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Future Grid Scale Clean Energy Options for New England

Economic Planning for the Clean Energy Transition

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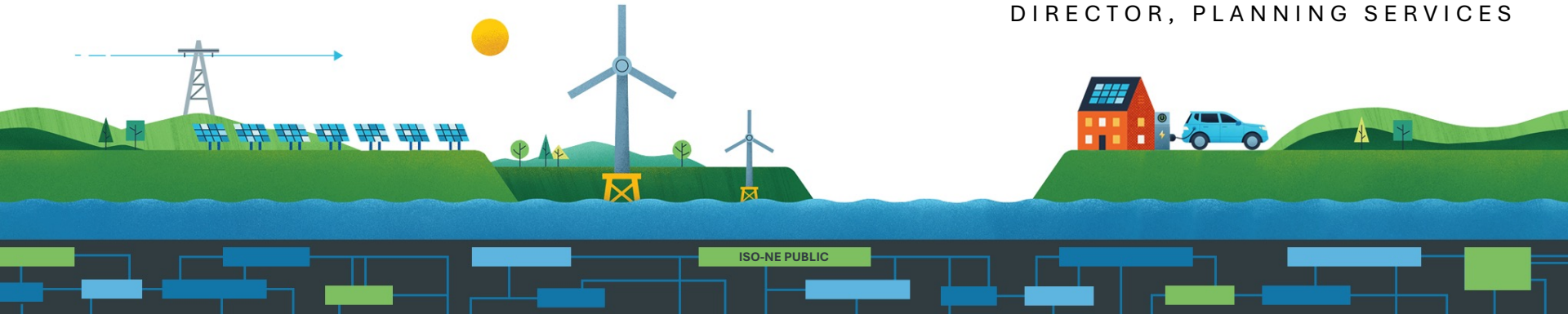
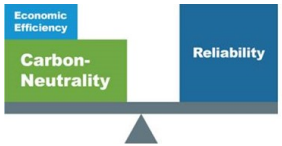
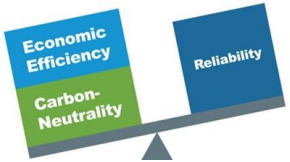
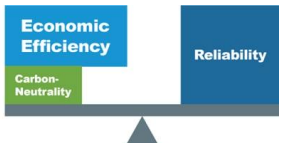


Economic Planning for the Clean Energy Transition (EPCET) – Overview

- EPCET explores the reliability, engineering, environmental and economic challenges the region must address to support the New England States' commitment to reduce carbon emissions over the next several decades
- The study was grounded in three main scenarios and one stakeholder-requested scenario
- The final report was published in October 2024

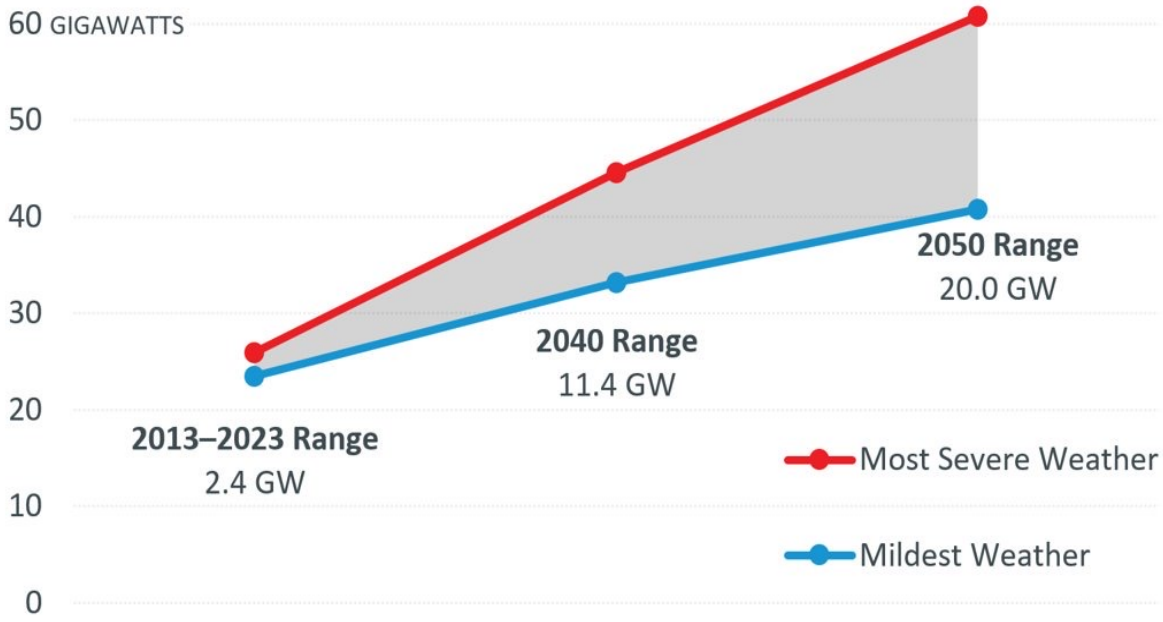






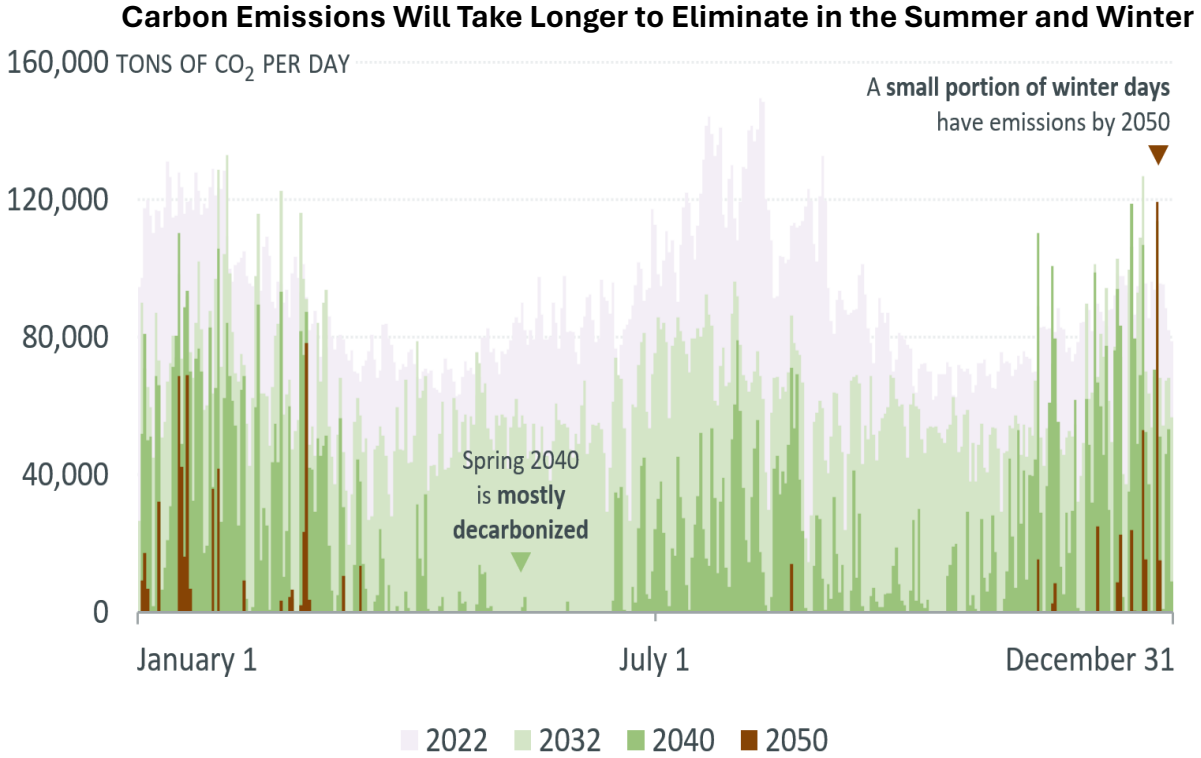
EPCET's key findings converge on a common theme: ***designing the power system of the future requires balancing reliability, economic efficiency, and carbon-neutrality***

The Future New England Power System Will See Increased Variability in Supply and Demand



- As heating is electrified, peak demand for electricity will shift from summer to winter
- Peak demand could vary by up to 50% between mild and severe winters by 2050
- As weather-dependent resources increase, electricity supply will also become more variable

To Fully Decarbonize the New England Power System, Renewable Buildout Will Need to be Substantial



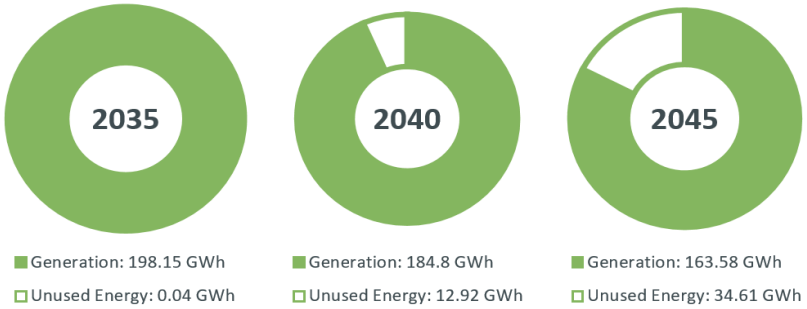
Spring and fall may be decarbonized years before summer and winter

- 36 GW of new capacity will significantly decarbonize spring
- 73 GW of new capacity will almost fully decarbonize spring, fall, and summer
- 97 GW of new capacity will decarbonize every month outside of winter

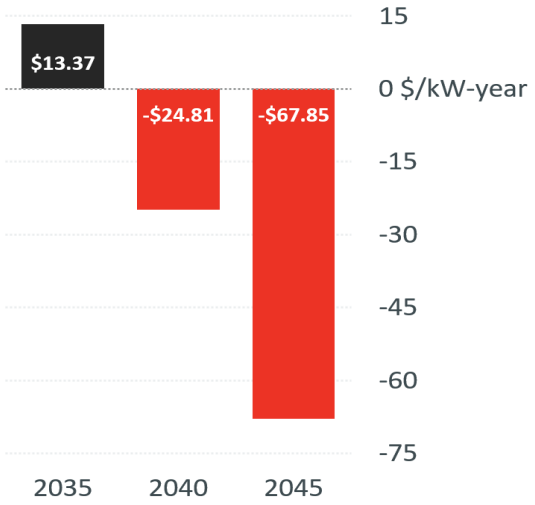
New Renewable Resources May Not Earn Sufficient Revenue in the Future

Assuming today's power purchase agreement (PPA) strategies hold, by the mid-2030s a new renewable resource becomes unprofitable by year five

Added Renewables are More Likely to Face Output Curtailment

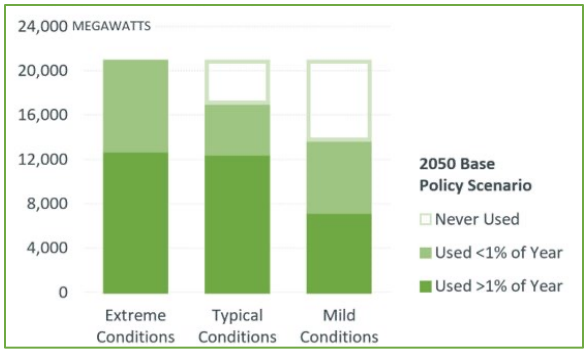


New Renewable Resources May Require Higher Levels of Financial Support

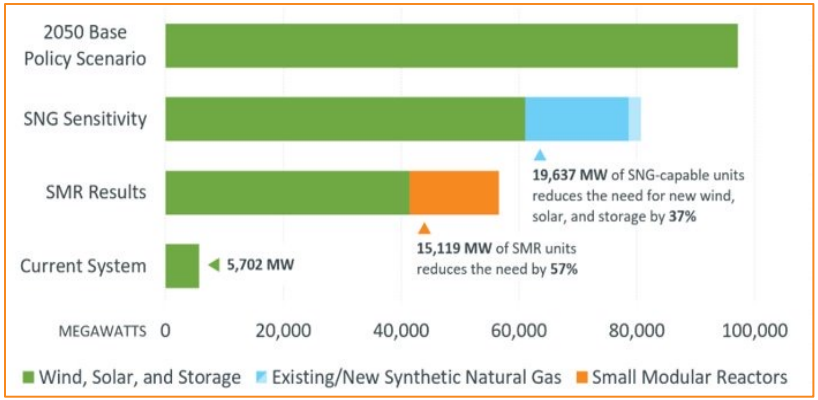


EPCET examined how discretionary load could reduce peak demand, curtailments, periods of negative LMPs, and PPA prices

Dispatchable Capacity Needed for Reliability May Operate Infrequently



- Resources needed to maintain reliability during the harshest conditions may only run for a few days once every few years
- Given the need for dispatchable resources in 2050, EPCET explored the use of zero-carbon generation



- As energy prices and capacity factors drop, market design will have to adjust to pay for flexibility, and ensure reliability services are adequately compensated

Questions