NEW YORK INDEPENDENT SYSTEM OPERATOR

2008 Product Enhancements

Project Title	Project Description
Energy Marketplace Product Enhancements	
Enhanced Price Validation – Phase 3	The Enhanced Price validation project was initiated in 2006 to create a new set of tools to facilitate the transition of Price Validation processes to NYISO staff and improve service levels. In early 2007, Phase 1 tools were delivered, providing improved capture and storage of price validation data to support improved transparency. Phase 2 expanded on Phase 1 functionality, creating new screens and queries that facilitate reservation / correction analysis and also delivering an automated "rules engine" to identify suspect prices in near real-time. Phase 3 will complete the feature development and integration of the Phase 2 tools, add alarm / alert functionality, and provide the capability for automated reservation processing in near real-time.
Comprehensive Bid Management System – Phase 3	The Comprehensive Bid Management System project will address the pressing need to stabilize and modernize NYISO's critical Marketplace application infrastructure. NYISO markets rely on a number of transactional functions that are currently facilitated by the "BidPost" application (commonly referred to as "MIS"). During the period of rapid growth following its introduction in 1999, the original MIS architecture was stretched to delver new requirements under aggressive timelines. In recent years, we have seen growing evidence that the technology supporting these critical functions must be updated to maintain the necessary service levels for application performance and availability. This represents a significant vulnerability within NYISO's core business. This project will address this risk by thoroughly reengineering these critical applications, systematically replacing the existing MIS infrastructure over a number of years. In 2008 we will build on the progress made in 2006 and 2007 by completing work on Generation bidding functionality and also initiating work on data model improvements and a user interface redesign.
Wind Forecasting System	With significant expansion of wind generation in the NYCA, it becomes increasingly important for NYISO to accurately forecast power production for these resources both day-ahead and in real-time. Absent a day-ahead prediction of the expected output of these facilities, SCUC could over commit conventional generation, only to see this generation backed down in real time. Similarly, the "look ahead" time horizons in RTC and RTD can also benefit from accurate forecasts of wind generator output, resulting in more efficient real-time commitment and dispatch solutions. This project will establish a partnership with a third-party expert to provide centralized, day-ahead and real-time forecasts of power output for all wind power facilities in the NY Control Area. These forecasts will be incorporated into the NYISO market systems to facilitate efficient scheduling and dispatch.
Market Monitoring System Enhancements	The NYISO Market Monitoring and Performance department has identified a series of enhancements to their reporting and monitoring tools that are necessary to maintain the necessary level of market oversight capabilities as specified in the NYISO tariffs and Market Monitoring Plan.

Project Title	Project Description
Market Software Recertification	Following a successful third-party certification of the market software in 2007, the NYISO plans to continue the annual program to re-certify that the Day-Ahead and Real-Time market software is in compliance with required tariffs through an independent validation of the application results. This effort provides additional confidence to our Market Participants that we are administering the market in accordance with the stated market rules. The scope of the 2008 certification effort will expand upon the scope of the certification project that was accomplished in 2007, and will include any applicable market rule modifications that were implemented since the prior certification.
Scheduling and Pricing Improvements	In May 2006, NYISO initiated a "rules assessment initiative" in the Market Structures Working group in response to repeated requests from Market Participants for a comprehensive review of NYISO scheduling and dispatch rules. NYISO drafted a charter for this initiative that outlined the following purpose: assess the effectiveness of market rules governing the scheduling, dispatch and compensation for energy and ancillary services; make recommendations for rules improvement and the reduction of unnecessary complexity. The recommendations will provide a primary source of requirements for concept design and development of future functionality. In 2006, discussions focused on 15-minute scheduling eligibility and supplier performance penalties. The Generator Testing Penalty Exemption introduced in 2007 is a direct result of the analysis and design efforts provided by the rules assessment initiative. In 2007, NYISO expanded the scope of discussion to include a broad review of real-time supplier compensation and performance penalties (coupled with discussions on the long-term market rules for wind suppliers). For 2007, NYISO committed to investigating Market Participant issues, measuring the magnitude of the issues, and if appropriate, defining straw proposals for rule improvement for consideration in 2008 project and budget planning. Although specific improvement proposals have not yet been outlined (expected to occur in Q3-Q4 2007), current analysis suggests that changes to performance penalties and / or pricing rules for "dragging" suppliers might be warranted. In fact, the "dragging" issue was also highlighted by Dr. Patton in the 2006 State of the Market Report (Recommendation 4 – 'Consider re-calibrating the dispatch levels in the real-time market's pricing model for units that are not responding to dispatch signals'). In addition, the NYISO plans to address the Potomac recommendation to include Local Reliability Commitments in the pricing algorithms of SCUC.
Netting of Bilaterals	In 2006, a FERC issued an order requiring the NYISO to pursue implementation of the Netting of Bilaterals project through the stakeholder process. This project is expected to establish zonal "trading hubs" in the NYISO market systems that would provide more flexibility in scheduling of bilateral power transactions. Using the NYISO bidding and scheduling system, a marketer will be able to establish transactions to purchase power from a portfolio of generators and deliver that power to a zonal "trading hub." Using the same set of tools, the marketer can also establish separate transactions to sell that aggregated power from the "trading hub" to a portfolio of load serving entities. Settlement software changes would be implemented to clear the power transactions and impose balancing charges as necessary to settle any remaining imbalance at these "trading hubs."

Project Title	Project Description
Disaggregated Virtual Trading	In the 2006 State of the Market Report, the NYISO's Market Advisor highlighted an issue with energy market price convergence in New York City. Specifically, an apparent divergence between day-ahead and real-time energy prices in specific New York City load pockets. That concern led to the recommendation that the NYISO should "Consider allowing virtual trading at a more disaggregated level or identify other means of improving convergence in the load pockets". In addition, multiple Market Participants have requested extension of the NYISO virtual market to allow trading at the nodal level. Supporters highlight the nodal virtual trading products that are currently supported at ISO-NE and PJM. This project would encourage better convergence of generator node prices, providing an additional hedging mechanism for loads or an arbitrage opportunity for traders.
Reference Price System Enhancements	Through recent efforts to accommodate the Minimum Oil Burn local reliability requirement, NYISO and Market Participants identified a number of limitations in NYISO's reference price calculation capabilities. For example, the NYISO is not currently able to execute a rapid, on-demand reference price calculation for a subset of units (current application requires recalculation and update of all units) or support reference price precision at the hourly level (current functionality is limited to a single reference price for each day). These particular limitations result in long cycle times for reference price updates that can prevent the level of reference price accuracy that Market Participants have requested. Additionally, NYISO has identified opportunities to improve efficiency by enhancing the input streams to the reference price calculation engine.
Inter-ISO Congestion Management	In late-2006, NYISO and PJM agreed to engage in discussions to assess the feasibility of a new inter-ISO dispatch program to help manage congestion within each Control Area. PJM has implemented this type of program with MISO and is also pursuing a similar implementation with Southwest Power Pool (SPP). In 2007, NYISO initiated discussions with PJM to further understand the MISO program and begin to outline a conceptual straw proposal for a similar program between PJM and NY. The NYISO will seek to review this conceptual proposal with NYISO stakeholders in 2008 and if appropriate, pursue a prototype implementation of this program.
Ancillary Service Market Convergence	In the 2006 State of the Market Report, Potomac Economics highlighted an issue with NYISO ancillary services markets, specifically, an apparent price divergence between Day-Ahead and Real-Time reserve prices. That concern led to the recommendation that the NYISO should "Evaluate the feasibility of introducing virtual trading of ancillary services." In response to this recommendation, NYISO has initiated a thorough review of recent ancillary services market performance. Specifically, the objective is to identify periods of statistically significant price divergence and further investigate the market and / or system conditions in place at that time to hopefully identify specific factors that might cause elevated (or depressed) real-time prices. If cost effective and feasible solutions to the problem can be isolated, the NYISO will pursue the necessary actions to address the underlying causes.

Project Title	Project Description

Financial System Product Enhancements

Credit Management System Automation	The NYISO credit management processes are currently carried out by business analysts who utilize a set of spreadsheet based tools and manual data capture and storage processes. The manual processes are thought to be well documented and consistently followed, but, can also be cumbersome and inefficient. The NYISO will initiate a project to streamline, automate, and integrate the credit management processes to make processes more efficient and auditable, as well as provide Market Participants with a user interface that allows them to access and manage their total credit portfolio across four (4) markets: Energy, TCC, ICAP, and Virtual. This project is a multi-year effort that will continue through 2009, and possibly into 2010.
BAS Data Retention	A cost-effective data retention and management solution is required to support the NYISO internal and external customers' ongoing operation of the marketplace. Initially, MIS, MISHIST and BAS were designed as transactional databases to run the NYISO markets and settlement systems. Over time, functional evolutions have expanded the data storage requirements. Also, the lag in closing out final bills resulted in the need to maintain all data on-line. These factors have contributed to the use of the system as a data warehouse. As a result, system stability and availability, including market and settlement execution are often compromised due to users' data inquiries, analyses and interaction. System stability problems result in poor or failed data access response times, reduced data and system management capabilities, and reduced utility and potential financial hardships imposed on Market Participants attempting to manage bid data or review settlement information.
Billing Manual Process Automation	A number of processes related to the NYISO Settlements remain manual processes due to limitations of the software in the settlements engine. This project addresses the highest frequency causes of manual entries by automating the processing of those activities within the settlements system. The proposed scope will address the highest priority / frequency causes of manual entries, but this project will not eliminate all manual settlements processes.
Settlement Software Recertification	Following a successful third-party certification of the settlement software in 2007, the NYISO plans to initiate an annual program to re-certify that the settlements software is in compliance with required tariffs through an independent validation of the application results. This effort provides additional confidence to our Market Participants that we are administering the market in accordance with the stated settlement rules. The scope of the 2008 certification effort will expand upon the scope of the certification project that was accomplished in 2007, and will include any settlement rule modifications that were implemented since the prior certification.

Project Title	Project Description
Business Intelligence Product Enhancements	
Market Monitoring Data Mart – Phase 1	This project would build a new data mart designed around the needs of the Market Monitoring and Performance (MMP) team. Since the data needs for this team are extensive and require much of the data that is produced by the NYISO, an initial investigation provided a prioritization for providing needed capabilities in a phased approach. The Physical and Economic Withholding area of responsibility within MMP emerged as the area to provide the most value with a reasonably moderate set of data. This project would leverage the significant investment NYISO has made in the Decision Support System (DSS). As this data is introduced into a new data mart for MMP it will also be made available in the existing Customer Settlements and the Pricing Data Marts where appropriate. So NYISO's entire DSS user base, both internal users as well as MPs, will benefit from this project.
Market Monitoring Data Mart – Phase 2	This project would be a continuation of the MMP Data Mart Phase 1 but would focus on another area of monitoring as prioritized by the Market Monitoring team. Currently there are several areas which would realize significant benefit through Data Mart expansion. As Phase 1 development proceeds, a reassessment will be done on these priorities and a second area of high value will be selected for ongoing data mart work.
TCC Marketplace Product Enhancement	
TCC Auction Automation – Phase 2	Following the implementation of the first phase of the TCC Auction Automation software project (Automation of the Awards Process), following phases will deliver the Database / Inventory Automation (Phase 2) and Bidding (Phase 3) functionality required to fully automate the TCC markets. Phase 2 will include the definition of the data requirements and the development of a database to handle the administration and control of TCC inventory. The major functions that are under consideration for Phase 2 include: administrative functions, views of inventory by a variety of parameters (contract dates, contract types, period of time), automation of the ETCNL/RCRR/AAR nomination process, facilitation of the secondary market (transactions against inventory), and expanded user interface and reporting to support added functionality.
TCC Auction Automation – Phase 3	Following the implementation of the first phase of the TCC Auction Automation software project (Automation of the Awards Process), following phases will deliver the Database / Inventory Automation (Phase 2) and Bidding (Phase 3) functionality required to fully automate the TCC markets. Phase 3 deliverables will allow Market Participants to submit their bids and offers into an auction via a web interface and through an upload process. Error detection will be performed on these submitted bids and offers. Screens will be developed to allow Market Participants to review and modify their submitted bids and offers. Roles will be created within the application that allow one user to enter and maintain bid and offer data, while another user has the authority to submit the bids and offers into the auction.

Project Title	Project Description
TCC Market Evolution	As the NYISO markets mature, Market Participant and regulatory factors are driving evolution of the TCC markets. Multiple market design efforts were initiated in 2007 that will continue to drive evolution of the TCC markets towards an end-state solution. Efforts to be advanced in 2008 include Long-Term FTRs and Expansion TCCs.

Auxiliary Market Product Enhancements

ICAP Auction Automation – EDRP/SCR Integration	Auxiliary Market Operations currently uses a series of manual procedures to collect and process EDRP and SCR registrations and SCR monthly ICAP data. This project will integrate the existing Access and Excel database information into the ICAP automation software, and will develop market participant screens to enter and modify registration and monthly capacity information.
Forward Capacity Market	NYISO stakeholders have raised the need to consider a longer-term forward capacity market in addition to the current ICAP auction schedule (seasonal, monthly, spot). In 2007, the conceptual design of a forward market is under development. In 2008, effort will be needed to complete the detailed market design and develop the functional requirements. It is not anticipated that software development and deployment of the forward market design would occur prior to 2009.
ICAP In-City Mitigation	In July 2007 FERC issued its Order on the NYISO's In-City Mitigation filing, requiring the NYISO to file a fully-supported proposal for a revised In-City ICAP market. In early October, the NYISO will file its plan to address both supplier-side and load-side mitigation in the NYC ICAP market. It will require significant software modifications to implement the final ICAP market mitigation design.
Deliverability	The NYISO worked with stakeholders in 2007 to identify the framework for a Deliverability test and the resulting impact on the ICAP market. Work in 2008 will address design issues associated with multiple Rest of State (ROS) capacity regions. It is not anticipated that software deployment of multiple ROS regions would occur prior to 2009.

Operations and Reliability Product Enhancements

SRE / OOM Application Integration	Replacement of the Out of Merit (OOM) and Supplemental Resource Evaluation (SRE) applications used by the control room floor. These applications are currently built upon an unsupported platform (Oracle Forms) and can be designed to be more efficient and less prone to errors. The intent of this project is to provide new tools that enable operators to better manage the process, and better integrates the SRE and OOM applications into the overall commitment, mitigation, and settlement processes.

Project Title	Project Description
Outage Scheduler Enhancements	The current process of scheduling Transmission and Generator outages is largely a manual effort. Transmission and generator outage information is submitted to the NYISO by telephone, email, and/or fax. NYISO scheduling staff then reviews and approve or disapprove the requests while manually entering the information into a proprietary database and the Energy Management System. This project proposal will implement a scheduling package that will automate the applicable manual processes, deliver a web interface for collection of outage requests, provide integration between the various outage scheduling functions and deliver the required reporting material.
RANGER Baseline Software Update	The NYISO technical computing infrastructure is continually being maintained with respect to platform currency and industry standards. During 2008 a planned migration of the ABB RANGER software to its most current version will be initiated.
Demand Response for Ancillary Services	Implementation of Demand Side Ancillary Services Program (DSASP) will introduce the capability of demand response to participate in the ancillary services markets and to participate in the real-time management of the grid. The program will allow participation in all categories of Operating Reserves and Regulation service, pursuant to NYSRC rules. Resources will be given scheduling treatment comparable to generation resources, with the expectations of real-time data telemetry from the resources to provide the necessary operator visibility and response verification. The resources will be paid for providing reserve services, but will not be eligible for energy payments. The responsible load serving entity receives the benefits of the reduced consumption.
Demand Response Program Evolution	Demand response program development remains a high level priority of the business, our Market Participants and the regulatory staff at the NYS PSC and FERC. Robust demand response in the markets is essential to facilitate the economic balancing of supply and demand. To grow additional participation, the limiting barriers of the current programs will be identified and options explored for relieving the barriers and new programs will be identified to grow participation based upon analysis of technology capabilities in communication and advanced metering, discovery of potential market penetration, reliability council expectations, and visibility and verification characteristics of demand response.
Control Room Enhancement Projects	This project represents a series of small projects that will improve operator tools as related to control room functions. Included within the scope are improvements to the control room map board, load forecasting applications, and enhanced reporting.

Project Title	Project Description

Infrastructure Product Enhancements

Oracle Forms Replacement	Oracle Forms is a multi-platformed Rapid Application Development (RAD) tool used for internal end user views and forms. NYISO has an extensive inventory of forms across the entire organization. NYISO is currently running an old version (6i) of Windows Client/Server architecture. In order to upgrade to the latest version of Oracle (10g), the forms must be replaced as they will no longer be supported if the database is upgraded. The existing client/server environment of Oracle forms will be replaced with a more standard web based environment. Each of the forms will be identified, classified, and grouped. If a form is no longer used or can be combined with existing functionality, it will not be converted, but instead will be retired.
Customer Relations System Replacement	Since 2005 the NYISO has been utilizing the HP's Service Center application to manage incidents reported to the internal IT Help Desk. This software has proven to be very helpful in managing incidents, and the NYISO is looking to leverage this technology across the enterprise. The NYISO is in the process of replacing the Notes based Customer Relations system (CRITaR) with HP Service Center. The implementation will allow Market Participants to log in and view their incident tickets directly, provide better reporting capabilities to Customer Relations, and move the functionality off the Lotus Notes infrastructure.
Internal Platform Upgrade Support	The NYISO technical computing infrastructure is continually being maintained with respect to platform currency and industry standards. During 2008 a number of planned migrations will be managed including, Oracle database upgrades, web platform evolution, and initiation of the SMD2 hardware platform replacement that was originally purchased in 2003.