

ISO Power Trends

New York's Success & Unfinished Business



**Report by the New York Independent System Operator
May 2004**

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EXECUTIVE SUMMARY

In the past, the New York Independent System Operator (NYISO) has issued a number of reports on the state's electric system. Those reports were called *Power Alerts* because they focused on the many problems faced by the system that required urgent attention. The present document will call attention to the significant progress and successes that have already been achieved following restructuring, but will remind the reader that there is also work to be done. Thus the name, ***Power Trends: New York's Success and Unfinished Business***.

Although unrelated to the fledgling markets, by far the most notable electrical event during the past year was the Blackout of August 14. About 50 million people lost electricity for varying periods of time. In New York City, some people were without power for more than a day. The Blackout resulted in the establishment of The U.S. – Canada Power System Outage Task Force (the International Task Force), which found that the Blackout originated in the Midwest, determined its causes, and made decisive recommendations to prevent a recurrence.

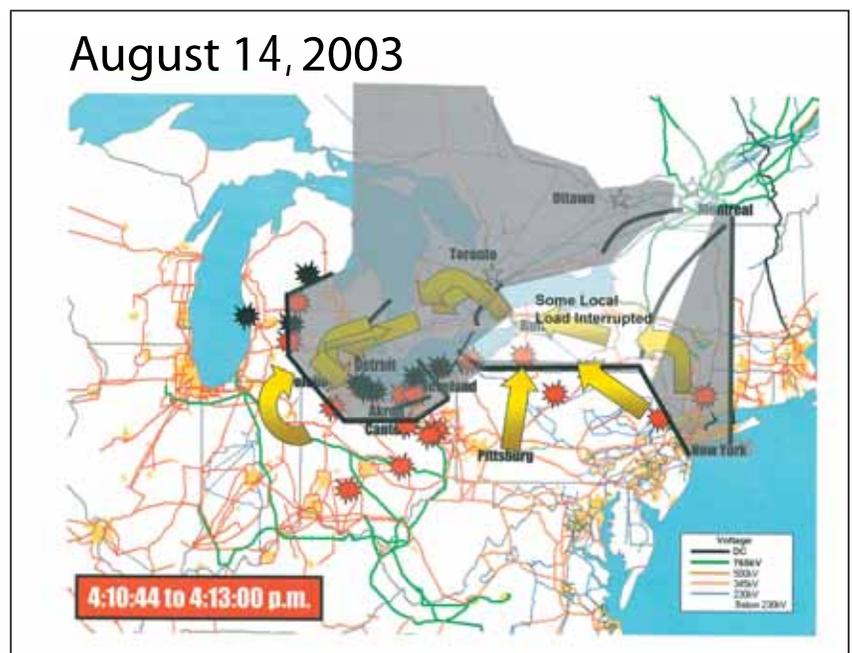
The August 14 Blackout

After exhaustive examination, the International Task Force issued several reports concluding that the Blackout originated in the Midwest and was caused by a series of operating deficiencies that were in violation of well established but voluntary operating standards.

The Blackout and the International Task Force report raised questions that will occupy us regionally, nationally and internationally for some time to come.

Although it was clear that nothing could have been done in New York to prevent it, the Blackout also suggested issues that will require further study within New York. The NYISO will issue its own final Blackout report in June.

Given the magnitude of the problem and the technical complexities involving restoration of power to the city of New York, it was remarkable that restoration was accomplished in just under 30 hours. The NYISO conducted an internal interim review and concluded, among other things, that the



remarkably short restoration time in New York was the product of an effective and tested restoration plan, and of the dedication and expertise of personnel at New York's public and private utility companies, the generating companies, the NYISO and at the state government.

Probably the most urgent response to the Blackout should be the conversion of voluntary operating standards to national mandatory standards with the force of law. This change was recommended in the International Task Force report and is supported almost unanimously by industry and federal and state governments. Because of the interstate nature of modern electric systems, the change requires congressional action. Unfortunately, such action has not taken place as of the date this *Power Trends* is being written. This piece of ***unfinished business***, which no state can solve alone, should be given high priority by Congress and the President.

In addition to the obvious danger if reliability standards are not made mandatory, continued congressional inaction can have adverse economic consequences. Electric systems must be designed based on various assumptions regarding neighboring systems. While reliability standards are mandatory in New York, that is not the case in some neighboring control areas. If it cannot safely be assumed that neighboring systems will follow accepted operating standards, then assuring continued reliability could add needless expense as individual systems may have to be redesigned to withstand gross operating failures by their neighbors.

The NYISO has undertaken a variety of studies to model the impact of different scenarios, including those that actually occurred at the time of the Blackout. These studies could point to additional measures that may be appropriate to protect continuity of electric service in New York. In the near term, however, the NYISO has instituted a number of improvements to be effective by the summer of 2004:

- Provision within the NYISO Control Room of greater visibility of system conditions outside New York State;
- Participation in a readiness audit by outside reliability organizations and the Federal Energy Regulatory Commission (FERC);
- Implementation of audit findings and Blackout recommendations of the North American Electric Reliability Council (NERC);
- Establishment of defensive procedures to be implemented in the event problems develop on neighboring systems;

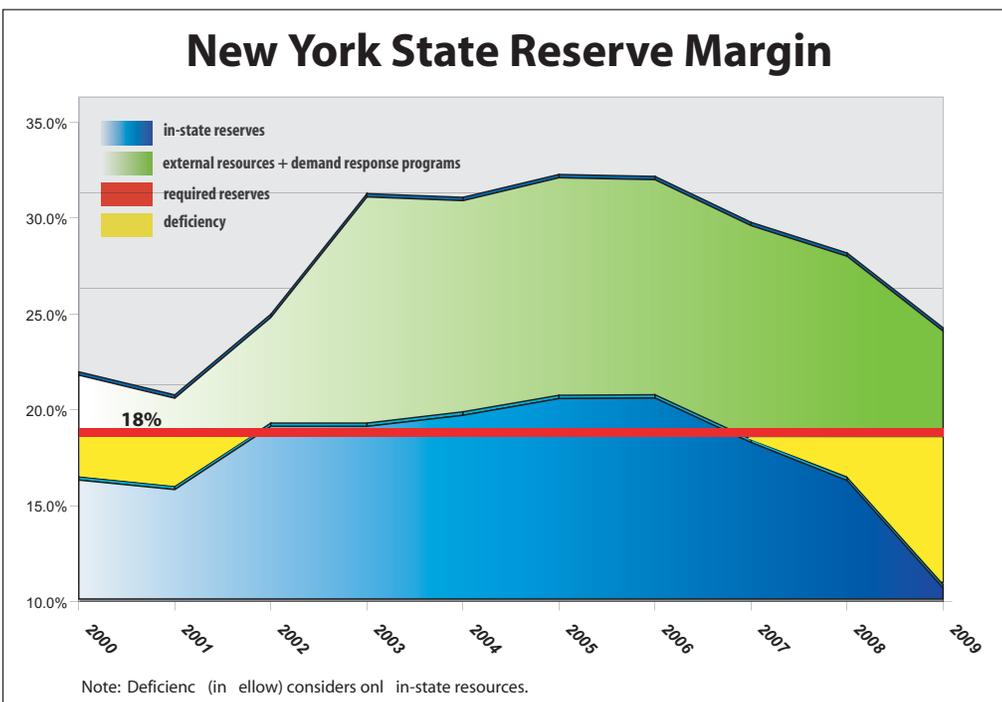
- Wherever possible the NYISO and New York's Transmission Owners will initiate improvements in their restoration procedures based on experience gained during the Blackout;
- Although NYISO operator training already exceeds industry standards, it will institute training improvements based on Blackout experience.

As discussed later in *Power Trends*, a strengthened transmission system could provide New York with greater flexibility and ability to withstand unexpected occurrences. Although transmission reinforcement was not a factor in the August 14 Blackout, it could become important in dealing with future events. The need for transmission reinforcement points up two related pieces of **unfinished business** that will be discussed below. The NYISO must complete its Comprehensive Planning Process and ensure that its tariffs provide clear responsibilities for appropriate system upgrades and a process for determining cost responsibilities if market solutions do not emerge.

Generation

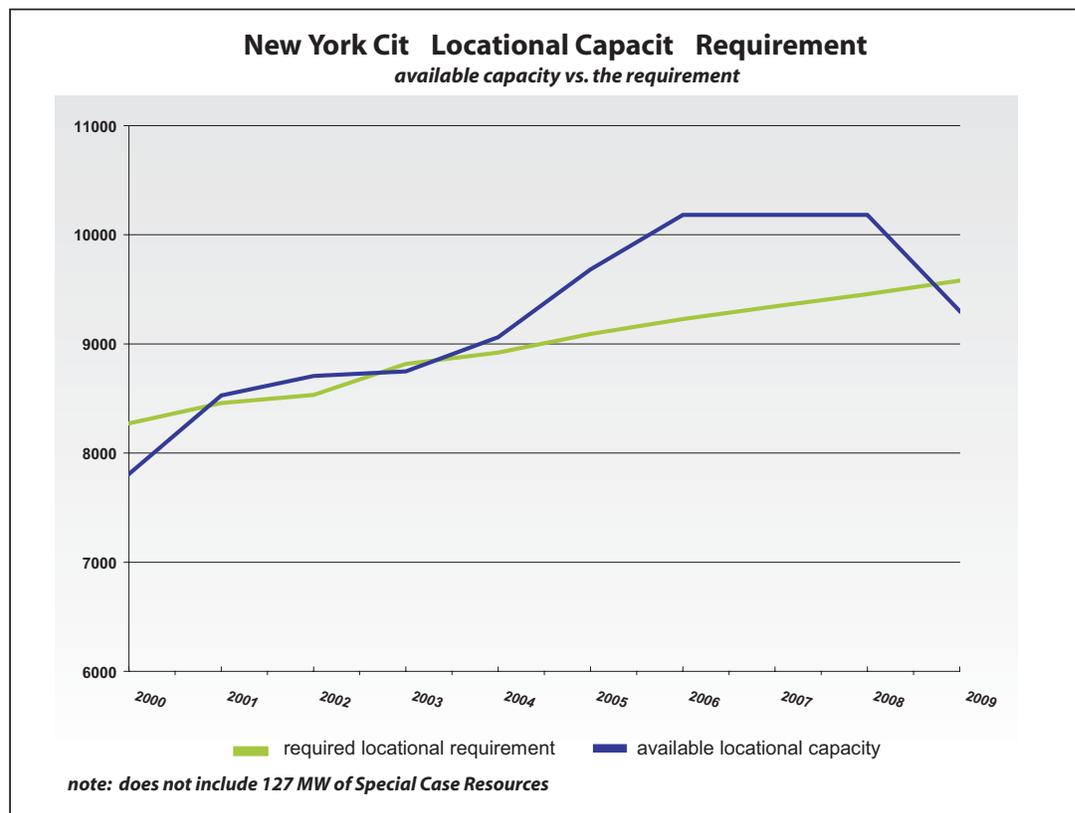
Previous reports by the NYISO have focused on the need to attract and site generation resources within the State. Considerable success has already been achieved in this respect.

Of the 5,000 to 7,000 additional megawatts (MW) of generation originally recommended by the NYISO to be in place by 2008, more than 3,000 MW have already been built. An additional 2,038 MW are under construction, and there are 3,120 MW approved through the Article X siting process, but their viability is not yet assured.



Equally important, is that new generation is appearing in the locations where it is most needed. This success is attributable to incentives provided by the NYISO's Locational Based Marginal Pricing system and innovative market improvements such as the ICAP demand curve and scarcity pricing. The success is also attributable to responses by the State government to our calls for streamlining the siting process.

Nevertheless, there remains much *unfinished business* if adequate generation is to be attracted and sited within the state to keep up with economic growth, technological change, environmental needs and replacement of obsolete plants. If the 2,038 MW currently under construction are completed on time, New York will just meet its reserve requirement with in-state resources. Special Case Resources (SCRs) and external resources will provide some additional margin above resource requirements. However, the NYISO recommends that additional capacity, predominantly in NYC and on Long Island, should be completed in the 2008 and beyond timeframe in order to ensure that the City and Long Island do not fall below minimum reliability requirements. The amount of this capacity should be a minimum of 500 to 1,000 MW each year depending on the pace of demand growth.



As the curve above indicates, NYC could fall below its locational requirement in 2009 and therefore there is greater urgency to assure that future generation is built.

Long Island is even more critical and may fall below its locational requirements next year. The Long Island Power Authority (LIPA) is installing a number of small generators on an

emergency basis for this summer, and has issued requests for proposals (RFPs) for new resources. However, the urgency of siting additional generation on Long Island as soon as possible cannot be overstated.

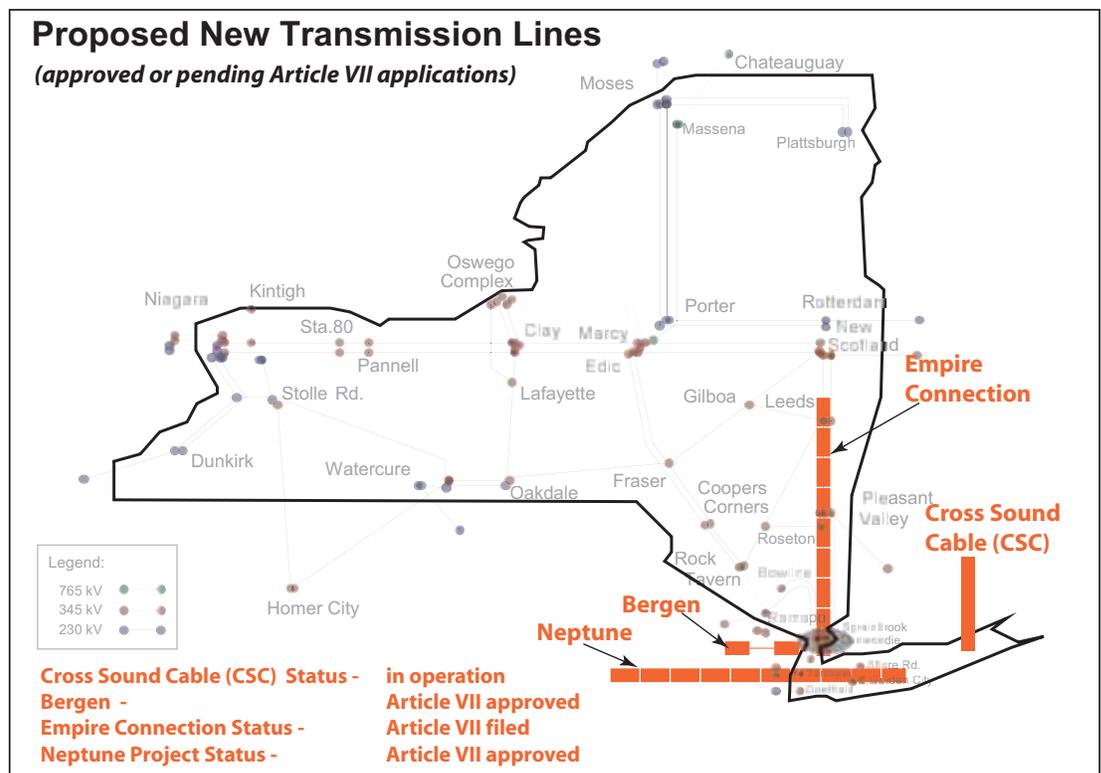
Meeting this goal of generation additions will require certain legal changes and possible additional market innovations, all in the category of *unfinished business*:

- The New York law governing power plant siting has lapsed and the State Legislature should reenact it as soon as possible;
- National and international conditions in energy markets have made energy investments unattractive to investors, and market innovation will be required to help rectify the problem; and
- In the near term, contracts or other mechanisms to provide capacity payments will be required to enable developers to attract investment, and load serving entities will need reasonable regulatory assurance of rate recovery if they are to enter into such contracts.

Transmission

The New York transmission system will likely require future reinforcement as load on the system continues to grow. While New York's transmission system meets applicable standards, portions of the system are often fully loaded, and the August 14 Blackout suggests that a greater margin for unforeseen events may be beneficial and should be evaluated. What is more, transmission limitations constrain the ability of New York's markets to reduce consumer costs. This transmission "congestion" can have a real cost to New York consumers.

Only one new transmission line has been constructed in New York State in more than a decade — a direct-current cable across Long Island Sound



from Connecticut to Long Island. This line is in operation, but it has faced legal difficulties. This Cross Sound Cable was built by a merchant enterprise rather than a regulated utility. Its continued operation, however, is dependent on the outcome of litigation and possible congressional action. Other merchant transmission projects have been proposed but have yet to achieve financing.

Despite considerable improvements in price signals provided by our markets to generation, thus far those signals have not been sufficient to produce and sustain enough transmission proposals. Existing Transmission Owners have been reluctant to engage in major transmission projects because of uncertainties regarding return on their investments. The possibility that new generating facilities could reduce or eliminate the need for new transmission and the enormous public relations issues, possible cost shifting, and environmental obstacles to transmission siting, provide additional impediments to transmission investment.

On the subject of transmission, there is much ***unfinished business***:

- The NYISO Comprehensive Planning Process must be agreed upon and implemented this year and must contain clear responsibilities for appropriate transmission upgrades;
- Federal and state regulators, together, must ensure that a process exists for appropriate return on investment of any regulated system upgrades; and
- A fair and legal means must be provided for merchant transmission developers to exercise eminent domain powers when appropriate.

Regional Planning

When the NYISO was formed and began operation, it was not authorized to conduct a Comprehensive Planning Process to identify and implement new transmission projects. Its planning centered mainly on projections of load growth, interconnection of new generating resources into the system and the reliability studies necessary for compliance with national and regional reliability council requirements.

Since the issuance of Order 2000, the FERC has made it clear that an expanded planning mechanism is required for ISOs and Regional Transmission Organizations (RTOs). The development and approval of such a process is a major piece of ***unfinished business***. The NYISO is now engaged with its Market Participants to develop such a process, file it for

approval by FERC and implement it rapidly thereafter. This initiative is divided into two parts.

The first phase of planning work, currently under development, begins with the identification of reliability needs and includes a process for market-based solutions with a regulatory backstop to ensure that such needs are met in a timely manner. Implementation of the regulatory backstop will require the commitment of Transmission Owners as well as participation by the New York Public Service Commission (PSC). The reliability phase of the Comprehensive Planning Process is scheduled to be filed with FERC later this year.

The second phase of the planning initiative, which will be addressed immediately following submission of the first phase to FERC, is a mechanism to identify projects needed for economic reasons. There is considerable controversy among market participants in New York as to whether planning for economic reasons is compatible with an open and competitive market environment.

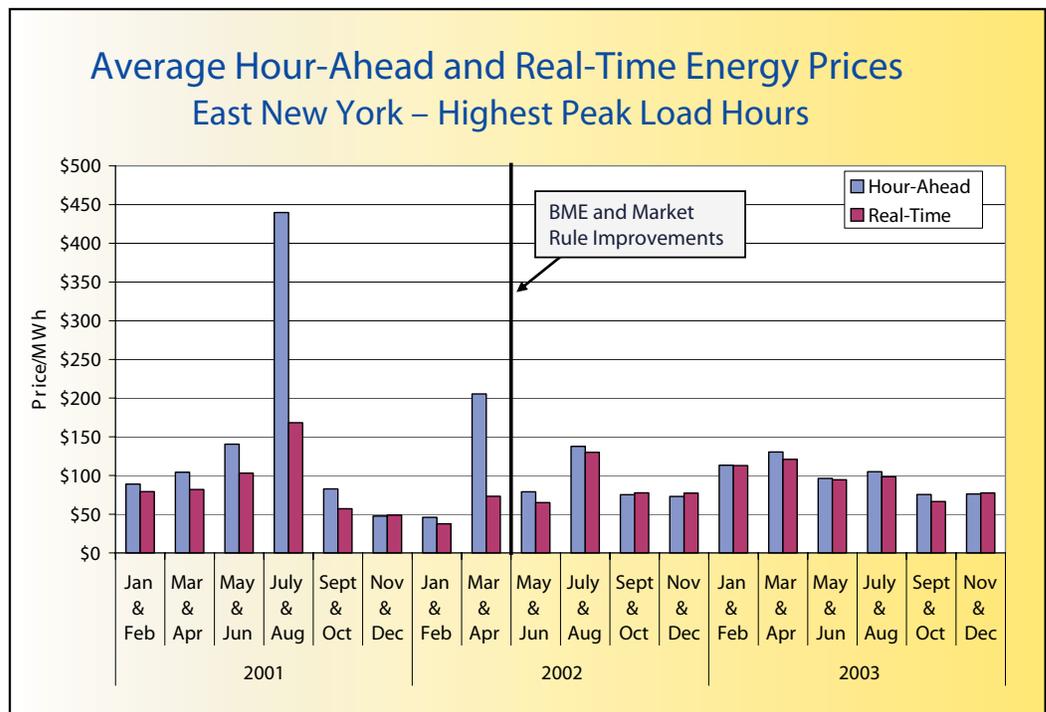
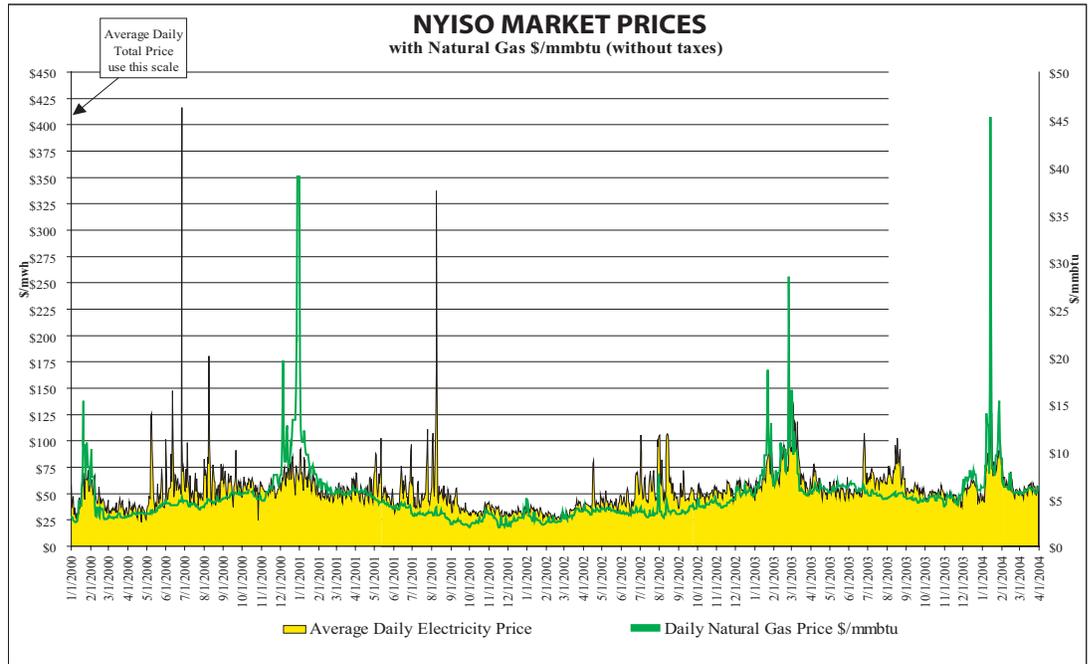
Among the problems underlying implementation is the question of how the facilities will be paid for and who will pay. There is a general consensus among market participants that some form of a “beneficiaries pay” methodology is appropriate for New York.

Environmental Stewardship

Recognizing the need to enhance future fuel diversity, the NYISO pursues policies and market development that provide “level-playing-field” incentives for investments in renewable technology while ensuring that the incorporation of renewable technologies does not unduly interfere with fair and efficient markets.

To ensure that the most effective and environmentally informed strategies are pursued, the NYISO has established an internal, cross-departmental environmental committee to ensure that new policies and initiatives are reviewed and that the NYISO is aware of, and participating in, all necessary external environmental initiatives. The Internal Environmental Committee is currently addressing three areas:

- State and Federal air quality regulations and their impacts on power plants;
- The renewable resources proceeding at the PSC; and
- Distributed generation and demand-side resources.



Dr. David Patton, Independent Market Advisor, State of the Market Report 2003. Dr. Patton is an independent advisor to the NYISO Board on market matters.

Markets

Despite their early growing pains, New York's wholesale markets have improved steadily since their inception, and they now constitute the industry standard in the new world of electricity markets. Not only have they gotten past those early growing pains, they have led the country in innovations such as the institution of demand curve pricing of installed capacity, scarcity pricing to reflect inadequacy of resources, and automatic market monitoring and mitigation where necessary to prevent the exercise and abuse of market power.

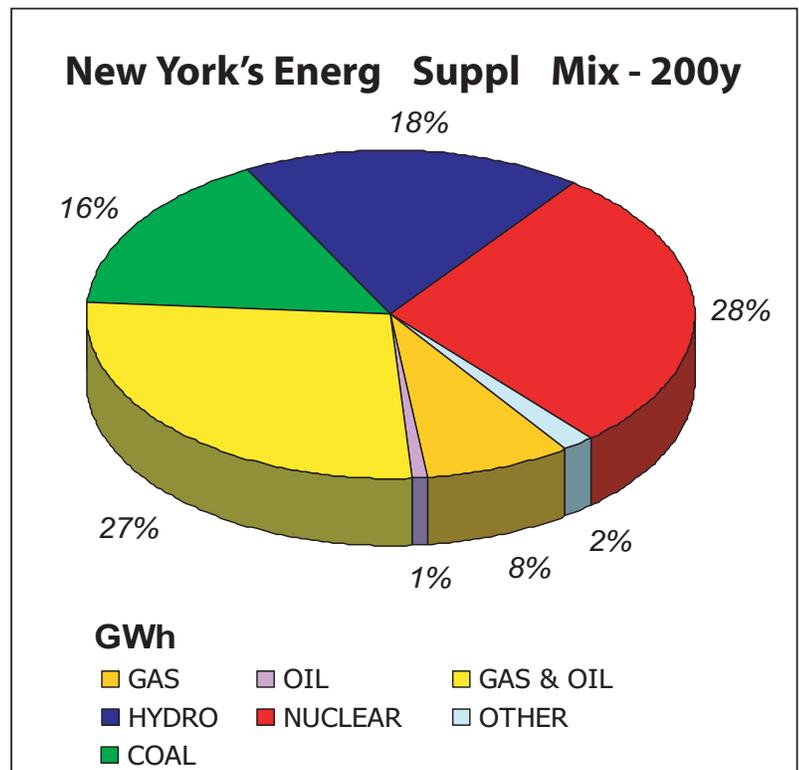
While, as might be expected, electrical energy prices continue to fluctuate, reflecting changes in demand, the cost of fuel and the availability of supply, there have been no recent indications that higher prices reflect the exercise of market power. The new markets have provided incentives to generators to improve their availability, indicating that the anticipated efficiency improvements have, in fact, materialized.

One significant measure of the success of the New York markets is the steadily improving convergence among the prices in the Day-Ahead and Real-Time markets, as can be seen in the preceding figure from Dr. David Patton's report on the New York markets.

Since New York's markets do not exist in a vacuum, regional market efficiency requires the absence or reduction of impediments to trading with the other markets in surrounding states. Those impediments ("Seams") have been troublesome to eliminate, but substantial progress has been made. A measure of that progress is the degree of arbitrage that occurs among the markets of the region and the consequent price convergence between them.

An emerging problem for the New York markets is the potential reduction in diversity of fuel supply, resulting from the fact that most of our recent and currently contemplated projects are fueled

by natural gas. This phenomenon strains existing gas delivery facilities and raises the specter of increasing dependence on imported liquefied natural gas (LNG). Since natural gas is normally found in close proximity to oil, it is reasonable to expect that the LNG we require will come from the same parts of the world that produce most of our oil. One of the advantages of natural gas had been that it had been previously seen as a North American fuel.



The diversity of supply in New York, as well as the dual fuel capability (plants able to run on two types of fuel) of the downstate units, has helped to dampen price spikes resulting from price fluctuations in an individual fuel. This past winter is a good example of the cost and reliability benefit of having a diverse fuel supply. This diversity also provides a degree of strategic comfort as to security of supply, but a new piece of ***unfinished business*** is the assessment of the economic and reliability implications of the increasing dependence on natural gas and the longer term strategic implications of dependence on LNG from the same parts of the world as oil.

A major improvement to New York's markets is the implementation of an entirely new system of market operating software, which is in the final stages of development at the NYISO. The existing software had largely been adapted from software used prior to the institution of the wholesale markets. The old software made change and improvement time-consuming and often impossible. These difficulties should be eliminated or greatly reduced with the introduction of the new software in the fall of 2004.

The new market software will enable the NYISO to essentially implement FERC's Standard Market Design. (Even prior to the advent of the new software, the New York markets were closer to FERC's Standard Market Design than any other markets.) The new software will enable greater price certainty, more flexible and efficient scheduling of generation, and the further reduction of seams with our neighbors.

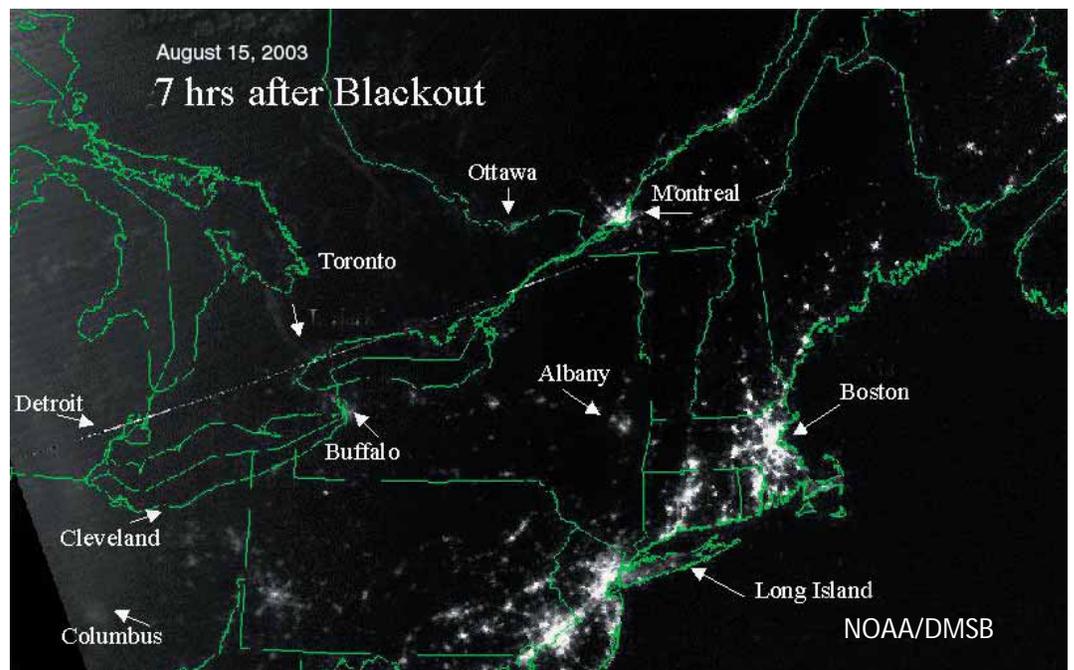
Finally, it now seems possible for NYISO to develop and implement a system of Virtual Regional Dispatch (VRD) with neighboring markets. At present, generation resources are dispatched on a least-cost basis within each neighboring ISO or RTO. VRD would enable efficient arbitrage of resources to occur in real-time among the markets. The NYISO will thus be working with its neighboring ISOs/RTOs to gain the acceptance and eventual implementation of VRD.

Unfinished Business

Since 2001, New York has made significant progress in addressing its energy problems. In particular it has finally begun to add new, cleaner and much more efficient generating facilities; and it has instituted competitive electricity markets, which are now acknowledged as among the best in the industry. It has made very little progress, however, in strengthening its transmission infrastructure. That lack of progress has potential negative implications both for future system reliability and consumer costs.

To ensure the future supply and reasonable cost of electricity in New York, the following are the “Big Four” items of New York’s ***unfinished business***.

1. Conversion of voluntary federal reliability operations standards to mandatory, with appropriate penalties for noncompliance.
2. Urgent implementation of the International Task Force’s recommendations following the August 14, 2003, Blackout.
3. Renewal of New York’s Article X power plant siting law by the State Legislature.
4. Completion and approval by the NYISO and its Market Participants of the NYISO’s Comprehensive Planning Process by the end of 2004.



The Blackout of 2003

Beginning at 4:10:39 on August 14, 2003, New York and the entire Northeast received a dramatic reminder that the reliability of the electric supply is a cornerstone of our society and economic well being.

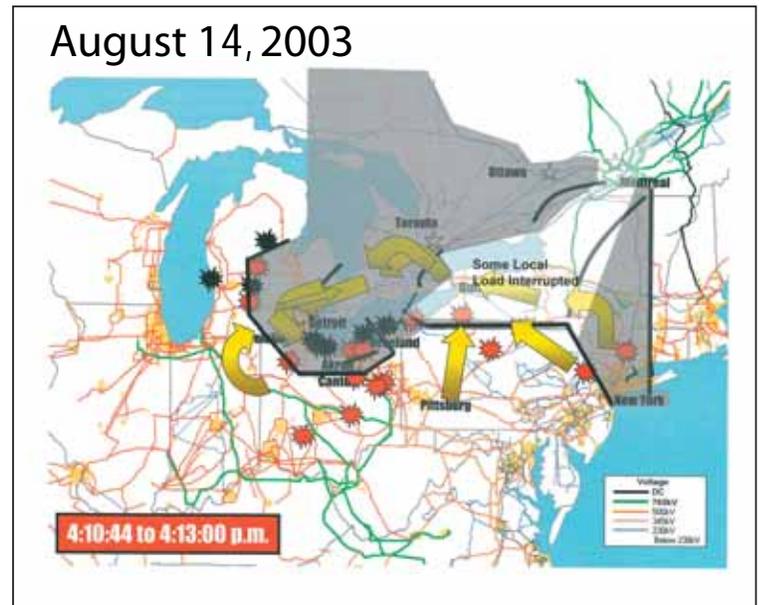
Downstate New York, including New York City, lost all power as residents spent the night in darkness. Portions of upstate New York, New Jersey, Pennsylvania, Ohio, Michigan, Massachusetts, Connecticut, and most of Ontario, were also affected.

We now know that the Blackout was primarily due to a disregard of well-established, although voluntary, reliability rules. These rules must be made mandatory and then be subject to strict enforcement under federal laws and regulations.

The International Task Force recommended the implementation of mandatory and enforceable reliability standards, accompanied by appropriate governmental oversight and penalties for noncompliance. While New York has mandatory reliability standards, the NYISO had called for such standards to be applied nationally prior to last August 14 and it will continue to advocate for their implementation.

The NYISO is taking aggressive action to prevent and, if necessary, mitigate any future system disturbances, especially this summer. We are pursuing many improvements and safeguards for summer 2004.

- Provision within the NYISO Control Room for greater visibility of system conditions outside New York State;
- Participation in a readiness audit by outside reliability organizations and the Federal Energy Regulatory Commission (FERC);
- Implementation of audit findings and Blackout recommendations of the North American Electric Reliability Council (NERC);
- Establishment of defensive procedures to be implemented in the event problems develop on neighboring systems;
- Wherever possible the NYISO and New York's Transmission Owners, will institute even better restoration procedures based on experience gained during the Blackout; and



- Although NYISO operator training already exceeds industry standards, it will institute training improvements based on Blackout experience of the NYISO and other systems.

With these measures completed, New York will be better able to withstand unforeseen events. But only federal action can address the root causes of events such as the 2003 Blackout, which made it clear that we must either have mandatory rules nationwide or we must design our systems, at great additional expense, on the assumption that neighboring systems may permit gross rule violations and leave us with the real possibility of a repeat of last year's Blackout. The obvious solution is that the rules must be made mandatory. Congress should immediately pass the bipartisan reliability portion of the pending Energy Bill.

The Blackout Minute by Minute

New York's power system was secure and operating normally in New York on a typical summer day until shortly after 4 p.m.

All but one of the bulk power system transmission lines was in service, and there was a generation capability surplus of approximately 3,000 MW. Normal levels of operating reserves had been maintained throughout the day.

Power flow transfers on both internal and external transmission interfaces were within prescribed limits, and the bulk power system cross-state voltage profile was normal.

The NYISO had received no notices or advisories from other control areas, so operators were not aware of what was about to take place.

- 4:06: Small (approximately 100 MW) but increasing power shifts out to Ontario.
- 4:09: The NYISO noted a power swing of approximately 700 MW out to Ontario, and a coincident swing of similar proportion from PJM to the south into the NYISO.
- 4:10:39: A sudden power surge, in excess of 3,500 MW, entered the NYISO system from PJM. It went through New York and westward into the Ontario system.
- Within six seconds, the ties in the grid between New York and PJM tripped, and two seconds later, the upstate ties with ISO New England opened, followed immediately by the separation of the New York system into two electrical islands.
- In the western part of the state, load-shedding relays operated and maintained a balance of available supply to the load and the upstate transmission system stabilized.

- In the southern island, consisting of the Hudson Valley, New York City, Long Island, Northern New Jersey and Southwest Connecticut, there was a mismatch of 6,000 MW between demand and supply and the southern island collapsed.
- In all, 22,984 MW of New York load was lost during the event.

As this timeline shows, the system disturbance swept through New York without warning and in a matter of seconds. The automatic relay and load-shedding protection in New York operated as intended, maintaining service in some areas and allowing restoration of the system to begin immediately.

Restoration

The assessment and restoration of the system was intensely complex. However, the NYISO and New York Transmission Owner system operators undergo extensive training for just such emergencies. Effective restoration plans, prior training, and constant communication within New York allowed the NYISO, the Transmission Owners, independent power producers, and the municipal systems to restore power to the New York Control Area (NYCA) completely in less than 30 hours.

The NYISO Restoration Plan is designed to stabilize the remaining NYCA transmission system; extend the stabilized system to blacked-out areas to provide start-up power to generation facilities and customer load restoration; extend the stabilized system to energized islanded areas; and ultimately restore normal transmission operation.

The Restoration Plan was conducted expertly under the guidance of Control Room operators. Generators and Transmission Owners in the NYCA, along with operators in neighboring control areas, worked extraordinarily well together to bring units back into service and restore the entire bulk power system in record time.

How the Markets Fared

Prior to 4 p.m. on August 14, 2003, the New York wholesale electricity markets, including the Day-Ahead and Real-Time balancing markets, were operating normally.

Day-Ahead Market operation for Thursday the 14th and Friday the 15th had been completed normally before the time of the system disturbance. Day-Ahead Market operation for Saturday the 16th and Sunday the 17th continued to operate normally during the restoration period. Market Participants continued to submit bids as usual, and Day-Ahead prices were calculated normally.

The Real-Time Market was suspended immediately following the Blackout. Normal Real-Time Market operations reopened on Monday the 18th. During the suspension of the Real Time markets, the system was dispatched in accordance

with Operator instructions, rather than Market Participant bids and offers. Real-Time prices were set equal to the Day-Ahead prices during the suspension period.

The NYISO implemented existing tariff provisions for the settlement of the markets in emergency situations, and carried out these settlements in cooperation with Market Participants. The necessary adjustments were successfully incorporated in the August bills.

The NYISO will continue to work with others to evaluate the causes of the Blackout and help to identify protocols to prevent future disturbances. To date, independent reviews by the International Task Force and the New York Department of Public Service (DPS), and an interim report by the NYISO, confirm that the New York bulk power system performed as designed and dispatchers responded appropriately. The NYISO will issue a final report on the system disturbance and restoration, including New York-specific recommendations, prior to the summer.

Generation

The first *Power Alert* was issued in March of 2001, following the NYISO's first full year of operation. The seasonally adjusted peak demand during the previous summer was 30,200 MW, with an installed generating capability of 35,347 MW. Imported capacity was needed to meet minimum statewide reliability requirements. The first *Power Alert* sent a strong signal that unless quick action was taken, especially in NYC, the state's electric reliability would be at significant risk in the future.

Since then, the state's peak demand has increased by 1,600 MW, and the expected peak demand for the summer of 2004 will be 31,800 MW. The required Installed Capacity has grown to 37,524, which is 18 percent above the required peak load. This growth in peak demand has been offset by an increase in generating capacity which will bring the total expected installed generating capacity in New York this summer to 37,914 MW.

Region	Requirement (Load + reserve or locational requirement)	Generation Available	Margin (as of April 2004)	New Generation & SCRs Summer 2004	Projected Margin Summer 2004
NY State	37,524	37,914	+390	929	+1,319
NY City	8,920	9,061	+141	125	+266
Long Island	5,008	5,091	+83	89	+172

**In-state supplies as of 5/2004. Does not include out-of-state firm imports or contracts. Approximately 2,500 MW of capacity from out-of-state resources has been available in the past. SCRs (a Demand Response Program) also assist in meeting demand in New York.*

The capacity increase has been achieved by the installation of new capacity, restarting previously retired generating units and by upgrading existing units. Additional demand-side and out-of-state resources further extend New York's capacity margin by an additional 2,500 MW.

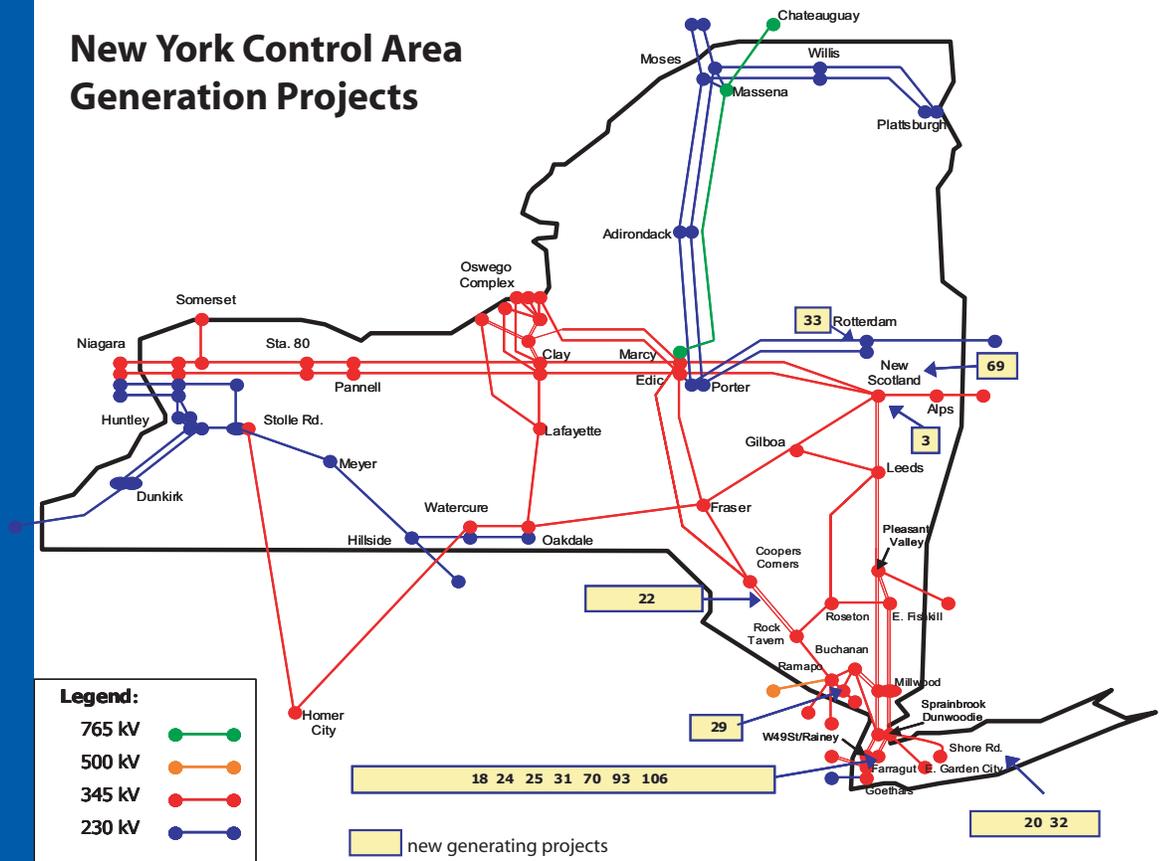
As the table below illustrates, New York City will not be able to meet its capacity requirement in 2009 unless new generation that is not already under construction comes on line; or scheduled retirements are deferred. Similarly, Long Island also will be in a deficit situation if no additional plants are built there. In both cases SCR's will not make up the deficiency.

Region	Requirement (Load + reserve or locational requirement)	Generation Available	Projected Margin Summer 2009
NY City	9,580	9,300	-280
Long Island	5,446	5,170	-276

**Generation available does not includes SCRs.*

Statewide, however, there has been a significant amount of new capacity that has been licensed by the Article X siting process and is now under construction. Article X was a “one-stop shopping” process for permitting and siting new generating plants over 80 MW across the state. That was until 2002, when the State Legislature allowed the law to sunset. Importantly, as the figure below shows, the new generation is appearing in locations where it is most needed.

New York Control Area Generation Projects



Generation Projects Subject to Article X Top of the Queue						
Project Name	Owner/ Developer	Size (MW)	Connect- ing Utility	Date of NYISO Application	Status of Article X	Proposed In- Service
Bethlehem Energy Center	PSEG Power NY	750	NM-NG	04/27/98	Certified 2/28/02	2005
East River Repowering	Consolidated Edison of NY	288	CONED	08/10/99	Certified 8/30/01	2004
Poletti Expansion	NYPA	500	CONED	04/30/99	Certified 10/2/02	2004
SCS Astoria Energy Phase I	SCS Energy LLC	500	CONED	11/16/99	Certified 11/21/01	2006
Under Construction TOTAL		2,038				
Brookhaven Energy	American National Power	540	LIPA	11/22/99	Certified 08/14/02	2006
Bowline Point Unit 3	Mirant	750	CONED	10/13/99	Certified 3/25/02	?
Spagnoli Road CC Unit	Keyspan Energy, Inc.	250	LIPA	05/17/99	Certified 05/08/03	2006
Wawayanda Energy Center	Calpine Eastern Corporation	540	NYPA	06/10/99	Certified 10/22/02	?
Astoria Repowering Phase I	Reliant Energy	367 net	CONED	07/13/99	Certified 06/25/03	2007
Astoria Repowering Phase II	Reliant Energy	173 net	CONED	08/18/00	Certified 06/25/03	2007
SCS Astoria Energy Phase II	SCS Energy LLC	500	CONED	11/16/99	Certified 11/22/01	?
Approved - TOTAL		3,120				
Empire State Newsprint	Besicorp / Empire State	505	NM - NG	07/14/00	Appl accepted 05/28/02	?
TransGas Energy	TransGas Energy, LLC	1,100	CONED	10/05/01	Appl accepted 6/05/03	2007
Projects with Applications Pending - TOTAL		1,605				
GRAND TOTAL MW Proposed Projects		6,763				
 under construction approved application pending						

Still, there are many Article X units under construction in NYC, including East River Repowering (288 MW), the Charles A. Poletti unit (500 MW), and the first phase (500 MW) of SCS Astoria (1,000 MW). Also, approved for NYC but not under construction is Reliant repowering (546 MW) and an Article VII permit for the PSEG Cross Hudson Project (550 MW). Article VII is the siting mechanism for transmission lines in the state. In addition, there are several wind power proposals in various stages of development.

These potential gains will be offset by the scheduled retirement of the existing Waterside Unit (167 MW) in 2004 and the Poletti unit (882 MW) in 2008. If all the proposed and approved capacity materializes New York City may be able to meet its locational capacity requirements through 2013.

On Long Island, Spagnoli Road (250 MW) and Brookhaven (540 MW) have received Article X certification but have not begun construction and are encountering significant local opposition. Long Island's ability to meet its locational capacity requirements will be difficult in the short run.

Across upstate, Article X projects pending include PSEG Bethlehem (net 350 MW), which is under construction, Bowline 3 (750 MW) and Wawayanda (500 MW). Because of financial uncertainty, neither of the latter two is under construction.

Because of the sunset provision in Article X, new applications are not being considered, but two applications are still under active consideration – TransGas energy in NYC (1,100 MW) and Besicorp in Rensselaer County (505 MW).

Nevertheless, there remains much ***unfinished business*** if adequate generation is to be attracted and sited within the State to keep up with economic growth, technological change, environmental needs and replacement of obsolete plants. The NYISO recommends now that 2,000 MW of new generation be added by 2009, predominantly in NYC and Long Island, and that 500 to 1,000 MW be approved and constructed annually thereafter depending on the pace of electricity usage.

Over and above maintaining the reliability of supply, these new generating facilities provide considerable environmental benefits. The combined-cycle units burn less fuel to produce electricity and employ the latest emissions and cooling technology. Today's fossil fuel generation facilities have heat rates (the amount of fuel that has to be burned to produce a kWh) of up to 13,000 BTU/kWh and emit as much as .48 lbs of oxides of nitrogen (NO_x is an ozone precursor) per million BTU of fuel burned. New gas-fired, combined-cycle facilities can have a heat rate as low as 6,800 BTU/kWh and emit only .0075 lbs of NO_x per million BTU of fuel burned. The new generating capability provide orders of magnitude improvement in terms of emissions reductions.

An example of the benefits of new generation is provided in an October 2003 report by a nationally recognized environmental consulting firm — M.J. Bradley & Associates — which stated that the small natural gas-fired plants operated in NYC by the New York Power Authority (NYPA) are the cleanest in the city and “operate under air-quality permits that are among the strictest in the nation for similar facilities.” The study noted that if the NYPA plants were not operating, “it is likely that emissions would be higher due to the need to seek power from higher-emitting plants.”

These successes notwithstanding, NYC and Long Island continue to minimally meet their locational capacity requirements. Additional generation resources are especially needed in

those regions because they are “load pockets.” Load pockets are areas where power supply is particularly tight in times of high demand. The ability to import electricity into NYC and Long Island has remained essentially fixed, while electricity demand in both locales has continued to escalate. For these reasons, NYC and Long Island have additional reliability requirements. One requirement is the same 18 percent reserve margin as the rest of the state, but the other is that installed in-city generating capacity must equal at least 80 percent of NYC’s projected peak demand (also called the in-city requirement) because of NYC’s energy needs and limitations in importing additional power over existing transmission lines. Long Island for similar reasons must have 99 percent of its peak demand located “on-island.”

There are a variety of measures including legislation and market innovations that could assist in attracting, siting, and building new generation resources in New York.

- The New York law governing power plant siting (Article X) has lapsed and the State Legislature has yet to reenact it. While some previously approved projects remain in the pipeline, New York lacks a clear and timely mechanism for receiving the necessary permits and approvals required to build power plants in the state;
- National and international conditions in energy markets have made energy investments unattractive to investors; while New York has instituted changes to its markets such as scarcity pricing, new market innovations will be required to rectify the problem; and
- In the near term, forward contracts or other mechanisms to provide capacity payments will be required to enable developers to attract investment, and load-serving entities will need regulatory assurance of rate recovery if they are to enter into such contracts.

Transmission

The wholesale electricity marketplace has spurred considerable interest in merchant transmission development, but there’s been a gap between conception and construction. Since the opening of the New York market, three Article VII applications have been filed to develop merchant transmission projects. Two of three have been approved and one is early in the licensing process.

The Cross Sound Cable, which is a 330 MW High Voltage Direct Current (HVDC) facility connecting the New England grid in Connecticut with the New York grid in Long Island has been constructed and is operating. The other project that has been licensed is the Neptune project, which is a 600 MW HVDC facility connecting the PJM grid in NJ with the New York grid in Long Island. Empire Connection, which is a 2000 MW HVDC facility from the upper Hudson Valley to NYC, is in the licensing process. A major challenge for these merchant facilities is attracting enough subscribers to obtain financing. Punctuating this difficulty is the recent cancellation by the Empire Connection project of its capacity auctions.

NYISO's Business Issues (BIC) and Operating (OC) committees. This group of stakeholders and NYISO staff is charged to develop a formal planning process for New York. The DPS as well as other state agencies are active participants in this process.

ESPWG enjoyed early success with the approval of the Initial Planning Process by the OC in September. The Initial Planning Process identifies reliability needs for a 10-year planning horizon, and reports on the costs of historic congestion. An initial report is expected in June. In parallel, the NYISO is also focused on the development of a Comprehensive Planning Process, which will address FERC's requirements for ISOs and New York's transmission infrastructure needs.

The NYISO's target is to complete the development of the Comprehensive Planning Process for reliability needs and to file with FERC in the third quarter of 2004. Then the NYISO, together with the ESPWG, will consider the development of an economic planning process for New York, which could be complete by the end of this year.

Regionally in 2003, an agreement on a Northeastern ISO-RTO Planning Coordination Protocol was achieved by the NYISO, PJM, ISO-NE, the IMO, Hydro Quebec, New Brunswick and the NPCC. The objectives of this protocol are to provide enhanced coordination of planning throughout the Northeast Region, helping to resolve Seams issues and ultimately to enhance the coordinated performance of the systems. The NYISO's Market Participants have expressed support for this effort.

The NYISO is finalizing the Northeastern ISO/RTO Planning Coordination Protocol with its neighbors. It is expected that the initial signatories will be ISO-NE, PJM and the NYISO. The Canadian entities have agreed to participate on a limited basis, subject to applicable provincial jurisdictional requirements. It is anticipated that the protocol will be finalized in the third quarter of 2004, accompanied by any required FERC filings. Implementation will begin immediately thereafter.

This protocol is intended to support and supplement, rather than replace, each ISOs individual planning procedures. The protocol provides procedures for data and information exchange, coordinated analysis of interconnection and transmission service requests and ultimately for the development of a Northeastern Coordinated System Plan.

The ISOs are in the process of receiving input on this protocol from their respective stakeholders. The NYISO's Market Participants have expressed their support for this effort. The NYISO expects to achieve completion of its two major planning efforts by the end of this year. It will mark a major milestone in establishing a coordinated planning process, which will be administered by the independent transmission providers with input from all stakeholder groups from the entire Northeast Region.

Environmental Stewardship

The NYISO recognizes the link between fossil-fired power plants and environmental quality and pursues strategies that would minimize negative environmental impact. Similarly, the NYISO pursues policies and market development that avoid discouraging investments in renewable technology while ensuring that the incorporation of these technologies does not unduly interfere with fair and efficient markets.

To ensure that the most effective and environmentally informed strategies are pursued, the NYISO has established an internal, cross-departmental environmental committee to ensure that new policies and initiatives are reviewed and that the NYISO is aware of, and participating in, all necessary external environmental initiatives. The Internal Environmental Committee is currently addressing three areas:

- State and Federal air quality regulations and their impacts on power plants;
- The renewable resources proceeding at the PSC; and
- Distributed generation and demand-side resources.

The NYISO is also pursuing the establishment of an advisory panel to assist it in making informed and forward-looking determinations on market development and policy initiatives that may have environmental impacts. Before the end of the year, the NYISO will have established a small committee of nationally recognized experts in the field of electricity production and environmental quality to help shape policies that promote environmental stewardship, and prepare for and incorporate new technologies as they appear on the market.

Renewable Portfolio Standard Proceeding

Since 2003, the NYISO has participated in the PSC's Renewable Portfolio Standard (RPS) proceeding, the intent of which is to consider policy implications of Governor Pataki's initiative to ensure that 25 percent of the energy consumed in New York by 2013 be derived from renewable resources such as wind and water.

Under active consideration are the costs of such an initiative, the best approaches to acquiring new renewable resources, and the reliability implications of doing so.



NYISO has expressed its support for the overall policy goals of the RPS, namely reducing New York's reliance on fossil fuels, diversifying the state's fuel mix, improving energy security, reducing the environmental impacts of electric generation and reducing energy price volatility.

However, NYISO has recommended that the PSC consider the likely changes in operations that a significant increase in intermittent resources will require for the NYISO to ensure that the high voltage electric transmission system remains secure and reliable.

In order to evaluate the potential procedural changes and market rules of an RPS, the NYISO and NYSERDA have commissioned GE Power Systems' Energy Consulting Group to conduct a two-phase evaluation. Phase I primarily concluded that the state should be able to integrate wind generation distributed across the NYCA to a level of at least 10 percent of the system peak load (a total of about 3,300 MW of wind turbine generators) without significant adverse impacts on the planning, operations, and reliability of the bulk power system, provided that appropriate wind farm requirements and operations practices are adopted when needed.

NYISO and its Market Participant committees have already begun to consider, and in some cases implement, some of the best practices recommended in the Phase I study.

Phase II, which is expected to conclude in December, will examine the potential impact of additional wind power on the New York power system and the New York markets in greater detail and refine the conclusions from the Phase I analysis. Additional changes to NYISO operating and/or market rules may be shown in Phase II. In addition, parties to the RPS proceeding have agreed that a system for tracking the creation, trading, and use of so-called Renewable Energy Credits (RECs) should be developed to facilitate the market-based procurement of new renewable resources. NYISO, as the likely administrator of such a tracking and trading system, has offered to facilitate the discussions that would be required.

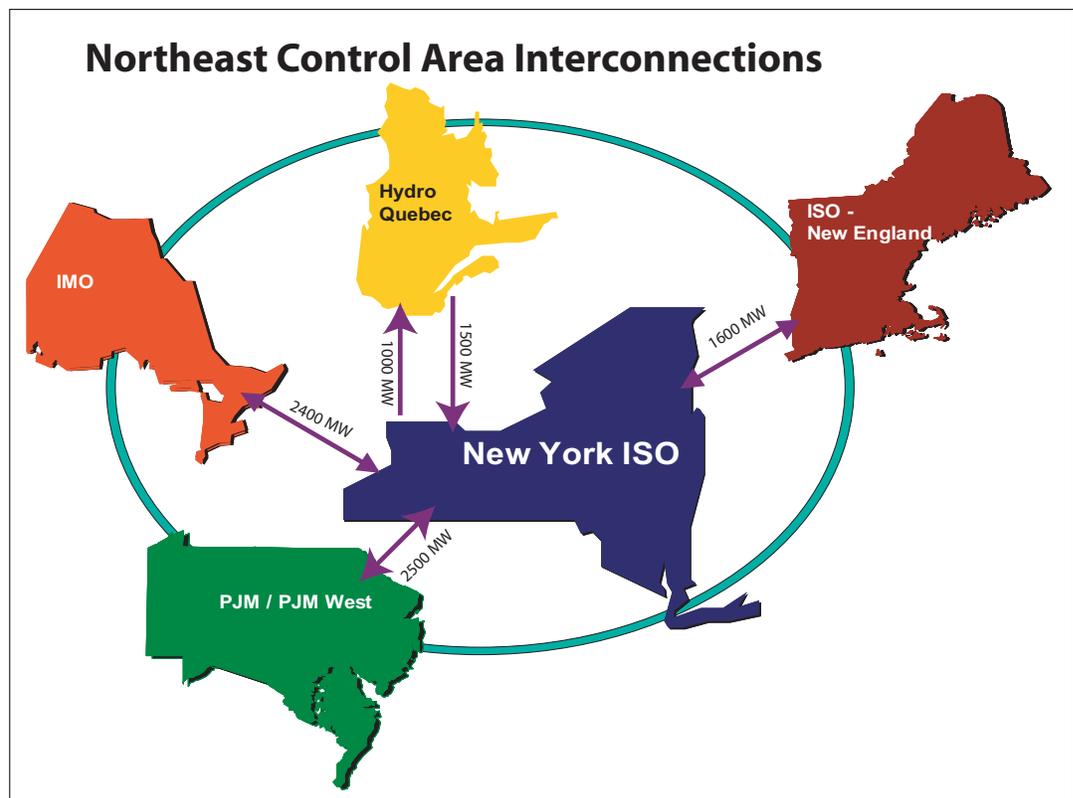
Markets

Since the inception of the NYISO energy and ancillary service markets there has been a concerted effort to continuously review and improve their function and efficiency in order to fully extract the benefits of competition and efficient markets.

Eliminating Seams in an Evolving Marketplace

Seams issues represent barriers to trading energy and capacity between regions, which can stifle emerging competition, create undesirable market inefficiencies, and even cause reliability problems in extreme cases. These can be in the form of market rules and protocols, operational procedures and practices, as well as administrative processes. The presence of Seams between adjacent markets introduces market inefficiencies, which tend to inflate price. Seams issues cannot be solved unilaterally. The NYISO has helped establish a series of agreements with each of its neighboring markets to foster

the cooperation and problem-solving needed to resolve seams issues and further enhance the competitiveness of the regional markets. Under these agreements, the NYISO, PJM, ISO-NE, and the IMO have developed cross-functional teams to address a variety of market design, seams, and technology issues. Earlier work focused on improving transaction certainty by implementing appropriate pricing methodologies for parties importing energy into NYISO's real-time market from neighboring areas.



Eliminating Export Fees – Rate Pancaking

In early 2003, the NYISO identified the importance of eliminating export fees between the New York Control Area (NYCA) and neighboring ISOs in order to facilitate trade within the Northeast region. In June 2003, the NYISO reached agreement in principle with the state's Transmission Owners, with the support of the PSC, for the elimination of export charges.

The New England Transmission Owners also had developed a framework to eliminate export fees by mid-year and include such provisions in the RTO joint filing made last October with ISO-NE. The New England proposal calls for a five-year phase-out of export fees, pending reciprocity.

Discussions began between the NYISO, ISO-NE, and the New York and New England transmission owners in mid-October and have focused on the term of the phase-out period and reciprocity issues. Discussions continued through the end of the year when the New England transmission owners indicated that the next step was to seek guidance from their state regulators.

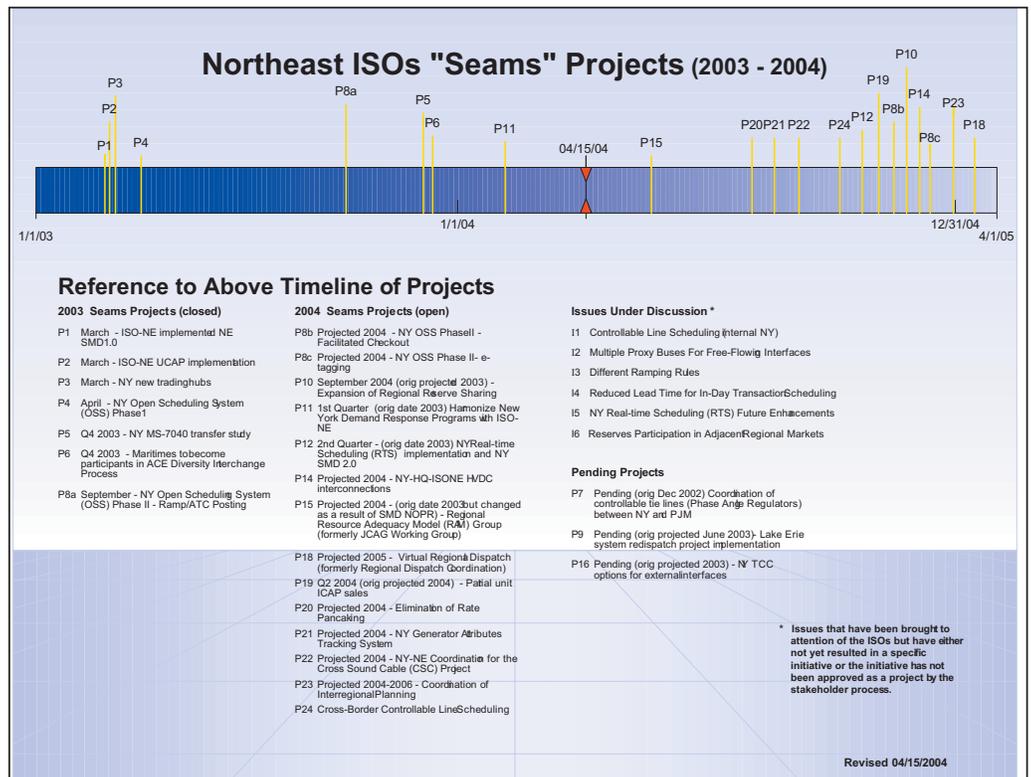
In early January, FERC convened a meeting of state regulators from New England, New York and the Mid-Atlantic states to discuss removal of export fees in the region. FERC stated that it would take action if a voluntary agreement could not be achieved. FERC's recent approval of New England's RTO application contingent upon reaching agreement with New York to eliminate export fees has given additional impetus to this ongoing effort. On April 30, the New York and New England regulatory commissions and both ISO's – with assistance from FERC – achieved a major breakthrough when the groups reached an agreement in principle to eliminate pancaked rates.

Progress in Resolving Other Seams Issues

The NYISO also has worked to standardize energy and capacity products among the region to further encourage active trading. Examples include long term (up to 18 months) transaction scheduling protocols, multi-hour block transactions and generation capacity measured through a common Unforced Capacity (UCAP) protocol.

NYISO's transaction prescheduling provides market certainty by allowing Market Participants to secure the equivalent of long-term firm transmission service up to 18 months in advance. This capability is particularly useful since Market Participants are required to contractually demonstrate transmission deliverability in support of their energy or capacity contracts.

Multi-hour block transactions provide a similar function for transactions conducted within a given day. It allows a Market Participant to specify a contiguous multi-hour contract for energy products that are



frequently traded among the regions. Market Participants can now pursue these types of contracts between the NYISO and adjacent areas with the confidence that once scheduled, all block hours will flow in real-time.

Finally, the NYISO has adopted the Unforced Capacity (UCAP) product definition for measuring the deliverability of installed capacity resources. The UCAP definition was originally implemented by PJM and has subsequently been adopted by the NYISO and ISO-NE. The adoption of a common product definition in each of the three regions greatly enhances the ability of generating resources to sell their capacity into the market that values it the most and removes a significant barrier to trade and market entry for the capacity markets.

The NYISO is also providing Seams leadership in the operations area and works with operations staff in adjacent markets to resolve issues. The NYISO has been developing methods and tools to streamline transaction scheduling and evaluation procedures between the various control rooms. Before, mismatches and other scheduling problems often resulted in cancelled transactions, which created significant uncertainty in the marketplace. The ISOs/RTOs now have a greater ability to avoid the scheduling errors and misunderstandings that impacted the regional markets in the past and failures such as these have been greatly reduced.

The quality of the price signals generated by each of the markets can have a profound impact on both market liquidity (a willingness to trade) and transaction certainty. The NYISO market design philosophy is that the market signals should provide the proper financial incentives for market participants to follow the instructions of the system operator. If the price signals are not consistent and rational, they can lead to inefficient use of the transmission system and lack of confidence in the market.

During its initial market implementation, the NYISO had difficulty maintaining consistent prices between its Day-Ahead and Real-Time markets. Sudden, unexplained differences would erode market confidence and discourage potentially competitive inter-regional transactions. The NYISO responded by making dramatic improvements in its system modeling and further enhanced its operating procedures to bring the Day-Ahead and Hour-Ahead markets more in line with the conditions actually experienced in real-time.

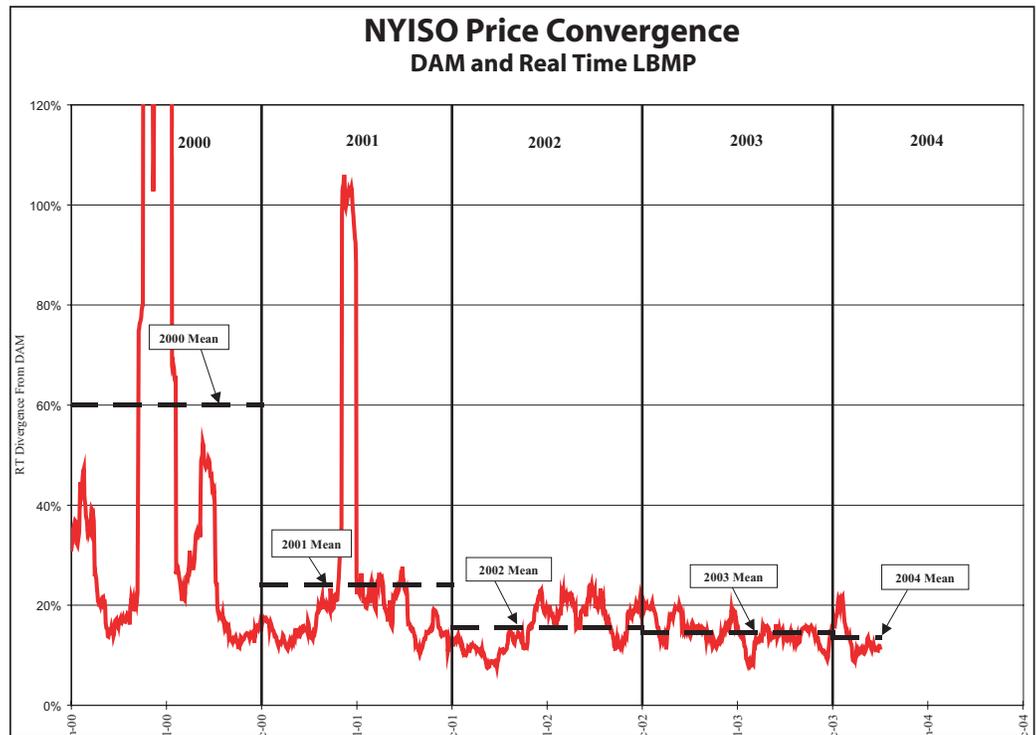
Though significant improvements have been made, further enhancements will be seen with the implementation of Standard Market Design (SMD2) later this year. Despite great strides, there are still circumstances in which price consistency between the Day-Ahead and Real-Time markets will not motivate the desired behavior from the marketplace. This typically occurs during scarcity conditions, when the system operator does not have enough resources to

meet energy and reserve demands. During these precarious times, it is desirable for energy prices to increase in a way that Market Participants will recognize and react to the condition by going to extraordinary means to supply power to the deficient market. This is done by either squeezing additional performance out of existing facilities or by voluntarily reducing load to curtail the demands on the already stressed system, or by moving power from areas that have surpluses.

To address this market reality, the NYISO has put pricing mechanisms in place to ensure that the proper price signals will emerge during true scarcity conditions, thereby encouraging suppliers to deliver needed power from adjacent areas to the NYISO when it is needed most.

Failure to incorporate scarcity pricing into the market design can have the exact opposite effect by sending false incentives to move power in the wrong direction from deficient areas to areas with surpluses.

The NYISO is also an active advocate for seams resolution on the national front, as representatives actively participate in various national forums. These groups include NERC, the North American Energy Standards Board (NAESB), and the ISO/RTO Council.



Benefits of Demand Response in New York

The NYISO has been active in expanding existing wholesale markets to permit loads to participate in both economic and reliability based markets. Inadequate demand response has been cited by FERC as a major impediment to full-functioning, efficient wholesale electricity markets. Since 2000 the NYISO has worked with Market Participants and NYSERDA to develop what many regard as the most advanced market for demand resources in the U.S.

Proportionally, the NYISO has the largest amount of demand response out

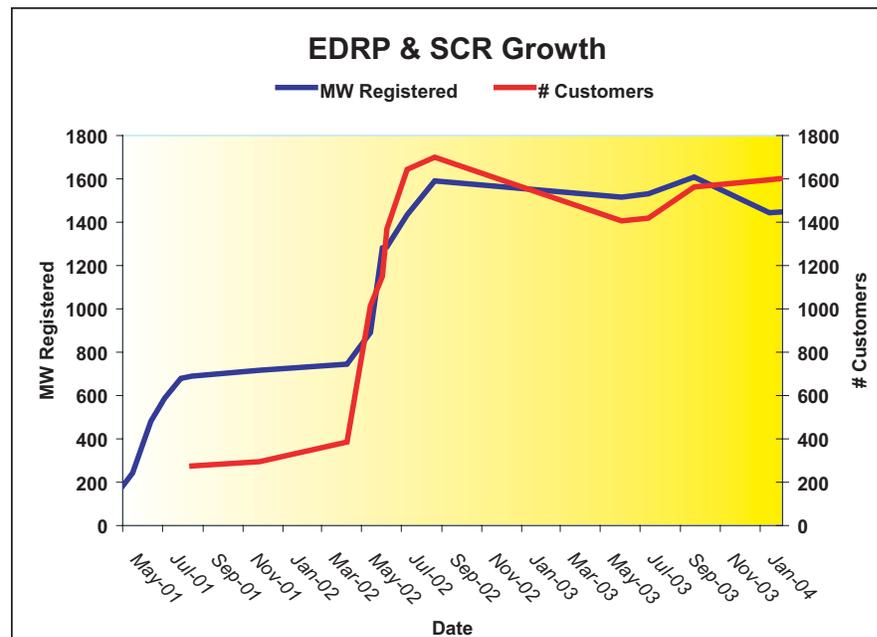
of its three neighboring northeast ISOs, on both a percentage of installed capacity and a percentage of required installed reserves basis. Nearly one-third of NYISO's installed reserve margin could be met in an emergency by demand response resources.

New York's leadership position on demand response is further highlighted by the fact that the NYISO has been asked to join a ground-breaking international effort sponsored by the International Energy Agency (IEA)

The objective of the project is to deliver the necessary methodology, business processes, infrastructure, tools and implementation plans for the rapid deployment of modern and up-to-date demand response into participating electricity markets.

The NYISO's Demand Response Programs:

- ICAP Special Case Resources (SCR)



- Emergency Demand Response Program (EDRP)
- Day-Ahead Demand Response Program (DADRP)

In developing these programs, the NYISO has been cognizant of environmental impacts, particularly as it relates to the use of emergency backup generators. The DADRP currently prohibits distributed generating units from participating in DADRP. EDRP requires that participating generators register with the NYSDEC.

ICAP SCR

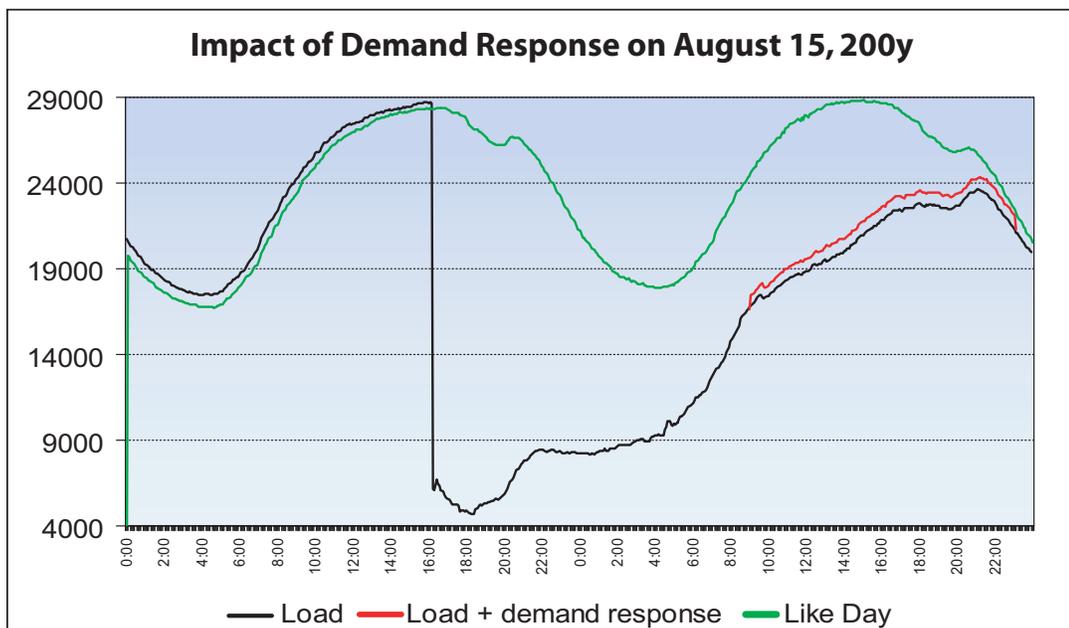
The ICAP SCR program pays retail electricity customers to provide their load reduction capability for a specified contract period. Program participants receive payments in advance for an agreement to curtail usage during times when the electric grid could be in jeopardy. Based upon system condition forecasts, participants are notified to curtail this claimed "capacity", either through the use of on-site generation and/or reducing electricity consumption to a firm power level. The program is open to interruptible loads – or local "behind-the-fence" generation greater than or equal to 100kw per zone.

EDRP

EDRP allows participants to be paid for reducing their energy consumption upon notice from the NYISO that an operating reserves deficiency or major emergency exists. The program is open to interruptible loads or local "behind-the-fence" generation greater than or equal to 100 kW per zone.

DADRP

DADRP allows loads to bid load reduction into the NYISO's day-ahead energy market. Load reduction bids are evaluated



along with generation supplier bids as part of the NYISO's Security Constrained Unit Commitment (SCUC) program.

As an indicator of success, the chart illustrates the growth in EDRP and SCR registration from May 2001 through February 2004.

2003 Program Experience

The NYISO activated the SCR and EDRP programs twice in 2003, both times in response to the August 14 blackout.

In contrast to past use of the emergency programs, the programs were activated on August 15 to help NYISO Operators restore the bulk power system following the Blackout. The figure indicates the extent to which load was able to be restored faster due to the EDRP and SCR activation.

Demand Response – The Future

In March 2004 the NYISO's Market Participants approved changes to the EDRP and SCR programs that will allow capacity credit, as well as energy payments, for on-site generation in excess of the customer's maximum load.

NYISO has proposed that the DADRP program be made permanent, and recently implemented the ability to allow third-party providers of demand response, in addition to load serving entities, to participate in the program. This change gives customers more choices in DADRP providers and should increase the number of offers submitted to the Day-Ahead Market by demand response providers.

Beyond 2004, the NYISO looks to build upon the existing demand response programs under the framework of FERC's Standard Market Design.

NYISO will be working with its Market Participants to expand upon experience with DADRP to develop programs that allow Demand Side Resources to participate in the NYISO Real-Time Energy, as well as Ancillary Services markets. Ultimately, NYISO intends to fully integrate demand participation in all of its markets alongside supply resources.

Standard Market Design - SMD2

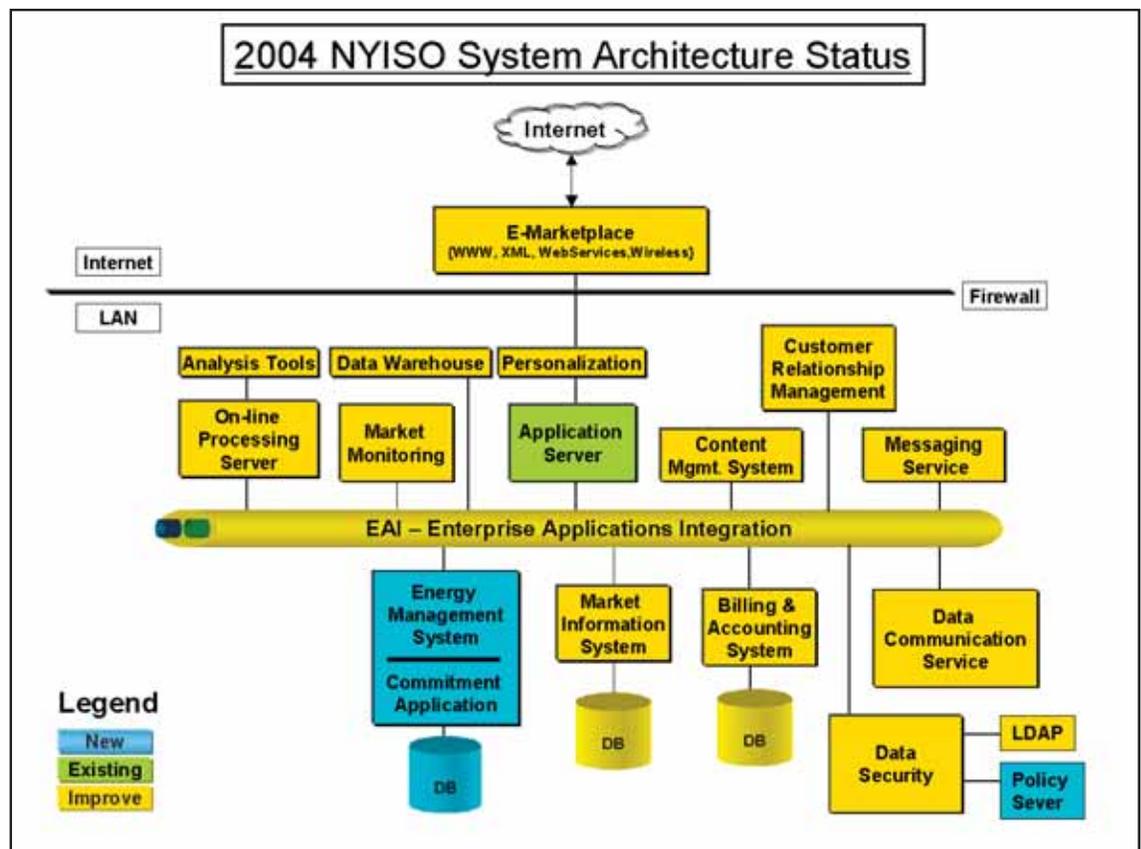
The electric energy markets of tomorrow must be flexible. They must be designed to accommodate emerging technologies, be environmentally responsible, and support an investment environment that keeps pace with the ever increasing demand for electricity.

More specifically, these energy markets must readily accommodate the performance attributes of new energy sources, incorporate conservation measures into the market design,

make the most effective use of the resources available, and provide the investment community with clear and dependable data and information.

The NYISO is currently working to implement its most ambitious project since the inception of the markets themselves – SMD2. The project, which features real-time scheduling (RTS), represents a wholesale replacement of the NYISO's in-day market software and will provide the NYISO with a state-of-the-art market and operational platform upon which to build the markets of tomorrow.

Under RTS, the NYISO's Day-Ahead, Hour-Ahead and Real-Time market solution engines will share a consistent platform, thus eliminating the chance of inconsistent prices caused by how different software packages view the power system. In addition, the Real-Time and hourly software will be able to look further ahead in time, which will allow the Real-Time dispatch and commitment decisions to be made on a more forward-looking basis. This feature will result in a more efficient commitment of 10-minute resources and will reduce the need for uplift payments to the affected generators.



Further efficiencies are anticipated, such as a two-settlement system for ancillary services, which will permit the NYISO to make more efficient ancillary service purchases through a more precise trade-off between energy and ancillary service options. Even with the extensive market efficiency gains anticipated with RTS, the NYISO is looking to further improve efficiency and eliminate market seams.

The NYISO has specified a number of market improvement initiatives that will build on the SMD2 platform and further exploit the benefits of competitive markets in the future.

Virtual Regional Dispatch

One way to increase competition is to increase the size of the market. Despite the reliability and technological barriers to larger markets, the NYISO, PJM and ISO-NE have been pursuing a concept that would allow many of the benefits to be achieved, without the cost and risk of merging both markets into a single entity.

The ISOs have developed a concept known as Virtual Regional Dispatch (VRD), where participating areas can control the flows between them in real time. Currently, the three markets only transact with each other day-ahead and hourly.

Once implemented, VRD would allow external transactions between markets to be scheduled with the same degree of flexibility and certainty as those transactions scheduled within a specific market, which is the NYISO's current practice.

To support initiatives such as VRD, improved congestion hedging mechanisms, such as Transmission Congestion Contracts (TCCs) must be established to ensure price certainty for transactions that span ISO/RTO boundaries. As part of a multi-step process, the NYISO will soon propose the introduction of TCC options at its boundaries to provide additional flexibility and hedging opportunities for Market Participants who wish to move energy and capacity between ISOs.

Unfinished Business

Since operations of the New York wholesale electricity market began in 1999, the NYISO has partnered with its Market Participants, the PSC and neighboring control areas to identify those major issues that would stand in the way of its mission to, quite simply, run a fair and equitable market and keep the lights on in New York State. So far, so good.

But, yes, there is ***unfinished business***, which brings us full circle to the Big Four recommendations within this report.

1. The Blackout of 2003 highlighted problems that can occur when just one area of an interconnected electric system malfunctions because of a failure to follow reliability standards. Last August proved that Congress must step in to make compliance mandatory, and grant the authority to regulators to assess penalties for noncompliance.
2. Of the many reports issued since the Blackout, none indicated New York operators could have taken preventative steps. However, the NYISO continues to review its own stringent standards while it heeds the 46 recommendations outlined in the most comprehensive study – the final report of the International Task Force. Continued evaluation and enhancement of New York's grid is NYISO's personal piece of unfinished business.
3. The state's Article X power plant siting law, which expired December 31, 2002, provided a streamlined process to review, approve and locate new generation facilities. While demand has flattened in Upstate, NYC and Long Island remain areas where demand is outpacing the construction of new supply sources. We urge the State Legislature to help recognize New York's unfinished business and reinstate Article X.
4. Last, the NYISO must continue to aggressively achieve its two primary functions – run fair and equitable electric markets and ensure a safe and reliable electric system for New Yorkers – by working to institute a Comprehensive Planning Process. By the end of 2004, the NYISO will have in place a process to identify and resolve the major energy issues affecting New York today and in the future, such as resource adequacy, transmission adequacy and congestion costs. It remains our charge and mission to ensure that New York continues to enjoy an abundant reliable supply of electricity.

While much progress has been made since the issuance of *Power Alert I*, there are still challenges to be met, and with the help of our Market Participants, state and federal government, we are confident that New York can resolve its ***unfinished business***.



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