



Transmission Planning Update

Northeast Regional Ocean Council (NORC)

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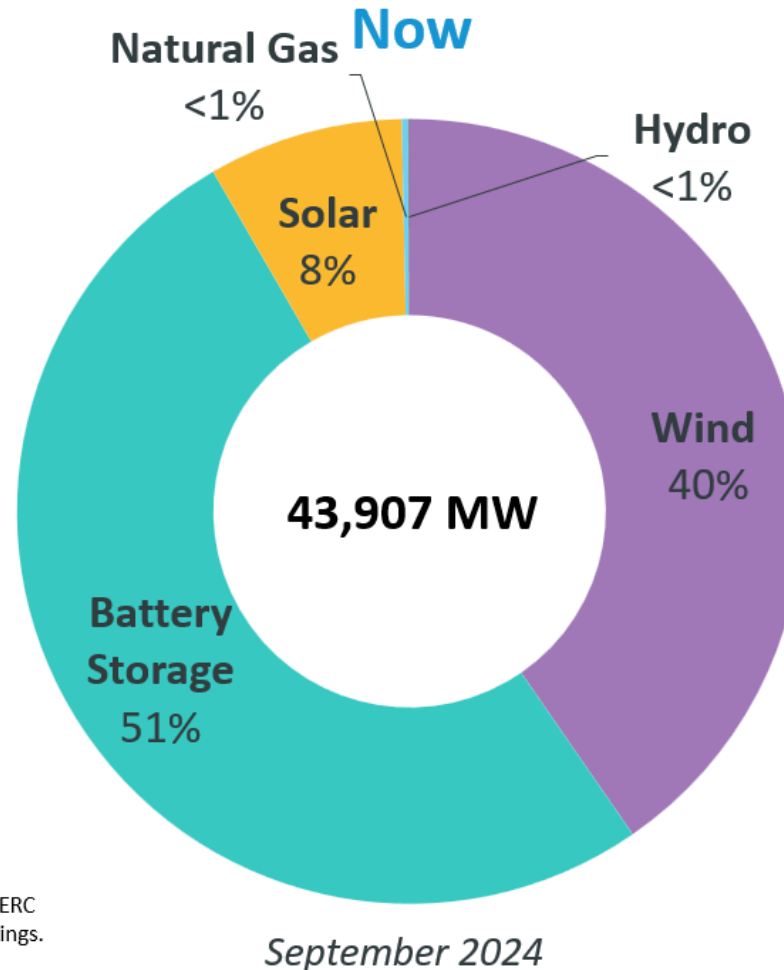
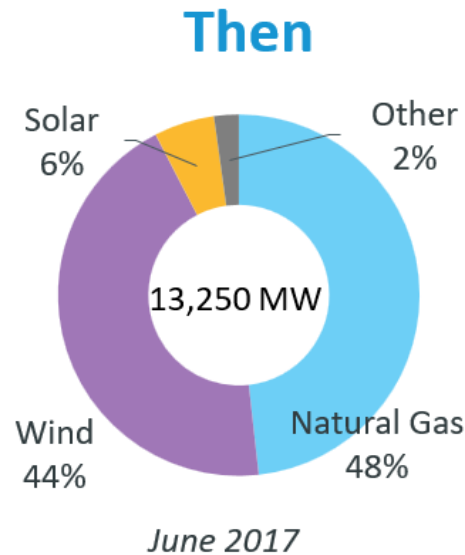
Meeting New Challenges in Transmission Planning

- Increases in renewable generation, along with unprecedented load and weather conditions, are creating power system conditions **outside the range of traditional studies**
- New England's power system is shifting from a summer-peaking system to a **dual-peaking system** (summer and winter) within the next decade, and then winter-peaking in the mid-2030s
- The New England states are seeking to identify potential new transmission solutions to help achieve their **clean energy objectives**



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	3,675 MW
MA	9,432 MW
RI	1,904 MW

Onshore Wind

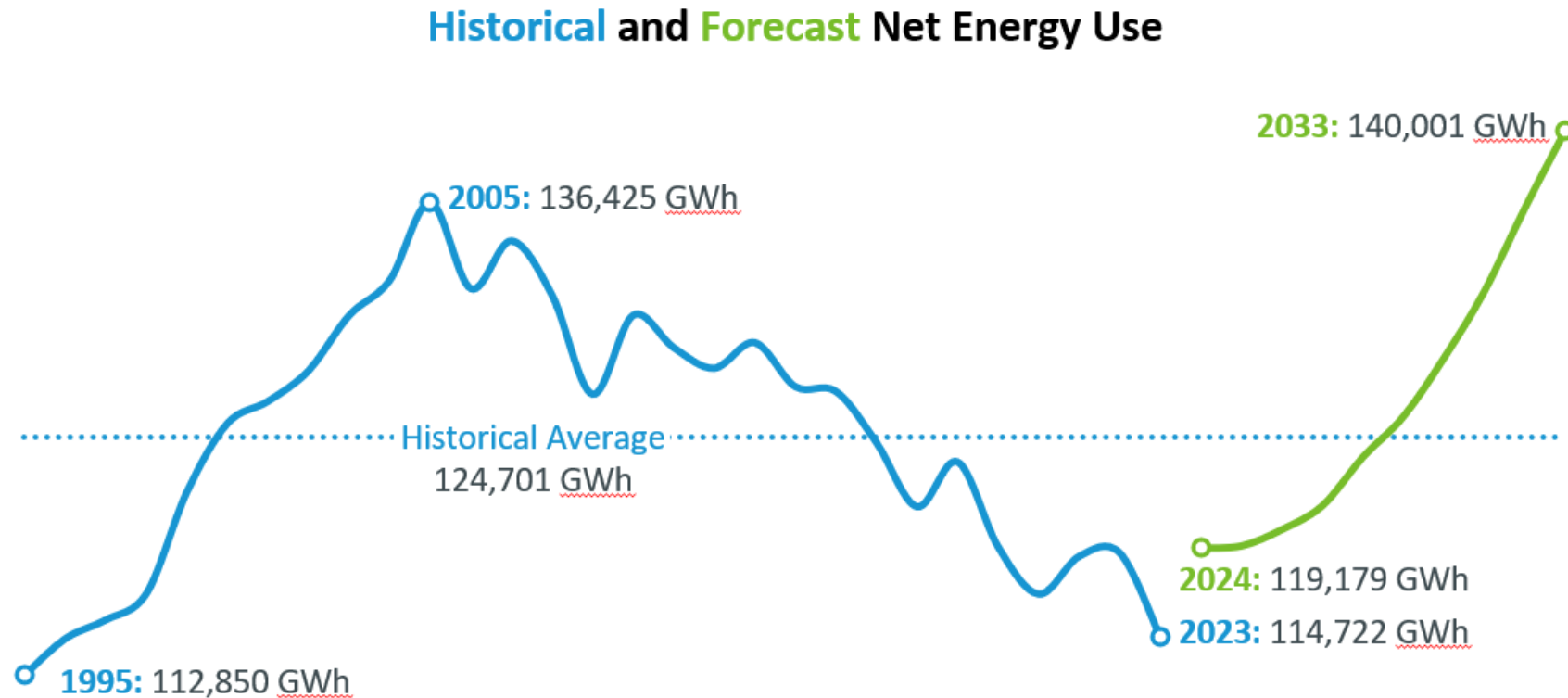


ME	2,720 MW
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Source: ISO Generator Interconnection Queue, FERC Jurisdictional Proposals; Nameplate Capacity Ratings.

Increased Electrification is Expected to Drive Steady Growth in Net Annual Energy Use

This follows two decades of decreased net energy use as a result of state policies incentivizing solar PV and energy efficiency



Transmission Planning: Recent Milestones

Date	Description
Feb. 12, 2024	ISO issued final 2050 Transmission Study – first long-term transmission planning study <ul style="list-style-type: none"> ISO has since conducted additional analysis of offshore wind points of interconnection
May 10, 2024	ISO and NEPOOL filed innovative long-term transmission planning (LTTP) proposal with FERC, creating a new path for states to direct transmission investment, with technical support from the ISO
May 13, 2024	FERC issued Order 1920 : Building for the Future Through Electric Regional Transmission Planning and Cost Allocation
July 8, 2024	FERC approved New England's LTTP proposal <ul style="list-style-type: none"> Region's proposal went far in complying with Order 1920, but with differences
Aug. 16, 2024	ISO issued draft Economic Planning for the Clean Energy Transition (EPCET) report
Oct. 10, 2024	NESCOE letter identified potential transmission needs for LTTP RFP, focused on increasing transfer capability to allow more power to flow from north to south within New England <ul style="list-style-type: none"> Stakeholders discussed NESCOE letter at ISO's Planning Advisory Committee on Oct. 10; comments are due to NESCOE by Nov. 22
Oct. 23, 2024	ISO announced pause on Order 1920-related compliance efforts due to significant challenges to FERC's order and the possibility for updates to the order (compliance filings are due in mid-2025)
2025	ISO would issue first LTTP RFP following a formal request from NESCOE (RFP process: ~18-mos.)

Key Takeaways from the 2050 Transmission Study

Reducing Peak Loads Significantly Reduces Transmission Cost

High-Likelihood Concerns Can Be Prioritized

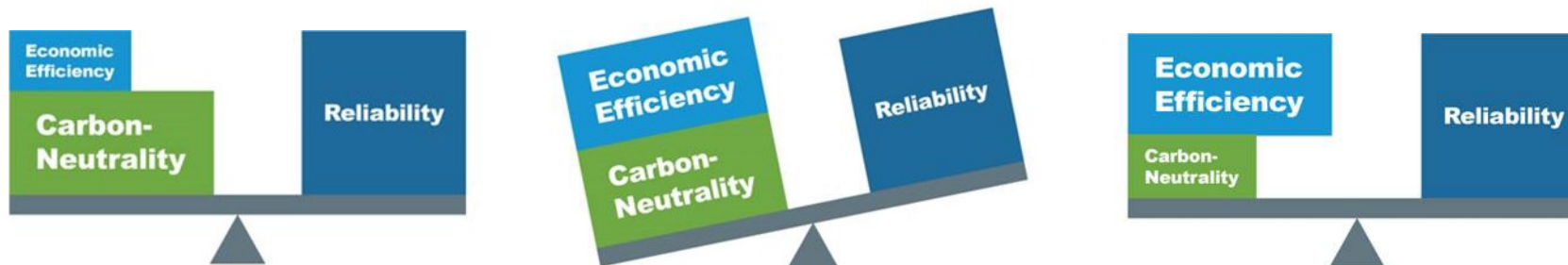
Incremental Upgrades Can Be Made As Opportunities Arise

Generator Location Matters

A Significant Number of Transformers Need to Be Added

EPCET Overview

- EPCET explores the operational, engineering, and economic challenges the region must address to support the New England States' commitment to reduce carbon emissions over the next several decades
- Most of the six states aim to cut emissions by at least 80% from 1990 levels by the year 2050 through a shift to renewable energy and electrification of heating and transportation
- ISO performed analysis over two years, published [draft report](#) in August 2024

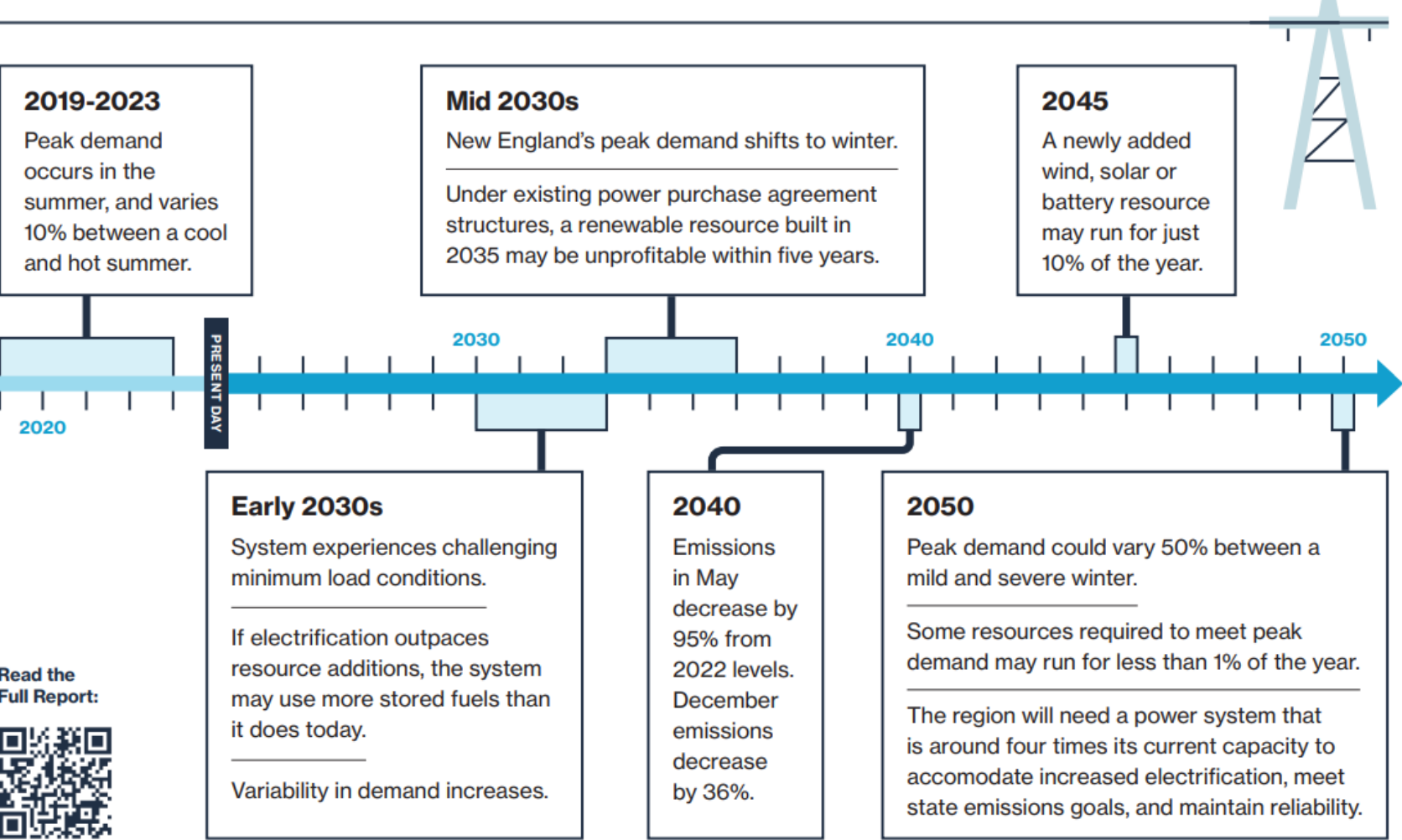


*EPCET's key findings converge on a common theme: **designing the power system of the future requires balancing reliability, economic efficiency, and carbon-neutrality***

EPCET Report

Aug. 2024

Timeline of Scenarios and Key Results



Read the
Full Report:



EPECT: Key Findings for the New England Grid

- **Increased variability will require vastly different supply levels from year to year**
 - Peak demand could vary by up to 50% between mild and severe winters by 2050
- **Emissions reductions will be seasonal**
 - Spring will be mostly decarbonized by 2040, but a small portion of winter days will still produce significant emissions in 2050
- **Renewable-only build-outs may be vast**
 - If the 2050 resource build-out is almost entirely wind, solar, and batteries, the region will need a power system that is roughly four times its current capacity to achieve state emissions goals and maintain reliability.
- **Firm, dispatchable, zero-carbon generation could help address challenges**
 - These resources may support reliability and reduce build-out costs

There Are **Four Pillars** Necessary to Support a Successful Clean Energy Transition



PILLAR ONE

Clean Energy

Significant amounts of clean energy to power the economy with a greener grid

PILLAR TWO

Balancing Resources

Resources that can supply electricity, reduce demand, or provide other services to maintain power system equilibrium

PILLAR THREE

Energy Adequacy

A dependable energy supply chain and/or a robust energy reserve to manage through extended periods of severe weather or energy supply constraints

PILLAR FOUR

Robust Transmission

To integrate renewable resources and move clean energy to consumers across New England