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**MECA COMMENTS
ON THE CALIFORNIA AIR RESOURCES BOARD'S
ADVANCED CLEAN CARS II REGULATION AMENDMENTS
JUNE 26th 2024 WORKSHOP**

MECA Clean Mobility (MECA) appreciates the opportunity to provide comments on the California Air Resources Board's Workshop on potential amendments to the Advanced Clean Car II (ACC II) regulations. MECA believes an important opportunity exists for CARB to align with additional parts of EPA's multipollutant rule to better accelerate the clean mobility market, especially over the next decade. CARB's amendments to ACC II could better position LEV and ZEV performance standards to continue to cost effectively reduce NOx, PM, VOCs and GHGs in all segments of the light-duty and medium duty fleets through the application of electrified powertrain system technologies as well as contributions from advanced internal combustion engines. We also offer comments on potential amendments to CARB's ZEV assurance measures that are designed to advance ZEV technology and ensure improved durability and operability that will benefit the owners of electric vehicles.

MECA is a non-profit trade association of the world's leading manufacturers of technologies for clean mobility. Our members have over 50 years of experience and a proven track record in developing and manufacturing emission control, engine efficiency, battery and fuel cell materials, components and charging as well as electric propulsion technology for a wide variety of on-road and off-road vehicles and equipment in all world markets.

MECA appreciates the time and effort that CARB staff put into amending the existing ACC II regulation by receiving and incorporating feedback from a broad range of stakeholders. Our comments align with and supplement our earlier comments during the development of the LEV IV and ZEV programs. We look forward to discussing our comments further with staff to clarify our points and address your questions.

Summary

MECA believes that the LEV IV regulation should be more completely aligned with EPA's Tier 4 program to facilitate manufacturer's product planning as California volumes of non-ZEV vehicles decline between now and 2035. This includes the following:

1. The same number and values of LD and MD NMOG+NOx certification bins.

2. The same implementation timeline and flexibilities of the more stringent 0.5 mg/mile PM standard for light- and medium-duty vehicles over the FTP (-7°C and 25°C) and US06 test cycles.
3. More stringent NMOG+NOx standards than proposed at the workshop for medium-duty vehicles based on best-in-class certification levels.
4. Alignment with EPA Tier 4's phase-in options for ORVR standards for incomplete MD and HD SI vehicles rather than the currently proposed delay until MY 2030.
5. Further review the methodology used for ORVR-equipped vehicles and to develop a new equation for Minimum Canister Nominal Working Capacity for non-ORVR equipped MDVs and HDVs while retaining the current equation for ORVR-equipped vehicles.

Regarding light-duty greenhouse gas standards, MECA supports the following:

6. Further forward-looking analyses of PHEV electric vehicle miles traveled (eVMT), fleet utility factors (FUFs) and GHG testing consideration based upon current best-in-class and future PHEVs that will meet ACC II's minimum all-electric range requirements.
7. Further flexibility for future CARB compliant PHEVs to contribute greater than 20% of a manufacturer's ZEV compliance in the early years of ACC II implementation to provide additional ZEV consumer vehicle choices while charging infrastructure and critical battery material supply chains develop.

Regarding ZEV assurance measures, MECA supports:

8. Updated consumer-facing vehicle environmental performance labels for ZEVs reporting real-world charge rate and temperature based all-electric range following respective SAE procedures.
9. Further consideration of EV battery labeling to ensure information addresses consumer, service and recycling needs.

LD and MD NMOG+NOx Certification Bins

The regulatory intent of ACC II is clear – only ZEV qualifying vehicles will be allowed for sale after MY2035. As a result, the production volume of non-ZEV, LEV IV compliant vehicles will gradually decline to zero. We recommend alignment of ACC II with all Tier 4 federal certification bin options. The alignment of LEV IV and Tier 4 certification bins consisting of the same number of bins and values serves as a foundation to:

- Provide important manufacturer flexibilities
- Yield cost reductions
- Enable greater and longer product support
- Incentivizes OEMs to implement further CO₂ reduction technologies and calibration improvements

In addition, this would ensure alignment of Section 177 states as well as Canadian non-ZEV production resulting in the largest possible streamlined market for manufacturers and their suppliers, helping to lower costs as production numbers diminish.

MECA also believes that the inclusion of the 5 and 10 mg/mile NMOG+NO_x certification bins may further incentivize manufacturers to incorporate additional near-zero emissions and new propulsion technologies on vehicle categories that are harder to electrify to meet customer demands. The omission of these bins detracts from aligned compliance pathways. The full alignment of LEV IV and Tier IV certification bins also negates the need to eliminate the “cleaner car” provision which prevents any unforeseen and undesirable certification outcomes.

0.5 mg/mile PM Standard Implementation and Timeline

Aligning the implementation timeline of the LEV IV 0.5 mg/mile PM limit is another way to ensure the greatest PM reductions at the lowest cost by streamlining the manufacturing and certification of non-ZEV light- and medium-duty vehicles. The incorporation of the federal phase-in schedules serves as an incentive for OEMs to bring these vehicles to market more quickly by taking the optional early phase-in, which will be more protective of communities disproportionately impacted by vehicle emissions.

NMOG+NO_x Standards for MD Vehicles

Consistent with our earlier comments, we support that LEV IV should incorporate the federal Tier 4 certification bins below 75 mg/mile for medium-duty vehicles. There are existing vehicles that can already certify below the 75 mg/mile bin. Unifying the production requirements of medium-duty vehicles will provide the greatest incentive for manufacturers to supply the cleanest vehicles to support consumer needs as soon as possible.

We suggest that CARB consider best-in-class certification levels in setting NMOG+NO_x standards for medium-duty vehicles. For example, MY2024 Class 2B best-in-class vehicles are achieving <30 mg/mile NMOG+NO_x, and an overall fleet average of 59 mg/mile which indicates that a considerably lower Class 2B fleet average value for MY2030 to 2032 is readily attainable, a full six years ahead of implementation. This feasible standard would be more protective of air quality, especially in communities disproportionately impacted by vehicle pollution and with inadequate infrastructure for ZEVs in the transition years.

ORVR Standards for MD and HD SI Vehicles

The June 26th workshop presentation suggests CARB intends to align ORVR standards for complete and incomplete SI medium- and heavy-duty vehicles with the emission limits and certifications procedures as adopted by EPA. However, CARB appears to be delaying full implementation for both SI medium- and heavy-duty incomplete vehicles until MY2030 rather than adopting the mandatory federal implementation of ORVR standards starting with MY2027 for incomplete SI HDVs.

Under the EPA ORVR regulations for incomplete SI HDVs published in January 2023, manufacturers were provided the option of a five MY production phase-in of 2026 (40%), 2027 (40%), 2028 (80%), 2029 (80%), and 2030 (100%) if the manufacturer elected to include incomplete SI MDVs (8,501-14,000 lb. GVWR) in the production phase-in percentages. Thus, a manufacturer of only incomplete SI HDVs must certify by the 2027 MY while a manufacturer of only incomplete SI MDVs must certify by the 2030 MY. A manufacturer of both incomplete SI MDVs and incomplete SI HDVs may elect to certify all families in the different MYs as specified above or use the five-model year phase-in option for combined incomplete SI MDV and incomplete SI HDV production beginning in the 2026 MY. It is not yet clear whether manufacturers with both incomplete SI MDV and incomplete SI HDV product offerings will use the fixed mandatory MY implementation dates or the production phase-in percentages.

In the workshop, CARB staff likewise expressed a willingness to allow for optional certification before MY2030 presumably to accommodate manufacturers using the EPA phase-in. Alternatively, at a minimum, CARB could continue the program implementation as specified in the webinar presentation but require that any and all SI MDV or SI HDV evaporative/refueling families certified and sold federally must be offered for sale in California.

MECA believes that the full alignment of ACC II with EPA's ORVR requirements achieves significant air quality benefits through early VOC reductions facilitated by the phase-in. These commercial vehicles have the largest volume fuel tanks of any SI vehicles (40 gallons or more) and often employ dual tanks. Using information from EPA's RIAs for the rule requiring ORVR for incomplete SI HDVs and information in the 2023 Department of Energy AEO, it is projected that there will be about 86,700 incomplete SI HDVs sold each year in the U.S. The California fraction of the incomplete SI HDVs sold each year is estimated at 11.2 percent or about 9,700 units annually. If the 3-year phase-in deferral is fully utilized by the manufacturers, then ORVR control may be deferred for as many as 29,100 vehicles.

We estimate that a delay in implementation represents about 39.6 metric tons of VOCs per calendar year for each model year of an implementation delay. The impact would potentially double (22.8%) when extended to the 177 states and Washington, DC. An appendix is attached which provides further details on this issue and our calculations.

Furthermore, the equation used to determine the Minimum Canister Nominal Working Capacity was developed based on the presumption that the vehicle uses ORVR technology. This clearly will not be the case for incomplete SI MDVs and incomplete SI HDVs in the 2026 MY and perhaps for a few MYs to follow. Therefore, we recommend that CARB review the methodology used for ORVR-equipped vehicles and work with the industry to develop and propose a new equation for Minimum Canister Nominal Working Capacity for non-ORVR equipped MDVs and HDVs while retaining the current equation for ORVR-equipped vehicles.

ACC II PHEV Requirements

We applaud CARB's increased minimum all-electric range (AER) and emissions testing requirements for PHEVs under ACC II. We believe these requirements will result in

advancements in future PHEVs that will lead to increases in all-electric operation combined with reduced emissions during charge sustaining operation as ACC II is implemented.

We believe that it is premature to draw conclusions regarding future PHEV operation prior to the implementation of ACC II when the new requirements take effect.

We agree that further investigation is needed to evaluate real-world PHEV GHG emissions as new longer-range vehicles are deployed to comply with ACC II. Given the significant increase in AER of ACC II over ACC I, we believe that assessments of electric vehicle miles traveled (eVMT) and fleet utility factor (FUF) should be forward-looking, incorporating only current, best-in-class PHEVs and projections based on future PHEVs that meet the ACC II requirements.

In addition, we are concerned with the current proposal for determining the GHG emissions only during charge sustaining operation of PHEVs as it fails to evaluate the complete vehicle, as designed. Under ACC II, PHEVs are required to comply with higher all-electric range requirements to incentivize electric operation. To meet this requirement, ACC II compliant PHEVs will have to employ larger and heavier battery packs. The heavier battery will disadvantage the PHEV in charge sustaining (HEV) operation compared to a traditional HEV which has a 1-2kWh battery and covers only short distances (1-2 miles) under its normal hybrid electric-only operation mode. By only considering charge sustaining operation during GHG testing, the procedure will negatively bias the PHEV's higher overall efficiency that is designed as a combined system with complementary EV and HEV propulsion. This disadvantageous treatment of PHEVs under GHG compliance testing is likely to dissuade manufacturers from further development of this technology resulting in fewer consumer choices and a reduced ZEV implementation rate in California and Section 177 states. We recommend that some representative electric utility factor needs to be applied to accurately reflect the GHG contribution of as designed, complete system, PHEV technology.

In addition, we support that production limits >20% for ACC II compliant PHEVs should be allowed to contribute to a manufacturer's annual ZEV requirements as we believe PHEVs have an important role for light- and medium-duty vehicles during the decarbonization transition while battery supply chains and Level 2 and greater charging infrastructures are being developed.

ZEV Assurance Measures

We appreciate CARB undertaking a review of ZEV assurance measures, including consumer-facing vehicle labels and battery labeling requirements. We encourage CARB staff to coordinate with EPA staff and the MSTRS working group that is charged with advising EPA on the information useful to consumers contemplating an EV purchase along with the data and testing EPA would need to collect to inform consumer metrics. We support an updated consumer-facing vehicle environmental performance label that includes vehicle efficiency, real-world charge rate and temperature based all-electric range. It is important that standardized procedures (such as SAE J1634 and J2953/4 respectively) be required for the data reported on these labels.

For example, electric vehicle charging varies by type of vehicle and the condition of the vehicle and its battery. A vehicles battery management software may allow charging at a rapid rate for a short period of time while limiting charge rate at other times. If “real-world charge rate” is to be reported, a well-defined methodology should incorporate an average rate of charging a battery from 10% SOC to 80% SOC at a specified charge power, such as 150 kW. Similarly, it is well-documented that electric vehicle range is affected by ambient temperature. Therefore, a consumer vehicle label should provide cold and hot ambient temperature range values. Finally, electric vehicle efficiency is currently included on today’s vehicle labels. We urge CARB working with EPA to review current certification cycles and test methods to ensure standardized certification testing yields accurate and unbiased efficiency values.

Conclusion

In closing, MECA appreciates staff’s work in developing the presented proposals for the Advanced Clean Cars II regulation. MECA believes that better alignment between LEV 4 and Tier 4 would result in cost effective air quality benefits for millions of Californians.

Our industry continues to do its part by delivering cost-effective and durable advanced emission control as well as efficiency technologies for non-ZEVs and ZEVs to assist in simultaneously driving electrification and reducing criteria and GHG emissions from engine-equipped vehicles.

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Appendix

California Adoption of ORVR Requirement for Incomplete SI MDVs and HDVs

Background: EPA first published requirements for ORVR for LDVs and LDTs in 1994¹, and has expanded the requirement to various subclasses of gasoline HDVs (vehicles > 8,500 lb. GVWR) since that time. This includes MDPVs in 2000², complete light-heavy gasoline vehicles between (8,501 and 10,000 lb. GVWR) also published in 2000³, and all complete vehicles above 10,000 lb. GVWR published in 2014.⁴ In the past CARB has adopted these ORVR requirements soon after published by EPA and in the case of Class 3 vehicles (10,001-14,000 lb. GVWR) actually led EPA by several years. In all of these cases EPA and CARB aligned on test procedures, emission limits, implementation dates and phase-ins.⁵ The only exception was for the Class 3 requirement identified above where CARB implemented the ORVR requirement three model years (MY) before EPA. CARB has had a section 209(b) waiver for its own LDV and LDT ORVR program since 2002.⁶ This waiver has continued to cover the subsequent EPA ORVR requirements because CARB's requirements were equal to or more stringent than EPA's requirements.

In January 2023 EPA published ORVR regulations for incomplete SI HDVs (spark-ignition heavy-duty vehicles > 14,000 lb. GVWR.)^{7,8} These regulations included certification requirements and emission limits as well as a 2027 MY implementation. However, manufacturers were given the option of a five MY production phase-in of 2026 (40%), 2027 (40%), 2028 (80%), 2029 (80%), and 2030 (100%) if the manufacturer elected to include incomplete SI MDVs (8,501-14,000 lb. GVWR) in the production phase in percentages.

In April 2024 EPA published ORVR regulations for incomplete SI MDVs (spark-ignition heavy-duty vehicles of 8,501-14,000 lb. GVWR.)⁹ These included the same emission limits and certification requirements as for incomplete SI HDVs, but the implementation MY was 2030. For compatibility with the option provided for incomplete SI HDVs, EPA continued the option of a five MY production phase-in discussed above if the manufacturer elected

¹ See 59 FR 16261, April 6, 1994.

² See 65 FR 6697, Feb 10, 2000.

³ See 65 FR 59895, Oct 6, 2000.

⁴ See 79 FR 23412, Apr 28, 2014.

⁵ See California Code of Regulations, 13 CCR 1978.

⁶ See 63 FR 9227, February 24, 1998 and 67 FR 54180, August 21, 2002.

⁷ As of June 17, 2024, for regulatory purposes, EPA defines MDV as a vehicle between 8,501 and 14,000 lb. GVWR and an HDV as vehicle with a GVWR greater than 14,000 lbs. Even though this new terminology and definitions were not adopted until the EPA rule published in April 2024 adopting ORVR for incomplete SI MDVs, those terms are used here to eliminate any confusion in discussions of the amendments being considered by California.

⁸ See 88 FR 4296, January 24, 2023.

⁹ See 89 FR 27842, April 18, 2024.

to combine incomplete SI MDVs and incomplete SI HDVs in the production phase in percentage compliance calculations.

Thus, a manufacturer of only incomplete SI HDVs must certify by the 2027 MY while a manufacturer of only incomplete SI MDVs must certify by the 2030 MY. A manufacturer of both incomplete SI MDVs and incomplete SI HDVs may elect to certify all families in the different MYs as specified above or use the five-model year phase-in option for combined incomplete SI MDV and incomplete SI HDV production beginning in the 2026 MY. It is not yet clear whether manufacturers with both incomplete SI MDV and incomplete SI HDV product offerings will use the fixed mandatory MY implementation dates or the production phase-in percentages.

CARB Webinar for Amendments to the ACC2.0 Regulations: In the material presented during the June 26, 2024 webinar covering amendments to the ACC2.0 regulations CARB addressed plans to adopt ORVR for incomplete SI MDVs and incomplete SI HDVs. The materials presented by CARB suggest alignment with the emission limits and certifications procedures as adopted by EPA. Inexplicably however, CARB proposed delaying full implementation for both groups of vehicles to the 2030 MY rather than adopting the mandatory MYs (2027 for incomplete SI HDVs and 2030 for incomplete SI MDVs) and the phase-in option in the EPA regulations. CARB expressed a willingness to allow for optional certification before the 2030 MY presumably to accommodate manufacturer using the EPA phase-in.

Discussion/Analysis: Generally, we support the adoption of ORVR for incomplete SI MDVs and incomplete SI HDVs, but there are a few issues.

Timing of the Implementation: Without explanation, the information presented in the webinar suggests a change in CARB's approach to adopting ORVR. Instead of fully **aligning with the EPA approach (including the optional phase-in) or leading by an earlier implementation of the requirements, CARB is proposing to delay the requirement for incomplete SI HDVs from the 2027 MY (as contained in the EPA regulation) to the 2030 MY.** Essentially all SI HDVs are incomplete vehicles and the current CARB approach would leave three MYs of these vehicles without mandatory ORVR control. These commercial vehicles have the largest volume fuel tanks of any SI vehicles (40 gallons or more) and sometimes employ dual tanks. Using information from EPA's RIAs for the rule requiring ORVR for incomplete SI HDVs¹⁰ and information in the 2023 Department of Energy AEO, it is projected that there will be about 86,700 incomplete SI HDVs sold each year in the US. The California fraction of the incomplete SI HDVs sold each year is estimated at 11.2

¹⁰ See "Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards Regulatory Impact Analysis," EPA-420-R-22-035, December 2022 and Table 49 subtap_49 of the DoE 2023 Annual Energy Outlook for medium and heavy vehicles.
<https://www.eia.gov/outlooks/aeo/data/browser/#/?id=58-AEO2023&cases=ref2023&sourcekey=0>

percent or about 9,700 units annually.¹¹ If the 3-year deferral is fully utilized by the manufacturers, then ORVR control may be deferred for about 29,100 vehicles.

Using a 4 gram/ gallon refueling emission rate and a fuel economy of 9.8 miles/gallon¹², over a 150,000 mile/15-year use period a vehicle would emit 0.0612 metric tons of VOC. If the 0.0612 metric tons was apportioned over 15 years and multiplied by the 9,700 vehicles, the emissions would be 39.6 metric tons per calendar year for each of the three MYs or an average of about 104.86 metric tons per year for each of the 17 calendar years the vehicles would be in the fleet. Using the VIUS database and approach as described above for California, the impact would potentially double (22.8%) if the deferral can be and is adopted by some or all of the 11 states and Washington, DC which have adopted the ACC program under section 177 of the Clean Air Act (CAA).¹³

If CARB does not adopt ORVR requirements for incomplete SI MDVs and incomplete SI HDVs with timing equal to or better than that adopted by EPA then a waiver under section 209(b) of the CAA may be required. CARB may believe that the Phase 2 EVR program will provide equivalent or better control during for these incomplete MDVs and HDVs, but we are unaware of any test data or surveillance data to support this assertion. Regardless, this would not be true in the other jurisdictions where there is no Stage II vapor recovery.

A final note here is that on occasion CARB has assessed whether to phase out dispenser and/or nozzle related elements of modules 2 and 3 of the Phase 2 EVR program due to the widespread use of ORVR. Each time, the lack of ORVR control on large trucks has been presented as one of the reasons not to act. The purpose of this comment is not to raise regulatory issues related to Phase 2 EVR, but simply to note that a delay in ORVR implementation as envisioned in CARB's webinar would continue to be an obstacle in any consideration of a phase-out.

Minimum Canister Nominal Working Capacity Requirement: In the ACC2.0 regulation CARB implemented a long overdue methodology to assure that a vehicle's whose tank pressure exceeds 10 inches of H₂O (2.5 kPa) during the running loss test has adequate capacity in the canister to capture vapors released from the fuel tank when the tank depressurizes upon cap removal. The requirement that these "puff loss" emissions not be vented to the atmosphere was first placed in the CARB regulations for evaporative emission control for 1995 and subsequent MY PCs, LDTs, MDVs, and HDVs, but the

¹¹ Calculated using data in the United States Census Bureau, "2021 Vehicle Inventory and Use Survey" for California and Total US (VIUS212A). The percentage was calculated using the row labeled "Some Commercial Use" and "Excluding Pickups, Minivans, and Other Light Vehicles." See [https://data.census.gov/table/VIUSA2021.VIUS212A?q=vius212a&g=010XX00US,\\$0400000_040XX00US06](https://data.census.gov/table/VIUSA2021.VIUS212A?q=vius212a&g=010XX00US,$0400000_040XX00US06)

¹² Fuel economy value taken from "Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles - Phase 2 Regulatory Impact Analysis," EPA-420-R-16-900, August 2016, page 8-18. Note that the DoE Annual Energy Outlook heavy gasoline vehicles mpg at 7-7.5 and 5.8-6.1 mpg for 14000-26,000 lb. GVWR vehicles and >26,000 lb. GVWR vehicles, respectively.

¹³ <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/states-have-adopted-californias-vehicle-regulations>

methodology to demonstrate that the requirement was being met was finally implemented in 2022 effective for PCs, LDTs, MDPVs, MDVs, and HDVs in the 2026 MY.¹⁴

The complication here is that the equation used to determine the Minimum Canister Nominal Working Capacity was developed based on the presumption that the vehicle uses ORVR technology. This clearly will not be the case for incomplete SI MDVs and incomplete SI HDVs in the 2026 MY and perhaps for a few MYs to follow. Thus, CARB needs to review the methodology used for ORVR-equipped vehicles and develop and propose a new equation for Minimum Canister Nominal Working Capacity for non-ORVR equipped MDVs and HDVs while retaining that for ORVR-equipped vehicles.

Recommendations:

(1) CARB should adopt the EPA ORVR implementation requirements for incomplete SI MDVs and incomplete SI HDVs. It is not clear why CARB would pursue a delayed implementation approach that would allow for an average of 100 metric tons of VOC per year for each of the 17 calendar years that the three model years of incomplete SI HDVs would be in the fleet.

(2) The regulations covering the Minimum Canister Nominal Working Capacity Requirement (implementing MY2026) need to be amended to include requirements specific for non-ORVR equipped vehicles in the MDV and HDV segments before 100% ORVR phase in is complete.

¹⁴ See section 14 of "California Evaporative Emission Standards and Test Procedures for 2026 and Subsequent Model Year Passenger Cars, Light-Duty Trucks, Medium-duty Vehicles, and Heavy-duty Vehicles," August 25, 2022.