UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Carbon Pricing in Organized	)	
Wholesale Electricity Markets	)	Docket No. AD20-14

ISO NEW ENGLAND INC. PRE-TECHNICAL CONFERENCE STATEMENT

ISO New England is pleased to offer these written comments. We hope they facilitate the Commission's consideration of mechanisms to price carbon dioxide emissions in regions with Commission-jurisdictional organized wholesale electricity markets.

As an initial matter, we want to acknowledge the critical role that the New England states play in establishing de-carbonization polices. Their leadership on this issue has led us to this point: engagement in a region-wide examination of the wholesale markets and how best to harmonize those markets with state policies.

In these comments, the ISO explains its support for net carbon pricing as a means to achieve that harmonization. We recognize that the New England states do not currently support carbon pricing in the wholesale markets for reasons that include their concern about the impact of a carbon price on the cost of electricity. For this same reason, we support the implementation of a *net* carbon pricing methodology, as described herein. Net carbon pricing minimizes price increases to consumers while ensuring that the wholesale electricity markets remain transparent and cost-effective, and are able to compensate both carbon-free resources and the efficient, low-emitting resources that the system requires to operate reliably in the future.

The New England states are also wary of ceding jurisdiction over de-carbonization to the Commission (and indirectly to the ISO). To be clear, ISO New England believes that, even if it is legally possible, it may not be prudent for the ISO or the Commission to unilaterally set the fee on carbon emissions. Instead, we look to policymakers to set that rate. Should policymakers do so, the ISO's existing dispatch and settlements system could be an effective vehicle to orchestrate the simultaneous optimization of reliability and de-carbonization objectives.

All that said, we remain open to other solutions that can bring the same benefits as a net carbon price while achieving the familiar goals of transparency and efficiency in the wholesale electricity markets. Below, we discuss the issues in New England that urgently require a solution, and the reasons we think that net carbon pricing is the best answer that has been identified to date.

Current Conflict Between Wholesale Markets and State Policies

The wholesale electricity markets were launched in New England in 1999 to facilitate competition on a resource-neutral basis, procure energy at the lowest cost, and create incentives for new investments that are borne by developers (and not ratepayers). For many years, the

markets have worked as designed. As discussed in the next section, they have created significant benefits for the New England region.

As noted above, the New England states are leaders in the important fight against climate change. Their primary tool to effect rapid de-carbonization has been to sponsor clean energy resources by directing state-regulated distribution utilities to contract with renewables at above-market prices, outside of the wholesale markets.

These contracts conflict with the wholesale markets. Resources that are sponsored through these contracts become largely indifferent to wholesale market prices, and their subsequent participation in the markets interferes with proper price formation and the markets' ability to attract and retain investment in other resources needed for reliability. Competitive, non-sponsored resources bear the impact of the resulting price suppression, and may be forced to retire prematurely – even though many of them will be needed to balance state-sponsored renewables that cannot supply energy during uncooperative weather.

ISO New England has attempted to mitigate the impacts of out-of-market actions by making changes to the Forward Capacity Market (FCM). That market helps to provide revenue, in addition to energy market revenue, so that the generators needed to assure resource adequacy have the opportunity to recover their costs. This revenue-balancing characteristic of FCM is especially important in a power system that is de-carbonizing; even absent price suppression, renewable resources, with their low daily operating costs, will lead to lower average energy prices and fewer opportunities for competitive balancing resources to supply energy.

Specifically, the ISO has modified FCM by adding two overlapping band-aids of varying effectiveness. First, the FCM rules were modified to add a Minimum Offer Price Rule (MOPR), which attempts to level the playing field between sponsored and non-sponsored resources. In so doing, the rule effectively excludes many sponsored resources from the capacity market. In turn, to allow sponsored renewables to participate in FCM, the ISO developed market-based rules known as Competitive Auctions with Sponsored Policy Resources (CASPR). From the outset, however, the ISO acknowledged that CASPR is a second-best solution, and a more holistic change is desirable.

The MOPR and CASPR rules have created significant complexity and controversy and, at least in the case of CASPR, are taking longer to work than the states anticipated. In the meantime, the states continue to sponsor resources that are not participating in FCM, which eventually could lead to overbuilding in the region, at an unnecessary cost to ratepayers and to market efficiency. As a result, and as discussed in more detail further below, the region seeks a better solution to the conflict between the wholesale markets' drive for least-cost reliable power and the states' de-carbonization policies.

Preserving the Benefits of *Both* Wholesale Markets and State Policies

ISO New England appreciates the critical importance of the states' goals, and the need to de-carbonize the New England economy in accordance with state legislative mandates. We support the states' efforts – as evidenced by the many changes we have made to our markets,

operations, and planning processes to integrate renewable energy technologies into our rapidly-evolving power system.[1]

At the same time, the wholesale markets have brought indisputable benefits. Since their start in 1999, New England's competitive wholesale electricity markets have resulted in significant efficiencies and stimulated billions of dollars of private investment in approximately 16,000 MW of new generation. The region's transition to competitive markets has shielded ratepayers from bad investment decisions and has spurred the development of a more efficient and flexible resource fleet. That fleet is able to deliver power to customers anywhere in the region from the most efficient resources, thanks to investments in transmission infrastructure. These upgrades to the region's transmission system, as planned by the ISO, have not only fulfilled reliability needs, they have also nearly eliminated energy congestion costs in our region.

Most recently, the wholesale markets have provided an orderly process for the exit of almost 7,000 MW of older fossil units and nuclear plants. In some cases, these retirements have furthered the states' environmental goals: as older fossil fuel units have retired, they have been replaced with newer, more efficient and cleaner generators. As a result, air emissions from regional electricity generation have fallen dramatically over the last two decades. From 2001 to 2018, emissions of sulfur dioxide (SO_2), nitrogen oxides (NO_X), and carbon dioxide (CO_2) declined by 98%, 74%, and 36%, respectively. The 80 million short tons of carbon dioxide emissions avoided regionally between 2001 and 2018 is equivalent to taking more than 17 million passenger vehicles off of the road for a year.

The markets have also delivered dramatic reductions in wholesale costs. Average annual wholesale energy prices declined by more than 60 percent from 2008 to 2019. In fact, in 2019, the total value of New England's wholesale electricity market was the lowest since the start of competitive markets. Retail electricity prices in New England continue to be high relative to other parts of the US, but the region's wholesale energy prices are at record lows.[2]

ISO-NE recognizes the important benefits of both the markets *and* the states' environmental policies. We ask the states and stakeholders to keep the benefits of both in mind as we seek to harmonize them.

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[1] As examples, the ISO has developed: a wind power forecast, updated throughout the day, of the energy output of existing wind resources to inform power system operations; real-time wind dispatch and congestion pricing in lieu of wind curtailments in New England; a forecast of the output of behind-the-meter photovoltaic (PV) resources that is included in the hourly day-ahead load forecast; an *annual* long-range forecast of PV resources that is an input to ISO market and planning studies; a 2010 study, in partnership with worldwide experts, on wind integration to evaluate the *operational* impacts of deploying large amounts of wind power resources; and a 2030 Power System Study that identified 12,000 MW of onshore and offshore wind potential in New England in response to a request from the six New England governors. We are now working on rules to ensure the seamless integration of storage and distributed energy resources to the markets.

[2] Retail rates include costs for power supply, transmission, distribution and all other delivery service charges as well as state policy programs. Total residential retail electricity rates (year-to-date through June 2020) ranged from 16.78 cents/kWh to 22.93 cents/kWh among the New England states, according to the US Energy Information Administration. Source: https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_5_06_b.

Carbon Pricing Meets the Region's Objectives

To date, ISO New England has only identified one solution that allows markets to achieve state emissions goals on a resource-neutral basis without harming price formation, and is simple, cost-effective and transparent: carbon pricing.

The essential design requires the ISO or another administering entity to charge each generator a policymaker-determined fee based on that generator's carbon emissions. Generators would incorporate that fee into their offers, and prices in the offer stack would rise to reflect the cost of emitting carbon. Prices in the energy market would continue to be set by the marginal resource, and all resources in the supply stack below the marginal resource would receive incremental revenue.

Emitting generators pay for their emissions, via the carbon fee, in direct proportion to their total impact (i.e., total carbon emissions). For example, wind, solar, nuclear and hydro resources emit no carbon and therefore will retain all the additional energy market revenue resulting from pricing emissions, while storage resources would earn additional revenue in proportion to the difference in the prices (caused by carbon pricing) when charging and discharging. The highest carbon-emitting generators in the cleared bid stack will net no additional revenue.

Such a carbon pricing mechanism is not only feasible, it already exists in the form of the Regional Greenhouse Gas Initiative (RGGI) in which all six New England states participate. However, since its inception, RGGI's aggregate emission limits have been too high, and the resulting carbon prices have been too low, to achieve the de-carbonization levels collectively sought by the New England states – as evidenced by the increasing prevalence of expensive state-sponsored renewable resource development in the region.

Carbon Pricing Design Issues

An effective carbon price requires policy direction from the states or federal government on several significant design issues. The most central of these is the carbon emissions price. From the ISO's perspective, the carbon price must be high enough to create incentives for new and existing resources to de-carbonize, and ideally would reduce the need for other, costly state de-carbonization programs and capacity market workarounds such as the MOPR and CASPR.

Additionally, the ISO urges uniformity across the six-state region. Specifically, all six states must adopt a consistent carbon pricing policy to prevent internal leakage. (Leakage between New England and its adjacent control areas is of less significance, and can be addressed in various ways without materially undermining the viability of regional carbon pricing.)

Policymakers could pursue emissions pricing for carbon using either an explicit carbon price or the familiar emissions "cap and trade" approach (as used by RGGI). Policymakers would also need to make decisions about program administration (i.e., whether by the ISO or a different agency), and the allocation of the revenue from the carbon fees remitted by generators. The allocation could take a variety of shapes, ranging from simple load-weighting to more complex allocations based on state emissions targets, and could be implemented on a gross or net

basis. If gross, demand as well as supply would get a strong price signal; in particular, that price signal to demand could lead to load reductions in peak hours and spur greater energy-efficiency investments.

On the other hand, allocation of carbon emissions revenue on a net basis to wholesale load will reduce price impacts on consumers, which are often cited by policymakers as a concern. Via "net carbon pricing," the emissions fees on resources could be automatically rebated to wholesale buyers through the ISO's wholesale settlements systems.

Impact of Carbon Pricing on the States' Emissions Goals

Ultimately, the principal benefit of carbon pricing, indicated by both theory and experience, is the achievement of the states' goals at a dramatic reduction in cost relative to expectations and technology-directed policy approaches.[3] This occurs because suppliers pursue the most cost-effective technologies.[4]

A recent Analysis Group study found that pursuing emissions objectives through current state-mandated programs and out-of-market procurements will almost certainly achieve the results inefficiently, at costs well in excess of what would result through carbon pricing. Specifically, Analysis Group estimated that, when compared to utility-administered resource procurements, an efficient carbon price within the competitive markets would achieve the emissions reductions needed to achieve the states' aggregate de-carbonization objectives at a cost savings of $100–300 million over the period 2026–2035.[5]

Impacts of Carbon Pricing on the Wholesale Markets

A carbon price will create powerful incentives within the wholesale markets for renewables development and retention of the most efficient balancing resources that operate when renewables cannot, including the nuclear units. As noted above, putting a significant price on carbon emissions would raise energy market revenue and encourage investment in resources that profit by supplying energy with low-to-no emissions, thereby driving the clean energy transition desired by the states.

Carbon pricing has an advantage over other methodologies because it compensates "cleaner" technologies, in addition to renewables. Whereas other programs are technology-

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[3] This effect was vividly demonstrated in the early years of the SO_2 air emissions program. While the EPA projected abatement costs (and therefore allowance prices) in the range of $250 to $350 per ton of SO_2 emitted, actual abatement costs during the first three years of the program (1995-1997) were far less and auction prices tended to range from $100 to $150, reaching a low of $63. As a result, the impact of SO_2 pricing on electricity production costs was far less than policymakers' initial expectations. *See* P. L. Joskow, R. Schmalensee, and E. Bailey, *The Market for Sulfur Dioxide Emissions*, American Economic Review, 1998.

[4] *See* S. Rausch and V. J. Karplus, *Markets versus Regulation: The Efficiency and Distributional Impacts of U.S. Climate Policy Proposals*, Energy Journal (2014, vol. 35), http://dx.doi.org/10.5547/01956574.35.SI1.11.

[5] Analysis Group, *Carbon Pricing for New England: Context, Key Factors, and Impacts* (June 2020), at www.analysisgroup.com/news-and-events/news/analysis-group-assesses-potential-impacts-of-carbon-pricing-for-the-new-england-power-generators-association/. The study was sponsored by the New England Power Generators Association.

specific, and choose winners and losers, carbon pricing will result in additional revenue to the efficient, lower-emitting balancing resources that we need to maintain power system reliability. This additional revenue reduces the potential for premature retirements of these low-carbon generators (and the region's remaining nuclear units).

In short, predictable market-based carbon prices will spur investment in low- and non-emitting resources while compensating existing balancing resources. Without a substantial, stable carbon price, investors in new power generation facilities will face difficult political uncertainties over their costs of future emissions compliance and the financial uncertainties that increasing numbers of sponsored resources create for future energy prices. These uncertainties raise costs, hamper investment, and ultimately may challenge resource adequacy in our region.

The above benefits largely result from the increase in energy market revenue created by an effective carbon price. However, a change in wholesale energy market revenue always has a proportional effect on the capacity market, bringing benefits to that market as well. In this case, because clean (and cleaner) resources receive greater energy market revenue, those resources will require less revenue from the capacity market. Their capacity market offers will, accordingly, be lower, making it easier for them to clear the market without recourse to CASPR. Moreover, to the extent the carbon price supplants the need for out-of-market state subsidies, the MOPR will no longer be necessary, either. The end result will be less duplication of resources in the region and lower costs for consumers.

Next Steps in New England

In 2019, the New England states initiated discussions about the future of the grid for the purpose of "analyzing and discussing potential future market frameworks that contemplate and are compatible with the implementation of state energy and environmental laws."[6] The generators and other stakeholders voiced support for such a discussion, and the New England Power Pool (NEPOOL) and the ISO agreed to dedicate resources to this effort.

As part of this initiative, the region is currently focused on developing a study, or multiple studies, to evaluate the resource mix that may exist at various points in the future as the region moves toward achieving state renewable energy mandates. One or more studies may also analyze potential changes to the wholesale market design to support the reliable operation of the electrical system as those mandates are achieved.

Participants in the initiative are currently discussing which future market frameworks to study. So far, it is not clear to us that any of the alternatives to net carbon pricing will preserve sufficient non-intermittent energy supply resources with the operational characteristics needed to balance a renewables-dominant system – nor is it clear that these alternatives fix the issues around the MOPR and CASPR.

Some have suggested we resolve the controversies surrounding the MOPR and CASPR in the bluntest way possible: by eliminating them. Their elimination, however, would quickly lead to lower revenue in FCM and may prompt premature retirements of the unsponsored balancing

[6] Memorandum to ISO New England at http://nescoe.com/resource-center/2020-workplan-jul2019/.

resources on which we presently rely for reliable system operations. The outcomes down that path are highly uncertain, and may not include an orderly retirement process that facilitates the exit of older, less-efficient resources (and limits retirement to those resources). The loss of balancing resources could result in significant energy price volatility and increased reliability risks. As the recent experience in California has shown, these potential reliability risks are not hypothetical.

In sum, we know that elimination of the MOPR will lead to price suppression in FCM. This result is inconsistent with the ISO's mission to develop competitive, economically efficient markets that are balanced between buyers and sellers.[7] Consequently, ISO-NE cannot support the elimination of the MOPR without an alternative mechanism that either eliminates the need for the MOPR (per the above discussion on net carbon pricing), or that compensates for the resulting price suppression in FCM.

The ISO believes better outcomes can be achieved simply, transparently, and cost-effectively. While we recognize that further study is needed before any final conclusions can be reached, the benefits of a carbon price create a benchmark for any solution to the existing tension between markets and state policy. We remain open to an alternative that allows the region to achieve the twin objectives of reliability and de-carbonization through sound market structures. Development of a mutually-agreeable solution will require policy direction from state or federal policymakers, and significant coordination between the FERC, state regulators and market participants.

ISO New England's management and Board of Directors are fully engaged on this issue, given that the ultimate solution may affect the markets' design, and, in particular, the manner in which resource adequacy is achieved in the region. To ensure that we continue to move forward, our Board has directed us to prioritize analysis of net carbon pricing and a forward clean energy market. We hope to conduct these studies within the existing stakeholder process that is underway in the region, and look forward to exploring the possibilities with the New England states and market participants.

[7] In part, the ISO's mission requires it to:

> create and sustain open, non-discriminatory, competitive, unbundled, markets for energy, capacity and ancillary services (including operating reserves) that are (i) economically efficient and balanced between buyers and sellers, and (ii) provide an opportunity for a participant to receive compensation through the market for a service it provides, in a manner consistent with proper standards of reliability and the long-term sustainability of competitive markets.

Section 2.3 of Participants Agreement among ISO New England as the Regional Transmission Organization for New England and the New England Power Pool and the Entities that Are from Time to Time Parties Hereto Constituting the Individual Participants, at https://www.iso-ne.com/static-assets/documents/2015/10/parts_agree.pdf.

Thank you for the opportunity to submit these written comments.

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Submitted on September 25, 2020