

Chart of the Week 2022-40: New England Winter Electricity Generation Mix: Some Considerations

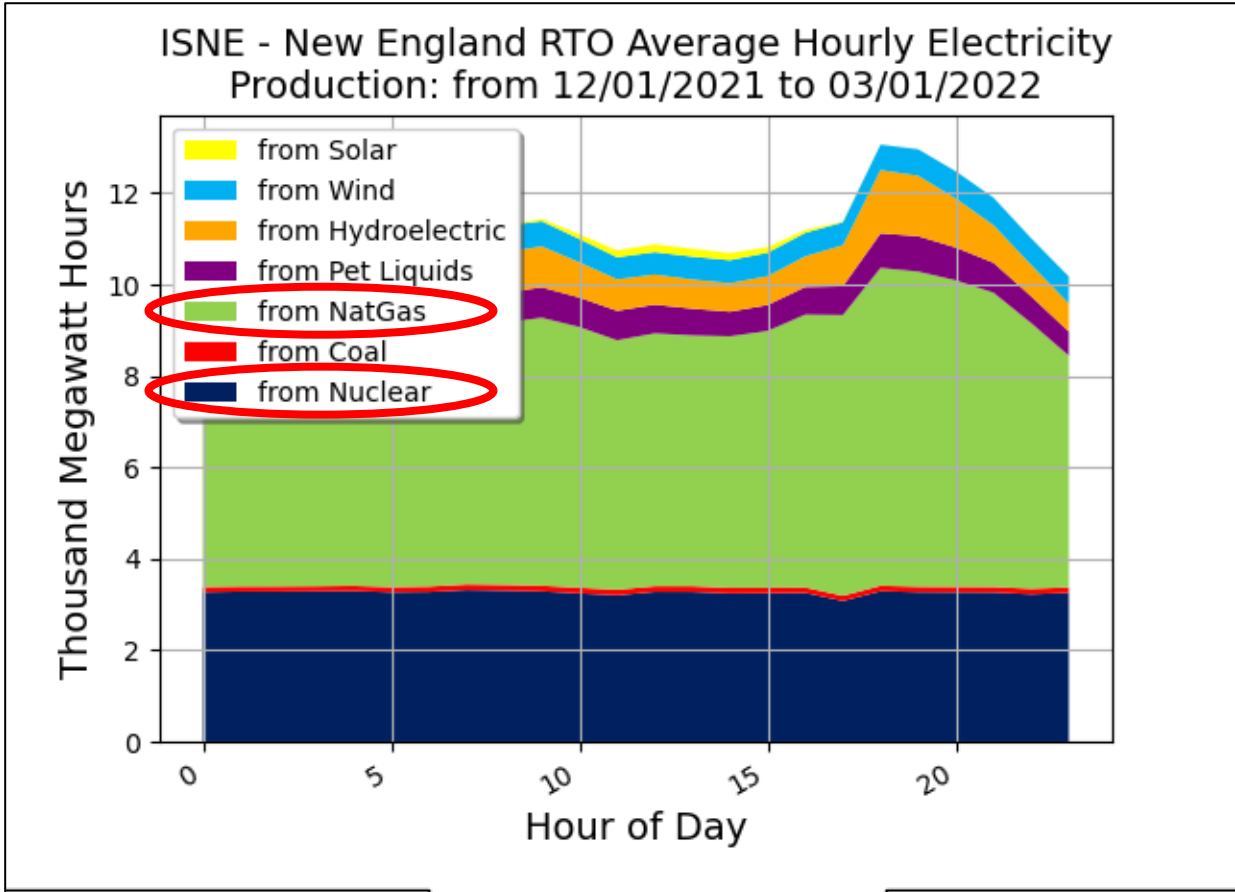


**Max Pyziur
October 26, 2022
Washington, DC**

New England Winter Electricity Generation Mix

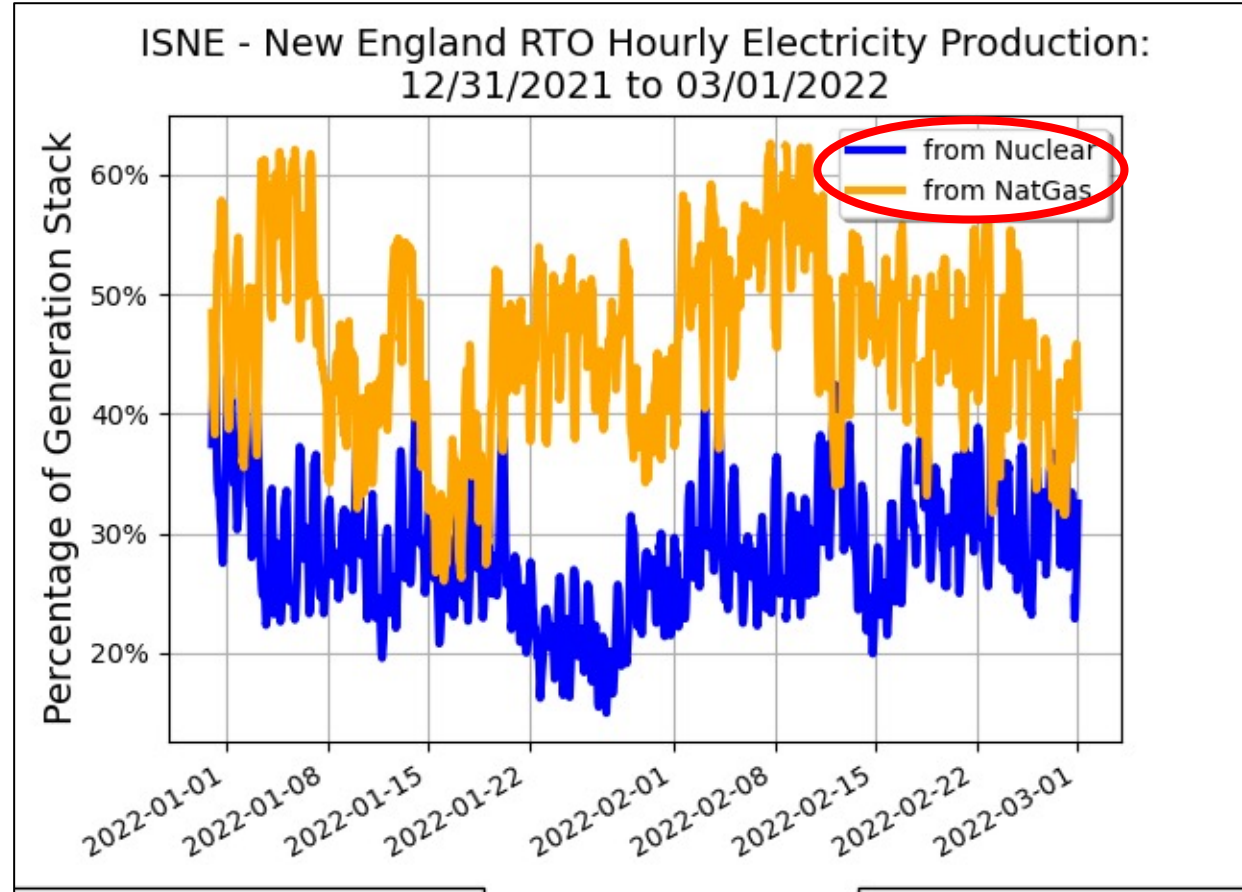


At peak winter demand, ISNE generates approximately 12 thousand megawatts per hour with an average of 46% from natural gas generation and 29% from nuclear.



Analysis based on Hourly EIA Data

@EPRINC_DC - Oct 20, 2022



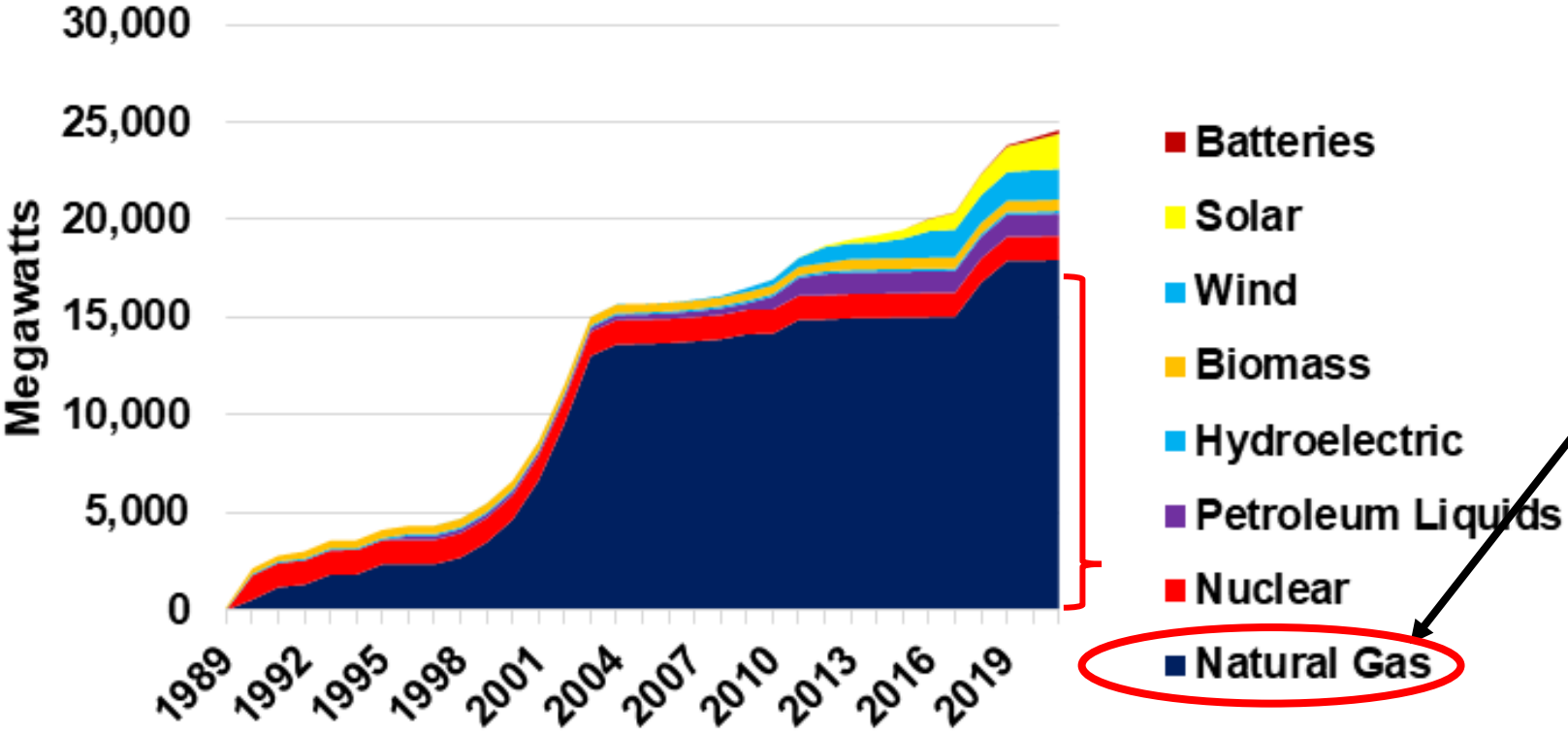
Analysis based on Hourly EIA Data

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New England Winter Electricity Generation Mix



Cumulative New Generating Capacity: New England RTO: 1989 - 2021



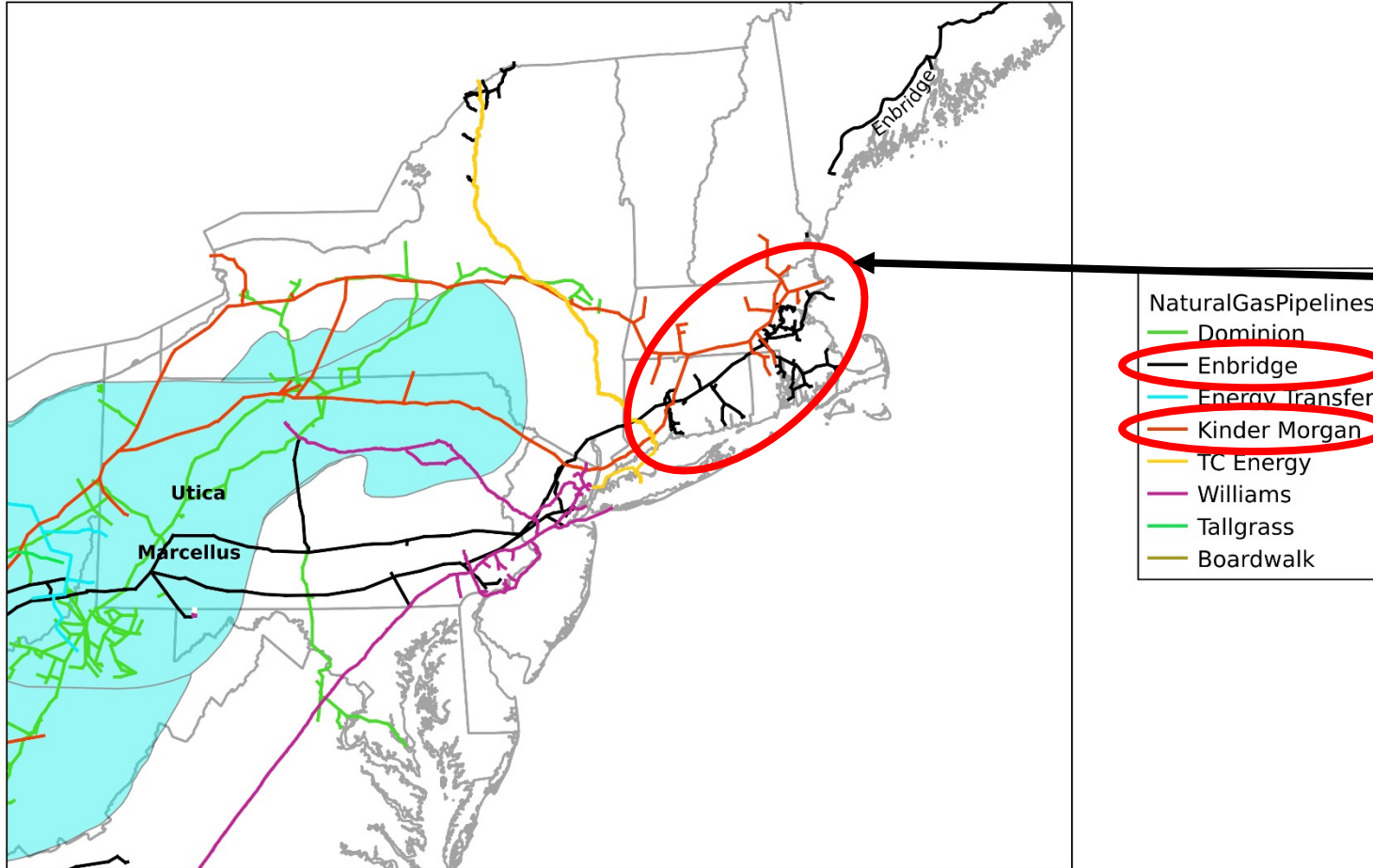
ISNE's generating capacity is dominated by natural gas and nuclear with the remainder consisting of a small base of intermittent renewables, as well as traces of coal and petroleum liquids. Much of the natural gas capacity has been added in the last thirty years displacing retired coal and petroleum liquids generation.

Analysis Based on EIA Data

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New England Winter Electricity Generation Mix

Primary U.S. Northeast
Natural Gas Pipeline Systems



The ISNE operating area has no indigenous sources of natural gas. It is serviced primarily by two natural gas transmission systems — Enbridge's 3.1 BCF/d Algonquin system and Kinder Morgan's 1.1 BCF/d Tennessee Gas Pipeline system — shipping gas from producing areas in the U.S. Mid-Continent.

Analysis Based on EIA, Company Data

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New England Winter Electricity Generation Mix



- **Independent Service Operator New England (ISNE) operates the electricity grid for six Northeastern U.S. states: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont, Together, they have a population of over 15 million in an area of almost 63 thousand square miles, about a quarter of the area of Texas.**
- **ISNE's generating capacity is dominated by natural gas and nuclear with the remainder consisting of a small base of intermittent renewables, as well as traces of coal and petroleum liquids. Much of the natural gas capacity has been added in the last thirty years displacing retired coal and petroleum liquids generation. At peak winter demand, ISNE generates approximately 12 thousand megawatts per hour with an average of 46% from natural gas generation and 29% from nuclear.**
- **The ISNE operating area has no indigenous sources of natural gas. It is serviced primarily by two natural gas transmission systems -- Enbridge's 3.1 BCF/d Algonquin system and Kinder Morgan's 1.1 BCF/d Tennessee Gas Pipeline system -- shipping gas from producing areas in the U.S. Mid-Continent. Critically, natural gas-fired generation is the most responsive to rapid shifts in demand, especially those from sudden cold winter weather.**
- **... continuing ...**

New England Winter Electricity Generation Mix



- ... continuing ...
- Unlike coal, petroleum, or nuclear fuel, there is no practical way to store natural gas on-site. ISNE natural gas-fired power generators rely on fuel purchased mostly on spot markets with the remainder under contract. ISNE's natural gas needs compete directly with utilities that service residences and commercial properties. Any pipelined natural gas shortfall caused by increased weather demand needs to be met with other gas sources, notably LNG imports.
- Currently, global LNG markets are tight and costly. With the loss of Russia-produced natural gas due to a combination of curtailments and sabotage, U.S. produced LNG is in high demand particularly in Europe. In addition, any U.S.-sourced LNG shipped into the Northeast is laden with more costs due to Jones Act considerations.
- Ahead of winter 2022-2023, ISNE officials ([here](#) and [here](#)) are warning that any sort of extreme cold weather combined with a lack of natural gas supplies could put strains on the region's grid undermining its reliability and possibly resulting in the need for rolling blackouts, similar to those in California.
- Additional natural gas pipeline capacity into the Northeastern U.S. states has been proposed, but much of it is under scrutiny due to increased legal and regulatory disputes.
- The expanded version of this slide deck is available at: <https://eprinc.org/chart-of-the-week/>
- For more information on this chart, please contact Max Pyziur (maxp@eprinc.org)