

# High Electricity Demand Day Ozone Attainment Strategies for OTC

## Analysis of Trading Approaches

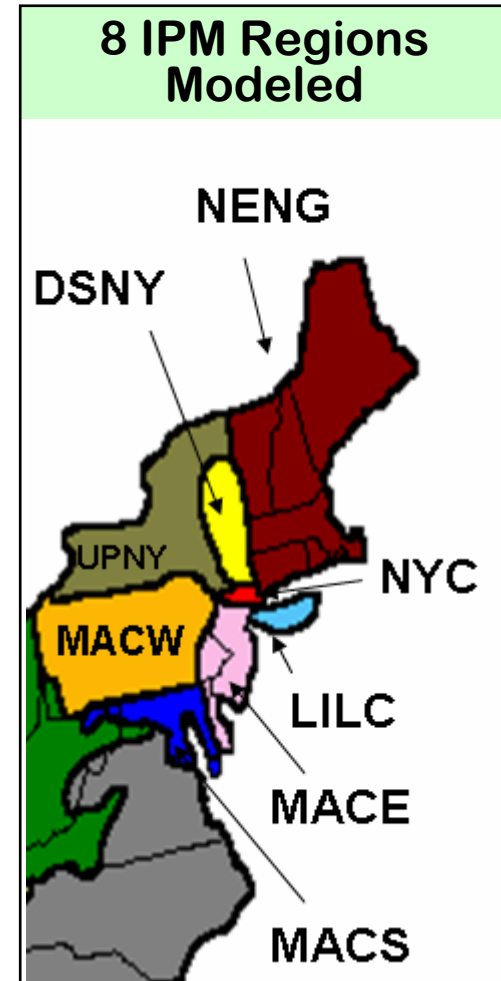
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# TRUM & Trading Analysis

- TRUM = The Technology Retrofit and Updating Model (TRUM)
  - Macro-driven spreadsheet model, developed by ICF to supplement the use of its Integrated Planning Model (IPM).
  - Runs quickly but does not provide exact solutions.
- Started with 2010 CAIR scenario as a base case
  - NEEDS 2004 and IPM Base Case v. 2.1.9
- Reconfigured the model to look at best estimate of average number of ozone “trigger” days & high electric demand day (HEDD) load
  - 12 high electric demand days, based on recent load projected to 2010
- Only controls and load-shifting used to comply (no clean energy options included)



# Regulatory Options Analyzed

Scenario	HEDD % Reduction from Capped Units	HEDD Surrender Ratio	Resulting Daily Emissions From OTR Capped Units	Actual Daily NOx Reduced from All Units	Total CAIR NOx Allowances Retired for 12-day Period	% of 2009 Region-wide O3 Season NOx Cap	% of 2009 OTR O3 Season NOx Cap
OTR-wide All EGU Types- 1	30%	16:1	532	159 tons (20%)	102,165	18%	74%
OTR-wide All EGU Types- 2	15%	6.4:1	648	66 tons (8%)	49,785	9%	36%
OTC-wide CTs Only (Exelon Proposal*)	0.4%	2:1	762	2.7 tons (0.4%)	13,104	2%	10%

- **OTR-wide Trading:**
  - Large surrender ratios would drive 15% (114 tons) to 30% (230 from 762 tons) reduction after CAIR in 2010, mostly with addition of SNCR
  - See significant load-shifting to non-capped CTs, decreasing actual reductions
  - Considerable reduction in CAIR 2009 ozone season NOx cap
- **Exelon proposal\*:**
  - Addresses some concerns (i.e., tightening cap, load-shifting to non-capped CTs)
  - Does not get as much overall reductions (because applicability very limited; no reductions from SNCR)

\* For ease of modeling, some simplifications were made to Exelon proposal.

# More Observations & Conclusions

- SNCR is driver of HEDD NO<sub>x</sub> reductions
- Existing water injection use reduces by almost half (MW basis)
- Significant implementation issues remain:
  - What triggers higher allowance surrender?
  - What would geographic extent be?
- High degree of variability in number of allowances retired, based on unpredictable number of trigger days
- Use of CAIR allowances to encourage additional HEDD reductions raises concerns

# OTR-wide All EGU-types Trading: Notes for TRUM Runs

- CAIR 2009 ozone season NO<sub>x</sub> cap is 580,000 tons
- OTR cap = 137,592 tons; calculated from OTR states receiving CAIR budgets
  - Includes Connecticut, Delaware, District of Columbia, Maryland, Massachusetts, New Jersey, New York, Pennsylvania, Virginia, West Virginia
- Higher surrender ratio applied to units >25MW

# OTC-wide CTs Only (Exelon Proposal\*)

## Assumptions

CT units are affected by the following assumptions:

### 1. Units greater than 25 MW

Controlled Units are defined as:

The units installed with water injection, SCR, or SNCR.

The units with NOx rate less than NOx RACT level (0.2 lbs/MMBtu)

The units with capacity factor less than 1180 during ozone season  
(meets NOx RACT operating time requirement)

The controlled units surrender NOx allowance at a 1:1 ratio

Uncontrolled Units surrender NOx allowance at a 2:1 ratio.

### 2. Units less than 25 MW:

Controlled Units are defined as:

The units installed with water injection, SCR, or SNCR.

The units with NOx rate less than 0.2 lbs/MMBtu

The units with capacity factor less than 1180 during ozone season  
(meets NOx RACT operating time requirement)

The controlled units surrender allowances equal to amount actual  
over allowable.

Uncontrolled units surrender allowances equal to two times the amount  
that actual emissions are over allowable emissions.