

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

In Reply Refer To:
Office of Enforcement
Docket No. PA19-1-000
July 7, 2020

Christopher R. Sharp
Senior Compliance Attorney
New York Independent System Operator, Inc.
10 Krey Boulevard
Rensselaer, NY 12144

Dear Mr. Sharp:

1. The Division of Audits and Accounting (DAA) within the Office of Enforcement (OE) of the Federal Energy Regulatory Commission (Commission) has completed an audit of New York Independent System Operator, Inc. (NYISO). The audit covered the period from January 1, 2016 through December 2, 2019.

2. The audit evaluated whether NYISO complied with: (1) provisions of its Open Access Transmission Tariff, business practices, corporate bylaws, policies, and codes of conduct related to its market administration obligations; (2) provisions of its Market Administration and Control Area Services Tariff; (3) provisions of select agreements, including foundation agreements, service agreements, and interconnection study agreements; and (4) Order Nos. 825 and 831, and other relevant Commission orders. The enclosed audit report did not identify any findings of noncompliance that require NYISO to take corrective action at this time.

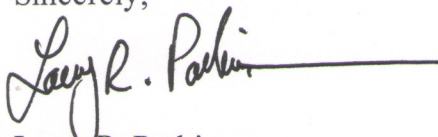
3. On June 25, 2020, you notified DAA that NYISO accepts the draft audit report. A copy of your verbatim response is included as an appendix to this report. I hereby approve the audit report.

4. The Commission delegated the authority to act on this matter to the Director of OE under 18 C.F.R. § 375.311. This letter order constitutes final agency action. NYISO may file a request for rehearing with the Commission within 30 days of the date of this order under 18 C.F.R. § 385.713.

5. This letter order is without prejudice to the Commission's right to require hereafter any adjustments it may consider proper from additional information that may come to its attention. In addition, any instance of non-compliance not addressed herein or that may occur in the future may also be subject to investigation and appropriate remedies.

6. I appreciate the courtesies extended to the auditors. If you have any questions, please contact Mr. Steven D. Hunt, Director and Chief Accountant, Division of Audits and Accounting at (202) 502-6084.

Sincerely,

A handwritten signature in black ink, reading "Larry R. Parkinson", followed by a horizontal line.

Larry R. Parkinson
Director
Office of Enforcement

Enclosure



Federal Energy Regulatory Commission
Office of Enforcement
Division of Audits and Accounting

AUDIT REPORT

**Audit of New York Independent
System Operator, Inc.'s
Compliance with:**

- Provisions of its Open Access Transmission Tariff, Business Practices, Corporate Bylaws, Policies, and Codes of Conduct Related to its Market Administration Obligations;
- Provisions of its Market Administration and Control Area Services Tariff;
- Provisions of Select Agreements, Including Foundation Agreements, Service Agreements, and Interconnection Study Agreements; and
- Order Nos. 825 and 831, and other relevant Commission orders.

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I. Executive Summary

A. Overview

The Division of Audits and Accounting (DAA) within the Office of Enforcement of the Federal Energy Regulatory Commission (Commission) has completed an audit of the New York Independent System Operator, Inc. (NYISO). The audit evaluated NYISO's compliance with: (1) provisions of its Open Access Transmission Tariff (OATT), business practices, corporate bylaws, policies, and codes of conduct related to its market administration obligations; (2) provisions of its Market Administration and Control Area Services Tariff (MST); (3) provisions of select agreements, including foundation agreements, service agreements, and interconnection study agreements; and (4) Order Nos. 825 and 831, and other relevant Commission orders. The audit covered the period January 1, 2016 through December 2, 2019.

B. New York Independent System Operator, Inc.

NYISO, which was formed as an Independent System Operator (ISO) and commenced operations in 1999 as a not-for-profit corporation, operates New York's bulk power system and energy markets. NYISO is regulated by the Commission and governed by a ten-member Board of Directors (Board), of which one member is designated as the President and manages NYISO's day-to-day operations. The role of the Board is to oversee management of NYISO, select its officers, and communicate policies and goals to the Chief Executive Officer. NYISO stakeholders consist of representatives from different sectors comprised of transmission owners, generation owners, other suppliers, end-use consumers, public power, and environmental parties. The Board works with these stakeholders in the ongoing operation and design of NYISO's functions and operations.

NYISO has more than 570 employees and 435 market participants. Serving 19.8 million customers in New York, NYISO manages the flow of power on more than 11,000 circuit-miles of electric transmission lines and 760 power generation units on a continuous basis. As administrator of New York's wholesale electricity markets, NYISO matches offers from energy producers with consumer utility demand with the stated goal of supplying power as efficiently and cost-effectively as possible. NYISO's OATT contains the terms and conditions upon which various types of transmission services are provided. NYISO's MST contains rules governing the operation of NYISO's energy, capacity, and ancillary services markets.

C. Conclusion

The audit did not result in any findings or recommendations that require NYISO to take corrective actions. Audit staff reached this conclusion based on performance of the audit steps outlined in the scope and methodology section of this audit report, including an examination of materials provided by NYISO in response to data requests, audit site visits and interviews with NYISO employees, and review of publicly available documents.

II. Background

A. Energy and Ancillary Services Markets

NYISO operates day-ahead and real-time markets for energy and ancillary services. These markets provide a mechanism for market participants to buy and sell energy and ancillary services at prices established through a competitive, bid-based auction process designed to meet demand on a least production cost basis with the resources available. Prices can be established through contractual, bilateral transactions where quantities and prices are arranged directly between wholesale suppliers and load-serving entities (LSEs), such as public utilities. For energy sales and purchases arranged through the day-ahead and real-time markets, NYISO establishes Locational Based Marginal Prices (LBMPs) that reflect local demand and supply conditions and constraints that may exist when moving energy across the grid to meet demand. Entities scheduling bilateral transactions pay the NYISO-determined price of congestion and losses to transmit energy from the source to the load.

NYISO market participants can access NYISO's day-ahead and real-time market results through NYISO's Decision Support System, an application that processes market settlements, market schedules, LBMPs, bids, and meter data. Many of NYISO's real-time market rules are implemented by automatic software. NYISO's Comprehensive Bid Management System (CBMS) has a public user interface that allows market participants to submit bids, offers, and operational information to NYISO. The CBMS includes automated controls to invalidate submissions that are prohibited by the MST, such as those that are late, incomplete, or fall outside of specified parameters.

Day-Ahead Market

In the day-ahead market, energy is purchased and sold by market participants the day prior to actual consumption or production. Day-ahead market settlement, which is based on day-ahead bids and the corresponding schedule and prices, or day-ahead commitment, produces schedules that are financially binding. The day-ahead market closes at 5:00 a.m. on the day prior to the dispatch day. Security Constrained Unit Commitment creates the NYISO day-ahead market schedules and prices by performing two commitment runs and two dispatch runs in sequence. NYISO then posts the day-ahead schedules and LBMPs by 11:00 a.m. Market Participants may participate in the day-ahead and/or the real-time market. As a result of the day-ahead commitment process, generators are scheduled to be available for dispatch in each hour of the next day, and LSEs are scheduled to buy a certain amount of load at the day-ahead price. In the day-ahead market, these generators are scheduled against the LSE bid-in load and transmission losses, and to meet the NYISO's forecasted load when the scheduled bid

load is not sufficient. From the schedule, LBMPs are computed and forward contracts are established for generation and load accordingly.

Real-Time Market

In the real-time market, NYISO balances energy variations in a generator's real-time dispatch from what is sold in the NYISO day-ahead market and performs a similar calculation to balance day-ahead and real-time energy consumption for load. During real-time operation, changes in operating conditions, the influence of additional real-time supply offers, and variations in actual load result in real-time schedules and prices differing from those for day-ahead. Differences in generation levels and in load consumption, as compared to the first settlement values in day-ahead, are settled at the real-time price.

Real-time bidding closes 75 minutes prior to the operating hour. NYISO uses Real-Time Commitment (RTC) and Real-Time Dispatch (RTD) software to make operational decisions and set energy prices in real time. RTC runs every 15 minutes and projects over the medium-term, next two and a half hour period. RTC issues binding commitment decisions that inform units to start, if needed, to meet load, reserve, and regulation requirements, and schedules import, export, and wheel transactions with neighboring areas. RTD runs every five minutes and projects over the short-term, next one-hour period. RTD issues binding dispatch instructions for units to provide energy, reserves, and regulation, and produces five-minute real-time prices (LBMP). When NYISO responds to a system condition not anticipated by RTC or RTD, e.g., an unexpected generator outage, it activates a specialized RTD program called RTD-Corrective Action Mode (RTD-CAM). RTD-CAM has several modes that can commit or de-commit fast start units or otherwise transition back to normal operations by producing new schedules and prices sooner than the next scheduled RTD run.

B. Installed Capacity Market

In addition to its energy and ancillary services markets, NYISO operates the installed capacity (ICAP) market. The ICAP market provides incentives to satisfy NYISO's planning reliability criteria over the long-term by facilitating efficient investment in new resources and retirement of older uneconomic resources. NYISO meets its resource adequacy needs by administering the ICAP market. NYISO conducts three ICAP auctions: six-month or "strip", monthly, and a spot, with the majority of capacity clearing in the spot auction. Participation in one of the ICAP auctions as an LSE seeking to procure capacity or as a supplier seeking to sell capacity is governed by requirements in the MST.¹ ICAP suppliers must meet a variety of eligibility

¹ See NYISO MST, Section 5.13, Installed Capacity Auctions, 2.0.0.

requirements and may be subject to mitigation rules designed to prevent the exercise of market power. Most ICAP suppliers are required to offer energy in the day-ahead market, or schedule outages or take a derate when the generator is not available. Suppliers are subject to penalty for failure to do so. LSEs must procure enough capacity to meet their specific installed capacity requirement through either bilateral transactions or through one or all of the ICAP auctions. The NYISO administers its ICAP demand curves in the spot auction to ensure all LSEs have met their installed capacity requirement.

The installed capacity requirement is calculated annually and apportioned to LSEs according to a process outlined in the MST.² The process uses inputs from a variety of entities. For example, NYISO calculates its peak demand forecast in coordination with Transmission Owners using the prior year's historical data adjusted for efficiency, load growth, and weather, while the New York State Reliability Council (NYSRC) sets the installed reserve margin based on a complex study designed to meet Northeast Power Coordinating Council reliability standards. The peak demand forecast plus the installed reserve margin together comprise the installed capacity requirement for the New York Control Area (NYCA) region.³

C. Market Monitoring

NYISO employs a hybrid structure for its market monitoring activities, which are performed by its internal Market Mitigation and Analysis (MMA) department and its external Market Monitoring Unit (MMU). Collectively, the two groups operate to fulfill NYISO's market monitoring, mitigation, and analysis responsibilities. The MMA participates in the administration of NYISO's MST and is responsible for:

- (1) Administering mitigation in accordance with the NYISO's tariffs, which includes daily monitoring of the markets to identify potential violations of market mitigation measures;
- (2) Assisting NYISO's efforts to accurately and effectively implement the requirements of its tariffs and intended market design;
- (3) Responding to information and data requests that NYISO receives from the Commission's Office of Enforcement and from the New York State Department of Public Service, consistent with the provisions of

² See NYISO MST, Section 5.11, Requirements Applicable to LSEs, 8.0.0.

³ *Id.*

Attachment O, NYISO's Code of Conduct, and any other provisions of NYISO's tariffs that address protected information;

- (4) Providing data and other assistance to support the MMU;
- (5) Working with other NYISO departments to analyze market outcomes;
- (6) Bringing to the MMU's attention market-related concerns (including, but not limited to, possible market violations) it identifies while carrying out its responsibilities; and
- (7) Participating in and reviewing NYISO's development, implementation, and administration of Reliability Must-Run agreements and associated tariff provisions.⁴

NYISO's external MMU is responsible for ensuring the markets administered by NYISO function efficiently and appropriately, and for protecting consumers and market participants by identifying and reporting market violations, market design flaws, and market power abuses. The external MMU performs three core market monitoring functions:

- (1) Timely reporting any failure by a market party or NYISO to comply with any tariff or services agreement, law, regulation, rule, standard or procedure, including any market power mitigation or other remedial measure, if such violation or failure to comply impairs or threatens to impair the competitiveness or economic efficiency of any of the NYISO's markets;
- (2) Submitting to the Commission, or other appropriate regulatory or enforcement agency, evidence of possible violation of state or federal law for the preservation of competition; and
- (3) Reporting on perceived market design flaws that NYISO's MMU believes could be effectively remedied by rule or tariff changes. The MMA department consults with the MMU regarding development of the inputs to mitigation (e.g., reference levels, going-forward costs).⁵

⁴ See NYISO MST, Section 30.3.3, Attachment O NYISO Market Mitigation and Analysis Department, 3.0.0.

⁵ See NYISO MST, Section 30.4.5, Attachment O Market Monitoring Unit, 56.0.0.

D. Creditworthiness Standards

All entities seeking to participate in NYISO-administered markets are subject to the eligibility requirements set forth in Attachment K of the MST.⁶ Market participants must maintain risk management policies and procedures that address risks that could adversely affect the entity's ability to pay its NYISO invoices. Additionally, each employee and agent that bids or schedules in the NYISO-administered markets on behalf of a market participant must have appropriate training and/or experience. Market participants must also maintain sufficient operational capabilities in terms of personnel resources and technical abilities to promptly and effectively respond to all NYISO communications and directions related to settlements, billing, credit requirements, and other financial matters. Lastly, market participants must satisfy minimum participation requirements of at least \$10 million in assets or \$1 million in tangible net worth as evidenced by audited annual financial statements or, if unable to meet that requirement, post additional security. On January 24, 2020, the Commission accepted an amendment to Section 26.1.1 of the MST.⁷ The amendment added an additional minimum participation criterion – i.e., that Market Participants have “appropriate experience and resources to satisfy [their] obligations to NYISO as they become due.”⁸

NYISO must independently verify that adequate capitalization is maintained on an annual basis. A NYISO market participant that experiences a change in financial position, such that it no longer satisfies the capitalization requirement, is required to promptly notify NYISO and post the appropriate security. Each entity is obligated to demonstrate ongoing compliance with the minimum participation requirements listed above by submitting a notarized officer's certificate by April 30 of each year. Further, NYISO may require a market participant to provide references from one bank and up to three utilities to vouch for creditworthiness.

E. Order No. 760

Order No. 760, issued in April 2012, requires Regional Transmission Organizations (RTO)/ISOs to electronically deliver, on an ongoing basis, to the Commission or its staff, data related to their markets, including physical and virtual offers and bids, market awards, resource outputs, marginal cost estimates, shift factors,

⁶ See NYISO MST, Section 26, Attachment K - Creditworthiness Requirements for Customers, 0.0.0.

⁷ See *New York Independent System Operator, Inc.*, Order Accepting Creditworthiness Requirements, 170 FERC ¶ 61,054 (2020).

⁸ *Id.* at P 3.

financial transmission rights, internal bilateral contracts, uplift, and interchange pricing.⁹ RTOs/ISOs are to provide documentation defining each field in their datasets, and promptly notify the Commission of any changes in how data are collected.

The Commission accepted NYISO's Order No. 760 compliance filing on October 3, 2012.¹⁰ In its compliance filing, NYISO proposed amendments to Section 12.4 of NYISO's OATT to reflect Order No. 760's requirement for the ongoing electronic delivery of data to the Commission on a continuous basis. NYISO's proposed amendments specified that this data included physical and virtual offers and bids, market awards, resource outputs, marginal cost estimates, shift factors, financial transmission rights, transmission congestion contracts, internal bilateral contracts, interchange pricing, capacity markets, uplift charges, and credits.

F. Order No. 825

In 2016, the Commission issued Order No. 825, which addressed certain practices that fail to compensate resources at prices that reflect the value of the service resources provide to the system, thereby distorting price signals, and in certain instances, creating a disincentive for resources to respond to dispatch signals.¹¹ Order No. 825 requires that each RTO and ISO align settlement and dispatch intervals by: (1) settling energy transactions in its real-time markets at the same time interval it dispatches energy; (2) settling operating reserves transactions in its real-time markets at the same time interval it prices operating reserves; and (3) settling intertie transactions in the same time interval it schedules intertie transactions. This order also requires that each RTO/ISO trigger shortage pricing for any interval in which a shortage of energy or operating reserves is indicated during the pricing of resources for that interval.¹²

⁹ *Enhancement of Electricity Market Surveillance and Analysis Through Ongoing Electronic Delivery of Data from Regional Transmission Organizations and Independent Systems Operators*, Order No. 760, 139 FERC ¶ 61,053 (2012) (Order No. 760).

¹⁰ *See New York Independent System Operator, Inc.*, Docket No. ER12-2481-000, (Oct. 3, 2012) (delegated order) (accepting NYISO's Order No. 760 compliance filing).

¹¹ *Settlement Intervals and Shortage Pricing in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 825, 155 FERC ¶ 61,276 (2016) (Order No. 825).

¹² Order No. 825 at P 1.

The Commission accepted NYISO's Order No. 825 compliance filing in February 2017.¹³ In its filing, NYISO represented that it already complied with Order No. 825 in the following ways: (1) NYISO dispatches and settles energy and operating reserve transactions on a five minute basis in its real-time market; (2) for external transactions, in its real-time market, NYISO schedules in either hourly or 15-minute intervals (depending on the external interface and/or transaction type) and settles on a five minute basis; and (3) NYISO triggers shortage pricing for energy and/or reserve shortages through the co-optimization of energy, reserves and regulation service products and use of reserve and regulation service demand curves.¹⁴

G. Order No. 831

In 2016, the Commission issued Order No. 831 to address the incremental energy offer component of a resource's supply offer, requiring RTOs/ISOs to amend their existing caps on incremental energy offers and implement additional measures.¹⁵ Specifically, the Commission required that each RTO and ISO: (1) cap each resource's incremental energy offer at the higher of \$1,000/megawatt-hour (MWh) or that resource's verified cost-based incremental energy offer; and (2) cap verified cost-based incremental energy offers at \$2,000/MWh when calculating locational marginal prices (LMP).¹⁶ Further, the Commission clarified that the verification process for cost-based incremental offers above \$1,000/MWh should ensure that a resource's cost-based incremental energy offer reasonably reflects that resource's actual or expected costs.¹⁷ Incremental energy offers above \$1,000/MWh must be cost-based and verified by the RTO/ISO or the MMU before the RTO/ISO uses the offer to calculate LMPs. Although the Commission did not prescribe how RTOs/ISOs or MMUs should conduct the verification process, the Commission stated that it expected them to build upon their existing mitigation processes for calculating or updating cost-based incremental energy offers. The Commission required that RTO/ISO compliance filings explain what factors the cost verification

¹³ See *New York Independent System Operator, Inc.*, Docket No. ER17-782-000 (Feb. 24, 2017) (delegated order) (accepting NYISO's Order No. 825 compliance filing).

¹⁴ See *New York Independent System Operator, Inc., Settlement Intervals and Shortage Pricing in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 825 Compliance Filing, Docket No. ER17-782-000 (Jan. 11, 2017).

¹⁵ *Offer Caps in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 831, 157 FERC ¶ 61,115 (2016), *order on reh'g and clarification*, Order No. 831-A, 161 FERC ¶ 61,156 (2017).

¹⁶ Order No. 831, 157 FERC ¶ 61,115, at P 42.

¹⁷ *Id.* at P 140.

process would consider and whether such factors are currently considered in the market power mitigation process, or whether new provisions would be necessary.¹⁸

The Commission accepted in part, and rejected in part, NYISO's initial Order No. 831 compliance filing. The Commission found that NYISO did not comply with the requirements in Order Nos. 831 and 831-A relating to after-the-fact cost recovery through uplift payments.¹⁹ Order No. 831-A clarifies that, if a resource avails itself of an RTO's/ISO's current rules to allow a resource to include opportunity costs in its bid, then that RTO/ISO must give that resource an opportunity to recover those opportunity costs through an uplift payment, subject to verification.²⁰ The Commission directed NYISO to submit a further compliance filing. NYISO's supplemental Order No. 831 compliance filings were accepted by the Commission in February 2019.²¹

H. Order No. 844

The Commission issued Order No. 844 on April 19, 2018 to revise its regulations to improve transparency practices for RTOs and ISOs.²² Order No. 844 required each RTO and ISO to establish in its tariff certain monthly reporting requirements, including: (1) requirements for each RTO/ISO to report total uplift payments for each transmission zone by day and uplift category; (2) requirements for each RTO/ISO to report total uplift payments for each resource by total amount of uplift paid in dollars aggregated across the month; and (3) requirements for each RTO/ISO to report certain information for each operator initiated commitment, including commitment size, transmission zone, commitment reason, and commitment start time.²³

On January 4, 2019, the Commission accepted NYISO's compliance filing subject to further compliance specifying the effective date for certain portions of NYISO's proposed tariff revisions.²⁴ The Commission found that NYISO's proposed tariff

¹⁸ *Id.* at PP 141-47.

¹⁹ *See New York Independent System Operator, Inc.*, 161 FERC ¶ 61,151, at P 33 (2017).

²⁰ Order No. 831-A, 161 FERC ¶ 61,156 at P 39.

²¹ *See New York Independent System Operator, Inc.*, 166 FERC ¶ 61,123 (2019).

²² *Uplift Cost Allocation and Transparency in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 844, 163 FERC ¶ 61,041 (2018) (Order No. 844).

²³ Order No. 844, 163 FERC ¶ 61,041, at P 1.

²⁴ *See New York Independent System Operator, Inc.*, 166 FERC ¶ 61,010 (2019).

revisions satisfied the order's requirements to report on zonal uplift, resource-specific uplift, operator-initiated commitment, and transmission constraint penalty factor requirements. On July 17, 2019, the Commission accepted NYISO's further compliance filing specifying the effective date for tariff revisions implementing the operator-initiated commitment report.²⁵

I. Joint Operating Agreement Between NYISO and PJM

NYISO has interconnecting facilities with PJM Interconnection, L.L.C. (PJM) over which substantial volumes of energy flow between the regions. To ensure reliable operations and efficient market operations for NYISO and PJM, NYISO executed a Joint Operating Agreement (JOA) with PJM establishing protocols and procedures.²⁶ Below is a summary of several aspects of the JOA:

- *Shared Benefits*: The JOA established the Coordination Committee to administer the coordinated implementation of the JOA's requirements and provides that NYISO and PJM operate their interconnection facilities to realize benefits to both parties. NYISO and PJM agree to not charge one another for mutually beneficial services resulting from interconnection, such as transient and steady-state support. NYISO and PJM also agree to remain interconnected throughout the term of the agreement with the exception of *force majeure* events that cause interconnections to cease, or planned maintenance where notice is provided in accordance with outage procedures implemented by the Coordination Committee. The Coordination Committee also assists PJM's and NYISO's efforts to follow their respective tariffs and operating agreements and develops and authorizes operating instructions to effectively and efficiently operate the PJM and NYISO transmission facilities.²⁷
- *Interconnecting Reliability Operating Limit*: There is an Interconnecting Reliability Operating Limit (IROL) shared by NYISO and PJM, which,

²⁵ See *New York Independent System Operator, Inc.*, Docket No. ER18-2400-001 (July 17, 2019) (delegated order) (accepting NYISO's Order No. 844 compliance filing).

²⁶ See NYISO OATT, Section 35, Attachment CC, Joint Operating Agreement Among and Between New York Independent System Operator, Inc. and PJM Interconnection, L.L.C.

²⁷ See *id.* at Sections 35.3.2 Establishment and Functions of Coordination Committee, 35.4 Mutual Benefits, and 35.5.1 Obligation to Remain Interconnected.

if exceeded, could result in instability.²⁸ NYISO and PJM agree to independently monitor and operate under the most conservative limits developed in the real-time and the day-ahead planning process.

- *Transmission and Generation Outage Coordination:* NYISO and PJM work together to develop procedures for coordinating transmission and generation outages to maintain system reliability.²⁹ Also, NYISO and PJM work together to resolve any outage conflicts and monitor their systems to evaluate the impacts of the other party's planned or unplanned outages on their systems. NYISO and PJM also follow uniform procedures for use of voltage control equipment to maintain a reliable bulk transmission system.³⁰
- *Market-to-Market Coordination:* NYISO and PJM agree to the basic principles of the market-to-market (M2M) transmission congestion coordination process set forth in the M2M Coordination Schedule (filed as an attachment to the JOA) that allows any transmission constraints significantly impacted by generation dispatch changes in both the NYISO and PJM markets or by the operation of the NY-NJ phase angle regulators to be jointly managed in the real-time security-constrained economic dispatch models of both parties.³¹
- *Checkout Protocols:* NYISO and PJM follow checkout protocols established by the North American Electric Reliability Corporation (NERC), and they tag transactions in accordance with NERC policies. Day-ahead checkouts are performed daily, real-time checkouts are performed hourly, and after-the-fact checkouts are performed the next business day.³²
- *Revenue Accounting:* NYISO and PJM have electric metering equipment installed to measure the quantity of electricity for revenue and accounting purposes. The metering compensation for transmission line losses to the interconnection facilities delivery point is determined

²⁸ See *id.* at Section 35.5.9 New York-PJM IROL Interface.

²⁹ See *id.* at Section 35.9 Coordination of Scheduled Outages.

³⁰ See *id.* at Section 35.11 Voltage Control and Reactive Power Coordination.

³¹ See *id.* at Section 35.12 M2M Coordination Process and Coordinated Transaction Scheduling and Section 35.23 Market-to-Market Coordination Process.

³² See *id.* at Section 35.13 Joint Checkout Procedures.

by NYISO and PJM's respective standards or otherwise agreed to by the Coordination Committee. Integrated meter readings are provided at least once each hour for interconnection facilities accounting purposes and meter registers are read at least monthly, as close as practical to the last hour of the month.³³

J. Agreements

NYISO's roles and responsibilities to operate the New York bulk power system and energy markets are specified in foundation agreements, service agreements, and interconnection agreements. Foundation agreements establish basic principles upon which NYISO operates and the responsibilities and authorities of all parties involved. Service agreements include interconnection agreements that govern the terms and conditions under which a customer's large or small generating facility interconnects and operates in parallel with the New York State (NYS) transmission system or the distribution system. Interconnection agreements establish the terms for construction and interconnection of new and materially modified generation and transmission to the NYS transmission system and certain portions of the distribution system. Other service agreements include development agreements for transmission projects selected in the NYISO's competitive planning process and customer agreements required for entities to participate in the NYISO's markets and/or receive transmission service.

³³ See *id.* at Section 35.16 Interconnection Revenue Metering.

III. Introduction

A. Objectives

The audit evaluated NYISO's compliance with: (1) provisions of its OATT, business practices, corporate bylaws, policies, and codes of conduct related to its market administration obligations; (2) provisions of its MST; (3) provisions of select agreements, including foundation agreements, service agreements, and interconnection study agreements; and (4) Order Nos. 825 and 831, and other relevant Commission orders. The audit covered the period January 1, 2016 through December 2, 2019.

B. Scope and Methodology

Audit staff performed these actions to facilitate testing and evaluation of NYISO's compliance with Commission requirements relevant to audit objectives:

- *Reviewed Public Information* – Conducted an extensive review of public information before commencing the audit. The review provided audit staff with an understanding of NYISO's energy and capacity market operations, tariff requirements, and other key regulatory and business activities. Examples of materials reviewed include NYISO's annual reports, NYISO filings and related Commission orders, NYISO's website, and other relevant regulatory and media sources.
- *Identified Standards and Audit Criteria* – Identified the regulatory requirements and criteria for evaluating NYISO's compliance with each audit objective. These included NYISO's OATT and MST, Commission rules, regulations, and other Commission orders relevant to the audit.
- *Issued Data Requests* – Issued data requests to NYISO to collect audit evidence and information. The information related to internal policies, transmission operations, procedures and controls, market monitoring, market mitigation and analysis, business practices, risk management, internal audits, corporate governance, contractual agreements, financial accounting and reporting activities, financial penalties, creditworthiness policies and procedures, NYISO agreements, regulatory filings, and other pertinent information. The evidence and information were used to test and evaluate compliance with Commission requirements relevant to audit objectives.
- *Conducted Teleconferences* – Held multiple teleconferences with NYISO employees to discuss audit objectives, testing, data request responses, technical and administrative matters, and compliance concerns.

- *Attended Site Visits* – Made two site visits to NYISO’s headquarters in Rensselaer, NY, to discuss and observe controls and procedures relating to audit objectives, tour the control room, and conduct in-depth discussions on NYISO operations and compliance with Commission requirements.
- *Internal Commission Conferences* – Conferred with other Commission staff to ensure audit staff had a complete and accurate understanding of Commission precedent and policy applicable to this audit.

Audit staff evaluated NYISO’s compliance with relevant requirements relating to the audit objectives through the following:

Compliance with OATT and MST

- *Cost Recovery for Auto-Swap Generators* – NYISO’s tariff contains provisions for combined cycle generating units with the ability to automatically switch from natural gas to a liquid fuel source in real-time in the event of a sudden supply disruption.³⁴ For eligibility periods, generators burning an alternate fuel because they activated their auto-swap capability and experienced a switch to the alternate fuel may recover their variable operating costs, i.e., commodity cost and associated taxes and emission allowance costs, if two conditions are met: (1) such costs are not reflected in the reference level for that eligible unit for the hours included in the eligibility period, pursuant to NYISO Procedures, and (2) the hour is one for which the commodity cost of the alternate fuel, including taxes and emission allowance costs, is greater than the commodity cost for natural gas, including taxes and emission allowance costs, as determined by NYISO.³⁵ Audit staff:
 - Reviewed NYISO’s procedures for cost recovery for units responding to local reliability rules addressing loss of generator gas supply in New York City and Long Island to ensure consistency with NYISO’s tariff;
 - Evaluated how NYISO verifies that a generator has automatically switched from natural gas to a liquid fuel source after an event;
 - Examined NYISO’s process for forecasting load levels that are used to trigger an eligibility period pursuant to MST section 4.1.9.1;

³⁴ See NYISO MST, Section 4.1, Market Services - General Rules, 15.0.0.

³⁵ See NYISO MST, Sections 4.1.9.2 and 4.1.9.3, effective May 23, 2018, Docket No. ER18-1168-000.

- Reviewed language from the NYSRC's Local Reliability Rules addressing Loss of Generator Gas Supply in conjunction with NYISO's auto swap cost recovery tariff provisions; and
 - Evaluated a zonal listing of eligibility periods that have occurred as a result of loss of generator gas supply.
- *Penalties* – NYISO's MST contains provisions for imposing financial penalties or sanctions when entities fail to comply with its provisions.³⁶ NYISO must notify the entities prior to imposing a penalty and shall afford them a reasonable opportunity to demonstrate that they should not be sanctioned, or to offer mitigating reasons for a lesser penalty, and NYISO may impose a penalty in an amount lower than the maximum at its sole discretion. Audit staff:
 - Reviewed NYISO's procedures for identifying violations and subsequently assessing penalties;
 - Evaluated NYISO's discretionary assessment of penalties, particularly those negotiated and settled through NYISO's dispute resolution process, to examine whether an equitable, clearly documented, and transparent process appeared to have been used;
 - Recalculated a sample of system generated penalties to test accuracy relative to the formulas in the MST; and
 - Evaluated whether penalties assessed were accurately reflected in market participants' invoices.
- *Payment of Uplift* – NYISO's MST contains provisions for paying uplift to generators that NYISO operates out of merit, i.e., NYISO dispatches the generator above or below its day-ahead or real-time schedule to meet a reliability need.³⁷ Because the real-time clearing price is not high enough to cover a generator's offer, NYISO compensates the generator through an uplift payment that "makes the generator whole" and covers at least some of the difference between real-time prices and the generator's offer. Audit staff:
 - Reviewed NYISO's automated process for calculating uplift to test its accuracy;

³⁶ See NYISO MST, Sections 5.14, 23.43 and 11.1-11.9.

³⁷ See NYISO MST, Section 25, Attachment J – Determination of Day-Ahead Margin Assurance Payments and Import Curtailment Guarantee Payments, and Section 18, Attachment C– Formulas For Determining Bid Production Cost Guarantee Payments.

- Tested day-ahead margin assurance and bid production cost guarantee payments to examine whether they were calculated in accordance with the formulas in the MST;
 - Reviewed NYISO's process for ensuring uplift is paid only when eligible per the MST;
 - Tested NYISO's calculation of uplift credits and charges, as well as NYISO's compliance with Order No. 844 uplift reporting requirements;
 - Reviewed data on uplift payments for a sample period, to determine whether the types of units to which NYISO awarded Day-Ahead Margin Assurance Payments were not prohibited from receiving those payments; and
 - Tested a sample of payments to verify that NYISO enforced the MST's eligibility rules prior to paying uplift.
- *Creditworthiness* – NYISO's MST requires that all customers seeking to participate in NYISO-administered markets are subject to eligibility requirements, which include those related to risk management, training, operational capabilities, and capitalization.³⁸ Audit staff:
 - Reviewed NYISO's policies and procedures to test compliance with select provisions of Attachment K;
 - Evaluated NYISO's measures to continually monitor market participants' credit;
 - Determined whether NYISO made exceptions to the creditworthiness requirements, including minimum participation criteria, for any market participant applicant looking to transact in NYISO's markets;
 - Reviewed creditworthiness of market participants and related NYISO practices in 2018 to ensure compliance with creditworthiness standards in NYISO markets;
 - Reviewed NYISO's actions to a material adverse change affecting the risk of nonpayment by a customer; and
 - Examined NYISO's processes and procedures for calculating and monitoring compliance with the operating, bidding, and collateral requirements.

Compliance with Select Agreements

Audit staff performed specific actions to evaluate NYISO's compliance with select agreements, including review of:

³⁸ See NYISO MST, Section 26, Attachment K - Creditworthiness Requirements for Customers, 0.0.0.

- *NYISO's Joint Operating Agreement with PJM* – NYISO has interconnecting facilities with PJM over which substantial volumes of energy flow between the regions. To ensure reliable operations and efficient market operations for NYISO and PJM, NYISO executed a JOA with PJM establishing protocols and procedures governing operation of their interconnecting facilities.³⁹ The NYISO JOA evaluation was done concurrently with DAA's audit of PJM, which included an evaluation of PJM's performance under this same agreement.⁴⁰ Audit staff:
 - Evaluated procedures for monitoring the 3,600 MW IROL and for reviewing instances in which it was exceeded;
 - Reviewed the process for managing generation outages in the NYISO region and congestion on flow gates between PJM and NYISO (redispatch and M2M phase angle regulator coordination);
 - Evaluated the effectiveness of controls implemented by NYISO for managing M2M coordination with PJM;
 - Reviewed NYISO's M2M settlement with PJM;
 - Reviewed examples of coordinated transaction scheduling with NYISO to evaluate whether the automated process is reasonable; and
 - Evaluated NYISO's process for ensuring confidentiality of information related to the JOA.

During the audit of NYISO, audit staff reviewed the JOA's planning coordination protocol, which describes how interregional transmission projects benefiting both NYISO and PJM are chosen, planned, and paid for. Although no joint projects have been considered since the inception of the JOA, audit staff reviewed an example of how costs would be allocated between NYISO and PJM (and ultimately to customers through the tariffs) if one were to be initiated. This and other discussions regarding the JOA were held to help identify improvements for enhancing management of the interconnecting facilities.

- *Foundation Agreements* – Audit staff reviewed NYISO's policies and procedures to test compliance with the duties and responsibilities set forth in the foundation agreements. Audit staff reviewed these foundation agreements:

³⁹ See NYISO OATT, Section 35, Attachment CC Joint Operating Agreement Among and Between New York Independent System Operator Inc. and PJM Interconnection, L.L.C.

⁴⁰ Audit of PJM Interconnection, L.L.C., under Docket No. PA19-2-000, which commenced on November 29, 2018.

- *ISO Agreement* – This establishes the creation of the NYISO. The agreement also establishes that the scope of the ISO is to maintain the reliable, safe, and efficient operation of the NYS Power System (including adjustment of generation, and coordination of maintenance and outage schedules of certain generators and transmission facilities), and the administration of the ISO OATT and MST, in accordance with the Reliability Rules and the terms of the ISO related agreements.⁴¹ Audit staff reviewed NYISO’s Commission-approved Market Power Monitoring Program in Attachments O and H of the MST,⁴² to test compliance with Order No. 719.⁴³
- *ISO-Owners (Transmission Owners) Agreement* – This agreement sets forth the duties and responsibilities of the ISO to exercise operational control of the transmission facilities of the Transmission Owners. Audit staff reviewed NYISO’s process for balancing generation and load and reviewed the Automatic Generation Control function that calculates an Area Control Error (ACE) and allocates ACE to Regulation Service providers scheduled by Real-Time Dispatch (RTD). Audit staff reviewed samples of outage and maintenance logs to evaluate this process.⁴⁴
- *NYSRC Agreement* – This agreement establishes the responsibilities of the NYSRC for developing Reliability Rules pursuant to which the NYISO shall maintain the safety and short-term reliability of the NYS Power System. Audit staff reviewed NYISO’s actual evaluations to ensure the LSEs within the NYCA maintained sufficient installed capacity. Audit staff also discussed NYISO’s processes for purchasing capacity should an LSE fail to meet its obligation prior to the spot auction.⁴⁵
- *Service Agreements* – Service agreements govern the terms and conditions under which the customer’s small generating facility interconnects with, and operates in parallel with, the NYS transmission or distribution system. Audit staff reviewed

⁴¹ See NYISO OATT, Foundation Agreement, ISO Agreement, 5.0.0.

⁴² See NYISO MST, Attachments O and H.

⁴³ *Wholesale Competition in Regions with Organized Elec. Mkts.*, Order No. 719, 125 FERC ¶ 61,071 (2008), *as amended*, 126 FERC ¶ 61,261, *order on reh’g*, Order No. 719-A, 128 FERC ¶ 61,059 (2009), *reh’g denied*, Order No. 719-B, 129 FERC ¶ 61,252 (2009).

⁴⁴ See NYISO OATT, Foundation Agreement, ISO-TO Agreement, 0.0.0, and NYISO OATT, Agreement No. 2271, NYISO and Transco Operating Agreement, 1.0.0.

⁴⁵ See NYISO OATT, Foundation Agreement, ISO NYSRC Agreement, 0.0.0.

NYISO's policies and procedures to examine compliance with the duties and responsibilities set forth in select service agreements.

- *Interconnection Agreements* – Interconnection agreements set forth the responsibilities and authorities of all parties involved. Audit staff reviewed NYISO's policies and procedures to determine compliance with the duties and responsibilities set forth in select interconnection agreements.

Compliance with Commission Orders

Audit staff performed specific actions to evaluate NYISO's compliance with select Commission orders, including review of:

- *Order No. 825* – Audit staff reviewed NYISO's Order No. 825 processes and controls, and, in particular, the reasonableness of its automated operating reserve demand curves (ORDC).⁴⁶ NYISO's ORDCs price all reserve shortages, regardless of duration, to ensure consistency between NYISO's statements in its Order No. 825 compliance filing and actual practices.
- *Order No. 831* – Audit staff reviewed NYISO's processes and controls to evaluate their consistency with the NYISO's Order No. 831 compliance filings, using a hypothetical example since NYISO has not yet had an offer above the offer cap. Audit staff reviewed an example in a test environment using NYISO's upgraded software installed to process such bids to simulate NYISO's practice for when a qualifying bid is eventually received.⁴⁷
- *Order No. 844* – Audit staff reviewed a sample of reports that NYISO posted on its website on zonal uplift, resource-specific uplift, and operator-initiated commitments to evaluate whether NYISO posted the reports in a manner consistent with Commission requirements pertaining to timeliness, format, and information. In addition, audit staff tested whether the data that NYISO posted in

⁴⁶ *Settlement Intervals and Shortage Pricing in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 825, 155 FERC ¶ 61,276 (2016).

⁴⁷ *See Offer Caps in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 831, 157 FERC ¶ 61,115 (2016), *order on reh'g and clarification*, Order No. 831-A, 161 FERC ¶ 61,156 (2017).

its uplift reports for a sample period were consistent with the uplift data that NYISO provided to the Commission.⁴⁸

⁴⁸ See *Uplift Cost Allocation and Transparency in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 844, 163 FERC ¶ 61,041 (2018).

IV. Findings and Recommendations

A. Conclusion

The audit did not result in any findings or recommendations that require NYISO to take corrective actions. Audit staff reached this conclusion based on performance of the audit steps outlined in the scope and methodology section of this audit report, including an examination of materials provided by NYISO in response to data requests, on-site visits, interviews with NYISO employees, and review of publicly available documents.

Attachment A – NYISO's Response to Draft Audit Report



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June 25, 2020

By Electronic Mail

Steven D. Hunt
Director and Chief Accountant
Divisions of Audits and Accounting
Office of Enforcement
Federal Energy Regulatory Commission
888 First Street, NE Room 5K-13
Washington, DC 20426

Re: **Office of Enforcement, Docket No. PA-19-1-000**

Dear Mr. Hunt:

Thank you for the draft audit report received with your letter of June 18, 2020. The New York Independent System Operator, Inc. agrees with the content of the draft audit report.

Respectfully submitted,

/s/ Robert E. Fernandez

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General Counsel & Chief Compliance Officer
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