

Agenda Item 4.0

PSPC Meeting 271

January 14, 2010

# ISO-NE 2008 Emissions Report: Preliminary Results

Helve Saarela

# Overview of Emissions Analysis

- Total emissions by state (in kTons) and annual emission rates for  $\text{NO}_x$ ,  $\text{SO}_2$ , and  $\text{CO}_2$  are calculated for all New England generators
- Marginal emission rates are calculated based on emissions from natural gas and oil-fired generators
  - Considered to be those units that respond to increased/decreased electrical demand
- 2008 Emissions Analysis will put more emphasis on annual system emissions rather than marginal emission rates
  - Replaces Marginal Emission Rate Analysis reports

# Current Methodology for Calculating Air Emissions

- Obtain annual emissions for all New England units
  - Primarily data from EPA Clean Air Markets Database
  - For units without EPA emissions data (generally smaller units):
    - NEPOOL Generator Information System (GIS) data (monthly data)
      - GIS data was not used when only proxy data was available
    - Remaining data from eGRID (2005 annual emission rates) or historically assumed emission rates (e.g. AP-42)
- For marginal units
  - Primarily hourly EPA data, with same priority for data sources as above

# 2008 New England Generation Annual Aggregate Air Emissions (kTons)

State	NO <sub>x</sub>	SO <sub>2</sub>	CO <sub>2</sub>
Connecticut	7.04	7.14	11,164
Maine	3.36	2.31	6,551
Massachusetts	15.28	47.72	24,767
New Hampshire	5.74	36.61	8,816
Rhode Island	0.56	0.27	3,514
Vermont	0.59	0.12	614
New England	32.57	94.18	55,427

# 1999 – 2008\* New England Generation Annual Air Emission Rates (lb/MWh)

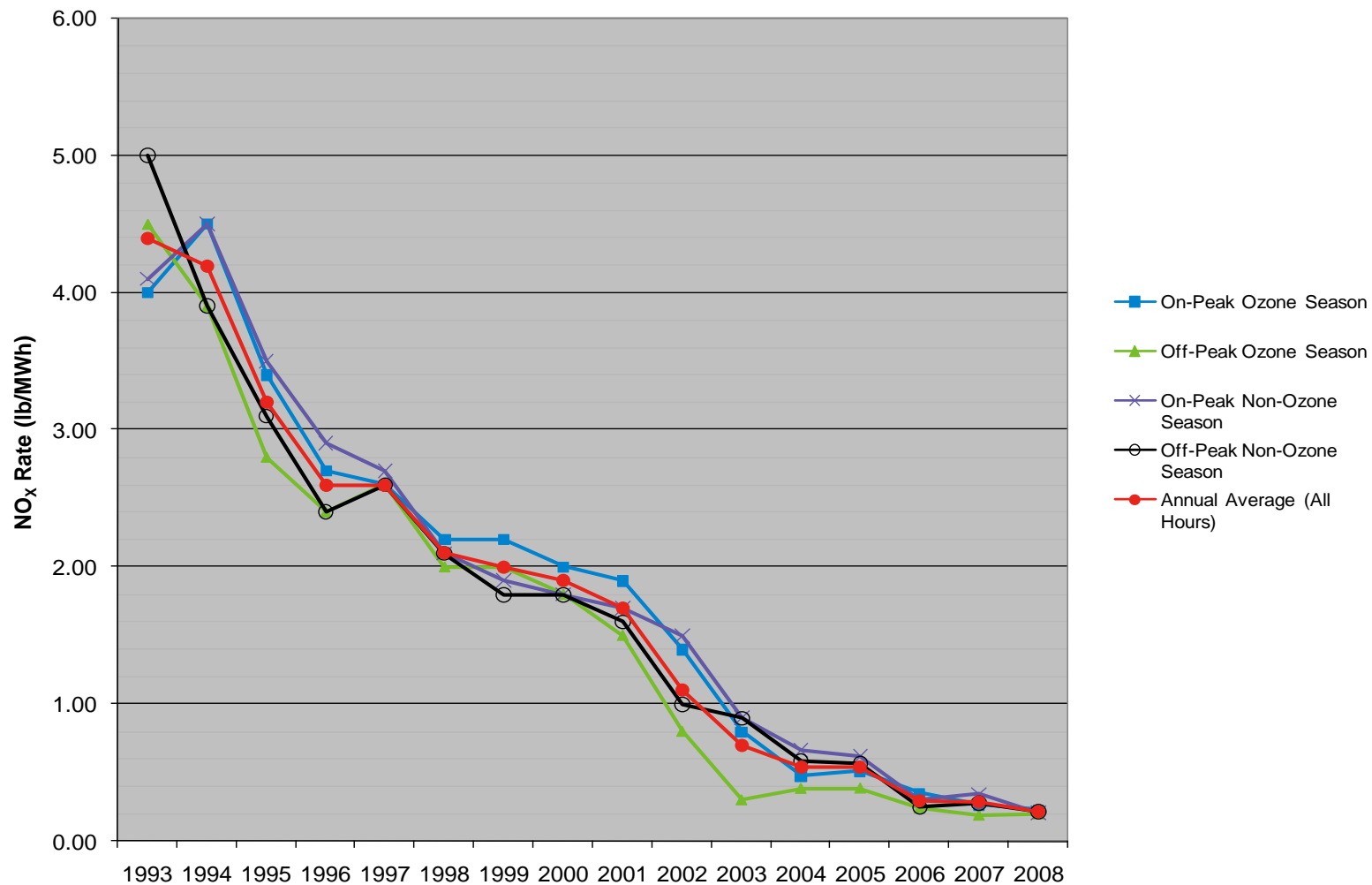
Year	Total Generation (GWh)	NO <sub>x</sub>	SO <sub>2</sub>	CO <sub>2</sub>
1999	104,409	1.36	4.52	1,009
2000	110,199	1.12	3.88	913
2001	114,626	1.05	3.51	930
2002	120,539	0.94	2.69	909
2003	127,195	0.93	2.75	970
2004	129,459	0.78	2.31	876
2005	131,874	0.88	2.27	919
2006	128,046	0.67	1.59	808
2007	130,723	0.54	1.66	905
2008	124,749	0.52	1.51	890

\*1999-2007 data from ISO-NE prior Marginal Emissions Analysis reports

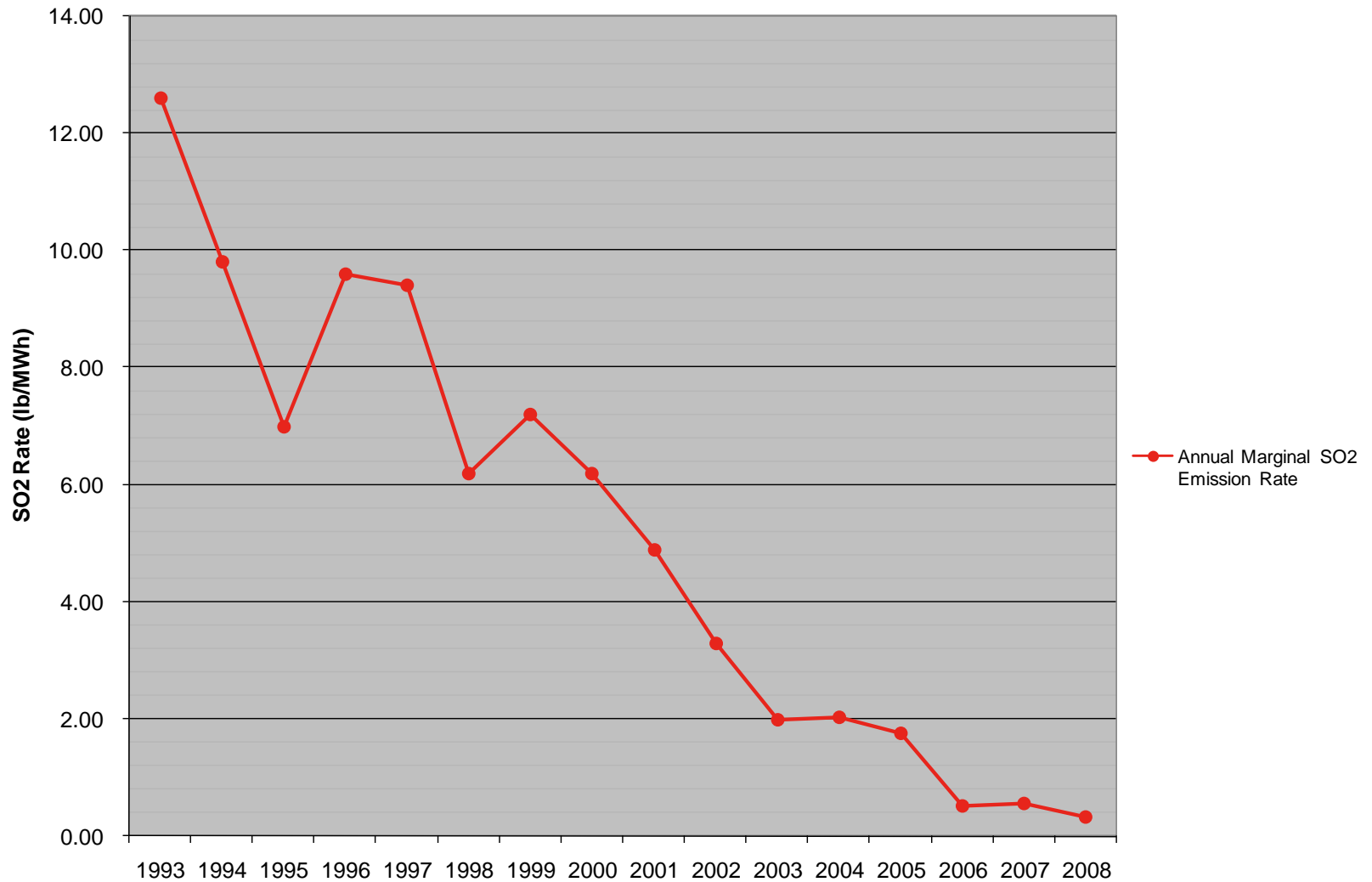
# 2008 Marginal Emission Rates (lb/MWh)

Air Emission	Ozone Season		Non-Ozone Season		Annual		Annual
	On-Peak	Off-Peak	On-Peak	Off-Peak	On-Peak	Off-Peak	Average (All Hours)
NO <sub>x</sub>	0.23	0.20	0.21	0.22			0.21
SO <sub>2</sub>					0.33	0.33	0.33
CO <sub>2</sub>					952	976	964

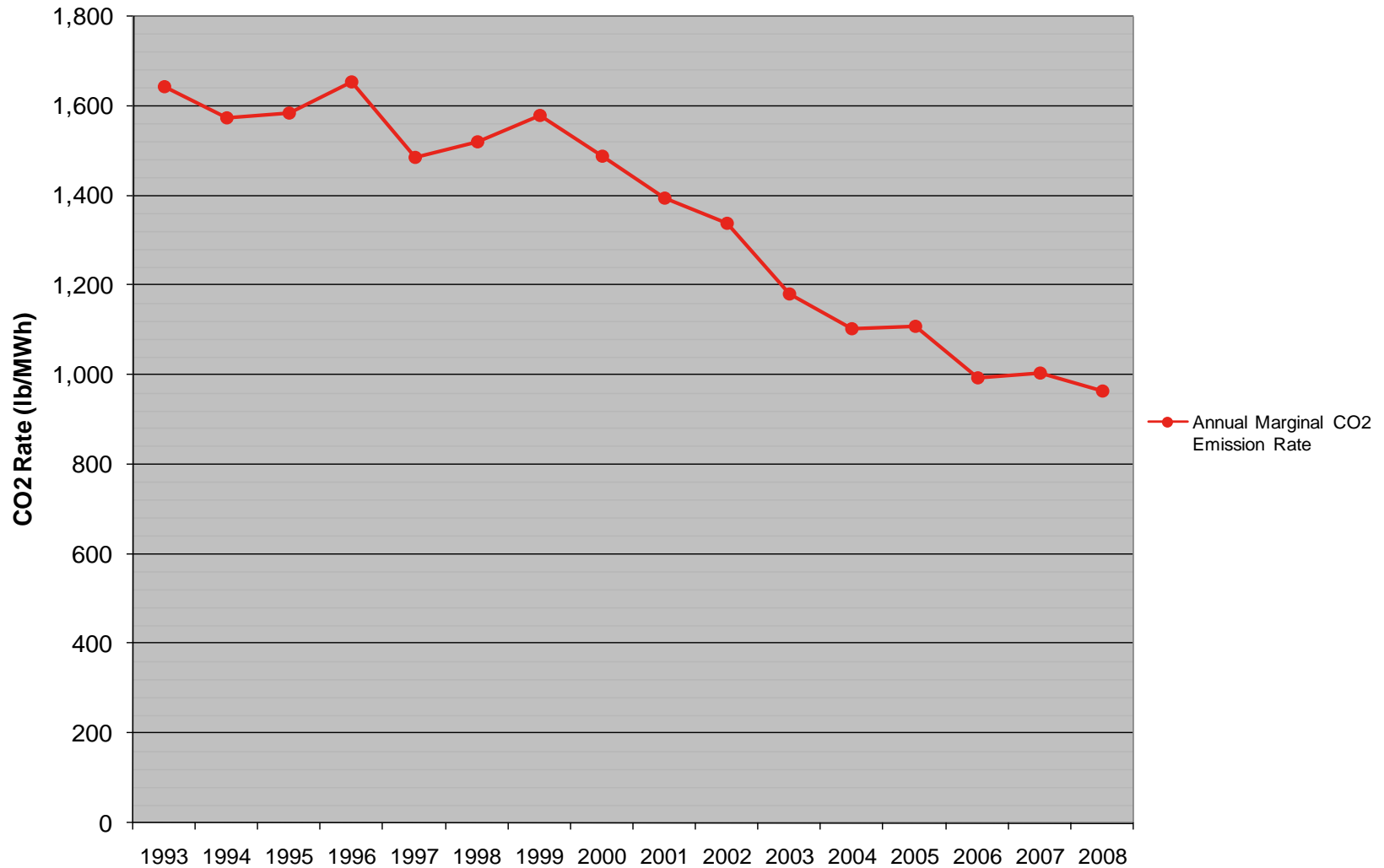
# NO<sub>x</sub> Marginal Emission Rate Analysis Results



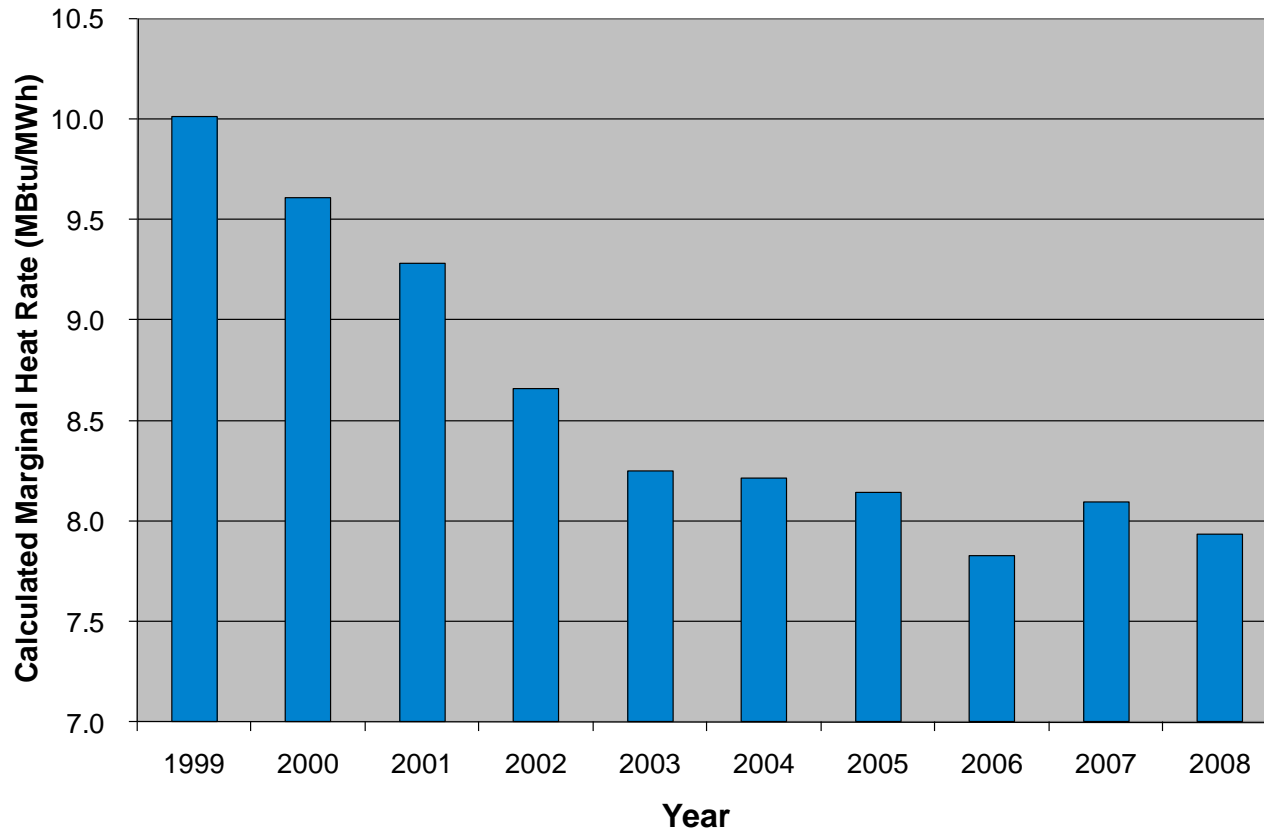
# SO<sub>2</sub> Marginal Emission Rate Analysis Results



# CO<sub>2</sub> Marginal Emission Rate Analysis Results

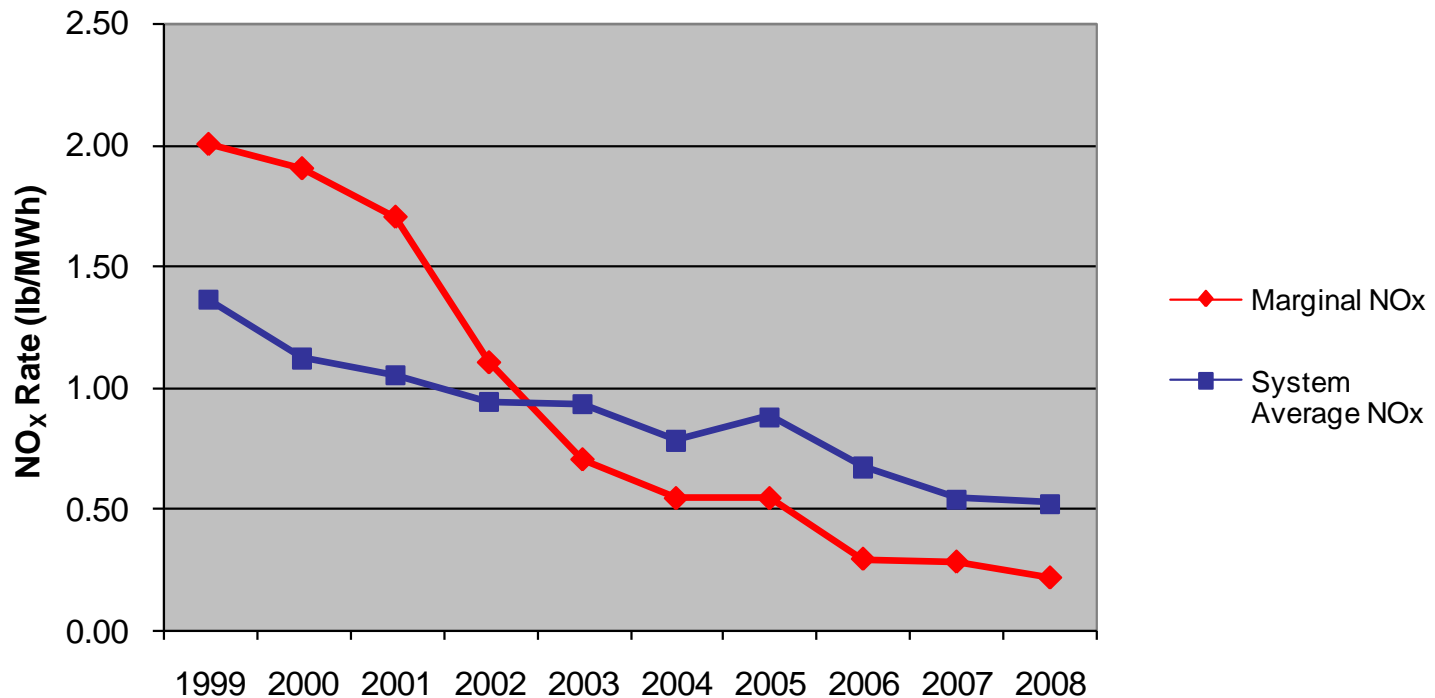


# 1999 - 2008 Calculated Marginal Heat Rates (MBtu/MWh)

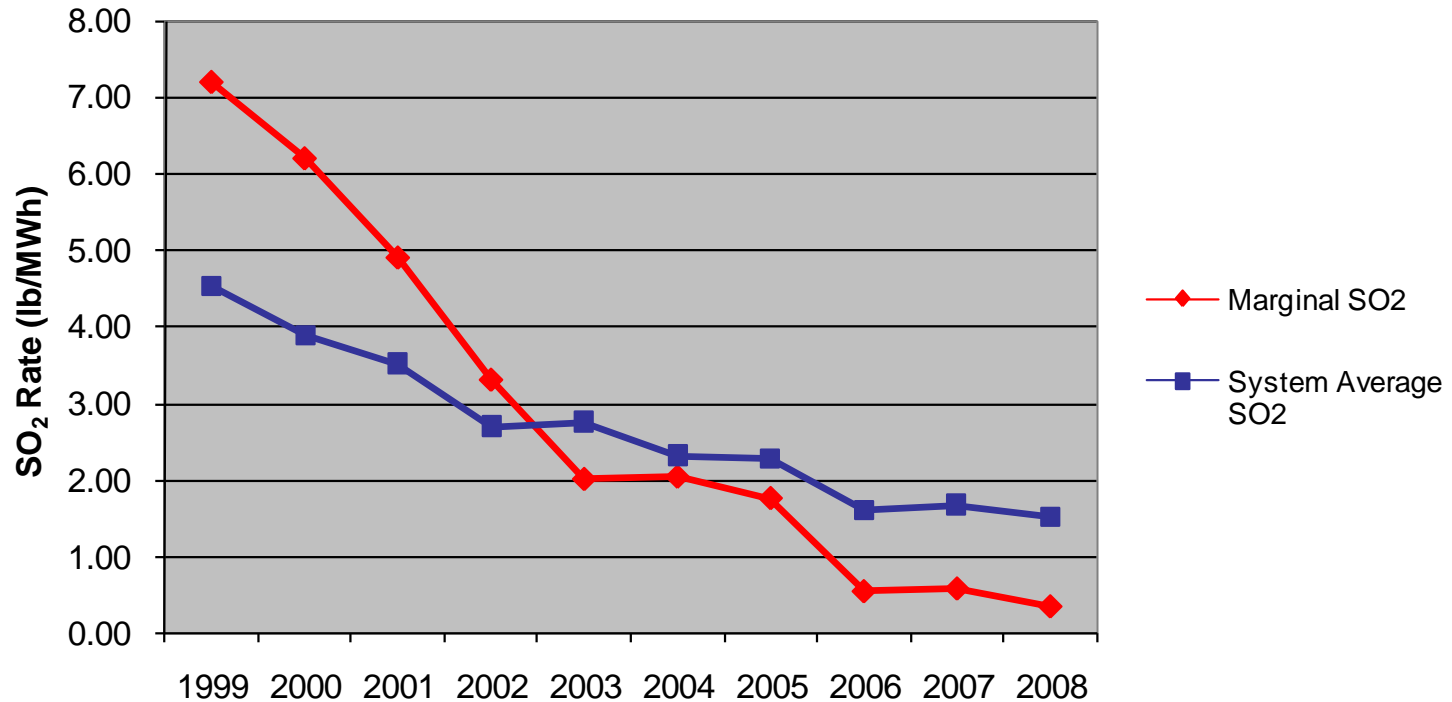


Calculated 2008 Marginal Heat Rate is 7.932 Mbtu/MWh

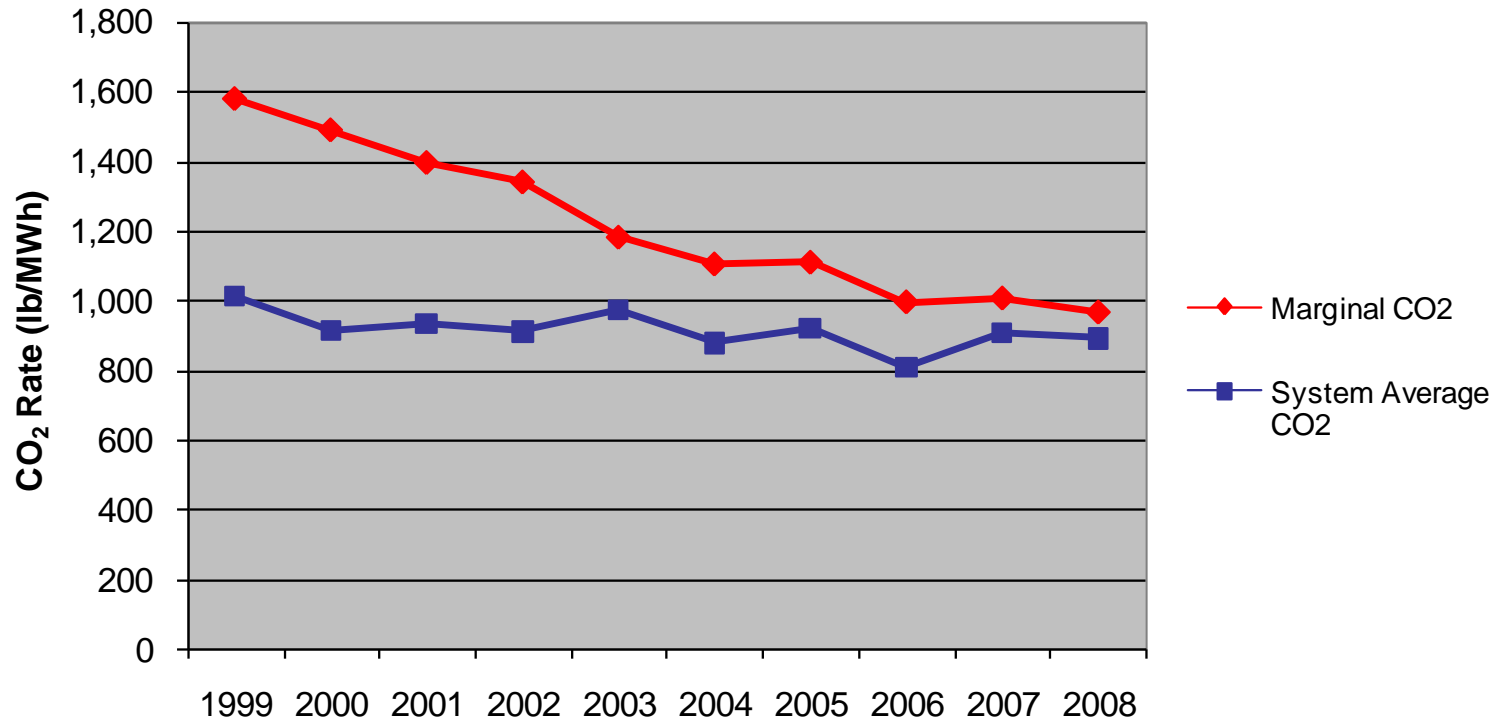
# 1999 – 2008 Marginal and System Average NO<sub>x</sub> Emission Rates in lb/MWh



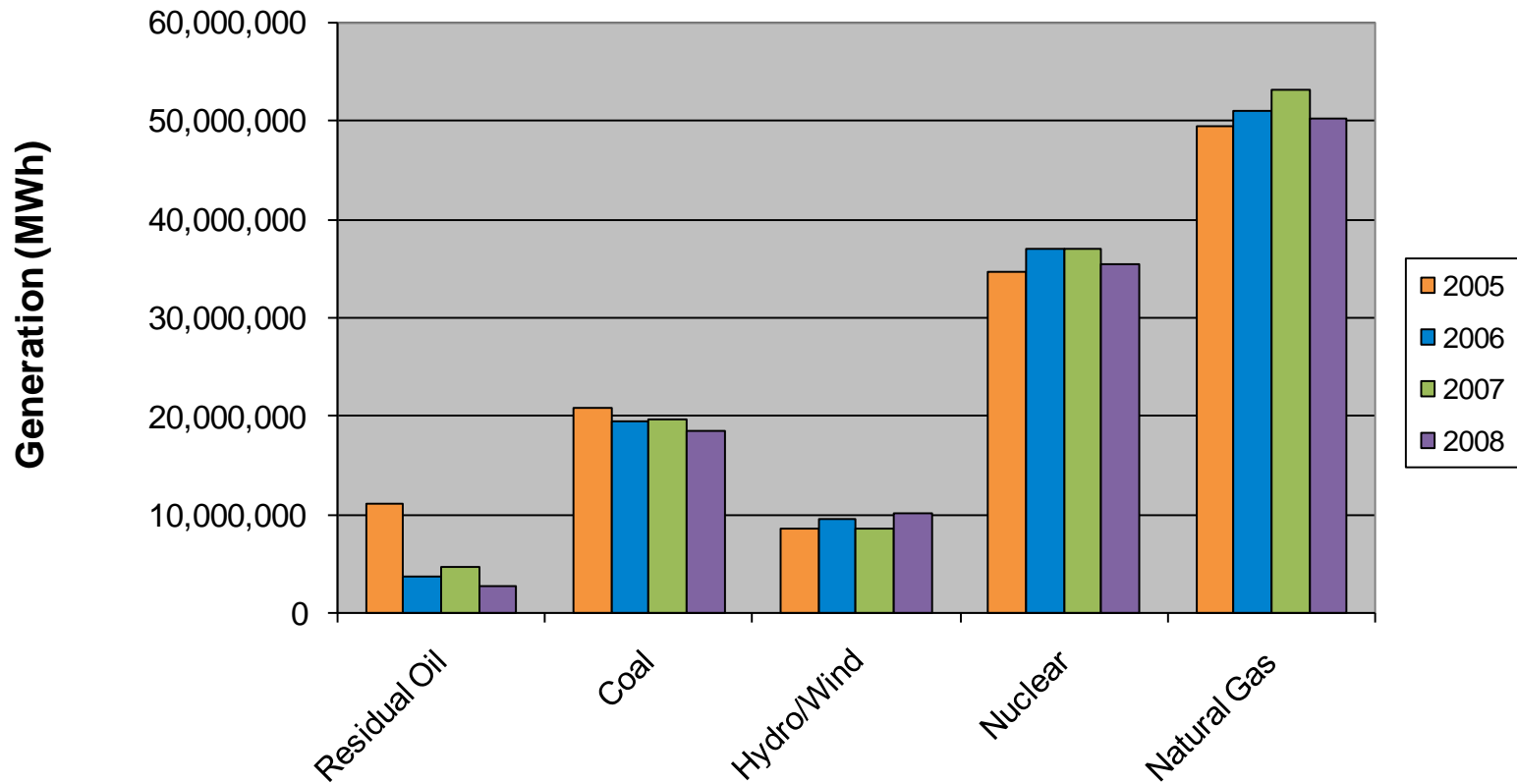
# 1999 – 2008 Marginal and System Average SO<sub>2</sub> Emission Rates in lb/MWh



# 1999 – 2008 Marginal and System Average CO<sub>2</sub> Emission Rates in lb/MWh



# Generation for Select Fuel Types, 2005 - 2008 (MWh)



# Next Steps

- Report is expected to be completed by second quarter 2010