NYISO Update

For the 2012 National Electric Transmission Congestion Study

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DOE Regional Workshop
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Philadelphia, PA

Outline

- **DOE 2009 Congestion Study**
- **NYISO Updates for 2012 Study**
  - ***Congestion Metrics***
  - ***Decline in Load Growth***
- **Factors Impacting Congestion**
- **Current or "Conditional" Congestion**
  - ***NYISO CARIS Study***
- **Consequences of Congestion**
- **Mitigation Options**
- **Eastern Interconnection Planning Collaborative**
- **Data Sources and Analyses**

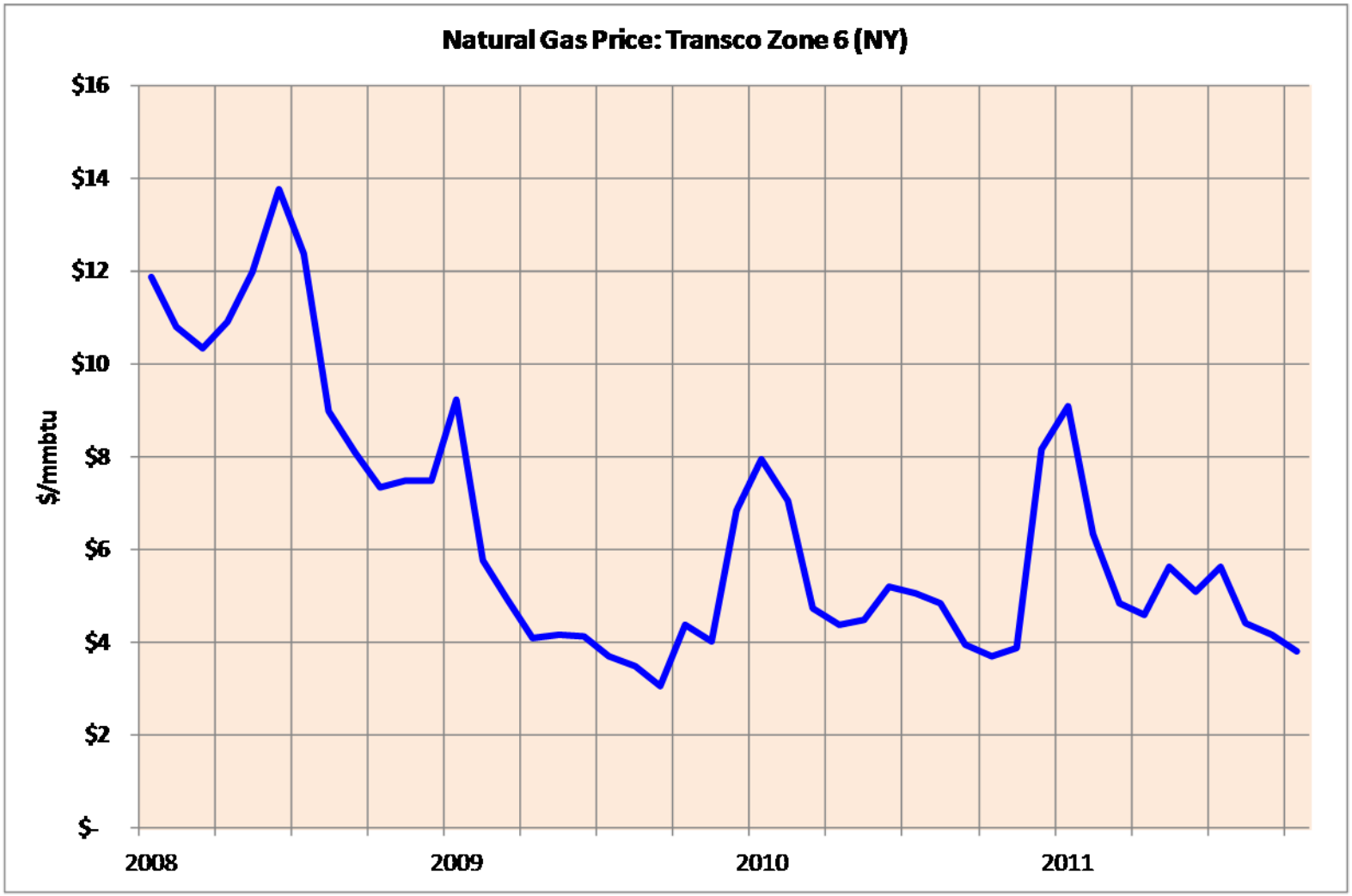
DOE 2009 Congestion Study

- **NYISO Comments *(Submitted on 6/29/10)***
  - ***NYISO expressed its general agreement with the DOE findings regarding the Mid-Atlantic region***
  - ***The 2009 Study was primarily based on 2007 historic data***
    - **NYISO noted that congestion in NY had declined in 2009**
  - ***NYISO noted that congestion in NY is <u>not</u> a reliability problem***
  - ***NYISO noted two changes in approach from the 2006 DOE Study, and expressed its support for both:***
    - **DOE's recognition that all resource options should be considered, that transmission is not the only solution and that not all congestion should be "solved"; and that**
    - **DOE made good use of the various regional plans and studies that were available in developing the 2009 Study**

NYISO Updates for 2012 Study

- **Congestion has declined to more normal levels from the high point in 2008**
- **There are several reasons for this decline:**
  - ***Fuel costs, especially natural gas, have declined significantly***
  - ***Additional resources have been added in eastern and downstate New York***
  - ***Load growth has declined due to the overall economic environment and implementation of statewide conservation measures***

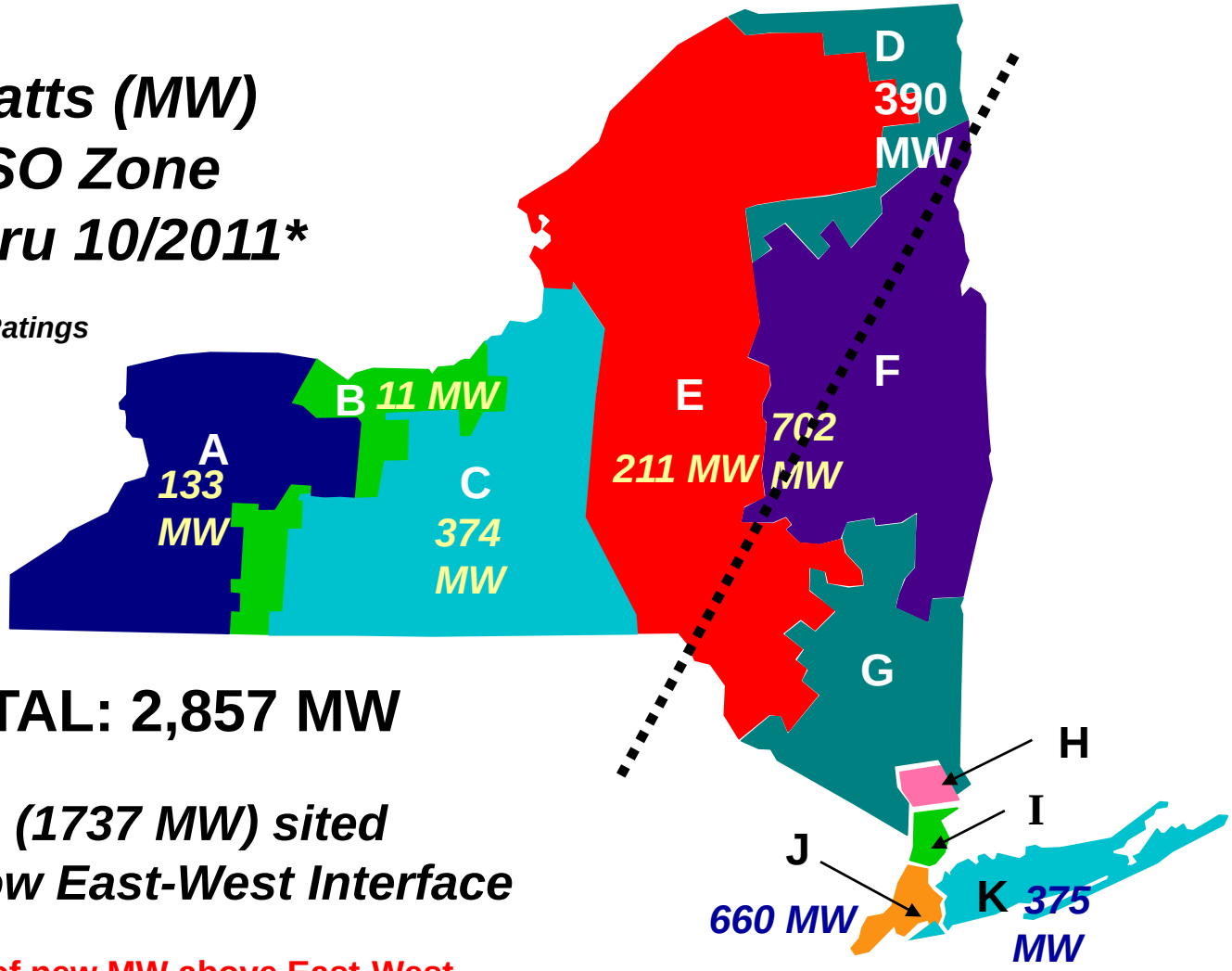
Lower Natural Gas Price



New Generation

Megawatts (MW) by NYISO Zone 2007 thru 10/2011*

*** Name Plate Ratings***



TOTAL: 2,857 MW

61% (1737 MW) sited below East-West Interface

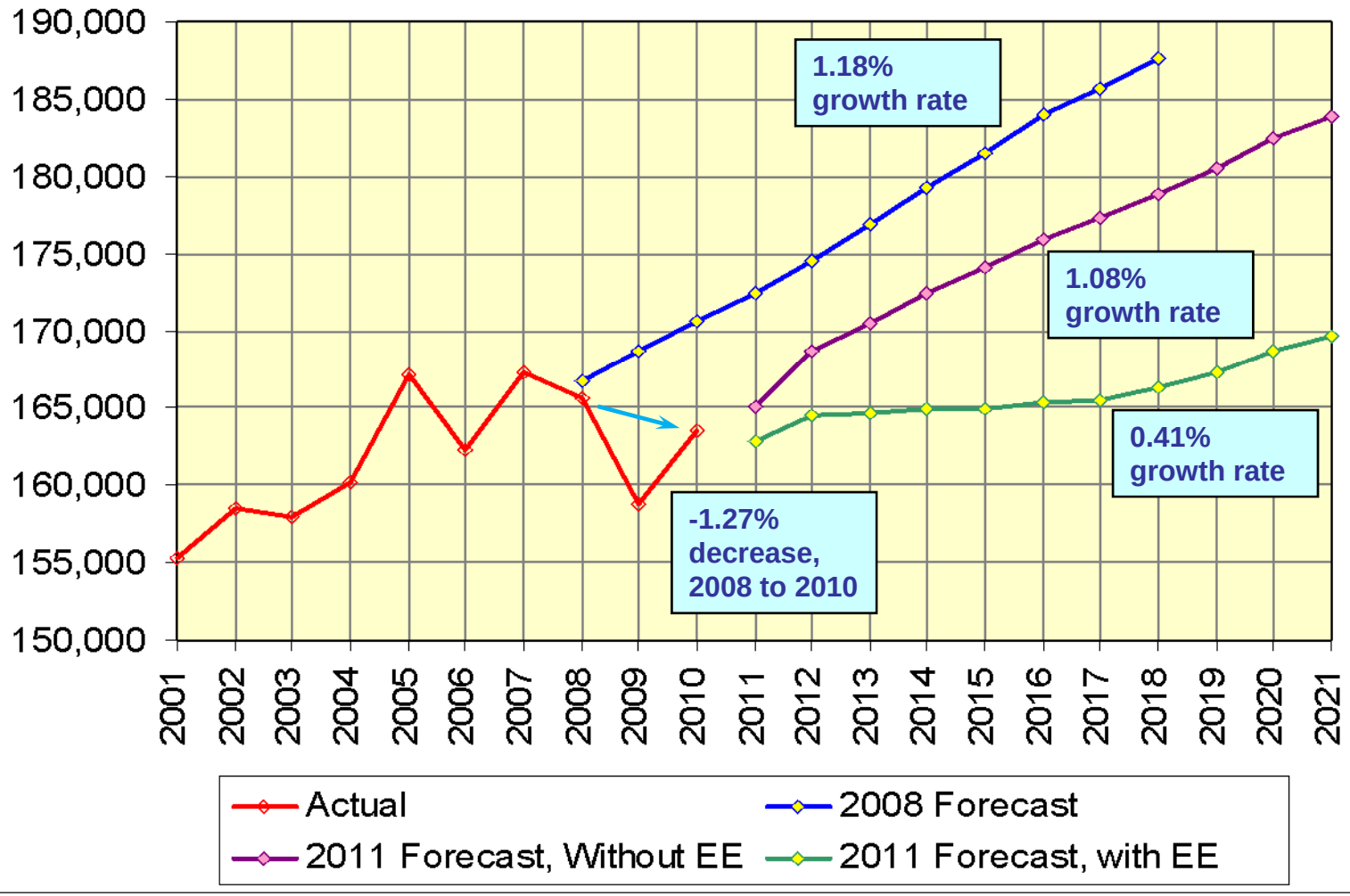
95% of new MW above East-West Interface is Wind Generation

Decline in Load Growth

- **In 2008 – Statewide load growth was 1.18%**
  - ***10-year average annual growth rate of energy***
- **Recent recession caused a decrease in actual usage from 2008 to 2010 of 1.27%**
- **NYISO's 2011 load forecast shows:**
  - ***Statewide load growth of 1.08% (w/o EE)***
  - ***0.1% reduction is attributed to a decline in the economy***
  - ***Statewide load growth of only 0.41% including EE***

2008 & 2011 Energy Forecasts (GWh)

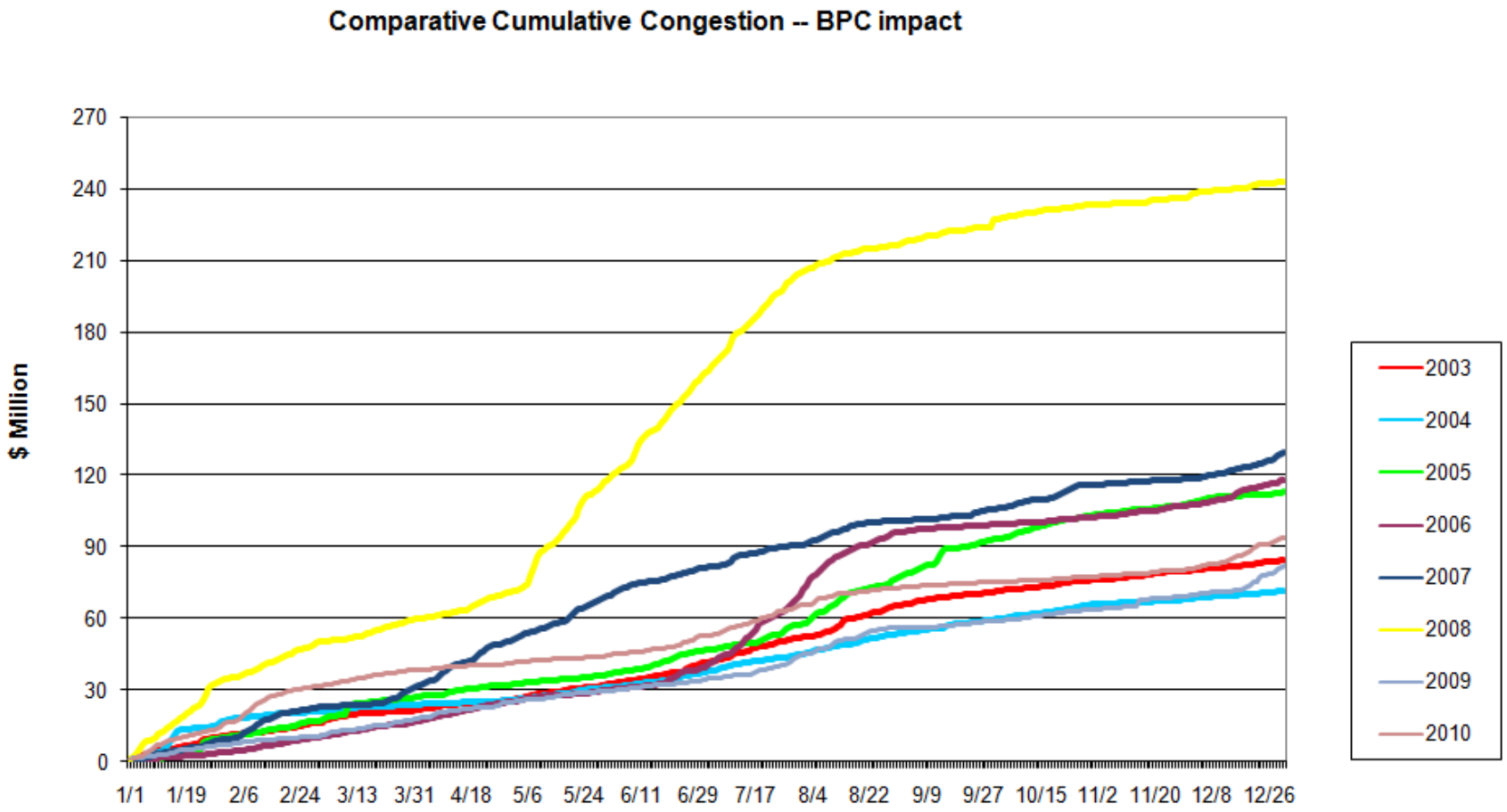
Impact of Recession & Energy Efficiency Programs



NYISO Congestion Metrics

- **In 2003, the 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**

Cumulative Congestion



Annual Congestion Impact

Annual 2010 Total Congestion Impact - Mitigated Bids ($ M)

Zone	BPC mitig	Unhedged Cong	Gener pay	Unhedged load pay
CAPITL	16.42	37.90	7.74	-17.75
CENTRL	-49.72	5.75	-176.06	-70.47
DUNWOD	0.00	46.93	0.09	10.93
GENESE	-2.38	1.85	-28.95	-48.89
HQ	-40.71	-6.37	-87.84	-5.03
HUDVL	2.94	-54.02	9.43	-117.41
LONGIL	104.93	264.75	190.40	133.96
MHKVL	-8.48	-2.65	-20.94	-36.96
MILLWD	0.00	-25.24	15.59	-42.51
N.Y.C.	111.55	362.38	164.90	77.09
NORTH	-7.69	1.13	-49.12	-17.72
NPX	24.77	7.11	28.59	-19.96
OH	-38.26	-4.27	-43.68	-0.40
PJM	-2.09	1.77	11.63	-12.99
WEST	-17.35	3.17	-138.24	-60.94
Totals	93.92	640.20	-116.45	-229.06
Sched1 & Shortfall Adj				-112.61
NYCA Total	**93.92**	**640.20**	**-116.45**	**-116.45**

Constraint Summary

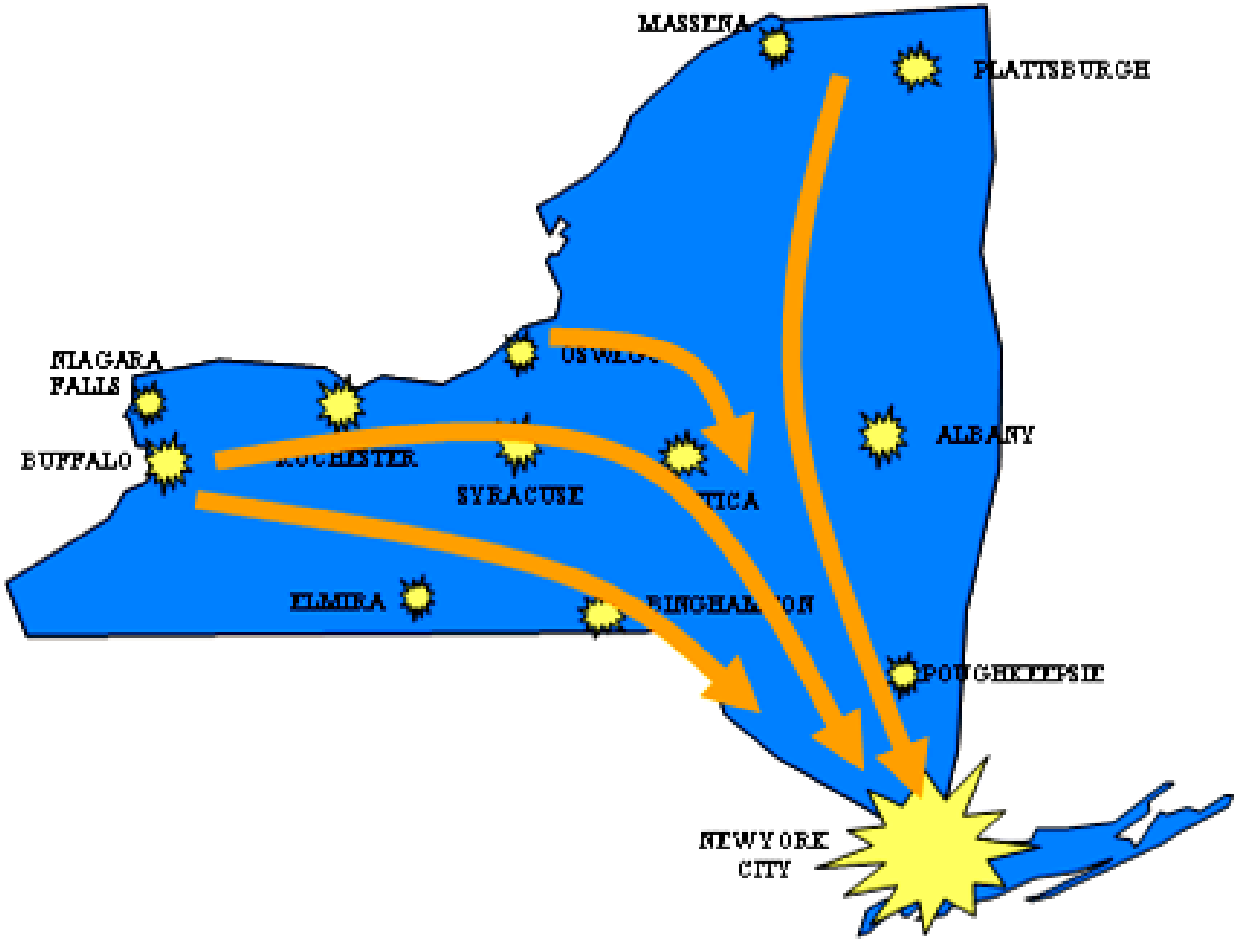
2010 Annual Constraint Summary

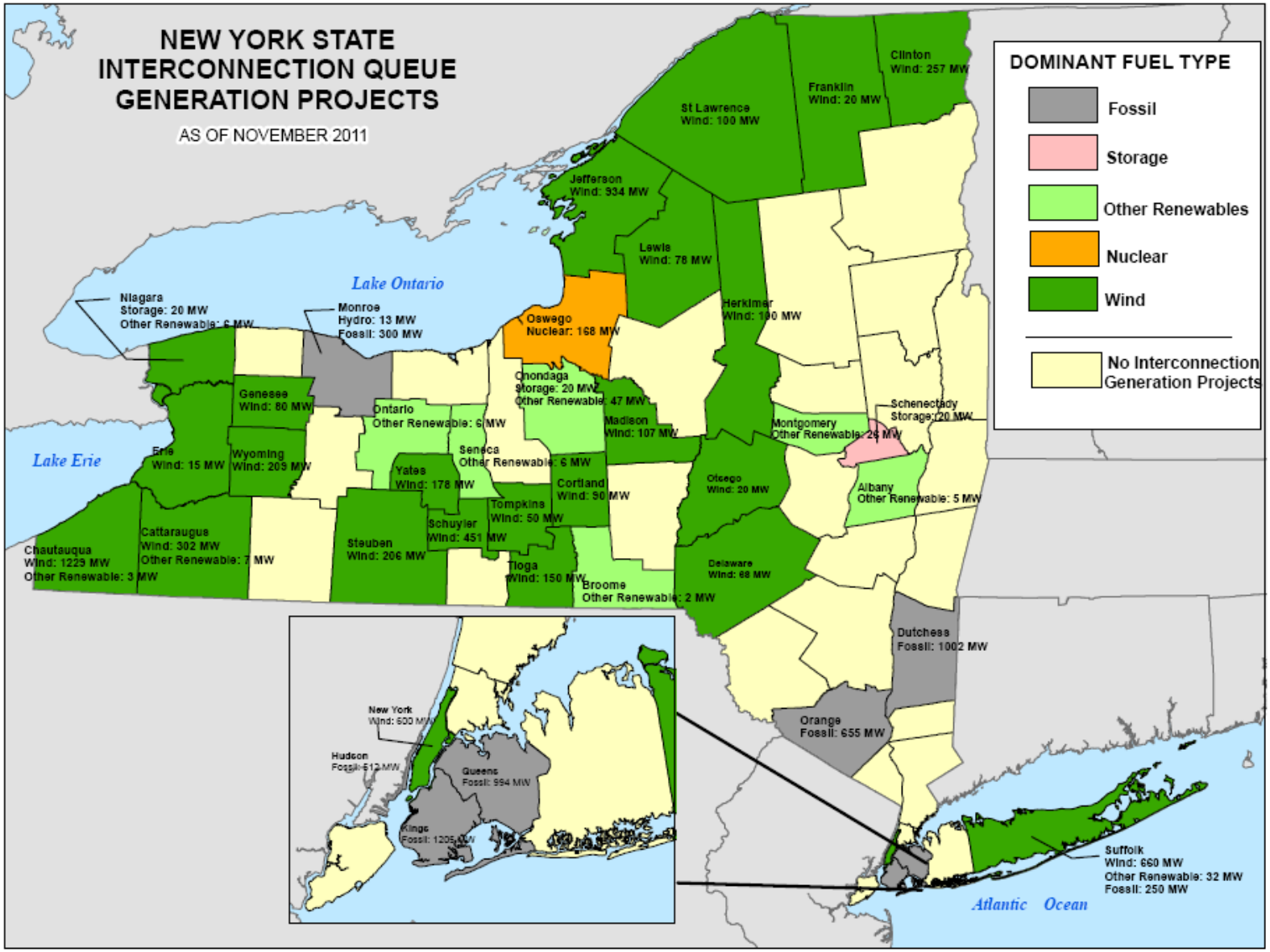
Monitored Facility	% of annual total	cumulative % of annual total
CENTRAL EAST - VC	45.2	45.2
PLSNTVLY 345 LEEDS 345 1	22.8	68.0
DUNWODIE 345 SHORE_RD 345 1	14.5	82.5
LEEDS 345 N.SCTLND 345 1	3.1	85.6
SPRNBRK 345 EGRDNCTR 345 1	1.9	87.6
GREENWD 138 VERNON 138 1	1.7	89.2
MOTTHAVN 345 DUNWODIE 345 1	1.3	90.5
RAINEY 138 VERNON 138 1	1.2	91.7
RAMAPO 345 ROCKTVRN 345 1	1.2	92.9
MOTTHAVN 345 DUNWODIE 345 2	1.1	93.9
MOTTHAVN 345 RAINEY 345 1	1.0	94.9
MOTTHAVN 345 RAINEY 345 2	0.8	95.7
GREENWD 138 KENTAVE 138 1	0.7	96.4
EGRDNCTY 345 EGRDNCTY 138 1	0.5	96.9
GOWANUSS 138 GREENWD 138 1	0.5	97.4
W49TH_ST 345 SPRNBRK 345 1	0.3	97.7
LEEDS 345 HURLYAVE 345 1	0.3	98.0
COOPERS 345 FRASER 345 1	0.3	98.3
SCH - PJ - NY	0.3	98.6
DUNWODIE 345 PLSNTVLE 345 1	0.3	98.8
EFISHKIL 345 PLSNTVLY 345 1	0.2	99.0

Factors Impacting Congestion

- **Impact of the economic downturn and slow recovery on load growth projections**
- **Stable fuel price projections**
  - ***Increase in shale gas production in the NE***
- **New generation additions in eastern and downstate regions**
- **New wind generation typically located in Northern and Western regions of the state**
- **Impact of statewide energy conservation programs**
- **Proposed transmission additions, including:**
  - ***Hudson Transmission Partners: 660MW DC/330MW capacity***
  - ***Champlain Hudson Power Express: 1000MW DC***
  - ***Transmission Owners' projects (Ref: 2011 NYISO Gold Book)***

Bulk Power Flows





Wind: A Future Congestion Challenge for NY

- **In New York State, wind power development is primarily occurring in the North and West, while load centers are in the Southeast**
  - ***Currently 1,348 MW of wind are interconnected***
  - ***Another 5,755 MW of wind are in the interconnection queue***

Current or "Conditional" Congestion

- **NYISO's economic planning process (CARIS) identifies the most congested interfaces in the State based upon historic & 10-year projections**
- **CARIS evaluates the benefits and costs of generic solutions, including generation, transmission and demand response**
- **Also includes scenario analysis**
  - ***To identify "Conditional congestion"***
- **2011 CARIS study is scheduled for completion in the first quarter of 2012**

Potential Risks

- **There are a number of potential factors that may impact both reliability as well as the level of congestion in New York over the coming years, including:**
  - ***Impact of pending environmental regulations which may lead to the retirement of generation in critical locations on the system***
  - ***Possibility that the Indian Point Nuclear Plant may shut down at the expiration of its current operating license in 2015***
    - **This would remove over 2000 MW of supply from the downstate region**

Consequences of Congestion

- **The potential risks noted above may adversely impact both reliability and congestion in NY**
  - ***NYISO studies these risks in scenario analysis under both its reliability and economic planning processes***
- **Resource retirements could lead to a reduction in fuel diversity and an increased dependence on natural gas**
  - ***NYISO is engaged in planning a regional study of the electric-gas interdependencies in the Northeast***
- **NYISO's wholesale market design and its continued market monitoring are adequate to deal with potential market power issues**
- **NYISO's reliability planning process (CRPP) considers all resources as potential solutions to Reliability Needs**

Consequences (Cont'd)

- **NYISO's locational energy and capacity markets provide the appropriate price signals for locating replacement resources in areas which tend to reduce congestion**
  - ***History has demonstrated this to be the case since the beginning of NYISO's operation***
- **The shut down of the Indian Point Nuclear Plant would likely have significant environmental, economic and reliability impacts for New York**
  - ***According to a Report for the City of New York prepared by Charles River Associates (CRA) issued in August 2011***

Mitigation Options

- **Transmission facilities located between upstate and downstate regions**
- **Generation resources located in or near the major load centers in Southeastern New York**
- **Demand reduction and/or energy efficiency resources located in the major load centers**
- **NYISO's reliability planning process (CRPP) is a true "all resource" planning process which treats all resources on a comparable basis and has an express preference for market-based solutions to reliability needs**
- **NYISO's economic planning process (CARIS) identifies major congestion sources, evaluates generic "all resource" solutions to provide information for the marketplace to propose potential projects**

EIPC & DOE Project

- **The NYISO is one of the founding members of the EIPC and is actively involved in the DOE EI Transmission Project**
- **The DOE Project is focused on the development of transmission options to support resource expansion scenarios resulting from future policy cases developed by the Stakeholder Steering Committee (SSC)**
- **The results of the DOE Project are expected to provide useful information for consideration in regional planning processes as well as for state and federal public policy makers**
- **The EIPC analysis is not a congestion study but may provide useful background for the DOE congestion study**
- **The DOE Project is scheduled for completion in late 2012**

Data & Analysis - NYISO

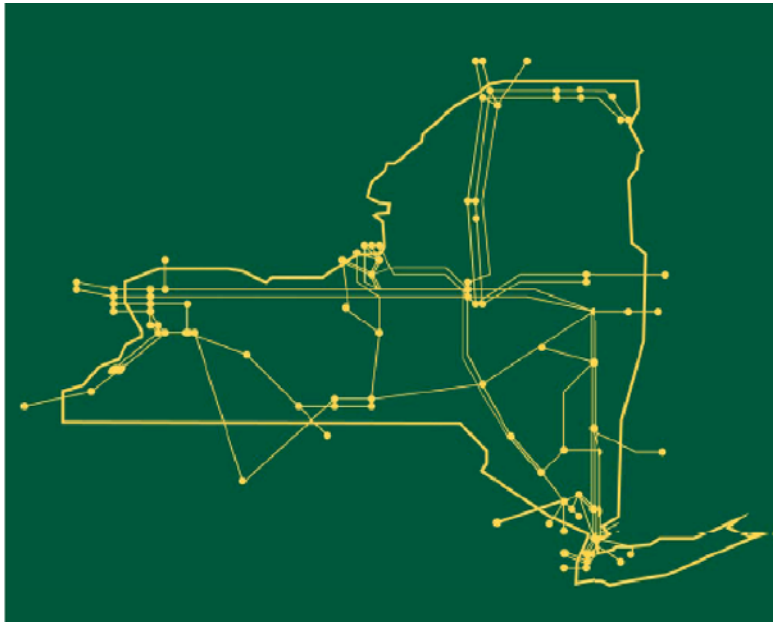
- **2009 CARIS Report**
  - http://www.nyiso.com/public/webdocs/services/planning/Caris_Report_Final/CARIS_Final_Report_1-19-10.pdf
- **2010 Reliability Needs Assessment**
  - http://www.nyiso.com/public/webdocs/services/planning/reliability_assessments/2010_Reliability_Needs_Assessment_Final_Report_September_2010.pdf
- **2010 Comprehensive Reliability Plan**
  - http://www.nyiso.com/public/webdocs/services/planning/reliability_assessments/CRP_2010_FINAL_REPORT_January_11__2011.pdf
- **New York Historic Congestion Data**
  - https://www.nyiso.com/public/services/planning/congestion_cost.jsp
- **2011 Load & Capacity Report (the "Gold Book")**
  - http://www.nyiso.com/public/webdocs/services/planning/planning_data_reference_documents/2011_GoldBook_Public_Final.pdf
- **2011 Power Trends Report**
  - http://www.nyiso.com/public/webdocs/newsroom/power_trends/Power_Trends_2011.pdf
- **2010 Wind Generation Study**
  - http://www.nyiso.com/public/webdocs/newsroom/press_releases/2010/GROWING_WIND_-_Final_Report_of_the_NYISO_2010_Wind_Generation_Study.pdf

Data & Analysis - Other

- **2009 Northeast Coordinated System Plan**
  - ***http://www.nyiso.com/public/webdocs/services/planning/ipsac/ncsp09_final.pdf***
  - ***2011 NCSP scheduled for completion in 2nd Qtr 2012***
- **Indian Point Retirement Study**
  - ***Conducted by Charles River Associates (CRA) for New York City Department of Environmental Protection, August 2011***
    - **http://www.nyc.gov/html/dep/pdf/energy/final_report_d16322_2011-08-02.pdf**
- **New York State Transmission Assessment and Reliability Study (STARS)**
  - ***Conducted by the NY Transmission Owners with assistance from the NYISO to investigating long-term transmission system needs***
  - ***Phase I: Condition & reliability assessments completed January 2010***

    http://www.nyiso.com/public/webdocs/services/planning/stars/Phase_1_Final_Report_1_13_2010.pdf
  - ***Phase II: Evaluation of economic alternatives scheduled for Q1 - 2012***
- **Eastern Interconnection Planning Collaborative (EIPC)**
  - ***http://eipconline.com/***

The New York Independent System Operator (NYISO) is a not-for-profit corporation responsible for operating the state's bulk electricity grid, administering New York's competitive wholesale electricity markets, conducting comprehensive long-term planning for the state's electric power system, and advancing the technological infrastructure of the electric system serving the Empire State.



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