UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Fast-Start Pricing in Markets Operated by Regional Transmission Organizations and Independent System Operators	**)** **)** **)**	**Docket No. RM17-3-000**

COMMENTS OF ISO NEW ENGLAND INC.

Pursuant to Rule 213 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission (the "Commission"),[1] ISO New England Inc. ("ISO-NE") submits these comments in response to the Notice of Proposed Rulemaking issued by the Commission in the above-referenced docket (the "Fast-Start NOPR" or "NOPR"). The Fast-Start NOPR proposes to require each regional transmission organization and independent system operator ("RTO/ISO") to implement market rules that meet certain requirements when pricing fast-start resources. While ISO-NE supports the Commission's efforts to improve the pricing of fast-start resources, ISO-NE requests that any final rule issued by the Commission in this proceeding allow for regional variations in fast-start pricing and provide sufficient time and flexibility to complete the detailed design work necessary to implement any required Tariff changes.

On September 24, 2015, ISO-NE, joined by the New England Power Pool Participants Committee, filed (in Docket No. ER15-2716-000) changes to the ISO New England Transmission, Markets and Services Tariff (the "Tariff") to improve price formation when fast-start resources are deployed ("Fast-Start Filing"). The Fast-Start Filing revised ISO-NE's Tariff so that the energy market price is more likely to reflect the cost of operating fast-start resources

[1] 18 C.F.R. § 385.213 (2016). Capitalized terms used but not otherwise defined in this filing have the meanings ascribed thereto in the Tariff, the Second Restated New England Power Pool Agreement and the Participants Agreement.

whenever these resources supply energy economically—thus better signaling, through transparent market prices, the costs that must be incurred in real-time to operate the system.[2] Specifically, the Fast-Start Filing included the following changes: (1) adjusting the real-time dispatch process to satisfy the offered minimum output level of each committed fast-start resource during its initial commitment interval; (2) "relaxing" a pool-committed fast-start resource's minimum output to zero in the pricing process that calculates real-time Locational Marginal Prices ("LMPs") and Reserve Market Clearing Prices; (3) revising the current treatment of a fast-start resource's Start-up Fee and No-Load Fee in the pricing process; and (4) providing compensation to resources, that, in certain circumstances, may incur a lost-opportunity cost by following ISO-NE's dispatch instructions. The Fast-Start Filing was broadly supported by stakeholders and was approved by the Commission on October 19, 2015.[3] The Tariff changes in the Fast-Start Filing will be effective March 1, 2017.[4]

On March 2, 2016, in response to an Order[5] from the Commission, ISO-NE provided responses to the Commission's questions regarding various price formation issues, include fast-start pricing ("Report"). In the Report, ISO-NE agreed with the Commission that there is no single "best" method for setting prices when fast-start resources are deployed—whether from the

[2] Testimony of Matthew White, on behalf of ISO New England Inc. ("White Testimony") attached to Fast-Start Filing at 14.

[3] See Letter Order issued on October 19, 2015 issued in Docket No. ER15-2716-000.

[4] The Commission accepted ISO-NE's request to move the effective date for the Fast-Start Filing from March 31, 2017 to March 1, 2017. Letter Order issued on February 6, 2017 in Docket Nos. ER17-576-000 and ER17-576-001.

[5] *Price Formation in Energy and Ancillary Services Markets Operated by Regional Transmission Organizations and Independent System Operators*, 153 FERC ¶ 61,221 (November 20, 2015).

standpoint of economic theory, or as state of the art "best practice."[6] The Report detailed the efforts in New England to improve price formation, through, among other things, the dispatch and pricing of fast-start resource methodology approved by the Commission in the Fast-Start Filing.

While the rules submitted to the Commission in ISO-NE's Fast-Start Filing address many of the proposed requirements in the Fast-Start NOPR, to the extent the proposals in the NOPR differ from the Fast-Start Filing, ISO-NE respectfully requests that the Commission allow flexibility to accommodate regional variations and not impose a "one-size fits all" approach to the requirements. ISO-NE urges the Commission to provide flexibility for each RTO/ISO to develop market rules that meet the Fast-Start NOPR's goals in a manner that is consistent with each RTO/ISO's existing market structures and practices. ISO-NE also requests that the Commission allow sufficient time and flexibility for RTOs/ISOs to develop and implement any changes required to fast-start pricing as a result of this proceeding.

I. COMMENTS

1. Fast-Start Resource Definitions and Resource Eligibility

In order to have consistent treatment for fast-start resources across the RTOs/ISOs, the Commission proposes to require that each RTO/ISO define fast-start resources as resources that meet the following performance requirements: (1) are able to start-up within ten minutes or less; (2) have a minimum run time of one hour or less; and (3) submit economic energy offers to the market.[7] As described in the Fast-Start Filing, in New England, the term "fast-start" describes resources that, among other requirements, can be started in thirty minutes or less, and have a

[6] Report at 3.

[7] NOPR at P 46.

minimum run time of an hour or less.[8] Fast-start resources include: Fast Start Generators, Flexible Do Not Exceed Dispatchable Generators, Dispatchable Asset Related Demand resources, and Fast Start Demand Response Resources.[9]

In the Fast-Start NOPR, the Commission asks whether the definition of a fast-start resource should include resources with start-up times greater than 10 minutes.[10] The Commission also seeks comment whether the proposed definition should establish minimum standards to allow for regional variations.[11] ISO-NE urges the Commission to allow regional flexibility with respect to fast-start requirements. In response to the Commission's question regarding the appropriate start time for fast-start resources, ISO-NE believes that the definition should include resources with start-up times greater than the 10 minutes proposed in the Fast-Start NOPR. Resources in New England with 30 minute start times are often committed in real-time to meet reliability needs. Excluding these resources from setting a price that reflects their full cost of deployment would impede the full realization of the Fast-Start NOPR's goal to accurately reflect the marginal cost of serving load.[12] The more flexible start time (30 minutes) utilized by ISO-NE is reasonable and appropriate for New England given the resource mix and operational requirements in ISO-NE's footprint. In New England, fast-start resources are mostly combustion turbines, internal combustion (non-turbine) units, pondage-based hydroelectric generators and pumped-storage hydroelectric generators. Many of the resources in the New

[8] White Testimony at 3.

[9] *See* Tariff Section I.2.2. Each of these resources may have additional requirements specified in the Tariff.

[10] NOPR at P 48.

[11] *Id.*

[12] *Id.*at P 35.

England fast-start fleet require a start-up time longer than 10 minutes and, therefore, would be excluded from fast-start pricing in New England if the start-up time proposed in the Fast-Start NOPR is adopted.

These resources, specifically offline resources with start-up times of up to 30 minutes, are useful and necessary to meet Northeast Power Coordinating Council ("NPCC") criteria which require that at least fifty percent of ISO-NE's second largest contingency be available as reserves that can be online within thirty minutes. ISO-NE also commits and compensates resources to provide 30-minute reserve through a dispatch that co-optimizes the supply of 30-minute reserve with energy and 10 minute reserve markets to meet this requirement. To ensure that prices provide the desired performance incentives to follow dispatch instructions to deliver *both* the 10-minute and 30-minute reserve products necessary to meet New England's reliability requirements, it is important that the Commission's final rule provide the flexibility to continue to include 30-minute resources within the definition of fast-start resources in New England, as accepted by the Commission in ISO-NE's Fast-Start Filing.

The proposed requirement in the NOPR that fast-start resources have a minimum run time of one hour or less is consistent with ISO-NE's current operational practices. However, any requirement that resources with minimum run times greatly exceeding one hour (*i.e.*, a two hour minimum run time) that also meet the startup time and economic offer requirements MUST be afforded fast-start pricing treatment would be inconsistent with New England's real-time scheduling and commitment procedures, but might be reasonable for other RTOs/ISOs with different practices and mixes of resources. ISO-NE urges the Commission to allow flexibility in this parameter for RTOs/ISOs that may have different requirements and/or different operational practices.

2. Inclusion of Start-up and No-Load Costs In Prices

In the Fast-Start NOPR, the Commission proposes that RTOs/ISOs allow fast-start resources' commitment costs (*i.e.*, start-up and no-load costs) to be reflected in prices.[13] Specifically, the Fast-Start NOPR proposes that, in the pricing run, each RTO/ISO determine prices by calculating an enhanced offer for each fast-start resource that includes not just the incremental energy offer but also includes start-up and no-load costs.[14] The Commission states that the enhanced energy offer should include the following components: (1) the incremental energy offer; (2) the amortized start-up cost; and (3) an amortized portion of the no-load cost.[15] The Fast-Start NOPR states that the enhanced energy offer can only be used to set prices during the resource's minimum run time.[16]

ISO-NE requests clarification on the consideration of no-load costs after the minimum run time. While the Commission states that the Fast-Start NOPR "does not address RTOs/ISOs including no-load costs in prices beyond a fast-start resource's minimum run time,"[17] the Commission also seeks comment on the appropriate amortization formula and timeframe.[18] ISO-NE believes that no-load costs should be considered in setting fast-start prices beyond a resource's minimum run time. As explained in detail in the Fast-Start Filing, this is important

[13] NOPR at P 49.

[14] *Id.*

[15] *Id.*

[16] *Id.* at P 52.

[17] *Id.* at fn 108.

[18] *Id.* at P 53.

because a fast-start resource continues to incur no-load cost while it operates.[19] In other words, if the ISO retains a fast-start resource online after its minimum run time because it remains economical to operate, the resource continues to incur its no-load costs. Under the Fast-Start Filing recently accepted by the Commission, the no-load cost of a fast-start resource is amortized over the resource's maximum output and then incorporated into (that is, added to) its incremental energy offer price throughout the resource's actual run time.[20] A high-cost fast-start resource[21] committed to meet a reliability need is generally de-committed as soon as it is no longer needed, which may be well past its minimum run time. If during this post- minimum run time period the fast-start resource is priced at only its incremental energy cost, the resource may not be inframarginal and may not earn sufficient revenue to recover its no-load cost. Unrecovered no-load cost is eventually compensated through uplift.

On the other hand, if a fast-start resource is low cost and remains online by virtue of its low cost, it is unlikely it will set the price (because it is likely to be inframarginal), even if its amortized no-load cost is included in the pricing calculation. For these reasons, ISO-NE requests that in any final order in this proceeding, the Commission allow the flexibility for an RTO/ISO to amortize no-load costs throughout a fast-start resource's actual run time – as the Commission just recently determined to be just and reasonable in New England's Fast-Start Filing.

3. Relaxation of Economic Operating Limit

[19] White Testimony at 42-43.

[20] White Testimony at 43.

[21] Offers submitted by hydro fast-start resources are often sufficiently low cost as to be inframarginal during most of their commitment duration.

The Commission proposes to require RTOs/ISOs, in the pricing run, to relax to zero each fast-start resource's economic minimum operating limit, thereby treating these resources as fully dispatchable for purposes of calculating prices.[22] This approach is consistent with ISO-NE's design,[23] as approved by the Commission. Thus, ISO-NE already complies with this specific element of the proposed rule. ISO-NE requests clarification, however, on certain language used in the Fast-Start NOPR that has the potential for unintended consequences or confusion. Across the ISO-NE Tariff and in numerous documents setting forth operational procedures and guidance used by both system operators and Market Participants, the phrases "EcoMin," "EcoMax," "economic minimum," and "economic maximum" take on related, but subtly different meanings. For example, a participant's real-time economic offer may state one value for EcoMin, but an unexpected equipment outage might restrict the resource's ability to operate at these levels. In this situation, the operator of the resource contacts the ISO control room to "redeclare" the impacted value (EcoMin or EcoMax) to a new value that accurately reflects the capabilities of the resource. This results in two different values for "EcoMin," one initially submitted by the participant and one later revised during real-time operation. Furthermore, system operators may need to cap a resource's EcoMax value in real-time to address a specific reliability need, or otherwise limit the maximum output of a resource to manage the dispatch of energy-limited resources. This revised EcoMax value may again differ from the value for that same parameter submitted by the participant.

ISO-NE requests that any final rule clearly provide that fast-start pricing may utilize the real-time values of a resource's minimum and maximum operating limits, which may change

[22] NOPR at P 54.

[23] Fast-Start Filing at 8-9.

throughout the day, either due to a change in a participant's economic offer or redeclaration by system operators in response to physical conditions. Different RTOs/ISOs use different terminology in their respective tariffs to address these concepts, and not all RTOs/ISOs use the concept of "economic minimum" and "economic maximum." ISO-NE urges the Commission to avoid the use of terminology in any final rule that might inappropriately limit the ability to amortize costs over the practical real-time maximum output capability of a resource as it may change during real-time operation, or be construed to reference specific tariff terms that in fact have different meanings in the different RTO/ISO tariffs.

4. Offline Fast-Start Resources

While the Commission in the Fast-Start NOPR does not require RTOs/ISOs to allow offline fast-start resources to set prices, the Commission seeks comments on the conditions under which offline resources should be able to set prices.[24] In ISO-NE, offline fast-start resources cannot set prices and ISO-NE requests that the Commission adopt the approach in the Fast-Start NOPR of not requiring an RTO/ISO to allow these resources to set prices. As ISO-NE explained in the Fast-Start Filing, if a resource has not yet been committed by ISO-NE's dispatch and commitment software, there is no simple means to determine whether deploying such a resource represents the marginal action the system would undertake in real-time to satisfy incremental energy demand at each node.[25] Therefore, in New England, allowing offline units to set the price can depress the real-time price and remove shortage pricing even when the system is in a scarcity condition. ISO-NE supports the proposal in the Fast-Start NOPR to allow each

[24] NOPR at P 59.

[25] White Testimony at 41.

RTO/ISO to determine whether or not it is possible and therefore appropriate, to allow offline units to set price.[26]

5. Day-Ahead and Real-Time Market Consistency

The Commission in the Fast-Start NOPR proposes to require RTOs/ISOs to incorporate fast-start pricing in both the day-ahead and real-time markets.[27] In the Fast-Start Filing, the Commission approved ISO-NE's proposal to only include fast-start pricing in the real-time markets.[28] In the Fast-Start Filing, ISO-NE stated that that the benefits of implementation of fast-start pricing in the Day-Ahead Energy Market would have a far smaller impact than implementation in the real-time markets, and that ISO-NE anticipated incorporating fast-start pricing in the Day-Ahead Energy Market in the future in conjunction with other changes to the Day-Ahead Energy Market.[29]

Implementing fast-start pricing in ISO-NE's Day-Ahead Energy Market would be a complex and time consuming endeavor that would require significant software changes. It would also require significant market design work in order to develop successful resolutions to several fundamental differences between the day-ahead and real-time markets. For example, under the Fast-Start Filing as accepted by the Commission, when fast-start pricing produces an LMP that is higher than an unconstrained resource's incremental energy offer for its instructed output level (an inevitable consequence of having separate dispatch and pricing processes), the resource has an incentive to maximize profit by increasing output to the level where its

[26] NOPR at P 56.

[27] *Id.* at P 60.

[28] White Testimony at 17.

[29] Fast-Start Filing at 13.

incremental energy cost equals the LMP.[30] To ensure incentive compatibility (*i.e.*, willingness to follow dispatch instructions), the rules approved in the Fast-Start Filing provide online resources with a real-time lost opportunity cost payment when this situation occurs. Implementing fast-start pricing in the Day-Ahead Energy Market would require careful consideration of how, or if, lost opportunity cost payments are required in the purely-financial Day-Ahead Energy Market, where the concept of "following dispatch instructions" is not directly translatable from real-time. For example, should an uncleared incremental offer receive lost opportunity cost compensation in the Day-Ahead Energy Market? Should lost opportunity cost be calculated for the entire day-ahead period or only the period during which the resource was committed? How would the lost opportunity cost compensation in the Day-Ahead Energy Market impact other Day-Ahead Energy Market uplift compensation? Should lost opportunity cost compensation in the Day-Ahead Energy Market be netted against opportunity cost compensation in the Real-Time Energy Market?

Other market design issues that require careful evaluation prior to implementing fast-start pricing in the Day-Ahead Energy Market include: how to apply startup and no-load cost amortization for a resource with a 15 minute minimum runtime when the Day-Ahead Energy Market clears for hourly intervals; and the treatment of energy and reserves that are co-optimized in ISO-NE's Real-Time Energy Market, but are not in the Day-Ahead Energy Market. Implementing a fast-start pricing design for the Day-Ahead Energy Market that is not thoroughly and comprehensively analyzed within the full framework of New England's energy, capacity and ancillary service markets risks unintended consequences with potentially inefficient outcomes.

[30] White Testimony at 45.

Additionally, incorporating fast-start pricing would require changes to the core Day-Ahead Energy Market clearing system. For example, incorporating fast-start pricing in the Day-Ahead Energy Market would necessitate separate dispatch and pricing runs in the Day-Ahead Energy Market. To accomplish this, a new Day-Ahead Energy Market clearing and pricing engine would need to be developed along with the associated database and workflow changes. The costs to implement such changes could be significant. Finally, ISO-NE would need close coordination with its software vendors to plan for and schedule the significant time required to develop and test the anticipated substantial and complex changes.

In short, ISO-NE respectfully requests that the Commission grant RTOs/ISOs the time and flexibility to resolve such intricate design and implementation questions without stipulating prescriptive rules in any final order. This is particularly important because the answers to these questions depend heavily on the specific structure of an RTO/ISO's market.

6. <u>Timing</u>

The Fast-Start NOPR proposes to require each RTO/ISO to submit a compliance filing with proposed tariff changes within 90 days of the effective date of a final rule issued in this proceeding.[31] While the rules approved in ISO-NE's Fast-Start Filing address many of the proposals in the Fast-Start NOPR, certain proposed requirements, especially the changes to the Day-Ahead Energy Market, would require substantial work and time to develop tariff changes. Additionally, any tariff changes would need to be reviewed and discussed with stakeholders, which typically requires four months even for smaller changes. Potential changes to the Day-Ahead Energy Market would be significant, and could involve a stakeholder process of around six-eight months. Although it is difficult to assess the time required for development and

[31] NOPR at P 66.

implementation before the detailed assessment and market design work have been completed, incorporating fast-start pricing into the Day-Ahead Energy Market and other potential changes in the NOPR appears comparable to the timeframe required to implement the tariff changes in the Fast-Start Filing. That effort, from the start of design work, through stakeholder review, Commission acceptance, software development and testing, and planned implementation required more than 36 months. Therefore, the 90 days proposed by the Commission is not sufficient to develop an effective design, draft corresponding tariff changes and submit a compliance filing in response to any final rule issued in this proceeding.

The Fast-Start NOPR also proposes requiring that the tariff changes become effective no later than six months after the compliance filing is due.[32] In response to the Commission's question about the software changes and time necessary to implement the proposals in the Fast-Start NOPR,[33] given the amount of software changes required by the proposals in the NOPR, ISO-NE does not believe that six months is sufficient time to implement the proposals, especially changes related to the Day-Ahead Energy Market. ISO-NE is currently working on numerous high-priority initiatives that require significant effort from the same staff and external software vendors that will be needed to develop the software changes required by the Fast-Start NOPR. Among other things, those teams are currently working on key projects such as critical cybersecurity enhancements,[34] implementation of the price-responsive demand changes,[35] and implementation of the two-settlement capacity market design.[36]

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[32] NOPR P at 66.

[33] *Id.* at P 65.

[34] For a description of ISO New England's recent and ongoing cybersecurity initiatives, see https://www.iso-ne.com/about/regional-electricity-outlook/cybersecurity-initiatives.

Moreover, the Commission has undertaken several rulemaking actions with significant interdependencies. In addition to the Fast-Start NOPR, the Commission issued a final rule regarding offer caps in November 2016, a notice of proposed rulemaking regarding energy storage in November 2016, and a notice of proposed rulemaking regarding uplift cost allocation and transparency in January 2017. Each of these initiatives directly affects the functioning of the energy markets, and each will likely require significant, and costly, changes to the software and systems used to administer those markets. It could be enormously inefficient and costly to impose different implementation timelines for these projects. It could also be needlessly risky to develop, test, and implement these various changes to the energy market software in rapid succession and with heavily overlapping timelines.

II. CONCLUSION

In conclusion, for the foregoing reasons, ISO-NE respectfully requests that the Commission consider these comments on the Fast-Start NOPR.

Respectfully submitted,

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[35] *See, e.g.*, Part 1 of Two-Part Filing of Demand Response Changes, FERC Docket No. ER16-167-000 (filed October 29, 2015); Letter Order Accepting Demand Response Changes, FERC Docket Nos. ER16-167-000 and ER16-167-001 (issued December 23, 2015).

[36] *See, e.g.*, Order on Compliance Filing, 149 FERC ¶ 61,009 (October 2, 2014).