

Clean Air Act  
Advisory  
Committee

November 7, 2019

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Transportation and Air Quality

# OTAQ Regulatory Outlook



# Topics

- Regulatory Actions: engines/vehicles
- Regulatory Actions: fuels
- Other items
- Cleaner Truck Initiative

# Regulatory Actions: On-road Vehicles & Engines

Action	Description	Milestone Targets
<b>The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule</b> for Passenger Cars and Light Trucks	Rulemaking to revise MY2021 – MY2026 vehicle GHG standards, changes to California vehicle waiver	NPRM Issued August 2018  Final Rule Part 1, published 9/27/2019
<b>Cleaner Trucks Initiative</b>	Rulemaking to revise EPA emission standards for highway heavy-duty engines & vehicles	NPRM in 2020
<b>Vehicle Test Procedure Adjustments for Tier 3 Test Fuel</b>	Adjustments to EPA GHG and NHTSA CAFE test procedures to account for change to Tier 3 gasoline certification test fuel	NPRM currently under OMB-led interagency Review
<b>Light-Duty Vehicle GHG Program Technical Amendments</b>	Action to correct errors in EPA regulations from program promulgated in 2012.	NPRM issued October 2018 Final Rule expected in 2019

# Regulatory Actions: Non-Road Engines and Fuels

Action	Description	Milestone Targets
<b>Amendments Related to Marine Diesel Engine Emission Standards</b>	Action to consider amending regulatory schedule for smallest power category of Tier 4 marine standards to provide additional lead time or other accommodations.	NPRM issued September 2019 Final Rule expected in 2020
<b>Amendments Related to Global Marine Fuel</b>	Technical amendment to diesel fuel regulations to allow distribution of 5,000 ppm S distillate marine fuel in the U.S., consistent with IMO 2020 std.	NPRM issued September 2019 (as part of above NPRM) Final Rule expected December 2019
<b>Advancing Clean Aircraft Engines and Reforming Test Procedures (Aircraft PM)</b>	This rulemaking follows on the International Civil Aviation Organization (ICAO) agreement on the first-ever international particulate matter (PM) emission standards for commercial aircraft engines in February 2019.	NPRM in 2020

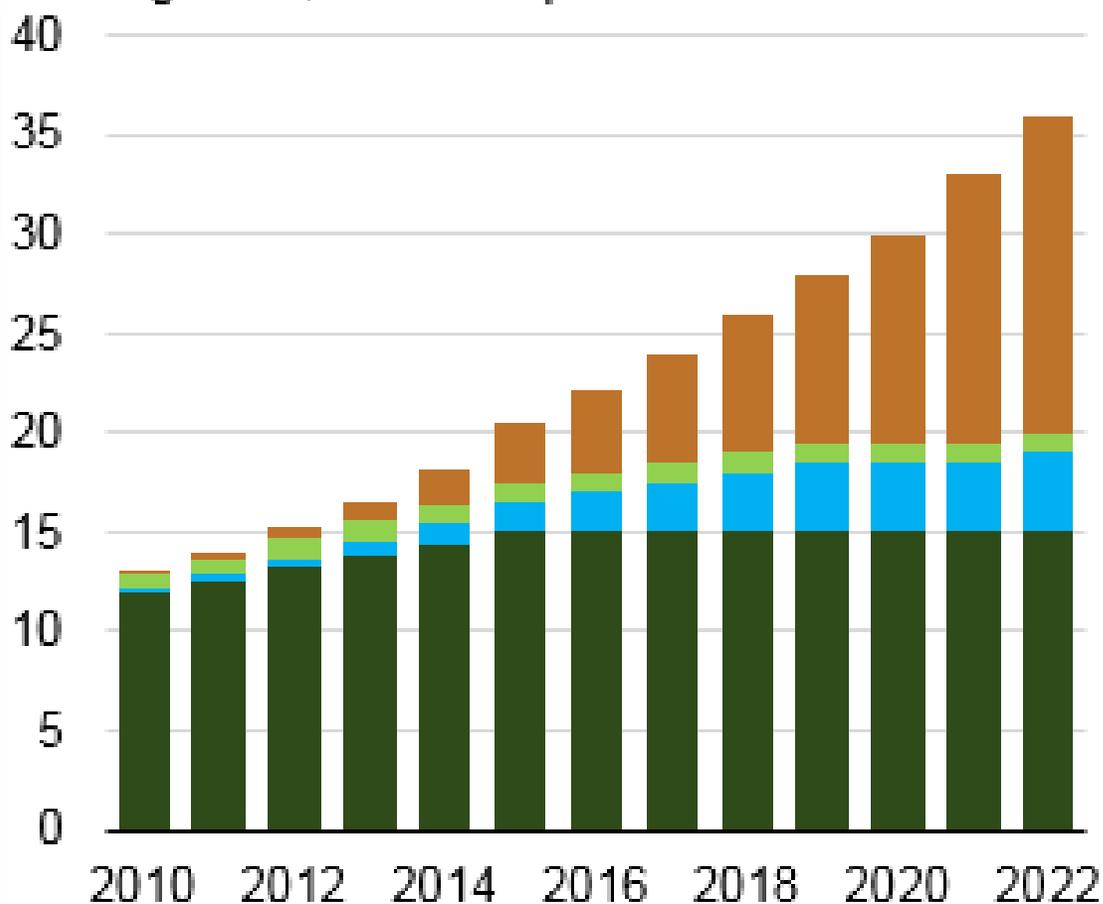
# Fuels



# RFS Volumes

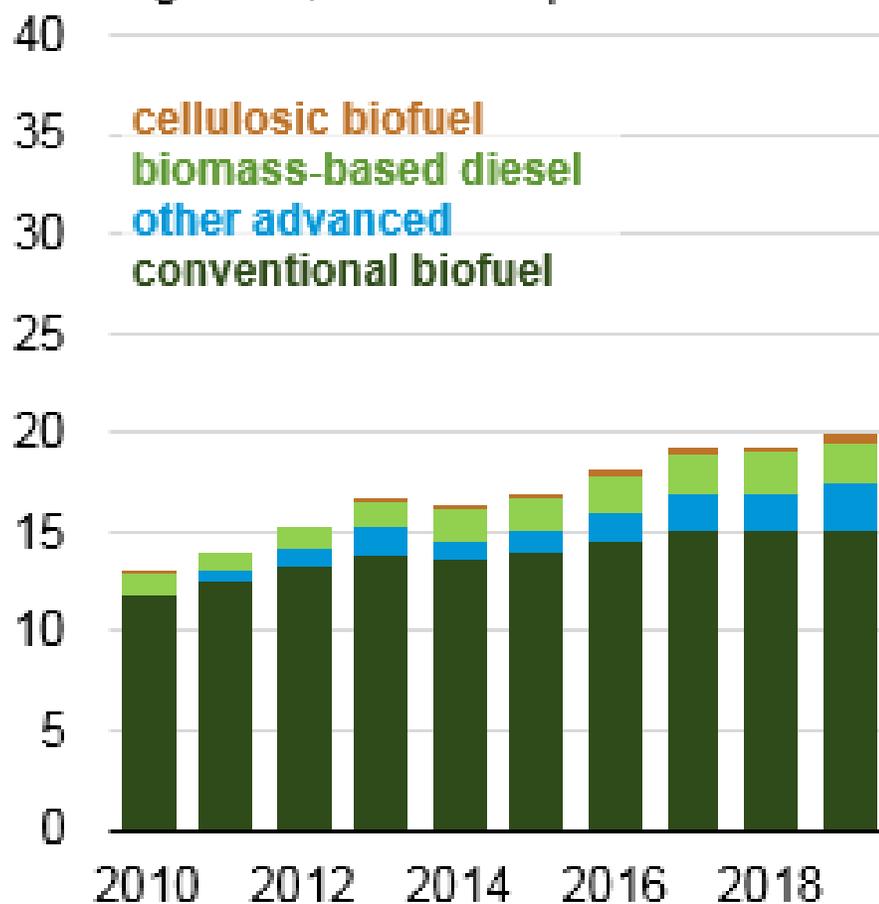
**EISA 2007 volume standards (2010-2022)**

billion gallons, ethanol equivalent



**RFS volume requirements (2010-2019)**

billion gallons, ethanol equivalent



# Regulatory Actions: Fuels

Action	Description	Milestone Targets
<b>E15 and RIN Market Reform</b>	Rulemaking to extend 1 lb psi RVP waiver to E15 and modify RIN market regulations.	Final rule signed on May 30, 2019
<b>2020 Renewable Fuel Volume Annual Standards Rule</b>	Rulemaking to put in place the renewable fuel obligations for the 2020 Calendar Year.	NPRM – July 2019 Supplemental – Oct 2019  Target date for final rule: end of 2019
<b>Renewable Fuel Standard Program Modification of Applicable Volume. (“Reset” Rule)</b>	Rulemaking to revise the renewable fuel volumes specified in the statute for 2020-2022	NPRM currently under OMB interagency review

# Regulatory Actions: Fuels

Action	Description	Milestone Targets
<b>Fuel Regulatory Streamlining Rule</b>	Rulemaking to rewrite all of our Part 80 fuel regulations (other than RFS) to be streamlined, easier to understand, and up-to-date	NPRM Early 2020
<b>Renewables Enhancement and Growth Support (REGS) Rule</b>	Rulemaking to allow biointermediates under RFS, put in place standards for higher level ethanol blends, new RFS pathways, seek comment on regulations to allow generation of RINs for renewable electricity, and put in place a number of other technical amendments to RFS.	NPRM proposed Nov. 2016  Final Rule TBD

# RFS Litigation

- Challenges to national actions (E15 rule, 2019 RVO rule, others)
- Multiple challenges to small refinery exemptions (2016/ 17/ and 18) in four different circuits
- Other case regarding various matters

# Major Studies

Action	Description	Milestone Targets
<b>Coastal Marine Mode Shift Study</b>	<p>Study in response to request from Congress. Will examine the potential for transportation mode shift in coastal marine transportation markets as a result of compliance with the North American Emission Control Area fuel sulfur limits.</p> <p><a href="https://www.epa.gov/regulations-emissions-vehicles-and-engines/study-impacts-compliance-eca-fuel-sulfur-limits-us">https://www.epa.gov/regulations-emissions-vehicles-and-engines/study-impacts-compliance-eca-fuel-sulfur-limits-us</a></p>	<p>Interim report completed February 2018</p> <p>Stakeholder workshop held July 2018</p> <p>Final study due to Congress end of FY2020</p>
<b>RFS Air Quality Anti-backsliding Study</b>	<p>Carry out a study on the air quality impacts of RFS volumes as required by Section 211(v) of the CAA</p>	<p>Consent Decree established deadline of March 30, 2020</p>

# Cleaner Trucks Initiative: Overview

- On November 13, 2018, EPA Administrator Andrew Wheeler announced the “Cleaner Trucks Initiative” (CTI)
- Objective is to achieve lower NO<sub>x</sub> emissions nationwide
  - Ensure real world emissions reductions
  - Improve certification and in-use testing requirements
  - Pursue a national, harmonized program
  - Focus on NO<sub>x</sub>, but take a broad look at other heavy-duty engine emissions
- Identify cost-effective means of ensuring real-world compliance and explore opportunities to streamline existing requirements

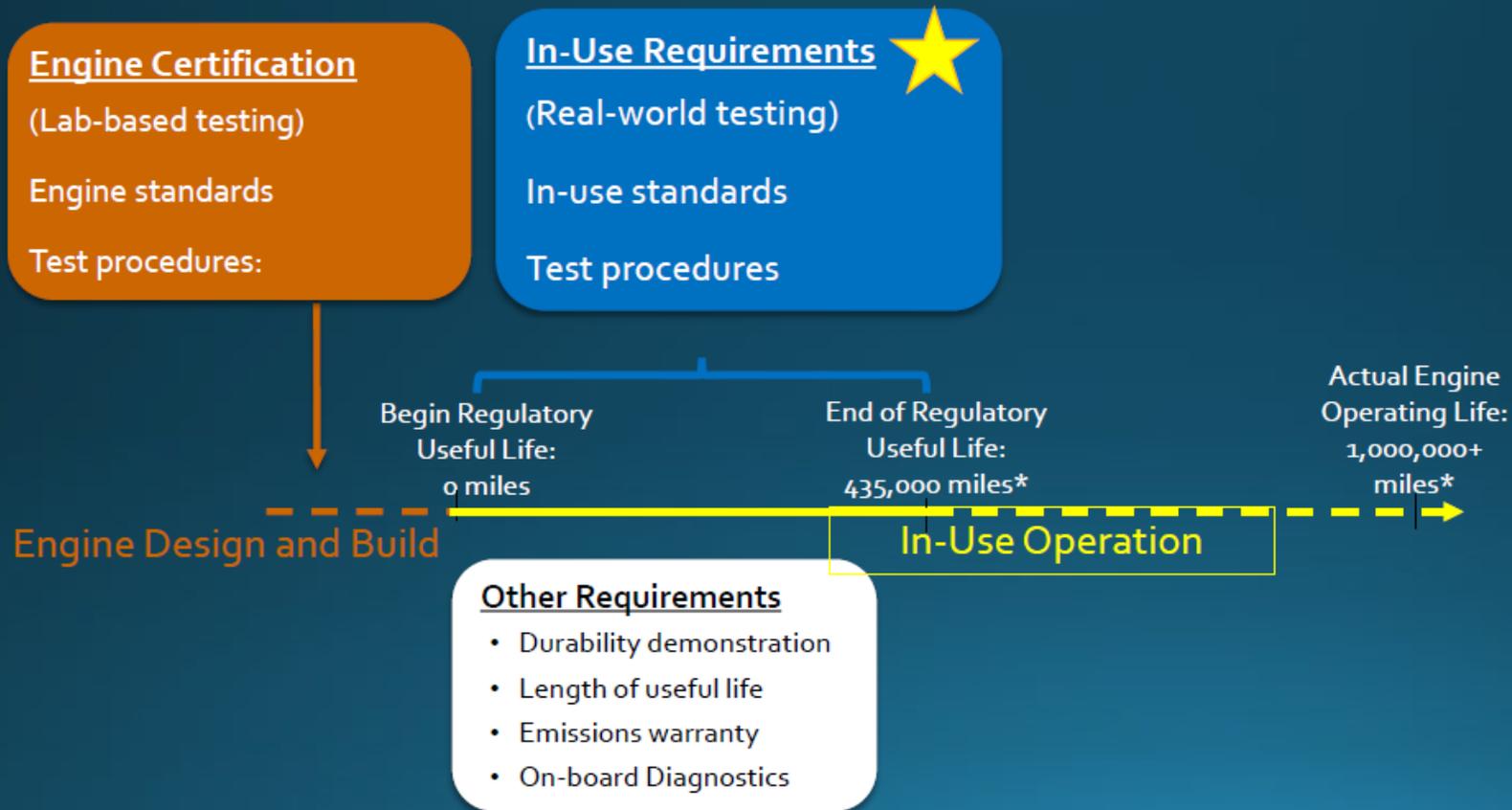
# Cleaner Trucks Initiative: Motivation

- EPA last revised NOx standards for heavy-duty trucks nearly 20 years ago
- We have an opportunity to modernize the requirements to better reflect the capability of available emissions control technologies
- EPA current emissions standards have lowered overall NOx emissions, but have not resulted in effective emission control under low-load conditions (when trucks are at idle, moving slowly, or in stop-and-go traffic)
  - By addressing low-load operation, we can improve NOx emission controls in cities and in areas of high traffic, making a big difference to communities

# Clean Air Act – Section 202(a) provides specific direction to EPA for Highway Heavy-duty Engines and Vehicles

- Set standards for air pollutants and revise from time to time
  - Must provide 3 years of stability between standards
- Implement after lead-time necessary to develop and apply technology
  - Must provide at least 4 years
- Standards applicable for the engine/vehicle useful life
- Give appropriate consideration to the cost of compliance
- Emission standards for HC, CO, NO<sub>x</sub>, and PM must reflect the greatest degree of emission reduction achievable through technology – considering lead time, cost, energy, and safety

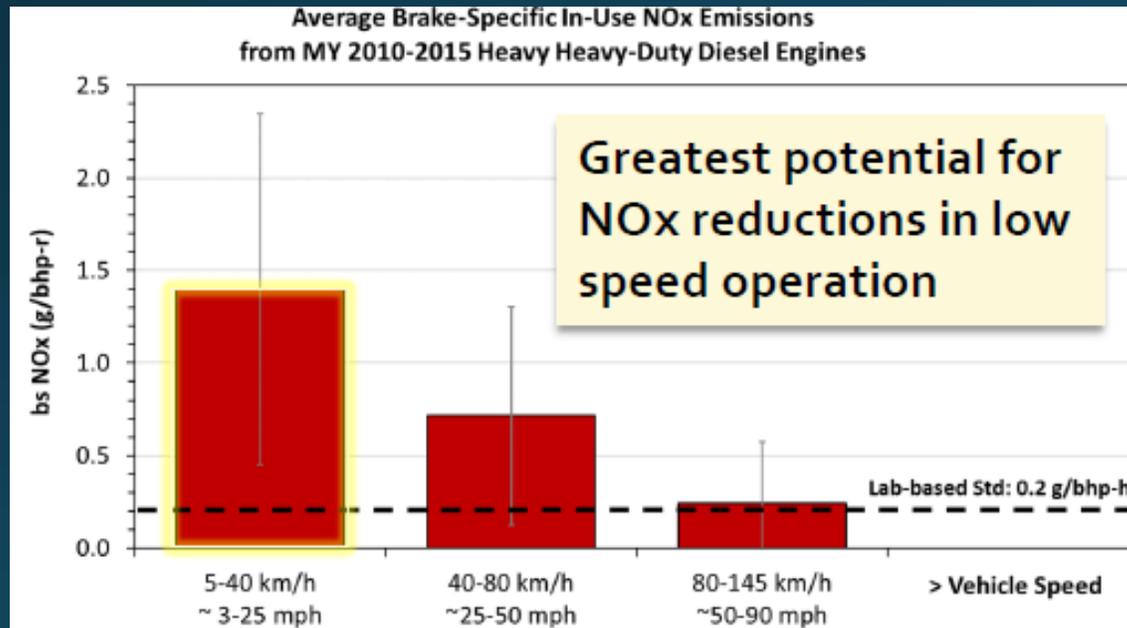
# Current Heavy-Duty Engine Requirements



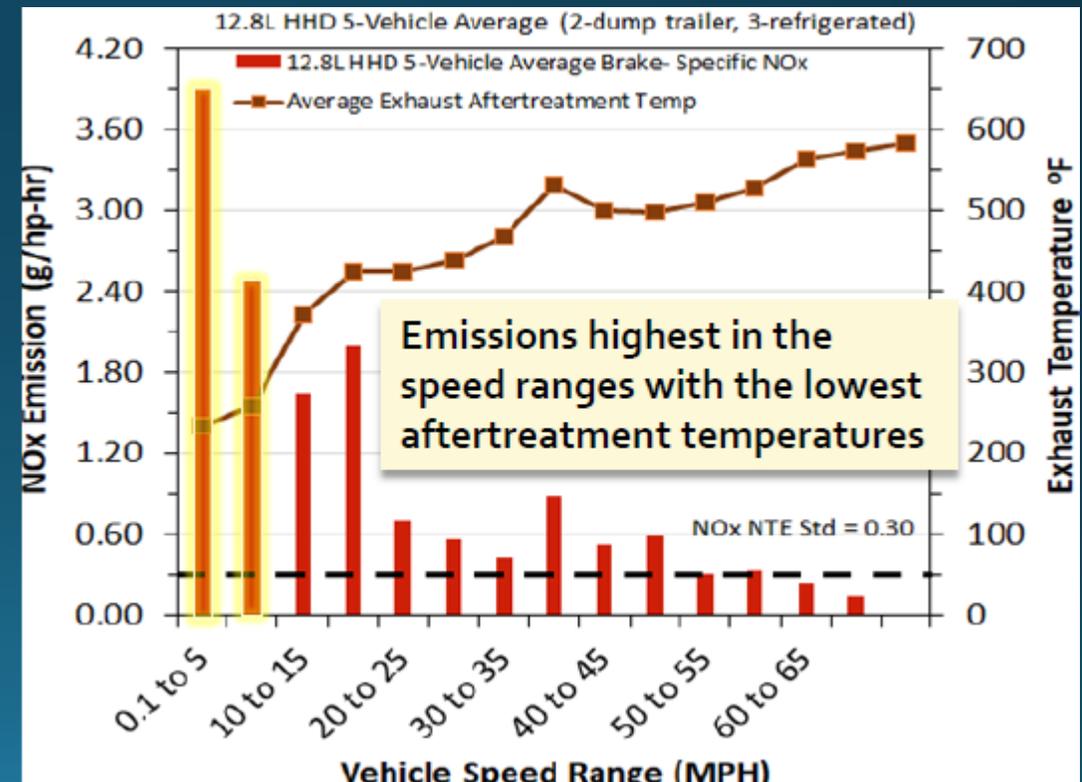
- Under CTI, we are taking a holistic approach to heavy-duty engine requirements to ensure in-use reductions over more of the operating life of these engines, while lowering manufacturer burden where possible
- Updates to in-use requirements will be key and will allow streamlining of other program elements

# Where do we see higher Nox emissions on the road? During Low Load Operation

Data from 93 vehicles; all engines certified to 0.2 g/bhp-h in pre-production lab tests



Data from 5 vehicles; all engines passed in-use testing standard of 0.3 g/bhp-h for conditions outlined in the test procedure



# CTI: Key Program Elements Being Explored

- Nationwide Emissions Reductions
  - Work to closely align CARB and Federal long-term programs
  - Continue technical coordination with CARB and industry
- Ensure In-Use Emissions Reductions
  - New in-use protocol that covers “all” in-use operation
  - Conducting and contributing to multiple technology demonstration programs
  - Regulatory useful life and warranty that reflect current operating life
- Streamline and Modernize Requirements
  - Accelerated aging protocol for diesel aftertreatment systems
  - Incentives for advanced technologies: 0 gram NOx
- Effective EPA Compliance and Enforcement
  - Utilize onboard data streams to identify emissions compliance concerns early
  - Consider technologies which can discourage tampering with emissions control technologies

# CTI: Timeframe and Current Status

- Targeting an ANPRM by end of 2019
- 2020 for a Notice of Proposed Rulemaking
  - Comment period after the proposal, followed by a Final Rulemaking
- Currently in the information-gathering stage
  - Early outreach to stakeholders
  - Continuing engagement and coordination with CARB staff on technical work
  - Accessing technical feasibility – evaluating the effectiveness of advanced technologies and compliance strategies
  - Developing cost, benefit, emissions inventory, air quality, and economic analyses to inform the CTI proposal

# CTI: Early EPA Stakeholder Engagement

(not comprehensive)

## User Community



## State, Local, Tribal Governments & Air Associations



## Suppliers & Labor



## Clean Air & Env. NGOs



## OEMs



# CTI: Ongoing Technical Assessment

(not comprehensive)



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SOUTHWEST RESEARCH INSTITUTE

- Baseline HDD engine performance over engine dyno test cycles
- HDD cylinder deactivation demonstration
- HD gasoline baseline and advanced technology demonstration



- Evaluate baseline emissions (HDIUT)
- HD gasoline assessment
- Next generation engine and aftertreatment demonstration
- HDV chassis & PEMS testing
- NO<sub>x</sub> sensor performance



- WVU activity and in-use emissions study
- Possible NO<sub>x</sub> sensor performance evaluation at SwRI



CALIFORNIA  
AIR RESOURCES BOARD

- Advanced technology demonstration (Stage 1-3 HDD engines)
- Low-load cycle development
- NREL cost study

## Additional Stakeholder Data

- Possible telematic data from a HD truck fleet



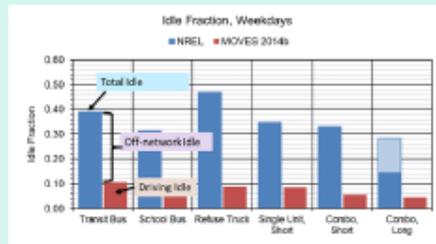
Environment and  
Climate Change Canada

- HDV chassis & PEMS testing
- NO<sub>x</sub> sensor performance

# CTI: Major Updates for Heavy-duty Emissions Projections

## New Data On...

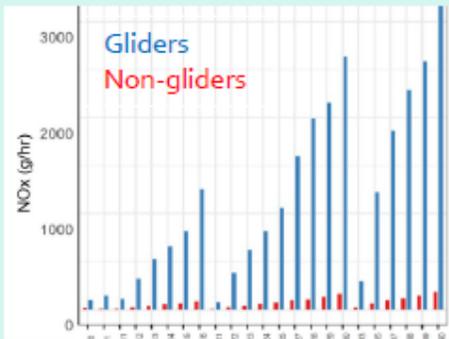
### HD Activity



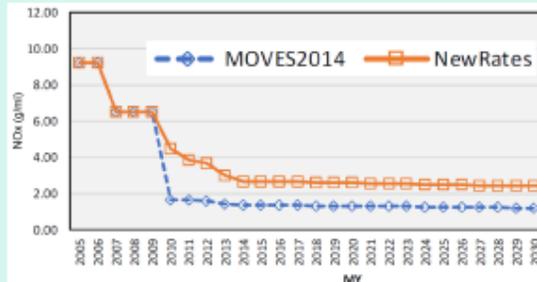
### VMT & Vehicle Populations



### Glider Vehicles



### HD Emission Rates



Updated  
for NPRM\*

## CTI Proposal

Emissions Inventories

Full Air Quality  
Analysis (CMAQ)

Benefits Calculations  
(BenMAP)

Proposed Program  
Benefit Cost Analysis

\* Will not be a new release of MOVES  
– an update for the NPRM analysis

# CARB Heavy-duty NOx Activities

- CARB has been developing major heavy-duty diesel program revisions, including lower NOx standards, for several years
- CARB timeline can enable faster implementation than US EPA
  - CARB likely to adopt new standards in early 2020, with new NOx standards implementation to begin in 2024. This is sooner than EPA can require
- CARB staff issued a White Paper in April 2019, detailing their views for a 2024 program, and noting additional improvements for 2027
- EPA staff continue to coordinate on technical issues with CARB, and we are exploring approaches with CARB and industry to maintain the historic EPA-CARB coordinated 50-state program approach

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