



Inter-Regional Planning in the Northeast

John P. Buechler
Executive Regulatory Policy Advisor
New York Independent System Operator

DOE 2009 Congestion Workshop
March 25-26, 2009
Chicago

OUTLINE

- ◆ **General Planning Principles**
- ◆ **NYISO's Comprehensive System Planning Process (CSPP)**
 - *Reliability (CRPP)*
 - *Economics (CARIS)*
 - *Historic Congestion*
- ◆ **Northeastern Inter-Regional Planning**
 - *Northeastern Coordinated System Plan (NCSP)*
- ◆ **Other Planning Initiatives**
 - *Integration of Renewable Resources*

General Planning Principles

Levels of Planning

- ◆ ISO/RTOs perform and coordinate their planning efforts at several different levels:
 - *Regional Planning within our individual footprints*
 - *Inter-regional planning under coordination agreements with our neighbors*
 - *Coordinated Inter-regional planning required by NERC & Regional Entities*
 - New York State Reliability Council
 - *Broader coordination across all ISO/RTO regions to share information on issues of common interest through the IRC Planning Committee*

ISO/RTO Regional Planning: Common Principles*

- 1. Independent analysis performed by ISO/RTOs**
- 2. Includes both reliability & economic components**
- 3. Open & transparent stakeholder process**
- 4. Market-based solutions**
- 5. Consider all resources**
- 6. Regulated backstop solutions—if needed**
- 7. Independent ISO/RTO Board approves final Plan**

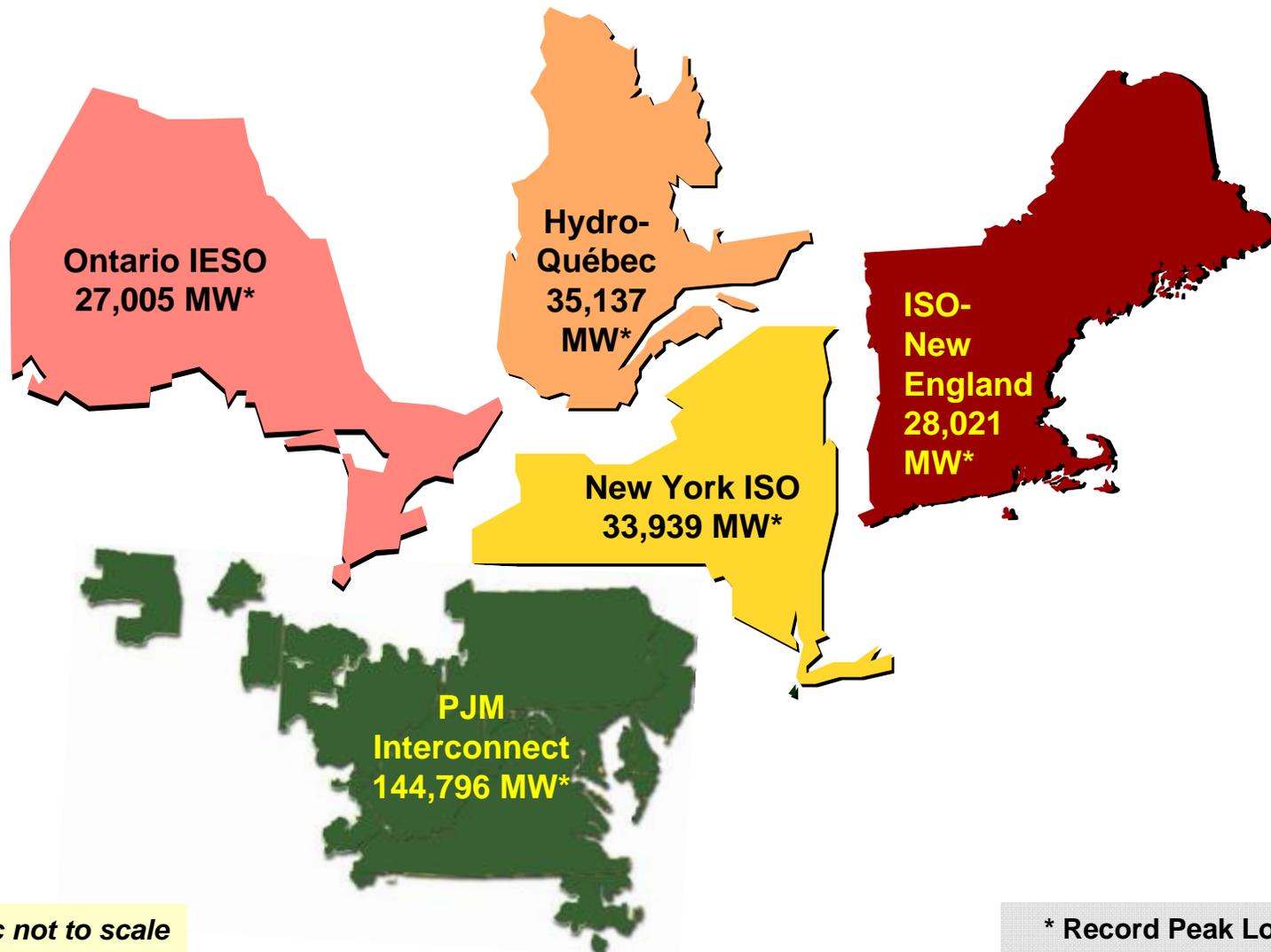
* See ISO/RTO Electric System Planning Report, IRC Planning Committee, February 2006

NYISO Comprehensive System Planning Process (CSPP)

NYISO Planning

- ◆ **NYISO is the transmission service provider for the New York Control Area in accordance with its FERC-approved OATT**
- ◆ **NYISO administers a Comprehensive System Planning Process (CSPP)**
 - *Reliability (CRPP)*
 - *Economic (CARIS)*
 - *Attachment Y to NYISO OATT*
- ◆ **NYISO administers the interconnection process for all transmission interconnections in New York**
 - *Attachment X (LFIP) & Attachment Z (SGIP)*
 - *Attachment S – Interconnection Cost Allocation*
 - *Projects aggregated by “Class Year”*

NYISO at the Hub



Graphic not to scale

* Record Peak Loads

Market-Based Philosophy

- ◆ **NYISO is a strong believer in the power of markets and strives to achieve market-based solutions whenever possible**
 - *Market design & rules*
 - *Planning process*
- ◆ **This philosophy has been generally supported by the NYS PSC and most other stakeholders and market participants**
 - *NYISO utilizes an open and transparent process for stakeholder participation*
- ◆ **NYISO markets and LMP pricing signals provide the benefits of competition while achieving the intended results**
 - *Except for wind power, almost all of the new merchant generation & transmission has been built or is proposed for the Southeast NY region*
- ◆ **Developers and investors can assess normal market risks reasonably well**
 - *Risk of regulatory intervention is less certain*
 - *This uncertainty can have a chilling effect on the market*

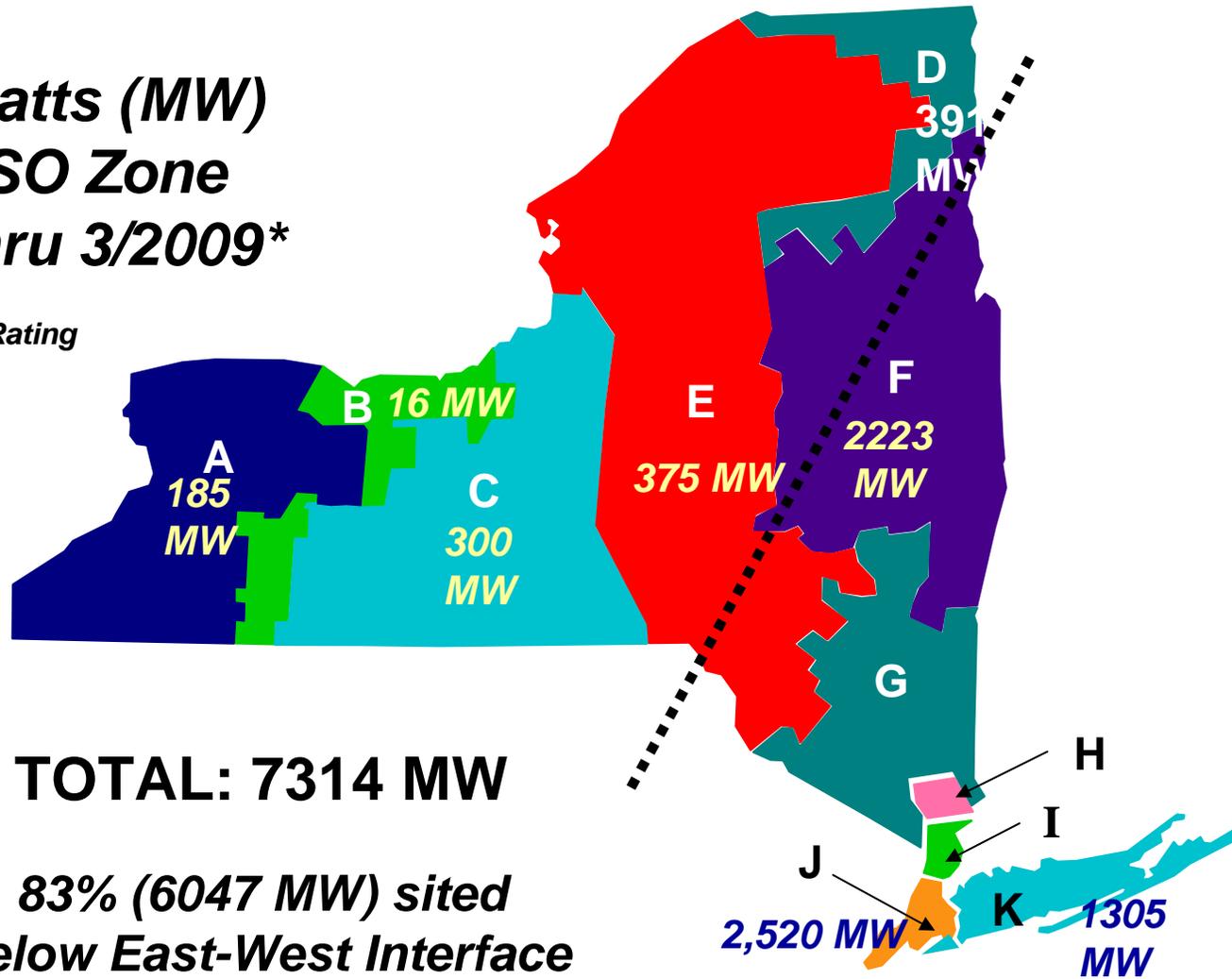
NYISO Market Results

- ◆ **Over 7300 MW of generation have been added in NYCA since NYISO start-up**
 - *Over 83% sited in New York City, Long Island and Hudson Valley, where demand is greatest*
 - *Some projects were built under regulatory initiatives*
- ◆ **1000MW of Merchant Transmission added**
 - *Cross Sound Cable: 330 MW - Connecticut to Long Island*
 - *Neptune: 660 MW - PJM to Long Island*
- ◆ **Generator availability has increased by 7%**
- ◆ **Installed Reserve Margin has been reduced**
- ◆ **Demand Response has increased to over 2000MW**
- ◆ **Renewable Resources have increased to 1275MW**
- ◆ **CRPP has produced sufficient market-based resources and avoided need for regulated solutions**

New Generation

**Megawatts (MW)
by NYISO Zone
1999 thru 3/2009***

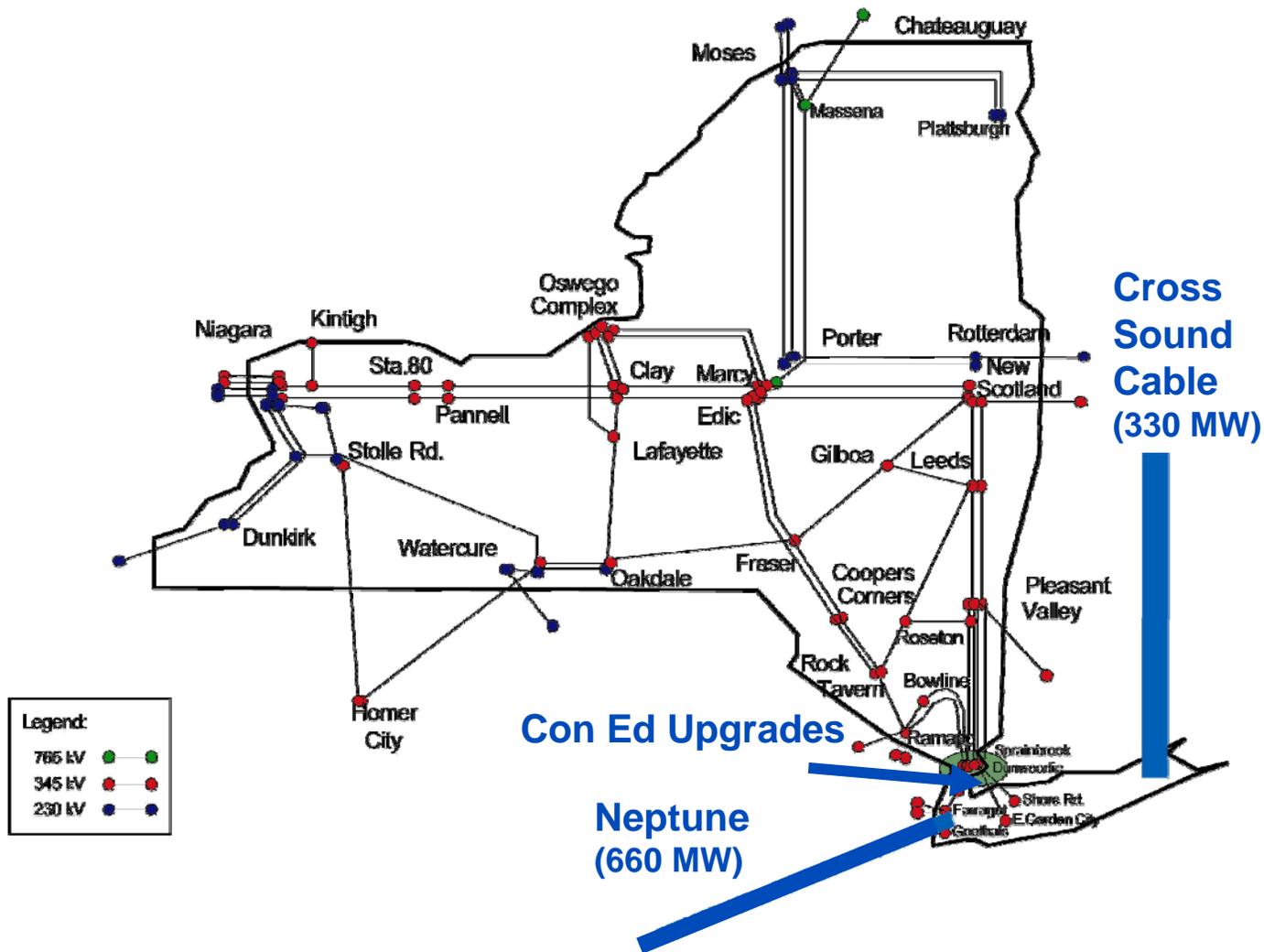
** Name Plate Rating*



TOTAL: 7314 MW

**83% (6047 MW) sited
below East-West Interface**

New Transmission



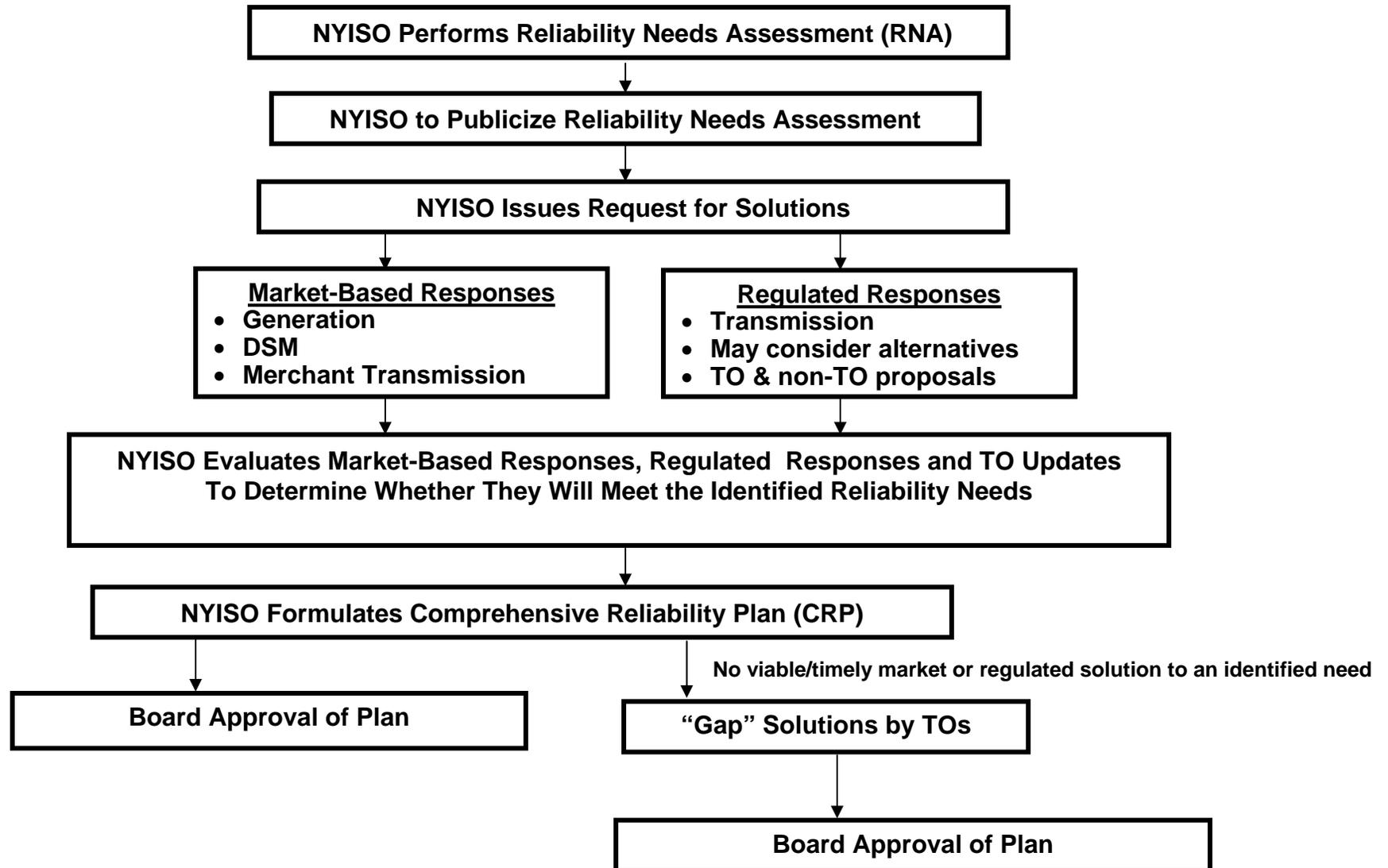
Development of the CSPP

- ◆ **Phased approach**
 - *Phase I: Reliability Needs (CRPP)*
 - *Phase II: Economic Considerations (CARIS)*
- ◆ **Anchored in NYISO's market-based philosophy**
- ◆ **CRPP**
 - *Approved by FERC in December 2004*
- ◆ **FERC found the NYISO CRPP:**
 - *to "...properly balance.." consideration of market-based and regulated solutions; and that*
 - *"It is certainly a substantial improvement over planning processes that have traditionally depended upon TO-developed regulated solutions."*

Comprehensive Reliability Planning Process (CRPP)

- ◆ **A formal, transparent, long-term (10-year) planning process for the NYISO**
 - *Provides for both market-based & regulated backstop solutions*
 - **All resources are considered on a comparable basis (Transmission, Generation & Demand Response)**
 - **Preference is given to market-based solutions**
 - *Addresses roles of NYISO, FERC and NYS PSC*
 - *Addresses cost allocation and cost recovery issues*
 - *Provides a commitment to investigate cause of potential market failure and to modify market rules as needed*
 - *NYISO-TO Agreement addresses TOs' rights and obligations under the CRPP*
- ◆ **Meets NYISO Objective: To ensure that upgrades will be built when needed for reliability**

Reliability Planning: CRPP



NYISO Response to Order 890

NYISO's Compliance Filing was focused upon meeting new FERC requirements under Order 890:

- ◆ **Local TO Planning Process**
 - *As input to the NYISO planning process*
- ◆ **Economic Planning**
 - *Congestion Analysis and Resource Integration Study (CARIS)*
- ◆ **Cost Allocation**
 - *For both reliability & economic projects*
- ◆ **Compliance Filing made on 12/7/07**
 - *FERC conditionally accepted NYISO's filing on October 16, 2008*
- ◆ **Initial CARIS Studies to begin in mid-2009**
 - *Detailed procedures and models under development*

CARIS Phase I: Study Phase

Base Case Assumptions:

Most recently approved CRP

Congestion Assessment: Historic and 10-year forecasted

Identification of the three most congested elements and selection of the three studies

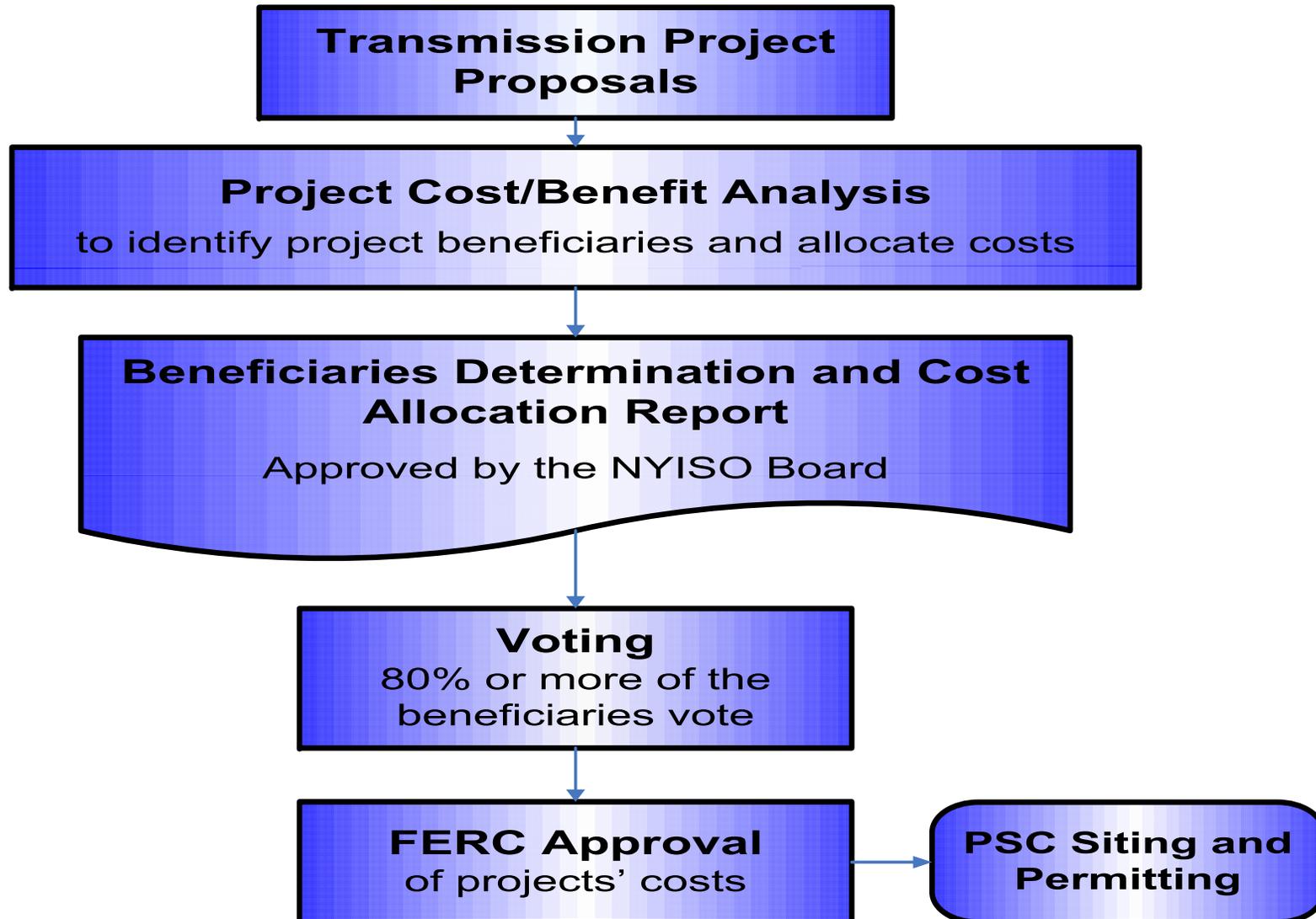
Cost Benefit Analysis

Three studies agreed to by the stakeholders
Additional studies paid by MPs and/or requested by PSC

CARIS Report

Approved by the NYISO Board

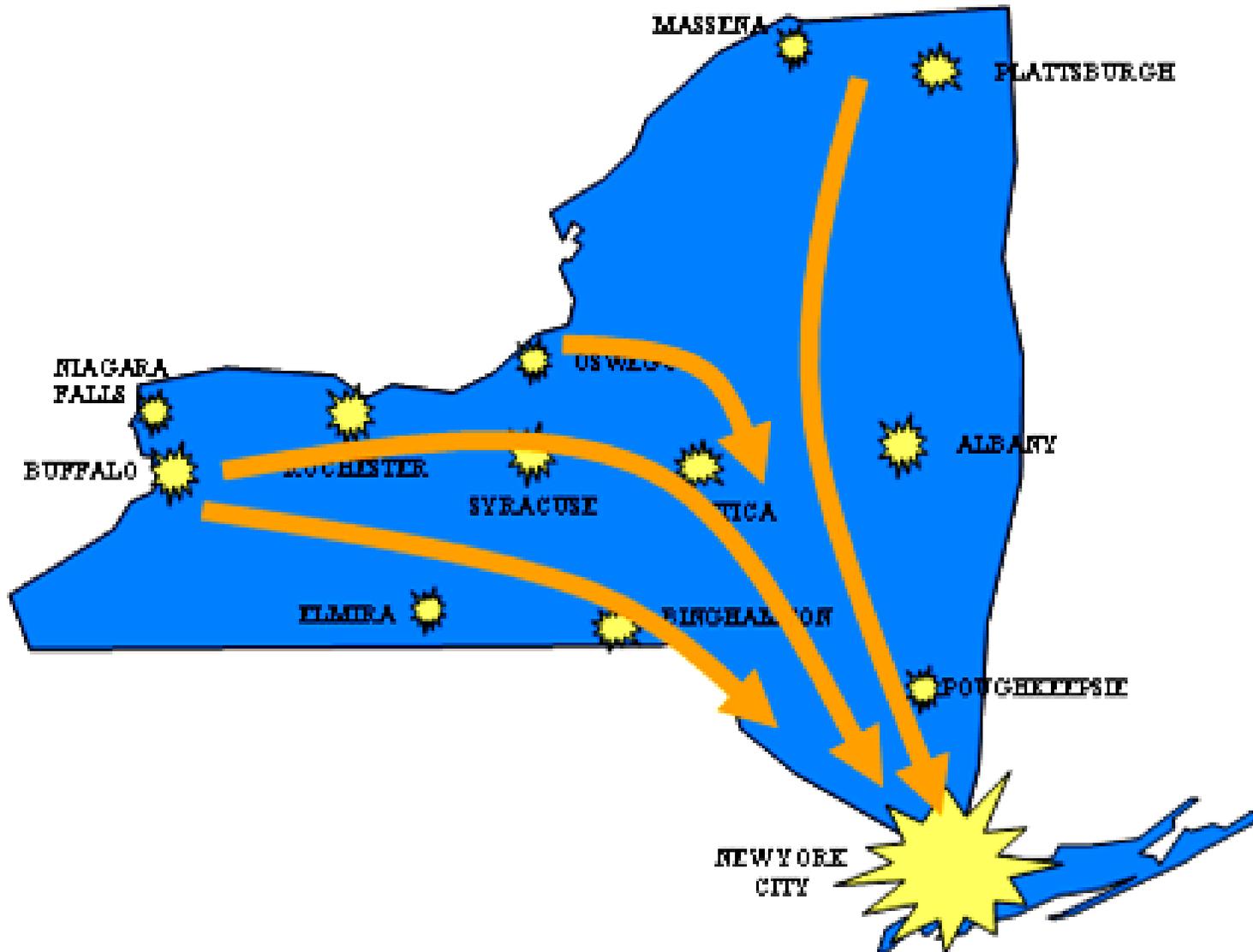
CARIS Phase II: Project Phase



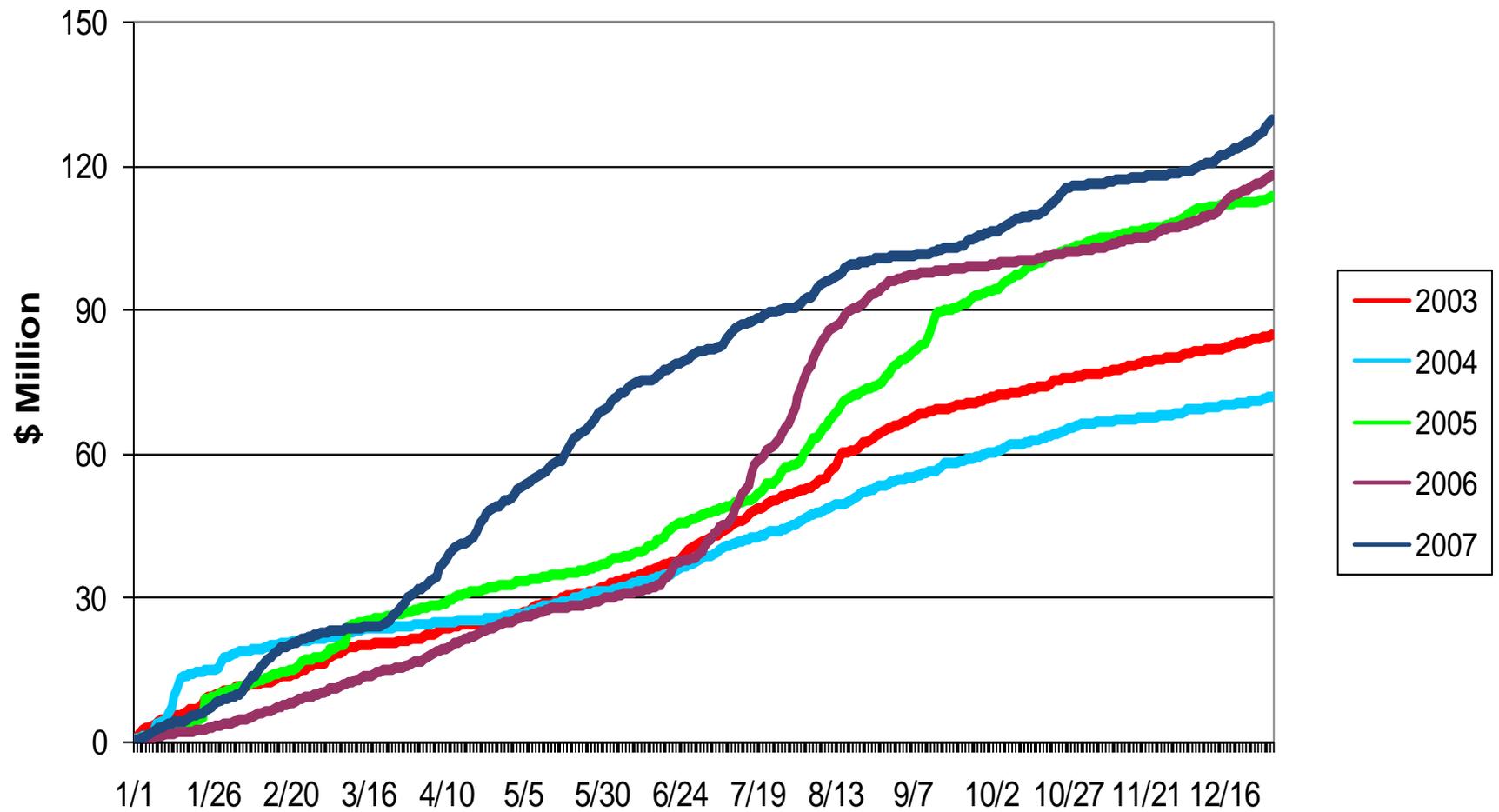
Reporting of Historic Congestion

- ◆ In 2003, NYISO and its stakeholders developed a methodology for analyzing historic congestion and the specific metrics to be used
- ◆ “Bid Production Cost” is the primary metric
 - *Measures the “societal benefits”*
- ◆ Other Metrics are also reported:
 - *Unhedged Congestion*
 - *Generator Payments*
 - *Unhedged Load Payments*
- ◆ Each metric is reported daily, by zone
- ◆ Congestion data is posted on the NYISO website, at:
https://www.nyiso.com/public/services/planning/congestion_cost.jsp

Bulk Power Flows



Comparative Cumulative Congestion -- BPC impact



2007 Annual Total Congestion Impact

Zone	BPC mitig	Unhedged Cong	Gener pay	Unhedged load pay
CAPITL	15.74	19.74	4.67	-41.17
CENTRL	-123.33	-9.82	-257.64	-80.09
DUNWOD	0.00	57.02	1.11	21.34
GENESE	-7.22	-10.93	-62.36	-64.40
HQ	-56.42	-2.62	-112.16	3.87
HUDVL	38.62	-78.67	52.98	-142.14
LONGIL	227.23	379.02	378.52	234.98
MHKVL	-18.52	-18.87	-37.57	-53.60
MILLWD	0.00	-51.70	37.92	-71.62
N.Y.C.	156.32	520.67	241.44	195.23
NORTH	-1.96	0.24	-56.24	-31.90
NPX	59.66	2.60	52.57	-40.32
OH	-85.56	-0.94	-121.57	6.56
PJM	-44.55	9.06	-21.38	1.58
WEST	-30.32	-8.59	-206.93	-85.74
Totals	129.68	806.22	-106.65	-147.43
Sched1 & Shortfall Adj				-40.78
NYCA Total	129.68	806.22	-106.65	-106.65

2007 Annual Constraint Summary

Monitored Facility	% of annual total	cumulative % of annual total
CENTRAL EAST - VC	39.0	39.0
PLSNTVLY 345 LEEDS 345 1	30.4	69.4
DUNWODIE 345 SHORE_RD 345 1	17.7	87.1
RAINEY 345 DUNWODIE 345 1	1.4	88.6
MOTTHAVN 345 RAINEY 345 2	1.3	89.8
SPRNBK 345 EGRDNCTR 345 1	1.1	90.9
GOWANUSS 138 GOWANUSS 138 1	1.0	91.9
GREENWD 138 KENTAVE 138 1	0.9	92.8
LEEDS 345 N.SCTLND 345 1	0.8	93.6
EGRDNCTY 345 EGRDNCTY 138 1	0.8	94.4
GREENWD 138 VERNON 138 1	0.8	95.2
RAINEY 138 VERNON 138 1	0.7	95.9
EDIC_PTR 345 MARCY 345 1	0.6	96.4
W49TH_ST 345 SPRNBK 345 2	0.4	96.8
MOTTHAVN 345 RAINEY 345 1	0.4	97.2
KENTAVE 138 VERNON 138 1	0.3	97.5
PLSNTVLY 345 ATHENS 345 1	0.3	97.9
SHORE_RD 345 SHORE_RD 138 1	0.3	98.1
GOWANUSS 138 GREENWD 138 1	0.3	98.4
W49TH_ST 345 SPRNBK 345 1	0.3	98.7
GOWANUSN 138 GOWANUSN 138 1	0.2	98.9
SCH - NE - NY	0.1	99.0

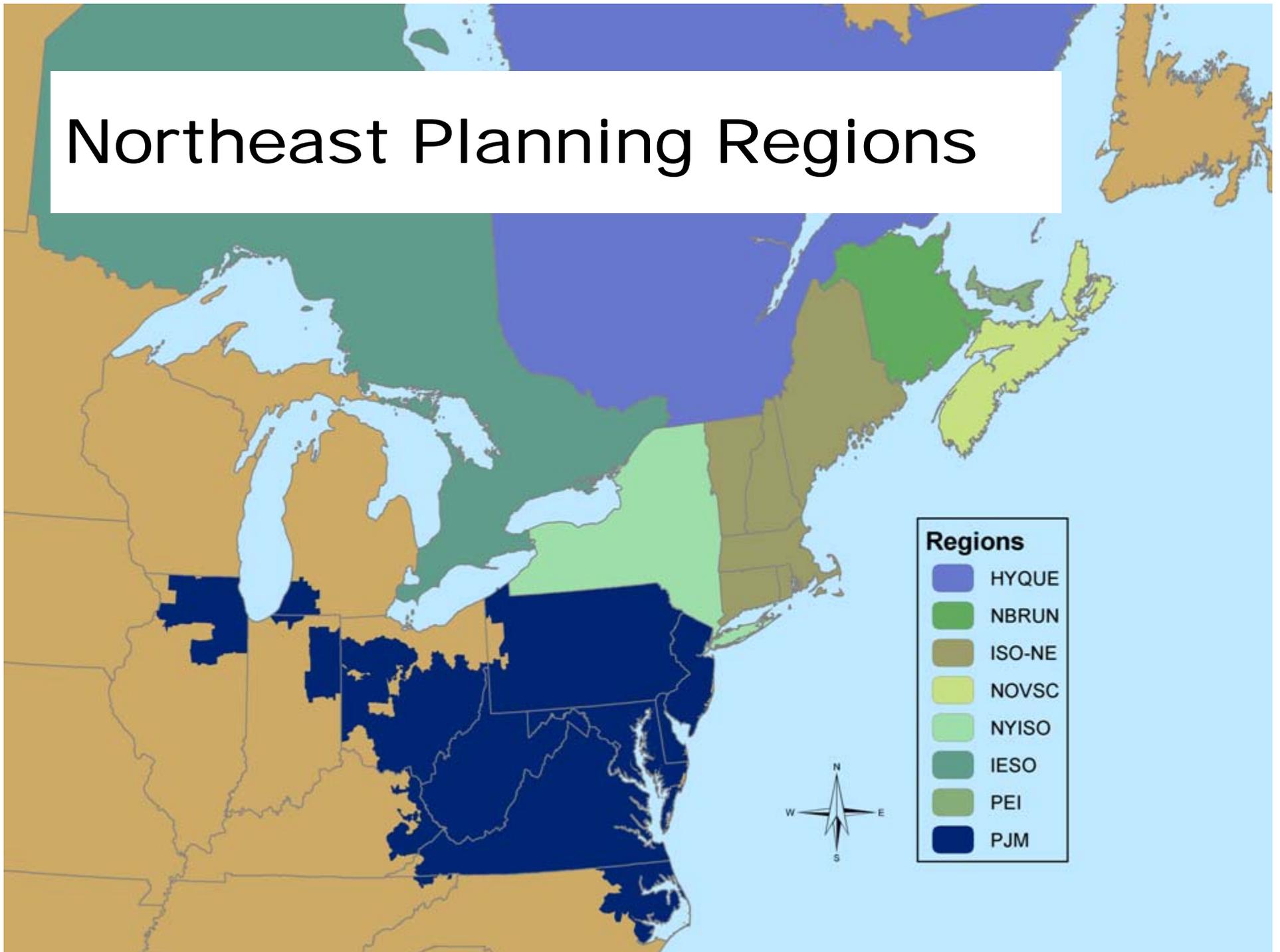
Northeastern Inter-regional Planning

Northeastern ISO/RTO Coordination of Planning Protocol

- ◆ **Northeastern Protocol was executed in December 2004 by ISO-NE, NYISO & PJM**
 - *IESO, Hydro-Quebec Transenergie & New Brunswick are participating on a limited basis*
 - *ISO/RTO Coordination Committee (“JIPC”)*
 - *Regional stakeholder committee (“IPSAC”): 7 Meetings held since June 2005*
 - *Website Supported by NPCC: www.interiso.com*
 - *FERC found Protocol satisfies Order 890’s (Inter-) Regional Planning Principle*

- ◆ **Objectives of Protocol**
 - *Provide a vehicle for enhanced coordination of planning throughout the Northeast*
 - *Address planning-related seams issues*
 - *Enhance coordinated performance of the bulk system*
 - *Support and supplement (not replace or supercede) each ISO’s individual regional planning procedures*
 - *Protocol will be modified as needed to ensure consistency with RTO/ISOs’ tariffs*
 - *Tariff changes are subject to respective RTO/ISO governance processes*

Northeast Planning Regions



Northeastern Protocol: Key Elements

TECHNICAL INITIATIVES

Procedures Established for:

- *Data and information exchange*
- *Analysis of interconnection requests*
- *Analysis of transmission service requests*
- *Development of a Northeastern Coordinated System Plan “(NCSP)”*

OTHER PROVISIONS

- ◆ **Cost Allocation**
 - *Place-holder provided*
 - “Cost allocation for elements of the NSCP will be addressed consistent with the applicable provisions of each ISOs tariff”
- ◆ **Dispute Resolution**
 - *Includes all aspects of the protocol*
 - *May employ a third-party for dispute resolution if desired*

2009 NCSP: Overview

- ◆ **Summary of ISO/RTO Regional Plans**
- ◆ **Inter-Regional Planning Studies**
- ◆ **Additional Coordinated Planning Activities**
- ◆ **Wind And Renewable Resource Studies**
- ◆ **Key Environmental Issues**
- ◆ **Renewable Resource Development**
- ◆ **Demand Side Resource Development**
- ◆ **Plans for Additional Studies**

2009 NCSP is Posted on ISOs' websites:

https://www.nyiso.com/public/committees/documents.jsp?com=oc_ipsac

Inter-Regional Studies

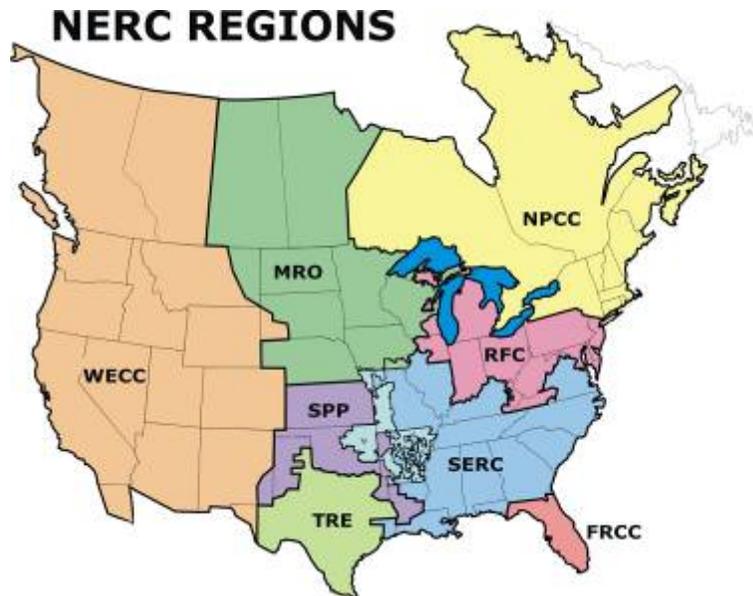
- ◆ **“Loss of Source” Analysis**
- ◆ **PJM 500KV Expansion Impacts**
- ◆ **North Country Wind Operating Studies**
- ◆ **Plattsburgh-Vermont PV 20 Upgrade Study**
- ◆ **Queue Projects w/Potential Inter-Regional Impacts**
- ◆ **Multi-Regional Transfer Analysis**

Next Steps

- ◆ **Plattsburgh – Vermont**
 - *230 kV or 345 kV solution*
- ◆ **New SWCT – New York Tie**
 - *345 kV from Pleasant Valley to Long Mtn. or other points, or*
 - *HVDC from Ramapo or NY to Norwalk or E. Shore*
 - *Reflect 2018 regional plan updates*
- ◆ **PJM – New York Focused Analyses**
 - *Reliability Analysis*
 - *Market Efficiency Analysis*
- ◆ **Inter-Regional Cost Allocation**
 - *Discussions to begin following identification of potential projects*

Other Planning Initiatives

Reliability Regulation



North American Electric Reliability Corporation (NERC)

- *Independent, self-regulatory, not-for-profit organization with mission to improve the reliability and security of the bulk power system in the U.S., Canada and part of Mexico*
- *Established in response to the 1965 blackout*
- *Compliance with NERC Reliability Standards became mandatory and enforceable in the U.S. in 2007*
- *NERC was named as the ERO by FERC*

Northeast Power Coordinating Council (NPCC)

- *Includes New York, New England, Ontario, Québec, and the Maritimes*
- *Formed as voluntary, not-for-profit, regional reliability organization in 1966*
- *Restructured in 2007 as the ERO Regional Entity for the Northeast*

New York State Reliability Council (NYSRC)

- *Not-for-profit organization established in 1999*
- *Responsible for Reliability Rules specific to the New York State Power System*
- *U.S. law authorizes New York State to impose more stringent reliability standards*

Reliability Planning

- ◆ **NERC Planning Committee**
 - *Oversees all planning related standards*
 - *Prepares and approve the NERC Annual RAS report*
 - *Coordinates the ERAG study forums*
 - *NYISO Member of;*
 - Resource Issues Subcommittee
 - Demand Side Management Influence on Reliability Task Force
 - Integration of Variable Generation Task Force (IVGTF)
- ◆ **NPCC Task Force on Coordination of Planning**
 - *Responsible for all NPCC planning criteria and standards*
 - *Responsible for reviewing and approving Area reviews both transmission and resource adequacy*
 - *Reviews and approves all SPS*
 - *Oversees the NPCC tie benefits study, seasonal and longer term resource adequacy assessments*

New York Planning Initiatives

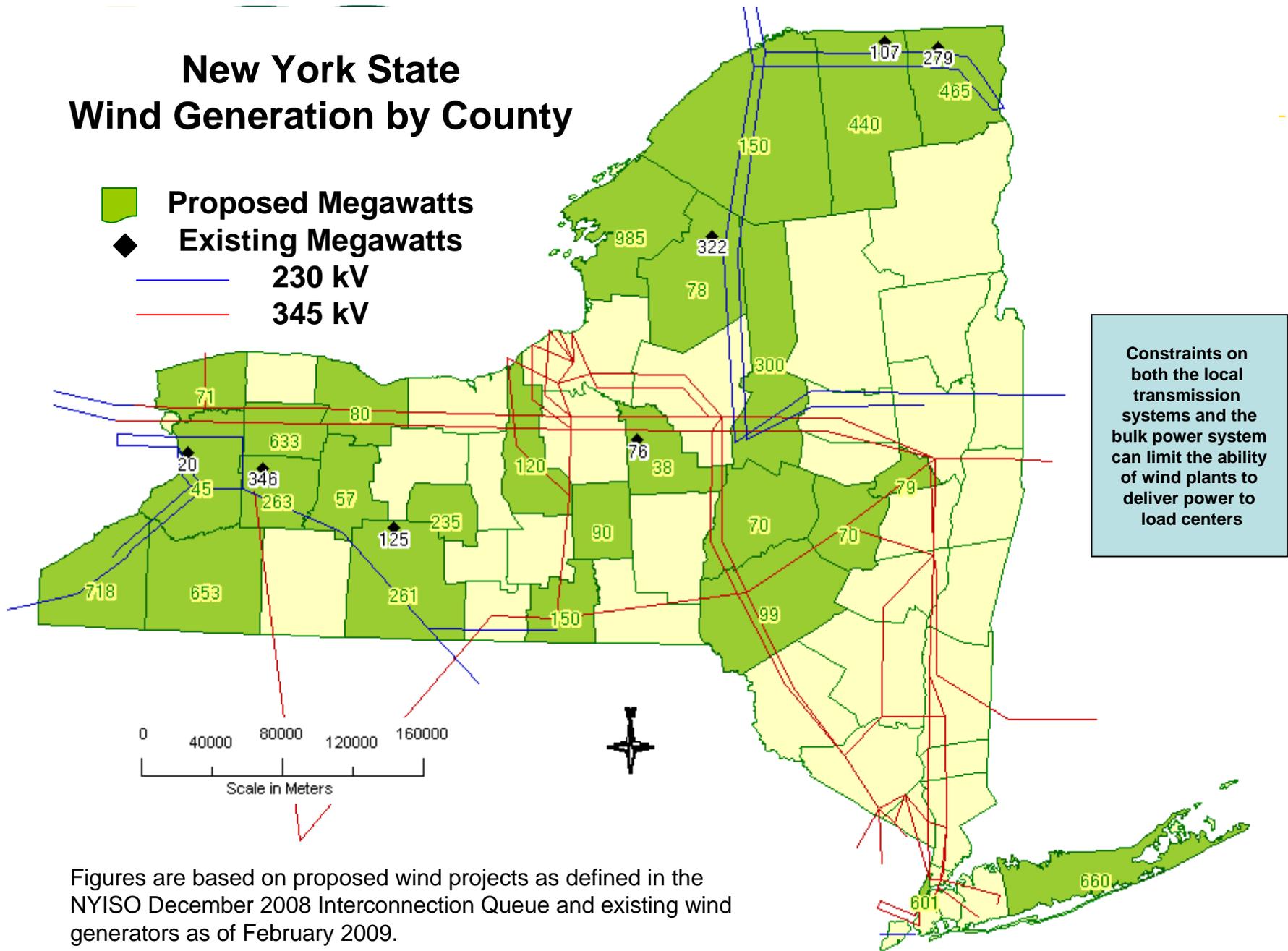
- ◆ **NY State Energy Planning Process**
 - *Draft Plan Due July 2009*
- ◆ **NYPSC Proceedings**
 - *Long Term Planning*
 - *Energy Efficiency*
 - *Renewable Portfolio Standards*
- ◆ **NYISO Wind Integration Studies**
 - *Operational & congestion analyses*
- ◆ **NY State Transmission Assessment and Reliability Study (STARS)**
 - *Long Term Transmission System Needs*
- ◆ **NY City Transmission Study**

WIND: A Future Congestion Challenge for NY

- ◆ In New York State, wind power development is primarily in the Northern & Western regions, while load centers are in the Southeastern region.
 - *Currently **1,275 MW** of wind are interconnected*
 - *An additional **1,000+ MW** are expected in 2009*
 - *Another **6,500 MW** of wind is in the interconnection queue*



New York State Wind Generation by County



Figures are based on proposed wind projects as defined in the NYISO December 2008 Interconnection Queue and existing wind generators as of February 2009.

Other Inter-Regional Planning Initiatives

- ◆ **DOE Eastern Wind Integration & Transmission Study (“EWITS”)**
- ◆ **Joint Coordinated System Plan (“JCSP”)**
- ◆ **ISO/RTOs share information on planning practices, interconnection procedures, regional renewable resources, energy efficiency and environmental initiatives**
 - *Northeastern Protocol*
 - *IRC Planning Committee*

The New York Independent System Operator (NYISO) is a not-for-profit corporation that began operations in 1999. The NYISO operates New York's bulk electricity grid, administers the state's wholesale electricity markets, and conducts comprehensive reliability planning for the state's bulk electricity system.

www.nyiso.com