Clerks' Office
California Air Resources Board
1001 I Street
Sacramento, California 95814

June 4, 2021

Re: Comments in Response to the Proposed Amendments to the Heavy-Duty Engine and Vehicle Omnibus Regulation and Associated Amendments (HD Omnibus Regulation) – 30-Day Notice

Dear Sir or Madam:

Cummins Inc. appreciates the opportunity to provide comments regarding the California Air Resources Board's (CARB) Proposed Amendments to the Heavy-Duty Engine and Vehicle Omnibus Regulation and Associated Amendments (HD Omnibus Regulation) or "30-day Notice". As stated in our August 25, 2020 comments to CARB's 60-day proposal[1], we understand the unique air quality issues California faces and share CARB's goal to improve real-world NOx emissions from heavy-duty vehicles.

Cummins strives to improve the environment while at the same time serving our customers. As a global power leader, we ensure our customers' success by offering a choice of technologies that are better for our customers, the environment, and our communities. We are investing significantly in technologies ranging from cleaner and more efficient natural gas and diesel to hybrid to battery electric and fuel cell electric powertrains as well as hydrogen production. Cummins offers these recommendations for the HD Omnibus Regulation necessary for bringing efficient, reliable, and cost-effective power to our customers and for ensuring the regulation succeeds in providing air quality benefits for California. As we have done throughout the rulemaking process, Cummins will continue to work with CARB and other stakeholders to finalize the necessary changes.

[1] https://www.arb.ca.gov/lists/com-attach/35-hdomnibus2020-VTYBclwwU20KZQdp.pdf

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Changes are still needed to recognize shortened lead times and unforeseen challenges

In our August comments in response to CARB's 60-day proposal, Cummins shared its intent to work towards meeting the proposed model year (MY) 2024 0.050 g/bhp-hr NOx standard with advanced technology internal combustion engines and powertrains, including alternative fuel options, even as concerns remained with the sweeping changes proposed in the regulation. We highlighted some of the significant uncertainties and challenges which manufacturers are facing in implementing CARB's new MY 2024 requirements due to the shortened, two-year lead time and the unprecedented scope of change to certification and compliance protocols. Cummins appreciates the proposed 30-day changes that are intended to provide additional clarity and improve manufacturers' ability to comply, such as:

- Removal of the 50-state option for MY 2024-2026
- Additional options for new durability / deterioration factor (DF) demonstration testing
- Prohibitions against interfering with certifying manufacturers' access to the in-use data needed to meet the new DF reporting requirements
- Additional compliance margin for the new moving average window (MAW) in-use compliance protocols
- The ability for zero-emissions powertrain manufacturers to generate NOx credits

While these and other proposed changes are steps in the right direction, they do not fully address all the concerns. Lead time remains short, with no margin for delays that might be encountered while attempting to understand and implement all-new regulatory requirements and at the same time develop and validate new products to meet them. CARB should allow discretion by certification staff in the final rule to address significant timing issues that may arise leading up to and during the certification application process.

Additional flexibilities are needed to address underserved applications due to limited product offerings

Additionally, manufacturers' product offerings will be limited for California and other states adopting CARB's Omnibus regulations, compared to the rest of the country. In response, CARB has appropriately proposed amendments with limited exemptions for engines at or above 525 horsepower and for diesel transit bus engines. Cummins supports those transitional flexibilities. However, other customers and markets beyond high-horsepower applications and transit agencies are expected to also go underserved due to limited product offerings. Cummins remains concerned

about vocational vehicle applications. Because many of those vehicles are essential to support our daily lives, CARB should finalize additional transitional flexibilities to allow manufacturers to temporarily sell a limited number of EPA-certified engines in California. The higher emissions from those engines could be more than offset by CARB not finalizing its proposed restrictions on NOx credit opportunities, which then would ensure customer needs are met with a simultaneous benefit to the environment. Toward that end, Cummins is especially troubled by CARB's June 2020 proposal to restrict manufacturers from using any NOx credits generated prior to 2010. We strongly disagree with CARB's basis that a 1997 EPA document[2] responding to public comments supports CARB's proposal. In fact, that EPA document expressly supports and defends finalizing unlimited credit life as an environmental benefit. (See Appendix for details.) Cummins agrees with EPA's conclusion and urges CARB to reconsider; especially because declaring already banked credits valueless significantly decreases the incentive for any manufacturer to generate credits in the future. In lieu of restricting the use of pre-2010 credits, Cummins recommends CARB take a more measured approach by balancing the amount of credits needed to avoid the impacts of limited product offerings with the amount of credits that remain available in the averaging sets. CARB then should implement appropriate sales volume limits, time limits, and credit discounts for the use of pre-2010 credits in a way that both ensures product availability and environmental benefits. Cummins is confident that our hard-earned emissions credits would ensure both product availability and significant environmental benefits during an appropriate transition period.

Further work is needed to explore more cost-effective alternatives to emissions warranty and useful life changes

In our August comments, Cummins also expressed concerns about the more stringent 2024 warranty reporting and corrective action provisions and the lengthening of emissions warranty and useful life periods in 2027 and 2031. We urged CARB to not finalize the proposed changes which would raise vehicle costs, further exacerbating cost increases associated with introducing new technology to meet new NOx standards at the same time. Cummins called on CARB to instead conduct a comprehensive study to assess the cost implications, including impacts on new technology adoption, of these changes which could have the unintended consequence of discouraging emissions improvements if customers cannot afford to buy new vehicles. The Board ultimately approved the proposed warranty and useful life changes, but it also directed staff to undertake the study. However, few modifications are included in the 30-day notice, and we believe

[2] https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100QQFN.pdf

that is because CARB's study has not yet focused on considering more cost-effective regulatory alternatives. Cummins urges CARB to continue engaging in discussions about more cost-effective solutions.

Cummins is committed to continue working with CARB to ensure a successful final rule

In addition to the concerns highlighted here, we have communicated other feedback and recommended regulatory changes through discussions with CARB staff and in the Appendix to these comments. Cummins is committed to continuing to work with CARB and other stakeholders to ensure the final rule is successful for the environment, for the people of California, and for our customers. For questions, please contact me: jackie.m.yeager@cummins.com.

Sincerely,

Jackie M. Yeager

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Appendix – Additional Feedback and Recommended Changes to the HD Omnibus Regulation

Pre-2010 Credits – Regarding CARB's proposal to bar the use of pre-2010 credits, page III-73 of CARB's June 23, 2020 Low-NOx Omnibus ISOR states, "CARB staff's rationale for this amendment is based on action previously taken by U.S. EPA. As noted earlier in Chapter I, Section B.7, federal-ABT credits generated prior to the 2004 MY were subject to a three-year credit life limit (U.S. EPA, 1997b). Starting with the 2004 MY, U.S. EPA removed these credit life provisions altogether from the federal regulations. U.S. EPA rationalized that even with an unlimited lifetime, all existing credits generated after the 2004 MY were expected to be used anyway by the 2010 MY (U.S. EPA, 1997b). In other words, U.S. EPA assumed the credits should be used within 6 years or less. CARB staff agrees, and thus used this rationale for the basis for staff's proposal. CARB staff believes that the absence of a credit life requirement would lead to undermining the benefits of emission standards as manufacturers will continue to use the credits to certify engine families to FELs above the applicable standards."

Cummins maintains a strong view that CARB inappropriately declared hard-earned and environmentally beneficial pre-2010 credits as valueless. The EPA document CARB cited expressly supported and defended unlimited credit life, and it included a hypothetical example of a manufacturer earning and using credits over a 12-year period, not six. In that document EPA also contemplated that a "large bank" could be saved for use only in emergencies and that it could be an environmental benefit. If CARB were to allow the use of pre-2010 credits at some discounted rate, then the environmental benefit would be real, and those credits could be used to avoid the impacts of limited product offerings. Refer to the EPA document originally cited by CARB and see:

- P. 15-16, Figs. 1-2. EPA's example of a manufacturer banking and using credits over a 12-year period, not six.
- P. 20 "EPA believes that an unlimited credit life is appropriate and beneficial for several reasons. There is no advantage environmentally to forcing or encouraging credits to be used [via expiration] because credit use results in higher emitting engines. EPA does not agree that allowing an unlimited credit life unduly delays the introduction of technology."
- P. 21 "Another long-term consideration is the possibility that a large bank of credits could be accumulated for use to be used against a future standard…. Once credits are generated, it is likely that manufacturers will hold some credits for emergencies, which could result in a benefit to the environment."

Various provisions – Proposed amendments for warranty, useful life, averaging sets, maintenance, durability demonstration, and labeling for optionally certified diesel hybrid powertrains base these requirements primarily on vehicle GVWR. For engines, however, these requirements are based on the primary intended service class definitions of §1036.140 which consider not only vehicle GVWR, but also engine characteristics and typical vehicle body types, applications, and duty cycles, which are also important criteria for assigning the appropriate requirements. Omnibus amendments to §1036.140 already instruct manufacturers to identify a single primary intended service class for each optionally certified diesel hybrid powertrain family that best describes the vehicles for which it is designed and marketed. To be consistent with how engines are treated for both criteria pollutant and GHG emissions, the requirements for optionally certified diesel hybrid powertrains should also be based on the powertrain family's primary intended service class, not primarily on vehicle GVWR.

Useful life periods – Hours are included as a limit to emissions useful life periods only for heavy heavy-duty (HHD) engines. Cummins requests to add hours to emissions useful life for other engine categories to address low vehicle speed, vocational-type applications, using similar rationale as used by CARB for setting hours limits for emissions warranty periods. Cummins has provided recommended hours values for useful life and supporting data. Additionally, the hours limits already in place for HHD engine useful life are effectively removed by reverting back to years or miles limits once the hours are reached. These secondary years or miles limits should be removed to avoid rendering the hours limit ineffective. Finally, key-on/engine-off time does not count for purposes of identifying the end of emissions warranty or useful life periods. CARB should allow key-on/engine-off time to count for cases such as hybrids where the hybrid components are still active even when the engine is off.

OBD thresholds – Alternate NOx OBD thresholds are available only for engines certified to $\leq$0.10 g/bhp-hr NOx. Engines certified to Family Emissions Limits (FELs) lower than the current NOx standard of 0.20 g/bhp-hr but higher than 0.10 g/bhp-hr would be subject to more stringent OBD thresholds than engines certified to $\leq$0.10. CARB should allow use of the alternate OBD thresholds starting MY 2022 for engines certified to FELs lower than current standards, rather than just FELs $\leq$0.10 g/bhp-hr. CARB should also allow use of the alternate OBD thresholds for these MY 2022-2023 engines without requiring pull-ahead of future Omnibus requirements.

3B-MAW and B-MAW in-use testing – Cummins appreciates CARB's amendments to recognize regenerations and low coolant temperature conditions beyond cold starts as invalid data (though

the coolant temperature provision should not sunset after MY 2026). CARB should additionally consider invalidating tests or data when the malfunction indicator lamp (MIL) is on. It is not appropriate to include such data in the in-use compliance determination when the MIL is indicating the emission control system is not operating properly.

Cycle-validation criteria – Cummins supports the revised regression limits for single-point injection, gaseous-fueled engines in §1036.540 and §1065.514.