



2013 Preliminary Project Candidates

NYISO Product and Project Management

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This document contains high level descriptions of each of the 2013 project candidates identified through internal discussions with Business Owners and discussions with Market Participants in the stakeholder process.

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BUSINESS INTELLIGENCE PRODUCTS

Order 760 Automation

Overview

On May 7, 2012 the FERC, issued Order No. 760 – Enhancement of Electricity Market Surveillance and Analysis through Ongoing Electronic Delivery of Data from Regional Transmission Organizations and Independent System Operators (“Order 760”). The Market Mitigation and Analysis (“MMA”) department played a crucial role in collaborating with FERC Office of Enforcement (“OE”) on the initial data submission and development of the data sets identified in this order. MMA has also acted in the role of liaison for FERC and was identified by Senior Management as the Coordinating Business Owner for Order 760 implementation with a responsibility to reach out to various Business Owners throughout the NYISO organization for continuity. This project will automate the transfer of data from semi-manual processes developed as part of an interim solution to a fully automated process for on-going deliverability of data (“end state solution”).

Business Intelligence Platform Design

Overview

Scalable and high performing data integration, data storage and reporting capabilities are required to achieve BRM, Smart Grid and other business initiatives. This project includes requirements analysis, technology evaluation, design and planning effort across all of these interdependent capabilities.

This project will consider data integration, data storage (BI database) and reporting and analysis components. To the extent feasible, the project will provide options of varied cost and capabilities to support strategic decision making. Multiple architectures, including best-of-breed and incremental improvements to existing NYISO architecture, will be analyzed and proposed. The project will conduct a technology evaluation(s) and proof of concept(s) as needed to minimize new technology risk. This may include validation of incremental technology improvements and/or specific product recommendations.

DSS Business Objects Webi Migration

Overview

Business Objects is slowly moving away from its Desktop (DESKI) application and will be eliminating support for this in the future. NYISO is migrating all of its reports to the newer Web based (WEBI) application in phases and will be eliminating all DESKI reports and support for the DESKI application in the next couple of years.

DSS Environment Upgrade

Overview

The goal of the DSS Environment Upgrade project is to mitigate business continuity risk for the DSS environment by improving the redundancy of the DSS environment and upgrading the ETL technology.

eTariff – Business Owner Assignment

Overview

NYISO's eTariff software has an add-on module (Compliance Functionality) which leverages the electronic storage of the tariff beyond simply filing tariff changes with FERC. It allows the ability to associate a Business Owner with each tariff section and provides for email notifications when those sections are modified. Anticipated deliverables include implementing the eTariff Compliance Functionality and incorporating the assigned Business Owner for each tariff section.

NYS Generator Attribute Tracking System (GATS) Integration

Overview

The New York State Legislature recently passed legislation to implement an automated Generator Attribute Tracking System (GATS) for monitoring pollution at the individual generator level. NYISO would need to provide feeds of data to this new system. The data feeds would be for actual MW data as well as generator attribute information NYISO has within its systems. NYISO anticipates working with the PSC and NYSERDA to define the data elements that NYISO will provide and developing requirements for integration and regular feeds of data to the PSC GATS once it is implemented.

Public Website – Maps & Graphs

Overview

The maps and graphs displayed on the Market Data pages of the NYISO public website are one of the most used areas of the public website. The Maps and Graphs provide near real time information on the LBMPs, Zonal Load, Interface Flows, etc in an easy to use format. They are currently displayed using older technology, which needs to be replaced for longer term maintenance and support. This project will focus on:

- Identifying, evaluating and implementing a new technology to display the maps and graphs, that better aligns with NYISO's architecture
- Identify and implement maps or graphical displays for new data areas as appropriate (e.g. Broader Regional Market information)
- Provide a framework where new maps/graphs can be built more easily

Public Website – Posting Marginal Unit Fuel Data

Overview

The Marginal Unit is the price-setting generator. There may be more than one marginal unit for any interval and the marginal unit(s) could be located in any one of the zones. There have been requests from MPs to have access to the Fuel Type of the Marginal Unit.

Public Website Technology Upgrade

Overview

The purpose of this project is to upgrade the underlying technology for the NYISO public. The existing technology would be replaced with a more cost effective solution by using Microsoft SharePoint to maintain and post documents to the public website.

CAPACITY MARKET PRODUCTS

Additional Capacity Zones

Overview

Additional Capacity Zones is a FERC Mandate and is a response to the Independent Market Advisor's 2009 SOM Report. Implementation is in progress 2012-2013 with the ICAP AMS Deployment planned for Q1 2014 (for Summer/2014 Capability Period). This is a significant software re-write and will require extensive regression testing. The existing code must be modified to accommodate a more dynamic definition of capacity locations. The software must be consistent with all Tariff changes approved by FERC and the criteria for creating new capacity zones. This effort is coupled with the Additional Capacity Zones Mitigation and all Tariff revisions specific to new capacity zones and mitigation of new capacity zones.

Demand Curve Reset

Overview

Every three years, the NYISO is required by the Market Services Tariff to update the demand curves. Failure to do so puts NYISO in violation of the Tariff.

Price signals need to reflect the latest net cost of new entry estimates, providing the correct signals for market entry and exit. The consultant performs the demand curve study and support tasks require internal NYISO resources from Product & Project Management, Operations and Market Mitigation and Analysis. In addition, the study must include potential new capacity locations.

Final demand curves are subject to Market Participant comment and review. It is possible that one or more elements of the consultant's recommendations may change prior to the compliance filing. Late consensus could require a mid-season demand curve reset.

GADs Portal

Overview

The Generator Availability Data system (GADs) NxL vendor software implemented by NYISO has an additional User Interface (Portal) available that would enable Market Participants to enter generator outage information directly. NYISO currently uses a manual process to accept MP outage information in spreadsheet form.

The architectural design specification was completed in 2012. The next logical step is to implement the .NET application and any necessary security enhancements to enable MPs to enter outage information directly through the Portal.

ICAP Masked Bid Data Automation

Overview

By FERC order, NYISO posts on its website all ICAP offers and bids three months after their effective date. Large quantities of data are manually processed each month to meet this requirement. This project would include the following:

- Automatically initiate the process at the required time each month
- Collect ICAP offers and bids from the ICAP software
- Mask data according to prescribed algorithms
- Post data on the NYISO website

ICAP Reference System

Overview

Market Mitigation and Analysis (MMA) collects extensive financial data from generation owners in order to perform the ICAP market mitigation measures. Now that the data collection process is standardized, efficiency and transparency could be gained by creating a web-based data portal that would allow MPs to upload and review their data. The NYISO and its consultants could use the data portal in the review process and to facilitate discussions with MPs. The anticipated deliverable is a Web-based software application, similar in concept to the Reference Level Software (RLS), but with different functionality. Functional deliverables could include the following:

- The ability for MPs to upload a standard template of data for the administrative ICAP determinations, in two separate sections: one for Going Forward Costs and another for Unit Net CONE
- Automatic calculation of all offer floors, caps, financial parameters, etc
- Visibility of all data to the NYISO, the NYISO's consultants, and the MP
- The ability for the NYISO to modify the values entered by MPs and delineate why values were changed or omitted
- Canned reports and data export functionality

DEMAND RESPONSE PRODUCTS

SCR Baseline Study

Overview

This project will evaluate the current ACL against a number of alternative response baseline calculations using a Customer Baseline Load (CBL) for SCRs.

In February 2011, when the NYISO proposed, and stakeholders accepted, the change to the SCR baseline from Average Peak Monthly Demand (APMD) to Average Coincident Load (ACL), the NYISO committed to conducting a study to evaluate an additional set of baseline calculations for measuring event response. The objective of the study is to determine if there is a method of estimating response to an event that will provide a better estimate of event response than the ACL.

The analysis is expected to be a two-year project based on the need to collect multiple Capability Periods of data to evaluate both Summer and Winter participation by SCRs and will require the collection of interval meter data from the SCRs for the analysis period. The proposed modifications to DRIS would allow the reporting of the hourly interval meter data from each SCR. Development of the analysis model internally could extend the delivery date of the study.

DRIS-SCR: SCR Performance and ACL Weather Adjustment

Overview

This project will implement changes to the Demand Response Information System to support market rules changes to the SCR program under discussion in the stakeholder process, specifically revisions to requirements for performance of SCRs and a weather adjustment to the Average Coincident Load (ACL) for measuring performance during events.

The SCR Program is the largest of the NYISO's demand response programs, both in the number of individual demand side resources and MW. The NYISO needs to continue to refine market rules and evaluate its measurement and verification procedures to effectively administer this program.

DRIS-SCR: Local Generators

Overview

This project will implement changes to the Demand Response Information System to support market rules changes to the SCR program that under discussion in the stakeholder process,

specifically changes related to eligibility and reporting requirements of Local Generators that participate in the SCR program.

The SCR Program is the largest of the NYISO's demand response programs, both in the number of individual demand side resources and MW. The NYISO needs to continue to refine market rules and provide for collection of sufficient data and processing support to effectively administer this program.

DRIS-SCR: Provisional ACL

Overview

This project will implement changes to the Demand Response Information System to support market rules changes to the SCR program that under discussion in the stakeholder process, specifically changes related to SCRs enrolled with a Provisional Average Coincident Load.

The SCR Program is the largest of the NYISO's demand response programs, both in the number of individual demand side resources and MW.

Since the SCR baseline changes were implemented in April 2011, the NYISO has received a significant number of comments, including three market participant presentations at the ICAPWG, regarding SCRs enrolled with a Provisional ACL. One of the presentations related to using the Provisional ACL as a way to allow resources to account for an increase in load since the last Capability Period, which would allow the SCR to offer more capacity. The scope of the project is intended to address four key areas from stakeholder comments:

- 1) Address allowance for the use of Provisional ACL for SCRs that change RIPs;
- 2) Review the limitation on Provisional ACL for three consecutive Capability Periods;
- 3) Review SCR Load Zone Peak Hours for Winter ACL; and
- 4) Address increased baseline with reporting process to increase ACL values within a Capability Period.

Order 745: Monthly Net Benefits Test Implementation

Overview

In March 2011, FERC issued Order 745 which required all ISOs and RTOs to implement a monthly Net Benefits Test using a partially prescribed algorithm to determine the price at which demand response was cost effective, identify the cost allocation methodology for costs associated with paying demand response the full LMP and propose changes to measurement and verification procedures as necessary.

The NYISO made a compliance filing on August 19, 2011. FERC has not yet issued an order to the NYISO to implement or revise its compliance filing. This project will implement changes

resulting from FERC's response to the NYISO's August 19, 2011 compliance filing on DR Compensation.

Reduced MW Offer Threshold for Demand Response

Overview

This objective of this project is to identify the market rule and software changes that would be necessary to allow demand response resources participating in the energy and ancillary services markets to be eligible to enroll and participate in those markets with a minimum capability of 0.1 MW instead of the current 1 MW minimum that applies to all suppliers in the energy and ancillary services market. Demand response programs affected by this project include the Day-Ahead Demand Response Program (DADRP), the Demand Side Ancillary Services Program (DSASP), and the future implementation of demand response in the real-time energy market. Analysis of the scope of software changes associated with this project is dependent on the 2014 implementation of the Ranger Optimization project that will begin in 2013.

Demand response stakeholders believe that a reduction in the 1MW minimum for participation in the energy and ancillary services market would facilitate enrollment and market participation by smaller demand response resources. Aggregation to meet the 1 MW minimum is currently permitted in DADRP and the deployment to support aggregations in DSASP is planned for early 2013.

Demand Response in the Real-Time Energy Market

Overview

The objective of this project in 2013 is the development of the market rules through the stakeholder process and identification of the software requirements necessary to integrate demand response resources into NYISO's real-time markets based on approved market design concepts.

In response to NYISO's initial compliance filing on FERC's Order 719, issued Oct. 28, 2008, FERC ordered the NYISO on Nov. 20, 2009, to allow demand response to participate in the NYISO's real-time energy market. In the NYISO's Feb. 2010 compliance filing, the NYISO provided a prioritized list of demand response initiatives and market participants supported the delay of implementing this effort so that the NYISO could make other higher-priority changes to its demand response programs. The NYISO proposed an action plan for 2011 that later needed to be delayed due to significant market rule changes to the SCR program in 2011 and FERC's Order 745 compliance filing.

This project is a continuation of the 2012 project that will identify the market design concepts for demand response to participate in NYISO's real-time energy market. Comments provided to

FERC on NYISO's Order 745 compliance filing in August, 2011 indicate that stakeholders are awaiting the full implementation of this project and have requested that FERC issue a date certain to the NYISO by which it must accommodate demand response in the real-time energy market.

Real-time participation by demand response may provide benefits to the NYISO, but it comes with significant complexity related to the interaction of the economic and reliability-based demand response program rules as they currently exist.

DSASP Aggregations

Overview

The deployment of this project was included the 2012 Business Plan and later reprioritized due to resource constraints resulting from the Order 755 project. This project will deploy software changes necessary to support the participation of aggregations in the Demand Side Ancillary Service Program (DSASP). The proposed market rules to allow aggregations for DSASP are expected to be filed with FERC in Q3 2012.

FERC's Order 719, issued Oct. 28, 2008, called for the integration of small demand side resources into the NYISO's ancillary services markets. Through several compliance filings related to Order 719, the NYISO has kept the Commission updated on the status of this effort. This project has been reprioritized for various reasons since 2010 and now that the technical specifications for Direct Communications for DSASP have been released, the final step for compliance with Order 719 is to implement the market rules and software changes to support participation of aggregations in the NYISO's ancillary services market through the Demand Side Ancillary Services Program.

The deliverables for this project will be to administer the aggregations of demand side resources as single DSASP resources that are modeled as generators in the NYISO's network model and MIS through changes to the Demand Response Information System (DRIS) and the MIS.

The following features will be added to DRIS:

- Ability to import individual demand side resources and associate those resources with a DSASP aggregation using a DSASP Aggregation ID
- Confirm eligibility of the individual demand side resources to be part of the DSASP aggregation, as the eligibility requirements relate to response type, location, participation in other NYISO demand response programs and any other verifications necessary to determine eligibility
- A report to the DSASP Provider that identifies which of the individual demand side resources are eligible to participate in the DSASP as an aggregation and totals of the Summer and Winter MW for the aggregated DSASP Resource. This report will be a required component of the DSASP Resource registration packet that CRD and Operations will use to model the DSASP Resource.

- Additional information on the report will include whether any of the individual resources are enrolled in another DR program with another aggregator and reasons for any individual resources that do not meet the eligibility screening
- DRIS will query MIS daily to collect any DSASP Resource PTIDs that have been associated with a DSASP Aggregation ID and then update each member of the DSASP aggregation with the generator PTID

Changes to MIS will:

- Allow for the tracking of the DSASP Aggregation ID
- Associate it with the generator PTID that Operations assigns to the DSASP Resource in the network model

ENERGY MARKET PRODUCTS

Ancillary Services Mitigation

Overview

Per recommendation of NYISO's Market Advisor, NYISO should modify two mitigation provisions that may limit competitive 10-minute reserves offers in the day-ahead market. This project would implement the two proposed enhancements approved by stakeholders in 2012.

Currently, units in NYC who are eligible to bid 10 minute spin are required to bid their capacity at \$0 in the DAM. In addition, all units have a reference price cap of \$2.52 for 10 minute non spin. These two rules have been identified by Potomac Economics as leading to market inefficiencies. During 2012, NYISO worked with stakeholders to modify these two rules. These new rules were approved by stakeholders for implementation in 2013.

The anticipated deliverable of this project will be the ability to gradually remove the \$0 bid cap and \$2.52 reference price cap from NYISO software as well as reporting changes to support the same. Features include:

- Stepped Removal of 10 Minute Non-Spin Reference Levels in RLS.
 - The ability to change the \$2.52 reference price cap to a higher value effective on specific dates as well as the eventual elimination of the cap.
- Stepped Removal of the requirement that New York City generating units offer 10-minute spinning reserves at \$0/MW in the DAM upon offer submission in MIS.
 - The ability to change the \$0 bid cap to a higher value effective on specific dates as well as the eventual elimination of the cap.
- Stepped Removal of the requirement that New York City generating units offer 10-minute spinning reserves at \$0/MW in the DAM at Market Close Integration with control room logging requirements in MIS.
 - The ability to change the \$0 bid cap to a higher value effective on specific dates as well as the eventual elimination of the cap.
- Enforce the requirement that New York City generating units must offer 10-minute spinning reserves at or below the stepped ceilings at bid submission in MIS.
 - Changes to enforce the **gradual** removal of reference price cap.
- Revise the Offer Thresholds in MMA Lower Threshold Ancillary Services Report in MMA-Reports.

CTS – NE Phase 1: Internal System Build-out

Overview

As part of the Broader Regional Markets initiatives, ISO New England (ISO-NE) and the New York Independent System Operator (NYISO) commenced the joint Inter-Regional Interchange Scheduling (IRIS) project. The main goal of this project is to improve price convergence between proxy buses of the two ISOs. For the IRIS project, two approaches were proposed according to the IRIS white paper¹ : Tie Optimization (TO) and Coordinated Transaction Schedule (CTS). The two ISOs agreed to pursue the latter. To implement the CTS approach, two design options were also proposed: the supply curve method proposed by NYISO; and the marginal equivalent algorithm suggested by ISO-NE. The two ISOs agreed to pursue the supply curve method based on the assumption that it is much easier to implement. In 2012 FERC accepted the tariff changes to implement CTS.

Phase 1 of CTS with NE will focus on building out and testing some internal applications to reduce the effort needed for testing and development, before activation.

Potomac Economics has identified a potential benefit of CTS as much as \$196M/year in Consumer Savings and \$17M/year in Production Cost Savings.

CTS – NE Phase 2: Activation

Overview

The anticipated deliverables for Phase 2 of this project in 2013 will be the requirement finalization and build-out of all systems needed to begin joint testing in January 2014 and activate CTS with NE in Q2 2014.

EITC Phase 5: CTS - PJM

Overview

This project will look to expand upon the work and concepts outlined in CTS with NE. This project will look to improve transaction scheduling inefficiencies that can occur between PJM's physical transaction modeling and NYISO's economic based scheduling models. This would be the next evolution in the BRM projects. The State of the market has recommended we continue to work with our neighbors to provide market efficiencies from transaction scheduling. For 2013, this project will look to finalize the concept between PJM and NY and get stakeholder approval on these concepts.

¹ IRIS white paper (ISO New England), January 5, 2011, [Online] www.iso-ne.com/pubs/whtpprs/iris_white_paper.pdf

5 Minute Transactions with HQ

Overview

In 2011 the NYISO activated 15 minute interval transaction scheduling with Hydro Quebec. This project would look to continue these enhancements and take transaction scheduling with HQ to the granularity of 5 minute intervals.

Business Justification

Currently transactions schedules are fixed during real time dispatch. Scheduling transactions during the real time dispatch would give Operations additional resources to help secure the system in real time. This flexibility would likely reduce real time price volatility and could reduce uplift.

Enhanced Scarcity Pricing

Overview

Today, the NYISO does not co-optimize commitment and dispatch with the pricing effects of SCR/EDP load reduction during activation events. Currently, the MIS post processes a price for these events after an optimized commitment and schedule have been set in Ranger. The intent of this project is to include the cost of a SCR/EDP event in the economic scheduling processes to will allow for pricing and scheduling of SCR/EDP events directly within the RTS system. The MIS post processing logic will also be retired as a function of this project.

Scheduling & Pricing Phase 6: Graduated Transmission Demand Curve

Overview

Today, the NYISO applies constraint relaxation logic to ensure transmission constraint feasibility prior to pricing the constraint. This is applied to a single \$4,000 point. With Graduated Transmission Demand Curves, the feasibility step would be replaced with using the demand curve MWs to make the constraint feasible (this is akin to the Reserve/Regulation Demand Curve modeling in UC/ED).

Potomac Economics has recommended in its State of the market report: “Consider the feasibility and potential impacts on reliability from using a graduated Transmission Shortage Cost.” They go on to say that, “Improving the accuracy of the Transmission Shortage Cost by representing it as a demand curve may cause the NYISO markets to take more efficient dispatch and commitment actions, and set more efficient prices.”

The anticipated deliverable of this project will be the integration of commitment, dispatch, and verification processes related to transmission demand curve activations.

Scheduling & Pricing Phase 8: Hybrid GT Pricing Improvements

Overview

The current process for determining eligibility of GTs to set prices is the result of complex steps in the hybrid dispatch within the optimization. This can lead to some GTs that should have set price, not eligible to set price.

Potomac Economics has recommended in their State of the market report: “Evaluate improvements to the real-time pricing methodology to ensure that GTs are eligible to set the LBMP when they are economic (i.e., displacing output from more expensive resources).” They go on to say, “The real-time pricing methodology (i.e., hybrid pricing) employs a step that causes some efficiently committed GTs to be deemed ineligible to set the LBMP. Hence, we recommend the NYISO identify and evaluate potential improvements to this step.”

In 2013, the NYISO proposes evaluate this potential improvement and present its analysis to the Market Place.

PAR Modeling Phase 2: Partially Controlling Mode

Overview

Recent changes to interface pricing and par modeling have given the ISO the ability to model PARs as controlling flows or not controlling flows. This project would look to enhance the existing software to model PARs as holding flows sometimes.

It is likely that when the Ont-Mich PARs finally go into service that a binary decision on their scheduling capability may not be the final end state solution. The next evolution in interface pricing may be to model these devices as partially controlling.

In 2013, this project would look to determine the requirements necessary for a partially controlling model.

ENTERPRISE PRODUCTS

Enterprise Project Management (EPM) Phase 2

Overview

The processes currently used to make enterprise decisions on project and change priorities, and the resource assignments to support them, are entirely manual. The ability of the organization to maximize staff resources in delivering sustainable business value towards corporate strategic objectives depends on a systematic, common framework for project decision making and resource allocation. The purpose of this initiative is to expand the implementation of the EPMLive application to provide a centralized system with an enterprise view of project demand, resource capacity, project costs, and resource utilization to support the decision making process.

NYISO faces increasing demands for project throughput and innovation. To meet those demands, mature processes are required to ensure the right people are working on the right things, the organization can respond to dynamic and changing requirements, and the organization can contain risk related to project delivery commitments and sustaining activities that are vital to existing operational functions.

Several key business capabilities must be developed to realize this vision and are enabled by the process changes and business system outlined in this proposal:

- Enterprise staff resource allocation and capacity assessments for project and non-project work
- Centralized processing of all project and change requests with visibility to resource projections
- Data driven prioritization and scheduling trade off analyses

HR Business System Capabilities

Overview

Information owned by the Human Resources department is currently stored and managed across multiple tools and on paper, and sometimes resides within a system that is not owned by HR. This results in data replication, the need for system-to-system interfaces, and data being managed by a group other than the business owner.

The intent of this project is to design the future state technology vision for HR and extended business processes that puts HR data under the control of the business owner and provides online systems for administering the performance management and benefits enrollment processes.

The processes used to manage new hires, employees, employee services, and terminations are currently either largely manual in nature or are implemented in disconnected technology solutions. Manual performance management and benefits enrollment processes affect every employee of the NYISO at some level, multiplying the effect of inefficiencies.

Network Reliability Upgrades

Overview

NYISO's ability to operate the grid and markets relies on electronic systems connected by various network devices to manage, secure, and enable communications between them. This project will replace several critical components of our network backbone and internet access that enable essential NYISO business operations.

Business Justification

Several of the devices currently in place are in or nearing end-of-life support and must be upgraded to supported versions. Some devices are also approaching existing capacity limits.

Market Job Scheduling Upgrade

Overview

The Control-M application provides automated scheduling functions for key NYISO business processes, such as the Day Ahead Market, Hour Ahead Market, RTD and RTC closes, Load Forecast processing, data feeds into the billing system, and the transfer of MIS data to MMA applications. The objective of this project is to upgrade the Control-M application to the currently supported level and provide vital staff training on this platform.

Market Data Management

Overview

This project will improve the reliability and resiliency of business processes dependent on market data such as Price Validation, M2M Validation, Weekly/Monthly Invoices, and related Web Postings and DSS Reports. This will be accomplished by implementing a data recovery solution and consolidating and updating legacy databases to simplify integration, eliminate unnecessary redundancy, and leverage the latest infrastructure for performance and data management.

Identity and Access Management Phase III

Overview

The NYISO Identity & Access Management (IAM) application enables and controls cyber access to its critical technology systems, and physical access to NYISO facilities, for employees and contractors. This project will migrate existing functionality to a supported system prior to the vendor's retirement of the current product in 2014.

The scope of this project includes the following 2013 deliverables:

- Vendor evaluation and selection, if needed
- System requirements
- Development, testing, and documentation
- Training and deployment

Ranger Messaging Integration Phases II

Overview

This project is a continuation of the 2012 Ranger Messaging Integration Project. The new technology will integrate internal applications and new partner integrations such as Market to Market and other BRM initiatives. Anticipated deliverables include the following:

- Re-engineer and replace existing enterprise service bus applications
- Implement a central repository for tracking and managing deployed services and dependencies
- ABB will replace current embedded client with new client libraries.
- Prepare existing applications for future enterprise service bus integration

Corporate Workstation Upgrade (Windows 7/IE 9)

Overview

This project will upgrade all NYISO Corporate Workstations (laptops and desktops) from Windows XP and Internet Explorer 7 to Windows 7 and Internet Explorer 9. Essential business processes and priorities across the enterprise are dependent on this technology upgrade.

Market and Web Application Server Upgrade

Overview

The current servers that support NYISO's critical market web applications are eight years old and support will expire in 2014. This project aims to retire existing servers and replace them with a modern server platform allowing NYISO to support its current portfolio of web applications and allow for potential future growth.

Enterprise System Reliability Monitoring Enhancements

Overview

Evaluate and implement a cost effective Enterprise Level Monitoring solution to monitor NYISO's critical applications and infrastructure services. The NYISO's current monitoring tool is not designed for enterprise level monitoring and is not an adequate monitoring solution for the future.

Windows Server 2008 Upgrade

Overview

This project is a multi-year initiative to upgrade NYISO's Windows servers to ensure NYISO has required support for all of its servers and to build new servers only with the most current version.

Enterprise Data Storage Management

Overview

The focus of this project is to establish a strategy to manage data lifecycles across all data storage mechanisms and ensure current storage solutions support the strategy. Anticipated deliverables include the following:

- Enterprise Data Archiving – develop technical strategy for managing data through enterprise storage systems

- Netbackup vStorage for Data Protection – implement a new backup infrastructure and strategy/method for backing up and recovering Windows Servers; specifically those running as virtual machines
- Enterprise Backup Environment Segregation- plan, purchase and build out new Enterprise backup environments to ensure segregation between production and non-production environments
- Corporate Storage Environment Segregation – plan, purchase and build out new non-production corporate storage environment. Move non-production data off of production corporate storage

Mobile Device Management Upgrade

Overview

The NYISO relies on the corporation Research in Motion (RIM) to manage Blackberry devices, which provide phone and email services. Given the current financial stability issues of RIM as well as potential compliance and information security risks with RIM infrastructure servers residing in Canada, NYISO should evaluate other alternatives to manage and supply mobile devices. Anticipated deliverables include the following:

- Evaluation of current NYISO mobile devices and alternatives
- Evaluation of mobile device management technologies
- Strategy for the future of device infrastructure that meets the business needs of NYISO communications while meeting compliance and security requirements
- Proof of concept infrastructure and evaluation of the viable mobile devices

Stakeholder Services Automation Tools

Overview

Over twelve and a half years of operation, NYISO customer service has evolved to include a fully staffed department providing service 24 hours a day, 365 days a year. The NYISO recently realigned the Customer Relations Department (CRD) under External Affairs, and subsequently merged the CRD and Committee Support Department to create the Stakeholder and Member Services department.

To meet the increasing demands for improved customer service, the NYISO Stakeholder Services department is evaluating automation tools, such as Customer Relations Management (CRM) software and a streamlined, electronic (online) NYISO Registration Application.

The intent of this project is to design the future state technology vision for Stakeholder Services to ensure NYISO can continue delivering successful customer service.

FINANCE PRODUCTS

CMS Energy Transactions

Overview

Enhancement to the Credit Management System (CMS) application to change the credit requirements for external transactions (imports, exports, wheels). These enhancements are needed to better align the credit requirements to the evolving market design for transactions occurring as part of the broader regional markets initiative.

During the past 2 years, there has been a significant increase in Energy Marketers and this increases the potential risk of defaults in the NYISO markets. These rules were brought through the governance process in 2009 but were unable to be implemented due to system and resource constraints. These changes were a prioritized project in 2012 with a code complete commitment for December 31. The project was put on hold due to project resource reallocation for Order 755 implementation.

Anticipated Deliverables

The anticipated deliverable of this project will be a change in the credit requirements for Market Participants with imports, exports or wheels through in the energy markets. Changes to the Credit Management System include:

- Integration with the Bid Management System (BMS)
- Implementation of a Historical Performance Calculation that will use a threshold to determine if an External Supplier is operating in a manner similar to a Virtual Trader
- External suppliers that exceed the threshold will be subject to increased credit requirements that account for their historical performance in delivering on their commitment
- External Buyers will have credit requirements equal to the higher of their bid price for the export or the virtual load credit requirements for export buyers
- To Bid to buy energy in the real-time market, export buyers would be required to have credit coverage equal to the bid price of the export.
- Wheels through in either the Day-Ahead or Real-Time Market would be subject to credit requirements that are equal to the bid price for their wheel through

ICAP Spot Market Credit Enhancements- Market Design

Overview

Market Participants have requested a full evaluation of the process and calculations used to determine the bidding requirements for the ICAP Spot Market. Any recommendations on changes to the existing processes and bidding requirements would be a future year request for

project prioritization. The request for this analysis is the result of recent changes made to the bidding requirements for the ICAP Spot market.

In 2012, Market Participants raised a concern at the Credit Policy Working Group related to the amount of credit held for bidding in the ICAP Spot Market Auction. At the time, per the tariff, the NYISO calculated and held the MP's maximum exposure in the Spot Auction approximately 5 days prior to the auction until the auction was complete and awards were determined. The NYISO reviewed and agreed that it was holding more credit than needed. MPs were also impacted by the changes in response to FERC Order 741 – Credit Reforms in Organized Markets, which resulted in MPs having less unsecured credit available for allocation in the capacity market. As a result, several MPs were experiencing collateral calls for the short period of time required for the Spot Market Auction.

Analysis was done and an interim solution is now scheduled for implementation in October 2012. The anticipated deliverable of this project will be a summary report which shows the analysis findings of existing bidding requirements and process for the ICAP Spot Market to include:

- benefits of existing process
- improvements to the existing process
- confirmation of the existing calculation or proposals to improve the calculation's accuracy

CMS: Enhanced Market Participant Data Access

Overview

This project includes several changes to the Credit Management System (CMS) to provide additional access to data for Market Participants and related automation of tasks. This project will provide MPs with access to FERC Order 741 minimum participation data while also automating and providing the Credit Department with better tools to track the required certifications, capitalization, risk procedures, and verification. Changes will also be made to the CMS to include within its capacity requirement the bidding requirement for the ICAP Spot Market Auction.

This project will include automation of the internal CMS functionality and external user interface surrounding the ICAP credit calculations. These changes will add the projected spot market exposure to the credit requirement for capacity as well as send the automatic notifications to the MPs.

FERC Order 741 directed the NYISO to require all Market Participants to submit Minimum Participation Criteria in order to participate in any of the NYISO markets. This project proposes CMS automation to track the annual process of certification, as well as, ensure that each Market Participant has appropriate capitalization in place. Moreover, this automation will

provide visibility and transparency to Market Participants to view the total amount of security held for both collateral and capitalization.

The anticipated deliverable of this project will be to incorporate the following changes in the CMS:

- Automation of Spot Market collateral calls
- Change the ICAP Market credit requirements in the CMS to include the amounts calculated for bidding in the ICAP Spot Market Auction
- Tools to track the annual certification process, Capitalization funds and/or financial statements, MP risk policies and procedures & MP verification
- Tools to provide automated Certification Requests, Capitalization Requests , Default Notices, and Suspension Notices
- Tools to provide automated and Default Notices
- Tool to determine which MPs are subject to providing risk policies /procedures and provide automated requests for risk policies / procedures

Performance Tracking System Replacement

Overview

The purpose of this project is to replace the existing NYISO Performance Tracking System (PTS). PTS is the source of Generator RTD MW data for all real-time settlements data calculations. Additionally, PTS is the source of all inputs into the subzonal load calculation. .

The intent of this project is to follow-on to the completed 2012 commitment of defining the requirements for a complete system replacement by year-end. This project will implement the defined requirements.

Data Retention Analysis

Overview

This project would examine how data is being created and stored along with identification of opportunities to implement performance improvements related to systems and data.

Business Justification

Removal of unnecessary data would provide marked improvements in performance as well as a potential to realize cost savings with less storage space needed.

Anticipated Deliverables

The anticipated deliverable of this project is an internal study to identify opportunities for improved data creation and retention and a potential list of next steps.

DSS: Enhanced MP Data Availability

Overview

The NYISO uses Decision Support System (DSS) Settlements Data Mart to provide MPs transparency into their billing data. A number of data and invoice determinants do not currently pass into DSS, making it difficult for MPs to tie out their invoices properly and at the right granularity. This project would satisfy a number of MP requests for the additional information. Anticipated deliverables include:

- Report to provide Billing Period comparison for 2 selected data versions
- Availability of detail data for bill codes involving local-only rate allocations and potential associated report
- Availability of billing determinants for mitigated start-up cost and potential associated report

Oracle Financials Upgrade EBS r12

Overview

The intent of this project is to upgrade to an enhanced and more technologically advanced version of Oracle Financials to better support the existing functionality of the Finance team and to allow the team to perform at a higher level of efficiency. An upgrade will provide the Finance team the ability to utilize improved and more user friendly functions in the existing modules. In addition, an upgrade to a newer version will allow the team to take advantage of new modules and functionality that doesn't exist in the current version.

The anticipated deliverable of this project will be an upgraded version of Oracle Financial E-Business Suite that includes the following features:

- Using a web based ADI removes the limitation of having to use an older version of Excel.
- Dunning functionality merged with Advanced Collection module allows for a centralized location to monitor and manage customer's payments activities.
- Project Costing compatible with both Excel and ADP.
- Purchase Orders and Contracts can be maintained, managed, saved and printed through the Purchasing Module and Business Intelligence Publisher tool.
- Accounts Payable module allows for entering multiple entries on same screen.
- Addition of sub-ledger accounting functionality
- New reporting tools that allow for the creation of user-defined static reports as well as AD Hoc Analysis and report's drill down capability.

Expanded Functionality for Billing Simulator

Overview

Customer Settlements and Market Mitigation and Analysis would like to leverage the existing 'Billing Simulator' to allow expanded functionality for analysis including testing existing settlement rules based on different inputs and testing proposed new settlement rules prior to sign-off and implementation. To do this, the 'Billing Simulator' needs to be enhanced to allow the Settlements team and other NYISO departments to provide data to be used in place of Production data when executing billing calculations in order to see the impacts.

The anticipated deliverables of this project will be:

- Ability to provide settlement input data for use in billing simulations without modifying production data
- User Interface to facilitate business needs
- Ability to use the billing simulator to test settlement outcomes to facilitate Mitigation disputes Dispute Resolution and Dispute & Claims Committee settlement analysis and processing
- Ability to use the billing simulator to test settlement outcomes with custom data sets to ensure code quality
- Enhanced reporting capabilities to provide better support for business activities by Customer Settlements, Market Mitigation and Analysis, IT Development, and IT Quality Assurance.

CMS: Unbalanced Trading Hubs

Overview

The project to provide Trading Hub bidding functionality was implemented 3 years ago but was limited to allowing only balanced trading hub bidding to limit the need for new credit functionality to address the risk associated with unbalanced trading hub bids. This project would implement the credit requirements needed to address the risk associated with the unbalanced energy MWhs and remove the bidding check that enforces balanced Trading Hub bids.

The credit calculations would be performed any time a trading hub bid is confirmed, updated or deleted and the bids will be accepted or rejected based on the availability of collateral to support the credit requirement for the bids.

The anticipated deliverable of this project will be to incorporate the following changes in the CMS:

- Automation of Unbalanced Trading hub calculations including automating a feed for the Henry Hub Gas futures prices used in the calculations.
- Addition of a credit market for trading hub bids and collateral allocation
- Updating of CMS User Interface to provide internal and external visibility to unbalanced trading hub credit requirements and collateral
- Tools to provide automated Collateral calls and Default Notices

OPERATIONS & RELIABILITY PRODUCTS

Ranger Optimization & Performance

Overview

Presently, lagrangian relaxation and MINOS technologies are used for the unit commitment and economic dispatch process. These are being replaced across the industry with a MIP/linear programming based optimization approach. The NYISO is the last remaining Ventyx/ABB customer on legacy LR/MINOS, which was developed in the late 1970s. MIP provides greater IT support as well as increased constraint modeling flexibility through high level modeling languages and current compiler and system optimization development.

MIP, in conjunction with co-processor speed improvements, allow for more accurate modeling of constraints, faster prototyping and development of market rules and easier IT support resulting in lower maintenance costs.

The anticipated deliverable of this project will be the integration of the MIP code running on a coprocessor with a NMR4/5 Ranger platform. Additionally, an independent validation of the market software will be conducted in parallel with NYISO testing efforts.

The benefits of proceeding with this project include:

- Improved commitment analysis performance
- Improved economic dispatch results
- Support for future Broader Regional Market initiatives
- Enable support of disaggregated virtual bidding
- Enable support of a larger volume of demand response units <1 MW than LR
- Avoided expenses and risks to other projects presented through resources being diverted to redundant testing when combined with NMR4/5 upgrade
- Significantly improved market rule prototyping and development functionality
- Avoided risk of decreased support on LR due to retired subject matter experts

Ranger Software Upgrade

Overview

Today, NYISO is operating on a version of the Ranger software that was first introduced in 2005. NYISO migrated to the current version in 2007. The project objective is to upgrade the Ranger baseline code to:

1. Increased supportability – today NYISO experiences a very high percentage of problems that have already been identified and fixed in subsequent releases
2. Bring into synch the hardware platform and software baseline – HP-UX is the current hardware platform that is owned by NYISO. Upgrading Ranger will provide a stable platform for the remainder of the expected life of the hardware

The anticipated deliverable of this project will be the integration of the existing customized NMR2 Ranger platform with an upgraded NMR platform. It is expected that the following deliverables will be completed:

- Integrated Ranger baseline code base
- Integrated Ranger baseline code with MIP/Co-processing code

EMS Visualization

Overview

The NYISO seeks to improve the situational awareness capabilities of the existing Operations control room displays. The new system will provide for enhanced wide-scale video projection, integration of video displays from alternative sources, and provide a platform to leverage modern video display technologies. This project is the continuation of the 2012 project to design and develop a software system capable of collating and displaying operationally relevant information to Operators and Support Staff in their new environment. Anticipated deliverables include the following:

1. A one-line representation of the NYCA BES with selected external busses to be prominently displayed on the video wall
2. Situational Awareness Displays will be created to provide information to operations that does not naturally integrate with the one line diagram.

Situational Awareness Displays will be made available to every operator's console as well as engineering support and operations management.

Phase 1 Metering Upgrade

Overview

At the current time a project is under way to re-provision all of the Phase 1 analog data circuits so that the raw signals are delivered to both Carman Road and Krey Boulevard facilities. This will allow signal processing hardware to be installed in the new control center currently being constructed at Krey Boulevard. The presence of these signals and the ability to process them provides a valuable redundant set of meter data points for the Operations monitoring functions.

In the event of the loss of the Ranger EMS System, or the ICCP data system, Phase 1 analog data that is delivered and displayed independent of these other systems, will allow the System Operators to manage net interchange and system frequency and allow them to perform manual dispatch of generation.

Control Room Migration

Overview

This project provides the general coordination and oversight of Operation's move into the new Control Center, following successful completion of the construction project. This includes the commissioning of the new building's support systems, including hotline, satellite and corporate phones, IPC system, ringdowns, control room video, and other support systems. In addition, it outlines the prerequisites for the migration including the building completion, video wall, EMS Visualization software and the Phase 1 implementation.

Operational Tools

Overview

This project is made up of two major components as follows:

1. Consolidate DMNC in CIM – This change would eliminate duplicate DMNC data definitions in an antiquated Approach database and CIM. Today, DMNC data is entered in both places manually. The DMNC database (Approach) then sends a flat file to MIS to update the MIS generator limits. This effort would eliminate this duplicate entry with CIM providing the flat file. Delivery for this effort is scheduled for Q1 2013.
2. MMS visualization – Improved displays to analyze the solution of Security Constrained Unit Commitment (SCUC).

These changes are necessary to more efficiently and effectively operate the energy markets and operate the NYCA grid. The DAM Administrators need better visualization displays to analyze the solution of Security Constrained Unit Commitment (SCUC). The current output of SCUC is displayed in a tabular format. This makes it difficult for the DAM Administrators to properly assess the solution in a timely manner. Additional data will also need to be available to the DAM Administrators.

HTP Controllable Tie Line

Overview

Hudson Transmission Partners, LLC has a project underway to build a 660 MW back-to-back HVDC (AC input-DC conversion-AC output) transmission that will connect the PSE&G Bergen Substation located in Ridgefield, New Jersey with Con Ed's West 49th Street Substation in New York City.

This is a scheduled line that will transport power into the NYCA. NYISO's systems need to be able to support scheduling transactions over this tie line. Anticipated deliverables include the following:

- Software will be designed or modified to provide the following:
 - Model an additional Controllable Line external proxy bus pair (one for imports and one for exports) in PJM.
 - Give MPs the ability to bid to (export proxy bus) or from (import proxy bus) in the Day-Ahead and Real-Time markets.
 - Give MPs the ability to schedule two-party bi-lateral transactions in the Day-Ahead and Real-Time markets.
 - Give NYISO Operators the ability to monitor the Controllable Line and curtail transactions on the line.
 - Monitor transmission rights and reject any bids that have not obtained transmission rights based on information obtained from PJM.
- The Tariff will be updated to include this tie line as a scheduled line.

MetrixIDR(Load Forecaster Upgrade)

Overview

NYISO's Load Forecaster application is supplied by Itron, Inc and is built on their NDauto product. NYISO is the last Itron customer to be utilizing NDauto. Over the past 10 years, Itron has had a dedicated software development team working on enhancing MetrixIDR to meet the requirements of a global customer community. In order to enhance the NYISO's load forecasting capabilities, this project would replace NDauto with MetrixIDR.

MetrixIDR is built using new technologies that are easy to maintain. Itron is committed to continue investing in MetrixIDR to ensure the software technology underlying the product remains current, as well as ensuring that the forecasting functionality the MetrixIDR User Community requires is available.

The following additional functionality will be delivered with the MetrixIDR product:

- Improved Model User Experience. From the online displays of historical load and weather day, online displays of model estimation results, and online tracking of forecast performance, the analysts responsible for building and maintaining the forecasting models are provided with enhanced user interface that improves overall productivity. The MetrixIDR user interface provides the analyst with the information needed to ensure the forecasts are on track.

- Improved Five Minute Modeling Framework. With enhanced data filtering and smoothing, and enhanced modeling options, Five Minute Modeling in MetrixIDR is significantly improved over NDauto.
- Enhanced IT Architecture. MetrixIDR represents ITRON's latest thinking on three-tier applications that support multiplexing and automated failover. NYISO IT resources will find supporting MetrixIDR much easier than supporting NDauto.
- Forecast Monitor is utilized for reviewing, modifying as needed and publishing the forecasts. This tool has been designed by System Operators and hides the modeling complexity of MetrixIDR to allow the operator to focus only on the forecasts.
- Multiple load forecast results (up to three) with similar displays for each weather forecast.
- Ability to publish any of the load forecasts to OISR/BMS based on parameter.
- Comparison plot overlaying the three forecast along with similar like day.
- Performance is expected to be maintained at current levels

Long Island PAR Optimization - SOM

Overview

The most recent State of the Market report from Potomac Economics identified perceived inefficiencies in the scheduling of PAR flows between zones J and K. The intent of this project is to delve deeper into the market advisor's findings and present a justification for the current solution methodology or a proposal of changes to the market participants.

Anticipated deliverables include the following:

- A study of the PAR scheduling between zones J & K with associated impacts.
- Proposals for improvement to the scheduling of PARs between J & K, if applicable.

DTS Sustainability

Overview

Today, the NYISO utilizes the Dispatcher Training Simulator (DTS) to maintain compliance with NERC Standard PER-005 and keep our operators licensed. Additionally, the TOs join ISO staff in training on our lone simulator environment to maintain their skills on black start and other emergency scenarios. The need to provide training of upcoming functionality associated with BRM, SGIG, wind resource management and other features while simultaneously certifying operators and TOs, as required by NERC, has proven to be especially difficult. With only one system serving both simultaneous needs, the long and unpredictable downtime required to redeploy, configure and set up training scenarios has caused staff rescheduling and other significant issues.

The anticipated deliverable of this project will be enhancements to remediate the identified shortcomings of the current DTS system, as it pertains to the effective training of ISO and TO

operators and their continued compliance with NERC standards. Additionally, a second identical system needs to be built to remediate the issues caused by the DTS's dual functions.

Ranger Workstation Upgrade

Overview

As a continuation of the 2012 project, NYISO will need to complete upgrading the Ranger workstations in 2013. This project will provide new Ranger workstations and monitors for the new Krey Primary Control Center. In support of Operations, the Dispatcher Training Simulator (DTS) Ranger workstations and monitors will also need to be upgraded in the new building.

2013 Reference Level Software (RLS) Enhancements

Overview

The Reference Level Software (RLS) application builds reference levels for generators that participate in the NYS electricity markets. The 2013 Enhancements project will refine the RLS application to include enhancements requested by the MMU, MMA and MPs.

Anticipated Deliverables

The 2013 RLS Enhancements project will deliver the following functionality:

1. New Capacity Calculation. Tariff Sec 23.3.1.4.3 describes New Capacity (Energy New Unit Reference Price) - Net additions calculation of capacity. RLS does not have the current capability to have only a portion of an energy reference price reflect a New Unit Reference price. Add RLS functionality to have only a portion of an energy reference price reflect a New Unit Reference price
2. Allow routine gas balancing charges in references. The purpose of IBRT was to allow generators to reflect their fuel costs more accurately, since this would lead to more efficient dispatch and price signals. However, the current "finger fumble" thresholds prevent generators from reflecting routine gas balancing charges in their reference levels. Consequently, some generators switch to more expensive fuels or stop offering altogether, leading LBMPs to be higher than if gas balancing charges were properly reflected in the generators' reference levels.
3. Multiple Point GT References. Allow GT final references to have more than a single point so that the reference can reflect base level and emergency level. If the cost data is given at different MW intervals, the RCE averages the costs and creates a reference and unit capacity. The unit capacity chosen by RCE could be different from the segment defined in cost data. Hence, in the similar unit report the final ref does not match the segment MW that drives the report. This will also fix the similar unit report. Run Hour Based Cost.
4. Add capability to have a cost in RLS that is based on the total number of hours that a Units run during a period of time. Certain Start Up costs and certain emissions cost can be more properly modeled with this ability. Requires updates to RCE, Web app
5. Allow MPs to view Ancillary Services References. Allow MP to view ancillary services references in RLS. PM Ticket number NYISO00030259, Requires updates to Web app
6. Ability to have time-varying references in the DAM. Currently, RLS and MIS only have the ability to load one reference for every DA hour. This poses a problem for MOB units as well as Startup. PE Request, Requires updates to RCE, Web app, MIS

7. Enhance Ref_Set_MIS form. Modifying the Ref_Set_Mis form to allow us to modify reference without a bill spin. MMA request, Requires updates to MIS
8. Use seasonal emissions in cost based reference calculation. This is an enhancement to RLS cost based references so date sensitive emission types (e.g., NOx seasonal) would only be used in the cost-based calculation within certain date ranges (May 1 – September 30). MMA request, Requires updates to RCE, Web app
9. Allow MPs to view Late Day Start (LDS) references. This enhancement was requested by Market Participants. MPs want to be able to see the LDS reference that was calculated for their generator. MP request, Requires updates to Web app
10. Min Gen Level Dependent Min Gen Reference. Accounting for units that have a temperature dependent MinGen level. They would have separate approved cost information in RLS and would have the ability to switch to these particular levels. MMA request, Requires updates to RCE, Web app
11. RLS Health Check. Includes notification of jobs completed, ????. Requires updates to Web app
12. Allow MPs to view sources of final references. References can be bid-based, LBMP based, or cost based. This would allow the MPs to see that reference source for their final reference. MMA request, Requires updates to Web app
13. Increase Cost Based Submittal Size. There are size limitations in creating an RLS submittal. This would increase that limitation. MMA request, Requires updates to Web app
14. Notify MMA of pending expirations. Create a notification process for pending expire references. This notification would also go to the MP so they are aware of the pending change. MMA request, Requires update to Web app
15. Allow negative fuel adders. Allow for negative biased fuel costs. This would allow more accurate and flexibly modeling for fuel prices. MMA request, Requires updates to RCE, Web app

ROS DAM Mitigation Reporting

Overview

ROS DAM Mitigation Reporting will be used to support tariff compliance. Currently MMA monitors for ROS DAM BPCG mitigation in a very labor intensive and time consuming manner (all other forms of BPCG mitigation has been automated). The primary goal of this project is to create a tool MMA can use to quickly and accurately determine if DAM BPCG mitigation is warranted. This will be a major efficiency gain for MMA. This project is the continuation of a 2012 project that defined the market design and requirements.

The project will deliver a report which screens all DAM BPCG payments on a daily basis and determines whether mitigation is warranted.

FERC Funded Market Rerun Capability Enhancements

Overview

The NYISO's ability to simulate the Day-Ahead Market was instrumental to the success of FERC's Office of Enforcement ("OE") actions during 2012. As such, the FERC OE is requesting that all ISOs develop the capabilities demonstrated by the NYISO, and in NYISO's specific case, to expand upon on its current analytical capabilities. One million dollars in funding was provided to the NYISO as part of FERC's settlement actions. After consideration and review of possible enhancements, MMA has identified two primary categories of modifications to the Market Operations Software (Ranger) that meet with the FERC OE's requirements:

1. RTS Simulation Capability

Create an environment with the ability to run any series of RTC/RTD Market increments to determine market effects of bidding behavior and system technical characteristics. Allows results from previous RTC/RTD re-runs to be passed to current and future runs to maintain data changes.

2. Enhancements to Simulation Results Reporting and Simulation Data Input

Implement enhancements to MMA's simulation capabilities, which would allow access to comprehensive data and comparison sets. Enhanced functionality to run reports, customize comparison cases, automate format functionality, network elements flow, and ability to summarize and produce multi-tabbed output files.

PLANNING & TCC PRODUCTS

High Performance Computing Phase 3

Overview

In order to better support tariff mandated activities performed by the Planning group, HPC Phase 1, implemented in 2011, established a single HPC (High Performance Computing) environment and procured site license for running GE MARS. NYISO worked extensively with GE development and application run time decreased from 16 hours to 30 minutes as a result. HPC Phase 2, currently being implemented in 2012, establishes the GE MAPS applications. Both applications are critical to NYISO performing tariff mandated functions including IRM, RNA, and CARIS.

This project will establish the redundant environment, reconfigure the deployment of the applications within HPC environment to spread load across both facilities, and procure licensing beyond the 7 cores for GE MAPS.

Siemens PTI Model-on-Demand Phase II

Overview

In 2012, NYISO completed a Software Design Specification based on Architecture Design specification completed in 2010 for delivery of Siemens PTI Model-on-Demand (MOD) web portal. The web portal will allow TOs to provide, review, update, correct, and approve network model data in a structured, interactive manor. NYISO will then review, work with TOs to update and correct if needed, and approve. As part of this project a redundant production environment and matching staging test environment will be developed.

Currently, updates to the transmission model are emailed to NYISO by the NY TOs. This update will allow TOs to make their updates through a web portal for their own verification, followed by automated notifications, review, approval and tracking of such changes by NYISO.

TCC Auction Engine Upgrade

Overview

There are 3 primary drivers for this project:

- 1) NYISO runs the TCC Market with Nexant Hedge OPF Engine running on Windows XP platform. NYISO is migrating away from Windows XP to Windows 7 64-bit because Microsoft and other vendors will be dropping support for it. Nexant has indicated their future product development and support will be on Windows 7.
- 2) The current TCC AMS (Automated Market System) has a bid limit of 500 bids per organization that stems from limits prior to automation support for TCC market. As part

of upgrade to Windows 7, NYISO would work with Nexant to increase the number of bids Hedge could handle, likely 2-3 times the NYISO's current limit. Full regression test would be needed to determine the increase NYISO could make without expanding supporting systems such as TCC AMS and CMS.

- 3) NYISO worked with Nexant on enhancements to Hedge in support introducing Multi-Duration TCC Auction format. Limits were identified with the Windows XP version in terms of number of bids per period that resulted in the auction engine not being able to meet NYISO requirements. These are hard limits as a result of the Windows XP platform. Nexant has indicated to meet our requirements; they are moving towards Windows 7.

This project migrates Hedge from Windows XP to Windows 7 and provides the required upgrades for Hedge to handle increased bids per organization and across multiple periods. Nexant expects the Windows 7 version to be available near the end of 2012.

This project is needed to 1) maintain product support for the TCC Auction Engine, 2) satisfy NYISO stakeholder request for increased number of bids per organization, 3) roll out Multi-Duration TCC Auction Format at a future date, and 4) completion of enterprise migration to Windows 7. Maintaining support on the application is critical to NYISO's ability to operate the TCC Market in a reliable fashion.

The following deliverables are anticipated as part of this project:

- 1) Windows 7 workstations deployed across TCC Market Operations,
- 2) Upgraded Nexant Hedge package for Windows 7 able to run both NYISO's current single period auction format as well as the Multi-Duration TCC Auction format.
- 3) Updated TCC Validation Tools as needed.

TCC Auction VB6 Validation Tool Replacement Phase 1

Overview

Operations Regional Market Coordination has a robust toolset for verifying the administration of the TCC Markets' automated and manual processes are performed consistent with the NYISO Tariffs. This toolset currently is split across a VB6 framework that is no longer supported by the vendor (originally developed by an outside consultant, runs on Windows XP, and is not upgradable to Windows 7) and a new JAVA based framework developed by IT as part of the Multi-Duration Centralized TCC Auction Phase 1 project. Phase 1 of this project will start the migration of the VB6 functionality into the Java based framework. As part of Multi-Duration TCC Auction Phase 1, a new Java based framework was developed with some new validations as part of that project delivered in the new framework. Having the toolset remain supportable is critical to assuring NYISO administers the TCC Market in accordance with NYISO tariffs. As the total functionality supported by the VB6 toolset is substantial, the entire migration will be split into multiple phases.

Phase 1 will deliver a subset of key TCC Market validation tool functionality in the new IT supported Java Framework, retire that functionality in the VB6 toolset, and plan out remaining phases of work for complete retirement of the VB6 toolset.

TCC 3-Month Bid Data Release Automation

Overview

NYISO has a tariff obligation based on a FERC order to post bid data from the TCC market 3 months after completion of the auction. Currently, a manual process is utilized to produce the data and validate the data has been properly masked. As a manual process, there are certain inherent risks with the process. In this project, the release of data will be automated. A process will be developed to pull the data from the TCC Automated Market System, appropriately mask the data, and post to nyiso.com.

The anticipated deliverable includes a new process that will automatically extract, mask and post the required data for FERC 3-Month Bid Data Release.

Multi-Duration Centralized TCC Auction Phase 2

Overview

This project continues the 2012 efforts to provide for TCC Auction 'End State' functionality (described in NYISO Tariff) and associated approved FRS for entire project scope through a series of incremental deliverables. Phase 2 would implement the top requested priority of MPs participating in the market through delivery of the Balance-of-Period auction format and associated credit management system changes to support. Once implemented, MPs would be able to reconfigure their remaining months within the capability period and be required to hold collateral for those months remaining in capability period (MPs current hold entire 6 months credit till the monthly reconfiguration auction runs).

There are several project dependencies for this phase of project to be implemented.

- 1) TO revenue allocation currently is a manual Excel based process that relies on the simplified auction format used in single period TCC Auctions administered by the NYISO today. Introduction of Balance-of-Period auctions will require TO revenue allocation to be automated. This effort was started under the original Multi-Duration TCC Project full scope and is proposed as part of *Order 760* in order to meet the compliance objectives of streaming data to FERC.
- 2) *TCC Auction Engine Migration to Windows 7* will be required as it has been determined the current platform will not be able to support the increased number of bids Balance-of-Period auctions are expected to have.

The project will provide the following deliverables:

- 1) Modifications to the TCC Automated Market System to support Balance-of-Period auction format.

- 2) Modifications to CMS in support of credit policy changes.
- 3) Updated TCC market validation tools. This would include updates to the VB6 based validation tool if this effort completes prior to migration to Java framework tool.
- 4) Modifications to the auction engine in support of a multi-duration auction format have been developed under the original, full scope Multi-Duration TCC project. Those enhancements have not been tested in a fully integrated system such that additional changes may be required as identified from testing efforts. In such a case, an enhanced auction engine will be supplied.