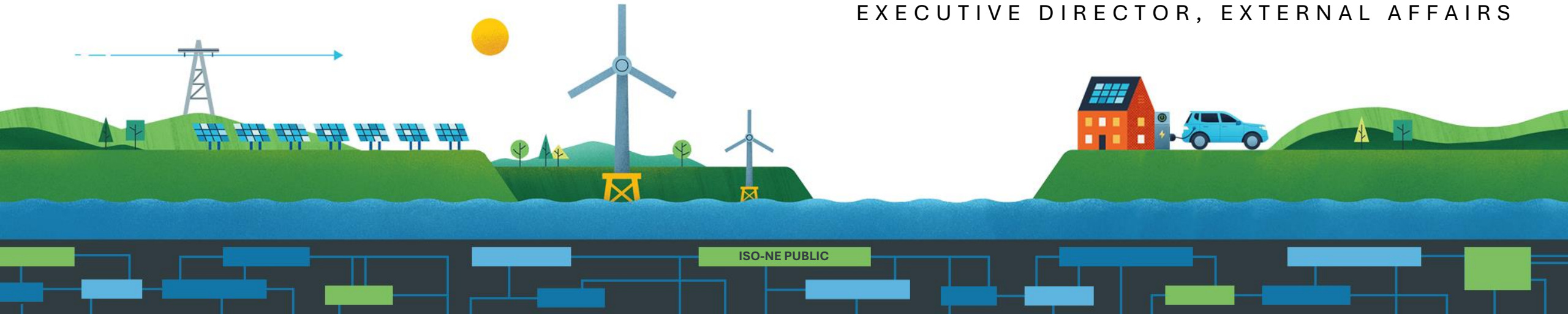
JULY 17, 2025 | VIRTUAL

Overview of Transmission Planning

Massachusetts Office of Energy Transformation

Eric Johnson

EXECUTIVE DIRECTOR, EXTERNAL AFFAIRS



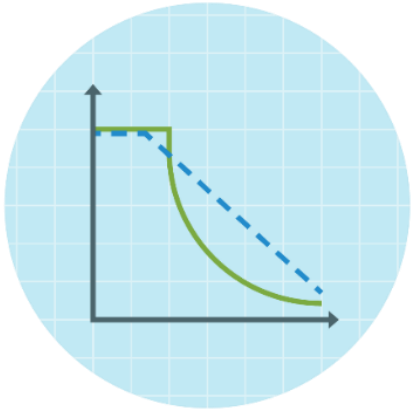
ISO New England Performs Three Critical Roles to Ensure Reliable Electricity at Competitive Prices

Grid Operation

Coordinate and direct the flow of electricity over the region's high-voltage transmission system

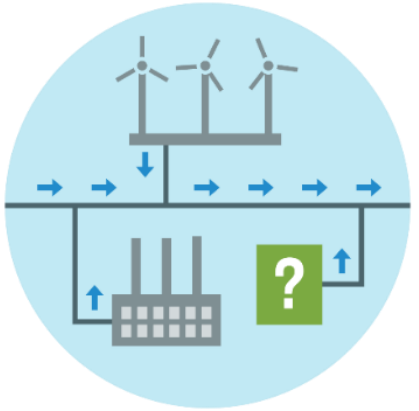
Market Administration

Design, run, and oversee the markets where wholesale electricity is bought and sold

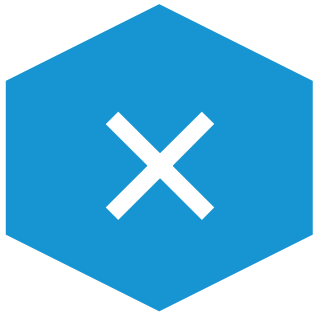


Power System Planning

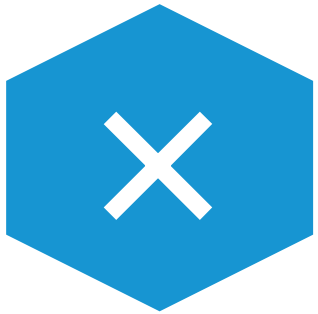
Study, analyze, and plan to make sure New England's electricity needs will be met over the next 10 years



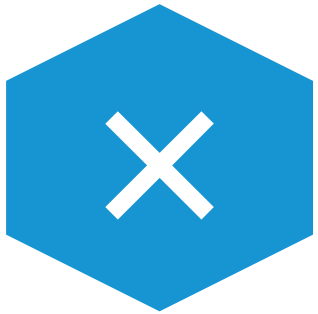
Things We Don’t Do



Handle retail electricity

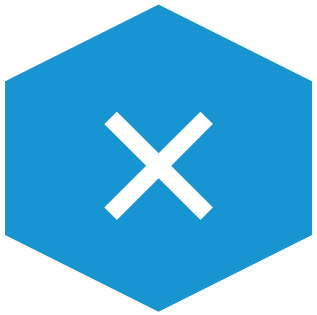


Own power grid infrastructure

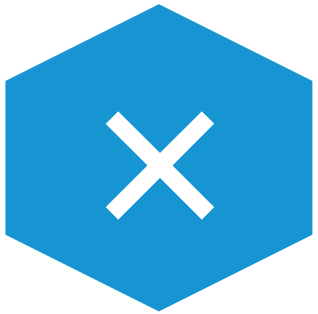


Have a stake in companies that own grid infrastructure

Have jurisdiction over fuel infrastructure



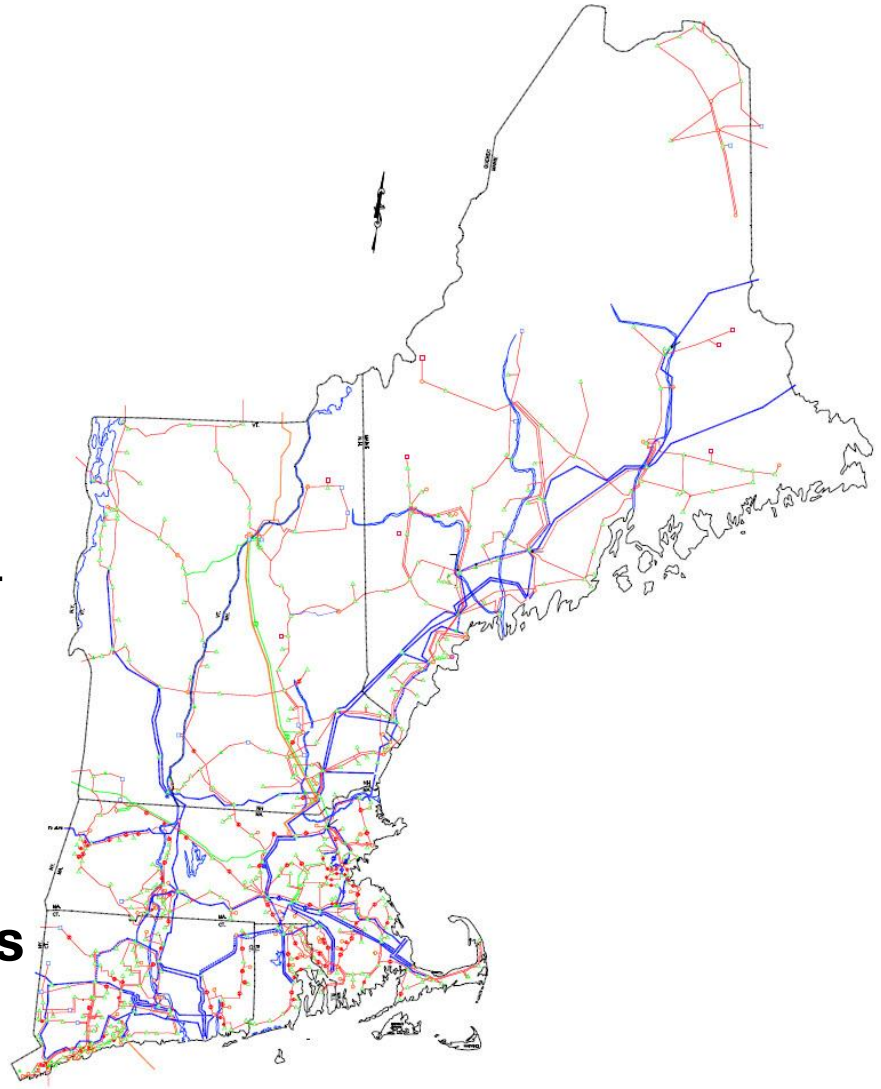
Have control over siting decisions



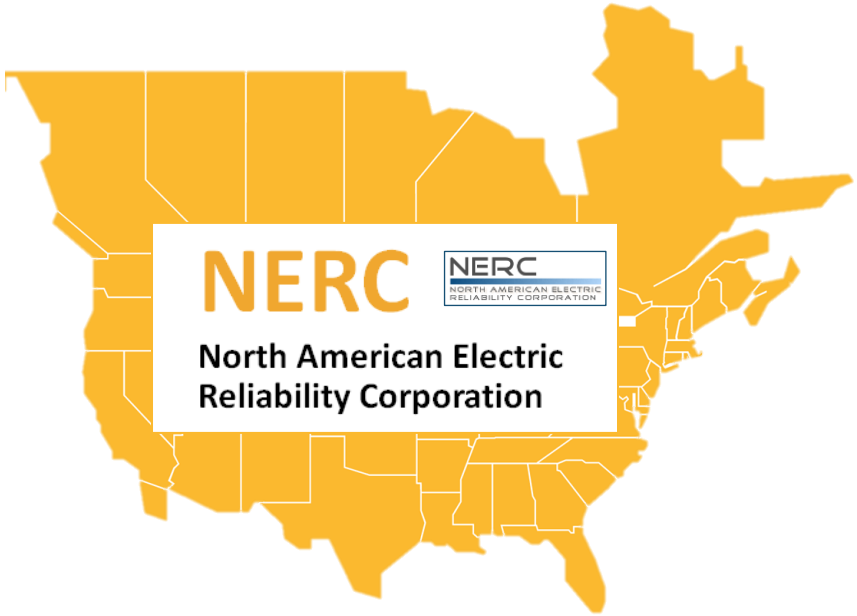
Plan the resource mix

New England's Transmission Grid Is the Interstate Highway System for Electricity

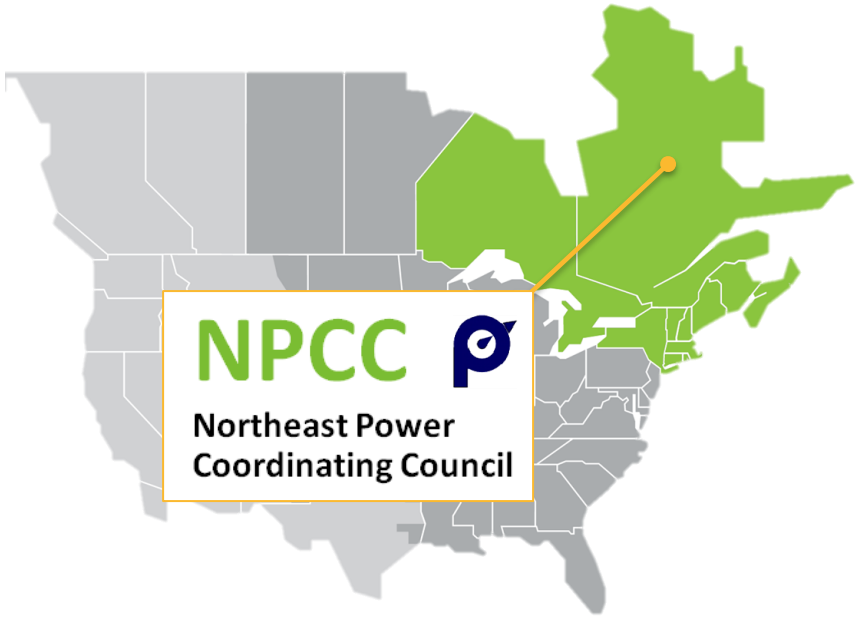
- **9,000 miles** of high-voltage transmission lines (primarily 115 kV and 345 kV)
- **13 transmission interconnections** to power systems in New York and Eastern Canada
- **9%** of region's energy needs met by imports in 2024
- **$13 billion** invested to strengthen transmission system reliability since 2002; **$450 million** planned
- Developers have proposed multiple transmission projects to access **non-carbon-emitting resources** inside and outside the region



ISO-NE is Subject to Reliability Standards



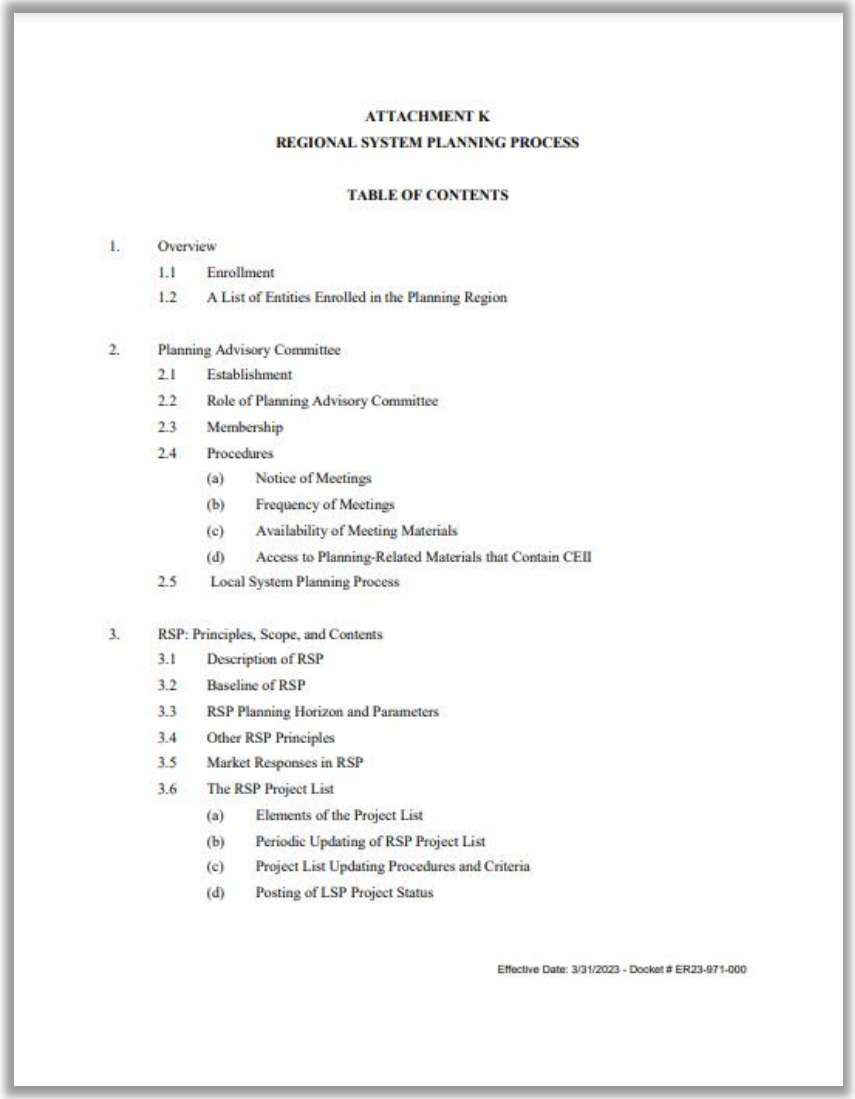
NERC is certified by FERC to be the Electric Reliability Organization, which establishes and enforces reliability standards for the US power system, and it plays a similar role in Canada.



NPCC is one of 8 authorities delegated by NERC to monitor and enforce compliance with reliability standards. It assesses reliability, creates specific regional standards to support reliability principles, and monitors and enforces those standards.

Open Access Transmission Tariff Attachment K

- Describes the regional system planning process
- Outlines ISO and stakeholder responsibilities
- Defines key transmission planning process components and requirements
  - Planning Advisory Committee (PAC)
  - Regional System Plan (RSP); scope and contents
  - Needs Assessment description
  - Solutions Study description
  - Competitive Solution process
  - Longer-term Transmission study process
  - RSP Project List
  - Economic Studies



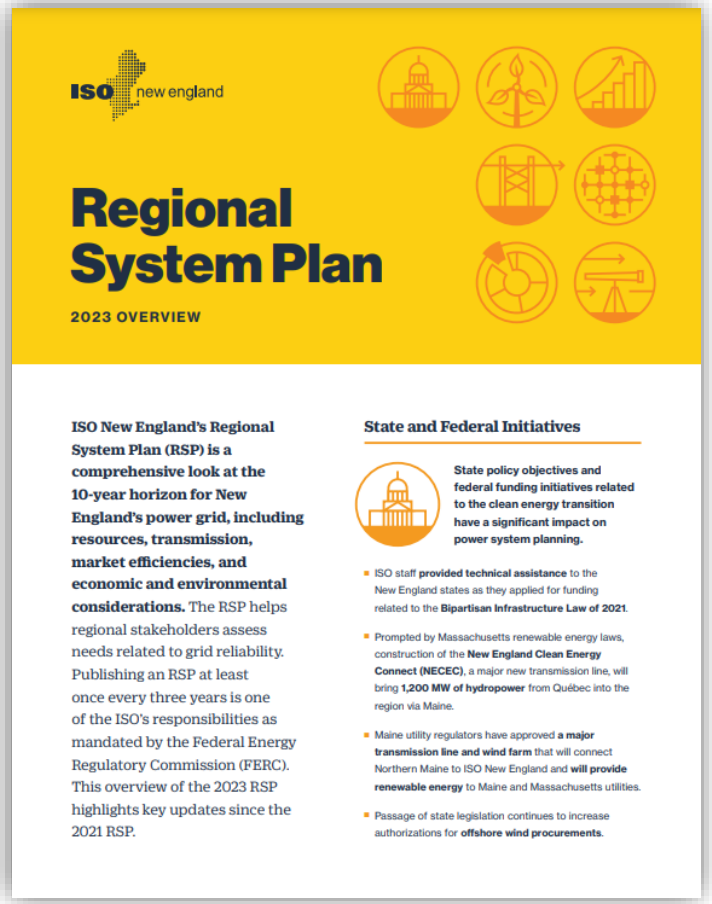
ATTACHMENT K
REGIONAL SYSTEM PLANNING PROCESS

TABLE OF CONTENTS

Effective Date: 3/31/2023 - Docket # ER23-971-000

Biennial Regional System Plan

- Through an open stakeholder process, the ISO is responsible for the development of long-range plans to address future system needs
  - Summarized in a Regional System Plan (RSP)
  - The plan is published every two years
- ISO New England hosted a public meeting to discuss the 2023 Regional System Plan
  - A recording is available on our website


ISO new england

Regional System Plan

2023 OVERVIEW

ISO New England's Regional System Plan (RSP) is a comprehensive look at the 10-year horizon for New England's power grid, including resources, transmission, market efficiencies, and economic and environmental considerations. The RSP helps regional stakeholders assess needs related to grid reliability. Publishing an RSP at least once every three years is one of the ISO's responsibilities as mandated by the Federal Energy Regulatory Commission (FERC). This overview of the 2023 RSP highlights key updates since the 2021 RSP.

State and Federal Initiatives

State policy objectives and federal funding initiatives related to the clean energy transition have a significant impact on power system planning.

- ISO staff **provided technical assistance** to the New England states as they applied for funding related to the **Bipartisan Infrastructure Law of 2021**.
- Prompted by Massachusetts renewable energy laws, construction of the **New England Clean Energy Connect (NECEC)**, a major new transmission line, will bring **1,200 MW of hydropower** from Québec into the region via Maine.
- Maine utility regulators have approved **a major transmission line and wind farm** that will connect Northern Maine to ISO New England and **will provide renewable energy** to Maine and Massachusetts utilities.
- Passage of state legislation continues to increase authorizations for **offshore wind procurements**.

Regional System Plan 2023 Summary

System Planning Activities

Ensuring Reliable Operations in the Future

Resource Adequacy

- Forecasting regional electric energy use
  - Including energy efficiency and solar photovoltaic
- Determine annual resource needs by:
  - Monitoring resource mix and fuel security, including renewable resource integration
  - Analyzing retirements for reliability impact
- Administering ISO Generation Interconnection Queue
- Administering the Forward Capacity Market (FCM)*
- Conducting Economic Studies

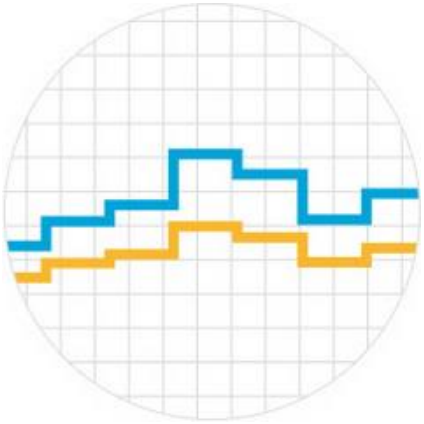
Transmission Planning

- Performing transmission reliability analysis Developing solutions or issuing a request for competitive solutions
- Reviewing transmission costs
- Planning for public policy
- Longer-term Transmission study process
- Conducting interregional planning activities

*To better ensure power system reliability and cost-efficiency as New England's resource mix evolves, ISO-NE is proposing Capacity Auction Reforms (CAR) that would transition the capacity market from a forward/annual market to a prompt/seasonal market with accreditation reforms. See https://www.iso-ne.com/committees/key-projects/capacity-auction-reforms-key-project for more information.

Forecasting Regional Electric Energy Use

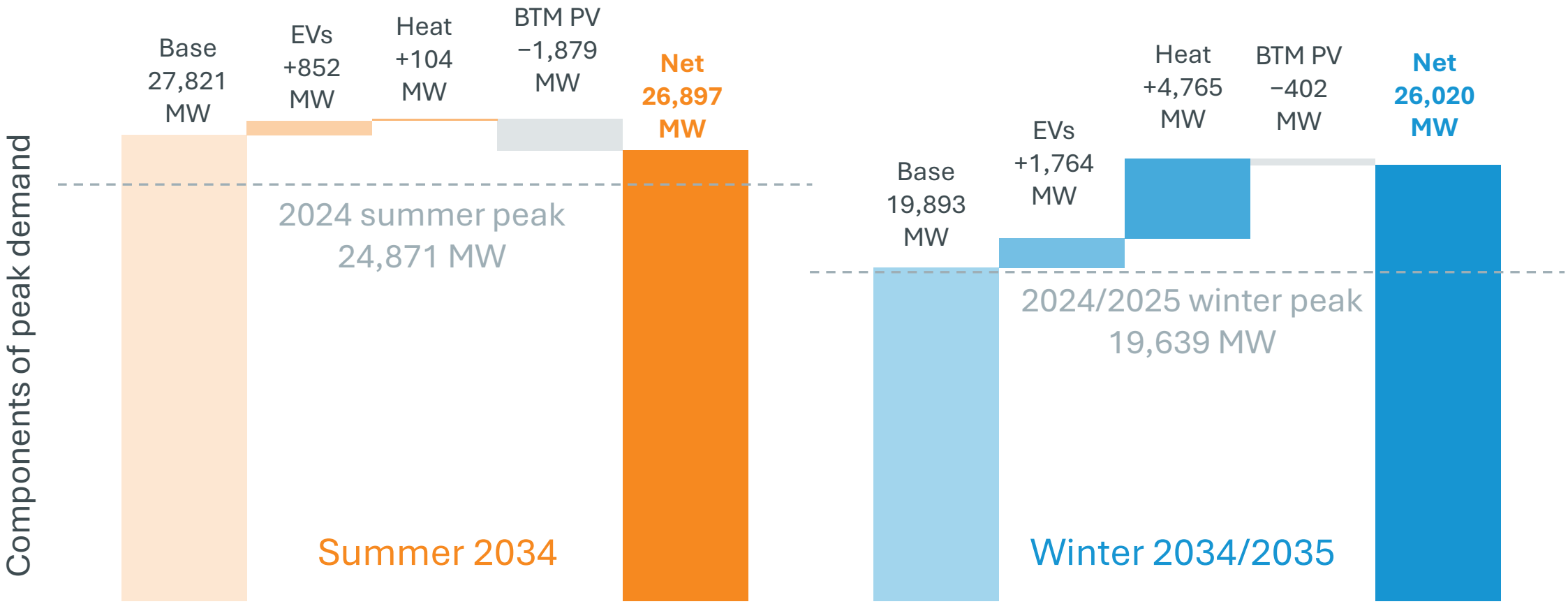
- ISO New England is responsible for planning the regional transmission system over a 10+ year planning horizon
- Forecasting how much electricity the region will use in the future requires ISO system planners to weigh multiple variables
  - **Economic** activity and outlook
  - **Weather** and **load** patterns
  - Federal and state **policies reducing** electricity demand
    - Energy efficiency (EE) initiatives and distributed generation
  - Federal and state **policies increasing** electricity demand
    - Electrification of transportation and heating



- The Capacity, Energy, Load, and Transmission Report (CELT) is the foundational resource for the ISO's system planning and reliability studies
  - The forecast looks out 10 years and ISO updates the report annually in May

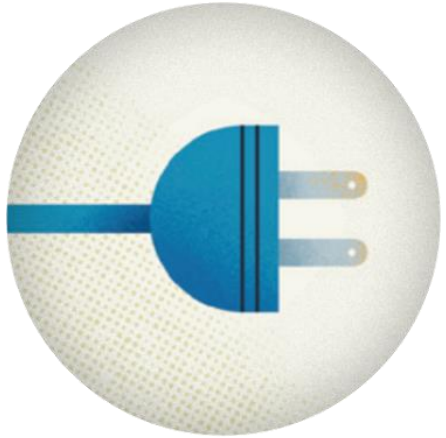
ISO's Ten-Year Forecasts Provide an Outlook for Electricity Use and Peak Demand

Deployment of these technologies create new challenges for grid operations and forecasting



Source: ISO New England 2025-2034 Forecast Report of Capacity, Energy, Loads, and Transmission (2025 CELT Report) (May 2025)

FERC Order 2023: Interconnection Reforms



- In July 2023, FERC issued **Order No. 2023**
- The ISO's **proposal**, filed in May 2024 and **accepted** by FERC in April 2025, will bring the region into compliance with Order Nos. 2023 and 2023-A
- The proposal's major changes include:
  - Adopts a "first-ready, first served cluster study process" for all interconnection requests
  - A penalty structure applied to the ISO and transmission owners for delays in study completion beyond established deadlines
  - Increased financial and site control requirements for developers entering projects into the ISO's interconnection process
  - Improves integration of battery storage projects and other new technologies
- **These reforms aim to prioritize projects with a high likelihood of development and deter speculative ventures**

Interconnection Process – Basic Flow

Interconnection Request

Basic information: size, location, fuel type

Cluster Study

Exact list of upgrades required for the cluster

Interconnection Agreement

Three-party agreement between generator, ISO, and transmission owner

Construction

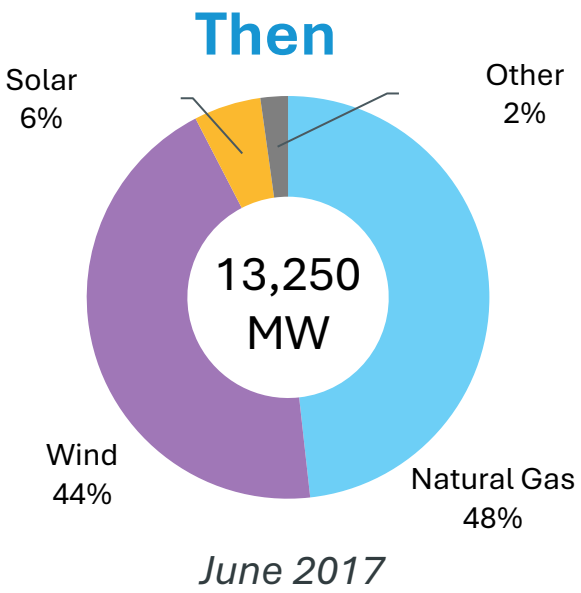
Generator begins commercial operation once construction is complete

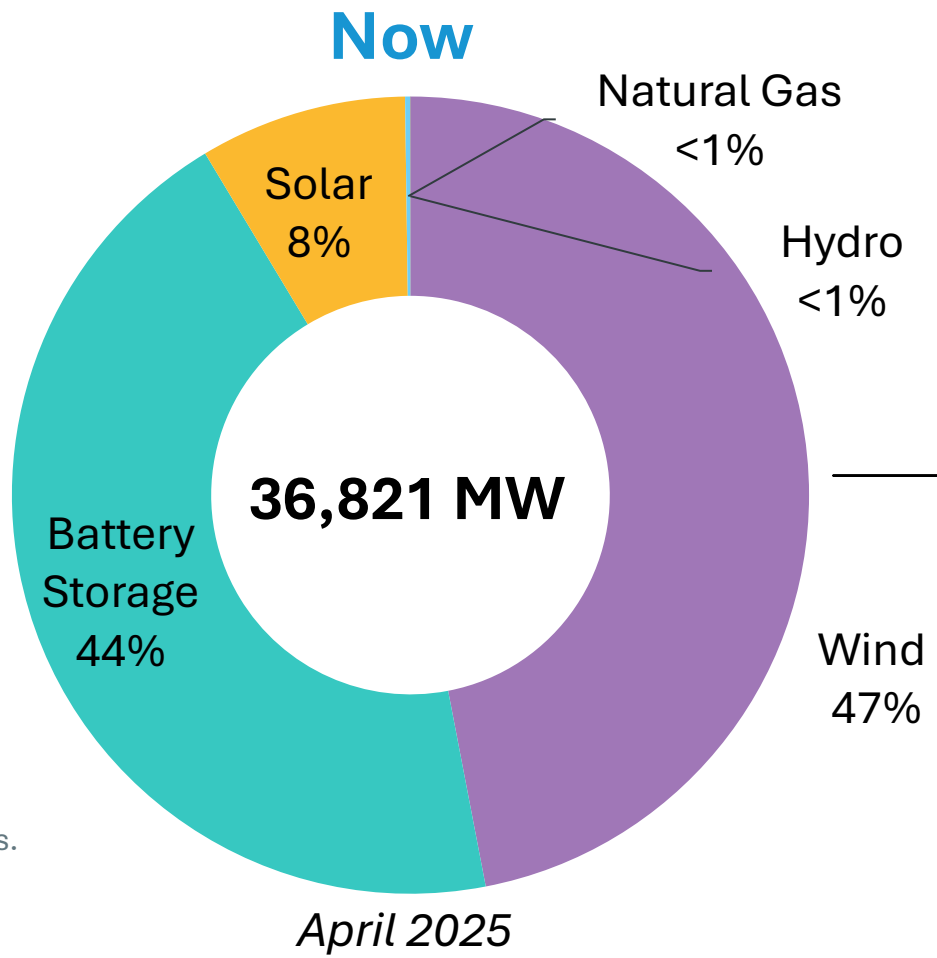
For more information about this process, visit Participate > Applications and Status Changes > New or Modified Interconnections

Changes to the Interconnection Process are in development to comply with FERC Order 2023. For more information, visit Committees and Groups > Key Projects > Order No. 2023 Key Project

The ISO Generator Interconnection Queue Provides a Snapshot of Resource Proposals

Dramatic shift in proposed resources from natural gas to battery storage and renewables



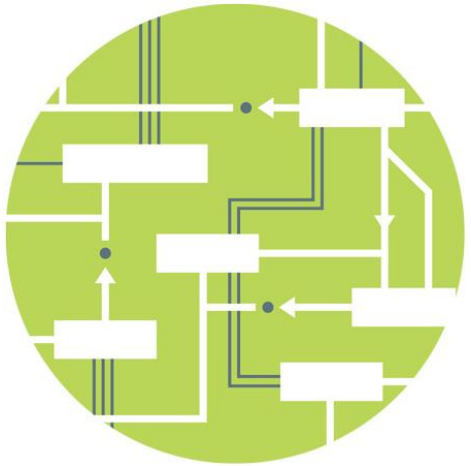


Offshore Wind	
CT	3,750 MW
MA	8,923 MW
RI	1,904 MW

Onshore Wind	
ME	2,720 MW

Source: ISO Generator Interconnection Queue, FERC Jurisdictional Proposals; Nameplate Capacity Ratings.

Regional Transmission Planning



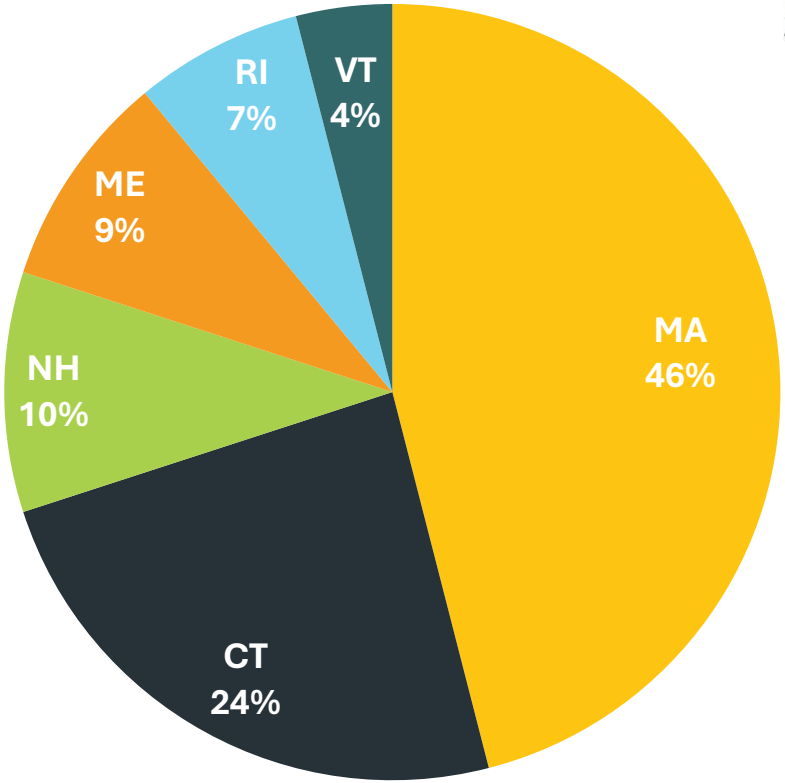
- ISO New England is responsible for planning the regional transmission system over the ten-year planning horizon and beyond
  - Summarized in Regional System Plan
  - Stakeholder engagement through Planning Advisory Committee

- ISO New England can select new projects to address *three* categories of transmission system needs:
  1. **Reliability projects:** maintaining the ability to deliver bulk power considering load growth, generator retirements, and other future changes
  2. **System Efficiency projects:** reducing energy costs by increasing the ability to obtain power from cheaper sources
  3. **Public Policy projects:** expanding the transmission system as needed for the successful implementation of public policy

Introduction to Transmission Planning
3 minute video

How Are Transmission Costs Allocated?

- The New England electric grid is a **tightly interconnected** system; each state shares in the benefits of reliability and market efficiency upgrades
- The amount of electricity demand in an area determines its **share** of the cost of new or upgraded transmission facilities needed for reliability or system efficiency



2024 Network Load by State

Elective Transmission Upgrades (ETUs)

- Upgrade or interconnection to a pool transmission facility (PTF) of the of New England transmission system
- Voluntarily funded by entity or entities that agreed to pay for all upgrade costs
- Entered into the interconnection queue by project developer, similar to the generation interconnection process
- Not identified as needed for reliability, but studied by ISO to ensure they can interconnect reliably

Comparison of Transmission Project Types

Reliability/System Efficiency/Public Policy Project

Need for a project identified

↓

ISO-NE conducts a Solutions Study* or RFP to develop a solution

↓

Project cost is shared among New England states

*The Solutions Study path applies only to reliability projects.

Elective Transmission Upgrade

Developer brings forward a project proposal

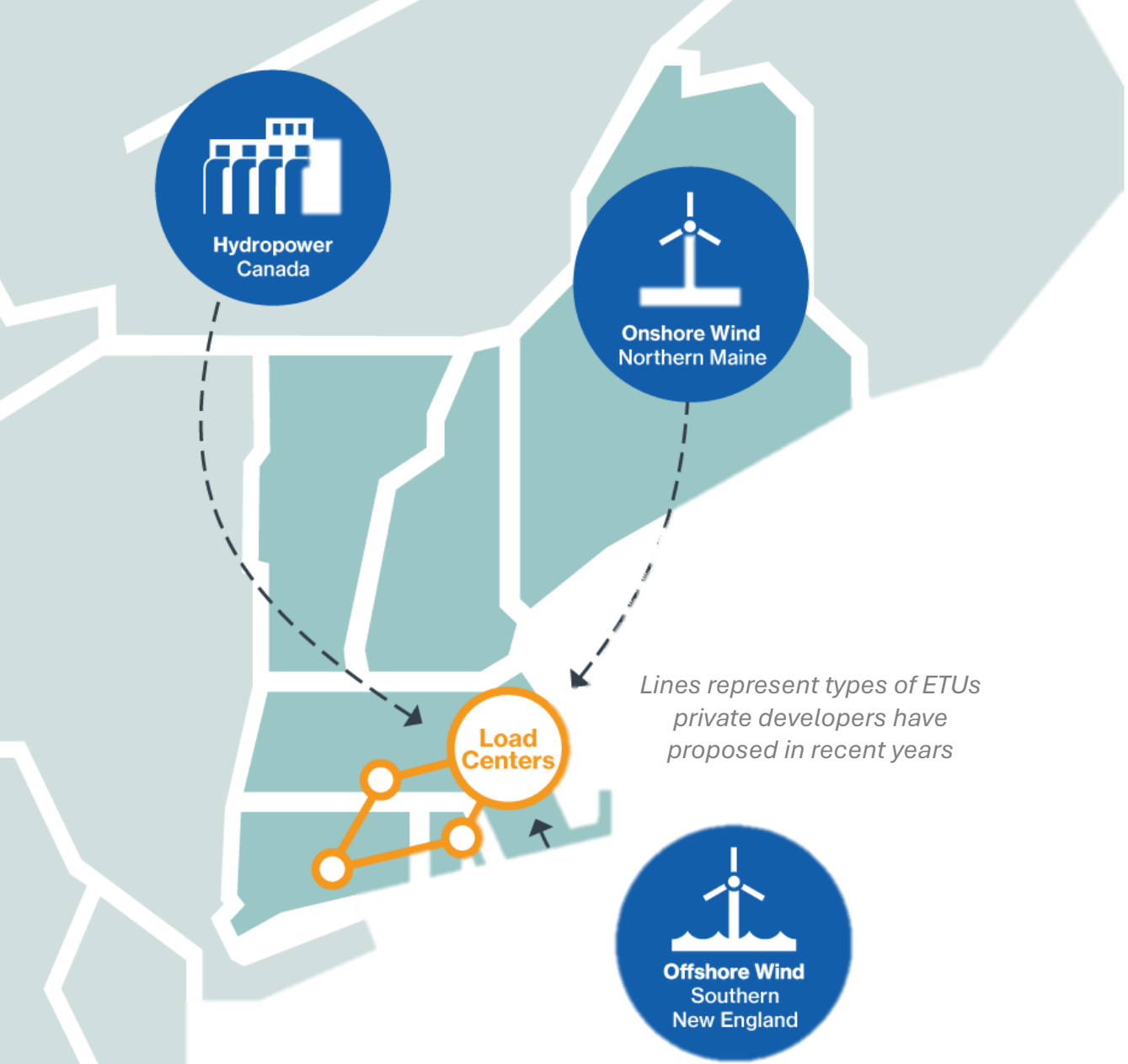
↓

ISO-NE conducts a System Impact Study to ensure project can be reliably interconnected

↓

Project cost funded entirely by developer (may seek contracts or an FCM commitment)

Developers Are Proposing Large-Scale Transmission Projects to Deliver Clean Energy to Load Centers



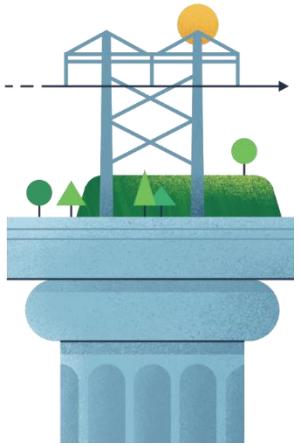
Lines represent types of ETUs private developers have proposed in recent years

Source: ISO Interconnection Queue (April 2025)

- Developers are proposing six elective transmission upgrades (ETUs) to help deliver over **9,000 MW** of clean energy to New England load centers
- Wind projects make up about **47%** of new resource proposals in the ISO Queue
  - Most are offshore wind proposals in southern New England, but some are onshore wind proposals in northern New England and **would require transmission** to deliver the energy to load centers

Longer-Term Transmission Planning (LTTP)

- In 2020, the New England States Committee on Electricity (NESCOE) vision statement recommended that the ISO work with stakeholders to conduct a **comprehensive long-term regional transmission study**
- In response, the ISO began the study and received **FERC approval** to revise the ISO Tariff to establish a repeatable longer-term study process
- The resulting 2050 Transmission Study was the **first longer-term transmission study** conducted for New England
  - The study informs stakeholders of the amount and type of transmission infrastructure necessary to provide reliable, cost-effective energy to the region through the **clean energy transition**, driven by state policy
- The region's **aging transmission system** has the potential to become a **significant bottleneck** to progress if it does not keep pace with changes to other elements of the power system



Longer-Term Transmission Planning (LTTP)

- Accepted by FERC in July 2024, the second phase of tariff changes creates a new process to **implement transmission upgrades** based on a LTTS
  - Provides an avenue for the **states** to **evaluate and finance** transmission upgrades needed to ensure a reliable grid throughout the clean energy transition
  - Upon request by the states, **through NESCOE**, ISO will issue and evaluate requests for proposals (RFPs) to address needs identified by the states in connection with an LTTS
- In December 2024, NESCOE issued a letter requesting that ISO issue an RFP to address the following needs by 2035:
  - Increase **Surowiec-South interface** limit to at least 3,200 MW
  - Increase **Maine-New Hampshire interface** limit to at least 3,000 MW
  - Accommodate the interconnection of at least **1,200 MW of new onshore wind** at or near **Pittsfield, ME**
- NESCOE identified **additional evaluation criteria** to be considered when evaluating the LTTP RFP bids

Additional information related to the LTTP and longer-term transmission studies is available on the ISO website:
https://www.iso-ne.com/system-planning/transmission-planning/longer-term-transmission-studies

Next Steps: LTTP RFP Schedule

- ISO issued a draft RFP for comment on March 14
- Final RFP issued March 31
  - The deadline for Qualified Transmission Project Sponsors (“QTPS”) to submit a proposal, including a $100,000 study deposit, is September 30, 2025

Schedule is subject to change

* May be either the Preferred Longer-Term Transmission Solution or Preferred Longer-Term Transmission Proposal, depending on whether Attachment K Section 16.4(i) or 16.4(j) applies.

ISO New England Planning Supports Inter-Regional Efforts

- Inter-regional planning ensures that one area's changes do not negatively impact the reliability of the transmission systems in other areas
- Seeks solutions that could cost-effectively address needs in multiple areas
- Addresses ongoing trends and changes affecting the entire industry

North American Electric Reliability Corporation (NERC)

Northeast Power Coordinating Council (NPCC)

Eastern Interconnection Planning Collaborative (EIPC)

Inter-Area Planning Stakeholder Advisory Committee (IPSAC)

Northeast ISO/RTOs Planning Coordination Protocol

- ISO-NE, NYISO, and PJM follow the *Amended and Restated Northeastern ISO/RTO Planning Coordination Protocol* to enhance the coordination of their planning activities and address interregional planning issues
- The Joint ISO Planning Committee (JIPC) addresses interregional transmission planning issues, including system needs and proposed system improvements that reflect resource diversity, environmental compliance obligations, and resource retirements, in addition to the integration of distributed and variable energy resources
- The JIPC ensures that the interregional planning process actively engages stakeholders through the Interregional Planning Stakeholder Advisory Committee (IPSAC)
- With input from IPSAC, the JIPC develops the *Northeastern Coordinated System Plan* (NCSP) biannually

ISO-NE Regularly Engages with the New England States on Transmission Planning

- Recent examples of collaboration between ISO-NE and the states include:
  - Northeast Collaborative on Interregional Transmission
  - Northeast International Committee on Energy (NICE) Transmission Working Group
  - LTTP RFP
  - State efforts to secure federal funding

Key Takeaways and Looking Ahead

- ISO-NE conducts transmission planning through an open stakeholder process
- The six New England states are actively involved in transmission planning in the region
- ISO-NE, in collaboration with NESCOE, issued the first ever LTTP RFP
- Additional changes to the transmission planning process are forthcoming to address FERC Order 1920

Questions