



# **United States Environmental Protection Agency**

## **Clean Air Act Enforcement: A Discussion With the National Association of Clean Air Agencies**

**May 21, 2018**

# Roadmap for Today

- A New Administration --New Policy Direction
- Recent Cases –Policy in Action
  - –Air Toxics
  - –Energy Extraction
- Mobile Sources –A Clear Threat to Air Quality

# Enforcement Direction

- Goals
- Policy
- Actions

# GOALS

**EPA's Mission: To Protect Human Health and the Environment**

**Goal 1 – Core Mission:** Deliver real results to provide Americans with clean air, land, and water.

**Goal 2 – Cooperative Federalism:** Rebalance the power between Washington and the states to create tangible environmental results for the American people.

**Goal 3 – Rule of Law and Process:** Administer the law, as Congress intended, to refocus the Agency on its statutory obligations under the law.

# Policy

The U.S. Environmental Protection Agency's FY2018-2022 Strategic Plan establishes both *cooperative federalism* (Goal 2) and *compliance with the law* (Objective 3. 1) as fundamental priorities for the agency. In particular, Objective 2. 1 states that the EPA will: 'Improve environmental protection through shared governance and enhanced collaboration with State, tribal, local, and federal partners using the full range of compliance assurance tools.' In using our compliance assurance tools. Objective 3.1 stresses the need to maintain a **level playing field**, stating that noncompliance with the law 'unfairly tilts the field of economic competition in favor of those that skirt the *law*' . . .

Interim OECA Guidance on Enhancing Regional-State Planning and Communication on Compliance Assurance Work in Authorized States, January 22, 2018

# Recent Actions

# Carbon Black Settlements – Level Playing Field

- **Lodged:** December 22, 2017
  - Orion Engineered Carbons, LLC (Louisiana Coplaintiff);
  - Sid Richardson Carbon and Energy Company; (Louisiana and Texas Coplaintiffs);
  - Columbian Chemicals Company (Louisiana and Kansas Coplaintiffs).
- **Alleged Violations:** NSR/NNSR, NESHAP and/or SIP violations
- **Control requirements include:**
  - Installation and operation of selective catalytic reduction for NO<sub>x</sub>; and
  - Installation and operation of dry or wet flue gas desulfurization for SO<sub>2</sub>.
- **Mitigation:** Varies by settlement.

# ExxonMobil (Olefins)

- **Lodged October 31, 2017**
- **Louisiana is a Coplaintiff**
- **Alleged Violations:** Claims arise out of operation/modification of industrial flares.
  - New Source Review/Prevention of Significant Deterioration (NSR/PSD);
  - NSPS and NESHAP;
  - Title V and the Title V permits; and
  - SIP requirements
- **Injunctive Relief: Covers 26 flares operated at four olefin plants and four polymer plants in Texas and Louisiana.**
  - Waste gas minimization plans for reducing waste flaring.
  - Root cause analysis/corrective actions for significant flaring incidents
  - Flare gas recovery systems at the petrochemical/olefins facilities
  - Flare monitoring and control equipment to ensure high combustion efficiency at all 26 flares.
- Fenceline monitoring stations to detect the presence of benzene from four of the covered plants.
- **Federal SEP and State Mitigation/SEP**



# EPA Press Release on Exxon Settlement

“This settlement means cleaner air for communities across Texas and Louisiana, and reinforces EPA’s commitment to enforce the law and hold those who violate it accountable,” said EPA Administrator Scott Pruitt. “As this agreement shows, EPA is dedicated to partnering with states to address critical environmental issues and improving compliance in the regulated community to prevent future violations of the law.”

# Off-site assessment with *GMAP-REQ* (EPA has it.)

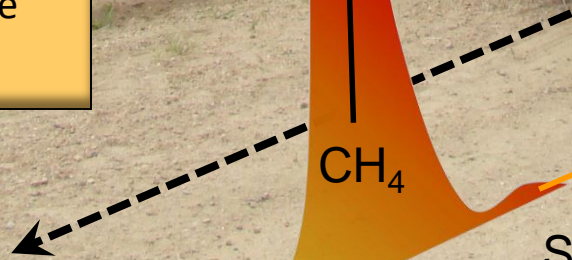
(Geospatial Measurement of Air Pollution – Remote Emissions Quantification)

wind direction



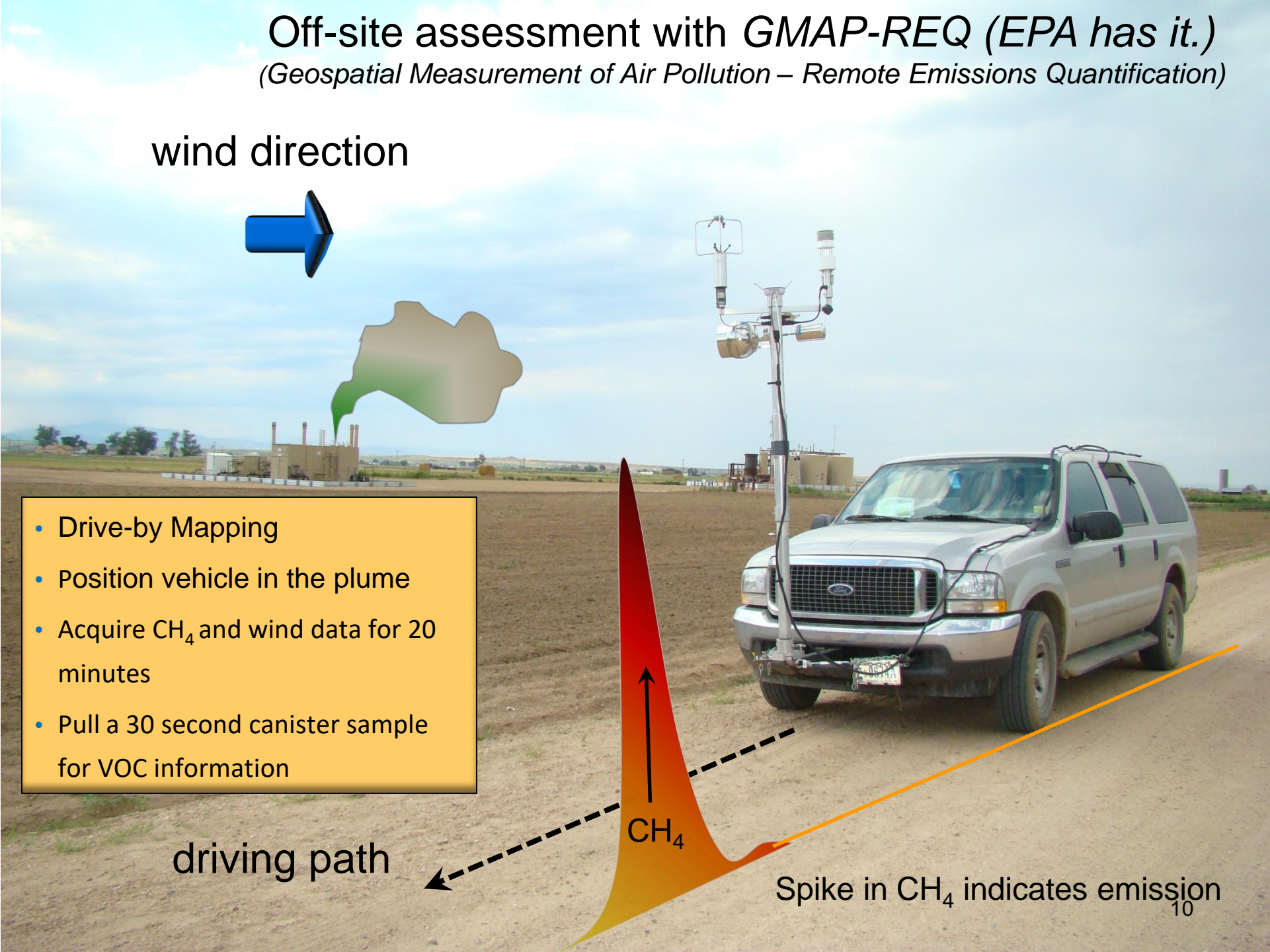
- Drive-by Mapping
- Position vehicle in the plume
- Acquire CH<sub>4</sub> and wind data for 20 minutes
- Pull a 30 second canister sample for VOC information

driving path



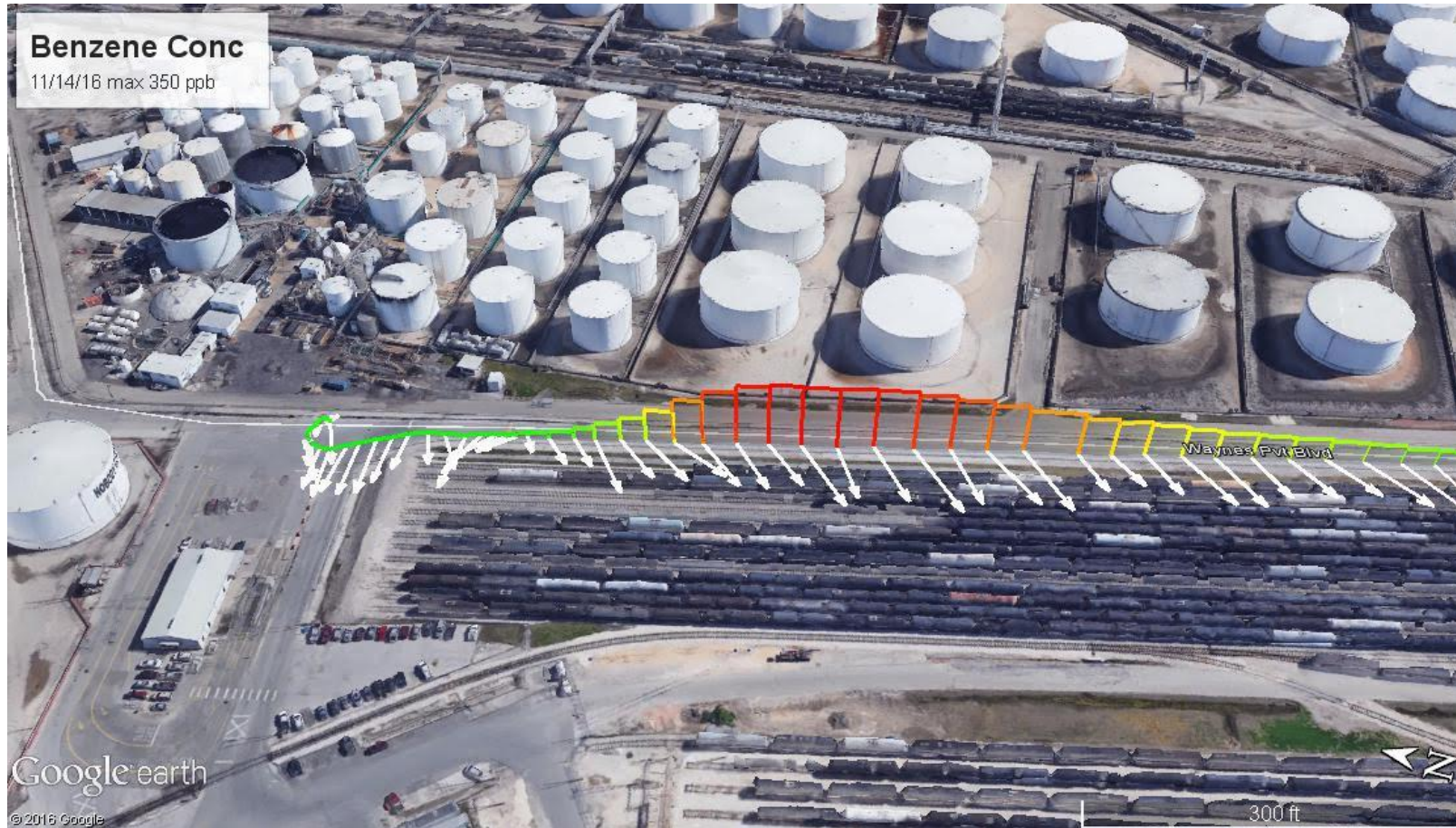
CH<sub>4</sub>

Spike in CH<sub>4</sub> indicates emission<sub>10</sub>





# Finding Leaks on the Move



# Vopak North America Inc.

- **Lodged: May 17, 2017**
- **Texas is a Coplaintiff**
- **Alleged Violations:** Claims arise out of operation of terminal bulk storage tanks, flares, and a wastewater treatment system.
  - New Source Performance Standards (NSPS);
  - National Emission Standards for Hazardous Air Pollutants (NESHAP); and
  - State Implementation Plan (SIP) requirements.
- **Injunctive Relief:**
  - Installation of state-of-the-art air pollution controls at the facility's wastewater treatment system
  - Use of infrared cameras to detect excess VOCs from chemical storage tanks
  - Third party audit to improve waste management.

# EPA Press Release on Vopak Settlement

“Today’s settlement reflects the Justice Department’s commitment to protecting clean air for the American people in partnership with the states,” said Jeffrey H. Wood, Acting Assistant Attorney General for the Justice Department’s Environment and Natural Resources Division. “The settlement will bring Vopak into compliance with federal and state clean air laws and will result in improved air quality for the residents of Harris County. We are proud to have partnered with Texas on this important result.”

# Energy Extraction National Enforcement Initiative

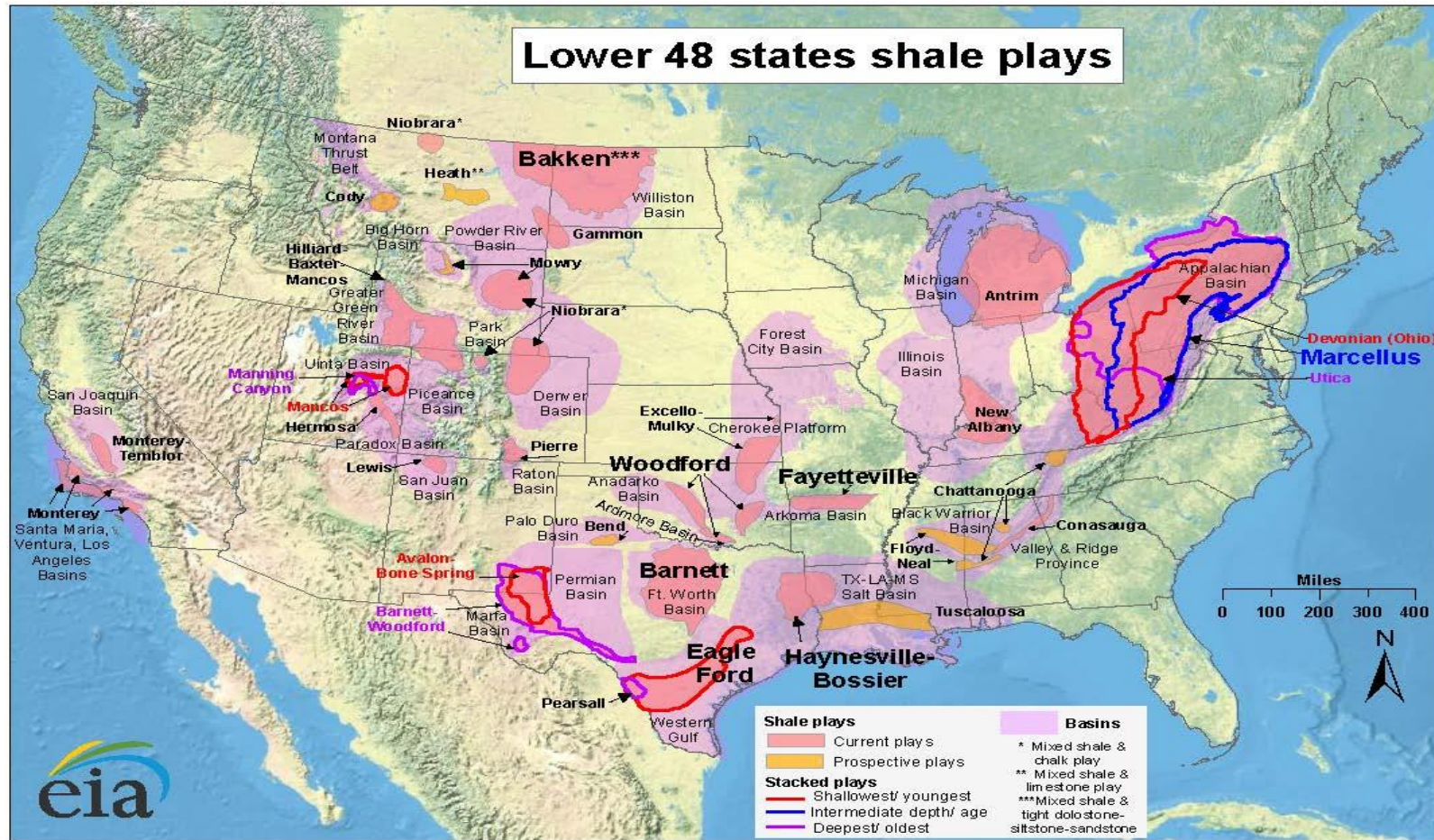
- In March 2010, EPA announced a new **enforcement initiative** for energy extraction.
- Initiative renewed for FY 14-16 cycle.
- Requested comment on whether to renew for the FY 17-19 cycle.
- Focus is **onshore natural gas extraction and production**.





# Energy Extraction: Expansion

Advances in hydraulic fracturing and horizontal drilling have opened new areas for oil and gas development. Growth is regional, unevenly distributed across the U.S., and in close proximity to large populations in some areas. Natural gas is an important cleaner burning “bridge fuel” that must be extracted and produced in a manner that protects communities and the environment, and complies with applicable laws.



Source: Energy Information Administration based on data from various published studies.  
Updated: May 9, 2011

# Air Pollution Focus

- Emissions from shale gas exploration and production affect air quality:
  - Air emissions can be released during all stages of production.
  - Primary pollutants of concern are volatile organic compounds (VOCs, e.g., propane, butane, xylene, benzene, toluene).
  - Ozone non-attainment areas.
  - Between 2000 and 2013 approx. 9.4 million people lived within one mile of a hydraulically fractured well.
  - Approx. 487,000 active natural gas wells



# Noble Energy

- Entered in June 2015.
- Resolves claims that Noble failed to adequately design, size, operate, and maintain vapor control systems on its controlled condensate storage tanks, resulting in emissions of VOCs.
- Covers all of Noble's controlled condensate storage tanks in the Denver 8-hour ozone marginal nonattainment area that have vapor control systems operating pursuant to the Colorado SIP.
  - More than 3,400 tank batteries, which are multiple storage tanks located together.
- Noble will spend an estimated \$60 million on system upgrades, monitoring, and inspections.
- Required environmental mitigation projects as well as Supplemental Environmental Projects to reduce emissions (e.g. reduction of emissions during condensate loading, retrofitting drill site diesel engines to reduce NOx, etc.)

# Noble Energy

## Injunctive Relief

- Engineering evaluations to ensure vapor control systems are properly designed/controlled.
- Noble must make necessary modifications to ensure systems are properly designed/controlled following the engineering evaluations.
- Infrared camera inspections to ensure the vapor control systems are controlling emissions as expected.
- Inspection/preventative maintenance program.
- Third-party auditor will review the engineering evaluations and will also perform infrared camera inspections.
- Evaluation of the pressure relief valves and thief hatches on each condensate storage tank and address any evidence of VOC emissions.
- Install pressure monitors with continuous data reporting on a cross-section of the tank systems.

# PDC Energy Inc.

- **Complaint Filed June 26, 2017**
- **Colorado is a Coplaintiff**
- **Consent Decree Lodged October 31, 2017**
- **Alleged Violations:** Claims arise out of Colorado SIP requirements relating to operation, maintenance, design, and sizing of vapor control systems at condensate storage tanks.

# PDC Energy Inc.

- **Injunctive Relief:**

- Engineering evaluations to ensure vapor control systems are properly designed/sized to control VOC emissions.
- PDC must make necessary modifications to ensure systems are properly designed/controlled following the engineering evaluations.
- Infrared camera inspections to ensure the vapor control systems are controlling emissions as expected.
- Third Party engineering evaluations verified by in-house PDC engineer.
- Inspection/preventative maintenance program.
- Install pressure monitors with continuous data reporting on a cross-section of the tank systems.
- Other measures to proactively detect and correct recurring issues.

- **Mitigation:**

- Installation of closed vapor system for loading condensate from certain PDC storage tanks into tanker trucks
- Installation of emissions control on certain natural gas-fueled compressor engines

# EPA Press Release on PDC Settlement

“This agreement will result in cleaner air in the Denver area and shows that EPA is committed to enforcing the law in order to ensure public health is protected,” **said EPA Administrator Scott Pruitt.** “This case exemplifies the strong partnerships with states that are integral to delivering results for American communities and finding solutions that build compliance with the law and prevent future violations.”

“As a result of state and federal efforts, PDC has agreed to take comprehensive action to address excess VOC emissions from its oil and gas operations,” **said Associate Attorney General Rachel L. Brand of the Department of Justice.** “We are proud that we were able to work side by side with EPA and Colorado to bring these facilities into compliance with the law.”

# Pigging and Venting -- As Bad as it Sounds



# MarkWest

- Lodged April 24, 2018
- Pennsylvania is a Coplaintiff
- Resolves NSR/PSD violations for excess VOC emissions at pig launching/receiving operations at compressor stations and stand-alone facilities in eastern Ohio and western PA (300+ facilities in the Marcellus and Utica wet gas areas)
- ***Injunctive Relief*** – jumper lines to depressurize equipment, pig ramps in pig receivers, flares where needed; submit federally-enforceable permit applications; and use a revised Real Gas law in VOC emission estimates (1.2x)
- ***Pollution Reductions*** - 700 tons per year of VOC
- ***Civil Penalty*** – \$610,000
- ***Supplemental Environmental Projects (SEP)*** - Install ambient air monitoring stations upwind/downwind of two MarkWest compressor stations in Ohio and PA; promote the use of innovative pig ramp technology to industry.

# EPA Press Release on Vopak Settlement

“I’m pleased to announce that through this agreement, MarkWest will make improvements to more than 300 facilities in western Pennsylvania and eastern Ohio,” said EPA’s Assistant Administrator for the Office of Enforcement and Compliance Assurance Susan Bodine. “We estimate that these improvements will reduce VOC emissions from these facilities by more than 90 percent, helping bring cleaner air to surrounding communities.”

“This Clean Air Act settlement will reduce harmful emissions from facilities located across western Pennsylvania and eastern Ohio,” said Acting Assistant Attorney General Jeffrey H. Wood of the Department of Justice’s Environment and Natural Resources Division. “Today’s action also demonstrates our commitment to working with federal, state and local partners to ensure the health and safety of the American people.”

“Our legacy to future generations will be defined, in part, by our commitment to protecting the environment,” said U.S. Attorney Scott W. Brady of the Western District of Pennsylvania. “This settlement agreement with MarkWest demonstrates the commitment of the U.S. Attorney’s Office to improving the quality of the environment and ensuring cleaner air for the residents of western Pennsylvania.”



**Enforcement Is Not The Only Pathway**

# Range Resources New Owner Audit Agreement

- August 9, 2017
- Covers approximately 400 well sites in Louisiana previously owned by Memorial Resources Development Corporation
- Elements of the Agreement
  - Requires development of a Facility and Permit Inventory (within first 30 days of Audit)
  - Preparation of an air permitting summary report that includes permitting corrective actions
  - Facility Compliance Evaluation and Corrective Actions
    - Assessment of vapor control sizing and schedule for completing appropriate repairs/upgrades
    - Audit of NSPS and NESHAP compliance and schedule for corrective actions (Part 60 Subparts K/Ka/Kb, KKK, LLL, IIII, JJJJ, KKKK, OOOO, OOOOa, and Part 63 Subparts H, HH, OO, SS, TT, UU, VV, HHH, ZZZZ, and BBBB)
- Agreement requires Range to submit a proposed schedule for corrective actions that will take more than 60 days. Extensions up to 36 months may be granted.
- New Owner Audit provides Range with penalty mitigation (adjusting the way penalties for economic benefit are calculated in the new owner context).

# New Owner Audit -- Proposal Summary

## Objective

- Utilize the *Interim Approach to Applying the Audit Policy to New Owners* (New Owner Policy) as a guide to develop a tailored proposal for the oil and gas sector (New Owner Audit Program or Program) that will improve the sector's Clean Air Act compliance while minimizing costs for all involved parties.

## Feedback

- EPA receiving feedback from interested parties:

<https://www.epa.gov/enforcement/new-owner-clean-air-act-audit-program-oil-and-natural-gas-exploration-and-production>

# Enforcement Trends – Mobile Sources

Light Duty  
Vehicles (1970s)



Heavy Duty (1980s)



Nonroad Spark  
Ignition (1997)



Marine SI (1998)



Locomotive (2000)



Nonroad Compression  
Ignition (1996)



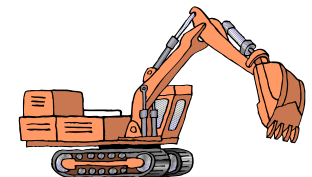
Marine CI  
(2004)



Recreational  
Vehicles (2006)

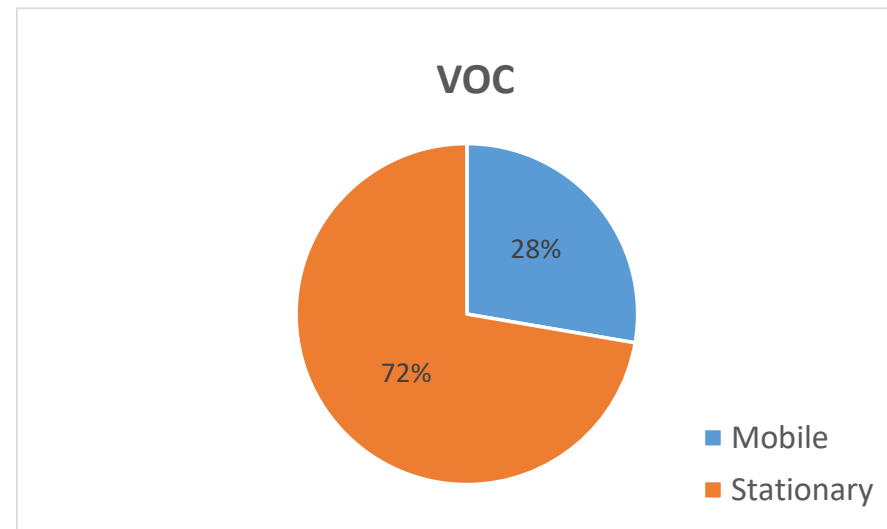
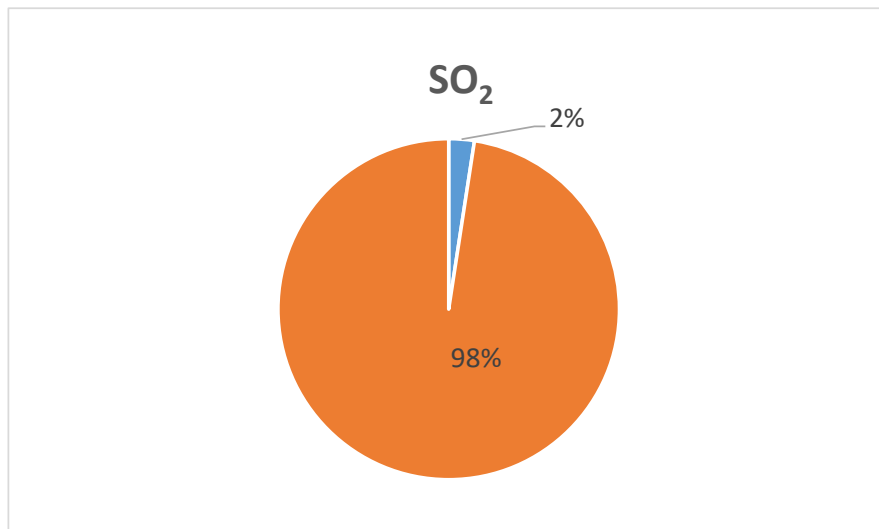
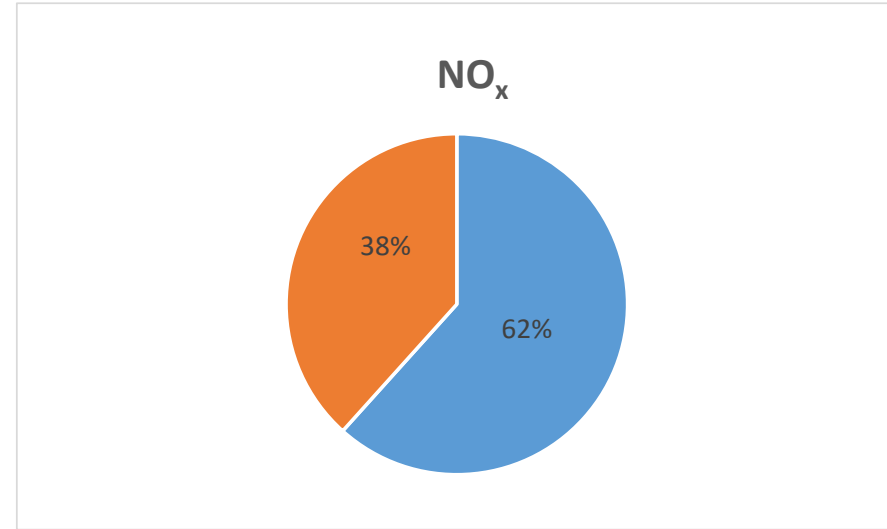
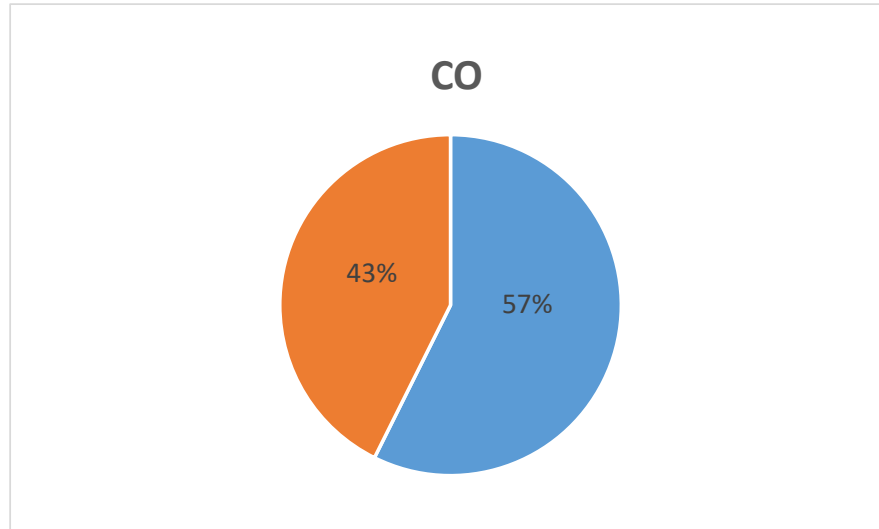


Large SI  
(2004)



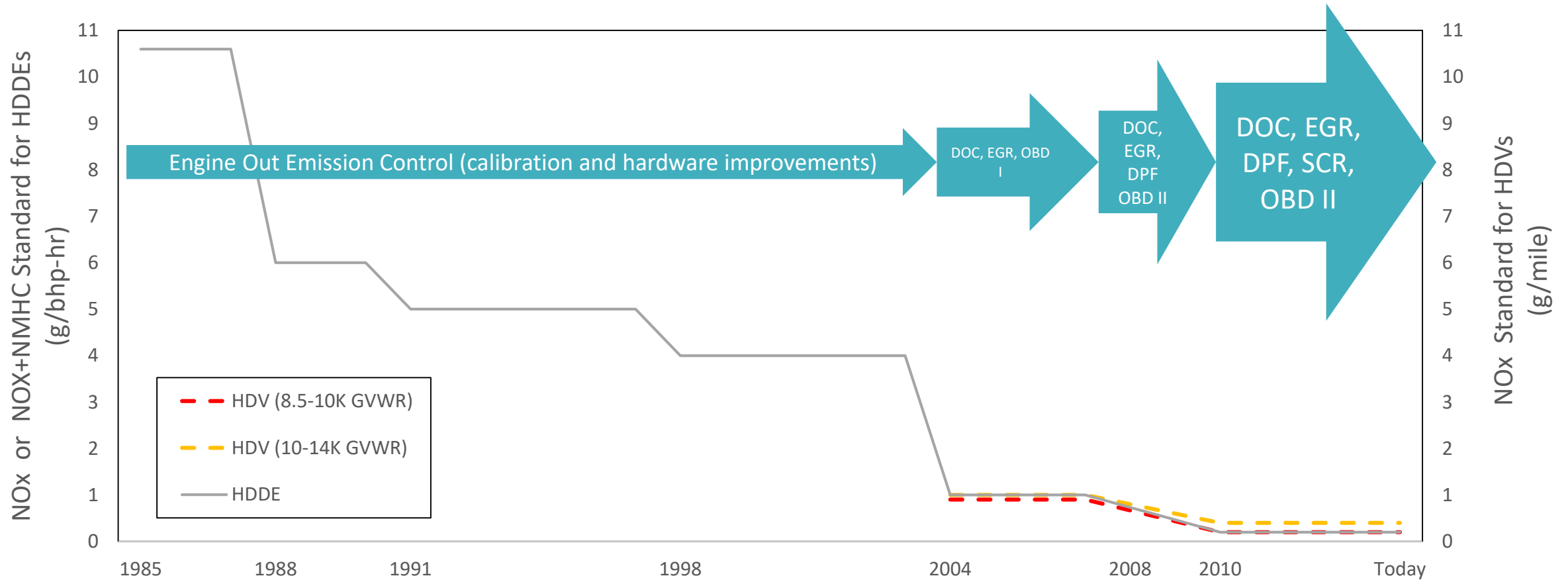
# Mobile vs Stationary Emissions

(Source: 2011 National Emissions Inventory Air Pollutant Emissions Data)



■ Mobile  
■ Stationary

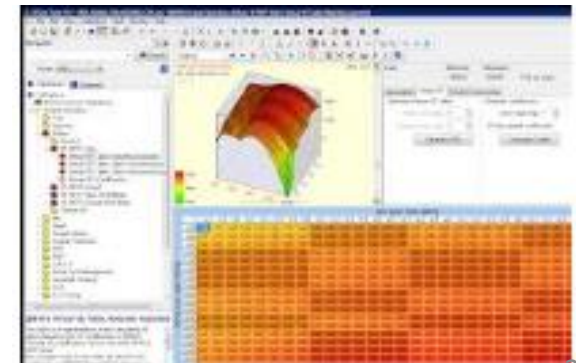
# NOx Standards and Vehicle Emission Control Devices Heavy-Duty Vehicles (HDVs) and Heavy-Duty Diesel Engines (HDDEs)



Source: <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P1000A01.pdf>

# What is an Aftermarket Defeat Device?

- Aftermarket Defeat Device – “any part or component...where a principal effect...is to bypass, defeat, or render inoperative any device or element of design installed on or in a [motor vehicle](#) or motor vehicle...”
- Types of Defeat Devices
  - EGR Hardware Deletes
  - Exhaust Aftertreatment Delete Hardware (straight pipes)
  - Tuning – Calibration and OBD modifications



# Why buy an aftermarket defeat device?

“The [device] unlocks your vehicle’s hidden performance by recalibrating your vehicle’s computer for Maximum Horsepower & Torque, Increase Throttle Response, Firmer Shifts and even Increased Fuel Mileage.”  
– *Advertisement*

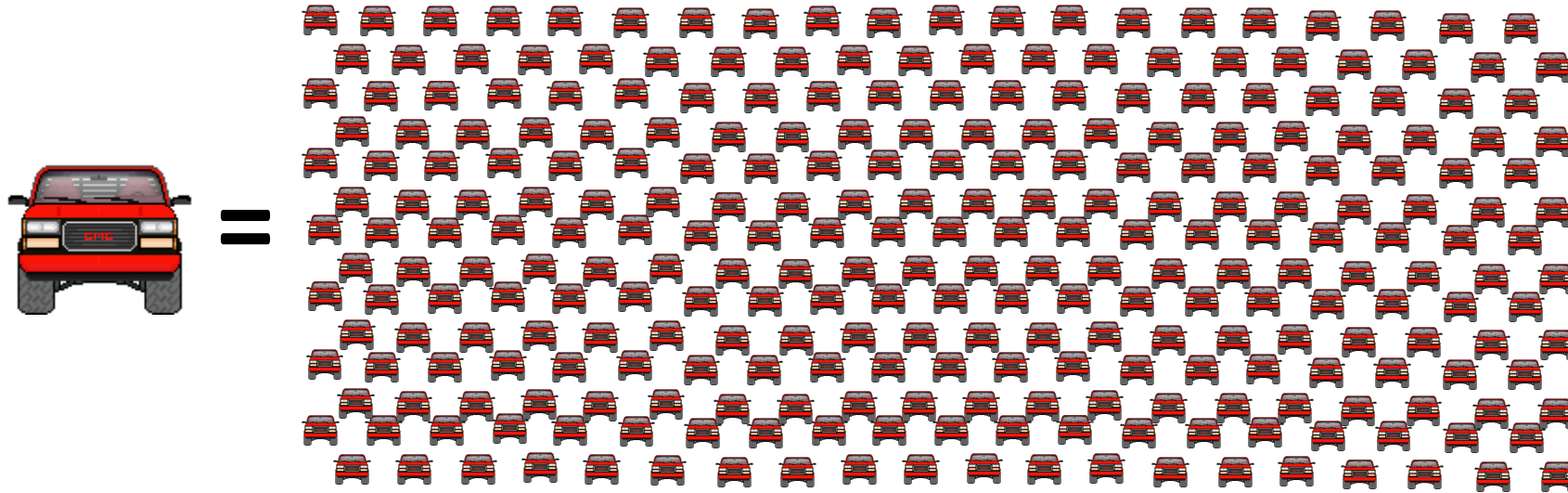
Defeating EGR, DOC, DPF, and SCR may improve fuel economy (3 to 10 % increase based on EPA testing) but at the expense of up to 100’s or even 1,000’s of times higher emissions





# Emissions Increase Due to Full Delete

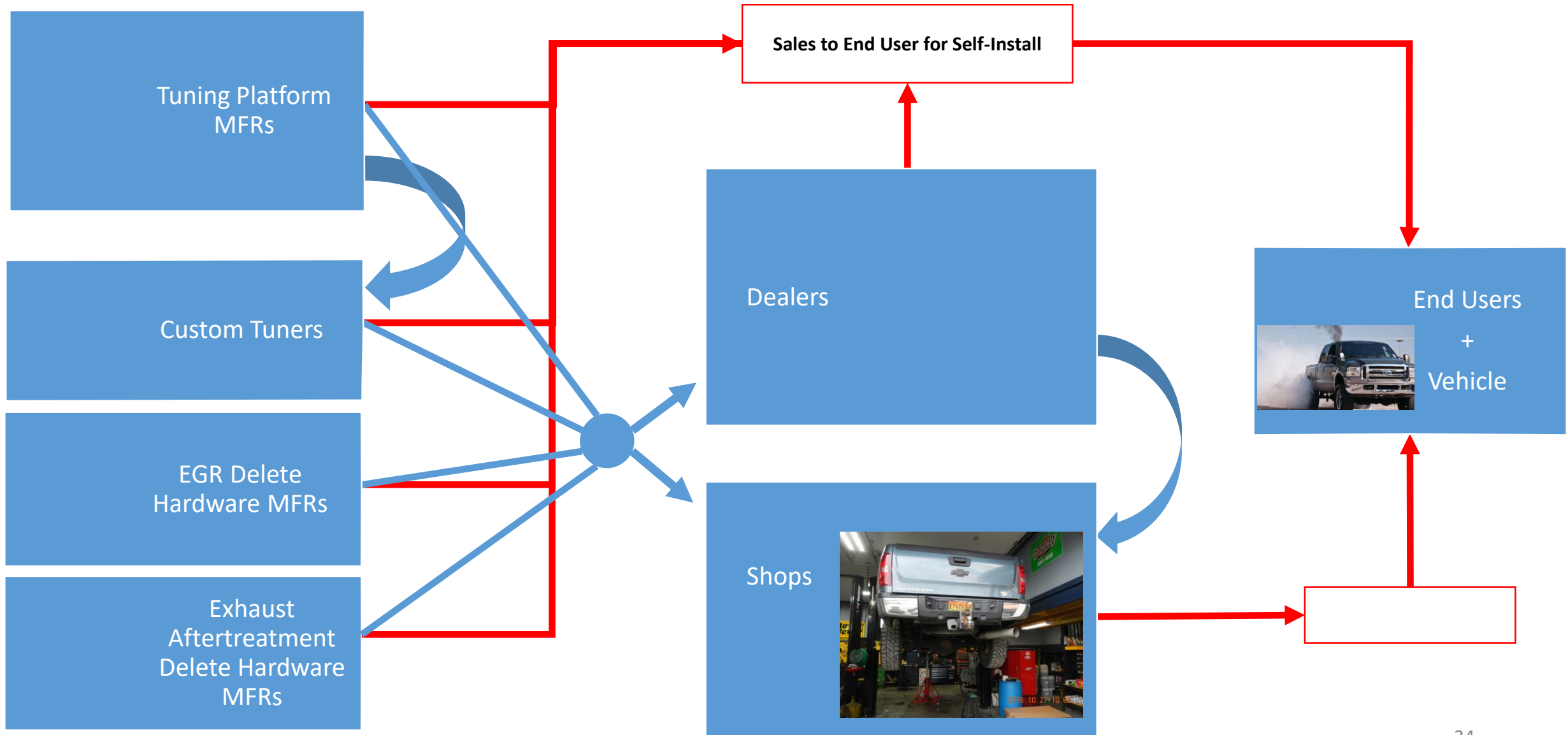
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EPA test results show the increase in NO<sub>x</sub>, NMHC, CO, and PM when a tuner enables a full delete of the vehicle. These tests were conducted without the SCR, DPF, DOC, and EGR emission controls.

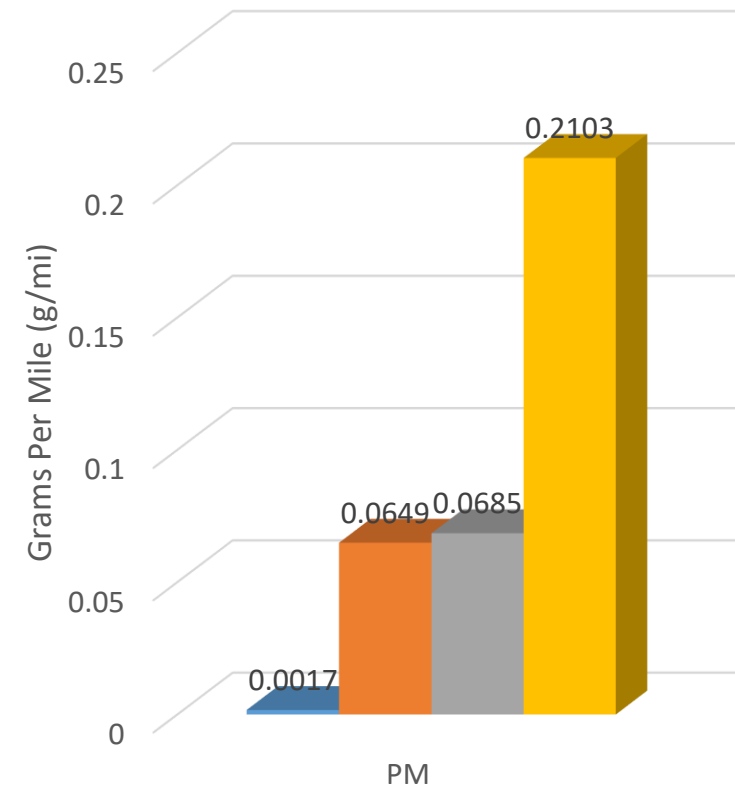
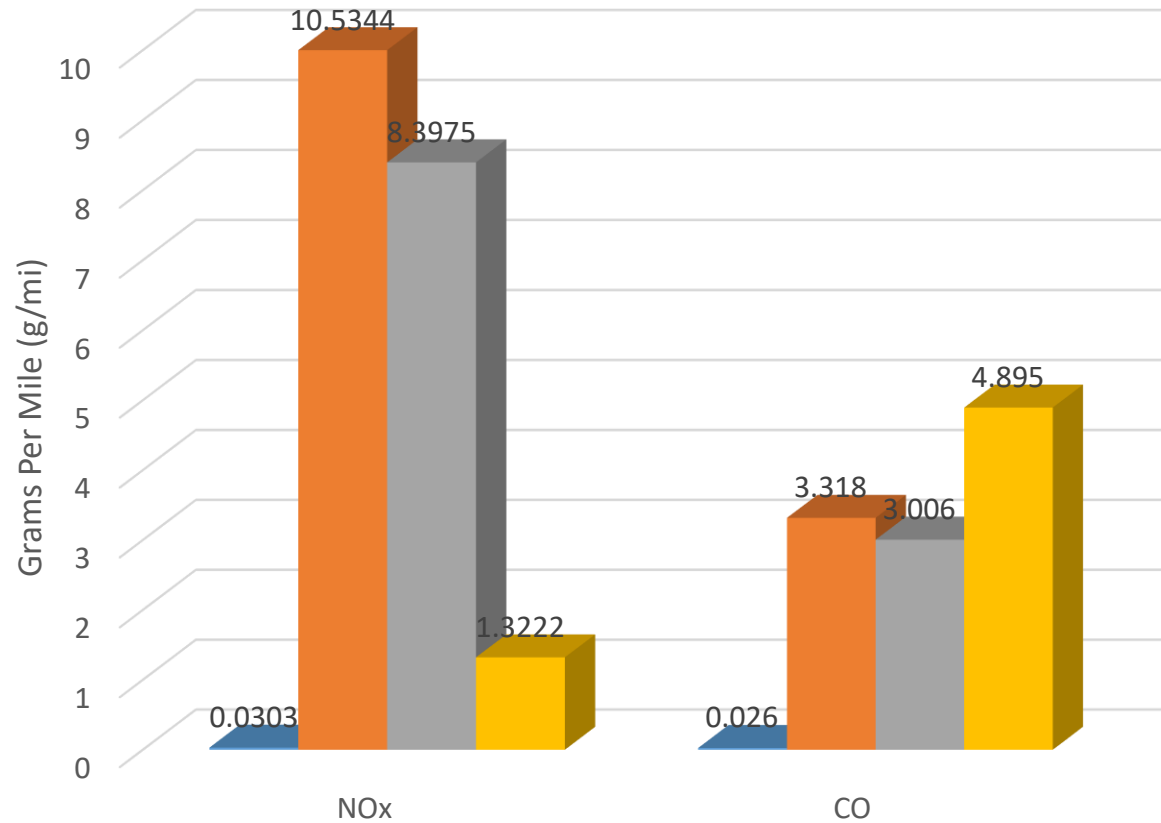
- Tailpipe NO<sub>x</sub> increased ~310x
- Tailpipe NMHC increased ~1,140x
- Tailpipe CO increased ~120x
- Tailpipe PM increased ~40x

# Aftermarket Industry Overview



# EPA Tuner Emissions Tests

Stock Calibration/Equipment Versus Emissions-Equip. Removed Tuners



Second and Third test: EGR electronically disabled by tuner. DOC, DPF, and SCR replaced with straight pipe and disabled by tuner in calibration.

Fourth Test: EGR not disabled electronically by tuner. DOC, DPF, and SCR replaced with straight pipe and disabled by tuner in calibration.

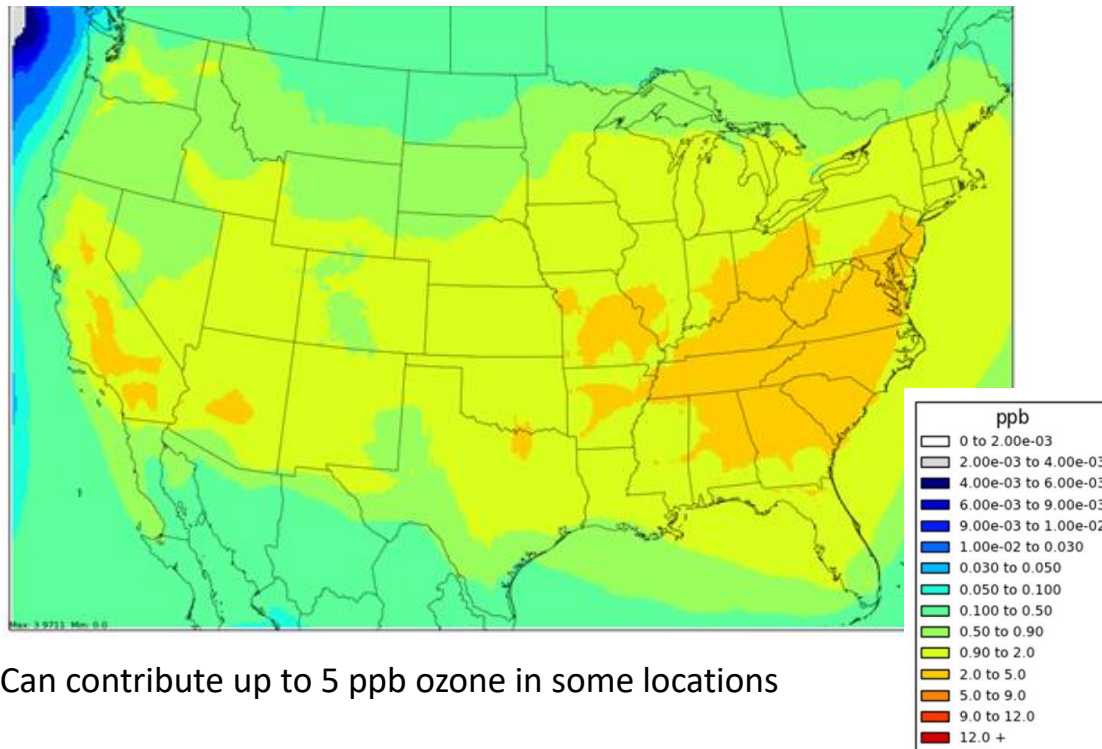
# Impacts of Highway Heavy-Duty Vehicles

- On-highway diesel sector\*
  - Largest single contributor to mobile source NO<sub>x</sub>
    - Contributes about  $\frac{1}{3}$  of mobile source NO<sub>x</sub> emissions in 2025
  - One of the largest mobile source contributors to ozone in 2025
  - Significant mobile source contributor to PM<sub>2.5</sub> in 2025, due to
    - NO<sub>x</sub> emissions which form PM
    - Directly emitted PM

\*Not accounting for gliders

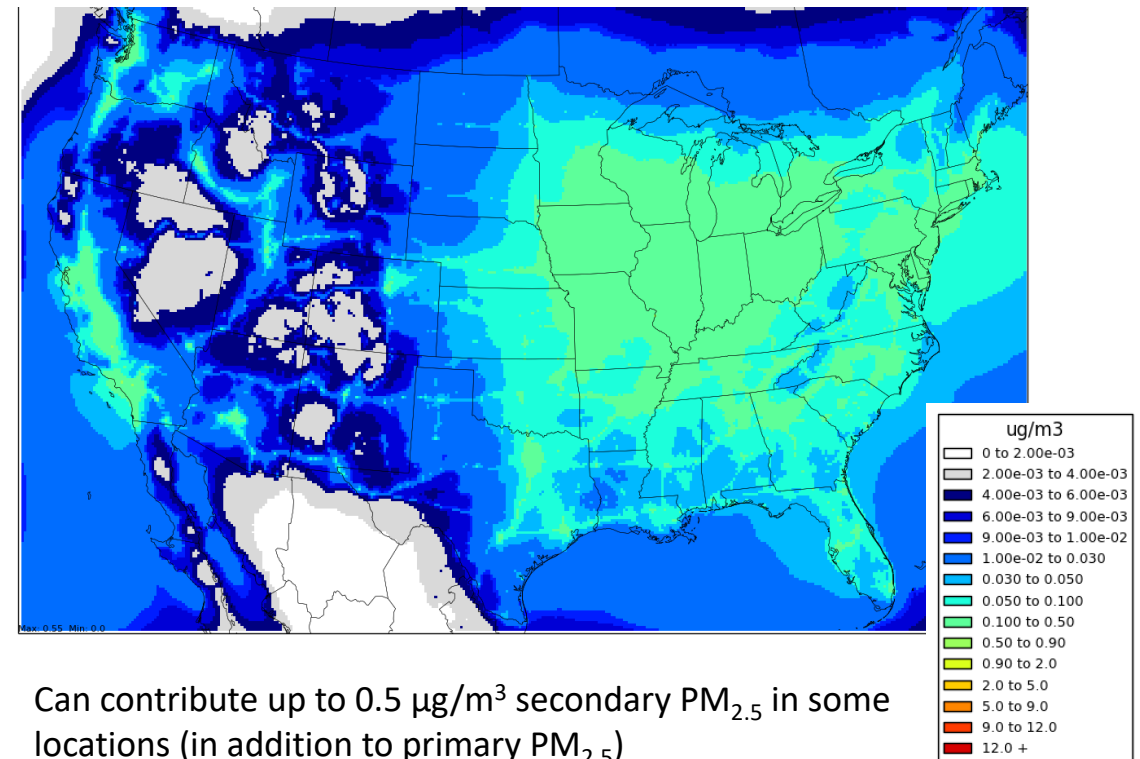
# NO<sub>x</sub> Emissions from Heavy-Duty Vehicles\*

NO<sub>x</sub> Contribution to Ozone in 2025 from HD Diesel Vehicles



Can contribute up to 5 ppb ozone in some locations

NO<sub>x</sub> Contribution to Ambient PM in 2025 from HD Diesel Vehicles



Can contribute up to 0.5 µg/m<sup>3</sup> secondary PM<sub>2.5</sub> in some locations (in addition to primary PM<sub>2.5</sub>)

\*Does not include NO<sub>x</sub> emissions from glider vehicles