

# 2010 RNA Environmental Scenario Update

**Peter Carney**

*Project Manager Environmental Studies  
New York Independent System Operator*

**ESPWG**

**KCC**

*June 11, 2010*

# Study Update

- ◆ Collected technology cost information
- ◆ Four meetings with NYSDEC to review program assumptions and schedules
- ◆ Retabulated Impact Assessments for each program
- ◆ 64% of NYCA Generation is affected by these environmental programs

# Categorical Impact Assessment

- ◆ Working Assumption for Assessment
  - *Assume the potential retirement decision is tied to the capital investment decision for environmental control equipment necessary for compliance with these programs*

# Categorical Impact Assessment

- ◆ Identify affected units for each program
- ◆ Assess current environmental performance and technology
- ◆ Assign Impact Category based on environmental program goals compared to existing performance
  - *3 – Highest Impact, major retrofit necessary to comply*
  - *2 – Moderate Impact, smaller scale retrofit*
  - *1 – Low Impact, low or no capital cost to comply*

# NOx RACT

- ◆ NY Environmental Board Approves NOxRACT
- ◆ Compliance Date July 2014
- ◆ Affected units GE / NYISO NOx RACT Study
- ◆ Program Capital Cost Order of Magnitude \$150-\$300 Mil.
- ◆ Impact Category
  - **3** – *No existing control technology*
  - **2** – *DLN or SCR in place, emission levels further reductions necessary*
  - **1** – *Obtain site specific emission limit , fuel switching, combustion tuning*

NOx RACT Affected Capacity (MW) by Assigned Impact Category				
Super Zones	1	2	3	Total
A,B,C,D,E	1,805	1,917	419	4,140
F,G	167	1,307	761	2,235
H,I,J,K	2,237	673	187	3,096
<b>Total</b>	<b>4,209</b>	<b>3,896</b>	<b>1,367</b>	<b>9,471</b>

# Maximum Available Control Technology: MACT

- ◆ USEPA proposed MACT for small boilers
  - *Hg Limited from coal and heavy oil units*
- ◆ NY Clean Air Mercury Rule Part 246
  - *Applies to Coal*
  - *Phase II 0.6 #Hg/TBTU assumed to be equivalent to MACT for Hg*
  - *Coal Units*
    - 2008 TRI Data used to determine current level of emissions
    - Category 2 assigned for units not now achieving Phase II
  - *Heavy Oil*
    - Category 3 assigned
- ◆ Program Capital Costs Order of Magnitude \$ 350-500 Mil.

<b>MACT Affected Capacity (MM) by Assigned Impact Category</b>				
<b>Super Zones</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>Total</b>
<b>A,B,C,D,E</b>	1,177	1,911	840	3,927
<b>F,G</b>	0	378	2,426	2,804
<b>H,I,J,K</b>	0	1,953	3,583	5,537
<b>Total</b>	1,177	4,242	6,849	12,268

# Best Available Retrofit Technology: BART

- ◆ Impact Category
  - 3 – Coal Units, Oil Units w/o Fuel Switching
  - 2 – Fuel Switching Determined by NOxRACT Study
  - 1 – Natural Gas Units with Existing Control Technology in Place
- ◆ Order of Magnitude Cost: \$ 100-\$200Mil.

<b>BART Affected Capacity (MM) by Assigned Impact Category</b>				
<b>Super Zones</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>Total</b>
<b>A,B,C,D,E</b>	0	1,675	0	1,675
<b>F,G</b>	1,080	1,357	368	2,804
<b>H,I,J,K</b>	2,807	1,652	0	4,460
<b>Total</b>	<b>3,887</b>	<b>4,684</b>	<b>368</b>	<b>8,940</b>

# Best Technology Available: BTA

- ◆ Three meetings with NYSDEC staff to discuss current permitting status, and performance of existing control protocols
- ◆ NYSDEC Capital Cost Order of Magnitude \$6.5 Bil. For all affected units
- ◆ Permitting and hearing process may result in fewer cooling tower retrofits.

<b>BTA Affected Capacity (MW) by Assigned Impact Category</b>				
<b>Super Zones</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>Total</b>
<b>A,B,C,D,E</b>	2,819	1,211	2,992	7,022
<b>F,G</b>	2,794	0	0	2,794
<b>H,I,J,K</b>	692	4,032	4,384	9,107
<b>Total</b>	<b>6,305</b>	<b>5,243</b>	<b>7,376</b>	<b>18,923</b>



# Combined Impact of Air Programs: NOxRACT, BART, and MACT

- ◆ Order of Magnitude Cost: \$600-1,000 Mil.

Summation of Affected Capacity (MW) by Impact Categories for Air Programs Excluding Category 1								
Super Zones	2	3	4	5	6	7	8	Total
ABCDE	928	324	1,400	95	0	80	0	3,587
FG	75	0	10	2,033	529	0	233	3,560
H,JK	2,501	1,619	0	1,778	187	0	0	6,084
<b>Total</b>	<b>4,184</b>	<b>1,922</b>	<b>1,410</b>	<b>3,906</b>	<b>716</b>	<b>80</b>	<b>233</b>	<b>13,231</b>

# Cumulative Impacts of Air and Water Programs

- ◆ Risk of premature retirement is related to the capital cost required to meet the new standards. The cost of the BTA program is potentially much greater than the combined cost of the air programs
  - *Air Program Cost: \$0.5-1Bil.*
  - *BTA Program Cost: \$6.5 Bil.*

Summation of Affected Capacity (MW) by Impact Categories for All Programs Excluding Category 1								
Super Zones	2	3	4	5	6	7	8	Total
ABCDE	964	2,203	989	538	561	1,030	53	6,337
FG	755		10	2,033	529	0	233	3,560
HI,JK	862	2,063	382	2,942	499	1,778	187	8,712
<b>Total</b>	<b>2,582</b>	<b>4,265</b>	<b>1,380</b>	<b>5,513</b>	<b>1,589</b>	<b>2,807</b>	<b>473</b>	<b>18,609</b>

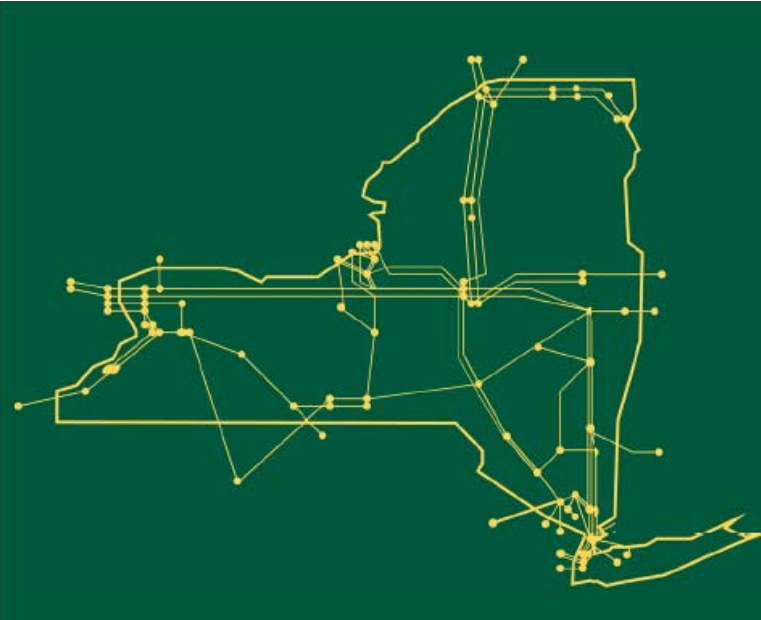
# Next Steps

- ◆ Collect Additional Cost Data
- ◆ Complete Zones At Risk Analysis
- ◆ Determine where the zonal threshold of capacity at risk is reached for each of the programs and for the combined impact of all of the programs.

# Other Important Considerations

- ◆ This scenario study does not:
  - *capture investment strategies of individual generation owners*
  - *estimate the impact of market structure changes resulting from State policy initiatives*
    - 30% RPS
    - 15% Energy Efficiency
  - *examine the impact of the current economic recession on the ability of generator owners to raise the capital necessary for the projects*
  - *evaluate the impact of generation retirements on parts of the systems subject to Local Reliability Rules*

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 planning for the state's bulk electricity system.



[www.nyiso.com](http://www.nyiso.com)