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High Electric Demand Day Strategy

Chris Salmi, NJ DEP

Anne Gobin, CT DEP



Overview

- **Emissions** from Electric Generating Units (EGUs) are **higher on high electric demand days**
- This results in **poorer air quality**
- **Flexibility and innovation** needed to develop successful programs to address this issue

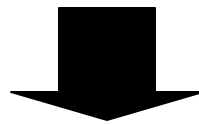


Baseload EGUs Getting Cleaner But Emissions on HEDD Remain High

Emissions (TPD)					
Typical Summer Day				High Electric Demand Day	
8/7/2002	6/4/2005		Δ	8/12/2002	7/26/2005
992			623	1615	
	551		798		1349



Baseload units
are getting
cleaner

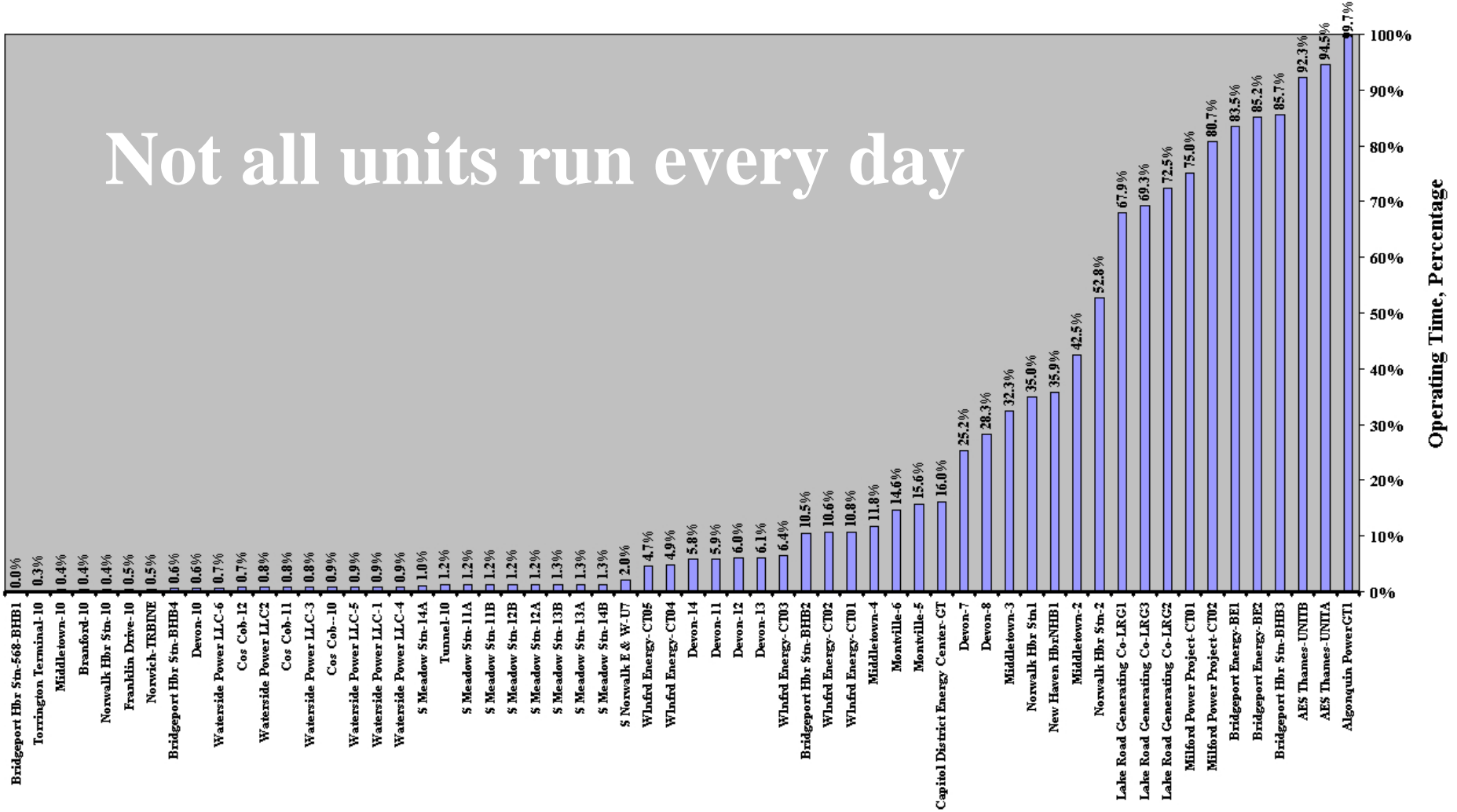


Delta getting larger--
HEDD units have a more
profound effect

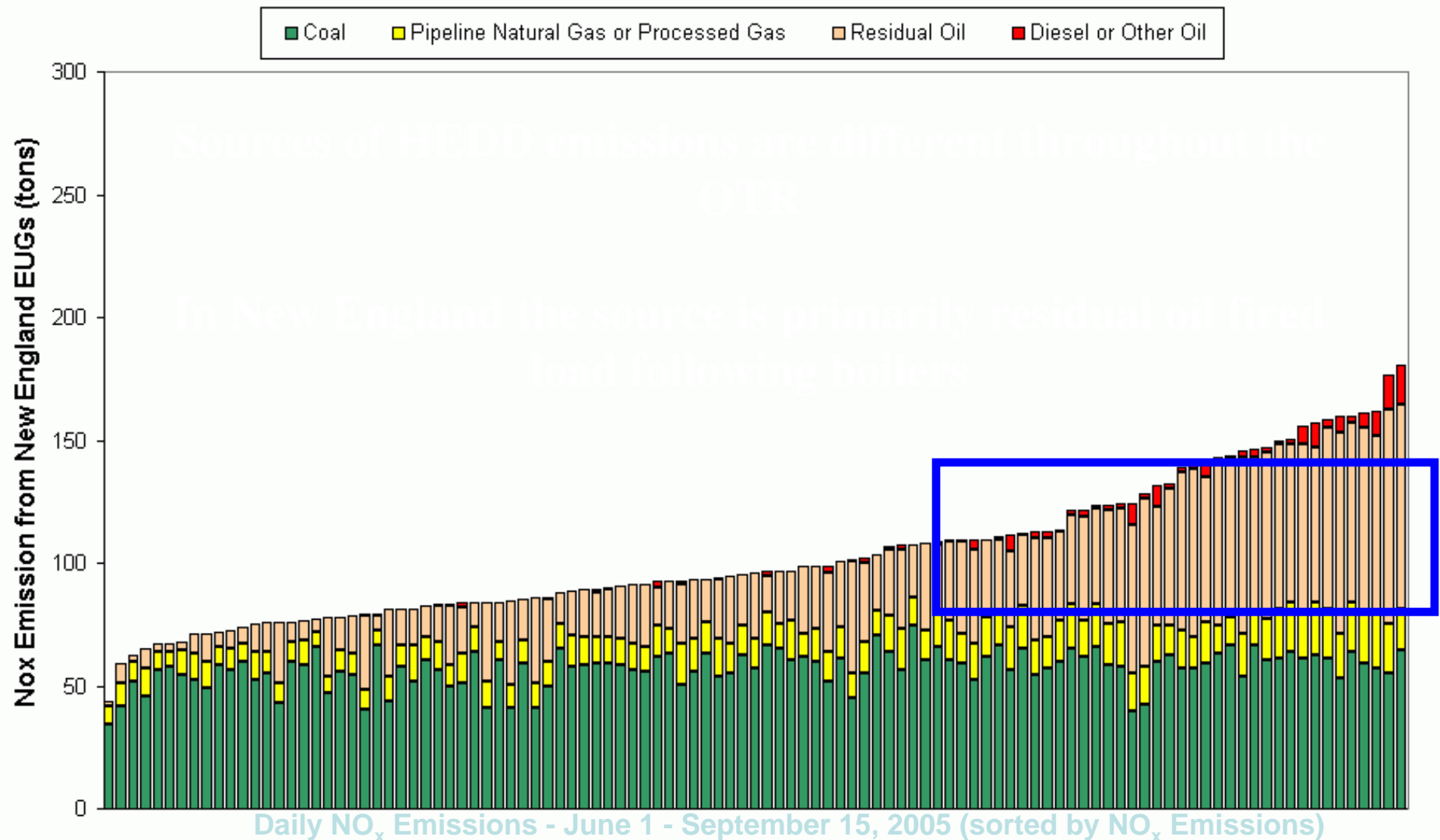


CT Electric Generating Utility Average Percent Operating Time 2002-2005 Ozone Seasons

Not all units run every day

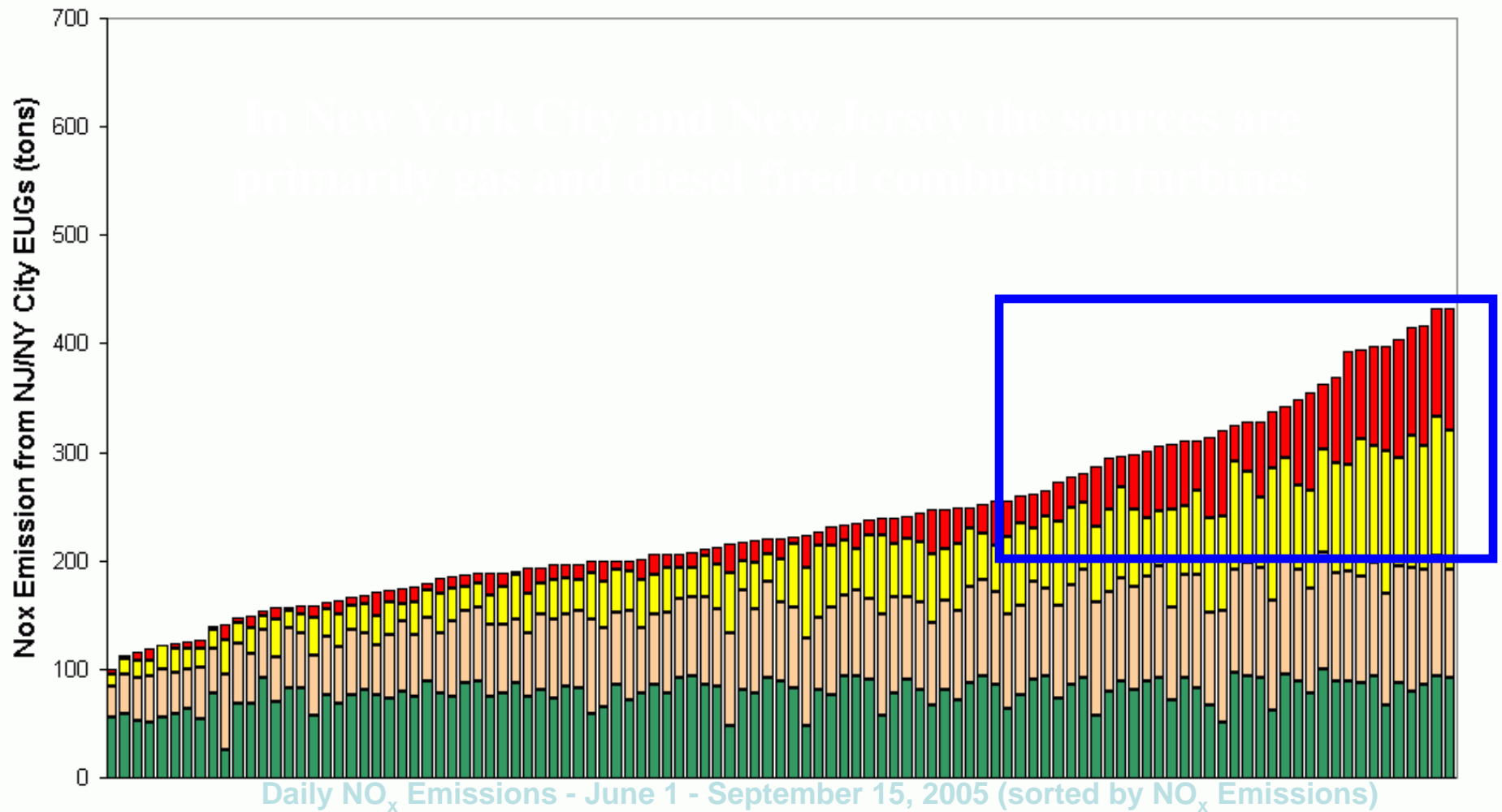


Fuel Types Comprising the Daily Nox Emissions
sorted by NO_x Mass from New England EGUs
June 1, 2005 - September 15, 2005



Fuel Types Comprising the Daily Nox Emissions
sorted by Nox Mass from NY City and NJ EGUs
June 1, 2005 - September 15, 2005

Coal Residual Oil Pipeline Natural Gas or Processed Gas Diesel Oil or Other Oil





Daily NO_x Emissions from All Units* in OTR States



Date (2005)	NOx Emissions (tons)	Heat Input (mmBtu's)	Average Emissions Rate (lbs/mmBtu)
May 1 – Sept. 30	Seasonal total:163,833 Daily average: 1071	Seasonal total:1,995,251,140 Daily average: 13,040,857	.164
Tuesday July 26	1,677	19,811,372	.169
Wednesday July 27	1,668	19,619,927	.170
Wednesday August 4	1,619	19,050,297	.170
Friday August 12	1,588	18,501,509	.172

• There are 1168 units in OTR states that report their hourly emissions to EPA as either part of the NO_x Budget Program and/or Acid Rain Program



The Air Quality Opportunity

- Reductions of NO_x on peak days will provide significant ozone reduction benefit
- Electric system policies should be used to reduce demand on peak days which in turn achieves air quality benefits
- Seasonal or annual trading EGU control programs do not address the problem as currently designed



Cannot Attain and Maintain without Addressing Peak Days

- **Increase in peak demand is growing faster than the base:**
 - PJM Interconnection: consumer peak demand for electricity will **rise ~ 1.6% annually** over the **next decade**.
 - NE ISO: peak demand will **rise ~2.4% annually**.
 - NYISO: relies heavily on many combustion turbines to maintain NYC grid.
- **Meeting hot day peak electrical demand requires bringing on more units, which are not necessarily clean. These same units appear insignificant in inventory.**



OTC Charges

- June 7, 2006:
Evaluate and recommend options to address HEDD emissions
- November 15, 2006:
Expeditious completion of HEDD strategy
for incorporation in ozone SIPs



Robust Stakeholder Process



- ISOs
- PUCs
- Generating Companies
- EPA
- State staff

Process started in April 2006



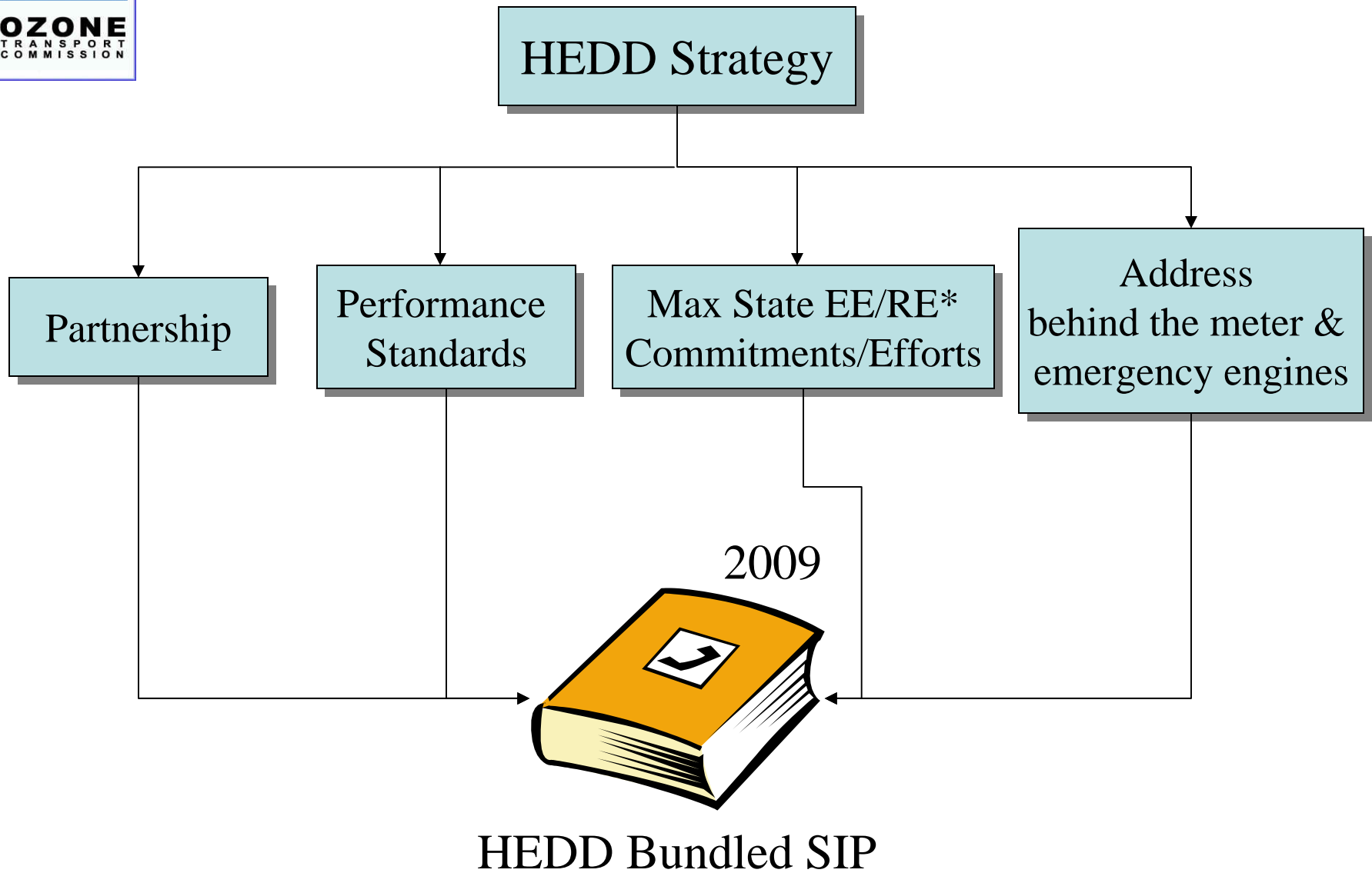
Accomplishments

- Established a list of HEDD units in a 6 state area (MD, DE, PA, NJ, NY, CT)
- Established an emission reduction goal
 - Looked at the emission difference between a Typical Summer Day (June 4, 2005) and a High Electric Demand Day (July 26, 2005)
 - Units Included in the Analysis
 - Combustion Turbines – Included all units
 - Non-Base Load Boilers
 - List adjusted by states
- Applied an emission reduction level to Uncontrolled Units



State Reduction Responsibility

State	NO _x (tons per day)	Percent Reduction from HEDD Units
CT	11.7	25%
DE	7.3	20%
MD	23.5	32%
NJ	19.8	28%
NY	50.8	27%
PA	21.8	32%
Total	134.9	



* Includes Demand Response and clean Distributed Generation



EPA TRUM Analysis of 2010 NO_x Reductions Resulting from EE Programs on HEDD in OTC

Assuming 1.5% Cumulative Load Reductions in All States

7.7*

State	Load Reduction MWh per day	NO _x Reduction Tons per day
Connecticut	1,497	1.20
Delaware	1,438	1.25
Maryland	2,181	4.32
New Jersey	6,394	6.44
New York	6,180	5.85
Pennsylvania	6,720	5.35

More detailed analysis can be performed on a state by state basis that utilizes more refined local information.

* Dispatch Analysis of August 2, 2006 NO_x Reductions with load constraints factored in for Southwest Connecticut. (Analysis by RSG Inc.)



State - Generator HEDD Partnership

Agreement contents:

- Emission Reduction Responsibility
- Defined Actions on High Electric Demand Days and Trigger
- Quantification Methods
- Reporting Requirements



Additional Components of Partnership

- States are reviewing existing rules to close 'loop holes' that enable dirty distributed generation to exacerbate our air quality problems
- States can enhance Energy Efficiency and Demand Response programs to reduce energy demand and therefore emissions



Challenges

- Agreeing to long term 'clean' performance standards and timing
- Prevent anticipated electric demand growth from creating growth in peak needs. Pursue demand response and energy efficiency with energy regulators and policy makers.
- Challenge the market to find funding to 'make' HEDD units clean in the long term



Leverage Energy Markets and PUC Actions

- Efforts to Reduce Electrical Demand
 - Energy Efficiency and Demand Response Programs
- Efforts to Improve System Reliability
- Efforts to Promote Fuel Diversity
 - Renewable Energy Programs
 - Diversity Requirements
- Actions Include:
 - Real Time Metering Infrastructure
 - Dynamic pricing for retail customers
 - Removal of electric distribution company disincentives - decoupling
 - Broaden the focus on energy efficiency to include demand response and make energy efficiency a resource that can compete for market share
 - Coordinated planning
 - Wholesale electrical market (ISOs) so environmental issues factored in



Flexibility & Certainty

- **Flexibility**

- HEDD unit owners choose the most cost effective path
- Can avoid “Command & Control” approach
- Can use conservation to minimize peaks & minimize the commitment impact
- If not double-counted, HEDD unit owners responsibility can span state borders, if directionally correct
- Allows time to comply and continue to plan




Flexibility & Certainty

- **Certainty**

- State and the source enter into a mutually agreed upon plan using a formal agreement as the “contract” which gets submitted in the SIP
- Lays out what is expected of both parties
- Provides the certainty required to plan future actions



What's in it for...

The State:  Attainment

**HEDD Unit Owners:  Flexibility
& Certainty**



Recommendations

- Complete work on trigger for HEDD
- Continue to work with stakeholders and energy planners to move energy and air quality planning in the direction to create a more symbiotic relationship
- Initiate HEDD Strategy for SIPs due June 2007