

Regional Planning Needs and Solutions



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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-NE'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 April 18, 2024

Three Ongoing Tariff Efforts

- Three separate efforts involving changes to ISO-NE's [Tariff](#) are underway
 - Storage as a Transmission-Only Asset
 - ISO-NE 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](#) was made on December 29, 2022; [FERC accepted](#) the Tariff changes on October 19, 2023
 - ISO-NE must make an additional FERC filing at least 30 days before the effective date
 - ISO-NE has not determined a target effective date at this time

Three Ongoing Tariff Efforts, cont.

- 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
 - ISO-NE began discussions with stakeholders in October 2023
 - FERC filing is targeted for May 2024
- Economic Study Process Improvements, Phase 2
 - The second phase of the effort is focused on further detailing Market Efficiency Needs Scenario that can potentially trigger an RFP for transmission construction
 - ISO-NE will begin discussions with stakeholders in November 2024

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

Interregional Study Request

- Today, New England must respect a 1,200 MW loss of source limit to ensure reliability in both PJM and NYISO's areas
- This 1,200 MW limit has the potential to constrain system design in New England, especially in the context of offshore wind resources
- On [March 27, 2023](#), ISO-NE sent a request for an interregional study to JIPC
- ISO-NE requested:
 - Evaluation of the loss of source limit in today's system to see if the limit can be raised above 1,200
 - If the limit on today's system remains below 2,000 MW, identification of upgrades necessary to support a 2,000 MW loss of source limit
- On [August 23, 2023](#) the JIPC agreed to participate in the study
- ISO-NE selected a consultant to perform the analysis
 - Work started to develop study models and the scope
- ISO-NE, NYISO, and PJM received a letter from multiple states requesting the interregional study be completed by September 2024
 - A response was provided that September is not achievable

2050 Transmission Study

- ISO-NE began the 2050 Transmission Study by posting the [scope for the 2050 Transmission Study](#) on December 22, 2021
 - Study objective: 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 was 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.

- Several presentations were made at PAC meetings since the scope was posted and those presentations can be found at [Longer-Term Transmission Studies](#)
- The final presentation to the PAC occurred on [October 18, 2023](#)
 - Summarized all presentations to date
 - Presented cost estimates to address steady-state, thermal overloads
 - The estimated cost to serve the 57 GW load is approximately \$22-26 billion
 - The following costs were not considered:
 - Costs associated with resolving non-PTF overloads that were not associated with PTF overloads
 - Costs for equipment required to solve voltage, short-circuit, transient stability, or electromagnetic transient (EMT) concerns
 - Costs to interconnect any of the new resources assumed in this study
 - Future inflation was not applied to the cost estimates provided in this study; these cost estimates represent U.S. dollars in 2023
 - Therefore, the total cost to serve the 57 GW load will be significantly higher
 - The final report was posted on [February 14, 2024](#)

2050 Transmission Study, cont.

- Based on stakeholder feedback, ISO-NE planned to perform additional analysis to provide information related to:
 - The impact of moving two future offshore wind project POIs from ME to MA
 - Potential landing points for HVDC or offshore wind
 - The details were discussed at the March PAC meeting on [March 20, 2024](#)
- An updated presentation to discuss the results of moving two future offshore wind project POIs from ME to MA was discussed at the PAC on [April 18, 2024](#)
 - The conclusions of the additional analysis are:
 - Moving some wind POIs out of northern New England and closer to load in southern New England can lead to transmission cost savings
 - Even with the wind relocation, upgrades are still needed on the North-South and Maine-New Hampshire interfaces
 - Location of offshore wind POIs are important, and results can vary significantly based on these locational choices
 - The offshore wind POI screening analysis will be one important step towards refining assumptions around offshore wind POIs
 - Optimizing these POIs across states can have significant benefits
 - The estimated cost to serve the 57 GW load is reduced from approximately \$22-26 billion to approximately \$19-22 billion taking into account the relocation of offshore wind

Transmission Planning Guide Updates

- ISO-NE issued an update to the [Transmission Planning Technical Guide](#) (TPTG), dated March 21, 2024
 - Update load power factor assumptions
 - Update Steady State Power Flow Solution Settings
 - Update the treatment of Local System Plan (LSP) Projects in Needs Assessment, Solutions Study, competitive transmission Request for Proposal (RFP) Study, and Area Review Analysis
 - Updates presented at the PAC meeting on [February 28, 2024](#)

Updating Area Study Plans*

- New England-wide short circuit assessment
 - Needs Assessment
 - On [July 25, 2023](#) ISO-NE presented the results of the Needs Assessment, which were later revised
 - 13 circuit breakers were found to be over their interrupting capability
 - 3 additional circuit breakers were found to be above 97.5% of their interrupting capability, but are not being addressed
 - Revision 1 of the Needs Assessment was published on [October 6, 2023](#)
 - A Needs Assessment Addendum was published on [March 18, 2024](#)
 - Solutions Studies
 - Four Solutions Studies were initiated to address the overdutied circuit breakers
 - Western and Central Massachusetts (WCMA), Rhode Island, Maine, and Southeastern MA (SEMA)
 - [WCMA](#) and [Rhode Island](#) solutions presentations were posted on November 8, 2023 for discussion at the November PAC meeting
 - The WCMA 2028 Short Circuit Solutions Study report was published on [December 20, 2023](#)
 - The Rhode Island 2028 Short Circuit Solutions Study report was published on [November 16, 2023](#)
 - [SEMA](#) solutions presentation was posted on February 22, 2024 for discussion at the February PAC meeting
 - The SEMA 2028 Short Circuit Solutions Study report was published on [April 24, 2024](#)
 - [Maine](#) solutions presentation was posted on March 18, 2024 for discussion at the March PAC meeting and took into account the results of the Needs Assessment Addendum
 - The draft Maine 2028 Short Circuit Solutions Study report was published on [March 18, 2024](#)

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

Updating Area Study Plans*, cont.

- Vermont
 - 2032** Needs Assessment scope of work presentation was discussed with the PAC on [December 13, 2022](#)
 - Considers new methodology for dispatch creation
 - Includes additional peak and minimum load scenarios to capture renewable resource and storage assumptions
 - Includes steady state, stability, and short circuit analysis
 - Based on stakeholder feedback, ISO-NE added a winter evening peak condition to the scope
 - Discussed with the PAC on [February 15, 2023](#)
 - The written scope was finalized on [July 13, 2023](#)
 - At the [November 15, 2023](#) PAC meeting, ISO-NE proposed that the needs related to tripping of legacy DER in the Vermont study area be moved into a separate New-England-wide minimum load Needs Assessment
 - Needs Assessment presentation was discussed with the PAC on [December 20, 2023](#)
 - Discussion included the deferment of an RFP to allow numerous other variables impacting the results to stabilize
 - Final Needs Assessment is expected to be issued in late May 2024

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

**Since the December discussion, the study year is being changed to 2033

Updating Area Study Plans*, cont.

- Boston
 - 2032** Needs Assessment scope of work presentation was discussed with the PAC on [December 13, 2022](#)
 - Considers new methodology for dispatch creation
 - Includes additional peak and minimum load scenarios to capture renewable resource and storage assumptions
 - Includes steady state, stability, and short circuit analysis
 - The need for a winter evening peak condition was reviewed and found to be less severe than the summer peak conditions already considered
 - The final written scope was published on [August 23, 2023](#)
 - At the [November 15, 2023](#) PAC meeting, ISO-NE proposed that the needs related to tripping of legacy DER in the Boston study area be moved into a separate New-England-wide minimum load Needs Assessment
 - Needs Assessment presentation was discussed with the PAC on [February 28, 2024](#) where both time-sensitive and non-time-sensitive needs were identified
 - A update to the Needs Assessment to correct modeling issues was discussed with the PAC on [April 18, 2024](#)
 - Draft Needs Assessment was published on [April 12, 2024](#)

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

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Economic Planning for the Clean Energy Transition

- To achieve a better understanding of the effect of industry trends on our economic planning analyses, ISO-NE is currently performing the Economic Planning for the Clean Energy Transition (EPCET) ‘pilot’ study, similar to our TPCET [pilot study](#) for transmission planning
- The EPCET pilot study has 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 includes a set of three reference scenarios and also models 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)
 - These scenarios use a capacity expansion tool that models the buildout of the system from today to 2050 under different assumptions
- ISO-NE initiated the study in April 2022 and expects to finish the work by Q3 2024

Market Efficiency Transmission Upgrades

- There have been no changes since the December 2023 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 13, 2023](#)
- ISO-NE discussed the process with the PAC on [January 19, 2023](#)
- 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 April 28, NESCOE provided their [Submission Regarding Transmission Needs Driven by State and Federal Public Policy Requirements](#)
 - No Public Policy Requirements were identified
- Stakeholders had until May 16, 2023, to request that ISO-NE reconsider NESCOE's position regarding federal public policy requirements
- At the [June 15, 2023](#) PAC meeting, ISO-NE presented its finding that a Public Policy Transmission Study would not be initiated for this cycle

Regional System Plan Project List and Asset Condition List Update – March 2023

- Updates to the Regional System Plan (RSP) Project List
 - Cost increases greater than \$5M
 - None
 - Three new projects
 - (MA) One project - WCMA 2028 Short Circuit Solutions
 - (ME) One project – Upper ME (UME) 2029 Solutions
 - (RI) One project - RI 2028 Short Circuit Solutions
 - Four projects were placed in service
 - (NH) One project - NH 2029 Solutions
 - (CT) Total of three projects
 - Eastern CT 2029
 - One project was canceled
 - (ME) One project – Upper ME (UME) 2029 Solutions
- Updates to the Asset Condition List
 - 11 new projects added
 - 14 projects placed in service
- Final RSP Project List and Asset Condition List update
 - [Final PAC presentation](#)
 - [Final RSP Project List](#)
 - [Final Asset Condition List](#)

APPENDIX A

Links to Key Study Areas

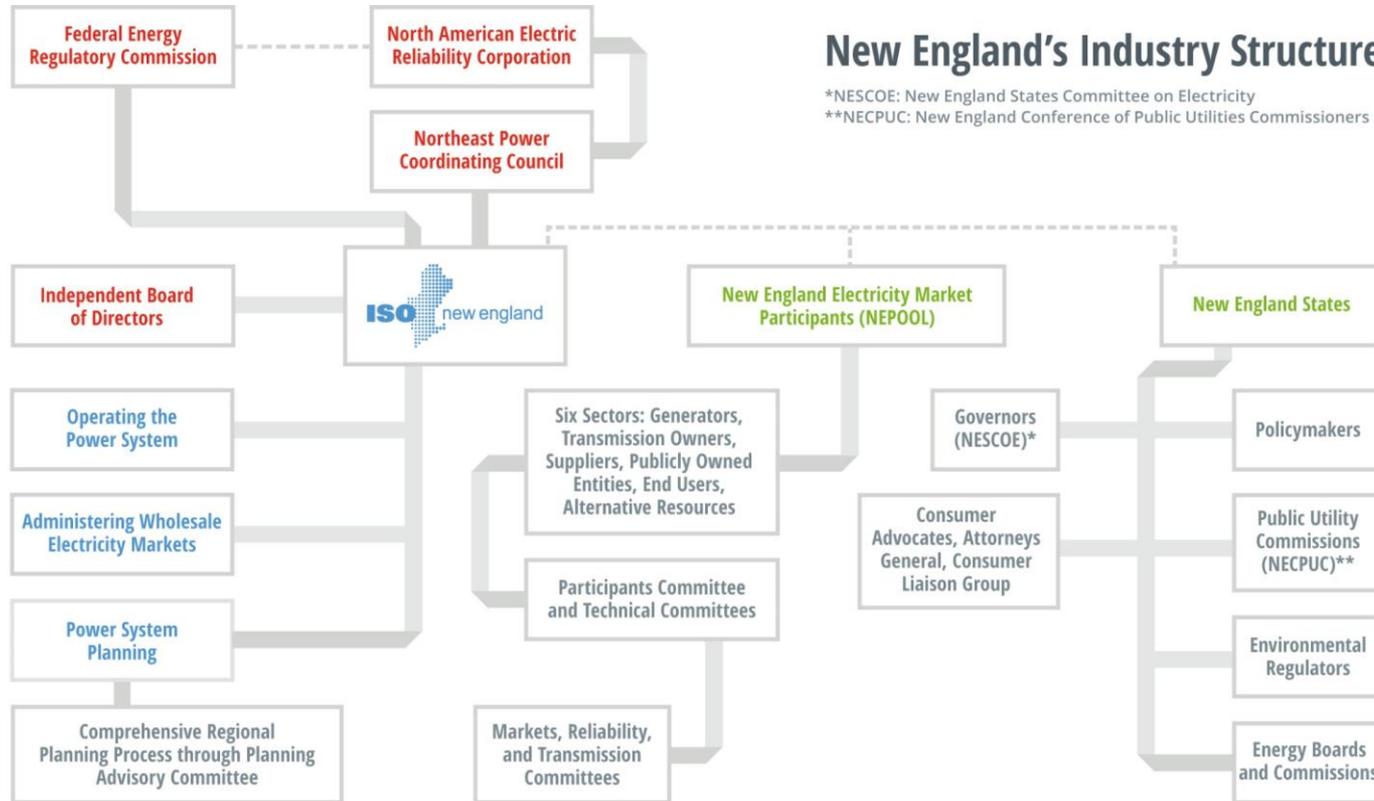
Links to Key Study Areas

- [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](#)

APPENDIX B

Overview of ISO-NE Planning Process

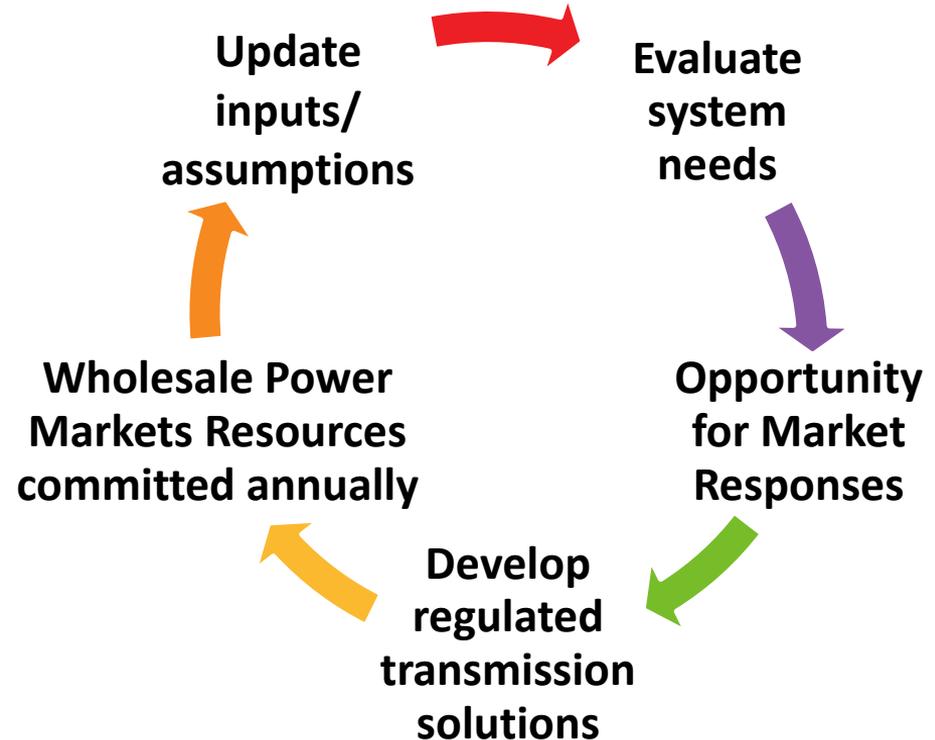
Numerous Entities Including an Independent Board Provide Oversight of and Input on ISO-NE's Responsibilities



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-NE 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, ISO-NE 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 ISO-NE
- NESCOE may provide a communication to ISO-NE 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-NE. Local PPRs will be specified by ISO-NE
- ISO-NE performance of an initial phase of the PPTS and, if determined by ISO-NE, a follow-on phase of the PPTS with opportunity for the 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)