The Northeast’s Need for NOx Reductions

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South Coast Air Quality Management District

Heavy-Duty Low NOx Rulemaking Workshop

September 26, 2019
Northeast States for Coordinated Air Use Management (NESCAUM)

• ME, NH, VT, MA, RI, CT, NY, and NJ

• NESCAUM directors are the 8 state air agency chiefs

• NESCAUM provides technical & policy support for states’ air quality and climate programs
Talk Outline

1. Persistent regional ozone problem in Northeast

2. On-road heavy duty vehicle (HDV) sector is large part of NOx inventory

3. Regional ozone modeling indicates large contribution from on-road HDV NOx

4. On-road HDV NOx controls can be highly cost-effective
Widespread Regional O₃ Nonattainment

- 2015 8-hr NAAQS 0.071 ppm nonattainment across NE Corridor

- 2008 8-hr NAAQS 0.075 ppm “bump-up” for failing to attain by deadline:
  - Serious: New York-Northern New Jersey-Long Island, NY-NJ-CT
  - Serious: Greater Connecticut, CT

[84 Fed. Reg. 44238 (Aug. 23, 2019)]
O$_3$ Improvements Are Stalling
NYC “NOx” Volcano Seen from Space

Compilation from Euro. Space Agency TROPOMI NO$_2$
Recent High Ozone in 2018

- Highest ozone seen in NYC region since 2006
  - 8 hour max: 115 ppb
  - 1 hour max: 143 ppb
On-road HDVs Largest NOx Source Sector in Northeast

Source: Ozone Transport Commission
Relaxation of Control Measures and Reduced Rule Effectiveness

1. Clean Power Plan (ACE Rule replacement)
2. Cross-State Air Pollution Rule (CSAPR) Update
   • Doesn’t match statutory ozone attainment deadline in Northeast
3. CSAPR Close-out
   • Doesn’t fully address remaining “significant contributions” from upwind states
4. Zero Emission Vehicle (ZEV) requirement waiver revocation
5. Glider truck rule (proposed)
6. Heavy-duty vehicle emissions control tampering
Regional $O_3$ Modeling Indicates Large Contribution from On-Road HDV

- Westport, CT monitor projected still in nonattainment in 2023
- On-road HDV diesel modeled to contribute 6-10 ppb $O_3$ on days above 70 ppb in 2023
- Overall, on-road HDV diesel is 3rd largest contributing source sector on average
Regional O$_3$ Modeling Indicates Large Contribution from On-Road HDV

- Staten Island, NY monitor projected still in nonattainment in 2023
- On-road HDV diesel modeled to contribute 5-10 ppb O$_3$ on days above 70 ppb in 2023
- Overall, on-road HDV diesel is 2$^{nd}$ largest contributing source sector on average
On-road HDV Diesel Is a Multi-state Contributor to O₃ Nonattainment

Modeled 2023 contributions by sector to Westport, CT ozone monitor

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Significantly contributing states (3 or more days)
On-road HDV Diesel Is a Multi-state Contributor to O₃ Nonattainment

Modeled 2023 contributions to Staten Island, NY ozone monitor

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Significantly contributing states (3 or more days)
### Annual Cost Effectiveness of NOx Reductions in Northeast

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<th>Annual Cost Effectiveness ($/ton Nox)</th>
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<tr>
<td>ICI Boilers (area &amp; point sources)*</td>
<td>$750 - $7,500 (Low NOx Burners)</td>
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<td>$1,300 - $3,700 (SNCR)</td>
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<td>$2,000 - $14,000 (SCR)</td>
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<td>Combustion Turbines – SCR*</td>
<td>$2,010 - $19,120</td>
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<td>HDV NOx 0.02 g/bhp-hr</td>
<td>Much less?</td>
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*From state-specific cost estimates in the Northeast*
Summary

• Northeast continues to suffer from poor ozone air quality
• Onroad HDV diesel is a major part of the Northeast’s NOx inventory
• Onroad HDV diesel can contribute 5-10 ppb O₃ at nonattainment monitors in 2023
• Onroad HDV diesel is large source of cross-border ozone transport affecting Northeast
• Onroad HDV diesel NOx reductions can be highly cost-effective relative to other options
• Northeast needs strong & timely interstate NOx control program for onroad HD diesel vehicles
• Absent such a federal program, Northeast states will look to CARB standards