



# **Dealing with Seams Issues**

## ***A Report from the Northeast***

***Charles A. King***

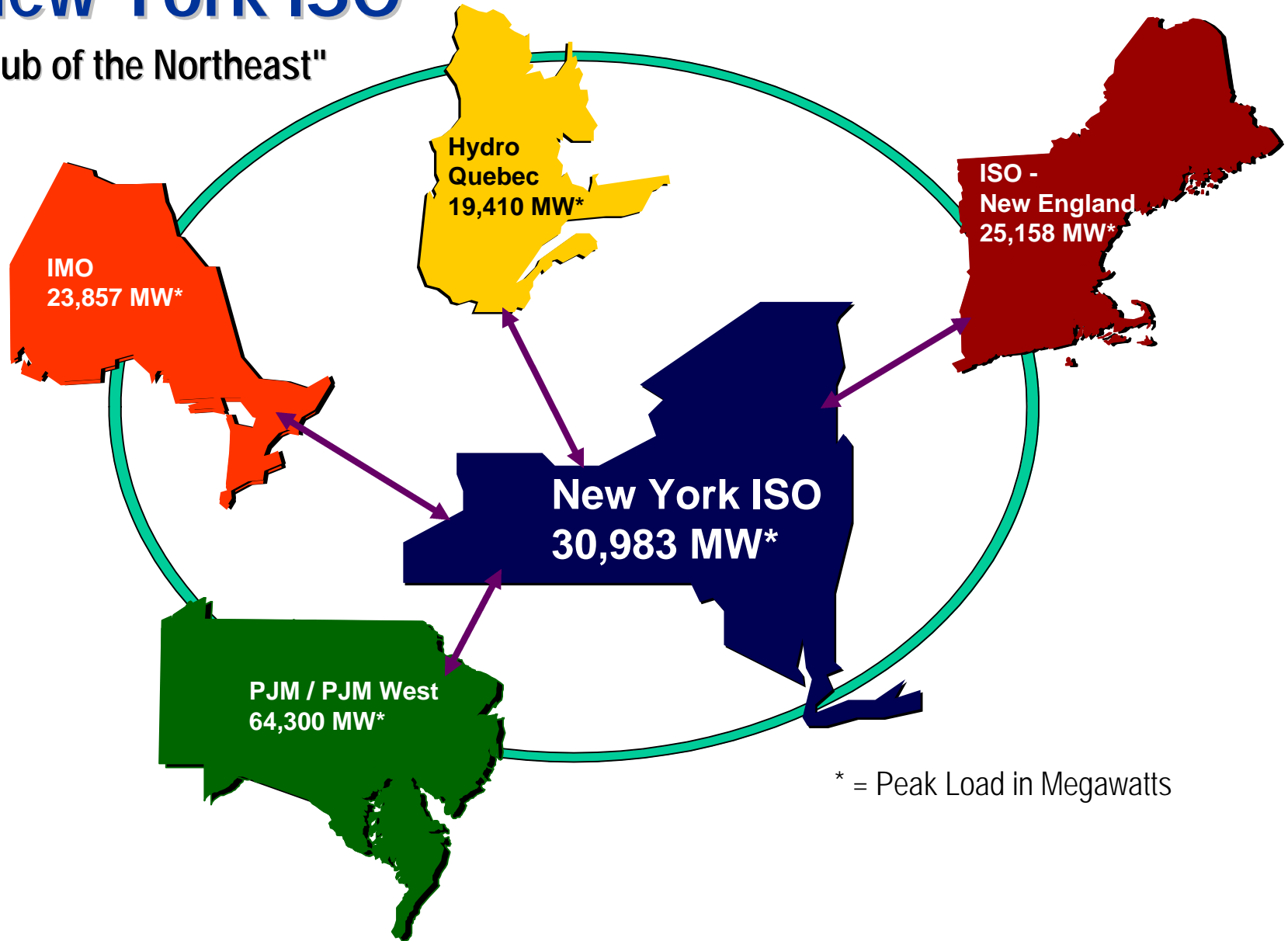
***Vice President NYISO Market Services***

**April 8, 2003**

**North American Energy Standards Board  
Fort Lauderdale, Florida**

# New York ISO

"Hub of the Northeast"



\* = Peak Load in Megawatts

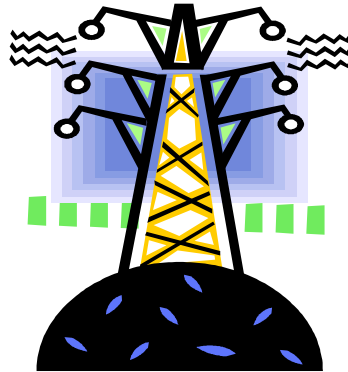
# What are the Seams?

## ✓ Definition :

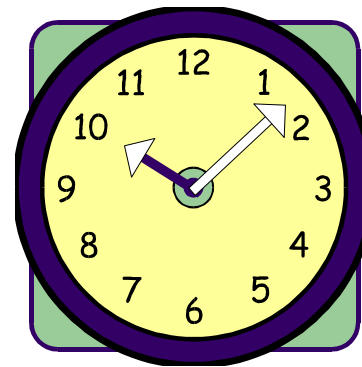
- *Seams Issues are barriers and inefficiencies resulting from equipment limitations and differences in market rules and designs, operating and scheduling protocols, and other control area practices which inhibit or preclude the ability to transact capacity and energy across control area boundaries.*

# Where are the Seams?

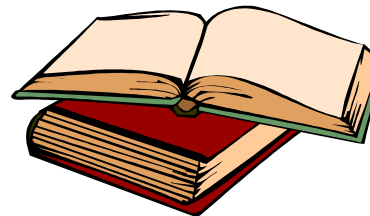
✓ **Spatial**



✓ **Temporal**

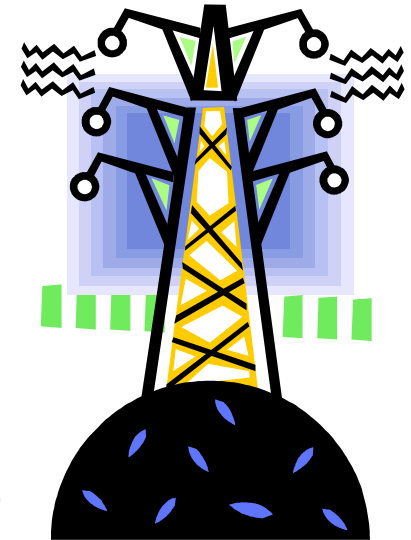


✓ **Administrative**



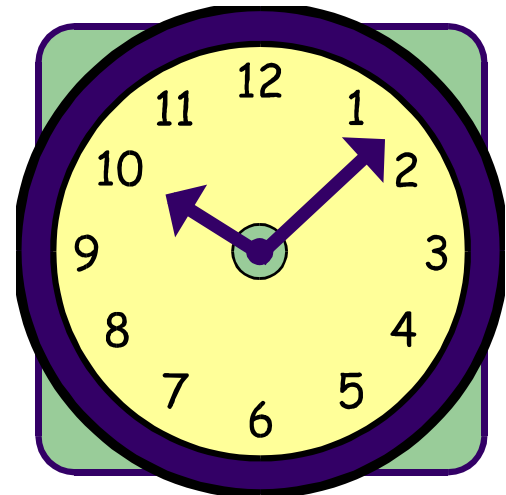
# Spatial Seams

- ✓ Visibility of System Operations & Modeling
- ✓ Transmission Capability (TTC/ATC)
- ✓ Hourly Schedule Ramp Limits
- ✓ Schedule Thresholds (1 MW)
- ✓ External Control Area System Models (Proxy)



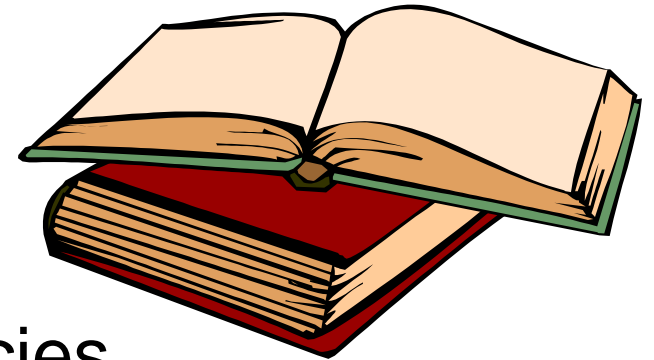
# Temporal Seams

- ✓ Control Area Scheduling Frequency
- ✓ Market Closing / Posting Times
- ✓ Auction Frequency



# Administrative Seams

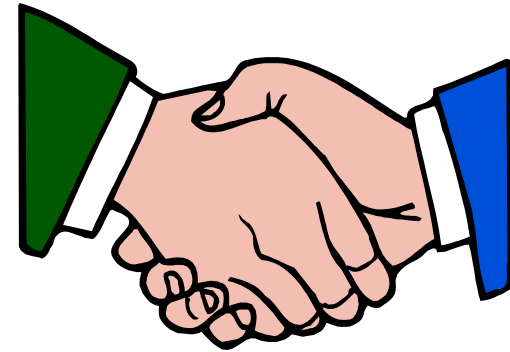
- ✓ Reservation Scheduling Rules
- ✓ Bidding Rules & Protocols
- ✓ Operations Procedures & Policies
- ✓ Interconnection Protocols
- ✓ Resource Deliverability Requirements (ICAP, A.Services)



# Seams can have an Adverse Impact on ...

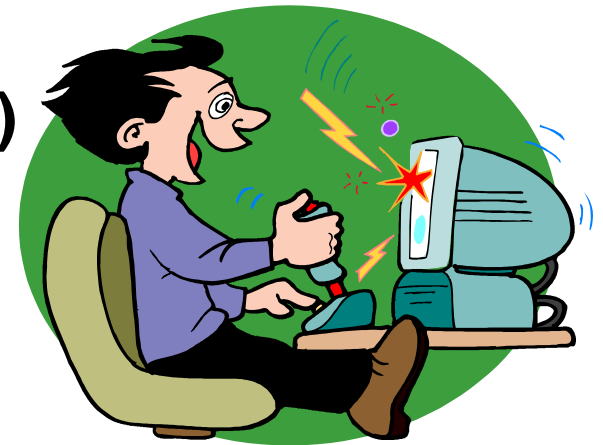
## ✓ Efficiency (Market Liquidity)

- *Transaction Flexibility*
- *Price Certainty*
- *Ability to Manage Risk*
- *Market Confidence*



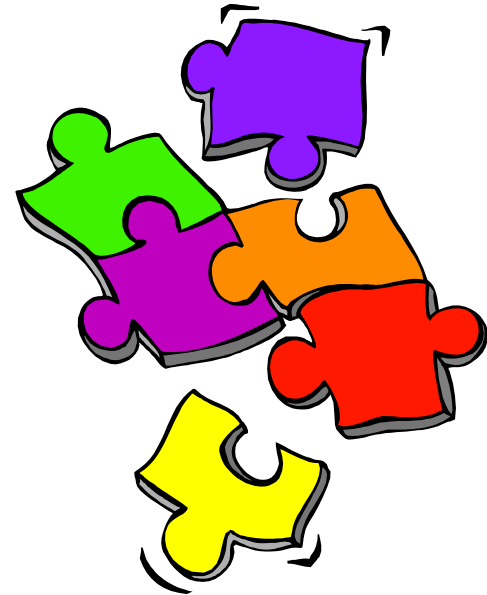
## ✓ Effectiveness (Market Optimization)

- *Inappropriate Price Signals*
- *Gaming Opportunities*
- *Counterintuitive Transactions*



# Seams are a Necessary Feature in the Transition to Open Markets

- ✓ Historical Development of the Grid Cannot be ignored
- ✓ Political/International Boundaries Exist
- ✓ Cannot Secure the Entire Eastern Interconnection with a Single Solution



# Technology Limitations Exist

- ✓ Network Solutions (size, speed)
- ✓ Metering / Telemetry
- ✓ Data Handling



# For now, we must learn to live with our Seams

- ✓ Look for opportunities to...
  - *Adopt similar market rule sets,*
  - *Remove barriers to market entry,*
  - *Improve data / information handling*
  - *Enhance transaction management,*
  - *Improve operations coordination and visibility,*
  - *Develop improved user-interfaces.*



# Major Seams Resolution Initiatives

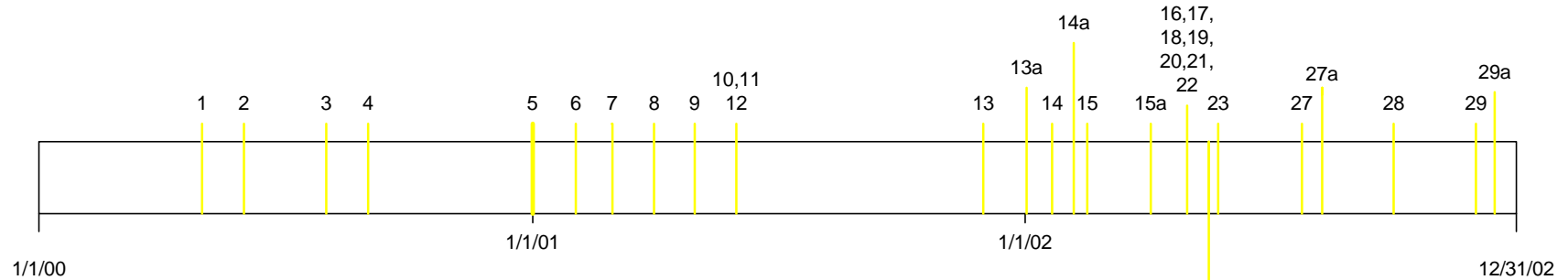
- ✓ Removal of Export Charges between control areas (Rate Pan-caking Elimination)
- ✓ Improve real-time use of transmission interfaces – Regional Dispatch Coordination
- ✓ Develop a common product definition and rules for Capacity Trading – Resource Adequacy Model (RAM) process

# Status of Seams Projects

## *Early 2003 Deliverables*

Project	Due Date	Status
1. Controllable Line Scheduling	<ul style="list-style-type: none"><li>▪ January 28<sup>th</sup></li><li>▪ Complete</li></ul>	<ul style="list-style-type: none"><li>▪ SCUC changes implemented to optimize scheduling of controllable lines with IMO to better reflect available real-time control actions</li></ul>
2. Open Scheduling System (OSS)	<ul style="list-style-type: none"><li>▪ Oracle 9i - March 9<sup>th</sup></li><li>▪ Complete</li><li>▪ OSS - Week of April 7<sup>th</sup></li></ul>	<ul style="list-style-type: none"><li>▪ OSS Delivery dependent on Oracle 9i deployment and subsequent testing of OSS application with the new version</li></ul>
3. ISO-NE - SMD 1.0	<ul style="list-style-type: none"><li>▪ March 1<sup>st</sup></li><li>▪ Complete</li></ul>	<ul style="list-style-type: none"><li>▪ SMD markets operational as of March 1<sup>st</sup></li></ul>
4. ISO-NE - ICAP Market	<ul style="list-style-type: none"><li>▪ March deployment</li></ul>	<ul style="list-style-type: none"><li>▪ ICAP auctions to be initiated for an effective date of April 1<sup>st</sup></li></ul>

# Completed Northeast ISOs "Seams" Projects (2000 - 2002)



## Reference to Above Timeline of Projects \*

### 2000 Seams Projects

1. May - NY Emergency Transfer agreement with PJM
2. June - NYISO Data Feed for PJM E-data tool
3. August - NY Emergency Transfer agreement with New England
4. September - NY prevention of transaction bid production cost guarantee gaming

### 2001 Seams Projects

5. January - PJM changes timing requirements
6. February - NY reserve sharing with ISO-NE
7. March - NY transaction curtailment notification messages
8. April - PJM modifies NYPP-E /NYPP-W LMP definition
9. May - NY Emergency Transfer Agreement with HQ
10. June - NY's implementation of transaction scheduling desk
11. June - PJM implementation of CSS
12. June - PJM/NY coordination of in-day transaction schedules to help control ramping issues
13. December - NY multi-hour block transactions

### 2002 Seams Projects

- 13a. January - ISO-NE and NYISO announce agreement to establish common market design and evaluate a single RTO
14. January - PJM implements NYIS interface LMP
- 14a. January - PJM and MISO announce plan to develop a joint and common wholesale market
15. February - NY transaction pre-scheduling
- 15a. April - PJM and Allegheny Power System form PJM West
16. May - ISO-NE changes to ICAP rules
17. May - ISO-NE rule changes to permit/facilitate SNETs from ISO-NE to NY
18. May - NY transactions reinstatement
19. May - NY hour-ahead closing time changed from 90 to 75 minutes
20. May - Interim transaction checkout between NYISO & ISO-NE
21. May - IMO seams initiatives
22. May - NY Emergency Transfer Agreement with IMO
23. May - NYISO filing for ICAP deliverability to PJM
- 23a. June - NY and NE Area Control Area (ACE) diversity exchange initial deployment
24. June - Display TTC /ATC for all interfaces on NPCC website
25. June - NY/PJM implement plan to enhance congestion management
26. June - NY and NE Area Control Error (ACE) diversity exchange initial deployment
27. July - NY in-day commitment and scheduling enhancements
- 27a. August - NPCC enhancement / expansion of Lake Erie emergency redispatch
28. October - NY interconnection agreement with HQ/TE \*\*
29. December - Coordination of controllable tie lines between (Phase-Angle Regulators) between NY and PJM
- 29a. December - PJM implements spinning reserves market

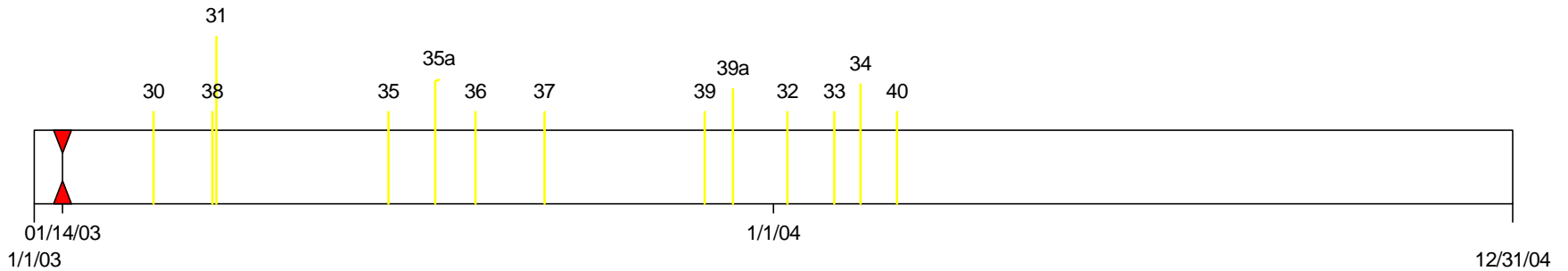
\* Descriptions of these projects may be found on the accompanying sheets.

\*\* Dates change - see detailed description document.

Revised 01/13/2003

# Ongoing Northeast ISOs "Seams" Projects

(2003 - 2004)



## Reference to Above Timeline of Projects \*

### 2003 Seams Projects (projected)

- 30. March 1 - ISO-NE to implement SMD 1.0
- 38. March 30 - Open-scheduling system (OSS) for seams issues
- 31. April 1 - ISO-NE ICAP implementation
- 35. June - Lake Erie system redispatch project implementation - (on hold)
- 35a. Summer 2003 - Maritimes become participants in ACE Diversity Interchange Process
- 36. NY new trading hubs
- 37. NY TCC options for external interfaces
- 39. Establish requirements for external thirty-minute reserves participation in NYISO

### 2004 Seams Projects (projected)

- 32. NY Real-time Scheduling (RTS) implementation \*\*
- 33. Regional RAM Group implementation \*\*
- 34. Harmonize NY Demand Response Programs with ISO-NE \*\*
- 40. NYISO to implement SMD 2.0 \*\*

### Issues Under Discussion \*\*\*

- Transmission Service Charge Discounting
- TTC / ATC
- Multiple Transmission Service Charge Invoicing
- Transmission Interconnection Procedures
- Controllable Line Scheduling
- Inter-Control Area Congestion Management/Parallel Flow Management
- Cross-Border Price Convergence
- Improved Independent Control Area Ramp Limit Information
- Multiple Proxy Buses For Free-Flowing Interfaces
- Partial Unit ICAP Sales
- Partial Unit ICAP Sales
- Different Transaction Ramping Rules
- Rate Pancaking

\* Descriptions of these projects may be found on the accompanying sheets.

\*\* Dates change - see detailed description document.

\*\*\* Issues that have been brought to attention of the ISOs but have either not yet resulted in a specific initiative or the initiative has not been approved as a project by the stakeholder process.

Revised 01/14/2003

# Examples of Seams Progress

- ✓ Item 32: Real-Time Scheduling/SMD2
  - *NYISO– on track for Q1-2004 completion*
  - *NYISO coordinating rule changes with neighboring ISOs*
  
- ✓ NYISO-PJM Congestion Redispatch Pilot Activation
  - *Used 6 times during November*
  - *Demonstrates successful regional collaboration*

# Status PJM-MISO Reliability Seams Issues

Concerns with Market-to-Non-Market flows and with Parallel Flows

Parallel Flows – Congestion Mgt	Proposal
Parallel Flows – AFC Coordination	System Ready – pulling data from MISO
Contract Tie Capacity	Tied to Congestion Mgt Solution
Different Definitions & Procedures	Initial Drills Completed and Issues Identified
Operating Procedures for Voltage Collapse	Agreed Upon Procedure
Outage Maintenance Coordination	Agreed Upon Procedure
Access & Expansion Planning	Issues Identified

**Solutions to be included in PJM and MISO Reliability Coordinator “Reliability Plans” which will receive Stakeholder review and will require NERC approval**

# MISO – PJM Congestion Management Proposal Elements

*Determining List of Coordinated Flowgates*

*Determining Economic Dispatch Flows*

*Determining Total Market Flows*

*Determining NNL Flows*

*Tagging Granularity – Uploading Marginal Units*

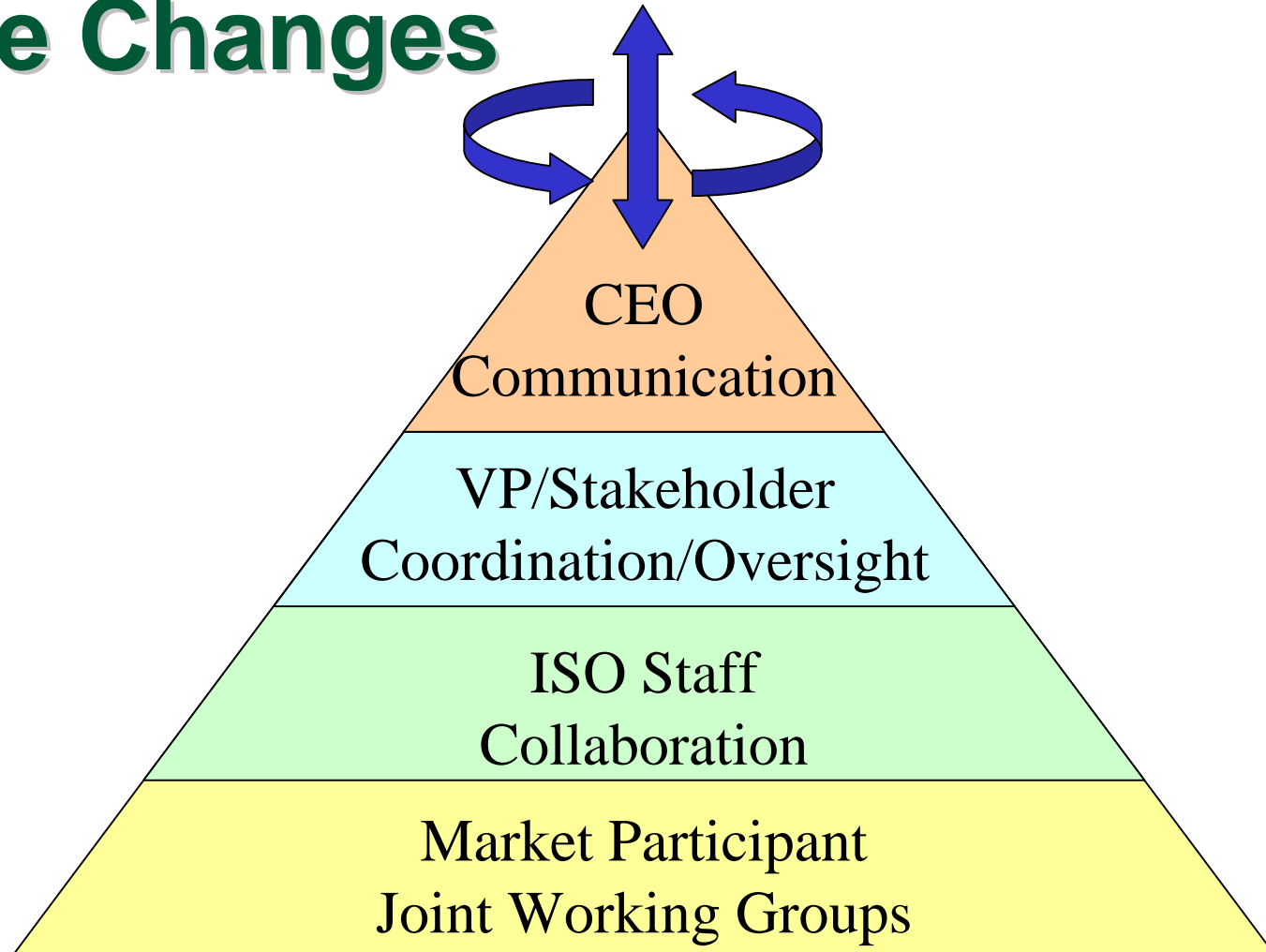
*In a nutshell, RTO's will: model external flowgates, determine historic NNL impacts (former control area gen-to-load) on flowgates, calculate real-time and projected centralized economic dispatch impacts, provide IDC with marginal unit impacts on constrained flowgates, and limit impacts on constrained flowgates to no more than historic NNL impacts.*

# MISO & PJM - Long Term - Timeline

2003			2004			
2 <sup>nd</sup> QTR	3 <sup>rd</sup> QTR	4 <sup>th</sup> QTR	1 <sup>st</sup> QTR	2 <sup>nd</sup> QTR	3 <sup>rd</sup> QTR	4 <sup>th</sup> QTR
<p><b>May 1 - PJM – Separate Service Agreements with AEP, DPL, &amp; ComEd. Services may include – OASIS, AFC, MMU</b></p>						
			<p><b>AEP / DPL / CE – Market Implementation Window 10/1/03 to 10/1/04</b></p>			
<p><b>Regional Endorsements &amp; NERC Approvals NLT Jul 1<sup>st</sup></b></p>					<p><b>Dominion – Market Window 9/1/04 to 12/31/04</b></p>	
			<p><b>★ Oct 1<sup>st</sup> – Goal - All Systems Ready</b></p>			
			<p><b>Dec 1<sup>st</sup> – MISO Implements Market &amp; Congestion Management Proposal</b></p>			

Look for next version of White Paper on Congestion Management at [www.miso-pjm-spp.com](http://www.miso-pjm-spp.com) on April 16th

# ISO Coordination of Rule Changes



# ISO Coordination Of Rule Changes

- ✓ CEOs – Direct communication as needed
- ✓ VPs - Periodic joint meetings
  - *Exchange of information regarding market developments*
  - *Review emerging issues and outline a plan of action*
  - *Coordination of ongoing seams related initiatives*
- ✓ Stakeholder Involvement
  - *Joint ISO meetings including stakeholder representatives*
  - *Last meeting 1st Quarter 03 (March 28)*

# ISO Coordination Of Rule Changes

- ✓ Staff Level – Continuous collaboration
  - *Examples include:*
    - ✧ ISO-NE and PJM participation in NYISO's Real Time Scheduling (RTS) development process
    - ✧ PJM/NYISO development of congestion management procedures
    - ✧ Coordination of external nodes for trading between NYISO and NE
    - ✧ Resource Adequacy Model (RAM) Group
    - ✧ Operating level meetings between NYISO and IMO to refine scheduling protocols
- ✓ Market Participant - Joint working groups
  - *Working group formed on an issue specific basis*
  - *RAM Group demonstrated success of this approach*
  - *In the process of forming a joint working group on Controllable Line Scheduling*

# Estimated Value of Seams Improvements for 2001-2002

- ✓ The NYISO Market Advisor has evaluated efficiency improvements for 2001 and 2002 relative to a year 2000 base
- ✓ The cumulative efficiency savings on a regional basis each year, relative to 2000 are:
  - 2001, \$21 million
  - 2002, \$56 million
- ✓ The cumulative savings above represents production cost savings in the northeast...
  - *Through displacement of high cost generation in one area with low cost generation in an adjacent area*
  - *And represents approximately ½ of the savings that could be achieved through perfect arbitrage*

# QUESTIONS ?????

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