UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Reactive Power Capability Compensation Docket No. RM22-2-000

NOTICE OF PROPOSED RULEMAKING COMMENTS OF THE NEW YORK INDEPENDENT SYSTEM OPERATOR, INC.

The New York Independent System Operator, Inc. ("NYISO") respectfully submits these comments in response to the *Notice of Proposed Rulemaking* issued by the Federal Energy Regulatory Commission ("Commission") on March 21, 2024 in the above-captioned proceeding ("NOPR").[1] The NYISO challenges the Commission's preliminary conclusion that compensating generating facilities for providing reactive power within the standard power factor range has resulted in unjust and unreasonable transmission rates and urges the Commission to allow the NYISO to maintain its current reactive power compensation program. The NYISO appreciates the opportunity to work with the Commission and Commission Staff through the submission of written comments.

The NYISO supports the NOPR's objective to avoid administratively burdensome processes and procedures to determine individualized, cost-of-service reactive power rates for generation facilities. At the same time, the Commission has not demonstrated that all reactive power compensation is unjust and unreasonable and, therefore, should not impose a uniform implementation approach where certain existing regional approaches effectively procure reactive power service at reasonable costs. The NYISO offers that the Commission could achieve the

[1] Compensation for Reactive Power Within the Standard Power Factor Range, *Notice of Proposed Rulemaking*, Docket No. RM22-2-000 (March 21, 2024).

NOPR's objective of avoiding the increasingly burdensome process required for certain approaches to reactive power compensation while continuing to provide regional flexibility for ISOs/RTOs to retain or develop different reactive power and voltage support service compensation frameworks.[2]

The NYISO has compensated Suppliers of Voltage Support Service ("VSS") using a flat rate, dollars per megavar ("MVAr")-year, structure for more than 20 years. This compensation structure produces sufficient dynamic reactive power capability throughout the New York Control Area ("NYCA") to maintain electric system reliability year after year, at a reasonable total cost to consumers.

The Commission should not impose a uniform implementation approach for reactive power capability compensation. The NYISO requests that the Commission finalize a rule that allows different regions to utilize different compensation approaches, including allowing the NYISO's current reactive power compensation program to remain in effect.

I. COMMENTS

A. NYISO's Existing Reactive Power and Voltage Support Service Compensation Structure is Just and Reasonable

Voltage support service is an essential ancillary service for maintaining reliable bulk power system operations. Since Commission Order No. 888, voltage support has been a mandatory transmission ancillary service and transmission providers must provide at least some reactive power to the transmission system from generators.[3] In order to maintain transmission

[2] *See* NOPR at P 27. For example, the Commission could pursue targeted section 206 actions on specific concerns. *See e.g., Fast-Start Pricing in Markets Operated by Regional Transmission Organizations and Independent System Operators*, 161 FERC 61,293 at P 4 (2017).

[3] *Promoting Wholesale Competition Through Open-Access Non-Discriminatory Transmission Service by Public Utilities: Recovery of Stranded Costs by Public Utilities and Transmitting Utilities.* Order No. 888, FERC Stats. & Regs., Regulations Preambles January 1991 - June 1996 ¶ 31,036, at ¶ 31,707 (1996), *order on reh'g*, Order No. 888-A, FERC Stats. & Regs., Regulations Preambles July 1996 - December 2000 ¶ 31,048 at 30,319 (1997). *Order on reh'g*, Order No. 888-B, 81 FERC ¶ 61,248 (1997), *order on reh'g. Order* No. 888-C, 82 FERC ¶ 61,046 (1998).

voltages on the NYS Transmission System within acceptable limits, facilities under the control of the NYISO are operated to produce or absorb reactive power.[4] Reactive supply and voltage support service is necessary to support all Transactions on the NYS Transmission System.

Since its inception in 1999, the NYISO has coordinated the provision of voltage support service and compensated eligible providers of such service.[5] Rate Schedule 2 of the NYISO Market Administration and Control Area Services Tariff ("Services Tariff") provides for an annual capacity payment per MVAr to those generators in the NYCA that qualify for voltage support payment under the NYISO Tariffs and procedures.[6] The NYISO understands there to be a cost associated with purchasing, maintaining, and operating equipment to provide reactive power support.[7] The cost of reactive power support in the NYCA is directly attributable to the service being provided and the reliability benefits of that service. The Commission has accepted the NYISO's compensation structure as just and reasonable in response to a number of Federal Power Act Section 205 filings over the years.[8]

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aff'd in relevant part sub nom. Transmission Access Study Policy Group v. FERC, 225 F.3d 667 (D.C. Cir. 2000), *aff'd sub nom. New York v. FERC,* 535 U.S. 1 (2002) ("The transmission provider must provide at least some reactive power from generation sources. For this reason, and because a transmission customer has the ability to affect the amount of reactive supply required, we will require that reactive supply and voltage control service be offered as a discrete service, and to the extent feasible, charged for on the basis of the amount required").

[4] Capitalized terms that are not otherwise defined herein shall have the meaning specified in the Services Tariff.

[5] Voltage Support Service ("VSS") is provided under Rate Schedule 2 of the NYISO's Open Access Transmission Tariff ("OATT").

[6] VSS suppliers are also compensated under Services Tariff Rate Schedule 2 for lost opportunity costs incurred when they reduce their energy output in order to provide VSS.

[7] *See New York Independent System Operator, Inc. Filing of Amended Rate Schedule 2 for Market Administration and Control Area Services Tariff, to Provide Payments for Voltage Support Service, and Request for Expedited Action, and Request for Clarification of Prior Payments,* Docket No. ER02-617, December 27, 2001 at pp. 6-7.

[8] *See New York Independent System Operator, Inc.*, 151 FERC ¶ 61,281 (2015), *New York Independent System Operator, Inc.*, 117 FERC ¶ 61,002 (2006), and *New York Independent System Operator, Inc.*, Letter Order regarding *Amended Rate Schedule 2 for Market Administration and Control Area Services Tariff,* Docket No. ER02-617, February 5, 2002.

In 2002, the NYISO implemented, with the support of its stakeholders, a single flat compensation rate for lagging reactive power capability. The single flat rate compensation structure has been a critical component of NYISO's approach since 2002. The 2002 rate was determined from the Commission-approved cost-based rates for voltage support service for vertically integrated generation owners in New York State that was available at the time. The NYISO's reactive power payment structure has always relied on one per-MVAr compensation rate for all qualified suppliers of voltage support service. Year after year this approach has successfully facilitated procurement of the reactive power support necessary to maintain electric system reliability at a reasonable cost to consumers.

The NYISO modified its Voltage Support Service compensation structure in 2016. The revised compensation program was developed with input from and approved by stakeholders, including members of the generation and transmission owner sectors. The 2016 redesign responded to a substantial increase in the need for leading reactive power support changing system conditions observed in the NYCA and set forth a just and reasonable rate to compensate voltage support service providers for both leading and lagging reactive power capability. The revised rate was determined after considering the system need for reactive power capability to maintain reliability, the total cost of the reactive power program, the cost information available to the NYISO, and extensive discussions with Market Participants.[9] Qualified suppliers are now required to demonstrate both lagging and leading reactive power capability annually with test results or operational data. Suppliers responded to the revised compensation structure by more

[9] *See* Docket No. ER15-1042-000, *New York Independent System Operator, Inc.*, Proposed Amendments to its Market Administration and Control Area Services Tariff Rate Schedule 2 (February 13, 2015); and *New York Independent System Operator, Inc.*, 151 FERC ¶ 61,281 (2015).

accurately demonstrating leading reactive power capability through precise testing or actual operations data and providing the leading reactive power when necessary to maintain reliability.

The NYISO's existing reactive power and voltage support service compensation structure continues to procure sufficient leading and lagging reactive power capability at a reasonable total cost to consumers. For more than 20 years, the NYISO's Commission-accepted compensation structure has facilitated voltage support service critical to maintaining reliable bulk power system operations. Circumstances have not changed in the New York Control Area to warrant a pivot in philosophy to find that the existing, Federal Power Act Section 205-accepted voltage support service compensation is unjust and unreasonable.

B. NYISO's Reactive Power Compensation Supports Electric System Reliability

Suppliers of reactive power that are compensated through the NYISO's voltage support service program provide reactive power services to maintain reliability whenever they are online and injecting or withdrawing energy. Based on a resource's demonstrated capability, both within and beyond the standard power factor range, the resource is required to maintain automatic voltage controlling equipment and is obligated to provide reactive power support when needed. Each Resource must be under the operational control of the NYISO or a New York Transmission Owner.

The NYISO requires that suppliers of voltage support service meet the following criteria. Every Resource must successfully perform a reactive power (MVAr) capability test each year in accordance with the NYISO Procedures or provide the necessary operational data to demonstrate the Resource's capability. Each Resource must be able to produce and absorb reactive power

within its tested reactive capability range.[10] Resources must be able to maintain a specific voltage level under both steady-state and post-contingency operating conditions, subject to the limitation of the tested reactive capability. Resources must have functioning automatic voltage controlling equipment to facilitate automatic response to voltage control signals. The automatic voltage controlling equipment could include, but is not limited to, an Automatic Voltage Regulator ("AVR") for non-inverter-based resources or inverters capable of automatic voltage control for inverter-based resources. Automatic voltage controlling equipment allows resources to dynamically produce or absorb reactive power within or outside their standard power factor range as needed to protect system reliability without intervention by NYISO operations personnel or generator operations personnel.

All resources that participate in the NYISO's Voltage Support Service program support electric system reliability. While the suppliers participating in the NYISO voltage support service program often maintain system reliability by producing or absorbing reactive power within their standard power factor range, they also move outside their standard power factor range to support electric system reliability automatically, without deviating from their real power energy schedule.

To facilitate reactive power supply and to maintain reliability, the NYISO's standard large generator and small generator interconnection agreements obligate generators "to maintain effective composite power delivery at continuous rated power output at the Point of Interconnection at a power factor within the range of 0.95 leading to 0.95 lagging" and, at the same time, obligate the NYISO to compensate for reactive power consistent with its voltage support service tariff

[10] If the resource is precluded from running in "lead" mode in which it can absorb reactive power, then the unit is not eligible to provide voltage support services. For information on exemptions from the requirement to absorb reactive power, see section 3.6.6. Exemption from Requirement to Absorb Reactive Power.

provisions.[11] The obligation on suppliers to provide reactive power combined with the NYISO's obligation to compensate for reactive power drive the availability of necessary reactive power capability to support electric system reliability. As discussed below, the NYISO is concerned that eliminating compensation for reactive power within the standard power factor range will introduce confusion among existing generators and new generators, and, in the longer term, introduce reliability issues onto the electric system.

C. NYISO's Voltage Support Service Rate Provides the Right Incentives

The NYISO's Voltage Support Service program encourages Resources to provide cost-effective reactive power which in turn supports transmission voltages throughout the NYISO system under a wide range of normal and emergency operating conditions. Since qualified Resources are compensated for their total reactive power capability, the NYISO program mimics a market by providing more annual compensation as a Resource's capability increases. Resources that can provide voltage support service at a lower cost than the NYISO's compensation rate increase their profit by demonstrating additional reactive power capability. Resources with higher voltage support service costs are not incentivized and provide little or no additional reactive power, beyond the minimum requirement specified in the Interconnection Agreement.

[11] *See* OATT Sections 30.14 and 32.5 (for example, see Section **9.5.1.1 Synchronous Generation. "**Developer shall design the Large Generating Facility to maintain effective composite power delivery at continuous rated power output at the Point of Interconnection at a power factor within the range of 0.95 leading to 0.95 lagging unless the NYISO or the Transmission Owner in whose Transmission District the Large Generating Facility interconnects has established different requirements that apply to all generators in the New York Control Area or Transmission District (as applicable) on a comparable basis, in accordance with Good Utility Practice." and Section **9.5.3 Payment for Reactive Power.** "NYISO shall pay Developer for reactive power or voltage support service that Developer provides from the Large Generating Facility in accordance with the provisions of Rate Schedule 2 of the NYISO Services Tariff.").

The NYISO's approach rewards competitive advantage the same way a well-functioning market would if a reactive power market was possible.[12] These incentives do not exist when reactive power capability is compensated through unit-specific cost-based payments, or as a component of installed capacity market payments or energy market payments. Compensating suppliers for demonstrated leading and lagging reactive power capability encourages Resources to accurately determine their total reactive power capability and to maintain the equipment necessary to provide the service, all of which supports reliable bulk power system operations.

While the total annual compensation for voltage support service is a small fraction of total compensation, when compared to capacity market and energy market compensation, compensation for voltage support service in New York provides the incentive necessary for resources to collectively provide this ancillary service that is required for electric system reliability.

D. Changing the NYISO's Current Voltage Support Service Compensation Structure Could Introduce New Unnecessary and Difficult Compensation and System Reliability Issues

The NYISO is concerned that moving away from its current Voltage Support Service compensation program will unnecessarily introduce difficult compensation issues and, potentially, downstream system reliability issues. Today, NYISO's Voltage Support Service compensation is directly linked to a Resource's capability and obligation to provide reactive power support. Any deviation from the current approach reduces the connection between the reliability service provided and the compensation. At the same time, significant effort would be required to facilitate any new compensation structures.

[12] A well-functioning, competitive reactive power market cannot be administered by the ISOs/RTOs because reactive power needs are highly localized with few resources capable of meeting the need.

To maintain just and reasonable compensation rates across energy, capacity, and ancillary service products, voltage support service compensation is currently factored into the NYISO's calculation and development of the reference price for NYISO's Installed Capacity market, which reflects the market price for the cost of new resource entry. If reactive power compensation is reduced, the lower compensation would likely increase the magnitude of offers into the NYISO Capacity Markets as the lost reactive power revenues would need to be accounted for in the Reference Price. This shift would result in eliminating the price signals and incentives for the reactive power necessary to maintain system reliability, and, instead blending those costs and payments into payments made to all capacity suppliers, without a direct link to provision of the reactive power necessary to support a reliable electric system.

If Generators are forced to provide reactive power within their standard power factor range and to accept muted compensation through capacity market compensation, the NYISO expects that reactive power-specific compensation for service outside the standard power factor range will also be required to maintain electric system reliability. Such a new compensation structure would require both market rules and a significant software project for ISOs and RTOs. The history of reactive power compensation discussed in the NOPR[13] and experienced in the early days of the NYISO[14] suggest that developing market rules for reactive power service outside a resource's standard power factor range would be complex, controversial, and time consuming. Beyond the initial burden of developing market rules, incorporating reactive power into the NYISO's co-optimization of real power (*i.e.*, energy to meet load), Operating Reserves,

[13] *See* NOPR at PP 12 and 18.

[14] *See New York Independent System Operator, Inc. Filing of Amended Rate Schedule 2 for Market Administration and Control Area Services Tariff, to Provide Payments for Voltage Support Service, and Request for Expedited Action, and Request for Clarification of Prior Payments*, Docket No. ER02-617, December 27, 2001 at pp. 6-7.

and Regulation Service would require extensive software changes that would take years to develop and implement based on current obligations and initiatives.

Shifting to event-specific reactive power compensation when a resource is instructed to operate outside its standard power factor range, as contemplated in the NOPR, would require complex market design rules, and could introduce reliability issues to the electric system. First, prohibiting compensation for reactive power support within the standard power factor range contradicts the approach taken in the NYISO's standard interconnection agreements. As discussed above, the NYISO's standard interconnection agreements for large and small generators couple the requirement to provide reactive power support with a NYISO obligation to compensate qualified reactive power providers, consistent with the currently effective Services Tariff. Second, a voltage support service supplier's available reactive power within their standard power factor range varies based on its real power schedule. Therefore, it would be difficult for an ISO to monitor and track how much reactive power support is available to the electric system, how much reactive power support a specific resource is obligated to make available within its standard power factor range, and how energy and reactive power must be traded off to balance with load and to maintain system reliability. This relationship introduces complex new co-optimization questions for an ISO like the NYISO. For example, if maintaining reliability of the electric system requires more reactive power support, does the market software commit additional real power (*i.e.*, energy injection) in order to receive more reactive power support from a resource's standard power factor range or does a generator maintain or reduce its real power injection level and request compensation for providing reactive power support outside its standard power factor range.

Requiring ISOs and suppliers of voltage support service to evaluate the economic impacts of balancing reactive power supply and real energy supply could also introduce voltage stability issues or energy supply issues that could jeopardize reliability. For example, of the many Interconnected Reliability Operating Limit ("IROL") interfaces that NYISO operates, two such interfaces are constrained by voltage collapse limits, Central – East and UPNY – ConEd, and other IROLs are constrained by stability limits. The IROLs are determined based on the understanding that the generators will automatically regulate to maintain voltages at pre-determined levels or set points, as directed by the NYISO or Transmission Owners pre-contingency and post-contingency. The current NYISO Voltage Support Service compensation program requires generators to maintain a functioning automatic voltage controlling equipment to support these IROLs. If NYISO transitions to an event-specific reactive power compensation structure, operators may not be able to count on the automatic reactive power support of the generators while establishing IROL, which could require lower IROL limits. Lower IROL limits lead to increased costs to consumers as interfaces become overly constrained. Constraints may continue to be exacerbated in a future where significant renewable generation sources locate in remote areas and require these transmission interfaces to deliver energy to serve load centers. Unnecessarily limiting the transfer capability of these facilities would jeopardize reliable electric service to consumers in New York, while at the same time increasing energy costs for consumers.

E. The Future of Reactive Power Capability in New York State

The NYISO is always reviewing the voltage support needs of the electric system in New York State. The generation mix is evolving rapidly in response to New York State public policy. The provision of voltage support will potentially be impacted in several ways by prospective

changes in the resource mix available to the NYISO commitment and dispatch systems. First, with fewer thermal units online and more output provided by asynchronous resources, it may become necessary to solely rely on asynchronous resources to provide voltage support at times. Second, as energy prices fall during the peak solar hours and at times when wind generation output is high, it could become necessary to commit resources, including thermal resources, to provide voltage support or to compensate resources that provide voltage support while injecting zero MWs of real power onto the system (*e.g.*, Energy Storage Resources). Third, low energy prices may make it very expensive to commit thermal generation at minimum load to provide voltage support, with the result that thermal resources committed to provide voltage support may create out-of-market uplift costs.

Consistent with NYISO's mission to maintain system reliability and to facilitate competition, voltage support service suppliers have never been restricted to any specific technology type and, with all of the resource changes happening throughout the state, the NYISO evaluates whether or not resources should qualify for compensation based on their ability to provide reactive power support. However, the NYISO does not consider blanket prohibitions based on resource type or technology. Qualified suppliers of voltage support service may include combined cycle units, Energy Storage Resources, and Intermittent Power Resources. Wind or solar Intermittent Power Resources and Energy Storage Resources that participate in the NYISO-administered markets as a Co-located Storage Resource ("CSR") may also participate in the NYISO's Voltage Support Service program. All of these resources provide reactive power support and help maintain electric system reliability throughout the NYCA. However, the NYISO will not admit into the program and compensate resources that are incapable of truly providing reactive power support. For example, the NYISO's Distributed Energy Resource

("DER") rules do not permit Aggregations of distributed resources to qualify for voltage support service compensation.[15] DERs are primarily expected to be connected to the distribution system. They are unlikely to provide measurable and beneficial voltage support service to the Bulk Electric System because any reactive power provided on the distribution system will experience high losses due to motors, transformers, and impedance at the distribution level.

Given the NYISO's record of successful procurement of reactive power support at reasonable costs to consumers, and in order to support reliability during an evolving resource mix, the NYISO requests flexibility to maintain, and potentially enhance, its existing voltage support service rules. For example, the NYISO may need to develop rules to provide the necessary incentives to drive reactive power availability from a wider range of resources or under a wider range of conditions in New York. The current NYISO voltage support service program incents units to provide more MVAr capability than is required by the standard power factor. With less need to commit thermal resources to meet energy demand, and a potentially higher cost of committing these resources out of market to provide voltage support, it will become more important to incent each resource to provide the maximum MVAr capability to minimize out of market commitments and also to take account of voltage support needs in the day-ahead market solution.

F. The Commission Should Allow for Regional Flexibility

Any reactive power compensation requirements should account for regional flexibility based on the existing, Commission-accepted approaches that continue to be just and reasonable. Or, in the alternative, the Commission should consider a final rule that allows various approaches

[15] *See* Docket No. ER19-2276-000, *New York Independent System Operator, Inc.*, Proposed Tariff Revisions Regarding Establishment of Participation Model for Aggregations of Resources, Including Distributed Energy Resources, and Proposed Effective Dates (June 27, 2019); and *New York Independent System Operator, Inc.*, 170 FERC ¶ 61,033 (2020).

to compensating suppliers of reactive power support outside of their standard power factor range. The NYISO, therefore, requests that the Commission provide regional flexibility for ISOs/RTOs to retain or develop different reactive power compensation frameworks. The Commission should not impose a uniform implementation approach for reactive power capability compensation.

Facilitating competition in the provision of voltage support services through compensatory measures, like the NYISO's program, offers practical, legal, economic, and engineering benefits. By financially incentivizing a diverse array of generators to offer voltage support, not only does the NYISO broaden the spectrum of resources contributing to voltage support service—from various generation technologies to transmission and other specialized providers—but also fosters a more competitive environment for the service. This expansion enhances system reliability through increased availability and diversity of voltage support service resources, which is crucial for maintaining grid stability under variable conditions. Legally, this approach supports the principles of fair and non-discriminatory competition for providing an ancillary service mandated by regulatory frameworks and links compensation to the service provided. Economically, the NYISO's approach equates the costs of essential services with competitive pricing and innovative supply of a necessary service, ultimately benefiting consumers with lower electricity costs. From an engineering perspective, a competitive landscape promotes the development of advanced, more efficient technologies to meet the dynamic needs of the power system, enhancing overall grid resilience and adaptability.

II. COMMUNICATIONS AND CORRESPONDENCE

All communications regarding this filing should be directed to:

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III. CONCLUSION

The NYISO respectfully submits these comments for the Commission's consideration and requests that the Commission allow the NYISO to maintain its current reactive power compensation program.

Respectfully submitted,

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May 28, 2024

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CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding in accordance with the requirements of Rule 2010 of the Rules of Practice and Procedure, 18 C.F.R. §385.2010.

Dated at Rensselaer, NY this 28th day of May 2024.

/s/ Stephanie Amann

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