The Vehicle Suppliers Association

Comments of

MEMA, The Vehicle Suppliers Association

to the

Environmental Protection Agency

on the

Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles; Proposed Rule

July 5, 2023

Docket: EPA-HQ-OAR-2022-0829

Introduction

MEMA, The Vehicle Suppliers Association, is the leading trade association in North America for vehicle suppliers, parts manufacturers, and remanufacturers. It has been the voice of the vehicle supplier industry since 1904.

Automotive and commercial vehicle suppliers are the largest employer of manufacturing jobs in the United States employing over 900,000 people throughout the country. Direct, indirect, and induced vehicle supplier employment accounts for over 4.8 million U.S. jobs and contributes 2.5 percent to U.S. GDP.

Suppliers lead the way in new vehicle innovations. Member companies conceive, design, and manufacture the OE systems and technologies that make up two-thirds of the value of every new vehicle and supply the automotive aftermarket with the parts that keep millions of vehicles on the road, fueling international commerce and meeting society's transportation needs. MEMA members are committed to safety and sustainability.

Background

MEMA and its members support the objectives of the Environmental Protection Agency (EPA) to improve national air quality through improvements to light- and medium-duty vehicles. The supplier industry directly manufactures vehicle components and systems that enable the transformation of the transportation sector to more environmentally friendly vehicles. These improvements and manufacturing include advancements in internal combustion engine technologies, including improvements in vehicles already in use.

Although MEMA member companies have made significant investments in zero-tailpipe emission vehicles, by way of employment, research and development, and manufacturing, additional and consistent financial investment is needed from federal and state governments as well as industry to bolster success. The supplier workforce will require upskilling for

technical skills and talent enhancement. A robust vehicle charging infrastructure must be built. New supply chains will need to be established and extended warranties will require open access to repair and maintenance information. These changes are necessary and must be considered and addressed to achieve the EPA's goals for Light-Duty/Medium-Duty Multi-Pollutant Emissions (LD/MD Multi-Pollutant Emissions).

The success of our industry is interwoven with the success of this proposal and the ability of the government to work with industry and other stakeholders to meet significant challenges. Therefore, the rule must address:

- **The need for regulatory certainty**. The final rule must contain an effective mix of feasible, demonstrated technology along with emerging technology, leaving options to improve emissions reductions in today's advanced propulsion designs. This will foster innovation in a coordinated direction, aligned with U.S. policy, but not mandate application of a narrowly defined technology path to make a positive impact on the country's urgent environmental goals.
- **The influence of other technologies – including internal combustion engines fueled by hydrogen and other renewable carbon-neutral fuels – which can impact and make measurable environmental improvements at scale.** These technologies can provide immediate improvement to the environment. This is important not only for environmental improvements but for environmental justice in providing cleaner consumer vehicles immediately to communities living and working close to busy streets, highways, and other transportation networks. Inclusion of all technologies that can decarbonize the transportation sector will foster the necessary growth in manufacturing capacity, vocational performance, infrastructure improvements, and consumer acceptance.
- **Technology Neutrality and BEV Emissions.** EPA should ensure that battery electric vehicles (BEV) are included in metrics for vehicle-to-vehicle comparison by assigning a metric that captures the pollutant emissions related to BEV operation, aligned with national electricity generation figures.
- **Challenges in our nation's infrastructure and power grid**. MEMA appreciates the significant public investments being made to support clean transportation infrastructure. As these new investments in highways and main corridors are deployed, federal and state incentives are needed to further expand the EV charging and refueling infrastructure in areas that connect these major thoroughfares. Urban industrial centers will need focused buildout while rural areas will need thoughtful rollouts to achieve an effective EV charging infrastructure. These buildouts must include Direct Current Fast Charge (DCFC) and vehicle-to-grid (V2G) bidirectional charging.
- **Supply chain challenges.** The proposed rule assumes that all materials for advanced vehicles, which are not available today in the quantities needed to support the massive growth in vehicle construction, will become available within sufficient time. This places a significant and unnecessary risk on manufacturers and

suppliers. Furthermore, once a company has converted production to new technology lines, that company cannot easily pivot its facilities and workforce back to the previous technology if EPA projections are not realized by the mid- to late-2020s.

- **Workforce challenges.** A significant increase in skilled workers will be needed to support the implementation of this rule and long-term success thereof.
- **Extended warranty.** The necessity to clearly define the applicability of the extended warranty and the need to provide repair access to service these new vehicles.

MEMA members are working to accelerate the performance and availability of clean-operating vehicle technologies and are directly contributing to their realization. Besides battery electric options, effective low- and zero-carbon technologies for future and current in-use vehicles also exist and can readily be put to use to reduce nationwide emissions and help EPA meet its climate goals. The success of this rule depends on greater inclusion of all available emissions reduction technologies, significant investment in infrastructure, careful understanding and investment in the domestic and global supply chain and ensured repair access to serve the improved and enhanced domestic vehicle fleet.

Detailed MEMA Comments and Concerns on our Shared Challenges

The Final Rule Must Reflect Regulatory Certainty Paired with Technology Neutrality

EPA must provide sufficient regulatory certainty to manufacturers and consumers to ensure the most favorable outcome of this ambitious market transformation. The final rule must contain an effective mix of feasible, demonstrable technology along with emerging technology, and leverage all available options to improve emissions reductions in today's advanced propulsion designs. At the same time, the final rule must encourage innovation in clean transportation, including more advanced low- and zero-emissions technology. Conversely, a 100% ZEV mandate is not realistic, would stifle innovation and would disallow technologies that could address the urgent need to decarbonize applications for LD and MD vehicles.

It is imperative that EPA aligns with the Joint Office of Energy and Transportation through the implementation period of this rule to identify shared concerns and solutions for the many moving parts of the rule. Failure in one key sector, lithium sourcing as one example, could result in significant cost or schedule impacts, stunting availability or adoption of these new vehicles. Positive regulatory certainty bolsters consumer confidence in new technologies and decreases the use of gasoline- and diesel-fueled vehicles. EPA should adopt an "all hands on deck" approach with regards to emissions-lowering technologies and encourage greater acceptance of and investment in renewable fuels, which can positively impact the net emissions of the entire U.S. internal combustion engine (ICE) vehicle fleet.

EPA must also closely align the final rule for LD/MD Multi-Pollutant Emissions with the emerging National Highway Traffic Safety Administration (NHTSA) Corporate Average Fuel Economy (CAFE) standards so neither creates confusion or unnecessary burdens.

The aggressive pace and scope of the proposed rule obliges EPA to work to ensure success throughout the course of this rule's implementation. EPA must follow through on all assumptions in the regulatory impact analysis (RIA), and act accordingly to help make them a reality and reassure manufacturers and consumers along the way.

MEMA urges:

- the Biden Administration to align regulations and priorities in concert with the Joint Office of Energy and Transportation throughout the implementation period of this rule to identify shared concerns and solutions for the many moving parts of the rule. EPA needs this broad support to follow through on all assumptions regarding critical materials, infrastructure, and timing of milestones identified in the rule's analyses.
- EPA work closely with NHTSA to align the CAFE standards rule with the LD/MD Multi-Pollutants rule.

Technology Neutrality Pairs with Regulatory Certainty

The proposed rule disproportionally favors battery electric propulsion, which in turn discourages any further advancements for internal combustion technology, including carbon-neutral renewable fuels. Emerging innovations and recent technologies offer significant reduction in emissions from ICE vehicles, in both future *and* current fleets.

Technology-forcing regulations that foster innovation aligned with policy, rather than regulations that mandate a narrowly defined technology path, will lead to a more positive national outcome.

MEMA recognizes that the proposal attempts a performance-based standard, and the agency makes forecasts that estimate a variety of technology combinations in future fleets. By accepting the potential for technologies other than battery electric and hydrogen fuel cell, EPA can make a more immediate, widespread, positive impact on nationwide emissions reductions. Therefore, EPA must incent the development and deployment of advanced technology options to include advanced internal combustion (ICE) technologies, renewable fuels, and post-combustion CO_2 capture (known as mobile carbon capture). These incentives will assist in accelerating the necessary infrastructure improvements needed to support advanced technology vehicles.

One of the pathways which deserves to be highlighted is the Hydrogen Internal Combustion Engine (H2ICE). This technology is a promising pathway which for certain applications is preferable to other alternate advanced technologies in the proposed rule. For example, a vehicle towing a trailer requires sustained torque output to tow a heavy load. H2ICE would offer the best solution for this vehicle to achieve the emission targets while fulfilling the customer needs for range and load. BEVs and fuel cell electric vehicles (FCEV) have weight and load limitations that might not allow this vehicle to meet its operational requirements. Indeed, the agency has recognized the benefit of H2ICE in the separate rulemaking for "*Greenhouse Gas Emissions Standards for Heavy-Duty Vehicles - Phase 3*[1]". We refer to section II. Proposed CO_2 Emission Standards, D. Vehicle Technologies, 1. Technologies to Reduce GHG Emissions from HD Vehicles with ICEs, paragraph 5[2] which states:

Manufacturers may develop new ICE vehicle technologies through the MY 2032 timeframe. An example of a new technology under development that would reduce GHG emissions from HD vehicles with ICEs is hydrogen-fueled internal combustion engines (H2ICE). These engines are currently in the prototype stage of innovation for HD vehicles but **have also been demonstrated as technically feasible in the past in the LD fleet**. H2ICE is a technology that produces zero hydrocarbon (HC), carbon monoxide (CO), and CO_2 engine-out emissions.

[1] https://www.regulations.gov/document/EPA-HQ-OAR-2022-0985-1423

[2] II. Proposed CO_2 Emission Standards, D. Vehicle Technologies, 1. Technologies to Reduce GHG Emissions from HD Vehicles with ICEs, paragraph 5

Furthermore, a large portion of manufacturing technology and workforce skills needed to manufacture H2ICE equipment may be adapted from currently available gasoline or diesel manufacturing footprints. H2ICE also builds hydrogen demand, which is a nascent market in the U.S. Building that market will help supply the needs of hydrogen fuel cell electric vehicles in due course. The two are complementary to each other's growth and commercialization. MEMA therefore strongly suggests that EPA adopt a consistent pathway for H2ICE for light-duty and medium-duty vehicles just as proposed for heavy-duty vehicles.

Renewable fuels, such as hydrogen, ethanol, renewable natural gas (RNG) and carbon-neutral renewable diesel are viable, proven pathways to lower emissions in the transportation sector almost *immediately*. The EPA has dismissed alternate fuel options, and as a result is missing opportunities for greater emissions reductions. We refer the EPA to the U.S. DOE alternate fuels data center for detailed examples of how alternate fuels can reduce vehicle emissions.[1] Several studies and programs run by Argonne National Laboratory also point to reduced emissions through alternate fuels.[2] EPA should include more analysis of these alternatives and do more to encourage investment and deployment of these technologies. We note CARB recognizes one renewable fuel[3] and allows it to be used for compliance with certain regulations. EPA should consider similar provisions.

Vehicles that use alternative, lower-carbon fuels can help advance EPA climate goals while also contributing to improved national security by lowering our dependence on foreign oil. Additionally, encouragement and investment in carbon-neutral fuels will also positively impact existing vehicles already on the road.

A well-constructed rule will be technology-neutral and provide added regulatory certainty by fairly assessing carbon content of vehicle's technologies, their production and where vehicle charging electricity comes from. At this time, there is no review of carbon content of components or vehicles in the draft regulatory impact analysis. We understand the complexity of this endeavor, but EPA overlooks broad environmental impacts through a selectively narrow focus on tailpipe emissions. Electric vehicles have no tailpipe, and thus no tailpipe emissions. If EPA is determined to regulate zero-emissions vehicles, EPA should address lifecycle carbon content of vehicles in scope of this rule to better balance technology vs. tailpipe.

The proposed rule states that emissions for an electric vehicle are zero. This position leaves no regulatory incentive to maximize efficiency or reduce weight within electrified vehicles and could result in larger amounts of critical elements consumed by larger batteries, as well as greater emissions from electric power sources needed to propel these vehicles than would otherwise be needed. This disregard for vehicle efficiency distinction across BEVs

[1] https://afdc.energy.gov/fuels/
[2] https://www.anl.gov/taps/fuels
[3] See § 2449.1(f) of the CARB In-Use Off-Road Diesel-Fueled Fleets Regulation
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/off-roaddiesel/ord15dayatta-1.pdf

conflicts and does not align with the existing and historic approaches of the Corporate Average Fuel Economy (CAFE) program and is a potential disruption to harmonization.

Consistent with its current authority to regulate power plant emissions, EPA should specify a value for electric generation emissions for each year 2027-2032 and include this in BEV emissions calculations, based on vehicle energy use.

The assignment of an emission value per kWh of battery capacity in BEV would assure that public incentives for larger BEVs provide the environmental benefits promised and other advanced clean transportation alternatives also improve their propulsion system efficiencies. This approach will also ensure more accurate assessments of BEV emissions. EPA could use the readily known and available national electricity generation data paired with miles per gallon equivalent (MPGe) to serve as a BEV emissions value for comparison. It is important this metric be aligned with NHTSA Corporate Average Fuel Economy (CAFE) standards. This metric is justified in the directions of 49 USC 39204 (a)(2)(B)(i), which require the Administrator of the EPA to consider net upstream emissions of electric vehicles when calculating fleet average fuel economy[4].

MEMA urges:

- EPA to move beyond tailpipe emissions and include emissions from electricity generation in BEV calculations.
- EPA to act decisively to further encourage and incentivize the development and deployment of advanced clean ICE technologies, including renewable fuels, and mobile carbon capture.
- EPA to develop an efficiency metric to comparatively analyze ZEV energy needs and – if not incorporated into this rule – report that metric to the public as an initial step.

Plug-in Hybrid Electric Vehicle (PHEV) Utility Factor

The data relied upon to establish the proposed reduction in utility factor for PHEV is flawed for a number of reasons and we urge EPA to conduct its own, current and future, real-world U.S. measurement of PHEV usage prior to implementing a revised utility factor. Such an analysis will find greater utility in PHEV usage than is suggested by the data used in the current proposal.

[4] 49 USC 39204 (a)(2)(B) "(B) If a manufacturer manufactures an electric vehicle, the Administrator shall include in the calculation of average fuel economy under paragraph (1) of this subsection equivalent petroleum based fuel economy values determined by the Secretary of Energy for various classes of electric vehicles. The Secretary shall review those values each year and determine and propose necessary revisions based on the following factors: (i) the approximate electrical energy efficiency of the vehicle, considering the kind of vehicle and the mission and weight of the vehicle."

The current data is inappropriate because it is primarily non-domestic, selective and ignores the significant changes already underway in infrastructure and vehicle design that enable greater PHEV utility.

Much of the current data leverages European Union (EU) use patterns in PHEV owners, which has several flaws. First, as the ICCT notes[5], there was a significant deviation between the utility factor for personally owned vs. company owned vehicles. Logic would suggest this makes sense – if drivers do not own their vehicles themselves, they are likely to be less-inclined to maximize their electric utility. That argument is compounded by the fact that many companies in Europe also provide gas cards to employees to support their transportation needs but provide no similar subsidization of charging needs. From this one may infer that EU employees used their "free" gas rather than pay for electricity, which would cause distortive bias in the data.

The ICCT study additionally relied on prominently for EPA's U.S. utility factor analysis used data collected in California, where incentives for PHEV purchasing are more generous than in the rest of the country and may even make the purchase of a PHEV less costly than a traditional ICE vehicle. While California is an admirable leader in ZEV deployment, its incentive structure for PHEV purchases differs from the rest of the country; a large percentage of its population resides in multi-unit dwellings (often without consistent overnight charging access), and it ranked (as of last year) behind at least 15 other U.S. states in terms of charging ports per EV, signifying a potential problem of constrained charging access that needs further examination[6]. The ICCT itself stated that, "More data collection could provide greater precision and clarity regarding the deviation of real-world electric drive share and what is assumed in EPA labeling." There is no indication that this additional data collection has since occurred.

Another distinction worth noting is that the PHEVs and charging infrastructure of the past five years (primarily in Europe, in the case of the data relied upon) have little resemblance to the vehicles and charging capacity projected by EPA in its forecast for the U.S. For example, CARB's ACC II regulation compels PHEVs to have an electric range of at least 50 miles to meet its ZEV criteria for real-world conditions and 70 miles for minimum certification range[7]. This will enable many drivers to complete all daily driving tasks on a single charge[8], and will likely promote greater utility in PHEVs. Furthermore, the need for a more comprehensive

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[5] https://theicct.org/publication/real-world-phev-use-jun22/
[6] https://www.govtech.com/biz/data/which-states-have-the-most-chargers-per-electric-vehicle
[7] https://ww2.arb.ca.gov/news/california-moves-accelerate-100-new-zero-emission-vehicle-sales-2035 and Clause § 1962.4(e)(1)(a) in Title 13 CCR
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/accii/2acciifro1962.4.pdf

[8] US Average miles traveled per year: 13,476; per day: 36.92 – https://www.caranddriver.com/auto-loans/a32880477/average-mileage-per-year/

nationwide EV charging infrastructure has been recognized by Congress and the Administration several times in recent years, whether through billions of dollars in new EV charging infrastructure direct investment and billions more for incentives to support private and public charging. Those investments will enable greater accessibility for PHEV drivers to charging stations, but it has yet to be realized at this point in time or reflected in the studies on which EPA relies to propose this amended utility factor.

If further study indicates that a change in PHEV utility factor is warranted, it must be substantiated by real-world and forward-looking data collected by EPA under reliable and repeatable test conditions. Absent that needed analysis, we strongly urge EPA to reconsider its amendment to utility factor calculations.

MEMA urges:

- EPA to maintain previous PHEV utility factor or conduct U.S.-based study and forecast to replace current PHEV utilization data and recalculate PHEV utility factor.

Continue Off-Cycle Technologies Credit & A/C Efficiency Technology Credit Programs

MEMA urges EPA to continue to provide the off-cycle technology credit program and the A/C efficiency credit program. The supplier community, working independently and in collaboration with OEMs, develop and engineer innovative technologies that contribute to vehicle manufacturers' strategies for real-world GHG and fuel consumption reductions often beyond those measured with standard test procedures. The off-cycle credit program and A/C efficiency credit program have helped to support industry investment in innovative and forward-looking technologies that provide environmental benefits. These technologies offer measurable, demonstrable, and verifiable real-world benefits that improve efficiencies and reduce GHG emissions. They also provide an important cost-effective option for OEMs to achieve fuel economy and GHG targets.

These credit programs are not loopholes and do not distort the market but instead recognize technologies that are not measured accurately on the existing test-cycles. These technologies are often more cost effective than other available technologies to reduce pollutant emissions. It is important that the MY27+ program allows a variety of regulatory tools to broaden compliance pathways for vehicles to manage their product mix during this transition period.

The continuation of the off-cycle credit program is critical in encouraging technologies that allow greater innovation which can provide a cost-efficient range of technology options that ultimately lower compliance costs and increase consumer choice. These technologies will continue to promote consumer choice, spur technology development, and minimize compliance costs while achieving significant pollutant emissions and oil reductions. Importantly, continuation of the off-cycle technology credit program will help maintain market certainty for these technologies.

Similarly, MEMA encourages EPA to explore how emissions reductions from off-cycle technologies and A/C efficiency technologies could be rewarded when used on BEVs, PHEVs, FCEVs, and other ZEVs. Many off-cycle and A/C efficiency technologies, along with emerging ZEV technologies, could help reduce battery energy use and therefore lower the amount of electricity used to power the vehicle overall. Consequently, technologies that reduce the amount of battery charging needed and, therefore, the electricity used to power the vehicle should be recognized in MY2027 and beyond.

MEMA urges:

- EPA to maintain off-cycle credits and A/C credits programs at full value through 2032 for all vehicle types, including ZEV, and consider additional ways emerging technologies that reduce ZEV energy consumption can be rewarded.

Gasoline Particulate Filter (GPF) and On-Board Diagnostics (OBD)

In the proposed rule, the agency calls for the diagnostic requirement to monitor for a removed, missing, or damaged GPF causing the PM value to go above 10 mg/mi over the Federal Test Procedure (FTP). Based on industry experience, even with a removed, non-existent or a strongly damaged GPF, the gasoline vehicle PM-emissions are below 10 mg/mi.

Considering the proposal for filtration efficiency monitoring below <30% efficiency, the current available technology (based on a differential pressure [ΔP] sensor) is not sufficiently accurate to detect the set threshold for filtration efficiency. Therefore, correctly identifying parts a with filtration efficiency of < 30 % would lead to identifying components which still having a significantly higher filtration efficiency as "Bad" (False Fail).

The proposal puts a restriction on "frequent regeneration" of the GPF. However, the specific tolerance for regeneration frequency is not mentioned. The limit for allowable regeneration frequency is not adequately defined and is expected to be sensitive to the application.

Monitoring incomplete regeneration of the GPF would be very difficult due to part/part-dispersion in a fresh state and increasing GPF differential pressure owing to ash loading over lifetime as well as other related issues.

MEMA urges:

- EPA to align with the CARB On Board Diagnostic (OBD) II requirements according to current regulation 13CCR1968.2 listed below and as announced by CARB during the SAE OBD Symposia during March 14th to 16th this year in Prague, Czech Republic:
  - Filtering Performance: "the OBD II system shall detect a malfunction when no detectable amount of PM filtering occurs".
  - Regeneration: Limitation of any regeneration monitoring requirement to active regenerations, while passive regenerations do not need any monitoring.

- Infrequent Regeneration: Required to be monitored only for sensor-based regenerations, but not for soot-load model-based regenerations.
- Incomplete Regeneration: Postpone requirement until enough data is collected to clarify details of active regeneration, including frequency of active regenerations which is expected to be low.

Infrastructure

To achieve the ambitious vision for U.S. charging infrastructure needed to rapidly electrify a high proportion of new vehicles, as noted above, EPA must work closely with other U.S. government agencies to help ensure that the dozens of programs in the Inflation Reduction Act (IRA) and Bipartisan Infrastructure Law (BIL),and others still needed to support the transition, are effectively deployed by the federal government. While it is true that agencies are – so far – rolling out these programs expeditiously, strong coordination of these initiatives is needed to realize nationwide transportation transformation.

V2G bidirectional charging technologies can provide a transformational opportunity to help address the nation's energy crisis while also decarbonizing the transportation sector. The use of bidirectional charging installations, for fleet and private vehicles, can help stabilize local grid activity and balance load versus demand[9]. Besides grid load balancing, the use of vehicle batteries as energy sources can also offset local energy production demands and further improve grid resiliency and national security.

EPA should include deployment of Direct Current Fast Chargers (DCFCs) and bi-directional charging impacts and benefits in the RIA. While overnight charging at lower power may be appropriate for certain applications, DCFCs can better meet the long-term charging needs of consumers and fleet operators of light-duty and medium-duty vehicles. Many EVs will need to achieve fast charging times to encourage consumers, fleet owners and operators to transition to electric vehicles. Further, medium-duty vehicles often have duty cycles that require faster, higher power charging due to their on-demand jobs. DCFCs can help address these charging time and operator confidence issues. Similarly, providing a diversity of charging options to all EV adopters offers access and flexibility which facilitates consumer confidence in EVs and help futureproof infrastructure investments.

With respect to existing fleet and future ICE vehicles sales, we note the European Union is exploring renewable fuels as a way to reduce net emissions and decrease dependency on outside energy sources[10]. The U.S. can do the same, and EPA can and should lead this initiative.

The European Union Alternative Infrastructure Regulation has made significant requirements on member states in making the necessary infrastructure investment.

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[9] This notice is one example of "grid services vehicles can provide" according to the US DOE https://content.govdelivery.com/accounts/USEERE/bulletins/3594aae

[10] https://europe.autonews.com/environmentemissions/eu-german-deal-outlines-legal-path-e-fuel-future

As an example of how EPA might compel State and Regional infrastructure buildout, we note below how the European Union has approached this challenge:

> As part of EU's "Fit for 55" package the EU has agreed on a direction forward March 2023 that ensures fast charging availability at distance-based intervals along the trans-European transport network (TEN-T). https://theicct.org/publication/afir-eu-april2023

1) Member States will be required to ensure publicly available chargers with power output capable to support BEV deployment;
2) The AFIR established targets for urban nodes for trucks and busses.
3) Member States will be required to ensure installation of a fast-charging pool every 60km in each direction along the TEN-T (Trans-European Transport Network) with milestones for completion in 2025, 2027, and 2030.

Additionally, in Appendix 1, MEMA has prepared a chart that reviews current CA state and federal actions to support ZEV transition.

MEMA urges:

- EPA to identify and address additional paths and actions within its authority to expand state and regional EV infrastructure investments, to include DC Fast Charge installations.

Supply Chain Challenges Will Continue Throughout Implementation

In the supporting documents of the proposed rule, EPA catalogs all public statements of investment in and projections for future availability of critical minerals. This projected sum is then cited as evidence there will be sufficient materials for construction of the future fleet. We disagree with this optimism. To assume that all materials for advanced vehicles in the quantities needed to support the exponential growth in advanced technology vehicle production and adoption will become available exposes the automotive industry – both vehicle manufacturers and suppliers – and the jobs it supports to significant, unnecessary risk. While the Infrastructure Investment and Jobs Act (IIJA) and the Inflation Recovery Act (IRA) endeavor to bring more resources to mining in the U.S. to boost supplies of critical materials, it is unclear that these provisions will resolve some of the other longstanding hurdles that inhibit mining activities in the U.S. Concerns about environmental issues often make mining projects extremely burdensome to undertake, and the associated permitting process extends the timelines past the point of practicality. EPA seems to assume in this rule that domestic mining will become more routine, but without sufficient evidence to substantiate this belief. It is our perception that nothing in the laws passed to date will overcome some of the most difficult challenges posed by trying to site mines in the U.S.

One way to supplement domestic mining is through increased recycling. As the EPA notes, the presence of minerals in materials and products already in the U.S., adds to the "mineral

stock that is available for domestic recycling in the future." The EPA spends much of the analyses recycling discussion on battery recycling, specifically on the minerals associated with batteries. Yet, EVs will rely on many other minerals beyond those needed for batteries. Aluminum, manganese, magnesium, silicon and many other critical minerals are already located in the automotive supply chain independent of batteries, such as in the aluminum and steel in door frames and in the body in white. The domestic recycling infrastructure is not sufficiently sophisticated to recapture and return the pre- and post-consumer scrap of this material already present domestically to the automotive sector. While EPA recognizes the value that recycling can provide to stabilizing the supply of critical minerals, its assumptions about the feasibility of this recycling to supplement mined minerals is premature without more investments in infrastructure to support this work.

MEMA urges:

- EPA to add battery recycling and disposal costs to the analysis as part of a sustainable BEV deployment to better address scarcity of critical minerals, provide a more resilient domestic supply chain, and over time reduce the added carbon impact of battery manufacturing and associated multi-national logistics.
- The Biden Administration and Congress must work expeditiously to secure, through trade policy, access to critical materials and expedite projects to refine critical materials in the U.S. and allied countries and encourage domestic recycling programs for other critical minerals to further expand and assure supply.

Immigration Reform will Help Address Need for More Skilled Workers

The manufacturing industry continues to invest in solutions to our workforce needs. As the largest employer of manufacturing jobs in the United States, our industry expects to have 2.1 million unfilled jobs by 2030[11].

Immigration reform is crucial to the United States developing a new pipeline of talent. MEMA recommends increasing annual quotas for employment-based immigrant and nonimmigrant visas, expanding the scope of essential worker programs, and creating new visa options for international students and other high-demand workers. Immigration reform with a focus on our workforce needs is crucial for our industry to continue its growth and advancement.

MEMA urges:

- EPA to work with other agencies to enable sufficient skilled labor to support national EV deployment and infrastructure transformations.

[11] Source: Wellener, Paul; Reyes, Victor; Ashton, Heather; Moutray, Chad. "Creating pathways for tomorrow's workforce today". Deloitte Insights, 4 May 2021
https://www2.deloitte.com/us/en/insights/industry/manufacturing/manufacturing-industry-diversity.html

Warranty Provisions Must Not Preclude Choice in Repair of Exclude the Aftermarket

MEMA urges EPA to not proceed with provisions mandating longer warranties for specific BEV parts, components, and systems. Vehicle warranties undergo robust regulatory oversight by the Federal Trade Commission (FTC) under authority granted by the Magnusson-Moss Warranty Act. These regulations meet the needs of consumers by providing reasonable warranty protections while protecting consumer choice. If EPA chooses to move forward with the warranty requirements outlined in the NPRM, MEMA urges the EPA to clarify that warranty repairs can be completed at dealer or authorized repair locations, and at quality independent aftermarket repair locations. This would ensure safety, affordability, and access to warranty repairs. Any EPA warranty regulations should specify that vehicle manufacturers and consumers, in line with the Magnusson-Moss Warranty Act, can employ certified or independent repair facilities of their choice for warranty repairs. Facilities must follow manufacturer repair and warranty procedures, warranty repairs can use parts and remanufactured parts that meet manufacturer specifications, and repair procedures and appropriate specifications are made available. The repair and maintenance of in-service vehicles is critical to ensuring that they operate as designed and continue to meet safety and emissions standards. A properly operating vehicle is critical for millions of Americans as their daily transportation. In many locations throughout the country, the nearest dealer or authorized repair facility is, at best not the most convenient option or, at worst, hours away.

Further, EPA has not clearly defined specific vehicle parts intended to be covered by the proposed warranty requirements, particularly those related to high-voltage battery and propulsion motors.

MEMA urges EPA to maintain current limitations and not expand warranty coverage to parts that have a shorter life and are a routinely replaced due to wear, or are adjacent to the warrantied parts through physical, electrical, or software connections but not the targeted component; such as sensors, filters, monitoring systems, cooling systems, HVAC, braking systems, control systems, inverters, converters, charging systems, structural systems, transmissions, other drivetrain components, electrical motors not part of the forward propulsion system, and filters. In particular, it is important that components found in both an ICE and a zero emissions vehicle not carry longer warranties for ZEVs than for ICE. We urge EPA to work with industry stakeholders, including original equipment and aftermarket suppliers and remanufacturers, to develop a list of wear and non-applicable parts and components with these criteria in mind.

Finally, MEMA urges EPA to consider the impact longer warranties could have on choices in consumer repair. Longer warranties could lead to monopolistic repair, resulting in delays, potential safety concerns, and increased costs for businesses and consumers. To successfully implement the warranty provisions, repair access needs include appropriate repair and maintenance information (RMI) to enable safe, educated repairs. This typically includes diagnostic codes, repair procedures, drawings, and vehicle specifications to enable safe and

complete repair. This has typically been provided for other vehicle systems but is often not made available for the technologies that will be covered by the new warranty provisions. In addition, access to vehicle diagnostics and state of health, including for all items under warranty and related systems, for owners, fleets, and repair professionals, need to be provided. This includes secure over-the-air (OTA) access to vehicle diagnostics and state of health on a fair, reasonable, and nondiscriminatory (FRAND) basis.

Additionally, EPA should consider added costs for post-warranty battery pack replacement to the RIA to capture critical mineral demands resulting from second and third owners who may have to replace/repair aged batteries after buying a used BEV. This may not factor into the cost benefit for new vehicle purchases, but it will cause further demand for critical materials. EPA should add this into the cost benefit for maintenance in Chapter 4.6.1 as well as critical mineral demands in RIA Preamble IV.C.6. While some of these retired batteries may be recycled, it will take some time for materials to build up and there will be some demand for new material that competes with production for new vehicle batteries. This is another reason EPA must forecast a more diversified, and possibly more expensive, supply chain in the RIA.

MEMA urges:

- EPA to clarify that warranty repairs can be completed at dealer or authorized repair locations, and at quality independent aftermarket repair locations.
- EPA to not proceed with provisions mandating longer warranties for specific BEV parts, components, and systems.
- EPA to consider the impact longer warranties could have on choices in consumer repair.

Conclusion

MEMA appreciates the opportunity to present these comments for EPA's consideration. We look forward to an ongoing dialogue with the agency and are happy to act as a collaborative resource.

For any questions or more information, please contact Alex Boesenberg, vice president, regulatory affairs, MEMA at aboesenberg@mema.org.

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Appendix 1

Comparison of California vs. U.S. Federal EV Programs

State of California	US Federal
Infrastructure coordination: • AB 2127 – coordination CEC (California Energy Commission), CPUC (California Public Utilities Commission), and IOU (Investor-Owned Utilities) – HIGHLIGHT BELOW • CEC estimates 157K high powered chargers will be needed by 2030 to support 181K MDV & HDV; and expects Advanced Clean Fleets to represent 3% of the system annual load in 2035, but only 1.4% for peak hour demand from 5PM to 8PM • Special task force for rural charging needs • Infrastructure providers working with majority of OEMs requirements for connectors, electric vehicle equipment supply equipment, communications, safety, and related hardware • Alliance of Clean Renewable Hydrogen Energy Systems	Infrastructure coordination: • September 2022 MOU signed between Environmental Protection Agency (EPA), Department of Transportation (DOT), Department of Energy (DOE), Department of Housing and Urban Development (HUD) are coordinating actions towards a decarbonized sustainable transport future (LD, MD, HD) starting with The U.S. National Blueprint for Transportation Decarbonization; targets for all new vehicles to zero emissions between 2030 and 2040. • BIL establishes Joint office of Energy and Transportation in Dec 2021, which has announced formation of EV working group in June 2022 to advise LD/MD/HD • In Preamble HD GHG Ph3 NPRM, EPA requests comment regarding stakeholders that must be engaged to overcome infrastructure barriers to ZEV adoption for >14K GVW On Highway Vehicles (Commercial Vehicle incl. trucks & buses) and metrics to track to ensure success.
Infrastructure investments: • CPUC has authorized $686M for projects over the next 5 years for infrastructure upgrade projects across 3 public utilities • CEC invests $2.9B to accelerate CA 2025 EV charging and hydrogen refuel which includes $1.7B for MDV & HDV infrastructure, $90M for hydrogen refueling infrastructure, $15M for ZEV and NZEV product support, and $10M for workforce development • EnergIIze (https://www.energiize.org/) has authorized $276M through 2026 for CA MDV & HDV • Private investments including from OEMs ($650M from Daimler, Volvo, Hyundai, Nikola are also listed without $ specified) • CARB LCFS provides credits to offset cost of lower carbon intensity fueling (with is included in CARB TCO comparisons BEV vs. ICE) • Private investments from hydrogen station develops for LDV (Chevron and Iwatani, with funding support from CEC; have committed to continue w/o gov't funding) • Today there are 56 hydrogen refueling stations in CA, and building 200 over the next 5 years (13 of these will offer fueling for commercial vehicle)	Infrastructure investments: • Bipartisan Infrastructure Law (BIL) $350B for FY22-26 Federal Highway Program with $7.5B to establish a National EV Charging Infrastructure (across LDV, MDV, HDV); $65B to upgrade power infrastructure; and NEVI formula program $5B for national development of EV charging infrastructure • DOE awards $7.4M to several projects to develop MD & HD EV ZEV charging and hydrogen corridor infrastructure plans • Regional clean hydrogen hubs: 2022-2026 $8Billion, program to support the development of at least 4 clean H2 Hubs, at least 1 shall have end-use in the transportation sector • Clean hydrogen electrolysis program 2022-2026 $1B: R&D, demonstration commercialization and deployment program for purposes of commercialization to improve efficiency, increase durability and reduce cost of producing clean H2 using electrolyzes (goal to reduce cost of H2 produced using electrolyzes to less than $2/kg by 2026 • Clean Hydrogen production tax credit for production of clean hydrogen for first 10 years for facilities put in place CY23-CY32 • IRA tax credit up lesser of $100K or 30% of cost of qualified alternative refueling CY23-32 including EV chargers, hydrogen, Natural Gas, Biodiesel through Alternative Fueling Property Credit

Vehicle incentives: • CALSTART reports over 2,118 M/HDV ZEV pop. in CA, supported by $303M total funding ($143K/veh) • HVIP point of sale vouchers ($657M for MHDV in 2021 and $675M in 2022); voucher varies by vehicle application with Straight truck $45K-$120K/veh; School buses $70-$198K/veh. • CARB matches funding provided by EPA DERA programs to support rural school bus replacement • VW Trust ($90M deployed for ZE CL8 & port drayage trucks, now $130M authorized over next 10 years for transit, shuttle, and school bus, up to $400K per vehicle) • Truck Loan Association program to subsidize small businesses that would not otherwise qualify for capital loans for Cleaner Trucks including ZEV • R2: Refuse Reimagined will double ZE Refuse truck in CA for 2023 (currently 23 vehicles, targeting 110 vehicles in 2023) • CARB Project 800 to support ZEV purchase at ports/drayage	Vehicle incentives: • BIL authorizes $5B over FY22-26 for Clean School Bus program administered by EPA Diesel Emission Reduction Authorization (DERA) – FY22 awarded nearly $1B grants to 389 school districts to fund 2,400 clean school buses and infrastructure (~$416K per bus) • BIL authorizes U.S. DOT Federal Transit Administration (FTA) increased funding for Low and No Emissions Vehicle Grant Program for Public Transit bus & facilities, $1.1B for FY22, $1.2B for FY23, funding will continue to be authorized through FY26. • IRA $1B in grants to purchase zero emission Class 6 and 7 trucks and install infrastructure • IRA $3.6B Credits for Qualified Commercial Clean Vehicles authorized 2023-2032 (avg. $360M py), Up to 30% cost of Clean Commercial Vehicle (ZEV/PHEV) capped at $40K per vehicle in tax credits to offset cost delta from same configuration conventional vehicles • IRA $3B Grants to Reduce Air Pollution at Ports authorize through 2027 for competitive rebates and grants to purchase and/or install zero emissions port equipment and technology

Takeaways from Appendix 2:

a) States and entities beyond California play a role in supportive legislation for infrastructure development.
b) Utilities need to be compelled to build out ahead of demand. Utilities are a mix of public and private entities and coordination is challenging for end-users. California has adopted AB 2127 to coordinate CEC (California Energy Commission), CPUC (California Public Utilities Commission), and IOU (Investor-Owned Utilities).
    a. AB 2127 is important because it reflects California's charging assumptions did not have clear charging infrastructure requirements for MHDV using standardized common connectors at final rulemaking in 2018, prior to EO N-79-20 and final MHDV ZEV mandates. This creates a capability gap for near term goals such as CARB Advanced Clean Fleets mandates calling for 100% ZEV sales in some vehicle application segments from drayage on Jan 1, 2024, to transit bus in 2029. EPA should review this program for best practices and lesson learned to improve guidance on MHDV requirement for use of IIJA and IRA funds.
    b. https://www.energy.ca.gov/data-reports/reports/electric-vehicle-charging-infrastructure-assessment-ab-2127
    c. "AB 2127 (2018) requires the California Energy Commission to biennially assess the electric vehicle charging infrastructure needed to meet the state's goals of putting at least 5 million zero-emission vehicles on California roads by 2030 and reducing greenhouse gas emissions to 40% below 1990 levels by 2030.
    d. The inaugural Assembly Bill (AB) 2127 Electric Vehicle Charging Infrastructure Assessment examines charging needs to support California's plug-in electric vehicles (PEVs) in 2030. Under AB 2127, the California Energy Commission (CEC) is required to publish a biennial report on the charging needs of 5 million zero emission vehicles (ZEVs) by 2030. In September

2020, Governor Gavin Newsom issued Executive Order N-79-20, which directed the Commission to update this assessment to support expanded ZEV adoption targets.

e. In 2018, Executive Order B-48-18 had set a goal of having 250,000 chargers (including 10,000 direct current fast chargers) by 2025. As of January 2021, California has installed more than 70,000 public and shared chargers, including nearly 6,000 direct current fast chargers. This report finds that an additional 123,000 are planned, of which about 3,600 are fast chargers. This leaves a gap of about 57,000 installations, including 430 fast chargers, from the 250,000 charger goal for 2025.
f. For passenger vehicle charging in 2030, this report projects over 700,000 public and shared private chargers are needed to support 5 million ZEVs as envisioned in the AB 2127 legislation. For the 8 million ZEVs anticipated by 2030 under the more ambitious Executive Order N-79-20 goals, nearly 1.2 million chargers will be needed for light-duty vehicles. An additional 157,000 chargers are needed to support the 180,000 medium- and heavy-duty vehicles anticipated for 2030.
g. The report also finds that a portfolio of charging solutions is needed to address site-specific real estate and grid constraints. To maximize grid integration, energy resilience, and ease of use for site hosts and drivers, charging equipment hardware and software should use common connector and communication standards. Innovative business models are prioritizing higher utilization, diversified revenues, and adaptation to local environments. Finally, the report outlines the need for continued government support and funding, increased private funding, and a flexible and scalable framework to accommodate the growing charging market."

c) A robust hydrogen infrastructure suitable for commercial vehicle applications is farther behind and reducing GHG impact of transportation needs this to be established along freight corridors. Only 13 out of 200 of the hydrogen fueling locations planned for readiness in California over the next 5 years will offer fueling for commercial vehicles.
d) While IRA and BIL are supportive of ZEV transition, more support and coordination is needed to overcome initial adoption barriers as well as targets to address the different needs of MHDV vehicle with higher peak loads.

e) The Federal government can be well positioned to direct infrastructure capabilities along interstates – including Hydrogen infrastructure and DC fast charging hubs.

f) In comments filed on behalf of the trucking industry to the Federal Highway Administration (FHWA) on its National Electric Vehicle Infrastructure Formula Program Notice of Proposed Rulemaking (Federal Register, June 22, 2022), FHWA was asked to direct states to dedicate specific funding levels towards the build-out charging infrastructure for the trucking sector.

a. In its final rule, the FHWA addressed this request as follows:

"FHWA understands that the MD/HD charging industry is very nascent and rapidly evolving; as such, *FHWA has not modified the language in this final rule to specifically accommodate MD/HD needs* so as not to preempt the pace of the technological innovation. The rule does not preclude MD/HD charging infrastructure and FHWA strongly encourages project sponsors to consider future MD/HD needs. The FHWA will continue to monitor the technological

advancements in the MD/HD industry for consideration as to whether further regulation is needed to provide applicable minimum standards and requirements at a future date." Federal Register, Vol. 88, No. 39, Page 12731 (February 28, 2023).

g) The Joint Office of Energy & Transport agency could be the responsible agent for coordinating ZEV infrastructure readiness. Industry would benefit from transparent reporting and agreed milestones.
h) EPA programs are supportive of bus and port ZEV transition, but other vehicle applications have comparatively less federal support to transition to ZEV relative to higher incentives in the California Hybrid Voucher Incentive Project.

Recommendations:

1) EPA defines MHDV charging requirements for States on ACT pathway and non-ACT pathway.
2) EPA defines and provides FHWA guidance regarding truck and bus requirements for NEVI.

Table Sources:

https://ww2.arb.ca.gov/sites/default/files/barcu/board/books/2023/042723/prores23-13.pdf (CARB Advanced Clean Fleets Resolution 23-13);

https://californiahvip.org/ (CALSTART Hybrid and Zero Emission Truck and Bus Voucher Incentive Project);

https://unfccc.int/sites/default/files/NDC/2022-06/United%20States%20NDC%20April%2021%202021%20Final.pdf (USA National Determined Contribution Reducing GHG in the US: A 2030 Emissions Target)

https://driveelectric.gov/news/ (Joint Office of Energy and Transportation News Site)

https://www.transit.dot.gov/lowno (FTA Low or No Emission Vehicle Program)