

# Regional Planning Needs and Solutions

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*IPSAC WebEx*



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# Purpose:

## *This presentation provides an update on ISO New England's (ISO-NE) transmission 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](mailto: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 22, 2021

# Four Separate Efforts

- There are currently four separate efforts involving changes to [Attachment K](#), Regional System Planning Process, to the ISO's Open Access Transmission Tariff that are or will soon be under way

Order 1000  
Lessons  
Learned

Attachment K  
Resources

Extended-Term  
Transmission  
Planning\*

Storage as  
Transmission

\*Tariff language uses the term "Longer-Term Transmission Studies"

# Four Separate Efforts, cont.

## 1. Order 1000 Lessons Learned

- The ISO is proposing revisions to the Attachment K competitive transmission development process. These changes represent improvements to the competitive transmission development process that were identified as a result of the Boston 2028 Request for Proposal (RFP), and are the result of stakeholder discussions that occurred at the Planning Advisory Committee on:
  - [October 21, 2020](#), [December 16, 2020](#), [February 17, 2021](#), [April 14, 2021](#), and [May 3, 2021](#) (summary memo)
- The ISO held discussions on the associated Tariff changes at the [July 14, 2021](#), [August 24, 2021](#), and [September 28, 2021](#) Transmission Committee meetings
- The Tariff changes were also discussed at the Reliability Committee on [September 21, 2021](#) and [October 19, 2021](#)
- PC discussion and supporting vote occurred on [November 3, 2021](#), with an anticipated FERC filing in December

# Four Separate Efforts, cont.

## 2. Attachment K Resources

- The ISO is proposing revisions to Attachment K that clarify and expand the pool of resources that can be relied upon in Needs Assessments and Public Policy Transmission Studies. Additional changes will be made to provide clarification regarding current planning processes, along with minor cleanup language changes
- Discussions at the TC occurred on [July 14, 2021](#), [August 24, 2021](#), and [September 28, 2021](#); PC supporting vote occurred on [October 7, 2021](#)
- FERC filing was made on [November 12, 2021](#)

# Four Separate Efforts, cont.

## 3. Extended-Term Transmission Planning\*

- The ISO is proposing changes to attachment K that will create a process for the ISO to perform extended-term planning analysis on the system, such as evaluating the year 2050. These changes are responsive to Section 2 of the [New England States' Vision Statement](#)
  - Multi-phased effort, with the first phase establishing the rules to enable the New England states to request that the ISO perform scenario-based transmission planning studies, on a routine basis
- Discussions on the first phase occurred at the [September 28, 2021](#), [October 26, 2021](#), and [November 19, 2021](#) TC meetings. PC vote is anticipated on [December 2, 2021](#) with a FERC filing by the end of the year
- 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 second phase will begin in early 2022

\*Tariff language uses the term “Longer-Term Transmission Studies”

# Four Separate Efforts, cont.

## 4. Storage as Transmission

- The ISO will be discussing proposed Tariff changes to allow storage to be considered as a transmission asset for the purposes of implementing solutions to Needs Assessments or Public Policy Transmission Studies
- The ISO expects to initiate discussions at the TC in the first quarter of 2022

# 2050 Transmission Study

- The ISO discussed the [proposed scope for the 2050 Transmission Study](#) at the November 17, 2021 PAC meeting
- 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 analysis will be 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





# Transmission Planning for the Clean Energy Transition (TPCET)

- The ISO began discussions at the [September 24, 2020](#) PAC regarding the need to improve assumptions used in Needs Assessments and solution development. The presentation included proposals for:
  - Load levels
  - Solar output
  - On-shore and off-shore wind output
  - The need for improved locational information for Distributed Energy Resources
- At the [November 19, 2020](#) PAC meeting, the ISO proposed a pilot study using the new assumptions to quantify tradeoffs between the assumptions and high level costs of addressing system concerns
- The TPCET Pilot Study was discussed at the following PAC meetings:
  - [December 16, 2020](#)
  - [January 21, 2021](#)
  - [March 17, 2021](#)\*
  - [June 16, 2021](#)
  - [July 22, 2021](#)
- At the [August 18, 2021](#) PAC meeting, the ISO discussed its proposed study assumptions and these were documented in the [Transmission Planning Technical Guide](#) on September 30, 2021

\*While not part of TPCET, this presentation has been noted here as it will impact study assumptions going forward.

# Updating Area Study Plans\*†

- Maine
  - The Maine study area has been split into two areas: Upper and Lower Maine
    - Allows for the handling of the proposed HVDC facility, the New England Clean Energy Connect (NECEC), which will have an impact on Lower Maine
  - Upper Maine
    - The Needs Assessment was completed on March 23, 2020
    - The final Upper Maine 2029 Solutions Study was posted on June 8, 2021
      - Based on stakeholder support, the proposed STATCOMs were replaced with synchronous condensers
  - Lower Maine
    - The results of the Needs Assessment were discussed with the PAC in March 2021; no needs were observed
    - The final Needs Assessment was published on May 21, 2021
    - A draft addendum was published on November 3, 2021 that corrected the power factor assumed in the minimum load cases; addendum analysis also observed no needs
- New Hampshire
  - The Needs Assessment was completed on December 4, 2019
  - The Western and Central New Hampshire (NH) 2029 Preliminary Preferred Solution was discussed with the PAC on February 17, 2021
  - The Southern NH 2029 Preliminary Preferred Solution was discussed with the PAC on April 14, 2021
  - The final New Hampshire 2029 Solutions Study was published on May 27, 2021

\*Links to the materials associated with the studies described on this slide can be found in [Appendix A](#).

†Area study plans that have not changed since the June 2021 IPSAC meeting can be found in [Appendix C](#).

# Updating Area Study Plans, cont.\*†

- Western and Central MA
  - The final Needs Assessment was posted on May 5, 2020
  - Very few issues were identified
  - Solution development had been placed on hold
    - Significant asset condition issues in the area need to be addressed
    - Significant proposed resource development in the area of identified needs may yield system upgrades and reconfigurations
  - Solutions Study scope of work was discussed with the PAC on March 17, 2021
  - On September 22, 2021, the ISO discussed updates to the study
    - With asset condition projects reflected, there are no longer identified needs and there is no need to conduct a Solutions Study
- Southeastern MA/RI
  - The scope of work for a minimum load needs assessment was discussed at the April 14, 2021 PAC meeting
    - The final Needs Assessment was posted on November 15, 2021
      - No needs were identified
  - A Needs Assessment Addendum was posted on October 19, 2021
    - Corrected a modeling area in the Kingston, MA area
    - While new needs were identified, they are addressed through previously developed solutions

\*Links to the materials associated with the studies described on this slide can be found in [Appendix A](#).

†Area study plans that have not changed since the June 2021 IPSAC meeting can be found in [Appendix C](#).

# Market Efficiency Transmission Upgrades

- There have been no changes since the June 2021 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

# Regional System Plan Project List and Asset Condition List Update

- June 2021
  - Updates to the Regional System Plan (RSP) Project List
    - Cost reduction of \$14.6M on new Seafood Way 115 kV Substation (MA)
    - Cost reduction of \$12.0M on Seacoast New Hampshire Solution (NH)
    - Cost reduction of \$8.9M Eastern CT 2029 (RI)
    - No new projects added
    - One project was placed in service
    - One small project was canceled
  - Updates to the Asset Condition List
    - Eight new projects added
    - Thirteen projects placed in service
  - Final RSP Project List and Asset Condition List update
    - [Final PAC presentation](#)
    - [Final Project List](#)
    - [Final Asset Condition List](#)

# Regional System Plan Project List and Asset Condition List Update, cont.

- October 2021
  - Updates to the Regional System Plan (RSP) Project List
    - Cost increase of \$7.1M on Southeast Massachusetts/Rhode Island Reliability Project (SEMA/RI) (MA)
    - Cost reduction of \$8.0M on Greater Boston (MA)
    - Twelve new projects added
      - New Hampshire (NH) 2029 Solution – total cost of \$134.9M
      - Upper Maine (UME) 2029 Solution – total cost of \$158.6M
    - Two projects were placed in service
    - Three projects were canceled as they are no longer needed due to NH and UME solutions
  - Updates to the Asset Condition List
    - Eleven new projects added
    - Nine projects placed in service
  - Final RSP Project List and Asset Condition List update
    - [Final PAC presentation](#)
    - [Final Project List](#)
    - [Final Asset Condition List](#)
- Next update is scheduled to be provided to PAC in March 2022

# Questions





# APPENDIX A

# Recent Information for Ongoing Reliability Based Studies

- [Boston](#)

- [Boston 2028 Solutions Study – Mystic Retirement](#), report posted September 24, 2020
- [Boston 2028 Solutions Study – Mystic Retirement – Preliminary Preferred Solution](#), presentation posted August 21, 2020
- [Posting of the Final Boston 2028 RFP Review of Phase One Proposals Report and Notice of Initiation of the Boston 2028 Solutions Study – Mystic Retirement](#), memo posted July 17, 2020
- [Response to Stakeholder Comments on the Boston 2028 RFP – Review of Phase One Proposals](#), memo posted July 17, 2020
- [Boston 2028 Request for Proposal \(RFP\) - Review of Phase One Proposals](#), report posted July 17, 2020
- [Boston 2028 RFP – Review of Phase One Proposals](#), presentation posted June 12, 2020
- [Boston 2028 RFP Posting of Phase One Proposals Memo](#), memo posted March 19, 2020
- [Boston 2028 RFP Regarding the Change in Mystic Generating Station Retirement Date](#), memo posted January 13, 2020
- [Boston 2028 RFP Announcement](#), posted December 20, 2019
- [Boston 2028 RFP Documents](#), posted December 20, 2019
- [Boston 2028 Needs Assessment Addendum](#), report posted October 17, 2019
- [Boston 2028 Needs Assessment Update](#), report posted October 17, 2019

# Recent Information for Ongoing Reliability Based Studies, cont.

- [Maine](#)
  - [Lower Maine\(LME\) 2030 Needs Assessment Addendum – Draft](#), report posted November 3, 2021
  - [Final Upper Maine \(UMS\) 2029 Solutions Study](#), report posted June 8, 2021
  - [Responses to Stakeholder Comments on the Upper Maine \(UME\) 2029 Solutions Study Report](#), memo posted June 8, 2021
  - [Final Lower Maine \(LME\) 2030 Needs Assessment](#), report posted May 21, 2021
  - [Responses to Stakeholder Comments on the Lower Maine \(LME\) 2030 Needs Assessment Report](#), memo posted May 21, 2021
  - [Lower Maine \(LME\) 2030 Needs Assessment](#), presentation posted March 12, 2021
  - [Lower Maine \(ME\) 2030 Needs Assessment Scope of Work](#), presentation posted September 18, 2020
  - [Draft Lower Maine \(ME\) 2030 Needs Assessment – Scope of Work](#), posted September 18, 2020
  - [Final Upper Maine \(ME\) Needs Assessment](#), report posted March 23, 2020

# Recent Information for Ongoing Reliability Based Studies, cont.

- [New Hampshire](#)
  - [New Hampshire \(NH\) 2029 Solutions Study – Final](#), report posted May 27, 2021
  - [Responses to Stakeholder Comments on the New Hampshire \(NH\) 2029 Solutions Study Update Presentation](#), memo posted May 27, 2021
  - [Southern New Hampshire \(NH\) 2029 Preliminary Preferred Solution](#), presentation posted April 9, 2021
  - [Western and Central New Hampshire \(NH\) 2029 Preliminary Preferred Solution](#), presentation posted February 12, 2021
  - [Responses to Stakeholder Comments on the New Hampshire \(NH\) 2029 Solutions Study Update Presentation](#), posted July 17, 2020
  - [New Hampshire \(NH\) 2029 Solutions Study Update – Revision 1](#), presentation posted June 18, 2020
  - [Final New Hampshire \(NH\) 2029 Needs Assessment](#), report posted December 4, 2019

# Recent Information for Ongoing Reliability Based Studies, cont.

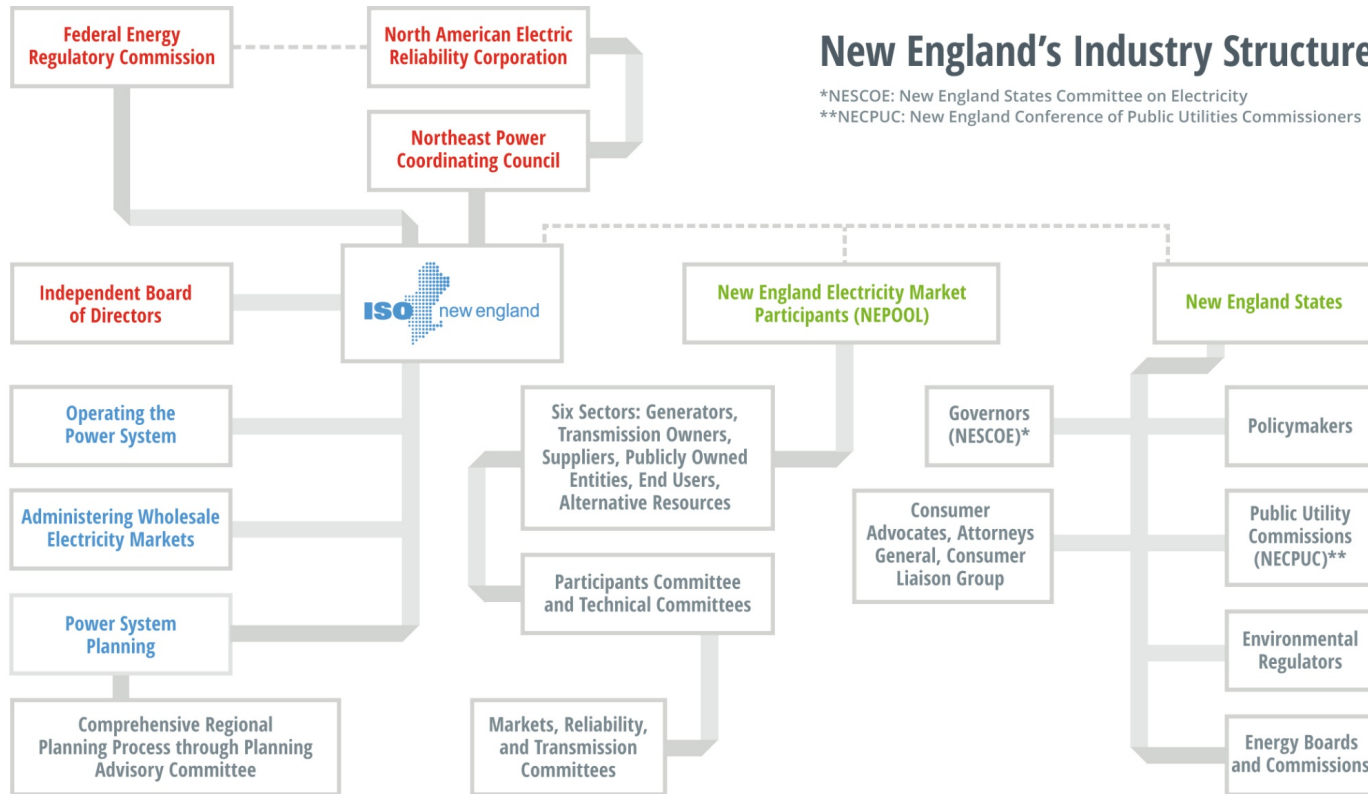
- [Western and Central Massachusetts](#)
  - [Final Western and Central Massachusetts \(WCMA\) 2029 Needs Assessment Addendum](#), report posted November 15, 2021
  - [ISO-NE Responses to Stakeholder Comments Draft Western and Central Massachusetts \(WCMA\) 2029 Needs Assessment Addendum](#), memo posted November 15, 2021
  - [Western and Central Massachusetts \(WCMA\) – 2029 Study Update](#), presentation posted September 20, 2021
  - [Western and Central Massachusetts \(WCMA\) – 2029 Solutions Study Scope of Work Update](#), presentation posted March 12, 2021
  - [Final Western and Central Massachusetts Area 2029 Needs Assessment](#), report posted May 5, 2020
- [Eastern Connecticut](#)
  - [Eastern Connecticut \(ECT\) 2029 Solutions Study – Final](#), report posted June 19, 2020
  - [Eastern Connecticut \(ECT\) 2029 Preliminary Preferred Solution](#), presentation posted May 15, 2020
  - [Final Eastern Connecticut \(ECT\) 2029 Needs Assessment](#), report posted November 25, 2019

# Recent Information for Ongoing Reliability Based Studies, cont.

- [Southeastern MA/RI](#)
  - [Final Southeastern Massachusetts and Rhode Island \(SEMA/RI\) 2030 Minimum Load Needs Assessment](#), report posted November 15, 2021
  - [Revised Southeastern Massachusetts and Rhode Island 2029 Needs Assessment Update Addendum](#), report posted October 19, 2021
  - [Southeastern Massachusetts and Rhode Island \(SEMA/RI\) 2030 Minimum Load Needs Assessment Results](#), presentation posted October 15, 2021
  - [Southeastern Massachusetts and Rhode Island \(SEMA/RI\) 2030 Minimum Load Needs Assessment – Scope of Work](#), posted August 2, 2021
  - [ISO-NE Responses to Stakeholder Comments on the Southeastern Massachusetts and Rhode Island \(SEMA/RI\) 2030 Minimum Load Scope of Work](#), memo posted August 2, 2021
  - [Southeastern Massachusetts and Rhode Island \(SEMA/RI\) 2030 Minimum Load Needs Assessment Scope of Work](#), presentation posted April 14, 2021
  - [Revised SEMA/RI 2029 Needs Assessment Update – Revision 1](#), report posted November 13, 2020
  - [Revised SEMA/RI 2029 Needs Assessment Update – Revision 1](#), presentation posted November 13, 2020
  - [Revised SEMA/RI 2029 Needs Assessment Update – Project Status Determination – Revision 1](#), presentation posted September 2, 2020

# APPENDIX B

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

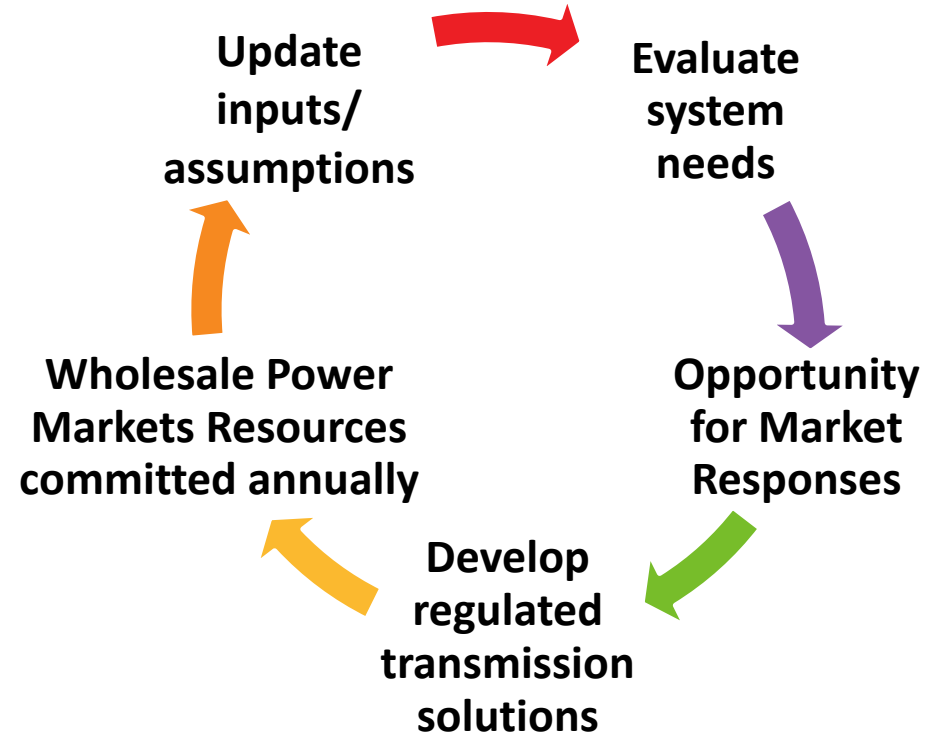




# New England's System Planning Process

## 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/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](http://www.iso-ne.com/oatt))

# APPENDIX C

*Area Study Plans that are Unchanged from the June 2021 IPSAC Meeting*

# Area Study Plans Unchanged since last IPSAC

- Boston
  - Driven by the upcoming retirement of the Mystic generators, a number of transmission planning studies have been completed
  - The ISO has completed a Needs Assessment Addendum to specify the design requirements for addressing the system restoration concerns
  - The ISO has completed a Needs Assessment Update which has incorporated the solution to the time-sensitive needs and updated resource assumptions to the latest available data
    - Non-time-sensitive needs remain: overload of three 345 kV cables and one 115 kV overhead line
  - The ISO issued an Request for Proposal (RFP) to address the identified, non-time sensitive needs on December 20, 2019
  - Phase One Proposals were due on March 4, 2020
  - 36 Phase One Proposals were submitted by eight Qualified Transmission Project Sponsors (QTPSs) and reviewed by the ISO and its consultants
  - At the [June 17, 2020 PAC meeting](#), the ISO discussed narrowing the proposals down to one
  - On [July 17, 2020, the ISO concluded the competitive transmission process](#) and began the Solutions Study process
  - On September 24, 2020, the ISO issued the final [Boston 2028 Solutions Study - Mystic Retirement](#)
    - Final solution:
      - Two 345 kV series reactors
      - One STATCOM
      - Direct transfer trip scheme

# Area Study Plans Unchanged since last IPSAC, cont.

- Eastern CT
  - The Needs Assessment was completed on November 25, 2019
  - The Solutions Study was completed on June 19, 2020
    - Most of the study area will be converted from 69 kV to 115 kV
- Southwest CT
  - The asset condition project to replace the existing Glenbrook STATCOMs resolves all identified needs. As a result, the Solutions Study was concluded.