What is NESCAUM?

• Northeast States for Coordinated Air Use Management
• Formed in 1967
• Association of 8 Northeast state air agencies
• Technical and policy support for air quality & climate initiatives
Member States

Connecticut
Maine
Massachusetts
New Hampshire
New Jersey
New York
Rhode Island
Vermont
Talk Overview

- Background for effort
- Conceptual description of ozone transport
- Trends in ozone
- CT challenges
Background

- EPA guidance requests states include a “conceptual description” of pollution transport problems in their SIPs

- To that end, NESCAUM seeks to:
  - Synthesize information across Northeast
  - Provide common foundation for all states
  - Avoid redundant efforts by states
Status

- NESCAUM has developed conceptual description of pollution transport as resource for states
- States may extract info according to needs
- States need to supplement with state-specific info
- Conceptual description available at: http://www.nescaum.org/activities/major-reports/
Covers ozone, PM2.5, and haze

• Separate volumes cover ozone and PM2.5/haze

• This presentation focuses on ozone

• NESCAUM received input and review from states
Conceptual description

• Qualitative in nature
• Not a new analysis
• Synthesizes & expands upon existing information
• Seeks to address questions posed by EPA guidance
  – Is $O_3$ problem local or regional in character?
  – Is transport important?
  – What types of weather lead to high $O_3$?
  – Is $O_3$ limited by NOx, VOCs, or both?
The Big Picture

Volatile Organic Compounds

Nitrogen Oxides

Ozone

Biogenic Area Mobile Off-Road Point
Regional nature of ozone
Recap of NE ozone studies

- Peer-reviewed science literature thru 2010
- OTAG 1995-1997 (eastern US)
- NE-OPS 1998-2002 (Philadelphia)
- NARSTO 2000 (Northeast)
- NEAQS 2002-2004 (New England)
- RAMMPP 2003 (eastern blackout)
Transport pathways

1. Smaller scale - sea breeze/surface winds

2. Regional scale – mid-level channeled flow; nocturnal low level jets

3. Largest scale – synoptic wind flow and upper level ozone reservoir
Schematic of transport paths

Transport Regimes Observed During NARSTO-Northeast
Small scale surface

Over water transport
Air trajectory paths arriving at Acadia Natl. Park on high ozone days
Transport along coastal CT

Peak ozone migrates east on June 5, 2010 over coastal CT. Mixing heights low near Long Island Sound.
Regional scale flow

Nocturnal low level jet
OTR-wide low level jet 8/12/2002
Upper level transport

Transport Regimes Observed During NARSTO-Northeast
Hi-elevation ozone monitors

Upper level ozone reservoir
The ozone reservoir aloft
Trends

• Trends in ozone

• Trends in NOx

• Retrospective look at NOx SIP Call
Regional NOx Controls Work

• Can now look retrospectively at NOx SIP Call results
• Consistent set of results showing regional progress
  – Peer-reviewed published studies
  – EPA trends reports
  – State monitoring
8-hr ozone trends in Northeast
Trends in high O3 & temps in CT

Number of Ozone Exceedance Days in Connecticut Compared to the Number of "Hot" Days
(2010 data are preliminary through Aug 10, 2010)
NOx going down in Northeast 1997-2009
Heading in the right direction

- Regional NOx controls coupled with appropriate local VOC & NOx measures work
- Ozone still a regional problem in eastern US
- State SIPs must continue to address local as well as downwind impacts
Future challenges

• Continuing challenges with current 85 ppb ozone NAAQS

• New ozone NAAQS on way

• Additional regional and local controls needed

• Peak ozone day strategies, e.g., high electric demand days
### Contributors to CT 85 ppb O3 NAAQS (maintenance) – 26 states total*

<table>
<thead>
<tr>
<th>State</th>
<th>Linkage (ppb)</th>
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<tr>
<td>NY</td>
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</tr>
<tr>
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<td>PA</td>
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<td>VA</td>
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*Note: CT is 4th highest contributor to itself in proposed EPA transport rule*
New ozone NAAQS coming

- EPA reconsidering recently revised 75 ppb ozone NAAQS (2008)
- Panel of outside science experts recommended in range of 60-70 ppb
- EPA may finalize revision by Sept. 1
Import of revised ozone NAAQS

• With revised ozone NAAQS, transport contribution thresholds will be 1% of new NAAQS (from EPA’s proposed transport rule)

• E.g., if 70 ppb, contribution threshold becomes 0.7 ppb
Examples of CT contributions if 70 ppb NAAQS*

<table>
<thead>
<tr>
<th>State / site</th>
<th>$CT$ contribution (ppb)</th>
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<tbody>
<tr>
<td>CT / Hartford</td>
<td>15.6</td>
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<tr>
<td>ME / Acadia NP</td>
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<td>MA / Chicopee</td>
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<td>NJ / Monmouth</td>
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<tr>
<td>RI / Providence</td>
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</table>

*Revised 8-hr primary NAAQS to be in 60-70 ppb range. Contributions from proposed EPA transport rule.
Questions?