



Gordon van Welie  
President and Chief Executive Officer

December 23, 2021

Katie S. Dykes, Commissioner  
Connecticut Department of Energy and Environmental Protection  
79 Elm Street  
Hartford, CT 06106-5127

Dear Commissioner Dykes:

I am writing in response to your letter dated December 17, 2021 concerning energy security in New England for this winter and I appreciate your obvious concern about this matter.

This letter highlights the wide range of actions that ISO New England (ISO) has taken in partnership with regional stakeholders and our regulator, the Federal Energy Regulatory Commission (FERC), to secure resources and enhance operational procedures to address energy security. We are confident that we have exhausted the options that are within our scope of authority.

For the past two decades, the ISO has raised concerns about energy supply issues limiting electricity production during periods of extreme cold weather. During this timeframe, we have worked continuously to deploy actions within our jurisdiction and to encourage the New England states and stakeholders to take regional measures to solve for this risk. The region has yet to reach consensus on an overarching and sustainable solution.

**Extreme Cold Weather in 2013-2014 Focused Attention on New England’s Energy Security Challenges**

In December 2013, in the midst of one of the most difficult and expensive winters in recent memory, New England’s U.S. Senate delegation called on the U.S. Department of Energy (DOE) to hold stakeholder outreach meetings in New England in 2014 as part of DOE’s Quadrennial Energy Review effort. Then, on April 21, 2014, U.S. Secretary of Energy Ernie Moniz convened a pair of regional meetings in New England, including a meeting with Connecticut Governor Dannel Malloy and various Connecticut policymakers.

At all of those meetings, there was a clear recognition that the growing demand for natural gas, coupled with impending retirements of non-gas resources had, and would continue to, lead to increasing constraints on the region’s natural gas pipelines – impacting both reliability and prices. There was no consensus action plan developed at these meetings, however various regional entities then engaged in a multi-pronged, but relatively uncoordinated, series of efforts to address the issue.

These efforts ranged from an unsuccessful attempt by the states to increase pipeline capacity, to the proposal of various wholesale market design improvements by the ISO (some successfully implemented, others not), and ultimately various state-led strategies to wean the region off fossil fuels, including through development of offshore wind and plans to develop additional transmission connections to Québec. Most of the planned, major infrastructure investments in New England have yet to come to fruition.

In parallel, the region is beginning to transition heating and transportation to the electric grid. Many studies indicate that, in order to achieve decarbonization goals, the New England electric grid will become winter peaking around 2030 and that electricity demand will more than double in the coming decades. Without a mitigation plan, this increased demand, coupled with a dependency on just-in-time energy supplies, will exacerbate reliability risks during extreme weather.

### **ISO's Winter 2021-2022 Outlook Shows Heightened Risk**

Ahead of winter 2021-2022, we have communicated how natural gas pipeline constraints, coupled with global supply chain issues related to deliveries of oil and liquefied natural gas (LNG), are placing New England's power system at heightened risk. In raising these issues, we are trying to raise awareness of this risk so the public is prepared given the supply dynamics this winter.

### **A Range of Actions to Address Energy Security, Though Vulnerabilities Remain**

The ISO has long advocated for states and stakeholders to make energy infrastructure investments to address fuel security risks and we have taken the actions available to us to address these risks through the wholesale electricity market design and operational improvements. As you note, we have also put in place temporary measures to fill short-term reliability gaps. I will expand on those measures below. We have made improvements to situational awareness for ISO system operators to enhance our visibility of the fuel systems on which the electric grid currently relies. We have posted a detailed timeline featuring numerous ways in which ISO New England and the region have sought to address these challenges.<sup>1</sup> In October, the ISO shared a presentation with the New England states highlighting these actions.<sup>2</sup>

While the region has made incremental progress on addressing energy supply risks, the fundamental energy-supply chain vulnerabilities still remain and threaten our collective ability to navigate the clean energy transition successfully. More recently, the events in California and Texas have revealed the vulnerabilities and systemic risks inherent in the energy supply chain.

This has further illuminated the reality that wholesale markets are not designed to allow suppliers to internalize the very high costs associated with fully mitigating the risks associated with low-probability, high-impact, extreme weather events in their offers, and neither are they required to do so. To require this level of hedging from wholesale suppliers would be very expensive.

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<sup>1</sup> Timeline: Historical Efforts to Address Fuel Security Issues in New England, ISO New England; <https://www.iso-ne.com/about/what-we-do/in-depth/efforts-to-address-fuel-security-in-new-england>

<sup>2</sup> ISO New England Energy Security Timeline: 2004–2025, Multiple Approaches Undertaken to Address Region's Energy Security Risks, ISO New England, December 22, 2021; <https://www.iso-ne.com/static-assets/documents/2021/12/new-england-fuel-risk-2021-2022-necpuc-12-22-2021-final.pdf>

### **ISO Action to Increase Visibility into the Regional Energy Supply**

The ISO does not have authority or control over the energy supply chain serving the region or over the fuel-procurement strategies of power plants operating in the wholesale electricity market.<sup>3</sup> However, the ISO has taken action to increase our visibility of the gas supply system and the inventory levels for power plants with on-site fuel storage. Improving situational awareness has become an essential tool for system operators as the region's fuel infrastructure has become increasingly constrained.

As examples:

- *Improved Information Sharing with the Gas Pipelines:* In 2014, the ISO made changes to the Information Policy in our tariff to enable sharing of information on scheduled output of natural gas-fired generators with interstate natural gas pipeline operators. This change provides greater accuracy on unit availability and operational capabilities, improving regional reliability. Enhanced communications allow improved insight and understanding when natural gas supply issues may adversely affect the bulk power system.
- *Rolling 21-Day Forecast Tool:* Since 2018, the ISO has published its 21-Day Energy Assessment Forecast and Report.<sup>4</sup> During the winter, this report is updated weekly or more frequently if necessary. The forecast is based on current system conditions, forecasted weather, load, generators' reports of stored-fuel inventories and emissions limitations, and includes status of fuel delivery systems. As a part of its winter operations, ISO New England routinely monitors weather forecasts and fuel supplies, including the availability of pipeline gas and expected production from wind and behind-the-meter solar resources.

The ISO also surveys generators at a minimum weekly to determine their inventories of stored fuels. These surveys are combined with forecasted consumer demand and published to the ISO website on a rolling 21-day look-ahead aimed at identifying potential energy shortfalls early enough to be addressed. This planning tool is unique among the ISO regions.

- *Data on Fuel Inventories:* Since 2019, the ISO has published regular reports on oil-depletion and usable-oil inventory.<sup>5</sup> This data provides the total amount of usable fuel oil at generating stations in New England that use oil for their primary or secondary fuel. The ISO also tracks LNG shipments to the region to improve its real-time awareness of this fuel.

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<sup>3</sup> The ISO cannot require generators to procure fuel in advance, though resources paid through the Forward Capacity Market to be available during periods of system stress face significant financial penalties if they do not meet their commitments.

<sup>4</sup> 21-Day Energy Assessment Forecast and Report, ISO New England; <https://www.iso-ne.com/isoexpress/web/reports/operations/-/tree/21-Day-Energy-Assessment-Forecast-and-Report-Results>

<sup>5</sup> Oil-Depletion and Usable-Oil Inventory Graphs, ISO New England; <https://www.iso-ne.com/isoexpress/web/reports/operations/-/tree/oil-depletion-graphs>

### **ISO Actions to Mitigate Energy Security Risks and Enhance Situational Awareness**

ISO New England continuously undertakes a variety of short- and long-term projects to enhance the region's competitive wholesale electricity markets and ensure reliable operation of the power grid. For example, this year, to enhance situational awareness entering this winter, the ISO compared expected consumer demand levels and other system conditions for this winter with three historical weather scenarios (2020-2021, 2017-2018, and 2013-2014) as part of the winter 2021-2022 seasonal system outlook.<sup>6</sup>

Additionally, the ISO initiated a project in the fall of 2021 to conduct a probabilistic energy security study for the New England region under extreme weather conditions. This is a pioneering effort by the ISO and the region. The ISO will share this analysis with the states and regional stakeholders for discussion in 2022. Following these assessments, the region will need to discuss what measures it should take to protect against these risks in the future.

The ISO has taken a wide range of actions to secure resources and updated operational procedures to address fuel security concerns. In the absence of investment in fuel supply infrastructure, in 2013 the ISO designed and implemented temporary programs to provide economic incentives for generators to store sufficient quantities of oil prior to the winter. (The ISO subsequently expanded the program to provide incentives for LNG and demand response resources, although the response to these incentives was modest.)

The Winter Reliability Programs ran for five consecutive years from winter 2013-2014 through winter 2017-2018. These programs were only temporary measures, and not sustainable in a market framework given that they were discriminatory – they subsidized the carbon-intensive, oil-fired generators that the region is trying to wean itself from, and had the effect of suppressing wholesale prices for clean energy resources and other existing resources. At this point, short of receiving different direction from the FERC, which voiced its concern about such temporary programs, the ISO has no plans to reinstate them.

Through investments in new resources and the transmission system, the ISO has been able to allow the retirement of many legacy generators with on-site fuel. Since 2014, fuel-secure generators resources that provided approximately 5,080 MW of winter capacity capability have retired (with an additional 460 MW scheduled for retirement by June 2025). The region's energy supply constraints, however, create challenges when resources seek to leave the market, notably those with on-site fuel inventories. The ISO, and the rest of the region, experienced this when, in 2018, the owner of the Mystic Generating Station (the primary customer for the Distrigas LNG facility in Everett, Massachusetts) announced the retirement of units 8 & 9.

The retirement of Mystic will bring the total loss of fuel-secure generating capacity to 6,940 MW. (For comparison, the current generating capability of the ISO New England system is about 31,500 MW). The ISO had to retain the Mystic units for an additional two years in order to ensure fuel security and reliability in the region.

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<sup>6</sup> Seasonal System Outlook, ISO New England; <https://www.iso-ne.com/markets-operations/system-forecast-status/seasonal-system-outlook/>

These actions gave the region additional time to implement reliability solutions before the units' eventual retirement in 2024. This last action led the FERC to direct the ISO to develop a long-term, technology-neutral, and market-based solution to replace the stopgap winter programs.

This triggered the ISO to launch a major market design initiative to address the operational risks associated with the clean energy transition, including an attempt to mitigate the identified energy adequacy risks. In April 2020, the ISO filed its Energy Security Improvements (ESI) proposal. The ESI proposal included new and necessary products in the ancillary services market to incentivize the region's fleet to invest in the energy-supply arrangements and technologies needed to run the grid reliably and efficiently. However, the states were concerned about the costs of the proposal and FERC ultimately rejected it in October 2020, terminating the requirement for the ISO to put forward such a proposal.

Nonetheless, the identified operational uncertainties remain and the ISO is continuing to work on enhancements to day-ahead ancillary services to improve reliable operations. However, as described below, we do not believe that it is realistic, or cost effective, to fully mitigate energy-adequacy risks through the wholesale electricity market. This means that the region needs a strategy for either hedging this risk outside of the wholesale electricity market, or for operating reliably during periods when wholesale electricity supplies are insufficient to meet demand during these events.

### **ISO Continues Work with Stakeholders to Develop Innovative Approaches to Energy Security**

The FERC-approved wholesale market structures, together with planned improvements in ancillary services and resource accreditation, will drive some measure of additional risk mitigation. However, it is unlikely that these measures will suffice to cover the risk of low-probability, high-impact extreme weather events. This is because the FERC has applied a non-discriminatory and consistent standard to all generators (whether they be fossil or renewable), such that, beyond their day-ahead commitment, they are generally only required to procure, or rely on, input energy (or fuel) that is available in real time. This means that generators are generally relying on "just in time" supplies of input energy. The consequence is that there is insufficient incentive for generators to invest in bolstering the supply chain for fossil fuels, particularly as the need (on average) for these fuels declines.

Paradoxically, due to the dynamics of renewable energy production, while the average utilization of fossil fuels will decline, the need for instantaneous, long-duration (e.g., days and weeks) balancing energy sources will increase.

We are concerned that the energy adequacy problem may get worse over time, until policymakers and stakeholders in New England can successfully engineer a clean energy replacement for the current balancing energy source, which is largely natural gas. This is unlikely to occur without policy support, since the available technologies to provide a reliable long-duration balancing energy source are currently expensive. The DOE has recognized this problem and has launched a number of research and development initiatives through ARPA-E, with solutions ranging from advanced modular reactors, to long-duration batteries and green hydrogen.

We believe that the concerns that we highlighted again this winter will continue until we have a robust, coordinated plan to address the vulnerabilities in New England's energy supply chain and wholesale electricity markets. This will require coordinated policy action by the state and federal agencies that have jurisdiction over the electric grid and the energy supply chain, working with the ISO and other regional stakeholders.

Our experience over the past two decades has led to the realization that a sustainable clean energy transition will require investment in all of the following regional measures:

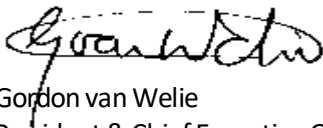
- Clean/renewable resources to ensure that the majority of our energy supply does not emit greenhouse gases,
- Additional transmission to integrate new renewable resources,
- Robust wholesale electricity markets that provide the necessary incentives to balancing resources to ensure reliable grid operations, and
- A robust energy supply chain and/or energy reserve. This can be accomplished through a combination of long-duration stored energy that can be accessed by the region and retail electricity demand that is responsive to wholesale electricity prices.

## Conclusion

To conclude, the actions the ISO has taken over the last two decades, including our preparations for winter 2021-2022, are part of the ISO's continuing commitment to work with the states, other stakeholders, and the FERC to solve for these energy security risks and enable a reliable clean energy transition.

I appreciate your interest and concern in these matters and would be pleased to meet with you and other regional policymakers to discuss how we can work together to achieve these objectives. We will share your letter and our response with our Board and our regulators at the Federal Energy Regulatory Commission, and would like to discuss with you a broader publication of these documents, as they raise important issues.

Sincerely,



Gordon van Welie  
President & Chief Executive Officer

December 17, 2021

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President and CEO  
ISO-New England Inc.  
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Holyoke, MA 01040

Re: Fuel Security in New England for Winter 2021-2022

Mr. van Welie:

I am writing to you today to outline my concerns and questions regarding the ISO's handling of this winter's fuel security issues for the winter of 2021-2022. The ISO's primary responsibility is to maintain the reliability of the region's electricity grid. Consistent with that responsibility, the ISO must identify measures or mechanisms, emergency or otherwise, to proactively address foreseeable reliability issues before they occur. To this point, I am unaware of any proactive measures identified by the ISO that will eliminate or substantially reduce the risk outlined by the ISO for this winter. Given your comments about the urgency of this situation, I would appreciate answers to the questions below by December 23, 2021, or as soon as otherwise possible. I look forward to your response and am happy to meet to discuss further following receipt of your response.

In recent weeks, the ISO-NE has engaged with elected officials, the press, and the public warning about an unusually higher risk of the potential for rolling blackouts or other emergency actions if we experience a colder winter than forecasted. I applaud the ISO-NE's efforts to better communicate with the public and share information about reliability risks. I am concerned that thus far the ISO has raised these concerns without clearly indicating to the states or the public what it is doing to proactively address these concerns this winter.

The ISO has indicated that it has concerns about the availability of LNG for the region this winter and the extent to which oil generators have filled up their tanks. Global commodity prices are higher than in years past, and these higher prices could impact the availability of LNG to the region or the incentive to purchase oil without knowing if costs will be recovered. Please answer the following questions regarding the ISO's visibility into this issue in the region:

1. To what extent does the ISO have visibility or information to be able to assess the fuel arrangements of generators in the region on an ongoing basis?

2. Has the ISO examined the LNG arrangements for each of the generators in the ISO that could use that fuel source in a similar way as it looks into the storage levels of oil in tanks on a regular basis, or is the LNG concern expressed by ISO merely based on the higher global prices?
3. If the ISO has examined the LNG arrangements, please describe the level of insight the ISO has into these arrangements.
4. If the ISO has not examined these LNG arrangements, please explain why it has not done so. Please also describe any obstacles that stand in the ISO's way.

Additionally, as you are aware, the ISO had a winter fuel buying program for five consecutive winters from '13-'14 through '17-'18. Further, FERC has approved an interim fuel buying program to cover the winters of '23-'24 and '24-'25. Accordingly, in the near-term we are exposed for this winter and next winter. Please answer the following questions regarding the ISO's consideration of proactive measures to address the fuel security risk:

5. Based on the ISO's level of concern for this winter, and presumably for next year's winter as well, why has the ISO not taken steps to temporarily reinstitute a fuel buying program, which has been successful in the past?
6. Has the ISO identified any other proactive measures—emergency or otherwise—that can be implemented this winter to eliminate or reduce the fuel security risk, even if such steps may be considered out-of-market?
7. If the ISO believes that there are no additional proactive measures capable of implementation for this winter that would eliminate or substantially reduce this winter's risk, please explain why.
8. Should the ISO begin working to propose a fuel buying program for winter '22-'23 now so that if commodity price dynamics continue into next year we do not find ourselves in the same position this time next year?

In conclusion, I am deeply concerned that the ISO appears, at least in its public statements, to be more concerned about our fuel security risks this winter, yet the ISO has done less than in previous years in terms of using the available tools to ensure the region has the fuel supplies we need. I look forward to speaking with you about my questions above, as soon as possible.

Sincerely,

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