Clean Air Act Advisory Committee

November 7, 2019
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Associate Director, Office of 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

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

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<tr>
<td>Amendments Related to Marine Diesel Engine Emission Standards</td>
<td>Action to consider amending regulatory schedule for smallest power category of Tier 4 marine standards to provide additional lead time or other accommodations.</td>
<td>NPRM issued September 2019</td>
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<td>Final Rule expected in 2020</td>
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<td>Amendments Related to Global Marine Fuel</td>
<td>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.</td>
<td>NPRM issued September 2019 (as part of above NPRM)</td>
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<tr>
<td>Advancing Clean Aircraft Engines and Reforming Test Procedures (Aircraft PM)</td>
<td>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.</td>
<td>NPRM in 2020</td>
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Fuels
RFS Volumes

EISA 2007 volume standards (2010-2022) billion gallons, ethanol equivalent

RFS volume requirements (2010-2019) billion gallons, ethanol equivalent

- cellulosic biofuel
- biomass-based diesel
- other advanced
- conventional biofuel
### Regulatory Actions: Fuels

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

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<td><strong>Fuel Regulatory Streamlining Rule</strong></td>
<td>Rulemaking to rewrite all of our Part 80 fuel regulations (other than RFS) to be streamlined, easier to understand, and up-to-date</td>
<td>NPRM Early 2020</td>
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<tr>
<td><strong>Renewables Enhancement and Growth Support (REGS) Rule</strong></td>
<td>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.</td>
<td>NPRM proposed Nov. 2016 Final Rule TBD</td>
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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

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<td>Stakeholder workshop held July 2018</td>
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<td>Final study due to Congress end of FY2020</td>
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<td><strong>RFS Air Quality Anti-backsliding Study</strong></td>
<td>Carry out a study on the air quality impacts of RFS volumes as required by Section 211(v) of the CAA</td>
<td>Consent Decree established deadline of March 30, 2020</td>
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Cleaner Trucks Initiative: Overview

- On November 13, 2018, EPA Administrator Andrew Wheeler announced the “Cleaner Trucks Initiative” (CTI)
- Objective is to achieve lower NOx emissions nationwide
  - Ensure real world emissions reductions
  - Improve certification and in-use testing requirements
  - Pursue a national, harmonized program
  - Focus on NOx, 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, NOx, 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

- **Engine Certification** (Lab-based testing)
  - Engine standards
  - Test procedures:
- **In-Use Requirements** (Real-world testing)
  - In-use standards
  - Test procedures

- **Begin Regulatory Useful Life:** 0 miles
- **End of Regulatory Useful Life:** 435,000 miles*
- **Actual Engine Operating Life:** 1,000,000+ miles*

**Other Requirements**
- Durability demonstration
- Length of useful life
- Emissions warranty
- On-board Diagnostics

- 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**
- VDA
- ATA
- NTEA
- ATD

**State, Local, Tribal Governments & Air Associations**
- NACAA
- NTAA
- APCA
- CAPCOA
- ECO
- CALIFORNIA AIR RESOURCES BOARD

**Clean Air & Env. NGOs**
- EDF
- NRDC
- ICCT
- AMERICAN LUNG ASSOCIATION

**Suppliers & Labor**
- UAW
- MECA
- EATON
- MEMA
- TENNECO
- BASF
- JM

**OEMs**
- CMA
- PACCAR
- DETROIT
- DAIMLER
- VOLVO TRUCKS
- NAVISTAR®
- ISUZU
- FCA
CTI: Ongoing Technical Assessment (not comprehensive)

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

**EPA**
- Evaluate baseline emissions (HDIUT)
- HD gasoline assessment
- Next generation engine and aftertreatment demonstration
- HDV chassis & PEMS testing
- NO_x sensor performance

**EMA Truck & Engine Manufacturers Association**
- WVU activity and in-use emissions study
- Possible NO_x 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
- HDV chassis & PEMS testing
- NO_x 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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