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**Written Comments**
**New England Energy Vision Technical Forum**
**Wholesale Market Design**

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The New England Power Generators Association (NEPGA)[1] appreciates the opportunity to comment on the states' review of Wholesale Market Design as part of the New England Energy Vision process. NEPGA recognizes the concerns outlined in the Vision Statement and shares the states' interest in better aligning the competitive wholesale markets with the states' clean energy and climate-related laws. NEPGA offers the following comments in an effort to identify efficient, market-based solutions that can help the states meet their legal obligations while maintaining long-term system reliability and competitive market outcomes for the continued benefit of the region's consumers.

The wholesale electricity markets have achieved remarkable results for consumers over the last 20 years. As intended by legislation restructuring the electricity industry, the markets have delivered merchant investment, competitive pricing, sustained reliability, and more efficient results for consumers. The markets have also ensured reliability at least cost, as seen through 9,627 MW of new generation capacity at the lowest costs ever and major reinvestments in existing resources, coupled with the lowest wholesale energy prices in the ISO's history.[2] The competitive market's price signals incentivize investment in resources – both new and existing – where and when they are needed, providing the region with resource adequacy and other critical reliability services. But to best chart a path for the future of the marketplace, there must be a common understanding of where the region started.

In 2015, a report prepared for the New England States Committee on Electricity (NESCOE) took a look back to assess how the region was faring in the goals laid out for restructuring.[3] That report highlighted the transfer of risk from ratepayers to private investors as a primary rationale for the states' support for restructuring and a move to market competition. Public officials and other proponents sought to "shift the risk of long-lived, capital-intensive investment decisions from utility ratepayers to the shareholders of unregulated players." Over $10 billion in new capital was invested in New England to build up the region's generation supplies in dozens of new facilities. One of the consequences of that surge in investment is that it produced excess capacity that resulted in significant losses for merchant generators - losses from which generators did not seek recovery from consumers through guarantees. In fact, consumers were shielded from the considerable costs of those decisions because of the states' decision to move

[1] The comments expressed herein represent those of NEPGA as an organization, but not necessarily those of any particular member.
[2] https://www.iso-ne.com/about/key-stats/markets#fcaresults
[3] Reishus Consulting, LLC (prepared for the New England States Committee on Electricity), *Electric Restructuring in New England – A Look Back*, December 2015, p. 21.

from the risky utility cost-of-service model to open competition in the wholesale electricity markets.

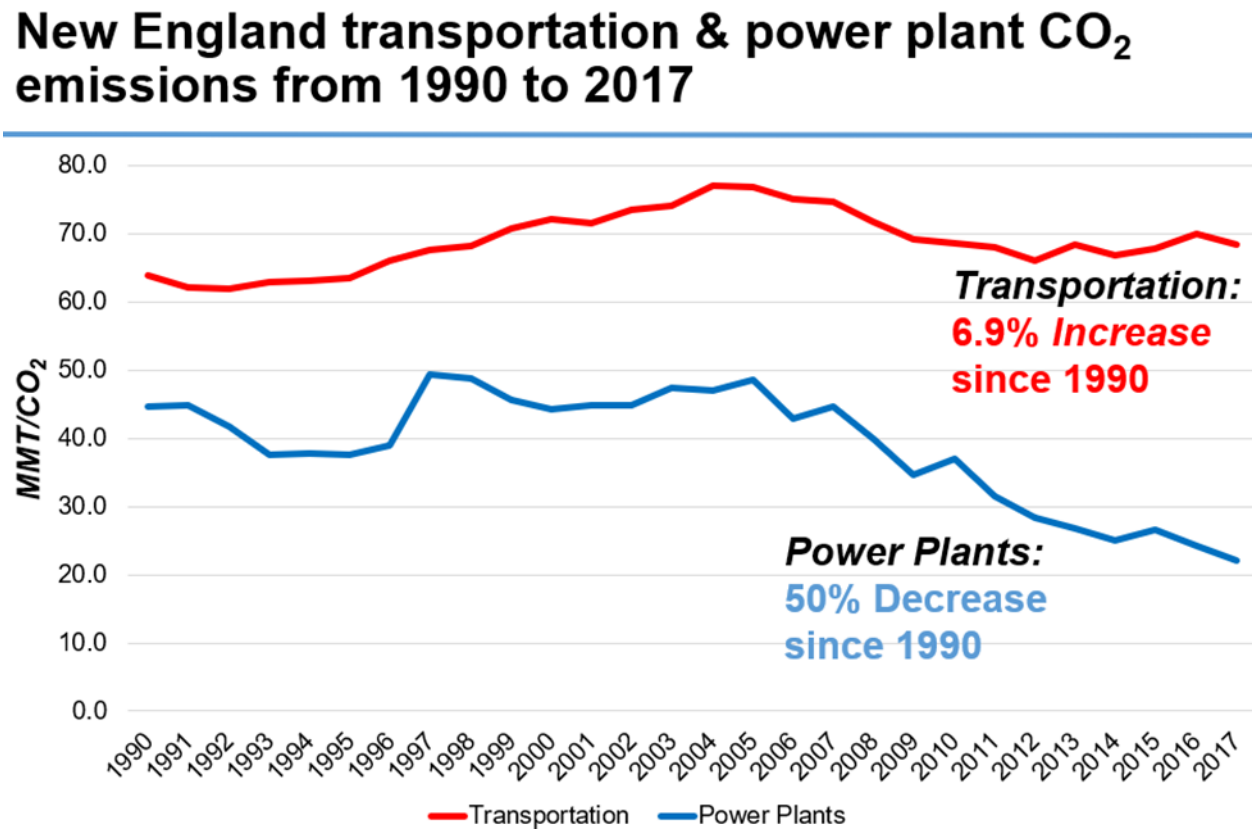
New England saw a real-world example of that shift from the rate-base model to a competitive market, which NEPGA illustrated in a case study.[4]

Between 2007 and 2013, the owners of the former Brayton Point coal and oil plant in Somerset, Massachusetts decided to invest $1 billion in new structures and equipment to comply with state and federal environmental laws and keep the plant running. Those costs were ultimately added to the company's balance sheet and included in the plant's wholesale market offers. By 2014, natural gas prices dropped, leaving a plant designed to serve as a baseload resource running at only 19% of its capacity. Because those environmental investments were made by private actors in the competitive markets, not a single dollar was recovered from consumers and the investments became a sunk cost for the plant's owner. Brayton Point eventually retired, leaving room for newer, more efficient resources to take its place.

In 2006, Public Service of New Hampshire (now known as Eversource Energy), then the owner of the Merrimack Station coal-fired power plant in Bow, New Hampshire, sought and received legislative approval for what Eversource estimated would be $250 million for a scrubber to reduce sulfur dioxide emissions. Instead, the costs for the environmental controls ballooned to $420 million – a 70% cost overrun. Eversource was not only entitled to recover the $420 million in cost overruns from its New Hampshire ratepayers, but it also earned a 9.81% profit.

The primary objective of cost-competitiveness, competitive investment, and resource efficiency in the late 1990s and early 2000s has led to strong results for consumers. But policies shift and the electricity market must now evolve beyond the original objectives of reliability at least cost to better incorporate the risk of climate change. Even without a major constraint, carbon dioxide ($CO_2$) emissions have declined in New England through a combination of competition driving efficiency, new investments, state actions, and the Regional Greenhouse Gas Initiative (RGGI). The result is a cleaner, more efficient fleet of power plants in the region. Since 1990, power plants have decreased $CO_2$ emissions by 50% – the most of any sector of the economy over the same period – according to recent data released by the U.S. Energy Information Agency.[5]

[4] http://nepga.org/wp-content/uploads/2016/04/nepga-fact-sheet-brochure-march15.pdf
[5] https://www.eia.gov/environment/emissions/state/




Driving much of this improvement is the efficiency (measured in heat rate) at facilities in New England, which since 1999 has improved by 22%. In addition, the rapid decline of natural gas prices over the last 15 years has spurred major investments in new generating facilities and improvements at existing plants that have driven a dramatic shift from primarily burning coal and oil to using natural gas for electric generation. In 2000, 40% of the electricity produced in New England was generated from coal and oil resources. Over the last several years, coal and oil plants together account for less than 1% of the region's electricity production.[6]

**Aligning the Markets with State Policies**

NEPGA strongly supports efforts to address the urgency of climate change and the need to invest in the electricity infrastructure to drive and enable that shift. For that reason, NEPGA has long advocated for a meaningful multi-sector price on carbon, which, along with widespread electrification of the transportation and building sectors, would reduce emissions and spur investment in clean technologies through transparent price signals to encourage investment in increasingly affordable clean energy resources. And NEPGA continues to believe that carbon pricing remains the simplest and most efficient means for reducing greenhouse gas emissions – the primary objective of state energy and climate laws.[7] However, NEPGA views carbon pricing

[6] https://www.iso-ne.com/about/key-stats/resource-mix

[7] Cavicchi, J. and Hibbard, P., *Carbon Pricing for New England, Key Factors, and Impacts*, June 2020, identifies an economy-wide carbon price of $25-35/short ton $CO_2$ in 2025 and $55-70/short ton $CO_2$ in 2030 and 2035 – prices sufficient to help the New England states achieve their 2050 greenhouse gas emissions reduction mandates and, over time, provide a mechanism to support financing of large-scale renewable resources, like offshore wind. A carbon price would lower all-in household energy costs, saving consumers $100 to $300 million (in 2020 dollars) in the years 2026 through 2035. A state-

as a starting point for further discussions rather than the only potential solution. The primary objective should be to identify a market-based solution that can help the states achieve their respective mandates and goals. Ultimately, stakeholder efforts should focus on developing a wholesale market design that incorporates the key element missing from today's competitive markets: valuing $CO_2$ to produce the necessary price signals to attract investment in, and ensure the dispatch of, low- and zero-carbon resources.

There is also, however, a clear desire to maintain market-based electric reliability on a regional basis.[8] That blending of integrating new clean energy resources, with sustained reliability requirements, as well as supporting financing of investment of existing and new resources requires a potential expansion of focus. NEPGA supports a wholesale market design that includes reliability products and services to complement and sustain a future grid along with integrating state policies into the market. These set of issues define the challenge New England faces. To do anything less risks reliability, increased costs to consumers, and a failure to meet our climate responsibilities.

Analysis conducted in 2018 found that state-supported resources are on track to comprise over 50% of the region's generation mix by 2027.[9] That amount is clearly understated with the enactment of state legislation over the intervening time to procure additional clean energy resources. It is for that reason that NEPGA has called for an analysis of the future market needs,[10] and why NEPGA supports the new focus by NEPOOL and ISO-NE on a "reliability gap" analysis that should be developed as soon as is practicable. NEPGA has advocated for further changes to the wholesale market design that facilitate the competitive entry and operation of resources needed to meet states' policies and provides sufficient revenue to maintain the operation of other existing resources that are (and will be) needed to provide the backstop and balancing services required in an increasingly larger set of intermittent power resources.[11]

Recent studies examining the changing energy landscape in New England confirm the need to preserve reliability services as the regional system evolves to include more weather-dependent resources. A report from Energy + Environmental Economics (E3) and Energy Futures Initiative (EFI) finds that "while these intermittent and/or energy-limited resources can make significant contributions to reliable electric system operations, numerous studies in other regions have demonstrated that complementary resources will continue to be needed to provide essential grid services and to generate electricity during extended periods of low wind and solar generation."[12]

A Massachusetts report issued in December projects deep decarbonization of the power sector, driven mainly by the installation of roughly 15 and 20 GW each of land-based solar PV and

established carbon price would not be subject to FERC jurisdiction; instead, it would be treated as a cost adder, similar to RGGI and the cap-and-invest program proposed by the Transportation and Climate Initiative.

[8] Gov. Charlie Baker et al., *New England's Regional Wholesale Electricity Markets and Organizational Structures Must Evolve for 21st Century Clean Energy Future*, October 2020.

[9] A. Joseph Cavicchi, Compass Lexecon, *Promoting Competitive Power Markets and Growing Zero-Emission Resources in New England*, November 2018, p. 5.

[10] https://www.utilitydive.com/news/a-dangerous-tipping-point-for-new-englands-wholesale-electricity-market/531564/

[11] https://www.utilitydive.com/news/a-path-forward-for-new-england-to-a-low-carbon-future-why-a-capacity-marke/570791/

[12] Elizabeth Mettetal et al., Energy and Environmental Economics, Inc. and The Energy Futures Initiative, Inc., *Net-Zero New England: Ensuring Electric Reliability in a Low Carbon Future*, November 2020, p.1.

offshore wind over the next 30 years.[13] As the report notes, that level of renewables penetration will require regional reliability services to support the system in those hours when solar and wind resources are not operational. The report finds that large-scale renewables should be complemented by long-duration reliability resources capable of providing power when weather conditions cause reduced output from renewables. For example, the report estimates that offshore wind operations will "die down" a total of about 12 days a year and up to 36 hours at a time. Given the region's anticipated reliance on offshore wind as a primary resource, the report recommends a variety of dispatchable generation than can fill operational gaps through 2050, whether low- and zero-carbon units or flexible thermal plants. As the report explains, "Renewable resources such as wind and solar power must be complemented by a range of resources both on the demand-side and on the supply-side, due to their inherent variability and in order to ensure the reliability of the electricity grid in every hour of the year." Those reliability resources could include fast-ramping and cost-effective natural gas plants, existing nuclear units and potentially new nuclear technologies, and hydroelectric generation.

With a focus on reliability services, NEPGA's analysis has found that resources providing firm, flexible, and/or dispatchable energy are at very real risk of having the revenues necessary to perform the desired level and timing of maintenance if the market does not improve.[14] The report from Compass Lexecon found that all of the 9,000 MW of combined cycle generation that was placed into service between 1998 and 2003 will reach 20 years of operation by 2023 and will therefore require significant maintenance in the ensuing years.[15] Owners will not be able to keep those units in service without a sufficient market revenue stream to support reliable operations. Other existing resources valued for their reliability and environmental attributes will also require long-term investments in the future. Nuclear generation and hydroelectricity in New England that serve important baseload and dispatchable, respectively, energy and zero-carbon services also rely on market revenues to cover their going-forward costs.

While there is often a temptation to neatly segment new versus existing, all new resources will eventually become existing, and all resources will need the assurance that the wholesale market design will provide non-discriminatory value recognition of their contributions in any stage of commercial operation. Contracted resources are often assumed in climate and clean energy analyses to remain in operation for years to come, but absent market improvements will face inadequate market revenues – and the prospect of early retirement – so long as the wholesale markets fail to value their low- and zero-carbon attributes. This risk further underscores the need for preserving a sustainable and durable market design to support competitive revenue opportunities for all resources – those needed to meet state obligations and those needed to support system reliability when the output of the state policy resources tapers off.

[13] Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs and The Cadmus Group, *Massachusetts 2050 Decarbonization Roadmap*. Boston, MA: Executive Office of Energy and Environmental Affairs, 2020.

[14] Merchant wholesale generators face considerable amount of fixed costs (including substantial property taxes to local municipalities) which must be supported from wholesale market revenues. When decreases in those revenues squeeze cash inflows, the offsetting balancing of cash outflows must come from expenses that can be deferred (e.g., delaying maintenance to a period of improved cash inflow).

[15] *Cavicchi*, p. 15.

**The Status Quo is Not Sustainable**

The markets as originally constructed were not designed to account for a given resource's carbon intensity or overall environmental emissions. In part, this is what has driven state procurements of specific resources outside the region's markets, namely through long-term contracting, that exposes utility ratepayers to risks that the markets were specifically developed to avoid more than two decades ago. As noted above, New England state mandates collectively authorize long-term contracting for the vast majority of the electricity supply in the region over just the next several years. Absent changes to the competitive markets to better integrate these resources, the region will continue on its current path, leading to costly and inefficient outcomes.

Resources with these state-backed contracts impact the wholesale markets in two ways. First, absent appropriate mitigation measures, state policy resources could displace those existing competitive resources that will be needed for reliability, which could include low and zero-carbon generation. Second, state-supported resources will likely bid into the Energy Market as price takers (i.e., at $0/MWh), putting downward pressure on the prices merchant generators rely upon for continued operations and capital investments. This would also impact units needed for their unique reliability aspects and those able to help the states meet their environmental mandates. Those resources operate in the market without revenue or cost guarantees, and without consumer-backed long-term contracts leaving them reliant on a fair and competitive market. Price suppression in the market has very real consequences for the viability of these facilities, many of which provide important reliability services to enable the decarbonized future.

Importantly, left unaddressed in the market, the impact of price-taker resources in the energy and capacity markets would lead to what ISO-NE has termed as a "disorderly" retirement of plants that will be needed for resource adequacy and reliability for years to come. The result is lower revenues for existing generators – particularly newer, more efficient, and flexible units – that run less, as well as price-taking baseload units.[16] A plant that is displaced by a state-supported resource will run less often, which makes it more reliant on the Forward Capacity Market (FCM) and the Ancillary Services Market to recoup lost Energy Market revenue. Even when those units do run, they can be expected to earn fewer revenues from lower Energy Market prices or potentially no revenues at all in the case of marginal units. That could then drive another round of reliability cost-of-service contracts. Additionally, there is the risk of a "Green Gap," as existing low- and zero-carbon resources experience the same price suppression faced by traditional generation, yet are excluded from revenue streams favoring new generation, are forced to retire. That outcome raises the very situation that gave rise to the development of the FCM in the first place and is a costly and inefficient outcome that NEPGA believes both generators and the states would like to avoid.

The challenge facing the New England wholesale markets therefore is how to provide adequate market revenues to attract and retain the resources needed to meet the future directed under state policies – not only those needed for their low and zero-carbon attributes, but also those that can provide reliability as clean energy resources are integrated into the system. To do this, NEPGA agrees with the principle in the Vision Statement[17] that the region should pursue market-based solutions to help the states meet their decarbonization mandates and preserve resource adequacy at least cost. Massachusetts Governor Charlie Baker reinforced this sentiment in his statement accompanying his recent veto of a bill that proposed additional

[16] *Cavicchi*, pp. 10-11.
[17] http://nescoe.com/resource-center/vision-stmt-oct2020/

procurements of offshore wind resources.[18] [19] While Governor Baker eventually dropped his objections to continued long-term contracting for large-scale renewables, his statement signaled a desire to work with other states on a transition from state procurements to a market-based approach to meet the Commonwealth's needs.

The markets as they are designed today are adept at managing the complexities of resource adequacy on the states' behalf, ensuring a reliable supply of electricity at the least cost to New England consumers under evolving conditions. States can depend on private investment, driven by market price signals, to incentivize the development of resources where and when they are needed – importantly including continued investments and maintenance at existing facilities that provide reliability and/or carbon-free generation. The FCM acting as the resource adequacy market requires price formation protection to ensure that there is an orderly retirement of less efficient resources, and support for needed facilities. NEPGA agrees that additional improvements are now needed to assure appropriate exit signals to avoid the disorderly retirement scenario. NEPGA wants to work with the states, NEPOOL participants, and ISO-NE to develop a durable, long-term market solution that facilitates the orderly entry and exit of resources, one that balances inclusion of renewable and zero-carbon generation with competitive market outcomes. This is a critical requirement of any pathway forward.[20]

NEPGA understands and appreciates the frustrations some states feel in not seeing as much of an accounting of contracted resources in FCM as currently occurs. NEPGA remains committed to supporting and improving transition mechanisms to recognize the resource adequacy and reliability attributes of these resources. NEPGA, however, also asks that the states articulate any long-term market design improvements to resource adequacy that preserves the balance of integrating contracted resources with providing sufficient revenues to other needed facilities. Shifting responsibility for resource adequacy from the competitive markets to the states would add significant planning and reliability product decisions, which are not currently included in the energy and/or renewable attribute contracts that are being developed. NEPGA believes that while improvements to resource adequacy markets should be examined, the foundational elements of competitive pricing to preserve reliability are sound. The region is stronger working as a collective through a market.

Changes like CASPR, however, only address a transitional phase of meeting state laws. It does not provide a long-term solution that addresses the central issue: how to value state policies in the market to facilitate entry of resources to help the states meet their respective mandates.

**Conclusion**

Restructuring succeeded in creating a competitive wholesale electricity market that has delivered a reliable, cost-effective supply of electricity for over 20 years, while shifting major risks away from consumers. It is clear, however, that changes to wholesale market design are now needed to (1) enable the New England states to meet their respective energy and climate-related laws; and (2) support the continued reliable operation of a fleet of other resources

[18] https://www.mass.gov/doc/climate-change-bill-letter/download
[19] S.2995, *An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy*
[20] Addition of an FCEM or simply removing MOPR may gain entry for new state policy resources, but absent companion market changes, would just push down the revenues to the set of existing resources that will still be needed to meet reliability. The entry of low or no variable cost energy will only increase the importance of capacity and ancillary service revenues to maintain reliable operation of the backstop & balancing fleet the states' plans require.

needed to backstop and balance the energy supply from state policy resources. These are not separable items; they must be implemented together. NEPGA remains committed to working with the states and other stakeholders to develop a solution that harnesses the competitive markets to attract investment in clean energy resources, further reduce $CO_2$ emissions, and maintain system reliability, all at competitive market pricing. NEPGA thanks the New England states for the opportunity to provide this information and stands ready to provide additional information and assistance throughout this process.