

February 20, 2020

Air and Radiation Docket and Information Center  
EPA Docket Center  
EPA/DC  
EPA WJC West Building  
1301 Constitution Ave. NW, Room 3334  
Washington, DC.

**Docket ID No. EPA-HQ-OAR-2019-0055**

Dear Administrator Wheeler,

Thank you for the opportunity to comment on the United States Environmental Protection Agency's (U.S. EPA) Cleaner Trucks Initiative (CTI) Advance Notice of Proposed Rulemaking (ANPRM). We at the California Air Resources Board (CARB) are pleased to see U.S. EPA issue the ANPRM and, in particular, see the ANPRM acknowledge the pressing need to considerably reduce oxides of nitrogen (NO<sub>x</sub>) emissions from heavy-duty trucks, not just in California, but also nationwide. The ANPRM poses many important questions, for what is undoubtedly a broad and complex rulemaking. We encourage U.S. EPA staff to take the time to review the responses received to the questions posed in the ANPRM, as well as data from the research projects underway to inform the CTI proposal. Heavy-duty trucks are such an important source that they warrant a thorough, methodical, data-driven rulemaking culminating in strong, aggressive standards.

Although California has made significant strides towards improved air quality over the past 5 decades, over 12 million State residents still breathe unhealthy air. California faces particularly extreme air quality challenges in the South Coast and San Joaquin air basins. In order for the South Coast to meet the federal ozone standards, for example, economy-wide NO<sub>x</sub> emissions need to be cut by 80 percent by 2031.

To achieve the needed NO<sub>x</sub> reductions and healthy air for Californians, future heavy-duty trucks must be dramatically lower-emitting than today's new trucks and must stay clean over their entire useful lives. Heavy-duty trucks comprise the largest NO<sub>x</sub> emission source category in the State, contributing a third of all statewide NO<sub>x</sub> emissions and over a quarter of total statewide diesel particulate matter emissions. CARB staff have been working on technology demonstrations and assessments since 2013, and for several years on a comprehensive update to the California standards for

heavy-duty trucks, our “Heavy-Duty Omnibus Low NOx Regulation” (HD Omnibus Regulation), and plan to bring a proposal to our board later this year. We anticipate staff’s proposal will be released for public review and comment in April, 2020.

The HD Omnibus Regulation is a critical part of CARB’s aggressive overall program to drive down emissions in California and protect public health. CARB is doing everything in our purview to cut emissions, including pushing to zero emissions wherever feasible such as in our Advanced Clean Trucks rulemaking. CARB must rely on U.S. EPA to do the same for sources outside CARB’s authority.

CARB’s proposed HD Omnibus Regulation will include a comprehensive set of revisions designed to ensure that NOx emissions from heavy-duty engines are significantly reduced from the time the vehicle/engine is first sold until the end of its useful life. The proposal is expected to contain the following important elements:

- Significantly more stringent exhaust emission standards and test procedures for 2024 and subsequent model year engines, including 2027 model year standards approximately 90 percent lower than today’s standards;
- A new low-load certification test cycle that demonstrates emission control during sustained low-load engine operation, which constitutes a large fraction of how trucks actually operate in urban areas;
- Durability demonstrations at certification that correlate with in-use emissions performance experience;
- Revamping the current heavy-duty in-use testing (HDIUT) program to require better emission control and cover all modes of in-use operation;
- Increased regulatory useful life to more accurately reflect how long trucks are used today (for example, to 800,000 miles for the heaviest trucks); and
- Longer emission warranty coverage (for example, to 600,000 miles for the heaviest trucks) to help ensure that emission control systems are well-designed and built properly and make it more likely that emissions-related repairs are completed promptly.

Addressing heavy-duty engines certified for use in California alone is not sufficient to address California’s air quality needs. Heavy-duty trucks play an important role in the transport of goods for interstate commerce and frequently cross state borders, and many California fleets purchase used federally certified trucks. Thus, California must rely on the federal government to adopt and enforce timely, rigorous standards to meet its federally mandated air quality standards. Indeed, federally certified heavy-duty trucks are responsible for over half of the total vehicle miles by heavy-duty trucks in California. For the heaviest trucks (Class 8 trucks over 33,000 pounds gross vehicle weight rating), over 60 percent of vehicle miles traveled in California are by federally certified trucks. Hence, no matter how comprehensive and effective California’s own

HD Omnibus Regulation is, without companion federal action, these federally certified trucks will be emitting excess NOx and will compromise California's ability to achieve clean air.

Therefore, CARB staff is pleased to see that U.S. EPA is both developing the CTI rule and actively involved in related research studies. CARB staff have also appreciated working with U.S. EPA staff over the past several years addressing heavy-duty greenhouse gas (GHG) and NOx emissions, as well as U.S. EPA's efforts to conduct and fund important related work. For example, U.S. EPA has contributed nearly \$500,000 to our Low NOx heavy-duty engine demonstration work at the Southwest Research Institute over the past several years, which has demonstrated NOx levels on order of 90 percent lower than today's standards with minimal or no GHG impact. We expect the shared Southwest Research Institute work to be foundational to our technical feasibility assessment for our HD Omnibus Regulation. CARB staff appreciates U.S. EPA's work in other important areas as well, including:

- Continuing to work on engine/aftertreatment/vehicle integration refinement;
- Developing a diesel aftertreatment rapid-aging protocol;
- Assessing feasibility and cost of open crankcase systems on heavy-duty diesel engines;
- Demonstrating cylinder deactivation across more engine platform and hardware approach examples; and
- Testing heavy-duty gasoline engines and technologies on Class 3 to 7 trucks.

Although U.S. EPA's work in some of these areas will not be complete in time to inform CARB's HD Omnibus Regulation, given the urgency with which California must act on its air quality challenges, CARB staff believes the work to be valuable and anticipates relying on this work in future rulemakings.

CARB staff has reviewed the ANPRM and notes many areas of agreement, including the importance of controlling emissions during low-load operation, as well as recognition of the existence of numerous promising technologies for dramatically lowering NOx emissions from heavy-duty diesel engines. Furthermore, CARB staff is encouraged to see that one of the goals articulated in the ANPRM is to establish a "coordinated 50-state program." CARB wholeheartedly supports that goal and encourages U.S. EPA in the CTI to align with California's program toward that end. Although California's HD Omnibus Regulation will likely take effect ahead of the CTI with model year 2024, we encourage U.S. EPA to have the CTI take effect as early as possible, given federal lead-time constraints, preferably with the 2026 model year. For years when California's standards are stricter, California's HD Omnibus Regulation may include compliance flexibilities to encourage manufacturers to voluntarily certify engines to one set of 50-State clean engine standards.

We strongly encourage U.S. EPA to align with the aforementioned elements of California's proposed program, including strict NOx standards about 90 percent lower than today's standards, a new low-load cycle, a revamped HDIUT program requiring broad in-use control, and longer useful life and emissions warranty provisions. The research funded by U.S. EPA and CARB, as well as recent industry activities to commercialize relevant technologies, validate the technical feasibility of much lower-emitting heavy-duty trucks compared to today's new trucks.

We also encourage U.S. EPA to maintain robust on-board diagnostic (OBD) program requirements with diagnostic specificity. This will ensure heavy-duty OBD systems continue to accurately detect and pinpoint system failures, help technicians perform proper emissions-related repairs, and protect vehicle owners from unnecessary repair bills when the wrong part is replaced. Although advances in NOx sensors are promising and CARB staff anticipates a strong role for NOx sensors in future heavy-duty in-use compliance programs, NOx sensors alone cannot replace the failure prevention and repair assistance functionality of a comprehensive OBD system.

In addition, we recommend U.S. EPA include provisions in the CTI equivalent to California's Real Emissions Assessment Logging (REAL) program, which CARB adopted last year. REAL, which is voluntary starting in model year 2022 and mandatory starting in model year 2024, uses the same sensors as OBD systems but collects data that gets stored on the vehicles to assess over the road real world emissions performance.

CARB staff has gone through the ANPRM in detail and has prepared feedback for U.S. EPA in response to numerous specific requests for comment or data. Our specific feedback is attached, along with the queries to which each corresponds, in the same order as the ANPRM.

If you have any questions or wish to discuss any of the topics in this letter or the attachment further, please do not hesitate to contact Ms. Kim Heroy-Rogalski, P.E., Chief of the Mobile Source Regulatory Development Branch at [kheroyro@arb.ca.gov](mailto:kheroyro@arb.ca.gov) or (916) 327-2200.

Sincerely,



Richard W. Corey  
Executive Officer

Attachment

Administrator Wheeler  
February 20, 2020  
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cc: Brian Nelson  
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