



The Northeast's Need for NO_x Reductions

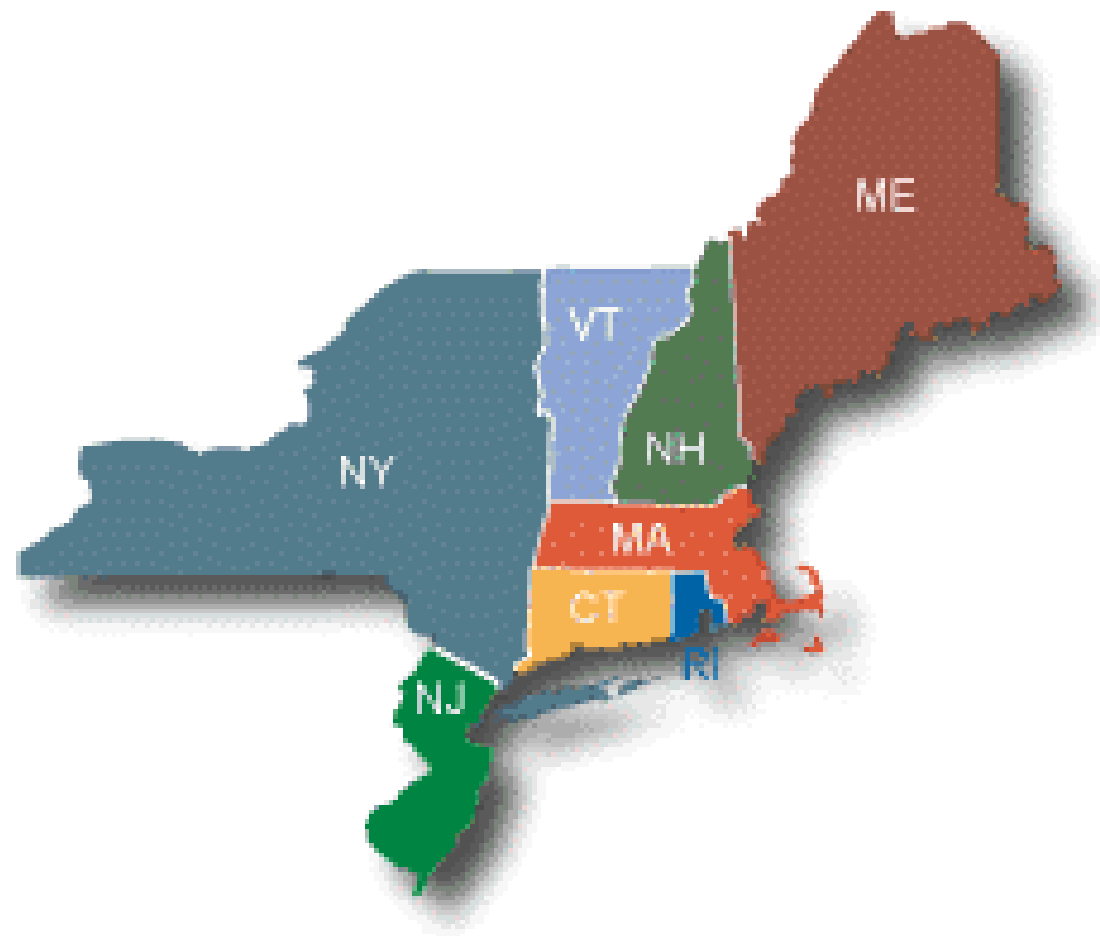
Coralie Cooper, Deputy Director

South Coast Air Quality Management District
Heavy-Duty Low NO_x 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

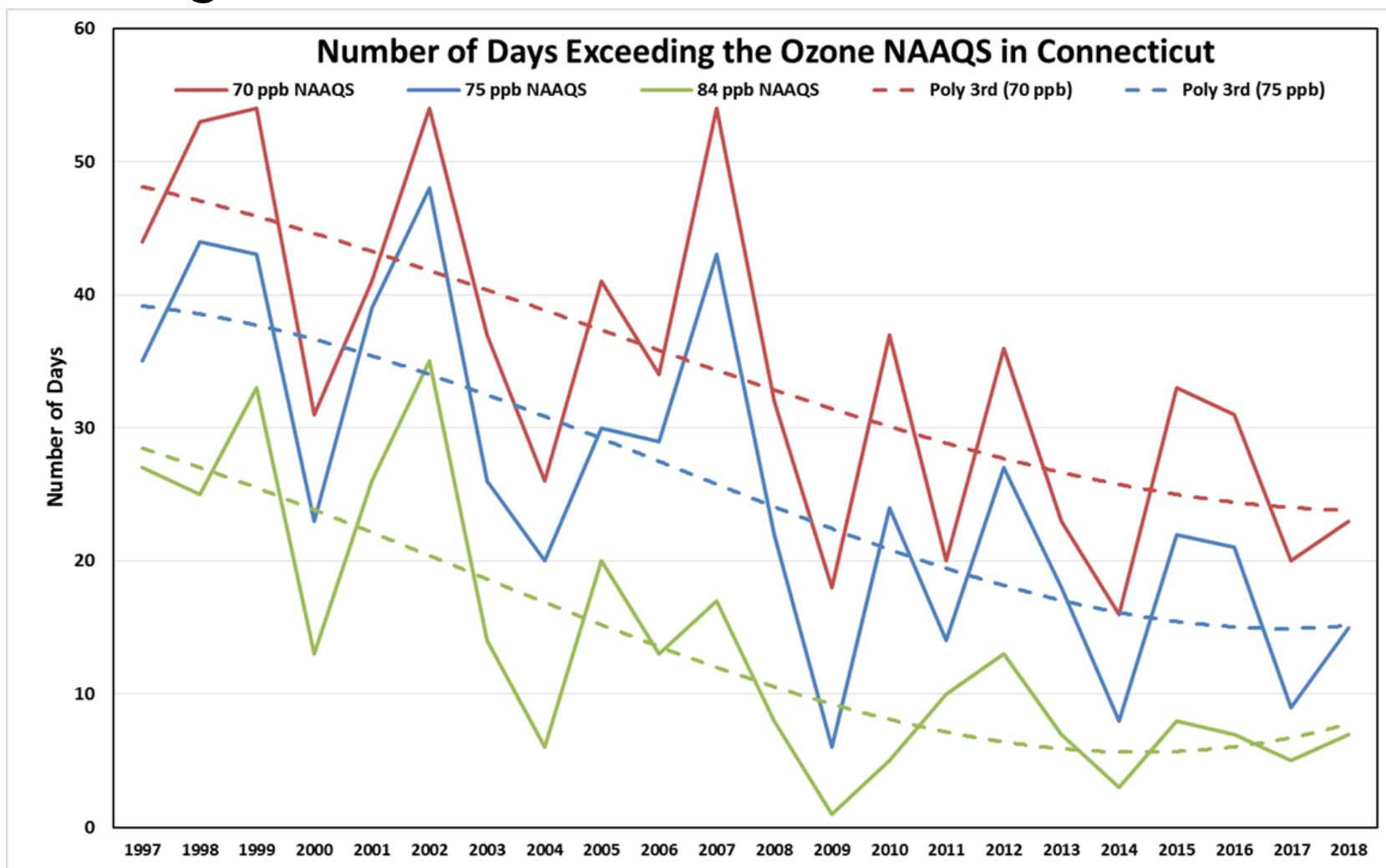
1. Persistent regional ozone problem in Northeast
2. On-road heavy duty vehicle (HDV) sector is large part of NO_x inventory
3. Regional ozone modeling indicates large contribution from on-road HDV NO_x
4. On-road HDV NO_x controls can be highly cost-effective

Widespread Regional O₃ Nonattainment

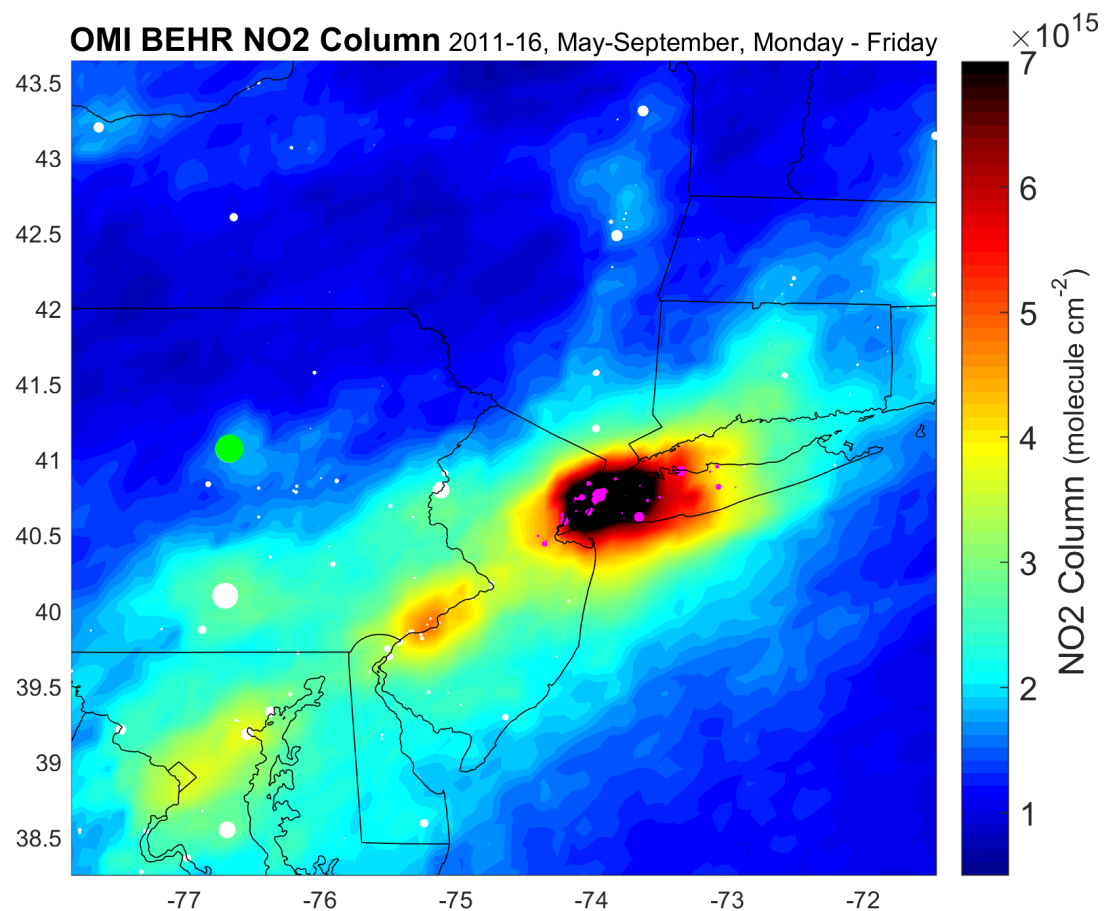


- 2015 8-hr NAAQS 0.071 ppm nonattainment across NE Corridor
 - 2008 8-hr NAAQS 0.075 ppm “bump-up” for failing to attain by deadline:
 - Serious: New York-Northern New Jersey-Long Island, NY-NJ-CT
 - Serious: Greater Connecticut, CT
- [84 Fed. Reg. 44238 (Aug. 23, 2019)]

O₃ Improvements Are Stalling

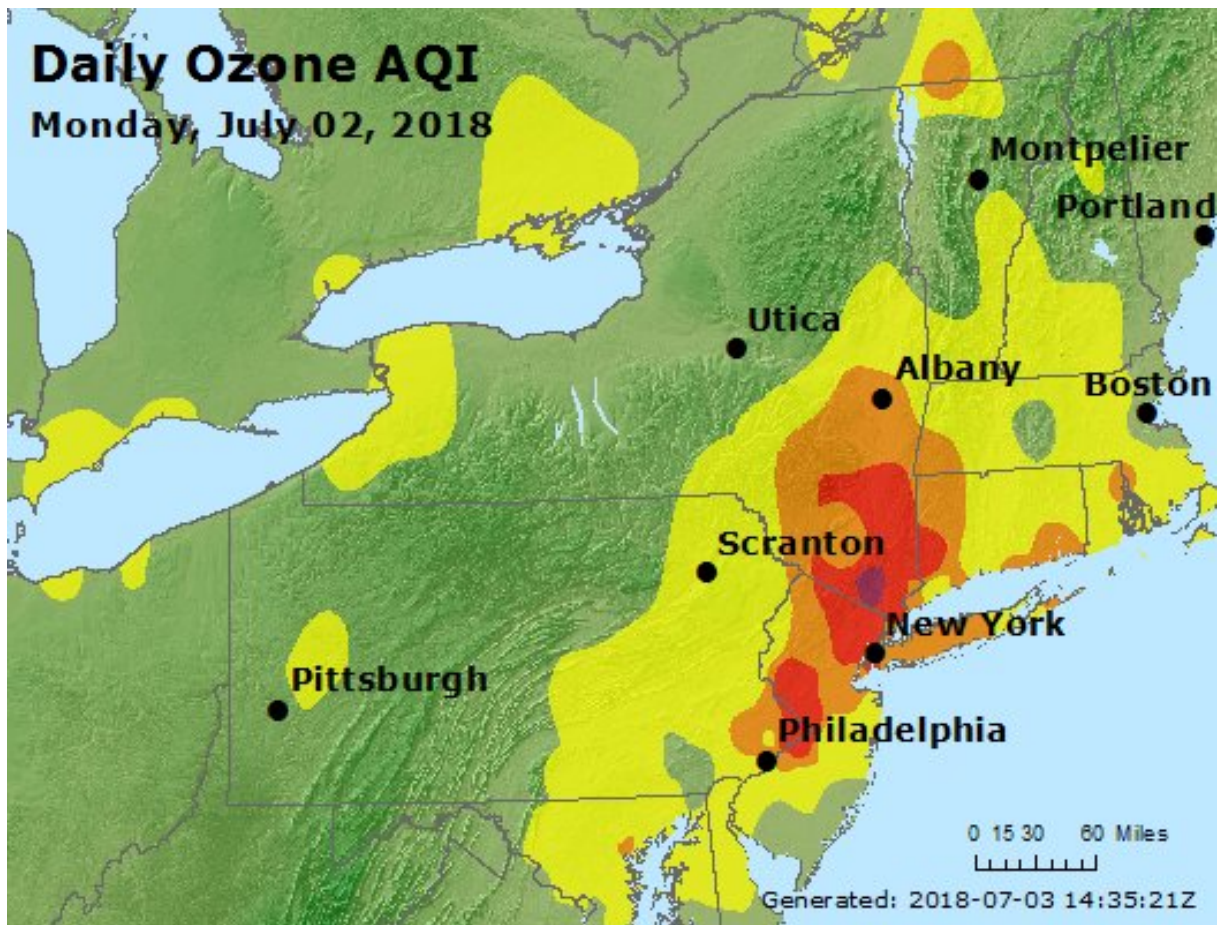


NYC “NO_x” Volcano Seen from Space



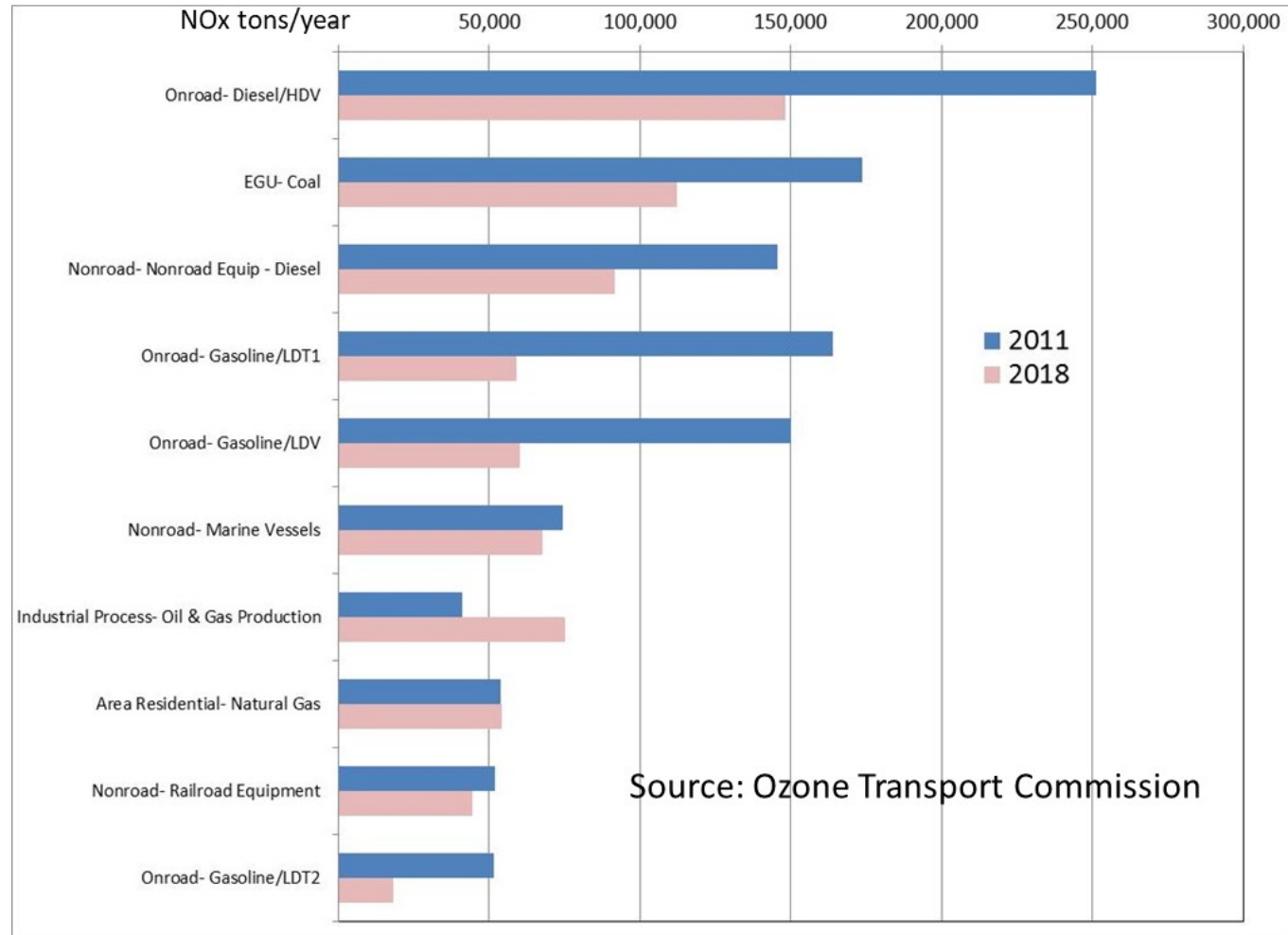
Compilation from Euro. Space Agency TROPOMI NO₂

Recent High Ozone in 2018



- Highest ozone seen in NYC region since 2006
 - 8 hour max: 115 ppb
 - 1 hour max: 143 ppb

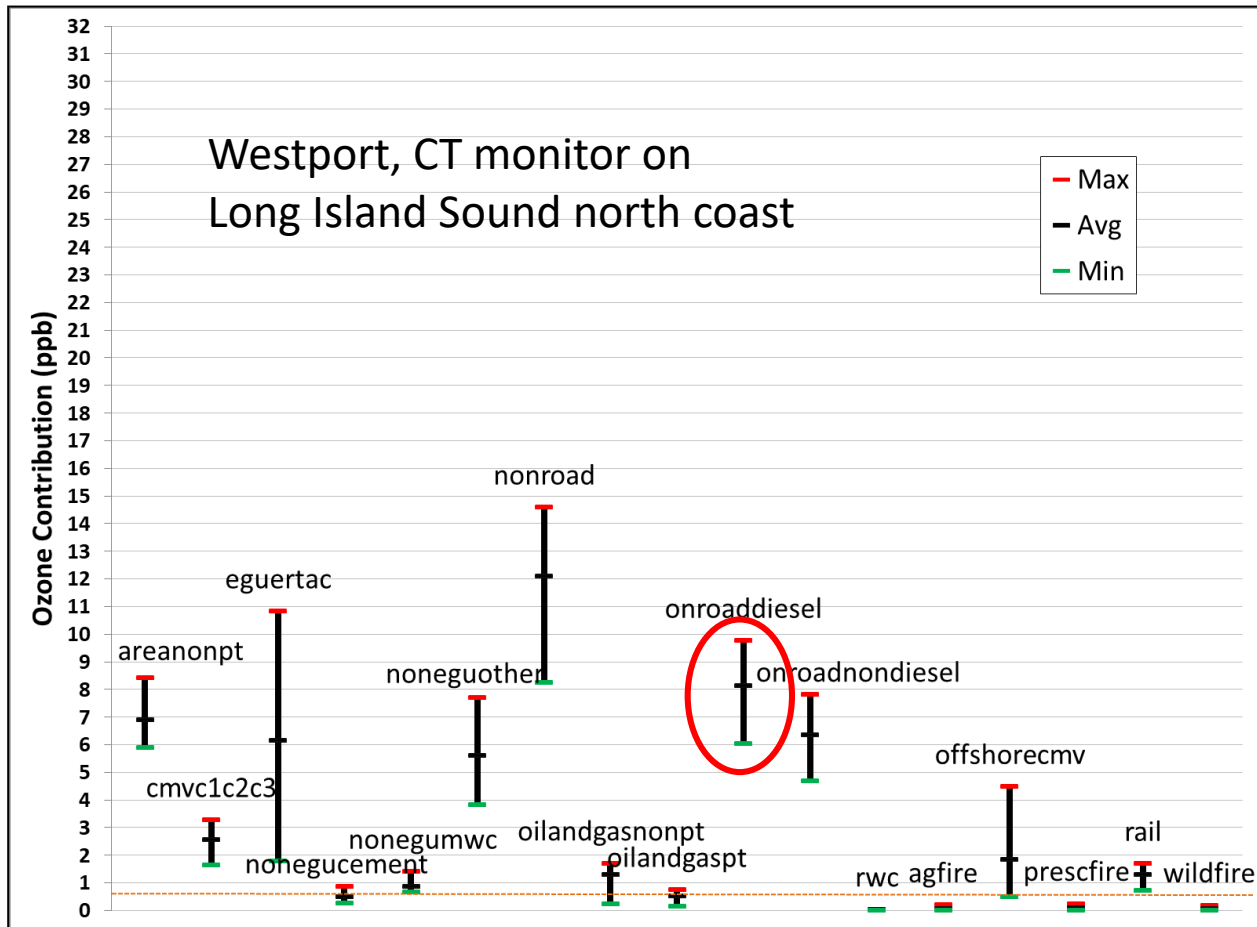
On-road HDVs Largest NOx Source Sector in Northeast



Relaxation of Control Measures and Reduced Rule Effectiveness

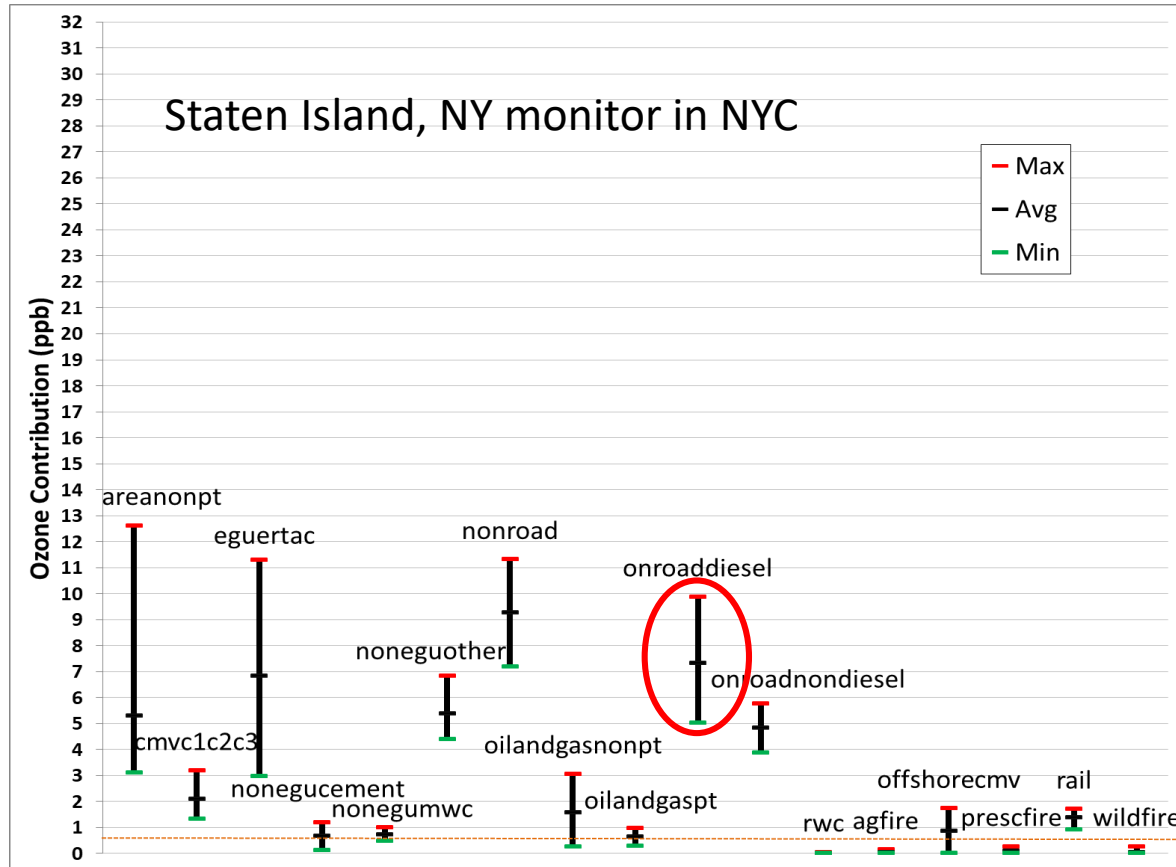
1. Clean Power Plan (ACE Rule replacement)
2. Cross-State Air Pollution Rule (CSAPR) Update
 - Doesn't match statutory ozone attainment deadline in Northeast
3. CSAPR Close-out
 - Doesn't fully address remaining "significant contributions" from upwind states
4. Zero Emission Vehicle (ZEV) requirement waiver revocation
5. Glider truck rule (proposed)
6. Heavy-duty vehicle emissions control tampering

Regional O₃ 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 O₃ on days above 70 ppb in 2023
- Overall, on-road HDV diesel is 3rd largest contributing source sector on average

Regional O₃ 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 O₃ on days above 70 ppb in 2023
- Overall, on-road HDV diesel is 2nd 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

	CT	IN	KY	MD	MI	NJ	NY	OH	PA	VA	WV
1 st Most	Nonroad			Power Plants (EGU)		Nonroad	Nonroad	Power Plants	Power Plants	Nonroad	Power Plants
2 nd Most	Onroad nondiesel			Nonroad		Onroad diesel	Area non-point	Nonroad	Non-EGU other	Non-EGU other	Oil&gas non-point
3 rd Most	Onroad diesel			Onroad diesel		Area non-point	Power plants	Onroad diesel	Onroad diesel	Onroad diesel	Non-EGU other

Significantly contributing states (3 or more days)

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Modeled 2023 contributions to Staten Island, NY ozone monitor

	DE	IL	IN	KY	MD	MI	NJ	NY	OH	PA	VA	WV
1 st Most	Power Plants (EGU)	Nonroad	Power Plants	Power Plants	Power Plants	Nonroad	Area non-point	Area non-point	Power Plants	Power Plants	Nonroad	Power Plants
2 nd Most	Onroad diesel	Power Plants	Non-EGU other	Onroad diesel	Nonroad	Onroad diesel	Nonroad	nonroad	Nonroad	Onroad diesel	Non-EGU other	Oil&gas non-point
3 rd Most	Nonroad	Onroad diesel	Nonroad	Non-EGU other	Onroad diesel	Non-EGU other	Onroad diesel	Onroad diesel	Onroad diesel	Nonroad	Onroad diesel	Oil&gas point

Significantly contributing states (3 or more days)

Annual Cost Effectiveness of NO_x Reductions in Northeast

Emission Source	Annual Cost Effectiveness (\$/ton Nox)
ICI Boilers (area & point sources)*	\$750 - \$7,500 (Low NO _x Burners) \$1,300 - \$3,700 (SNCR) \$2,000 - \$14,000 (SCR)
Combustion Turbines – SCR*	\$2,010 - \$19,120
HDV NO _x 0.02 g/bhp-hr	Much less?

*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 NO_x 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 NO_x reductions can be highly cost-effective relative to other options
- Northeast needs strong & timely interstate NO_x control program for onroad HD diesel vehicles
- Absent such a federal program, Northeast states will look to CARB standards