



Energy and Environmental Planning
At
The NYISO

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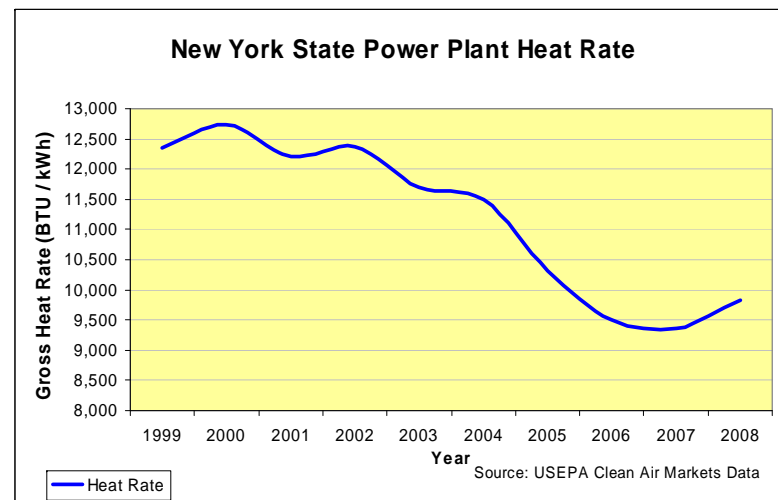
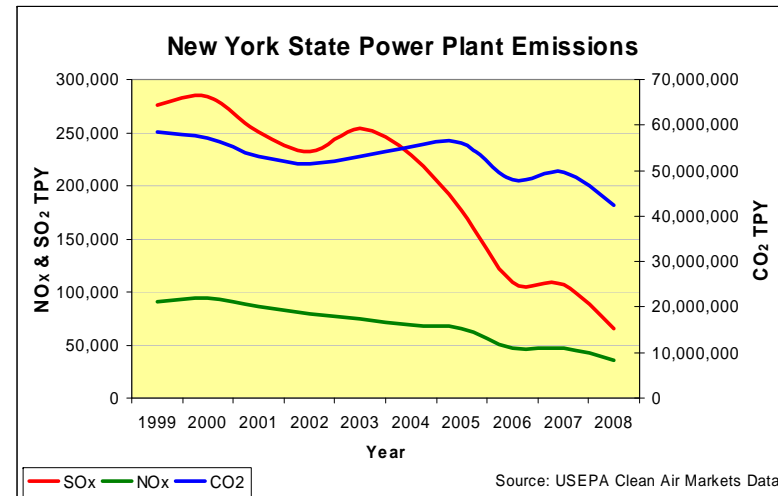
Sector Meeting
Spring 2009

Agenda

- ◆ Cleaner and More Efficient Generation
- ◆ NYISO Planning Process
- ◆ Regional Greenhouse Gas Initiative (RGGI)
 - *Other CO₂ Initiatives*
- ◆ Ozone
 - *National Ambient Air Quality Standard (NAAQS)*
 - *Clean Air Interstate Rule (CAIR)*
 - *Reasonably Available Control Technology (NO_x-RACT)*
- ◆ Renewable Portfolio Standard (RPS)
- ◆ Distributed Generation

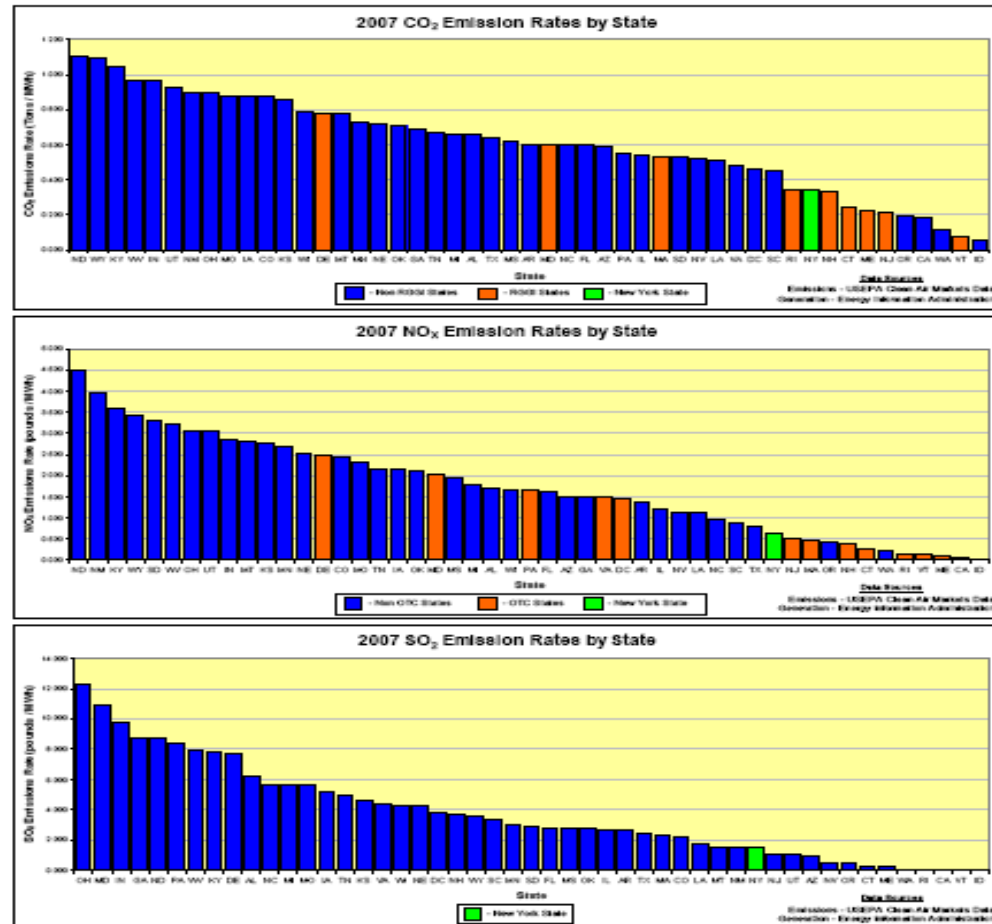
While Participating in the NYISO Markets, New York's Power Plants Have Become Cleaner and More Efficient

- ◆ USEPA's data shows continued notable reductions in the emissions of SO₂, NO_x, and CO₂
- ◆ The same data shows continued marked improvement in the generation plant efficiency



New York's Electricity is Among the Cleanest in the US

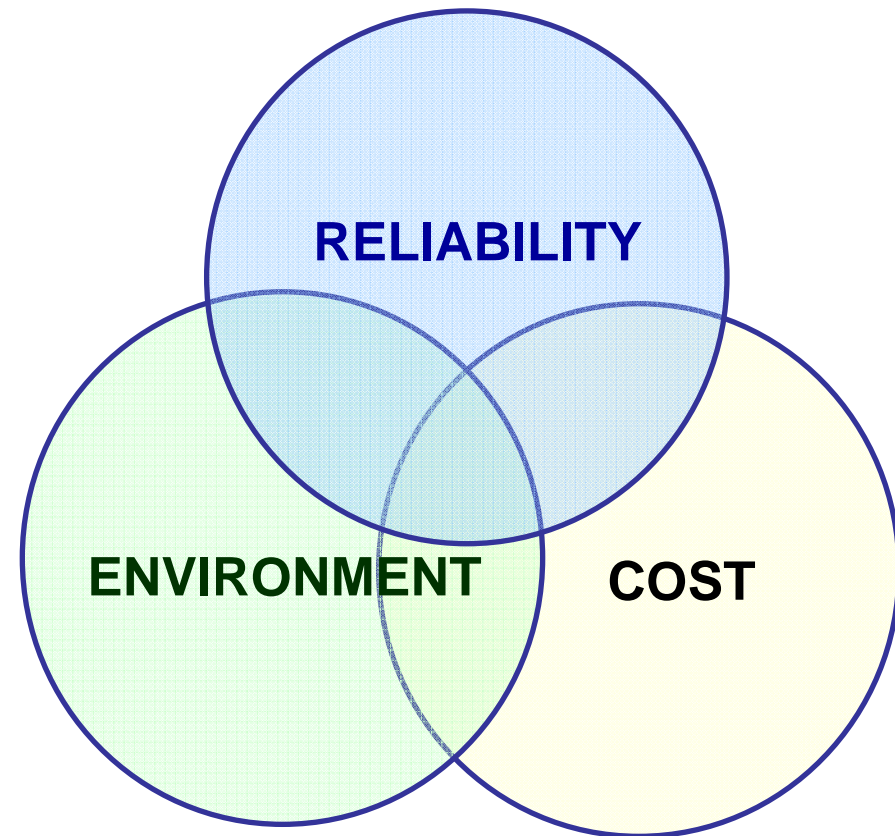
- ◆ NY Emission Rate Rankings (#/MWH)
 - CO₂ 10
 - NO_x 12
 - SO₂ 13



Planning for Emerging Issues

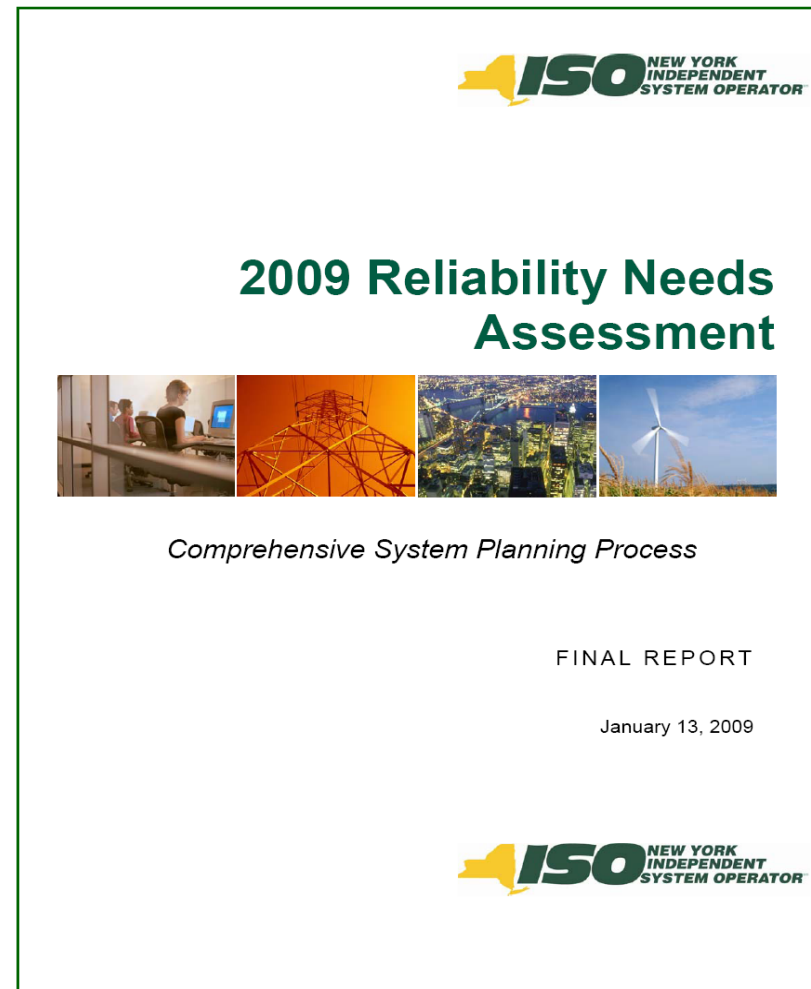
An array of emerging issues are impacting reliability, costs to consumers and environmental sustainability. In New York State, the issues are driven by:

- ◆ ***Overdependence on gas/oil (Fuel Diversity)***
- ◆ ***Aging electricity system infrastructure***
- ◆ ***New environmental standards (SO_x, NO_x, Carbon, etc.)***
- ◆ ***Growth in peak demand and energy consumption***



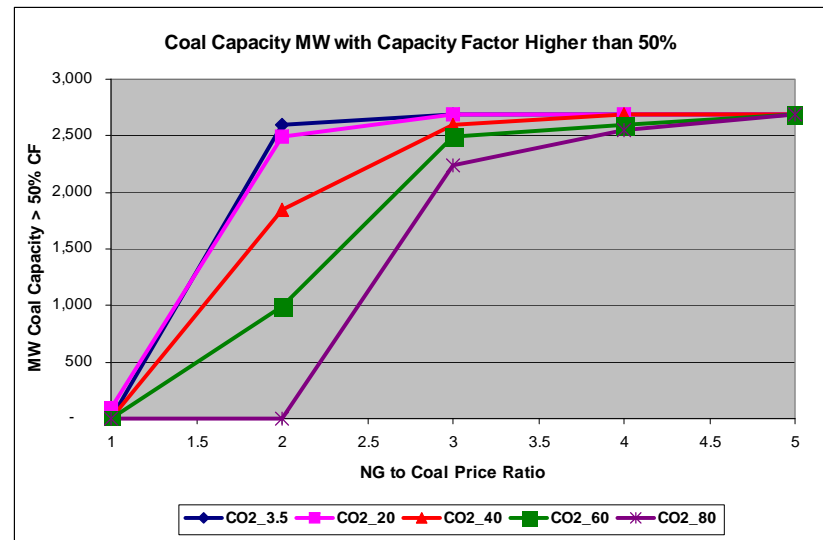
2009 Reliability Needs Assessment

- ◆ Risk Factors:
 - *Failure to implement EEPS*
 - *NOxRACT without flexibility*
 - *CAIR and the Courts*
 - *RGGI*
 - Loss of a nuclear plant
 - Fuel supply disruption
 - High CO₂ Allowance prices



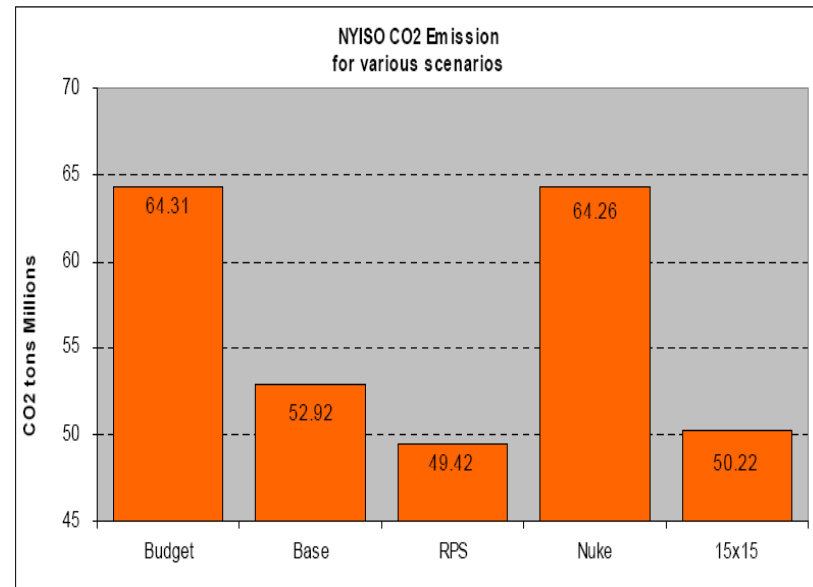
Reliability Can Be Impacted by CO₂ Cost

- ◆ As CO₂ allowance prices increase, coal units lose economic viability
- ◆ Low gas to coal cost ratios also reduce operating margins for coal units
- ◆ The combination of high CO₂ costs and low natural gas costs may lead to the shutdown of much of the coal capacity in NYCA
- ◆ Without new replacement capacity, reliability criteria would be violated



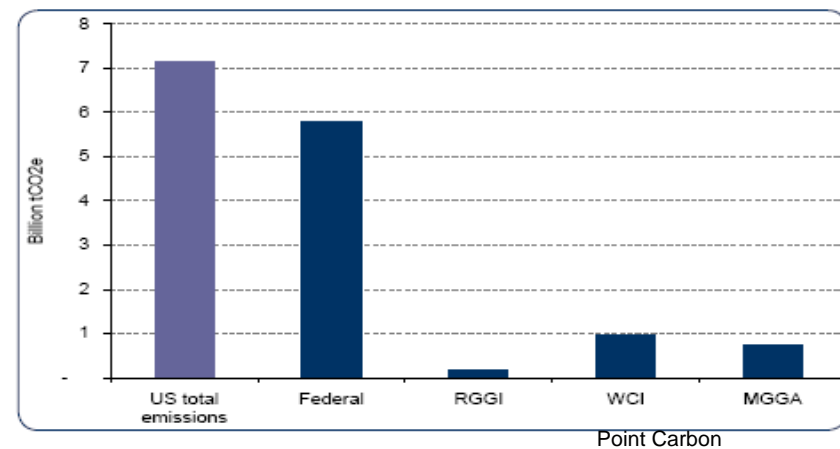
RGGI Sensitivities

- ◆ The demand for CO₂ Allowances will be impacted by other events
 - *Loss of a Nuclear Plant*
 - *Implementation of EEPS*
 - *Implementation of RPS*
 - *Disruptions in fuel supply*



CO₂ Market Convergence

- ◆ 26 States now have CO₂ initiatives in progress
- ◆ The Western Climate Initiative and the Mid-West Governor's Initiative plan on using RGGI Allowances
- ◆ Federal 2010 Proposed Budget has more than \$80 Billion of Revenue from CO₂ Allowance Sales @ \$12-\$20/ton

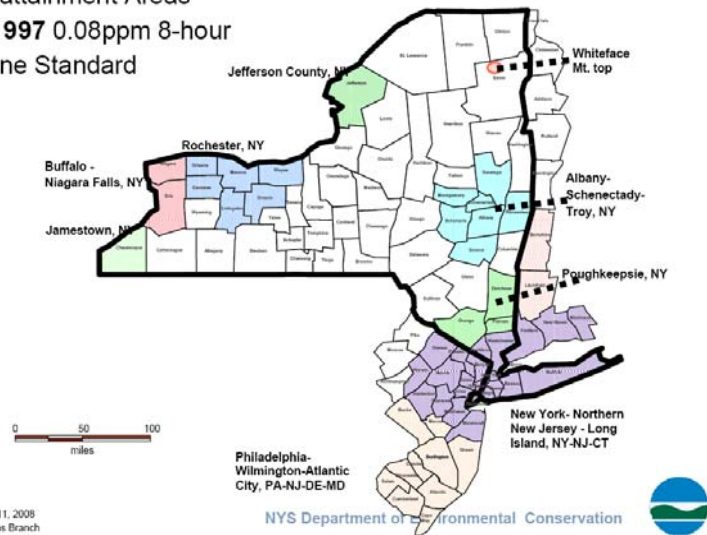


Other CO₂ Initiatives

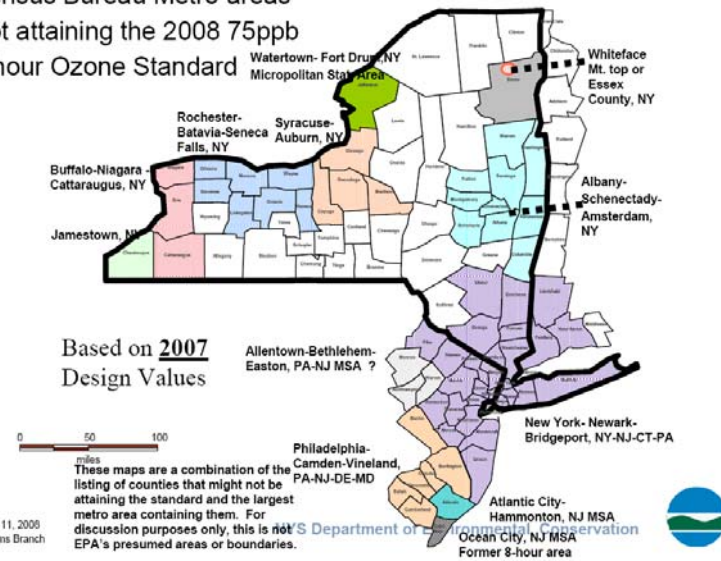
- ◆ Low Carbon Fuel Standard
 - *Would limit the amount of carbon in all fuels thus mandating the use of bio fuels*
- ◆ Proposed CO₂ New Source Performance Standard
 - *Could limit new and reconstructed steam and or combined cycle units to gas only*
 - *Could limit new and reconstructed combustion turbines to almost only gas with an effective heatrate of 12,100*
 - *55,500 GWHrs/yr of fuel diversity could be at risk*

EPA Lowers the Ozone Standard

Nonattainment Areas for 1997 0.08ppm 8-hour Ozone Standard



Census Bureau Metro areas Not attaining the 2008 75ppb 8-hour Ozone Standard



Based on 2007 Design Values

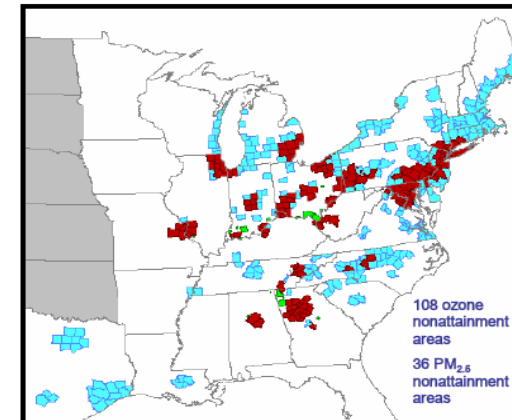
These maps are a combination of the listing of counties that might not be attaining the standard and the largest metro area containing them. For discussion purposes only, this is not EPA's presumed areas or boundaries.

Clean Air Interstate Rule

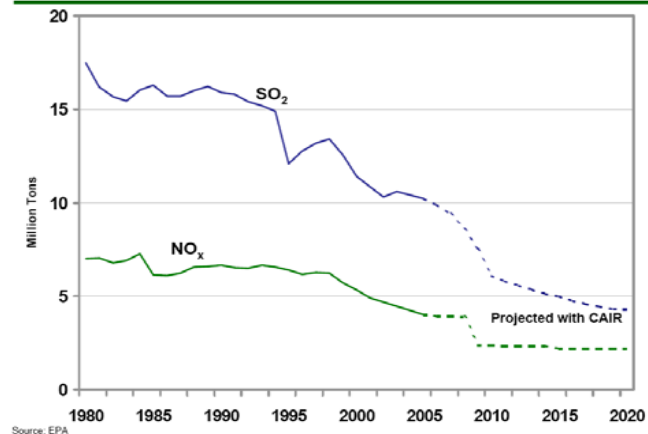
◆ CAIR

- *Proposed to reduce ozone, acid rain and regional haze*
- *Covers 28 eastern states*
- *Two Phase Cap and Trade system of Allowances*
 - *Nox 2009/2014*
 - *SO₂ 2010/2015*
- *In effect but Court has ordered a redesign*

Ozone and Fine Particle Nonattainment Areas (April 2005)



CAIR Accelerates 35 Years of Clean Air Progress: Nationwide SO₂ and NO_x Emissions from the Power Sector



CAIR Program	CAIR Budget Tons	2007 Actual Emissions Tons
Ozone Season NOx	21,960	19,425
Annual NOx Cap	45,617	40,818
Annual SO2	135,139	107,211

NOx RACT

- ◆ NYSDEC plans to propose new NOx RACT standards this year to be effective in 2010/11/12
- ◆ Currently older GTs that have not retrofitted emission reduction equipment file averaging plans with steam units in order for the group of units to operate below the required emission standard.
- ◆ New regulations will reduce steam unit emissions to the level where it will be difficult to achieve the extra emission reductions necessary to support averaging
 - *Averaging to be available across owners*
- ◆ Expected reduction costs of \$5,500/ton or \$25/MWH for the older gas turbines.
- ◆ Flexibility in implementation will be necessary in order to maintain reliability.

RPS II and Proposal for a US-RPS

- ◆ **New York**

- *New Goal is known as “45X15”*
- *Proposed increase to 30% and extended timeframe to 2015*
- *Target remains 10 Mil MWH/yr.*
- *Program costs grow from \$780 Mil to \$1.5 Bil.*

- ◆ **AREA**

30% Renewable energy mandate without credit for existing large hydro

\$55/mwhr liquidated penalty

Distributed Generation Emission Limits

- ◆ New NYSDEC Proposal
 - *No exemption for Special Case Resources*
 - *Effective 2011*
 - *9gr/bhp NO_x*
 - *Most machines built after 1995 can comply*
 - *Older diesel machines may no longer be able to participate in SCR and EDRP program*
 - This could be several hundred mw of capability
 - NYISO will examine potential impacts



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 provides comprehensive reliability planning for state's bulk electricity system.

www.nyiso.com