Project Title	Project Description
Energy Marketplace Product Enhancements	
Comprehensive Bid Management System – Phase 4 & 5	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 project will address this risk by thoroughly reengineering these critical applications, systematically replacing the existing MIS infrastructure over a number of years. In 2009 we will build on the progress made in 2006, 2007, and 2008 by completing work on MIS Administrative functions as well as data model improvements.
Trading Hubs (F.K.A. Netting of Bi-Laterals)	This project will; establish zonal trading hubs in the NYISO market systems that provide more flexibility in scheduling of bilateral power transactions. Using the NYISO bidding and scheduling system, a market participant 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 market participant can also establish separate transactions to sell that power, or portions thereof, from the trading hub to a portfolio of load serving entities.
New Technologies Into Regulation Markets	The New Technology Market Development will address the need to evaluate and develop market rules that consider the unique characteristics of the emerging technologies. Potential modifications to the bidding, scheduling, monitoring and settlement processes may be required in order to realize the full potential of these new technologies. The objective of the analysis is to evaluate the new technologies, merge these features into the market comparable with existing product suppliers while maintaining the reliability and market efficiency objectives of the NYISO.
Wind Resource Management	In 2004, the New York State Public Service Commission (PSC) implemented a Renewable Portfolio Standard (RPS) for New York, targeting 25% of New York's energy consumption to be provided by renewable resources by 2013. Most of the increase in renewable capacity over the next few years is expected to come from wind generation. As more generation from wind turbines is added to the system, it becomes increasingly important for NYISO to have strong tools at our disposal to manage these resources in a reliable way. During 2008, the NYISO began achieving that goal by implementing an intelligent wind power forecasting program. Additionally, NYISO has embarked on a new study assessing the implications of large wind integration in New York, including the impacts on market rules, grid reliability, system cost, and ancillary services. This project will continue expanding our ability to effectively and reliably manage wind power integration into the NY Bulk

Project Title	Project Description

Power Grid by addressing recommendations from the 2008 Wind Integration study work, including the ability to direct wind plants to reduce output in response to observed or anticipated reliability limitations.

Scheduling and Pricing Improvements - Phase 2 and 3

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;
- Implement solutions, as necessary

The recommendations will provide a primary source of requirements for concept design and development of future functionality. The primary focus of the effort is real-time market operation with day-ahead issues considered as necessary. The first phase, penalties for grouped units, of this review has been implemented, while the second phase, improved pricing, is underway additional areas still need to be enhanced.

The 2007 State of the Market report stated, "Further improvements to the consistency of the pricing and physical dispatch passes of RTD could improve the efficiency of NYISO's energy and ancillary services pricing (particularly during shortages) and reduce uplift." To achieve this, the focus of the second phase will be on limiting the divergence between the physical and ideal basepoints for off-basepoint resources, without sacrificing the integrity of the hybrid dispatch.

The 2007 State of the Market report also stated a need to, "evaluate potential improvements real-time commitment model ("RTC") and the real-time dispatch model ("RTD") to improve their consistency and improve the management of ramp capability at the top of the hour." The focus of the third phase will be to study this recommendation.

Enhanced Scheduling with ISO-NE / PJM

In late-2006, PJM approached NYISO, interested in developing a program to allow inter-control area dispatch to help manage congestion. PJM has implemented a program with MISO and is currently in the early stages of designing such a program with 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. NYISO has continued to define the details of a Congestion Management protocol between NYISO and PJM. In 2009, NYISO will seek approval of the proposal with NYISO stakeholders and if appropriate, pursue an implementation of this program.

The 2007 State of the Market report continued the recommendations to improve the scheduling of cross border transactions to improve the utilization of the interface capacity to converge individual market prices. The State of the Market analysis demonstrated a potential net annual benefit to customers of approximately $160MM/year. However, the vast majority of the benefits are associated with the few hours of reserve shortage in each market. NYISO has been

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Project Title	Project Description
	working with ISO-NE to develop a protocol to address the shortage conditions within each market. The scope of this effort for 2009 is to work with stakeholders on the development of this protocol and implement the changed process.
Disaggregated Virtual Trading	In the 2006 & 2007 State of the Market Report, the NYISO's Market Advisor highlighted an issue with energy market price convergence in New York City. Specifically, Dr. Patton highlighted an apparent divergence between day-ahead and real-time energy prices in specific New York City load pockets. That concern led to the following recommendation to consider allowing virtual trading at a more disaggregated level or identify other means of improving convergence in the load pockets.

In addition to Dr. Patton's recommendation, multiple Market Participants have requested extension of the NYISO virtual market to allow trading at the nodal level (current functionality only supports trading at the NYISO load zones). In 2008, the NYISO investigated the market and software implications for extending the current zonal virtual trading capability to generator locations.

Revisions will be developed to manage credit requirements, monitor for market manipulation concerns and address software performance limitations. |
| Shortage Pricing Evolution | The NYISO implemented reserve demand curves as part of the SMD2 implementation to accurately and consistently capture shortage conditions directly into the market clearing prices. During the development of the market rules, set points (or set point/ MW pairs) were established for the Ancillary Service products. In 2009 we will assess the operation of the reserve demand curves to confirm the continued applicability of the set points and consider needs for additional demand curve capabilities to quantify shortage conditions. |
| Enhanced Interregional Transaction Coordination | The effort will focus on the desire to improve the price convergence between New York and adjacent markets through improved transaction scheduling opportunities. The effort will include an analysis of the current effectiveness of the transaction scheduling protocols, including an assessment of the efficiency of the scheduling tools at predicting real-time conditions. Also included is an assessment of the market-to-market price convergence and the elements that lead to divergence, as well as an evaluation of the impact Lake Erie loop flows have on transaction scheduling and the influence of proxy pricing protocols have in creating Lake Erie loop flows. The goal of this effort is to identify and evaluate opportunities to improve the effectiveness of transaction scheduling outcomes. |

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Project Title	Project Description

Financial System Product Enhancements

Project Title	Project Description
Credit Management System Automation	Corporate Credit is responsible for managing the NYISO's and Market Participants' risk exposure by monitoring and managing credit and collateral for Market Participants in all NY markets: Energy and Ancillary Services, TCC, ICAP and Virtual Transactions. Credit and collateral requirements are driven by a variety of factors in each market as specified in the tariff. Currently, Corporate Credit utilizes more than 40 manual processes consisting of a set of spreadsheet based tools and manual data capture and storage to administer these responsibilities. The manual processes are well documented and consistently followed, but, can also be cumbersome and inefficient. Currently, Market Participants do not have any visibility to their collateral requirements without contacting Corporate Credit via email, phone or fax. The end state vision for this multi-year project is an automated and integrated Credit Management System (CMS) that provides a real time credit position and settlements results netted across all markets. NYISO and MPs will be able to manage collateral as a portfolio and make business decisions using analytical tools and information through a user interface. In addition, the NYISO will be able to leverage automation to implement credit requirements that are better matched to market risk. While this project will increase internal efficiencies, it will also assist in evolving the markets and improving liquidity by providing Market Participants with the ability to manage all of their credit requirements as portfolio. This will be an iterative project, with multiple phases as follows: • Phase 1: TCC Market and Credit Infrastructure • Phase 2: Virtual Transactions Market • Phase 3: Energy and Ancillary Services Market • Phase 4: ICAP Market • Phase 5: Market Participant User Interface and Portfolio Management
Consolidated Invoice Enhancements	Consolidated Invoice is the application that produces the MPs' monthly invoice. Con Invoice has been identified for redesign or replacement to support the goals of the Settlement System Replacement (SSR) strategy. The application was custom built about nine years ago and can be difficult to update. Redesign would entail leveraging the new rules engine platform to the greatest extent possible for the timely delivery of settlement invoices. This is a multi-year project with the ultimate objective of redesigning or replacing Consolidated Invoice to provide a cleaner interface for MPs to receive settlement data and to provide greater flexibility and supportability for NYISO staff on the basis of a more robust architecture.

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Project Title	Project Description
	2009 project objectives will deliver targeted functionality to support any changes to market rules or the settlement cycle, as well as design deliverables to support the eventual re-architecture of the platform.
Billing Manual Process Automation	This project continues to eliminate manual settlement processes and adjustments 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 initiated 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 2009 certification effort will expand upon the scope of the re-certification project that was accomplished in 2008, and will include any settlement rule modifications that were implemented since the prior certification.

Business Intelligence Product Enhancements

Project Title	Project Description
Market Monitoring Data Mart – Phase 2 and 3	This project would continue the multi-year effort to 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).
NYISO Public Website Redesign	The NYISO public website (portal) is showing its age. This project would be a redesign of the website which would include: • The overall look and feel • The organization of the site • The content of the site All of these areas would be analyzed and changed where appropriate. This would be a significant project as it touches so many areas of the company and all of those stakeholders would need to be involved.

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Project Title	Project Description

TCC Marketplace Product Enhancement

TCC Auction Automation – Phase 3	Following the implementation of the first phase of the TCC Auction Automation software project (Automation of the Awards Process), the 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 and real time Credit checking as part of the Bid submission. Screens will be developed to allow Market Participants to review and modify their submitted bids and offers.
TCC Auction Enhancements – Phase 1	This project will provide for TCC Auction 'End State' functionality to include the ability to offer Multi-Period Auctions with possible Balance of Period Auction. More specifically, the following functionality may be addressed as part of this phase: • Seasonal Auction Changes (An important feature of the end state auction engine is that it can simultaneously evaluate bids and offers for TCCs of multiple durations, permitting the NYISO to sell six-month and annual TCCs within the same auction round, and add auctions of TCCs additional durations, without extending the length of the auction). • Monthly Auction Changes (The ability of the end-state auction to simultaneous sell or reconfigure TCCs of multiple durations would enable the NYISO to expand its monthly auctions to reconfiguration auctions not only covering the next month, but the remainder of the capability period). • Miscellaneous Internal facing Changes • Expanding the availability of LTFTRs (per FERC's Order) to LSEs that seek to use non-historic points of injection and withdrawal.
Incremental TCC Procedure	NYISO tariff provides for award of Incremental TCCs to parties that increase the transfer capability of the system • Although some interim awards have been made, a procedure for permanent awards has never been formalized with stakeholders • Numerous other priorities interceded and there have been relatively few projects to generate MP interest in raising the establishment of a permanent process as a priority • With the FERC order on LTFTRs, action is now necessary; In Order 681 FERC mandated process for allocation of transmission rights for LSEs in a series of Guidelines: • Guideline #3 is most applicable and, in brief, states that transmission organizations must provide a means to make available LTFTRs made feasible by transmission upgrades or expansions on request to any party that pays for such upgrades or expansions in accordance with the Transmission Organization's Prevailing Cost Allocation Methods for upgrades or expansions.

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Project Title	Project Description

Auxiliary Market Product Enhancements

DMNC Test Validation Tools	A series of SAS reports providing all relevant information on DMNC test submissions was deployed in May 2007 as an interim solution to satisfy an audit requirement. Some components of the input dataset are not part of NYISO's production database (e.g., historical weather station temperature data). In addition, there is interest in automating some of the decision-making process where appropriate. This project is intended to develop a fully automated system that integrates all data into production databases and provide additional automated screening of test data.
Forward Capacity Market	With the implementation of long-term forward capacity markets in PJM and ISO-NE, the NYISO and its stakeholders are considering the addition of a forward market and modifications to the existing capacity market as necessary. Top-level designs for both a mandatory and voluntary market design were vetted with stakeholders during the first six months of 2008. With input from stakeholders and the NYISO BOD, the NYISO will continue to vet its proposal for a forward market design in 2009. If significant agreement is reached during this phase, it will be possible to begin software development of the new market design in 2009.
ICAP Buyer-Side In-City Mitigation	ICAP Buyer-Side In-City Mitigation implements the rules set forth in the NYISO's May 7, 2008 FERC filing, pending FERC approval. The effort consists of: • For new generators deemed to be Uneconomic, flagging the unit Uneconomic and establish an Effective Start/End Date when the unit is subject to Buyer-Side Mitigation. • Calculating and entering a Unit Specific Buyer-Side Mitigation Reference Floor Price. • Prohibiting Offers to Sell for Uneconomic Unit as Bilateral Sale, Strip or Monthly Auction. • Implementing rules to handle overlap between Supply-Side and Buyer-Side Mitigation for units deemed Uneconomic.
GADS NxL Portal	This project covers integration of GADs data (generator forced outage statistics) to the ICAP auction software using the NxL GADs software package from Solomon Associates. The primary effort involves integrating the market participant portal section of NxL with NYISO's infrastructure. In 2008, effort was expended to implement the basic GADS calculations as an internally-hosted server application/database. The proposed project effort is built around internal integration of the NxL software, with separately-budgeted hardware from IT.

Project Title	Project Description
Demand Response Program Management	The NYISO currently uses a series of manual procedures to collect and process EDRP and SCR registrations and SCR monthly ICAP data. This multi-year effort will identify products available to automate current procedures and expand the capabilities of demand response program management, including implementation of new demand response programs. The initial phase will include the development of requirements, evaluation of system products, a make-or-buy decision, and implementation of prioritized requirements. Efforts necessary to support integration with a SmartGrid network will be explored and incorporated into the planning requirements. Phase 1 implementation of prioritized requirements will include replacement of the existing Access database and Excel worksheets for demand response program registration, monthly processing of SCR data, and automation of the demand response event payment calculations. A subsequent phase will include on-line registration for market participants, enhanced event data submission functions and automation of CBL and performance calculations using hourly interval meter data.
Deliverability	The NYISO plans to implement changes to the existing ICAP Market System to support the results of Deliverability tests. Efforts include: • Existing generators will be capped at a Summer Capability Period ICAP level via a one-time process based on the highest summer DMNC test over the past five years. • New generators will be assigned an ICAP equivalent cap for the Summer Capability Period based on the results of the Deliverability Test performed in conjunction with the annual Class Year assessment. • For all generators, Winter Capability Period ICAP caps will be set to the ratio of CRIS to ERIS levels for each unit, multiplied by the then applicable Winter DMNC level.

Operations and Reliability Product Enhancements

Outage Scheduler Automation – Phase 2	Transmission and generator outage information is submitted to the NYISO by telephone, email, and/or fax. NYISO scheduling staff then approves or disapproves the outage request and manually enters the information into a proprietary database that exists outside of the Ranger operating environment. This proprietary database is used to produce required operating and market facing outage schedule reports. This database was replaced in the 2008 Phase 1 project. In addition, this transmission outage information must also be manually entered into the Ranger system, in a separate step, to facilitate an accurate and up-to-date network representation within Ranger. Design of the automation and integration with Ranger is one of the key components of the 2009 Phase 2 project. The other key component of the Phase 2 project will be the automation of external interfaces. For example, generator owners will submit outage scheduling requests, and forced outage data electronically via user-friendly web interfaces. Upon confirmation by NYISO scheduling staff, the outage schedule data will be electronically forwarded to the appropriate NYISO applications (i.e. Ranger)

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Project Title	Project Description
Reference Level Software Replacement	This project will focus on continuing the effort of a multi-phased project focusing on the next generation of the Reference Level Software. In 2008, the NYISO initiated the scoping, requirement definition and project plan development, which is currently scheduled for completion in Q109. These activities will include deciding on a vendor solution as well as process improvements. Activities for the design and implementation of the software replacement project require funding in the 2009 and 2010 budgets.
OATI Software and Platform Enhancements	This project will address E-Tagging system enhancements including the update of OATI tags for in-hour curtailments. In addition this project will upgrade existing infrastructure as this application is critical to the NYISO, our neighboring Control Area's and MP's.
Linden VFT Implementation	This project will implement the controllable tie line for Linden VFT. The Linden VFT will be a 300 MW VFT controlled line from NJ to the Goethals 345 station. The Linden VFT Project's 300 MW of incremental Transmission Transfer Capability was auctioned in twelve - 25 MW blocks. Four customers were awarded transmission scheduling rights ("TSRs") in the open season auction for terms of either three, five or seven years from commercial operation. Nine 25 MW blocks were subscribed for a three year term. Three 25 MW blocks were subscribed for a five years. Linden VFT will use incremental transmission capacity on the existing 345 kV radial line that connects the Linden Cogeneration Facility to Con Ed's Goethals substation. This project will also incur cost of additional metering equipment, telephone lines at the PCC & KCC (Phase 1 data signal). Implementation is requested for June 2009 (100 MW) and end of year (300 MW).
Control Room Enhancement Projects	This project represents a series of small enhancements 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.
Market Software Recertification	Following successful third-party certifications of the market software in 2007 and 2008, 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.

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.
HRIS System Implementation	The NYISO Human Resources process is currently carried out by a team of HR Generalists who use a set of spreadsheet-based tools, manual data capture, and storage processes. While the manual processes are well-documented and consistently followed, they can be cumbersome and inefficient. Specifically the following challenges exist with the current Human Resources management processes and tools: • Labor-intensive calculations are prone to the potential for errors and omissions; • Redundant calculations, multiple data sources, manual entries, and lack of up to date information due to the lack of dynamic integration with other internal and external systems; • Lack of reporting capability and the inability to capture and track data relationships; • Concern with the ability to meet stakeholder expectations; • Lack of external transparency and access; • Inability to effectively communicate with MPs regarding their credit market position and credit requirements; and • Limited training materials, detailed process, desk-top procedures and limited access to human resources that provide specialized support to the Human Resource management team The end-state vision is an application: • That supports bidirectional data flow between NYISO applications • Robust enough to support future expansions • Easily configurable to support calculation changes in any of the NYISO • Standard and customized reporting capabilities to support analysis and business processes
Lotus Notes Retirement	The NYISO is in the process of migrating from Lotus Notes to MS Exchange for email and calendaring. As part of the MS Exchange Project, there has been significant analysis performed regarding the impact to other Lotus Notes applications and databases. The NYISO will address the remaining Lotus Notes applications and databases as part of a comprehensive Lotus Notes Retirement project.
Server Upgrades – HP/UX Ranger Migration	The NYISO technical computing infrastructure is continually being maintained with respect to platform currency and industry standards. During 2009 a number of planned migrations will be managed including, Oracle database upgrades, web platform evolution, and initiation of the SMD2 hardware platform replacement, originally purchased in 2003.

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