

# EPA Update on the Cleaner Trucks Initiative

August 5, 2020  
Association of Air Pollution Control Agencies  
Energy Committee Meeting

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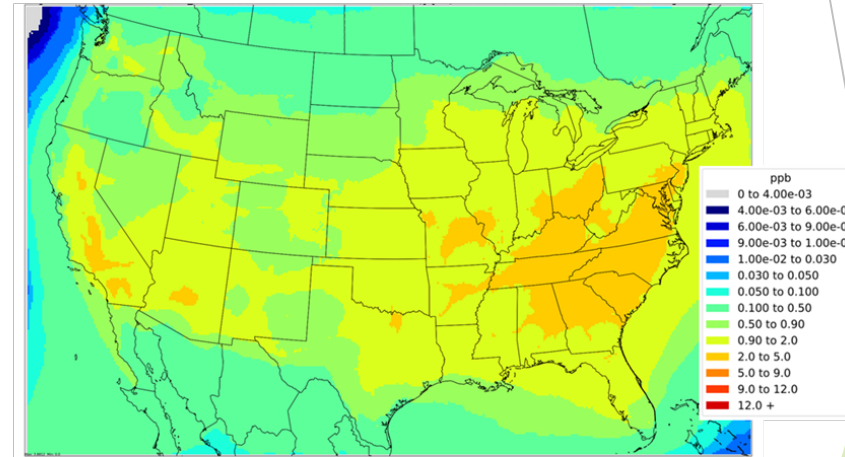
# Outline

- ▶ Cleaner Trucks Initiative (CTI): Need for Action
- ▶ Overview of Major Provisions Under Consideration
- ▶ High level summary of stakeholder input on the January 2020 Advance Notice of Proposed Rulemaking for the CTI
- ▶ Next steps & discussion

# EPA's Cleaner Trucks Initiative — Need for Action

- ▶ Heavy-duty emissions contribute to air pollution that impacts human health and the environment; particularly ozone and PM<sub>2.5</sub>
- ▶ We've heard from state & local agencies that while ambient concentrations are improving, more needs to be done to reduce exposure and risk
- ▶ State & local agency comments to EPA include:
  - ▶ Continued challenge to achieve and maintain NAAQS attainment
  - ▶ Some areas already “bumped up” to higher classification for 2008 ozone standard
  - ▶ States can't control interstate emissions; addressing transportation sources would be less burdensome and expensive
  - ▶ NO<sub>x</sub> reductions from heavy-duty vehicles are a critical part of their strategies to attain and maintain the NAAQS

Projected Seasonal Ozone Concentrations  
from Onroad Heavy-duty Diesel in 2025\*



\*8-hr maximum average; Zawacki et al, 2018. Mobile source contributions to ambient ozone and particulate matter in 2025. Atmospheric Environment, Vol 188, pg 129-141. Available online: <https://doi.org/10.1016/j.atmosenv.2018.04.057>.

# EPA's Cleaner Trucks Initiative — Need for Action

- ▶ Current emissions standards have lowered overall NO<sub>x</sub> emissions, but have not resulted in effective control under all operating conditions
- ▶ We project heavy-duty engines will continue to be one of the largest contributors to mobile source NO<sub>x</sub> emissions nationwide in the future; in calendar year 2045:
  - ▶ 30% of the mobile source NO<sub>x</sub>,
  - ▶ 80% of the onroad NO<sub>x</sub> inventory
- ▶ Heavy-duty engine NO<sub>x</sub> inventory in 2045 is composed of several operating modes; CTI is focusing on potential NO<sub>x</sub> reductions from three in-use conditions
  - ▶ Medium-to-high load emissions
  - ▶ Low load emissions
  - ▶ Age effects

# Overview of Major Program Provisions Under Consideration

- ▶ Standards and Test Cycles
- ▶ Emission Control Technologies
- ▶ In-Use Emission Standards
- ▶ Extending the Regulatory Useful Life
- ▶ Ensuring Long-Term In-Use Emissions Performance
- ▶ Certification and Compliance Streamlining

# CTI Advance Notice of Proposed Rulemaking Summary

- ▶ Advance Notice was published in Federal Register on January 21, 2020
  - ▶ 30-day comment period closed on February 20, 2020

## The Advance Notice included

- ✓ **Background and goals**
- ✓ **Technologies we are evaluating**
- ✓ **Test programs we have initiated**
- ✓ **Compliance provisions we are considering**
- ✓ **Requests for comment + data to inform our proposal**

## The Advance Notice did NOT include

- x **Potential stringency of future standards**
- x **Assessment of costs**
- x **Quantitative societal impacts**  
(i.e., air quality, economic, environmental, health)

These topics will be covered in the Notice of Proposed Rulemaking

# Overview of Advance Notice of Proposed Rulemaking Public Comments

- ▶ This slide and the ones that follow are not intended to be an all-inclusive summary of the input EPA received - but rather a very high-level summary
  - ▶ Many commenters provided detailed comments on technologies and program design
- ▶ ~300 comments received
  - ▶ States, Locals, and Tribal (~30)
  - ▶ Environmental Groups (~15)
  - ▶ Trade Associations & Fuels (~35)
  - ▶ OEMs (~10)
  - ▶ Independent Owner-Operators (~15)
  - ▶ Suppliers (~5)
  - ▶ Individual Fleets (~1)
  - ▶ Individuals/Private Citizens (~180)

# State, Local, and Tribal Organizations

## ► Commenters

- **15 State Air Agencies:** AZ, CA, CT, DE, GA, MD, MN, NY, NV, NC, OR, PA, UT, VT, WI
- **8 Local Air Agencies:** D.C Council of Gov'ts, Clark County, NV; Maricopa County, AZ; Bay Area AQMD, San Joaquin Valley AQMD, South Coast AQMD
- **Other Local Entities:** City of New York, Port of Long Beach, Washoe County Health District, NV
- **Multi-jurisdictional groups:** National Association of Clean Air Agencies, Northeast States for Coordinated Air Use Management; Ozone Transport Commission; California Air Pollution Control Officers Association
- **Tribes:** National Tribal Air Association, Keeweenaw Bay Indian Community

## ► Key Comments

- Need NO<sub>x</sub> reductions:
  - NAAQS attainment and maintenance
  - Environmental justice and other public health concerns
  - Regional haze and ecosystem concerns
- Want stringent control in as short a timeframe as possible (including early incentives)
- Widespread interest in ensuring control over vehicle lifetime, including addressing tampering, and under different operating conditions such as idle

# Environmental and Health NGOs

## ► Commenters

- **Environmental NGOs:** Union of Concerned Scientists (UCS), Environmental Defense Fund (EDF), International Council on Clean Transportation (ICCT), Natural Resources Defense Council (NRDC), and Chesapeake Bay Foundation (CBF)
- **Health NGOs:** American Lung Association (ALA), Allergy & Asthma Network, Alliance of Nurses for Healthy Environments, American Thoracic Society, Association of Schools and Programs of Public Health, Asthma and Allergy Foundation of America, Center for Climate Change and Health, Children's Environmental Health Network

## ► Key Comments

- EPA needs to complete planned technical projects before issuing a proposal
- Need more stringent standards to address air quality and public health for all communities
  - Inequitable burden of heavy-duty emissions on most vulnerable communities
- Reducing airborne nitrogen is a key component of protecting waterways from excess nitrogen pollution

# Truck & Engine Manufacturers

## ► Commenters

- Cummins, Volvo, Isuzu, the Truck & Engine Manufacturers Association (EMA); Tesla, Oshkosh, Rivian, Roush

## ► Key Comments

- Allow time to conduct a thorough analysis
  - carefully assess the costs and the benefits of future NO<sub>x</sub> standards
- Support for a national, harmonized low NO<sub>x</sub> program
- Most of the nation—with exception of a few areas in CA—in full attainment of ozone NAAQS by 2025

# Owners, Operators, Truck Fleets, Dealers

## ► Commenters

- American Trucking Associations (ATA), Owner-Operator Independent Drivers Association (OOIDA), National Association of Small Trucking Companies (NASTC), American Truck Dealers (ATD), and Individuals

## ► Key Comments

- EPA must conduct a through cost assessment
  - If initial purchase price & operational cost for new trucks is too high; owners may keep older trucks on the road
- General support for a national, harmonized low NO<sub>x</sub> program
- Specific concerns about impact of emission control systems on trucking operations
  - Expensive towing costs & downtime from emission system failures
  - Automatic disabling of trucks due to triggering of “SCR Inducement” strategy

# Suppliers, Supplier Trade Groups, Labor

## ► Commenters

- Manufacturers of Emission Controls Association, Motor & Equipment Mfrs. Association, Advanced Engine Systems Institute, Eaton, Allison Transmission, Alliance for Vehicle Efficiency, United Auto Worker, Lubrizol, CPK Automotive, Ingevity, Fire Apparatus Mfrs. Association, Odyne Hybrid Systems, Indrio Technologies

## ► Key Comments

- Generally supportive of more stringent NO<sub>x</sub> standards and providing industry with regulatory certainty
- Strong support for a 50-state harmonized EPA-CARB program, or harmonize with California where it makes sense
- EPA must balance emission reductions with technology costs, feasibility, lead-time, and avoid market disruptions
  - Consider a phase-in approach for longer useful life and warranty
  - Several support incentives for early introduction of low NO<sub>x</sub> technology

# Next Steps

- ▶ We are actively moving forward with this important rulemaking
  - ▶ Engaging in a robust and open dialogue with stakeholders
  - ▶ Furthering our own research and test programs
- ▶ EPA was previously targeting a Notice of Proposed Rulemaking (NPRM) signature in September 2020
  - ▶ Air quality modeling analysis and other technical information in a separate Notice of Data Availability following the proposal
- ▶ We recently decided to combine these two steps into one action
  - ▶ COVID-19 pandemic has impacted EPA operations and timelines and limited stakeholders' ability to prioritize technical research to inform the CTI and to engage with EPA

# Ways to Continue Engagement on CTI

- ▶ More information is on our Cleaner Trucks Initiative webpage
  - ▶ <https://www.epa.gov/regulations-emissions-vehicles-and-engines/cleaner-trucks-initiative>
- ▶ CTI docket at [www.regulations.gov](http://www.regulations.gov)
  - ▶ Docket number: EPA-HQ-OAR-2019-0055
  - ▶ View supplemental material and references from the ANPR, and public comments
- ▶ The Notice of Proposed Rule will be followed by a public comment period and one or more public hearings

# EPA Contacts for CTI

- ▶ CTI Rulemaking Team Leads
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# Appendix

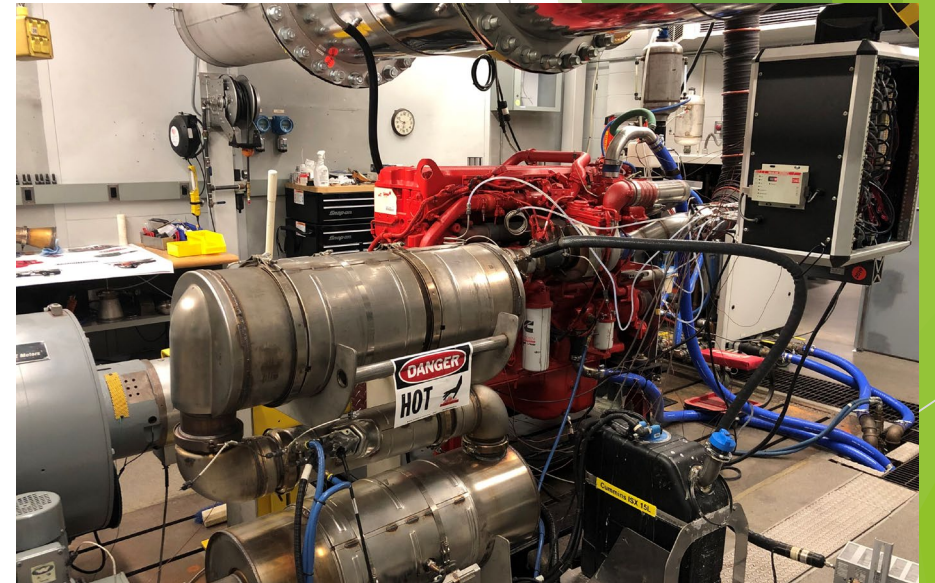
# Standards and Test Cycles

## ► Improving Existing Emission Standards

- Technologies being considered should enable significant emission reductions

## ► New Emission Test Cycles and Standards

- Considering the addition of a low-load test cycle and standard to improve performance of the emission control system at low load and low temperature operation

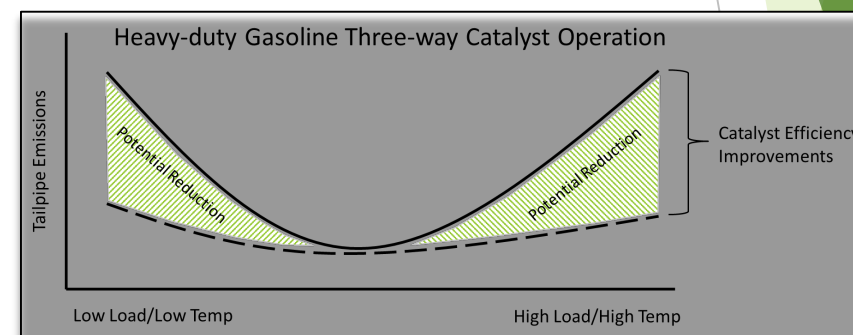
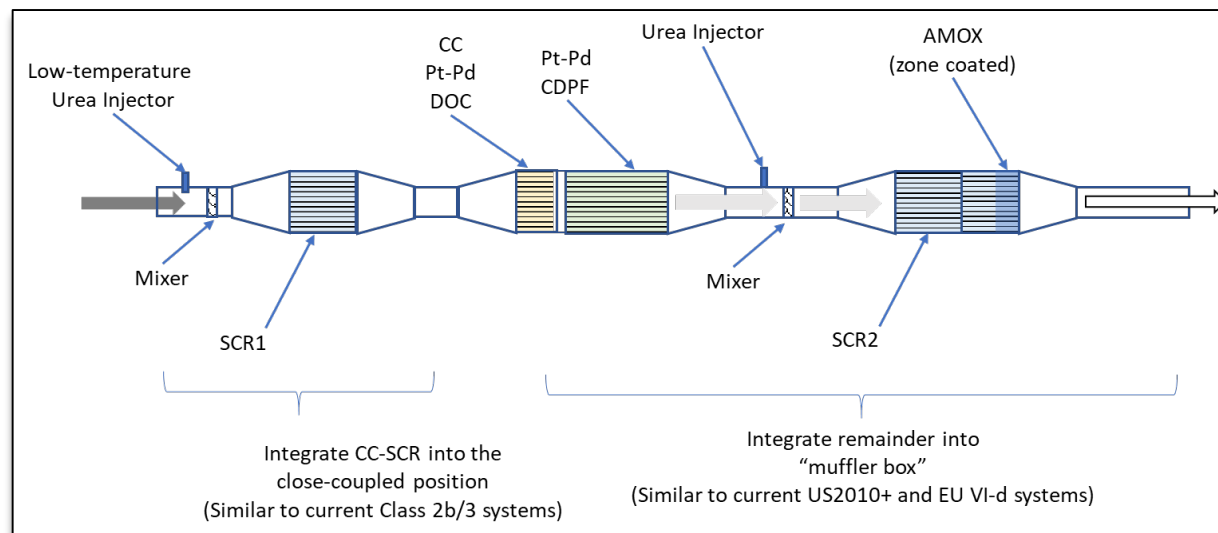


# Emission Control Technologies Being Considered

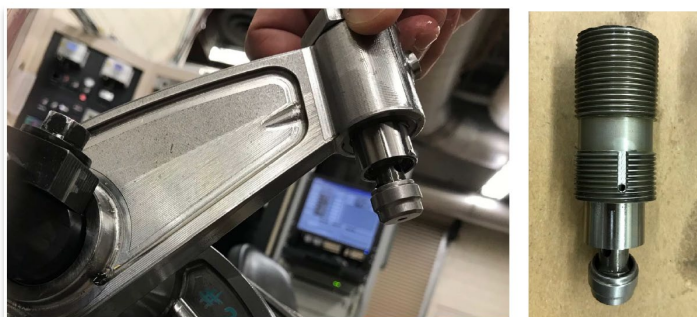


**EPA** UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
NATIONAL VEHICLE AND  
FUEL EMISSIONS LABORATORY

## Next-generation diesel aftertreatment



*Cylinder deactivation to increase diesel exhaust temperatures without raising CO<sub>2</sub> emissions*



Cylinder Deactivation (Eaton)

*Strategies to improve HD gasoline catalyst performance*

# In-Use Emission Test Procedures & Standards

- ▶ Significant in-use performance improvements can be made by considering more of the engine operation outside of today's EPA in-use testing requirements
- ▶ ANPR describes the intent of the CTI to improve our in-use procedures to capture nearly all real-world operation
- ▶ Seeking comment on a revised in-use approach, including:
  - ▶ Using an approach similar to the European in-use program
  - ▶ Use of a moving average window-based standard
  - ▶ Potential need to include emission measurement allowances



# Extending the Regulatory Useful Life



- ▶ Today's regulatory useful life covers less than half of the primary operational life (i.e. time to first engine rebuild) for most heavy-duty engines
  - ▶ Today's useful life ranges between 110,000 and 435,000 miles, depending on the regulatory class
  - ▶ EPA data indicates that the average engine rebuild mileage for those classes range between 315,000 and 910,000 miles
- ▶ ANPR requested comment on issues related to extended useful life requirements such as:
  - ▶ Appropriate useful life values
  - ▶ Considerations for durability demonstrations
  - ▶ Useful life of aftertreatment components
  - ▶ How many times engine cores are typically rebuilt

# Ensuring Long-Term In-Use Emissions Performance

- ▶ Deterioration of emission controls can increase emissions from in-use vehicles
- ▶ Such deterioration can be inherent to the design and/or materials of the components; the result of component failures; or the result of mal-maintenance or tampering
- ▶ The ANPR sought comment on ways to develop a modern strategy to improve real-world in-use emissions performance, including:
  - ▶ Warranties that cover an appropriate fraction of engine operational life
  - ▶ Improved, more tamper-resistant electronic controls
  - ▶ Serviceability improvements for vehicles and engines
  - ▶ Education and potential incentives
  - ▶ Engine rebuilding practices that ensure emission controls are functional



# Certification and Compliance Streamlining

- ▶ ANPR explored opportunities to streamline requirements while ensuring no loss in protection for public health and the environment
- ▶ EPA intends to evaluate compliance costs associated with testing, reporting, and recordkeeping and identify ways to lower costs and streamline requirements for:
  - ▶ Pre-certification emission testing
  - ▶ Certification reporting
  - ▶ Post-certification testing, reporting, and recordkeeping
- ▶ ANPR requested input on ways to improve the certification and recordkeeping process