

**STATE OF CALIFORNIA  
AIR RESOURCES BOARD**

<b>Notice of Public Availability of Modified</b>	)	<b>Public Hearing Date:</b>
<b>Text and Availability of Additional</b>	)	<b>December 9, 2021</b>
<b>Documents and Information;</b>	)	
<b>Proposed Heavy-Duty Inspection and</b>	)	<b>Comment Deadline:</b>
<b>Maintenance Regulation</b>	)	<b>May 26, 2022</b>

**COMMENTS OF THE  
TRUCK AND ENGINE MANUFACTURERS ASSOCIATION**

May 26, 2022

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<b>Proposed Heavy-Duty Inspection and Maintenance Regulation</b>	)	<b>December 9, 2021</b>
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**Introduction**

On May 11, 2022, the California Air Resources Board (“CARB”) Staff published Proposed 15-Day Modifications (“Proposed Modifications”), following the Board’s direction to the Executive Officer subsequent to a December 9, 2021, hearing on the “Notice of Public Hearing to Consider Proposed Heavy-Duty Inspection and Maintenance Regulation” (“the Proposal”).

The Truck and Engine Manufacturers Association (“EMA”) is the international trade association that represents the interests of the world’s leading manufacturers of internal combustion engines, including heavy-duty engines, and of heavy-duty on-highway vehicles. EMA’s members have significant interests in many provisions of the Proposed Modifications, as they will directly impact the products manufactured by EMA members, and will further impact the on-board diagnostic certification and the in-use maintenance of those products.

EMA and its members have actively participated in the various workgroup and workshop meetings held by CARB Staff leading to the development of the proposed heavy-duty inspection and maintenance (“HD I/M”) program, including submitting written comments and participating in the December 2021 Board hearing, and we appreciate the open and collaborative process and Staff’s willingness to address and incorporate stakeholder comments. Notwithstanding EMA’s appreciation of the process, we have a number of remaining concerns with the Proposed Modifications, as detailed in our comments below.

**Comments on the Notice of Public Availability of Modified Text and Proposed Amendments to Appendices A-1 and B**

**1. Leadtime and Applicability (§2195(d))**

As EMA has previously mentioned in our testimony to the Board, and in comments provided to CARB staff, we are concerned about the lack of time for full prove-out of devices. There are many questions and concerns with the feasibility, compatibility, and readiness of devices, especially given the short amount of time between issuance of the final HD I/M program, device manufacturers’ field testing, and the program implementation date proposed in the Initial Statement of Reasons. Specifically, there must be an assurance any device that CARB approves for use must not have any impact on heavy-duty vehicle OBD system normal operations and

communication; thus, time must be allowed for device manufacturers and vehicle manufacturers alike to ensure feasibility and compatibility of the technology, and to protect against any unintended impacts to vehicle systems. Additionally, device prove-out must ensure that there are no issues with regard to the durability of the OBD port and mechanical load on the connector with the use of a continuously connected tool. Further, time is needed for the development of an industry standard or protocol (e.g., SAE, IEEE, etc.) for device communication with vehicles, prior to the implementation of the program. A standard, well-defined communication protocol is critical to the success of the program, and to the safety and robustness of the OEM systems on which the devices – especially those that will be “continuously connected” – will be installed.

As such, we support the proposed changes to §2195(d) to implement the device requirements only following a determination that the necessary devices, tools, and platforms are successfully built, tested and deemed ready for use, and that a subsequent public notice would be provided to all users via CARB’s website and the Register with at least 90 days’ notice.

**2. Time extensions due to unavailability of parts (§§2195.1, 2196.8)**

EMA supports the proposed amendments related to compliance time extensions due to the unavailability of parts (§2195.1 “Provisional HD I/M compliance certificate”; §2196.8). As previously noted, parts unavailability issues could arise for fleets of any size and could be recurring or continue indefinitely, such as with the ongoing worldwide supply shortages that are currently impacting many industries. The HD I/M regulation order would now provide ability for relief in situations where an unforeseen supply issue outside of a vehicle owner’s control impacts the ability to source parts. Further, the proposed amendments to require contacting one repair facility, would also decrease the burden on vehicle owners, as the previously proposed requirement of three facilities was quite onerous (with questionable benefit).

**3. Quarterly compliance deadline (§§2195.1, 2196.1)**

Regarding the proposed new quarterly compliance deadline (§2195.1 “Compliance deadline – (3) Quarterly compliance deadline”, and §2196.1(d)(3)), EMA (and other stakeholders) provided informal comment during various HD I/M workshops and workgroup meetings regarding our concern with and opposition to quarterly reporting. However, EMA did not comment on reporting frequency at the time of the 45-Day notice, as we supported the semi-annual deadlines ultimately proposed by CARB Staff. While we understand that the Board directed CARB Staff to propose an increase to quarterly reporting three years after program implementation; we do not support this proposed amendment. The increased reporting will not necessarily lead to any additional or improved compliance with the HD I/M program, yet will constitute an additional burden to regulated entities in reporting information to the agency. Where this is information that is already provided to CARB through other means (e.g., the HD OBD regulations of 13 CCR 1971.1), that will result in duplicative reporting by manufacturers – and an increased burden on Staff in reviewing such information. However, the true burden of reporting will fall on vehicle owners and/or operators, many of whom are small businesses currently operating on small margins. These parties may not be able to readily absorb the time (or associated cost) burdens of such increased reporting – again, with unclear benefit.

**4. Additional comments on specific definitions (§2195.1)**

**a. “HD I/M compliance certificate” (and deletion of “Compliance certificate”):**

As EMA has previously noted, we have concerns with the potential for confusion with the use of the term “compliance certificate,” as it has a very specific meaning in Title 13. We appreciate the proposed addition of the qualifier “HD I/M”, which does help to distinguish a compliance certificate under this program from an *emissions* compliance certificate; however, we would prefer the use of a completely different term to avoid confusion. While our concern remains regarding the potential for confusion, we do appreciate the associated proposed modifications to focus more on compliance with the HD I/M program, rather than ‘obtaining a compliance certificate.’

**b. “On-Board Diagnostics (OBD) system”:**

We support the proposed amendments to this definition, but note that EPA has recently proposed a rulemaking that would make changes to its OBD-related regulations. Specifically, provisions related to OBD would be codified in 40 CFR parts 86 and 1036. We recommend that CARB Staff coordinate with EPA to ensure the correct references to EPA’s regulations prior to finalizing the HD I/M regulation order.

**5. Vehicle Compliance Test Methods for OBD-Equipped Vehicles (§2196.3)**

Regarding section 2196.3, we have concerns with some of the proposed elements specified as criteria for passing an HD I/M compliance test. First, subsection (c)(2) states that a vehicle would not pass a compliance test if “[t]he vehicle’s OBD system reports an active and/or permanent diagnostic trouble code (DTC).” However, would CARB provide consideration for vehicle owners whose vehicles fail based on permanent faults alone, when the owners can provide evidence of a completed repair as recommended by SAE J1939-03<sup>1</sup>? Monitors associated with infrequent regeneration can make erasure of permanent faults difficult to achieve in a short time. Vehicles that cannot be driven will never erase permanent faults. Lost business revenue from sidelined commercial vehicles is highly punitive to vehicle owners, especially for small businesses.

Subsection (c)(3) states “[t]he vehicle’s OBD data indicates the OBD system has not yet operated sufficiently to determine the presence or absence of a DTC” as a condition that should occur for a vehicle to pass. This indicates that a single readiness group reporting a “Not Ready” status would result in a failing grade for an HD I/M compliance test. This situation is possible for a number of situations, particularly readiness groups that are dependent on certain operating conditions to be achieved in order for those monitors to run (e.g., DPF-related monitors that only run in the event of a regen occurrence, etc.). There are existing Federal and State I/M programs that acknowledge this, and allow vehicles to pass this criterion without all readiness groups reporting “Ready” at the time of inspection. (See 40 CFR Part 51 Subpart S.) EMA recommends the following language, which also includes consideration for the SAE J1979-2 protocol that introduces additional readiness groups (CSERS, PCV Monitoring, etc.): “The vehicle’s OBD data indicates the OBD system has not yet operated sufficiently to determine the presence or absence of a DTC for 3 or more of the supported readiness groups;”.

Lastly, clarity is needed in subsection (c)(4) with respect to the OBD data being collected. We recommend the following edits: “The vehicle’s Calibration Verification

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<sup>1</sup> See SAE J1939-09, Table 2 (“IM failure detection for fault combinations”), row 5.

Number(s) (CVN), and the Calibration Identification Number(s) (Cal ID) OBD data collected during a compliance test is inconsistent with the OBD data profile from vehicles with the same make, and/or model year generated using all valid compliance test records submitted to the Executive Officer;”.

## **6. Roadside monitoring devices (§2196.5)**

EMA remains concerned with the roadside emissions monitoring devices provisions of §2196.5. The use of such devices to flag vehicles with a PM or NOx emissions measurement “that corresponds to exceeding the equivalent OBD trigger threshold for illuminating the MIL” will result in erroneous flagging of vehicles. There is no instantaneous limit of emissions. Even in-use emissions are measured as part of an entire drive cycle’s work, and it is not unusual or even abnormal to have emissions that exceed this threshold for short intervals of time, such as passing by a remote sensor. Use of an OBD emissions limit of 0.4 g/bhp-hr for flagging such “high emitters” could result in situations where a vehicle is “flagged” when the engine is actually functioning properly (e.g., the engine is running without SCR on under an approved AECD, acceleration events, etc.). OBD systems must continuously monitor for malfunctions, and the malfunction criteria of section (e), as noted in the regulations, are designed to detect problems over time, not from an instantaneous snapshot as would be detected by a roadside emissions monitoring system. Participants at the various workshops held during the development of the proposed program noted other situations where a vehicle could be flagged due to the MIL illuminating, but the MIL goes off before the vehicle is taken in for testing/repair. As we have mentioned numerous times, we are seriously concerned that erroneous flagging of vehicles could lead to situations where a properly functioning vehicle is required to undergo unnecessary and costly testing; or if a vehicle travels a fixed route over a given period of time, the vehicle could be flagged multiple times by the same monitor as a high emitter before the owner/operator ever receives a notification.

In the Initial Statement of Reasons to the 45-Day Notice, CARB indicated that PEAQS would be one of the roadside emissions monitoring devices used for the HD I/M program. In our previous comments, EMA requested that CARB conduct a study of the vehicles being flagged by PEAQS devices to determine the error rate between vehicles flagged and those that have an actual emissions exceedance such that repair is needed – and we renew that request today. Namely to determine an appropriate PEAQS threshold, including an appropriate measurement allowance, that can reliably be used to differentiate improperly flagged vehicles, and ultimately account for the wide range of acceptable in-use emissions rates from vehicles that do not have an emissions-related failure. We further recommended that such a study include an assessment of the vehicles which would trigger such PEAQS assessments, including an actual emissions measurement using industry agreed-upon methods and instruments, to determine if the vehicle has a true repair needed, or is merely being flagged due to the nature of the PEAQS measurement and threshold. A full study of the PEAQS system, and other roadside monitoring devices planned for use for the HD I/M program, are needed prior to program implementation to provide certainty and to avoid situations where a significant portion of the vehicle population is erroneously flagged for unnecessary repair. The magnitude of the potential problems of implementing this portion of the program before fully assessing the capabilities and error rates of the roadside monitors will only be exacerbated by the inclusion in the program of all heavy-duty vehicles traveling in the state of California.

## 7. Pilot program

California SB 210 requires completion of a pilot program “before adopting and implementing the program.” Further, SB 210 requires a “report to the transportation and environmental committees of the Legislature” on a number of elements. (See § 44156(a)-(b).) CARB’s pilot program and report were released in tandem with the Initial Statement of Reasons and Proposed Regulation Order. Thus, any significant issues that are found following the pilot program, or in report review, were likely not adequately reflected in the proposal. In fairness to all stakeholders impacted by the proposed HD I/M regulations, we reiterate our request that full consideration be given to the report and a subsequent review should be completed prior to the issuance of a Final Regulation Order. There are significant technical issues, some of which were flagged in the Initial Statement of Reasons by CARB Staff, that warrant proper consideration prior to finalizing the rule.

## 8. Edits to the proposed regulatory text

EMA’s specific comments on the proposed regulatory text are noted below. CARB’s proposed modifications to the originally proposed regulatory language are shown in strikethrough and underline, and EMA’s suggested edits are denoted in red text (with additions underlined, and deletions in strikeout):

- **§2195.1 Definitions – “Manufacturer”**: As previously noted, “certification” under the HD I/M program is different from emissions certification. We recommend the following changes to the definition of the term “Manufacturer” for clarity:  
“Manufacturer” means any person who manufactures or assembles an engine, vehicle, or piece of equipment for sale in California. It also means the person who is granted emissions compliance certification for a certified engine, vehicle, or equipment.
- **§2195.1 Definitions – “Roadside emissions monitoring device”**: We recommend the following edits to the proposed definition to clarify that the ‘downloading of OBD data’ is related to the requirements and provisions of Appendix B:  
“Roadside emissions monitoring device” means a CARB-authorized ~~emissions monitoring instrument that may include an emissions sampling system~~ that for remotely ~~measures tailpipe measuring exhaust~~ emissions, downloading OBD data (pursuant to Appendix B, “California Standards for Heavy-Duty Remote On-board Diagnostics Devices), and/or captures collecting other information to identify a specific vehicle from pass for identifying vehicles passing through vehicles the system.
- **§2196.1(d)(3)**: The proposed provisions of §2195(d) would require that the HD I/M program would not take effect until such time that the Executive Officer determines that “the devices, tools, and platforms within the electronic reporting system necessary to effectively implement the specific requirement have been built, tested, and are ready for use by regulated entities;” we recommend amending proposed subsection (d)(3) to clarify that the three year period begins after the effective date of the periodic testing requirements, as specified by the Executive Officer:  
(3) Three years following the effective date, as determined by the Executive Officer per section 2195(d), of periodic vehicle emission testing requirements specified in

section 2196.2., an OBD-equipped vehicle other those specified in (d)(1) shall be subject to quarterly compliance deadline (more than 90 calendar days away) if deadlines.

- **§2196.1(e):** It is overly restrictive to require that only vehicle owners can demonstrate compliance. There may be cases where someone other than a vehicle owner would demonstrate compliance (e.g., a vehicle operator, etc.). We recommend the following edits to subsection (e) to allow more flexibility for vehicle owners:

If a vehicle owner or designee demonstrates vehicle compliance is demonstrated within 90 calendar days in advance or less of the vehicle’s immediate upcoming compliance deadline, the Executive Officer shall deem a vehicle compliant with the HD I/M Regulation up to the vehicle’s subsequent compliance deadline as long as the additional conditions specified in section 2196.1(b) are met. For example, if an owner of a vehicle with a semi-annual compliance deadline demonstrates compliance between March 3 and May 31 in advance of a June 1 immediate upcoming compliance deadline, a compliance certificate could the vehicle shall be issued through the deemed compliant with the HD I/M Regulation up to and including December 1-compliance deadline.

- **§2196.1(h):** To ensure that there is not confusion regarding a vehicle’s emissions compliance status and its HD I/M compliance status, we recommend the following edits to subsection (h):

(h) CARB may publicly disclose the HD I/M Regulation compliance status of vehicles operating in California.

- **§2197.1(b)(2)(A)2.:** Suggested correction of typographical error:

2. A certificate of completion from a CARB-approved course as specified by the requirements of title 13, CCR, section 2193(g) of the Periodic Smoke Inspection Program.

- **§2198.1(a)(3)(A):** To ensure that there is not confusion regarding a vehicle’s emissions compliance status and its HD I/M compliance status, we recommend the following edits to subparagraph (a)(3)(A):

(A) All vehicles operating within California will remain subject to inspection requirements regardless of the vehicle’s HD I/M compliance status.

**9. Specific comments on Appendix B “Proposed 15-Day Changes to the Proposed California Standards for Heavy-Duty Remote On-Board Diagnostic Devices”**

We offer the following comments on specific modifications proposed for remote OBD devices per Appendix B:

- *Part II, C:* Item #12 for incorporation by reference (“SAE J1939-DA “Digital Annex of Serial Control and Communication Heavy Duty Vehicle Network Data,” March 2020”) is an old reference, we recommend using the 2021 version for incorporation. We also encourage Staff to engage with the SAE committees to ensure that the most

up to date version of referenced documents are utilized – and updated – for the HD I/M program.

- *Table 1, Odometer:* The Data Type (“Integer”) for the Odometer field does not specify if data must be submitted in miles or kilometers. Given that the program applies to all vehicles traveling in California, we note that vehicles from Canada or Mexico will have odometer readings in kilometers.

Odometer*	Odometer reading of the vehicle at the time the OBD data is downloaded from the vehicle OBD system ( <u>required if supported</u> )	Integer (7)
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- *Table 1, Engine Runtime Total:* The Data Type for the “Engine Runtime Total” field does not specify what how the data must be submitted (e.g., hours and tenths, minutes, seconds, etc.).

<u>Engine Total Runtime</u>	<u>Accumulated engine runtime over the lifetime of the vehicle, as specified in subsection h(5.2.1.A) of the CARB HD OBD regulation (section 1971.1, title 13, CCR)</u>	<u>Integer (10)</u>
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- *Table 3, Message Type:* We recommend shortening “REQ” and “RSP” to “T” and “R”, respectively.

Message Type	<u>The message type of the data line indicates if the message was sent from the ROBD device to the vehicle or received from the vehicle. "REQ" is the request messages sending to the vehicle, and "RSP" is the response messages received from the vehicle.</u>	String (3)
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- *Table 3, CAN ID:* The Data Type specifies a proposed length of 15 characters; however, 29-bit CAN IDs are typically represented as 8 ASCII characters (e.g., “18EEFF00”). Is there a need for the additional 7 characters?

CAN ID	CAN ID	String (15)
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- *Subsection E.5.3:* The language of subsection E.5.3 would require that ROBD devices encrypt data, yet the regulation does not state requirements (e.g., AES-256 to NIST 800-38a, or PKI as discussed in NIST SP 800-175B<sup>2</sup>) for how the data shall be encrypted.

<sup>2</sup> See <https://nvlpubs.nist.gov/nistpubs/Legacy/SP/nistspecialpublication800-38a.pdf>; <https://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-175Br1.pdf>.



## **Conclusion**

EMA appreciates the opportunity to submit comments on the proposed I/M program modifications. EMA requests that CARB incorporate EMA's comments prior to finalizing the proposal, and we would welcome the opportunity to answer any questions or further discuss these comments with CARB Staff.

Respectfully Submitted,  
TRUCK AND ENGINE  
MANUFACTURERS ASSOCIATION