2025 Enterprise Project Candidates

Product and Project Management

July 3, 2024

This document represents potential 2025 Enterprise project candidates. Enterprise projects are internal-facing technology and back-office support projects that have no market rule changes. These project candidates and their corresponding descriptions reflect information known about each of the project candidates as of the date of this document.

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Introduction

This document represents potential 2025 Enterprise project candidates. Enterprise projects include internal-facing technology and back-office support projects that have no market rule changes. The list includes projects that may be noticeable to Market Participants. These project candidates and their corresponding descriptions reflect information known about each of the project candidates as of the date of this document. Projects are classified as four project types.

Project Type	Description
Mandatory	Projects that are key to support Strategic Initiatives, comply with FERC Orders, maintain reliable operations, or sustain the operation of the NYISO business. These projects will be included in the budget
Future	Consensus from stakeholder discussions of this project's priority relative to other projects has resulted in these projects NOT being prioritized and initiated in the coming budget year. Resources, time constraints, stakeholder feedback, and other project dependencies have been taken into consideration
Prioritize	Projects to be prioritized and included in the budget based on a feasibility assessment taking into consideration resources, time constraints, stakeholder feedback, priority score, and other project dependencies. Market projects are included in the stakeholder survey

Enterprise projects are NOT included in the stakeholder survey. Enterprise projects that are Prioritize (not Mandatory, Continuing, or Future) are scored by the NYISO during the prioritization phase. These projects are included in the budget based on a feasibility assessment taking into consideration resources, time constraints, stakeholder feedback, priority score, and other project dependencies. The table that follows identifies project type for each of the projects included in this document.

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Prioritize

1. 3rd Floor Data Center (Krey)

The 3rd floor data center was in existence when NYISO moved into the Krey Boulevard facility in 2006 and was used to house the vendor data services coming into the facility. Since it was an existing space already in service, the data center was never set up to meet current NYISO standards. There are air conditioning and power distribution issues that make this space less-than-ideal for data services.

In addition, the telemetry room on the 1st floor of the two-story addition to the Krey facility was built to ultimately house these services. All the supporting infrastructure, including power, cooling units, racks/cabinets, backbone fiber, and conduits are already in place in that room.

In 2024, the NYISO is conducting a study to come up with costs (1) to address the current air conditioning and power issues in the 3rd floor data center, versus (2) moving the vendor services to the telemetry room, which was explicitly designed and constructed to house these services. Design and planning work is currently being performed as part of the approved 2024 project effort, with a recommendation expected later this year. In 2025, the NYISO will begin implementing recommended solution.

2. Access Management Program Enhancements

The access management program is a portfolio of products supporting the North American Electric Reliability Corporation Critical Infrastructure Protection (NERC CIP) and System and Organization Controls (SOC) 1 audit requirements for controlling access within the NYISO organization ("Access Management"). Access Management services are critical to effectively managing and supporting NYISO's systems.

The further integration and expansion of these Access Management services continues to advance the capabilities available across NYISO environments for cloud, corporate, privilege, and physical access to ensure NERC CIP, SOC1, and internal process compliance. The proposed project would expand and strengthen the Access Management program capabilities by building and integrating the existing program to ensure security and compliance.

3. Activate VSA Application

The NYISO's network model representation has been upgraded to include new 345KV substations and transmission facilities. The addition of these new facilities has an impact

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on Voltage Stability limits. The NYISO would like to enable Voltage Stability Application (VSA) in the production system. The project builds upon existing functionality to add the VSA application to the suite of existing tools. This project will expand upon the Power Systems Application Engineering team's functionality to allow them better visibility to system conditions.

4. Activu Server Upgrade

Activu servers currently installed at NYISO facilities provide the video output that displays on the Krey and Carman Control Room video walls. The current version of Activu software installed at the NYISO will no longer be supported by the end of 2025. This project is required to maintain grid reliability as well as ongoing vendor support for critical systems. This project proposes a multi-year effort to replace Activu servers with supported systems.

5. Advanced Storage Modeling

Currently, NYISO Grid Operators designate resources as Supplemental Resource Evaluation (SRE) or Out-of-Merit (OOM) using a manual process. With the implementation of DER, the NYISO anticipates significantly more small resources (i.e., 0.1 MW units) to come online. The Capacity Analysis Commitment Tool (CACT) will give the NYISO Operators the capability to designate resources as SRE or OOM in a more timely manner and considering economic merit and to schedule/re-schedule resources to meet an additional MW need in certain hours of a study period. This functionality will support NYISO Operators in the evaluation of SRE/OOM requests for local reliability submitted by the Transmission Operators (TOs) or the Distribution System Operators (DSOs). The NYISO will evaluate further system changes to effectively manage Energy Limited Resources (ELR).

6. Air Handling Units Replacement (Krey)

There are four Air Handling Units (AHUs) installed at the Krey facility that provide all the HVAC services to the four-story building. These four AHUs are original to the building, end of life, and will be 28 years old in 2025 when the replacement is planned to begin. Component failures within these units continue to increase, resulting in increased maintenance costs and reduced reliability.

The objective of the project is to procure and install four new air handling units at the Krey facility, including the purchase and replacement of all fans, motors, dampers, coils, pans, doors, filters, filter bays, and controls. Design and bidding are expected in 2024 with replacement of two units in 2025 followed by the remaining two in 2026.

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7. Anomaly Report Redesign

Settlement Operations is responsible for understanding and identifying discrepancies between hourly revenue grade meter data reported by the Meter Authority and the corresponding telemetry data that is rolled up to an hourly level. The current identification of these discrepancies is done through anomaly reports that are run and distributed to Meter Authorities throughout the periods in which tie-line and generator meter is updated. These updates can happen anywhere from the next business day up to 60 days after the issuance of the initial invoice. The rules surrounding what is considered an anomaly were determined over two decades ago. Since that time, based on changes in the quality of data received and the types of errors that are more common now, a redesign of what constitutes an anomaly and of the actual reports is needed.

The redesign would build on the current process, which allows Settlement Operations to run the reports at any point in time and provides users with the ability to distribute the reports to the appropriate Meter Authority. This project will include:

- An analysis of the current rules used to determine anomalies included in reports.
- An analysis and creation of new types of anomalies to be used for more detailed internal investigation and analysis.
- The new analysis may result in additional types of reports, such as external tie-line analysis and anomalies comparing data across days.

8. Automation of DMNC Validation

The NYISO's Market Mitigation and Analysis Department (MMA) currently performs the Dependable Maximum Net Capability (DMNC) validation process. This validation is a largely manual process that includes downloading data submitted by Market Participants, formatting the data to be captured in a report, and reviewing the final report to see if further action is required. This project intends to automate steps of the DMNC validation process which are not required to be performed by an analyst.

9. Bidding Upload Download Security Enhancements

The NYISO's Marketplace and Joint Energy Scheduling Systems upload and download capabilities are running on outdated software and must be replaced to provide better security for the data during transit. As part of a multi-year effort that started in 2024, the Upload/Download functionality will be updated to deliver a new method for bulk submission of energy and transaction bids with a more secure authentication/authorization method.

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10. Building Management System Controls Upgrade

The Facilities Building Management System provides the monitoring of the electrical systems and the monitoring and control of the mechanical systems at both buildings. This system is the most important system to NYISO's Facilities staff as it provides the operational tools and situational awareness displays to effectively and efficiently monitor and control all critical and non-critical building systems.

The current Building Management System is 26 years old, is end of life, and needs replacement. In addition, as the end-of-life monitoring points fail and are replaced, the replacement points are not compatible with the old Building Management System. The NYISO is currently in the second year of a three-year project to replace the Building Management System at both the Krey Boulevard and Carman Road facilities. The NYISO is proposing to complete this project work in 2025.

11. Conference Center Renovations (1D) (Krey)

The Conference Center on the first floor of the Krey facility is used for both internal and external training classes, meetings, and Market Participant events. In recent years, the demand for larger meetings and training sessions has continued to grow. The NYISO has had to limit class sizes due to the limitations of the room size and configuration.

This multi-year project will reconfigure Conference Room 1D and some of the surrounding spaces to allow for more flexibility and space for meetings and training sessions. The NYISO will develop detailed design and construction documents in 2025, followed by renovations in 2026.

12. Conference Room Technology Upgrade

To support the NYISO's shift to a hybrid workforce, Microsoft Teams Room technology has been established in NYISO conference rooms to provide video conferencing capabilities and improved audio to support meetings requiring on-site and remote participants. The initial roll-out of this technology was limited to conference rooms in private areas of the building and did not include the conference center and other rooms with existing specialized conference room technology. Additionally, the existing conference center hardware is nearing end of life, resulting in increased maintenance costs and a higher risk of disruptions during critical meetings. This project proposes to update the technology in these additional rooms to provide consistent video conferencing capabilities in NYISO meeting spaces.

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13. Contingency Database Enhancements Project

The introduction of Coordinated Grid Planning Process (CGPP) to support the New York State's Climate Leadership and Community Protection (CLCPA) goals and the incorporation of interconnection cluster studies requires support from System Modeling team to develop the required study cases along with appropriate contingencies.

Currently, the contingency database is maintained on the NYISO network directory and updated annually as part of the database update cycle. The contingency events are crucial for planning studies to simulate the effects of loss of single or multiple facilities on the power grid as required by NERC, the Northeast Power Coordinating Council, and the New York State Reliability Council. The number of contingency files and events have increased 300% over the past 5 years due to the rapid growth of inverter-based resources and transmission projects. The number of contingency events and files are expected to increase at a faster rate as the state works towards achieving the CLCPA goals. This increase will double the time spent on verifying and updating the contingency events in the next 3-5 years.

The contingency database must be updated simultaneously with the annual FERC-715 base case preparations. Previously, the coordination between the FERC-715 cases and the contingency database was manageable for the NYISO, but with the substantial increase in the number of contingency events and files to update, the chance for human error and compliance risk higher. The project objective is to complete a Study Complete on how best to develop an enterprise-level contingency file database system that NYISO System and Resource Planning will update annually.

14. Control Room Video Wall Replacements

This project is a study to determine which vendors and technology the NYISO should pursue to replace the video walls at the Krey and Carman Control Rooms and the Staging video wall once support for the current equipment ends in March 2030. This technology lifecycle project is necessary to maintain grid reliability, performance, and availability, as well as ensure ongoing vendor support for critical systems.

15. Demand Forecasting Machine Learning

The NYISO is evaluating the use of artificial intelligence in its information technology (IT) systems. The NYISO created a machine learning (ML) production environment in 2024 used it to identify virtual market anomalous transactions. This project will pilot using ML to analyze demand forecasting and evaluate whether ML could be used to dynamically predict confidence in NYISO's primary system's forecast. This analysis could alert NYISO staff to potential deviations from forecast. If the pilot is successful, the NYISO would

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promote the demand forecast model to the ML production environment. ML could be used to dynamically predict confidence in NYISO's primary system's forecast. This can be a valuable capability that alerts staff to potential deviations from forecast. This project proposes to complete a demand forecast use case pilot in 2025.

16. DRIS Efficiency Improvements

The Demand Response Information System (DRIS) is used to administer multiple Demand Response programs (Emergency Demand response Program (EDRP), Special Case Resource (SCR), and the Demand Side Ancillary Services Program (DSASP)) and support Behind-the-Meter Net Generation Resources. Due to an increase in the number of individual Resources in the EDRP and SCR program, DRIS is experiencing slower processing times for functions that are required to meet program rules and requirements. This project will enhance the DRIS software to improve processing times and improve workflows.

17. EMS/BMS Operational Enhancements

The NYISO completed a multi-year project in 2020 to upgrade both the EMS and the Business Management System (BMS). The EMS encompasses the core reliability functions used by the system operators such as load flow and contingency analysis. The BMS encompasses the day ahead and real time energy market functionality. This project is a continuation of the effort to regularly update the EMS/BMS systems with the changing needs of the business.

18. EMS/BMS Technologies Upgrade

The NYISO's current hardware and operating system that the EMS/BMS platform runs on will be end of life in 2024, with extended support through June 30, 2026. It is critical that the hardware and operating system the EMS/BMS platform runs on be upgraded so they remain stable and supported by the vendor. Therefore, the NYISO cannot extend the use of the hardware and operating system past their extended support end-of-life dates. For the NYISO to move forward with an upgrade to a vendor-supported operating system version, the NYISO must make modifications to the existing Network Manager platform. This project is the continuation of a multi-year effort.

19. EMT Modeling Software Enhancements

The rapid growth of inverter technology has created a need to go beyond the conventional planning tools to conduct more detailed studies using electromagnetic transient (EMT) models for issues related to inverter-based resource integration. With the

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growing penetration of Inverter Based Resources (IBRs) in New York State, such as solar and wind, there is a need for EMT studies. This type of modeling is complex and requires new software. Several relevant NERC standards are under revision, including but not limited to NERC Facility Interconnection Studies standard FAC-002, Modeling Standard MOD-032, MOD-026 and Transmission Planning TPL-001, add to the requirement for EMT modeling and studies.

In 2024, NYISO completed a project to purchase two new off-the-shelf software applications and engage vendors to train NYISO subject matter experts on the applications. In 2025, the NYISO plans to deploy the off-the-shelf software applications in a cloud computing environment.

20. Endpoint Protection Modernization

The Endpoint Protection Modernization project aims to enhance the security posture of our organization against evolving cyber threats.

21. Enhanced Exterior Security Profile (Carman)

With the recent renovations to the Carman Road Control Room and the desire to make the Carman Road and Krey facilities very similar in functionality, it is important to maintain a similar security profile at the Carman Road and Krey facilities. This project would enhance physical security at the Carmen Road facility.

In addition, there are a number of security repairs and upgrades that the facility needs. These include guard shack improvements, refurbishment of the guard shack swing gates, new sidewalks, and handrails from the main entrance door down to both parking lots and improved site lighting.

22. Enhancements to Risk Verification Functionality

Annually, the Counterparty & Credit Risk Management team must verify risk policies of all Market Participants in the Transmission Congestion Contracts market and may select 10-20% of all other Market Participants for risk policy verification. This project is intended to add functionality and enhance current functionality in the Credit Management System (CMS) to better facilitate and track receipt and verification of Market Participant risk policies. Enhancements include, but are not limited to, streamlining “in progress” capability, adding an audit trail of the analyst working on a policy, and adding a report to track key performance indicators.

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23. Enterprise Monitoring Redesign

The NYISO's current real-time IT systems monitoring solution is comprised of multiple applications integrated together to produce a "single pane of glass" utilized by the Enterprise Operations Center (EOC) for 24/7 monitoring and support of IT services. These legacy technologies support traditional on-premise IT infrastructure and are not designed to monitor cloud-based services. With the NYISO's strategic shift to migrate most market-based applications to the cloud and continued expansion of cloud services, the NYISO's enterprise monitoring solution must be redesigned to ensure the EOC has real-time visibility of NYISO's hybrid infrastructure, with the ability to monitor services running within NYISO's data centers or in the cloud.

While the primary driver of the Enterprise Monitoring Redesign project is to support NYISO's hybrid IT infrastructure, this project is expected to provide additional benefits by retiring a legacy solution that is complex and heavily customized. The new solution is expected to improved integration capabilities and proactive monitoring capabilities that will allow the EOC to react quickly to service disruptions and perform remediations that traditionally would require SME support during a triage.

24. Enterprise Project Collaboration

Opportunities exist in Product and Project Management to utilize and embrace new technologies to reduce manual process, drive increased enterprise collaboration, and increase transparency. The goal is to foster collaboration across departments utilizing new technologies, update processes, and enhance Product and Project reporting for greater visibility into key performance metrics. Reducing manual processes will lessen the risk of manual errors and allow the organization to focus on additional value-add project tasks. Automated tasks, early detection and prevention of risks, and greater collaboration has to potential to speed up project completions while maintaining the NYISO's high quality standards. The project deliverable for 2025 will be a Study Complete.

25. Export Tool for EMS Offline Studies

NERC Standard MOD-033-2 requires that the NYISO, as Reliability Coordinator, provide actual system data to Planning Coordinators for event analysis and model verification. Currently, it takes Operations Engineering team a month or more to create and release the required data because of manual processes. Having a software tool that could promptly export a real-time EMS case that reflects actual system operating conditions could significantly expedite the process of providing data for event analysis and model verification. Additionally, the accuracy of an EMS-exported case versus a manually adjusted case is expected to be higher and the process more consistent, leading to more realistic cases with fewer discrepancies.

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26. Grid Outage Analysis Tool (G.O.A.T.)

NYISO Grid Operations currently lacks a comprehensive tool for conducting least-cost optimization and running power flow analyses for 24-hour intervals, hindering their ability to efficiently assess the impacts of outages and optimize unit schedules. There is a need to develop a new 24-hour Outage Analysis Tool that is capable of performing least-cost optimization, unit commitment, economic dispatch while conducting 24-hour power flow analyses for a daily outage schedule.

27. Hybrid Infrastructure Upgrade

To keep the NYISO markets running smoothly and the electrical grid operating reliably, the NYISO must periodically evaluate and upgrade the underlying IT application platform infrastructure. The NYISO utilizes a hybrid infrastructure to support its markets, which consists of a mix of on-premise and cloud-based infrastructure services.

This multi-year project includes two major efforts, 1) migration of commercial off the shelf (COTS) software applications to the cloud, building off the experience of System Resource Planning applications currently running in the cloud and 2) migration of internally-developed applications to the cloud, taking advantage of containerization tooling and automated delivery pipelines currently being utilized for settlements and pricing data marts.

28. ICAP AMS Improved System Integrations, Customer Transitions, & Offers Project

The NYISO's ICAP Automated Market System (AMS) exchanges data with the NYISO Market Information System (MIS) and CMS, accepts load forecast, load shift, and true-up data from Transmission Owners, and allows MPs to bid and offer capacity in the Strip, Monthly, and Spot auctions.

This project is expected to address the following issues:

i. Billing and credit problems can result due to a mismatch between the methods used by the NYISO MIS and ICAP AMS in determining effective dates for a) Financially Responsible Party (FRP); and b) generator ownership, and which must be corrected via manual billing adjustments, or which require MPs to settle outside of the NYISO settlement process.

ii. When a Load Serving Entity (LSE) involuntarily exits the market, their load must be transferred to the Provider of Last Resort (POLR). There is no mechanism for automatic transfer of load to the POLR, nor does the AMS automatically reject/identify future load forecast data for terminated/withdrawn LSEs.

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iii. When MPs become non-market qualified, the ICAP AMS does not automatically identify or remove existing ICAP AMS Strip and Monthly bids and offers from non-market qualified MPs prior to auction runs

iv. If an MP is deemed non-market qualified, the NYISO prohibits it from accessing the ICAP AMS, which prevents the MP from reviewing current and past billing details and prevents it from offering any unoffered resources or long capacity into the Spot Auction. This can result in additional financial loss to the MP, as well as to other MPs, who can pay a higher MCP due to the unoffered MWs.

v. MPs are occasionally awarded bid MWs in nested locations outside of its bid location. If an MP inadvertently fails to offer this resale capacity in the Spot auction, the capacity will go unmonetized.

vi. MPs are currently unable to offer internal specific-Point Identifier capacity in the Strip and Monthly auctions.

29. ICAP Auction Simulator Enhancements

The ICAP market and auction systems are currently undergoing significant evolution in areas of capacity accreditation, along with demand for newer products such as inter-zonal Unforced Capacity Deliverability Rights (UDRs), increasingly granular marginal clearing prices, etc. These new products bring risks to the ability for the current auction system to be successfully supported in production.

NYISO's Installed Capacity Market Operations (IMO) team administers two Strip auctions, twelve Monthly auctions, and twelve Spot auctions each capability year. As the market rules and business rules to implement market design initiatives become increasingly complex to administer, the NYISO will need to develop the ability to prototype new auction structures and rule sets to assess feasibility and ensure market evolutions can be seamlessly integrated into market operations.

30. ICAP Efficiencies Effort

The ICAP Efficiencies project will enhance security, improve system integration, and address long-standing inefficiencies in the ICAP AMS application, and position the application to support anticipated future projects. This project will include refactoring efforts to reduce unused code and enhance future maintainability, and producing improved documentation around the existing ICAP API. The NYISO will perform application maintenance to bring many of the existing technologies up to the latest versions and address any outstanding known security vulnerabilities, update the

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upload/download functionality to accommodate REST API integrations and improved security, and update other features of the application. The deliverable for 2025 will be Q4 Deploy.

31. ICAP Supplier Status Enhancements

The NYISO's IMO team currently manages ICAP Supplier statuses manually. ICAP Supplier statuses include ICAP Ineligible Forced Outage, Mothball, and Retirement. These statuses are maintained manually within the AMS through the "Derating Factor" value as a proxy for all inactive states. As a result, this manual tracking and accounting process requires careful attention and leads to redundant or unnecessary ICAP Supplier data in the AMS, because of the binary logic employed to track multifaceted ICAP Supplier statuses which all adhere to unique timelines. Automatically tracking ICAP Supplier status will result in more efficient utilization of NYISO resources and reduce the potential for error.

32. IT Infrastructure Automation

The focus of this continuing, multi-year effort is on increasing automation of various IT management activities. By enhancing the NYISO infrastructure, with supporting processes and current and prospective tools, the NYISO will be increasingly responsive in supporting the frequency of change required by the business. Automation of activities, such as patching and upgrade processes, will also serve to improve the NYISO's security posture while reducing business impact of services.

33. LDAP Upgrade

Lightweight Directory Access Protocol (LDAP) is a communication protocol used to access and manage information stored in a directory service. The directory service stores information about network resources such as users, computers, and printers, and LDAP allows users to search, retrieve, and modify this information. The NYISO uses LDAP for authentication and authorization purposes, allowing management of user and system accounts across multiple applications, such as Outage Scheduler, Marketplace, Webform, BSS, and CMS, and devices in a centralized and standardized way.

The various software that supports the NYISO's use of LDAP is on sustaining support (search database for fixes and apply – cannot open tickets for support). This project is the second year of a multi-year effort to upgrade software to current and supported versions.

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34. LFDR Upgrade

The Load Forecasting Data Repository (LFDR) is currently the real-time "flight recorder" for the NYISO's operational load forecasting system. It serves as the data warehouse for real-time (i.e., 5-min) and day-ahead (i.e., hourly) demand forecast information and as the long-term archive for weather, and behind-the-meter (BTM) solar forecasts and estimated generation. The LFDR base system is no longer supported by the vendor as of 2021. The current LFDR began migration to a new platform in 2023 and continued in 2024. This project will complete that migration effort.

35. LifeRay Web Content Management System Upgrade

The NYISO's public website and intranet are delivered via Liferay, a Web Content Management (WCM) platform that was implemented with the website redesign project in 2018. This technology provides the foundation for how the NYISO communicates with stakeholders, policy makers, press, and NYISO employees. This project proposes to upgrade the LifeRay software so that it will remain supported by the vendor.

36. Load Forecasting System Upgrade and Buildout

The NYISO's load forecasting system contains the statistical software that is used to build and train all forecast models used in production and the software that receives data inputs and generates forecasts in real time for Grid Operations and Market Operations. The current version of the load forecasting system in operation at the NYISO will no longer be supported after September 2024 and an upgrade is required for the system to remain fully supported by the vendor.

This project would update the NYISO's current load Forecasting application and its computational engine to the latest versions.

MetrixND contains the statistical software that is used to build, and train all forecast models used in production. MetrixIDR is the dynamic system that receives data inputs and generates forecasts in real time for Grid Operations and Market Operations.

37. Media and Podcast Rooms

NYISO's External Affairs and Communications Departments continue to grow and expand their presence. As part of this expansion, these departments are performing more interviews and podcasts to share with the public. In addition, there is a desire to have a dedicated space where NYISO executive management can meet the media and hold press conferences, as needed.

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Currently, NYISO does not have suitable spaces for either of these functions. This Project proposes to renovate spaces within the NYSIO's buildings to address these needs.

38. Micro-Segmentation

The NYISO currently employs a defense-in-depth (DID) approach to cybersecurity by placing multiple layers of protection between critical assets and external threat actors. The next generation security architecture is an evolution in cybersecurity that builds upon the DID through the adoption of zero-trust principles to remove inherent trust found in many systems, applications, and capabilities to better detect and isolate threats that can evade internal security protections.

Micro-segmentation is a continuing multi-year effort to implement a technology-driven approach that redefines security boundaries from broad network segmentation to isolated, minimized attack surfaces by applying security controls closer to the asset they are protecting. Micro-segmentation technology provides greater visibility and control over NYISO's data center/cloud infrastructure traffic and mitigates unauthorized access and lateral movement between different parts of the network. This approach can limit the spread of ransomware or other threats to reduce the potential and impact of security breaches. In 2025, the project aims to expand micro-segmentation further from what was developed in 2024.

39. Microsoft 365

This project is part of a strategic focus on implementing a hybrid infrastructure model that will leverage cloud solutions, where appropriate, to increase delivery flexibility, agility, and efficiency with the NYISO. The project will expand the NYISO's adoption of Microsoft 365 and Azure cloud services, reducing the size of the NYISO's on-premises infrastructure footprint and the corresponding administrative overhead, freeing up NYISO staff for higher-value work. This project will provide access to new features and capabilities not available in an on-premises deployment, including security and information protection enhancements.

40. Midrange and Storage Upgrade

The NYISO utilizes vendor products for automation and patching its Linux servers. The current versions of these products are end of life and no longer supported. These tools are critical to the Linux environment's security posture because in the absence of these tools, Unix Admins would be required to log into each device to patch each server individually, which is resource extensive, adds risk of human error, is not sustainable, and

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would result in the NYISO having to alter its patch periodicity. This project will rearchitect and implement these tools and train the NYISO administrators in the usage of the tools.

This project will also upgrade the current version of the operating system on the servers in all environments to remain supported by the vendor.

41. NAS Storage Refresh

The NYISO's current infrastructure for storing its file data is approaching end of life in early 2026 and will need to be replaced in order to have support from the vendor. This project will architect, procure, install, and configure replacement infrastructure in the NYISO data centers, and migrate the data from the current infrastructure to new solution.

42. Natural Gas Notices Service Subscriptions

NYISO receives email notifications from natural gas pipelines and local distribution companies (LDCs) ranging from informational postings, planned outage data, capacity constraints, operational flow orders, force majeure events, interruption of service notices, etc. These notices contain valuable information, but are often cumbersome to process and quickly obtain information that is useful for real time operations. These notices become critical to operational awareness during the Winter Operations period. This project objective is to provide a subscription platform to streamline the various email notifications from natural gas pipelines and LDCs.

43. Network Infrastructure Upgrade

The NYISO network infrastructure includes many different components that are critical to delivering networking services to NYISO end-users, business units, and external customers. This includes key infrastructure such as switches, routers, firewalls, and other network devices that interconnect and protect our systems. All these components require active vendor support to provide 24x7 assistance and to receive necessary updates to protect from vulnerabilities. Several of our network infrastructure components are entering the vendor-mandated end-of-life state. As a result, the NYISO will no longer receive necessary security patches to mitigate new cyber risks and/or software bugs once that threshold has been passed.

Given the critical importance of this infrastructure, it is necessary to keep these key components under vendor support to receive updates, patches, and on-going maintenance. This project is a continuation of a multi-year effort to continue replacing outdated hardware with the objective of providing secure service delivery while

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modernizing and streamlining the NYISO's data centers in accordance with current industry best practices and vendor recommendations.

44. New Ties and Gens Management

Generator and tie line management is currently a lengthy manual process that spans multiple years and involves the coordination and sharing of information from multiple NYISO departments including Planning, Operations, Customer Registration, Customer Settlements, as well as Market Participants. Coordination and on-going communication are necessary to ensure that all impacted systems for end users have the correct information. This current process requires settlements to pull data from multiple sources to ensure adequate time is allowed for system set-up within the NYISO and at the Meter Authority. This information is also necessary for the validation of data which can only occur in production when data is entered for the new tie line by the Transmission Owner. This project would consolidate the manual processes into a single system, streamlining the current process.

45. Office Mechanical Systems Replacement (Krey)

The cooling towers and chillers at the Krey facility provide the cooling capacity for the entire four-story building. These units are original to the building, are end of life, and will be 27 years old when they are replaced in 2024. This project will replace the current cooling towers and chillers with air-cooled chiller technology.

The NYISO is currently in the second year of a three-year project to replace the cooling towers and chillers, with the first unit being installed end of 2024, followed by second unit in 2025.

46. Oracle Database Evolution

To position the NYISO to be able to upgrade to new versions of Oracle, the NYISO must migrate the Oracle database infrastructure to pluggable databases and containers. A container database (CDB) contains one or more user-created, pluggable databases and application containers. A pluggable database (PDB) is a portable collection of schemas, schema objects, and non-schema objects that appears to an application as a separate database. The NYISO's current version of Oracle will be end of life April 2027.

The move to pluggable databases and containers is proposed to be multi-year project effort. Pluggable databases and containers are a prerequisite to upgrading to the next Oracle version. This is a multi-year effort expected to be completed in 2027.

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47. Outage States Portal Dashboard

The NYISO's IMO team administers ICAP Supplier outages states procedures in coordination with the NYISO's ICAP MMA and Scheduling departments. This process requires frequent email communication with ICAP Suppliers and careful and consistent tracking of internal and external communication regarding ICAP Supplier outages over extended periods of time, on the order of 6-12 months or longer.

Creation of an "Outage States" portal would allow for more effective tracking of outages, close coordination, and communication between NYISO and the impacted Market Participants. Moreover, it reduces the risk to the NYISO and to Market Participants that tariff-defined deadlines will pass without action and that they or the market will be adversely impacted.

48. Probabilistic Forecasting Enhancements

Demand Forecasting and Analysis (DFA) currently provides Grid Operations with a P90 peak load forecast using an offline model with no connection to the Production system. With growing Behind-the-Meter (BTM) solar penetration and increased load/weather sensitivity resulting from increased heat pump usage, load forecast error risks are rising. This project will significantly expand DFA's ability to provide Grid Operations with knowledge of the potential impacts these growing risks have as the generation fuel mix and heating load become increasingly weather based.

49. Production Cost Software Upgrade Project

Due to the large volume of rapid changes in generation resources in the New York Control Area (NYCA) required to comply with aggressive climate goals as outlined in the NY Climate Leadership and Community Protection Act (CLCPA), the NYISO must update its production cost model and related software tools to more accurately simulate future scenarios and new resource types (*e.g.*, increased amounts of renewables and energy storage). The existing production cost model version and software tools have limitations in modeling a large number of these new resources in future scenarios, capturing the effects of transmission outages, and modeling new inverter-based resources on reserves.

This is a multi-year project that began in 2024 and is expected to reach the System Design milestone by the end of 2024. The project objective for 2025 is to reach the Development Complete milestone.

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50. Quarterly Project Status Enhancements

The NYISO receives quarterly project status from transmission project developers through Salesforce per the NYISO OATT tariff requirements. The reports are uploaded to the Salesforce portal in an Excel spreadsheet. Currently, the NYISO has 112 interconnection queue projects in the project tracking process, which has grown ten times over the last few years. The current process for reviewing 100-plus spreadsheets and identifying the update from the previous quarter is cumbersome and highly inefficient. With the current process, in some cases, key information sections are left incomplete by the developers, which leads to follow-ups with the developers via email, which further makes the whole process inefficient and adds delays. The objective of the project is to develop a software solution to collect the information with reporting capabilities.

51. Reference Level Software Cleanup

The Reference Level Software (RLS) was originally released in 2010. Since that time, many NYISO projects and initiatives have impacted the development of reference levels and the software. Following the release and subsequent enhancements, numerous RLS improvements have been identified. This project intends to implement the list of identified improvements and prepare the RLS for future enhancements.

52. Reliability Compliance Tools Enhancements

As the NYISO markets continue to evolve, it is imperative that the tools NYISO Grid Operations uses to administer the markets also evolve to support these changes. This project will enhance NYISO Grid Operations situational awareness of critical functions, by implementing enhancements to the tools used by the Operators to administer the Grid. This is a multi-year project that began in 2024.

53. Renewable Energy Forecast Integration and Reporting Enhancements

The NYISO currently supports two distinct systems to meet its front-of-the-meter (FTM, grid connected) and behind-the-meter (BTM, distributed) renewable energy forecasting requirements. The current data systems separately provide data processing, real-time alerting, and reporting infrastructure for the NYISO and have developed over the last 20 years in response to the growing number of wind and solar installations across the NYCA. The demand for robust renewable forecast performance information and capacity/attribute tracking will continue to grow with the large number of renewable projects in the interconnection queues along with the potential new forecasting data streams (e.g., probabilistic wind and solar forecasts to support dynamic reserve market

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products). The project objective is to build out a framework that will allow NYISO to integrate new forecasting data as needed in the future.

54. Salesforce Flow Migration

The Salesforce tool that currently handles the process and workflows for the NYISO's various portals is reaching end of life in 2025 and must be replaced. Salesforce is a cloud platform that has become a critical enterprise solution supporting several areas of the business, such as Market Participant Registration, Interconnection Requests, and Generator Modeling. Each of these functions has complex workflows with multiple decision points that are essential to adhering to our process and compliance obligations. The project proposes to migrate all components of the NYISO Salesforce implementation to the new Salesforce Flow tool.

55. Security Information and Event Management (SIEM) Modernization

The SIEM Modernization project aims to elevate our organization's cybersecurity capabilities in terms of threat detection, response, and overall security operations.

56. SQL Server Monitoring Tool

The NYISO uses SQL databases to support various applications critical to administration of the markets and operations of the business. This project proposes to develop improved monitoring and alerting of our SQL environments utilizing a SQL Server Monitoring Tool.

57. Telemetry Tone Gear Upgrade

The NYISO telemetry includes many different components that are critical to delivering required Telemetry data to NYISO Operations and external customers. This includes key infrastructure that interconnects NYISO systems to external services. All these components require active vendor support to provide 24x7 assistance and to receive necessary updates to protect from vulnerabilities. Many of the NYISO's telemetry infrastructure components are entering the vendor-mandated end-of-life state.

Given the critical importance of this infrastructure, it is necessary to keep these key components under vendor support to receive updates, patches, and on-going maintenance. This project is a continuation of a multi-year effort to replacing outdated hardware with the objective of providing secure service delivery while modernizing and streamlining the NYISO's telemetry services in accordance with current industry best practices and vendor recommendations.

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58. Thunderstorm Alert

During a thunderstorm alert, all transmission into New York City is shut off and all congestion cost allocation is diverted back to New York City (NYC relies on "internal" resources for power during a thunderstorm alert). The current settlement calculation process for handling a thunderstorm alert is a manual process done in a spreadsheet at month-end that also utilizes a SAS query as a validation. This process requires acquisition of data files from multiple sources including Network Manager, which contain dynamic transmission flows making settlements more difficult. NYISO now secures lower-level lines changing the way the system operates. The current manual process may not always produce accurate results. This project aims to automate the current manual process, allowing for more efficient, accurate, and timely thunderstorm alert settlements.

59. Uncertainty Response Team (URT)

Working towards the ambitious clean energy and decarbonization goals of the CLCPA will result in significant changes to the resource mix in the New York Control Area, which presents unique challenges when compared with the traditional fleet of resources. To prepare for addressing challenges with the transition of the power grid, a platform to quantify and manage uncertainty is of paramount importance to enable a successful transition. The objective of this project is to identify changes required to build new or extend existing system(s) that will allow NYISO to continue to operate the New York Bulk Electric System efficiently and effectively with the future grid challenges.

60. Watchlist for Rest of State Units

Currently, in the Rest of State (ROS) locale, a method to automatically mitigate units that can impact market clearing prices in their locations does not exist. ROS units are only subject to mitigation for guaranteed payments and prospective mitigation in response to Locational Based Marginal Price impacts. Examples of situations that could present opportunities for existing units to exercise market power include securing new transmission facilities, addition of new units to the network model, extended transmission outages, or generator retirements. These situations could change the system topology in a manner that makes certain units the only option to relieve constraints, thus putting them in a position to exercise market power. To improve monitoring of these units for potential mitigation, MMA requires an automated method to gather information to evaluate opportunities for existing units to exercise market power. This project would develop automated report that gathers the information needed to determine if market power is triggered under these circumstances.

The deliverable for 2025 would be Q4 Deploy.

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61. Windows and SQL Upgrade

This multi-year project is an effort to upgrade NYISO's aging SQL and Windows Client & Server Operating Systems. For 2025 the impacted systems are:

1. Windows Client - Nearly all NYISO employees use a Windows client OS to perform their work. Windows 10 22H2 will reach EOL by October 2025. This work will upgrade an estimated 1500+ laptops and workstations in 2025.
2. Windows Server - All on-premise services and applications supported by the Windows team are underpinned by Windows Server operating systems. Windows Server OS 2016 will reach end of life by January 2027. This work will upgrade an estimated 450+ servers in 2025 and 2026.
3. SQL - Infrastructure has seventeen various applications using SQL 2016 Standard. SQL 2016 Standard is on extended support, which ends July 2026. To avoid being out of support, the NYISO needs to begin upgrading SQL in 2025.
4. Replace laptops and iPads for certain users.

Mandatory

62. Automation in CMS for Interconnection Credit Instruments

FERC Order 2023 and Order 2023A allows for Interconnection Customers to use forms of security reasonably acceptable to the transmission provider which include, but may not be limited to, cash, letters of credit and surety bonds as a deposit for Interconnection and Cluster Studies. This project is intended to replicate functionality in CMS to track these forms of security by Interconnection Customer by Project and by type of deposit (i.e., Study Deposit, Phase 1, Phase 2). Other items will include functionality that restricts use of funds for certain types of deposits (i.e., Site Control Deposit). Functionality will also include creating a different page and customer type in the system to ensure the rules for Interconnection Customers vs. Market Participants are clearly separated.

63. Generator Data Reporting System

The NYISO's IMO team manages, tracks, and develops reports based upon generator availability data that submitted by NYISO ICAP suppliers for purposes of capacity accreditation, generator modeling for resource adequacy, planning, and operations reliability assessments. The current Generator Availability Data Operating System (GADS)

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will need to be re-platformed by the end of 2025 due to a loss of expertise and vendor support.

64. Modification to NERC CIP Standards

In 2024, NERC has approved or is targeting to approve updates to all CIP Standards with a mandatory implementation timeframe expected to be late 2026 / early 2027. The NYISO must complete implementation of the changes to maintain compliance with the NERC CIP Standards. In 2025, the NYISO will study the impact of the standard changes to NYISO and start to design and implement program and system changes required by the standard changes as part of this multi-year project.

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