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An Update on ISO New England's Study on Regional Fuel Security

ISO New England, the operator of the region's bulk power system and wholesale electricity markets, is conducting a study of fuel security challenges to the continued reliability of New England's power system. In this context, fuel security refers to the ability of power plants to have or obtain the fuel required to generate electricity, especially during the winter peak season.*

ISO New England is focused on fuel security for several reasons. The regional power system is increasingly dependent on natural gas for power generation; the capacity of the region's natural gas infrastructure is not always adequate to deliver all the fuel needed for both heating and power generation during winter; the region has limited dual-fuel generating capability, with emissions restrictions on burning oil; coal, oil, and nuclear power plants, which are needed to maintain reliability when natural gas is in short supply, are retiring; and natural gas is the fuel of choice for most new power plant proposals.

The purpose of the fuel security study is to examine how anticipated generating resource and fuel-mix combinations could impact reliable operation of the regional bulk power system during the winter period. This is an operational study focused on availability of energy during the entire winter period, which is defined as December 1 through February 28 of the following year, and different from a planning study that typically focuses on capacity availability during winter peak days.

This is the first operational study conducted by the ISO to focus on the effect of fuel supply on power system operations throughout an entire winter. As a result, a new study model had to be developed. The model includes more than twenty hypothetical combinations involving different regional resource mixes. These hypothetical future conditions were developed based on a range of resource and fuel types that might be expected to be available in the 2024/2025 timeframe.

Each case is populated with differing levels of non-natural-gas generator retirements, imports from neighboring power grids, dual-fuel power plants (that can generate electricity using natural gas or oil), liquefied natural gas (LNG) imports, and renewable resource development. All the cases take into account the ISO's forecasts for demand reductions provided by energy efficiency measures and distributed solar generation during this timeframe.

This study will quantify each case's fuel security risk—that is, the number and duration of energy shortfalls that could occur during the entire winter period in 2024/2025 and that would require implementation of emergency procedures to maintain reliability. These energy shortfalls are to be viewed as a measure of system stress, with increased shortfalls signifying increased risk and, conversely, fewer shortfalls indicating a lower risk.

It's important to note that the study is not focused on the effects of expanded access to natural gas from the region's pipeline network and will not identify needs for new or expanded pipeline capacity or natural gas infrastructure.

The study is still underway, with completion expected by the end of October, 2017. Because of the new operational focus of this study, and that both the model and preliminary results must be confirmed, it would be premature to focus stakeholder discussion on the inputs to the study. The preliminary set of results will be presented to regional stakeholders for full discussion, at which point the ISO would be able to conduct additional analysis based on stakeholder feedback. Following discussion of the results, the ISO will work with stakeholders to determine whether further operational or market design measures will be needed to address the fuel security risk.

* The ISO conducted an unrelated *Peak-Gas-Day Capacity and Energy Analysis* as a continuation of the *2016 Economic Study: NEPOOL Scenario Analysis*. The ISO conducts economic studies such as this at the request of stakeholders as part of the regional system planning process. The NEPOOL natural gas study evaluated the natural gas system's ability to meet the requirements of natural-gas-fired generation as outlined in the stakeholder scenarios used in the *2016 NEPOOL Scenario Analysis*. The NEPOOL study assumed that the natural gas system will have no planned or forced outages and the gas delivery system will be at full capacity on the summer and winter peak days in 2025 and 2030, while this *Fuel Security Study* quantifies the risks associated with insufficient fuel during the entire 90-day winter period. The NEPOOL analysis also differs from this fuel security analysis in terms of metrics, scenarios, and the variability in power system inputs.