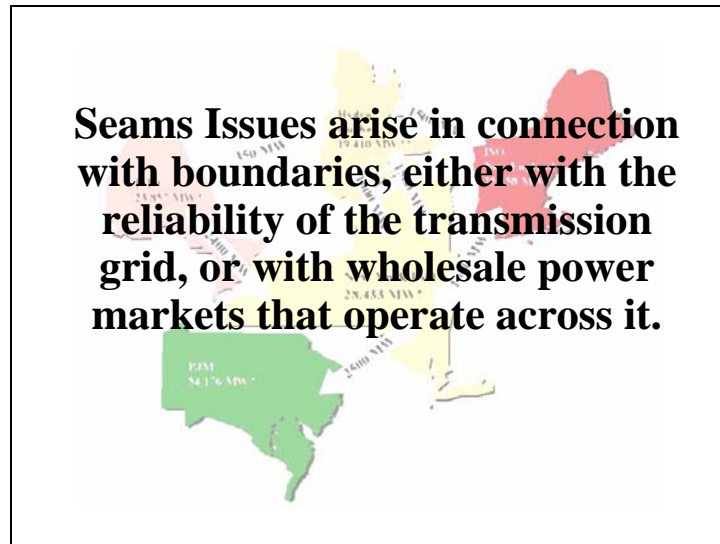


Good afternoon.

I appreciate the invitation to speak to you about the resolution of seams issues in the Northeast markets by the New York Independent System Operator and its neighboring transmission and market operators, and FERC initiatives in reducing seams issues with respect to reliability of the Northeast markets.

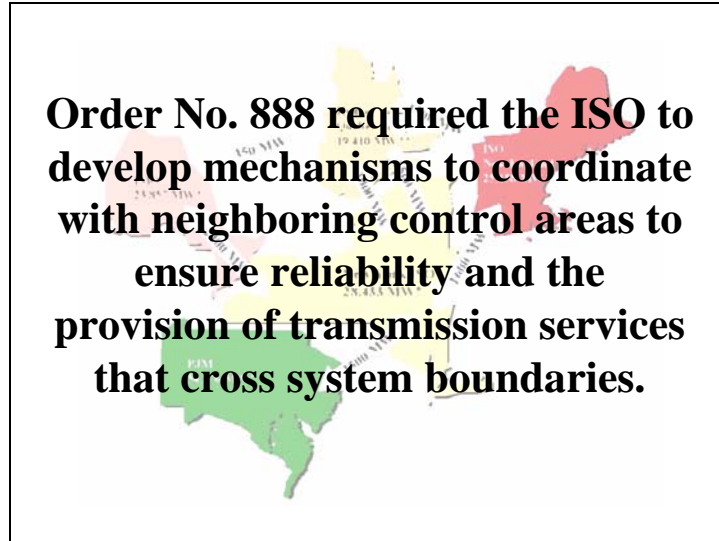


Seams are regional boundaries between specified areas in the transmission grid, such as electricity utility service territories, control areas or RTO/ISOs. Seams issues arise in connection with these boundaries, either with the reliable management and operation of a transmission grid, or with the wholesale power markets that operate across it. With the rise of regional markets under open access and increasing trade over greater distances, seams have come to play an ever more prominent role in the development of electricity markets.

Given regional boundaries, a complex set of issues arises, including what products can be traded, the appropriate degree of standardization, and degree of interregional coordination needed to manage congestion.

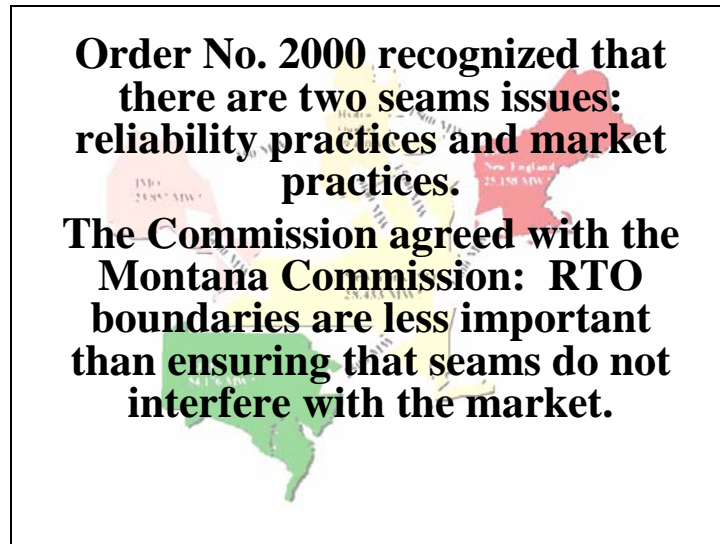
But standardization of the product will not ensure efficient trade, because the rules for trading the same product between regions vary from region to region. The nature of product definition, trading rules and congestion management between any two regions all depend on the types of markets that exist in each region.

*From an internal study by William Meroney*



The Commission has a long standing concern with the elimination of seams issues.

In the Commission's landmark Order No. 888, the Commission identified the principles it would use to assess Independent System Operator (ISO) proposals. One of these principles required the ISO to develop mechanisms to coordinate with neighboring control areas to ensure reliability and the provision of transmission services that cross system boundaries.



In the Regional Transmission Organization Notice Of Proposed Rulemaking several commenters pointed out that there was no explicit coordination requirement proposed and recommended including a function for RTO's similar to the coordination principle in Order No. 888.

The Commission's Order No. 2000 specifically cited to NERC comments in which NERC stated that there are two seams issues: reliability practices across seams and market practices across seams. Additionally, the Commission found agreement with the Montana Commission which stated that RTO boundaries are less important than ensuring that seams do not interfere with the market. The Montana Commission proposed that the Commission require consistent methods of access, pricing, and congestion management to encourage seamless trading. Thus, the concept of large "seamless trading areas" for power emerges as a "scope" issue that is distinct from the scope of the region for organizing the transmission functions of an RTO.

However, scope does not solve all seams issues. There will always be border issues. The major dimensions are reliability and economic seams, neither of which respect lines drawn on a map.



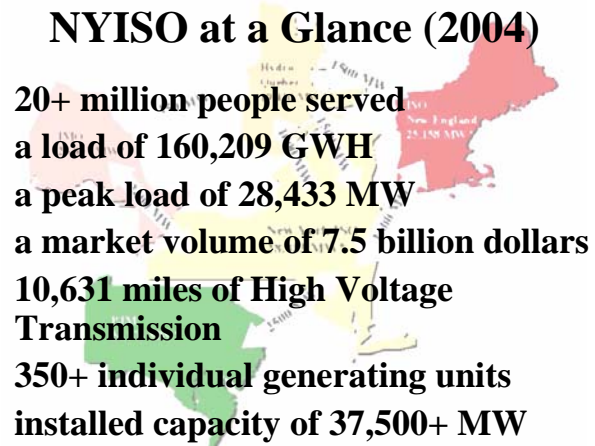
NYISO, as we currently know it, can be viewed as the recognition for the need for inter-regional coordination and cooperation. Following the "Northeast Blackout of 1965", New York's eight largest electric utilities joined together in order to reduce the probability of another major power interruption and created the New York Power Pool(NYPP), combining the member's knowledge and technical resources in power generation and transmission.

The NYPP coordinated the interconnected transmission system, designed and operated a state-of-the-art control center and trained Pool and member system personnel. An economic dispatch program, developed by the NYPP, provided New York State electric customers with reliable power at the lowest cost available.

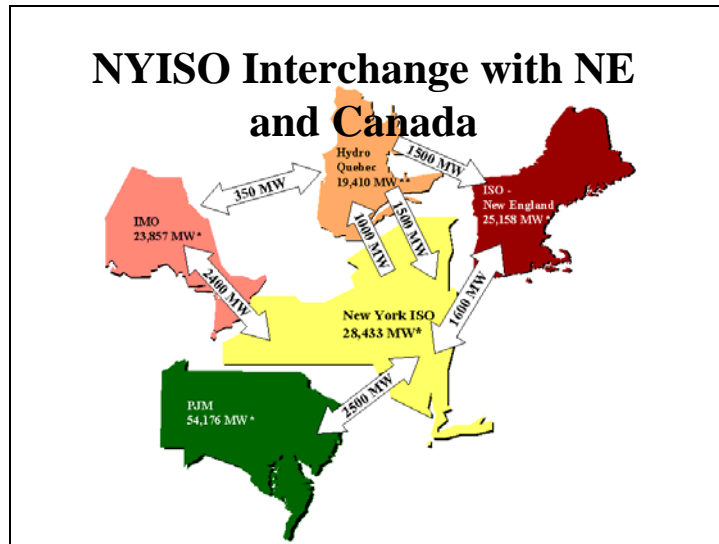
In the mid 90's the Commission and the New York State Department of Public Service introduced new policies to redefine the rules in which electricity could be generated, dispatched, transmitted, purchased and sold. In 1993, responding to federal and state regulatory policy changes, the NYPP formed the Committee for the 21st Century. Their assignment was to initiate a plan that would improve upon the economic dispatch system in light of major changes occurring in the New York electric industry. Substantial expansion of non-utility generation and additional rulings by Commission required the Committee to plan for open, nondiscriminatory access to the transmission system.

In 1997, the NYPP member systems filed a proposal with Commission, which dissolved the New York Power Pool and replaced it with the New York Independent System Operator. On December 1, 1999, The New York Independent System Operator officially assumed control and operation of the state's electric power grid from the New York Power Pool.

## **NYISO at a Glance (2004)**



**20+ million people served**  
**a load of 160,209 GWH**  
**a peak load of 28,433 MW**  
**a market volume of 7.5 billion dollars**  
**10,631 miles of High Voltage Transmission**  
**350+ individual generating units**  
**installed capacity of 37,500+ MW**



New York interconnects with four separate organized markets – ISO-NE, PJM, IMO, and Hydro Quebec. Clearly any issues that arise at these borders could have significant reliability and economic impact in other regions. The combined area of these markets:

Serves a combined load on the order of 155,000 MW

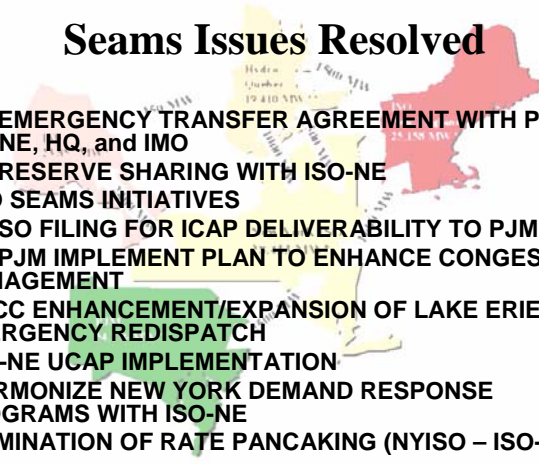
Involves over 50,000 miles of transmission lines

Serve a population on the order of 70,000,000 people

Includes a combined customer load greater than the entire Western Interconnection

Includes major political, financial and cultural centers of the country and the world

*Graphic courtesy of NYISO*



### Seams Issues Resolved

- NY EMERGENCY TRANSFER AGREEMENT WITH PJM, ISO-NE, HQ, and IMO
- NY RESERVE SHARING WITH ISO-NE
- IMO SEAMS INITIATIVES
- NYISO FILING FOR ICAP DELIVERABILITY TO PJM
- NY/PJM IMPLEMENT PLAN TO ENHANCE CONGESTION MANAGEMENT
- NPCC ENHANCEMENT/EXPANSION OF LAKE ERIE EMERGENCY REDISPATCH
- ISO-NE UCAP IMPLEMENTATION
- HARMONIZE NEW YORK DEMAND RESPONSE PROGRAMS WITH ISO-NE
- ELIMINATION OF RATE PANCAKING (NYISO – ISO-NE)

This slide illustrates the breadth and depth of seams issues. NYISO list some 45 seams issues as having been resolved since the year 2000.

The following is detail for the listed Seams Issues Resolved

**NY EMERGENCY TRANSFER AGREEMENT WITH PJM, ISO-NE, HQ, and IMO** – ensures that energy will flow across control area boundaries during emergency situations

**NY RESERVE SHARING WITH ISO-NE** – Phase 1 allows NY to include 300 MW from ISO-NE as 30-min. reserves. Phase II (sharing of up to 100MWs of 10 minutes reserves) effective 6/15/01.

**IMO SEAMS INITIATIVES** – implemented a procedure that permits staggered HAM closing times – IMO generally closes their market to MP's 2 hours before the hour – a process is in place that will evaluate their accepted NY import/export bids in the hour-ahead commitment.

**NYISO FILING FOR ICAP DELIVERABILITY TO PJM** – NYISO filed with FERC on May 24 to modify its tariff to provide delivery of ICAP purchased by PJM from NY suppliers, allowing NY generators the opportunity to meet the PJM deliverability requirement and participate in the PJM ICAP market.

**NY/PJM IMPLEMENT PLAN TO ENHANCE CONGESTION MANAGEMENT** - Under specific conditions between NY and PJM through control room operating procedures. The pilot provides a means to relieve congestion in western PJM by shifting generation in NYISO.

**NPCC ENHANCEMENT/EXPANSION OF LAKE ERIE EMERGENCY REDISPATCH** – NPCC FERC filing to add the MISO as a signatory and incorporate new settlement provisions.

**ISO-NE UCAP IMPLEMENTATION** – ISO-NE implemented NY-based UCAP market as part of *NE SMD 1.0*. New England market's is similar to New York's schedules and auction processes. With the opening of the ISO-NE markets, the same UCAP product is now used throughout the Northeast Region (PJM, NY and ISO-NE)

**HARMONIZE NEW YORK DEMAND RESPONSE PROGRAMS WITH ISO-NE** – NYISO Demand Response staff have met several times with their counterparts in PJM and New England during 2003 and 2004 and determined that much harmonization has occurred since the original recommendations.



For example:

All three ISOs have similar emergency programs called under very similar system conditions with similar or identical price floors (\$500 in NYISO and PJM, \$500 or \$350 in ISO-NE)

All three ISOs have programs under which Demand Response can obtain ICAP credit by virtue of participation in an emergency/reliability program

All three ISOs have, or plan to have, planning processes that will, in general terms, allow Demand Response to compete alongside transmission and generation alternatives to meet economic/congestion needs.

All three ISOs have adopted Small Customer Aggregation programs that allow small customers lacking interval meters to participate in their demand response programs.

All three ISOs presently allow on-site generation to participate in their emergency DR programs.

All three ISOs have, or are seeking participant/FERC approval of fundamentally similar day-ahead demand response programs.

All three ISOs are in fundamental agreement that DR has a role to play in providing ancillary services such as reserves and that DR should be appropriately integrated into each ISO's ancillary service markets.

**ELIMINATION OF RATE PANCAKING (NYISO – ISO-NE)** - The elimination of export fees between ISO/RTO regions is an important objective of FERC, and was implemented in conjunction with the ISO-NE RTO proposal.



Seams initiatives currently under way. Again, not a full listing of open projects and proposed projects, but as you can see, these are extremely significant projects.

#### **NPCC EXPANSION OF REGIONAL RESERVE SHARING**

NPCC will coordinate the implementation of a 100 MW reserve sharing pilot among NPCC members and PJM to improve regional reserve market efficiency.

#### **REGIONAL RESOURCE ADEQUACY MODEL (RAM) GROUP**

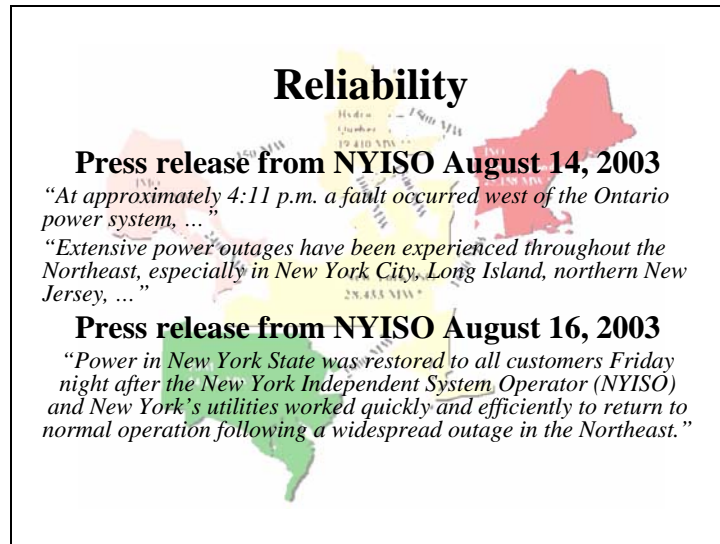
The Regional Resource Adequacy Model (RAM) Working Group (formerly the JCAG Working Group) was set up to develop longer-range UCAP markets in NY, PJM and ISO-NE than currently exist.

#### **COORDINATION OF INTERREGIONAL PLANNING**

In January 2003, a Liaison Task Force was formed including all NPCC members as well as PJM to develop ways to improve the coordination of planning for the Northeast region. As a result, there has been considerable improvement in communication on planning issues. During 2004, ISO-NE, NYISO and PJM solicited stakeholder input on a draft protocol agreement. In general, stakeholders were very supportive of moving ahead with the protocol.

Milestones and timetable:

- The ISOs developed a draft coordinated planning protocol document, incorporated stakeholder input and finalized the protocol document in December 2004. This document provides the basis for standardizing data and information exchanges, developing a coordinated plan, and initiating a joint stakeholder process. The IMO, Hydro Quebec (Transenergie) and New Brunswick Power, while not parties to the protocol, have agreed to participate on a limited basis in order to ensure better coordination for the benefit of the Northeast region.
- The initial scope of work, for a Northeast Coordinated System Plan began in Summer 2004. It includes better coordination of information sharing by harmonizing the timing, development and exchange of data bases and modeling assumptions used in planning analysis, addressing cost allocation issues, the establishment of standardized confidentiality agreements and building upon joint planning activities already under way.
- The intermediate term goal is to develop and issue an initial draft consolidated system plan that can be issued to stakeholders by March 31, 2005.
- A region-wide planning process will be implemented which includes an open stakeholder advisory group and the issuance of a region-wide coordinated plan. This region-wide planning process would be supplemental to each ISO or RTO's individual and more detailed transmission planning process.
- Implementation Date for Region-wide Planning Process: No later than June 30, 2005.



**Reliability**

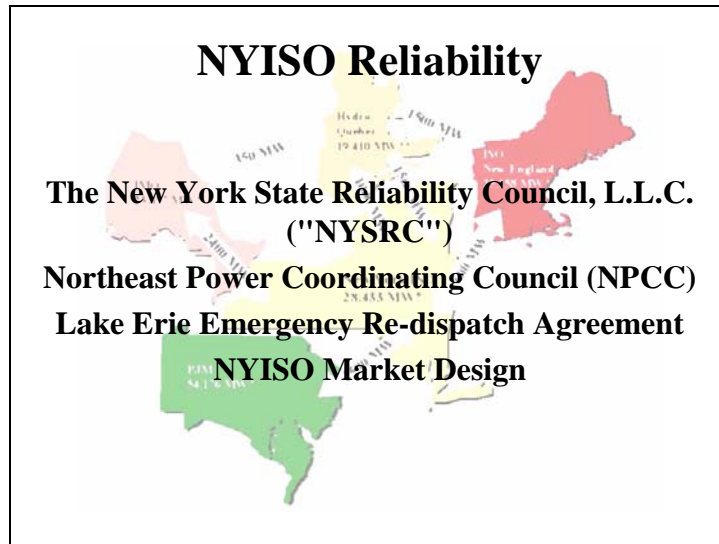
**Press release from NYISO August 14, 2003**  
*“At approximately 4:11 p.m. a fault occurred west of the Ontario power system, ...”*  
*“Extensive power outages have been experienced throughout the Northeast, especially in New York City, Long Island, northern New Jersey, ...”*

**Press release from NYISO August 16, 2003**  
*“Power in New York State was restored to all customers Friday night after the New York Independent System Operator (NYISO) and New York’s utilities worked quickly and efficiently to return to normal operation following a widespread outage in the Northeast.”*

Market seams issues aside, the events of August 14, 2003 vividly bring forward the reliability issues for all market operators, whether in RTOs, ISOs or other markets. The blackout respected no borders as it raged through the Midwest, Canada and the Northeast. NYISO responded quickly and efficiently to restore the markets in New York.

NYISO, in its blackout report, reinforced its endorsement of the recommendations made by the U.S.-Canada Power System Outage Task Force and NERC, while recommending improved emergency response communications and procedures within the New York Control Area, and the expansion of restoration training.

NYISO continues to track and report its response to the Task Force’s 46 recommendations, and continues to urge Congress to pass mandatory and enforceable reliability standards. Reliability standards have been mandatory in New York, and have exceeded the voluntary standards set by the North American Electric Reliability Council (NERC).



NYISO coordinates through a variety of means to ensure reliable transmission service. Among these are:

**New York State Reliability Council, LLC (NYSRC)** *from website*

The New York State Reliability Council, L.L.C. ("NYSRC") is a not-for-profit entity whose mission is to promote and preserve the reliability of electric service on the New York State Power System by developing, maintaining, and, from time-to-time, updating the Reliability Rules. The NYSRC's mission also includes monitoring compliance with the Reliability Rules. The NYSRC is governed by an Executive Committee consisting of representatives from the Transmission Owners and the Power Authority of the State of New York; the Wholesale Sellers sector; the Large Consumers sector; the Municipals and Electric Cooperatives sector; and four members not affiliated with any Market Participants.

**The Northeast Power Coordinating Council (NPCC)** is an international electric regional reliability council which was formed shortly after the 1965 Northeast Blackout to promote the reliability and efficiency of the interconnected power systems within its geographic area.

**Lake Erie Emergency Re-dispatch Agreement-** To facilitate emergency re-dispatch among participating control areas surrounding Lake Erie to avoid the shedding of firm load.

In addition, NYISO incorporates into its market design features that support reliability within the NYISO market.

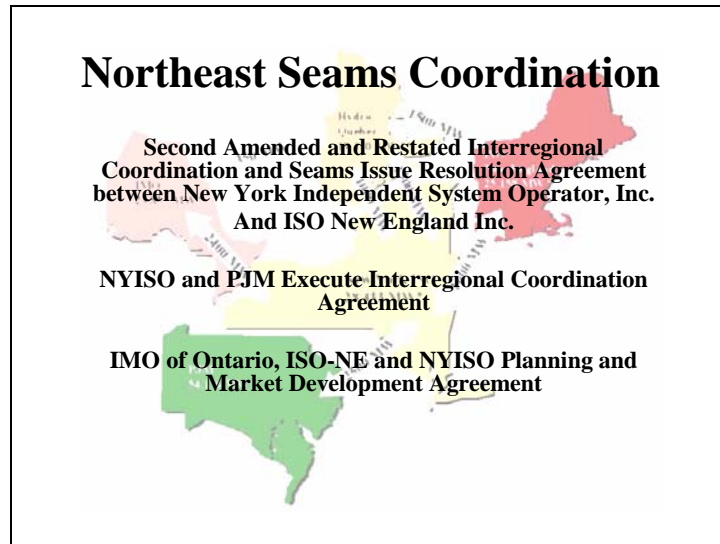
Examples of market design elements that support reliability are:

**Storm Watch** - Storm Watch provides for securing a specific area (i.e. the In-City locality) to a double contingency when thunder storms are within one hour of the New York City area and tracking in that direction.

**Locational ICAP requirements** – Requires percentage of ICAP purchased be within load pockets.

**Locational Reserves requirements** – Requires percentage of reserves purchased be within load pockets.

**Demand Reduction Programs in NYISO** - Emergency Demand Response Program (The EDRP provides a mechanism for load reduction during emergency conditions and is open to interruptible loads and standby generation resources), ICAP Special Case Resources Program (A reserve capacity program that contracts resources to meet NYISO supply requirements over a specified contract period) and the Day-Ahead Demand Response Program (The DADRP allows demand side resources to bid load reduction in the day-ahead energy market and be paid for verified performance of scheduled load reduction).



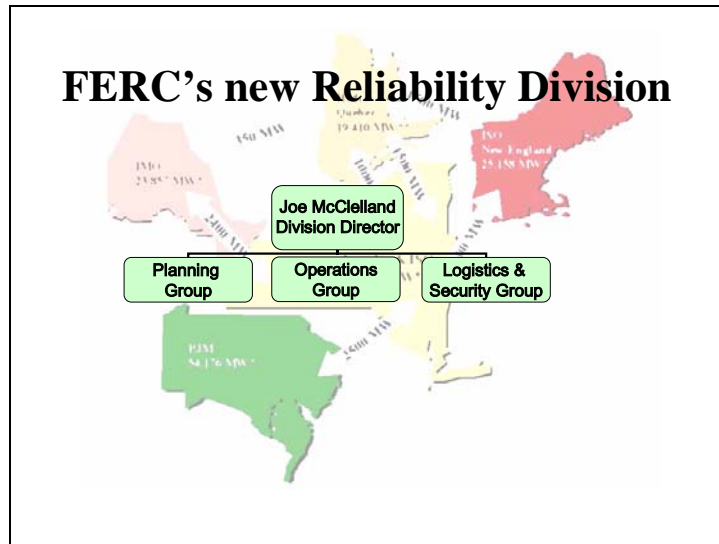
The recognition of the importance of resolving seams issues has resulted in the establishment of various agreements between the market operators in the Northeast (including the Canadian markets) to provide a formal process within which seams issues may be addressed.

#### **Planning- NYISO (local requirements) vs. NE (regional requirements)**

In January 2003, a Liaison Task Force was formed including all **Northeast Power Coordinating Council** members as well as PJM to develop ways to improve the coordination of planning for the Northeast region. As a result, there has been considerable improvement in communication on planning issues. During 2004, ISO-NE, NYISO and PJM solicited stakeholder input on a draft protocol agreement. In general, stakeholders were very supportive of moving ahead with the protocol.

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Congress gave FERC an extra \$5 million dollars this year for improving grid reliability, and FERC used it to established a new reliability division.

Existing and new staff formed the new division, complemented with outside industry experts.

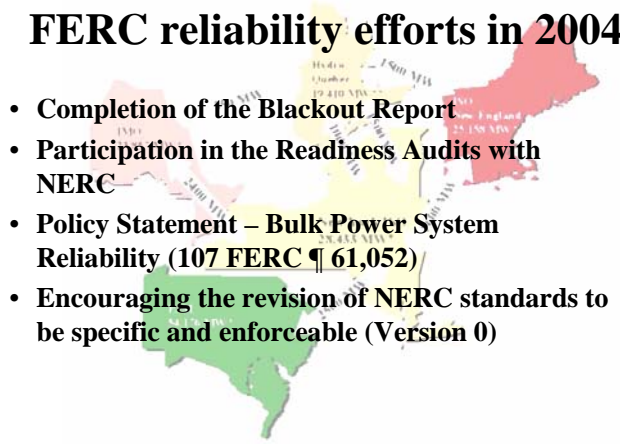
The Division will concentrate on three areas: Planning, Operations, and Logistics and Security

Planning efforts will include the identification and investigation of areas of congestion

Operations activities will include the review of the O&M activities of transmission owners

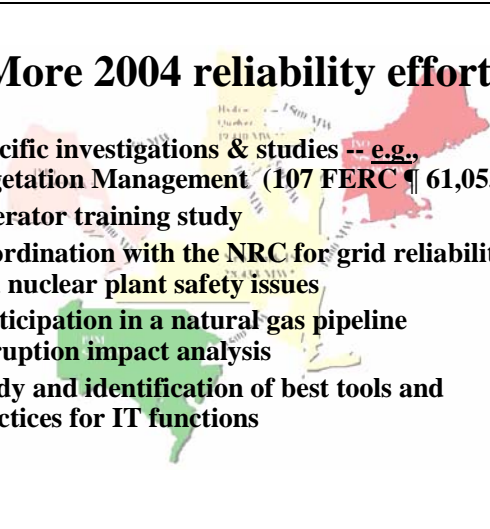
Logistics and security efforts will review areas such as cost recovery and cyber security

## **FERC reliability efforts in 2004**



- **Completion of the Blackout Report**
- **Participation in the Readiness Audits with NERC**
- **Policy Statement – Bulk Power System Reliability (107 FERC ¶ 61,052)**
- **Encouraging the revision of NERC standards to be specific and enforceable (Version 0)**

- The FERC undertook a a number of new reliability activities this year.
  - First and most important was the Final Blackout Report, which issued April 5. Most of the other efforts were undertaken to follow through on implementing its recommendations.
  - FERC directed First Energy – the company is whose service area the blackout began –to hire an independent consultant to assess the need for improved voltage support in Northeast Ohio and report to the Commission
- NERC readiness audits, FERC participation – continues
- FERC issued a reliability policy statement in April setting out several new policies, e.g., tariff obligation: good utility practice – includes following NERC and RRC rules.
  - We strongly encouraged NERC to revise its rules to be more specific and enforceable, and do so on a faster timetable (result: Version 0 was balloted in 2004, instead of 2006.)



### More 2004 reliability efforts

- **Specific investigations & studies -- e.g., Vegetation Management (107 FERC ¶ 61,053)**
- **Operator training study**
- **Coordination with the NRC for grid reliability and nuclear plant safety issues**
- **Participation in a natural gas pipeline disruption impact analysis**
- **Study and identification of best tools and practices for IT functions**

We did several other investigations and studies. I'll mention just two others:

We required all transmission owners in the U.S., whether subject to FERC rate regulation or not, to report to us on their vegetation management practices, that is, trimming trees – line by line. And we sent a report to Congress on the our findings, recommending among other things that the industry needs to develop and enforce better VM standards. NERC is now developing such standards.

We have recently begun, in cooperation with NERC, a study of actual transmission operator training practices. This study will also examine electric industry “best practices,” and lessons that might be learned from the best operator training practices in other areas, such as training for civil and naval nuclear reactor operators, and training for air traffic controllers.

Note on status:

**Specific investigations & studies -- e.g., Vegetation Management (107 FERC ¶ 61,053) - completed**

**Operator training study - underway**

**Coordination with the NRC for grid reliability and nuclear plant safety issues - underway**

**Participation in a natural gas pipeline disruption impact analysis - underway**

**Study and identification of best tools and practices for IT functions – underway; almost completed.**





### **Possible future FERC initiatives**

- **Cyber security evaluations of SCADA systems and IT platforms**
- **Reactive power oversight, including planning, operations, and compensation**
- **Transmission planning oversight including adequacy and extreme contingency plans**
- **Work that will be required by any reliability legislation – various rulemakings**

FERC has plans for further reliability initiatives. I'll mention just two very different efforts: spare equipment and reliability legislation

1. We have begun a study of the need for spare transformers and how to pay for a inventory of spare transformers. Losing a key transformer could do significant damage to the grid. There appear to be many types different types of custom designed transformers and few or no spares in inventory. Large transformers are manufactured overseas and take a long time to order, build and transport. These facilities are expensive, not every company needs its own inventory if it can rely on others. Is there a value to developing fewer, more standardized types transformers to facilitate replacement? Is there a way for companies then to share a common inventory in each region and share in the cost of inventory?
2. If Congress passes reliability legislation, FERC will have new and clearer reliability authority and responsibility. We have been preparing for passage of this law: internally, by developing various contingency drafts rules to implement it; and externally, especially by conferring with NERC and Canadian government officials.