAC CEII information, please complete the CEII Request Process found at: <https://www.iso-ne.com/participate/support/request-ceii-access>
- Download and complete the CEII Access Request Form and then submit the completed Form into Ask ISO at: <https://askiso.force.com/s/>
- ***Note: If you have Reliability Committee (RC) CEII access, you still need to apply for PAC CEII access***
- Should you have further questions, kindly contact Participant Support and Solutions by email: AskISO@iso-ne.com or by phone: (413) 540-4220 or (833) 248-4220
- The ISO-NE planning process was previously discussed with the IPSAC and a summary appears in [Appendix B](#) for stakeholder reference
- The information provided in this presentation is as of November 17, 2022

Three Ongoing Tariff Efforts

- Three separate efforts involving changes to the ISO's [Tariff](#) are underway
 - Storage as a Transmission-Only Asset
 - The ISO held stakeholder discussions regarding proposed Tariff changes to allow storage to be considered as a transmission asset for the purposes of implementing solutions to Needs Assessments, Market Efficiency Transmission Upgrades, or Public Policy Transmission Studies
 - FERC filing is expected by the end of 2022



Three Ongoing Tariff Efforts, cont.

- Economic Study Process Improvements
 - The ISO has been discussing proposed Tariff changes to the Economic Study process to reflect stakeholder feedback from previous work and improve the process for future studies
 - The ISO expects to submit the changes to FERC in January 2023
- Extended-Term Transmission Planning*, Phase 2
 - The second phase of the effort will address the rules to enable a state or states to consider potential options for addressing the identified issues and cost allocation for associated transmission improvements
 - The ISO expects to begin discussions with stakeholders in early of 2023

*In some documents, this may be referred to as “Longer-Term Planning”

2050 Transmission Study

- The ISO finalized the [scope for the 2050 Transmission Study](#) on December 22, 2021
 - Study Objectives
 - Given the future load and resource scenarios described in the “New England States’ Vision for a Clean, Affordable, and Reliable 21st Century Regional Electric Grid,” determine the following for the years 2035, 2040 and 2050:
 - Transmission needs in order to serve load while satisfying NERC, NPCC, and ISO-NE reliability criteria
 - Transmission upgrade “roadmaps” to satisfy those needs considering both constructability and cost
- The study is restricted to thermal steady-state analysis
 - DC contingency analysis will be used to identify thermal constraints and develop transmission upgrades
 - This analysis is expected to identify potential major transmission line additions

2050 Transmission Study, cont.

- The ISO discussed the [preliminary N-1 and N-1-1 thermal results](#) at the March 16, 2022 PAC meeting
 - Some of the key takeaways:
 - The Winter Peak in 2050 is the most challenging snapshot
 - The overloads are driven primarily by high heating load
 - Heavy North-South transfers may require additional transmission between generation-rich Northern New England and generation-deficient Southern New England
- The results of additional [sensitivity analysis](#) were discussed at the April 28, 2022 PAC meeting
 - Sensitivities on 2050 Winter Peak to establish the relationship between load level and overloads
 - Analysis to determine if summer-only overloads can be solved via different solar resource distributions

2050 Transmission Study, cont.

- At the [July 20, 2022](#) PAC meeting, the ISO discussed:
 - Updated results reflecting modeling corrections
 - The updated results showed a relatively small decrease in the number of overloaded facilities, but there remain a significant number of system concerns
 - Approximate duration of overloads in response to stakeholder requests
 - Approximately 13 hours of exposure to loads above 51 GW, which is the load level selected to develop the base set of system upgrades
 - Results show that “capping” system load at lower load levels than those contemplated in the study can lead to a significant reduction in the miles of transmission overloads

Updating Area Study Plans*

- Western and Central MA
 - A Needs Assessment has been initiated to evaluate the adequacy of the protection system on the 69 kV D-4 line
 - This Needs Assessment was discussed at the [April 28, 2022 PAC meeting](#)
 - The existing protection systems on the D-4 line are insufficient to prevent local generators from losing synchronism for a remote fault
 - The final Solutions Study was discussed at the [June 15, 2022 PAC meeting](#)
 - Needs will be addressed through the addition of high speed protection
- Vermont
 - 2032 Needs Assessment anticipated to be discussed with PAC starting in December or early 2023

*Links to each of the Key Study Areas can be found in [Appendix A](#)



Updating Area Study Plans, cont.*

- Boston
 - At the [March 16, 2022 PAC meeting](#), the ISO discussed the possibility of changing the status of a circuit breaker in Boston to “normally open” to optimize the transfer capability of the existing system
 - At the [April 28, 2022 PAC meeting](#), the ISO stated that the proposal would continue moving forward and would result in a 300 MW increase to the N-1-1 Boston and Southeast New England import limits
 - This project has now been placed in service
 - 2032 Needs Assessment anticipated to be discussed with PAC starting in December or early 2023
- Geomagnetic Disturbances
 - The ISO discussed the scope of its first ever geomagnetic disturbance Needs Assessment at the [April 28, 2022 PAC meeting](#)
 - The results of the Needs Assessment were discussed at the [July 20, 2022 PAC meeting](#)
 - No needs were identified in the study

*Links to each of the Key Study Areas can be found in [Appendix A](#)

Economic Planning for the Clean Energy Transition

- To achieve a better understanding of the effect of industry trends on our economic planning analyses, the ISO is proposing a Economic Planning for the Clean Energy Transition (EPCET) 'pilot' study, similar to our TPCET [pilot study](#) for transmission planning
- The EPCET pilot study plans to achieve three main objectives
 - Perform a dry-run of the study framework proposed in the upcoming Tariff changes
 - Take a deep dive into all input assumptions in economic planning analyses, propose updates to any assumptions based on our current experience, and test the effect of those modeling changes
 - Gain experience in the features and capabilities of our new economic planning software
- The scope will start with a set of three reference scenarios and then model stakeholder sensitivity requests
 - **Benchmark Scenario:** Model previous year (2021) to test fidelity of models against historical performance
 - **Market Efficiency Needs Scenario:** Model future year (i.e., 10-year planning horizon) based on our existing planning criteria (CELT forecasts [EE, PV, EV, HP], FCM new/retired resources, state contracted resources, etc.)
 - **Policy Scenario:** Model future year (i.e., year of last policy target, 2050) based on full effect of all New England state climate policies (i.e., electric sector and economy-wide de-carbonization)
- The ISO initiated the study in April 2022 and we expect to work on this pilot study over the next 18-24 months

Market Efficiency Transmission Upgrades

- There have been no changes since the May 2022 IPSAC meeting



Public Policy Based Transmission

- Public Policy Transmission Upgrades (PPTUs) are upgrades designed primarily to meet local (e.g., municipal and county), state, and federal Public Policy Requirements identified as driving transmission needs relating to the New England Transmission System
- The Public Policy process was initiated on [January 14, 2020](#)
- The ISO discussed the process with the PAC on [January 23, 2020](#)
- Two submittals were made
 - [Combined document containing both submittals](#)
 - [Combined templates for both submittals](#)
- New England States Committee on Electricity (NESCOE) has the option to provide a communication regarding those submittals by May 1, 2020
 - On May 1, NESCOE provided their [Submission Regarding Transmission Needs Driven by State and Federal Public Policy Requirements](#)
 - No Public Policy Requirements were identified
- The ISO completed the process with a determination that a Public Policy Transmission Study will not be performed at the [June 17, 2020](#) PAC meeting
- The next cycle for the Public Policy process will begin in January 2023

Regional System Plan Project List and Asset Condition List Update

- June 2022
 - Updates to the Regional System Plan (RSP) Project List
 - One cost increase greater than \$5M
 - \$14.4M increase for the Sudbury-Hudson 115 kV line
 - One new project
 - K Street normally open breaker
 - Three projects were placed in service
 - No projects were canceled
 - Updates to the Asset Condition List
 - Two new projects added
 - Seven projects placed in service
 - Final RSP Project List and Asset Condition List update
 - [Final PAC presentation](#)
 - [Final RSP Project List](#)
 - [Final Asset Condition List](#)

Regional System Plan Project List and Asset Condition List Update

- October 2022
 - Updates to the Regional System Plan (RSP) Project List
 - There were two changes in cost estimates greater than \$5M
 - Increase of \$23.6M related to reconductoring of the L190 line
 - Increase of \$11.3M related to upgrading the 400-1 line
 - One new projects
 - Project added to provide clarity around the Eastern CT 2029 Solutions work at the Buddington Substation, \$5.5M
 - Four projects were placed in service
 - No projects were canceled
 - Updates to the Asset Condition List
 - 20 new projects added
 - 18 projects placed in service
 - Final RSP Project List and Asset Condition List update
 - [Final PAC presentation](#)
 - [Final RSP Project List](#)
 - [Final Asset Condition List](#)
- Next update is scheduled to be provided to PAC in March 2023



APPENDIX A

Links to Key Study Areas

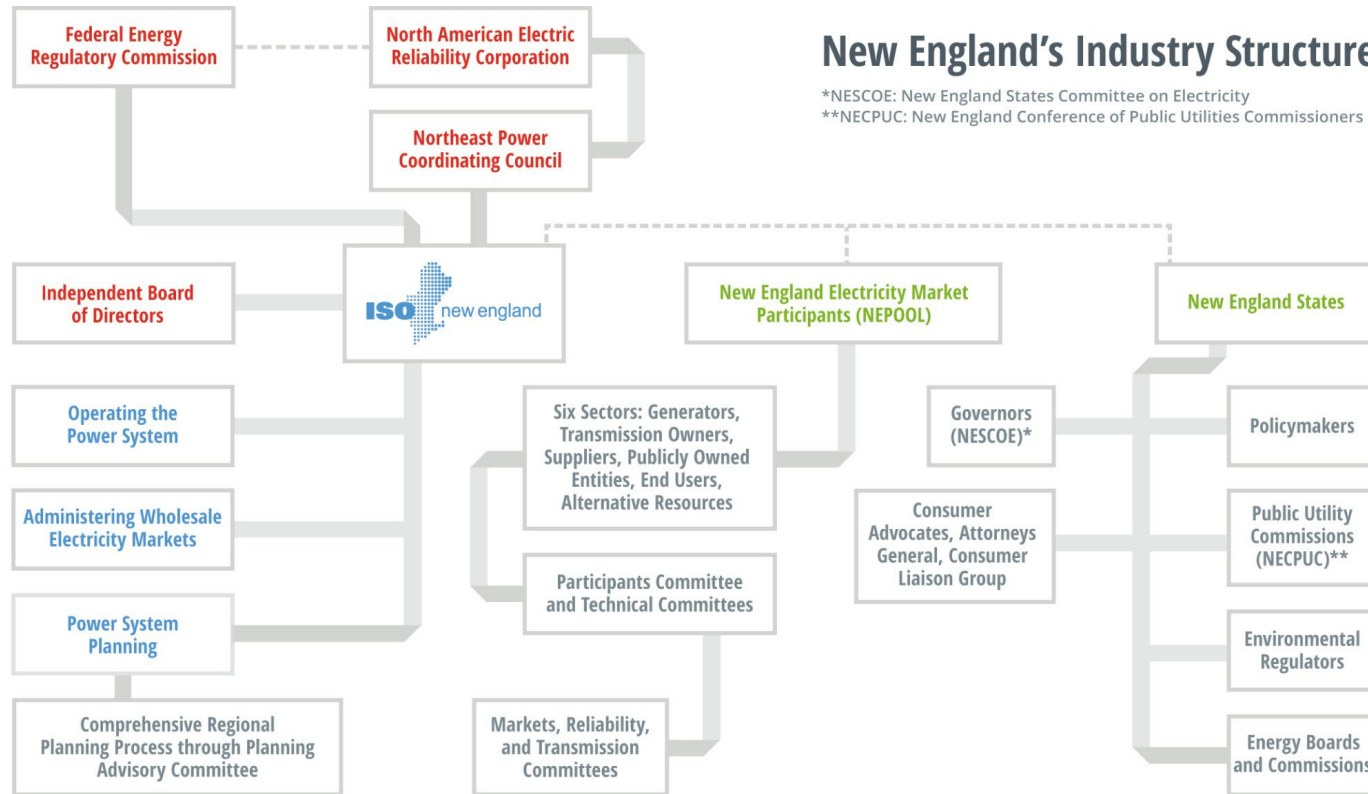
- [Eastern Connecticut](#)
- [Greater Boston](#)
- [Greater Hartford](#)
- [Maine](#)
- [New England East-West Solution](#)
- [New England-Wide Geomagnetic Disturbance](#)
- [New Hampshire and Vermont](#)
- [Southeastern Massachusetts and Rhode Island](#)
- [Southwest Connecticut](#)
- [Western and Central Massachusetts](#)

Links to Other Areas of Focus

- [Longer-Term Transmission Studies](#)
 - This where materials related to the 2050 Transmission Study can be found

APPENDIX B

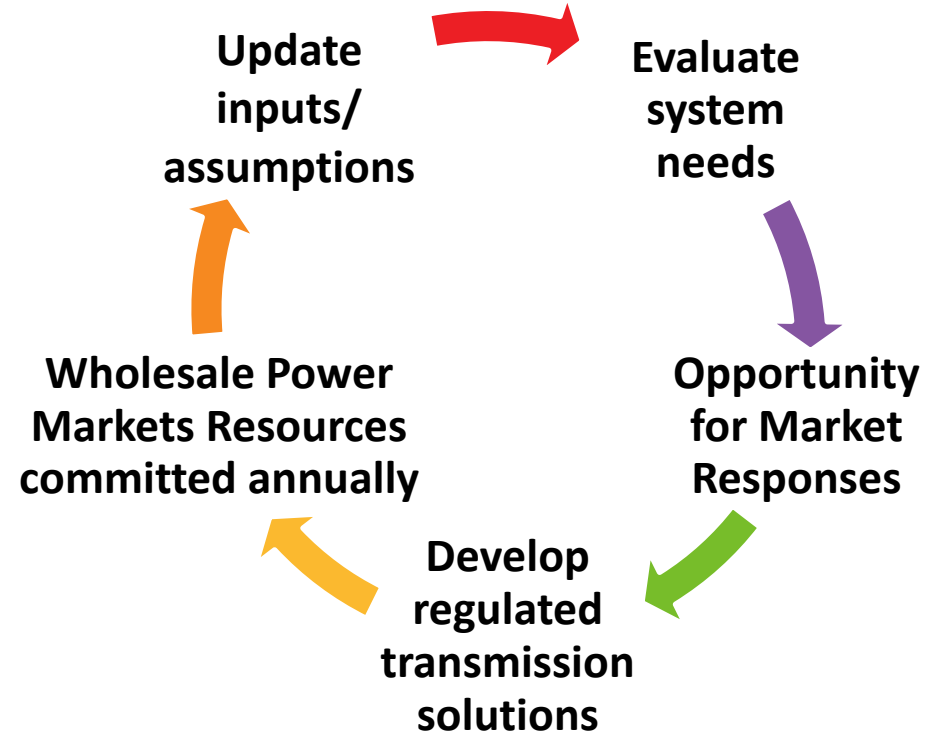
Numerous Entities Including an Independent Board Provide Oversight of and Input on ISO's Responsibilities



New England's System Planning Process

Continuous, Adaptive and Successful

- Open and transparent 10-year planning horizon reflects:
 - Update inputs/assumptions
 - Evaluate system needs
 - Market responses
 - Timing of future resource needs
- Provide information to marketplace and stakeholders
- Coordinate with neighboring areas



Reliability Planning Process

- Needs Assessments evaluate the adequacy of the transmission system over a 10-year planning horizon
 - Incorporate resources (generation and demand response) that have a firm commitment to perform, typically receiving an obligation through the Forward Capacity Market
 - Incorporate energy efficiency and photovoltaic forecasts
- ISO New England utilizes a continuous planning process
 - No fixed schedule
 - Allows for the incorporation of assumption changes “on-the-fly” rather than waiting for the next cycle
 - Ensures that solutions are not under or over-built
- Solutions Development
 - Identification of needs to be addressed through the Solutions Study process or the Open Competitive Process (as per Attachment K)
 - If the requirements of Attachment K Section 4.1(j), including a year of need 3 years or less from the completion of the needs assessment, have been met then the Solutions Study process is used for solution development
 - If the year of need is greater than 3 years from the completion of the Needs Assessment, the competitive process is used for solution development

Public Policy Process

- At least every 3 years, the ISO issues a Public Notice indicating input on state and federal Public Policy Requirements (PPR) can be submitted to the New England States Committee on Electricity (NESCOE) and local (e.g. municipal and county) PPRs can be submitted to the ISO
- NESCOE may provide a communication to the ISO regarding Public Policy Requirements
- Specification of the federal, state and local PPRs, if any, that will be addressed in a Public Policy Transmission Study (PPTS). Federal and state PPRs will be specified by NESCOE and, if required, by ISO. Local PPRs will be specified by ISO
- ISO performance of an initial phase of the PPTS and, if determined by ISO, a follow-on phase of the PPTS with opportunity for PAC to comment
- If a Public Policy Transmission Upgrade will be pursued, the solution will be developed through the Open Competitive Process

Helpful References

- The Transmission Planning Process Guide outlines the steps in the regional transmission planning process (<https://www.iso-ne.com/system-planning/transmission-planning/transmission-planning-guides/>)
- The Transmission Planning Technical Guide documents several of the assumptions used in transmission planning studies ([https://www.iso-ne.com/system-planning/transmission-planning-guides/](https://www.iso-ne.com/system-planning/transmission-planning/transmission-planning-guides/))
- Attachment K to the ISO New England Open Access Transmission Tariff (OATT) describes the Regional System Planning Process (www.iso-ne.com/oatt)