



California Air Resources Board
1001 I Street
Sacramento, CA 95814

November 21, 2025

SUBMITTED ELECTRONICALLY TO:

www.arb.ca.gov/public-comments/comment-log-drive-forward-light-duty-vehicle-program-october-2025-workshop

Re: Initial Comments and Reflections on the *Drive Forward* Initiative

Rivian Automotive, LLC, (“Rivian”) participated in the October 21, 2025, workshop presenting CARB’s *Drive Forward* initiative to scope new emissions regulations. We appreciate this opportunity to submit initial feedback on the presentation. We look forward to more detailed dialogue with staff and other stakeholders over the months ahead.

Our brief comments below reflect on several of the concepts presented at the workshop. As an automaker, we have a compelling interest in potential updates to the state’s vehicle regulations including initial discussions about potential regulation of non-exhaust emissions. This is an important area of discussion and careful deliberation will be required to identify how best to address the challenge. We also appreciate CARB’s proposal for a new electric vehicle (“EV”) window sticker and the interest in charging reliability and interoperability. We provide initial feedback on both topics.

We hope you find these recommendations helpful and look forward to continued dialogue and partnership in realizing the state’s objectives.



About Rivian

Founded in 2009, Rivian is an independent U.S. company headquartered in Irvine, California. Rivian manufactures all of its vehicles in the United States. With over 14,000 employees across the globe, Rivian's expertise lies primarily in engineering, software development, and manufacturing.

In addition to our vehicles, Rivian is a manufacturer of direct current fast chargers (DCFC) and deploys, owns, and operates those chargers under a nationwide charging network – the Rivian Adventure Network. Since launching in 2022, the network has deployed over 800 DC fast charging ports nationwide at over 120 sites, with 85% of those sites now open to all EVs, with more coming soon. Rivian has also started transitioning portions of charging sites to the SAE J3400 NACS connector in anticipation of the growing base of vehicles with native NACS charging inlets coming to market. Rivian's commitment to charging reliability has been demonstrated through the Rivian Adventure Network's high uptime rates of 97%+, achieved via our vertical integration and robust operations and maintenance support.

Initial Considerations for *Drive Forward's* Regulatory Scope and Design

Rivian welcomes interest in implementing strategic policy frameworks that support the continued growth and competitiveness of the American auto industry. We stand ready to work with policymakers and partners in designing smart public policies that support our shared goals.



Tailpipe Standards

Looking ahead, we expect that the fleet of vehicles sold in California could achieve substantial reductions in emissions. To strengthen any revised regulation and maximize its benefits, we encourage CARB to consider:

- **Including EVs in the fleet average.** Whereas previously CARB proposed an ICE-only standard, we believe a technology-neutral standard inclusive of EVs can unlock larger and more cost-effective average emissions reductions.
- **Providing early action credits for reductions achieved in the model years prior to official implementation.**
 - For example, manufacturers could earn credits for performance against the MY2025 standard, up to a declining cap and with a traditional five-year carry-forward limitation.
 - We also recommend allowing credit trading between the light and medium-duty classes.
- **Using an up-to-date and accurate Fleet Utility Factor (“FUF”) for PHEVs.** As Rivian has commented in the past, PHEVs exhibit significant variability in their environmental performance. Research from Europe shows that PHEVs deliver poorer environmental benefits in real-world usage than certified under test procedures, with troubling implications for the projected benefits of regulatory programs that encourage the development and sale of these vehicles.¹ In the United States, PHEVs drive fewer electric miles than assumed for labeling purposes, with fuel consumption as much as two-thirds higher than nominally anticipated.²

¹ Patrick Plotz et al., The International Council on Clean Transportation, Real-World Usage of Plug-In Hybrid Electric Vehicles in Europe: A 2022 Update on Fuel Consumption, Electric Driving and CO2 Emissions (June 2022), available at www.theicct.org/publication/real-world-phev-use-jun22/.

² Aaron Isenstadt, Zifei Yang, Stephanie Searle, and John German, The International Council on Clean Transportation, Real-World Usage of Plug-In Hybrid Electric Vehicles in the United States (December 2022), available at www.theicct.org/publication/real-world-phev-us-dec22/.



Simply put, on average PHEV drivers do not plug in their vehicles as much as was previously assumed and the weight of the evidence clearly suggests a need to revise the FUF. An accurate FUF, reflecting CARB's onboard diagnostic data, would ensure that the regulation works as intended—achieving reliable, real-world emissions reductions.

- **Technical adjustments to the target curves to reduce the incentive to upsize vehicles.** Specifically, CARB should consider whether 'flattening' the slopes of the standards curves and narrowing the difference in stringency between the car and truck curves could play a role in moderating any perverse incentives within the regulation for manufacturers to upsize and/or reclassify vehicles.
- **Maintaining parity between EVs and ICEs with respect to air conditioning efficiency and leakage credits.** If CARB elects to establish an ongoing refrigerant leakage standard or provide AC efficiency credits, Rivian strongly encourages the agency to maintain a level playing field between EVs and ICEs, making all vehicles eligible for credits regardless of powertrain.

Rivian also supports revisions to the state's light-duty and medium- and heavy-duty NMOG and NOx targets, and strongly urges accounting for EVs in fleet average compliance. EVs can contribute meaningfully to aggregate reductions in air pollutants in air basins across the state and should be creditable for those benefits under the criteria pollutant standards.

Non-Exhaust Emissions

Rivian appreciates CARB's attention to non-exhaust emissions. Brake wear, tire wear, and road dust resuspension all merit continued study. These are emerging areas of focus for policymakers across the globe and, in Rivian's experience, the state of the art in regulation varies across these domains. In anticipation of more



detailed presentations and stakeholder discussion in future workshops, the following represent brief initial reflections on these topics.

Brake Wear

- The European Union has already established standards for brake wear under the Euro 7 regulation, representing a logical point of departure for CARB's efforts.
 - We initially recommend erring on the side of harmonization with the Euro 7 targets in the interest of minimizing the compliance burden for automakers with a global portfolio.
- Nonetheless, we note that the Euro 7 standards established distinct standards for internal combustion engine vehicles versus EVs.
 - CARB should evaluate the costs and benefits of this approach and whether a fleet average standard applied across both ICEs and EVs in a given vehicle category—and employing traditional averaging, banking, and trading of compliance credits—might achieve aggregate reductions in brake wear emissions across the fleet at lower cost.

Tire Wear

- Unlike brake wear, no standard for tire wear yet exists in Euro 7. Moreover, in Rivian's view, regulating tire wear is a more challenging proposition and there are several important considerations.
- CARB should carefully consider whether the vehicle certification process is the most impactful venue for a regulation that aims to address tire abrasion. Vehicle owners will likely replace their original equipment tires, meaning that the tires supplied with a new vehicle for sale represent just a fraction of the tires that vehicle will ultimately drive on.
 - To fully address tire wear, therefore, regulators should consider whether a regulation farther 'upstream,' governing tire makers



themselves and the full universe of “aftermarket” tires would be more effective.

- Rivian has additional concerns about the impact of a tire wear standard on customer satisfaction with the vehicle.
- Any effort to regulate tire wear would seem likely to encounter various implementation challenges.
 - Modeling tire wear for purposes of demonstrating compliance with a standard is likely to be difficult, and perhaps even impossible.
 - Yet testing is also likely to be very costly.
 - In-field testing would require many vehicles, drivers, and significant time.
 - Drum testing remains unproven.
- Fundamentally, regulating tire wear would incur tradeoffs. A tire optimized for wear rate might not offer the same performance in other regards. For example, if tread depth were sacrificed to some extent to minimize mass loss through abrasion, it might come at the expense of the tire’s hydroplaning performance. This is an important issue for regulators to weigh in assessing the costs and benefits of moving ahead with a tire wear standard.

Road Dust Resuspension

- Vehicle-level regulations do not seem well-suited to addressing resuspension of road dust.
 - Many factors are at play, including traffic volume and speed, pavement texture, meteorological conditions, road surface dust load, and others—many of which are well outside the control of vehicle manufacturers.
- While brake and tire abrasion standards could play a role in mitigating sources of new road dust, it seems likely that additional interventions



would need to factor into—and might even play the dominant part in—a comprehensive response.

Environmental Performance Label

Rivian broadly supports transparent range and consumption metrics for EVs. We believe that updating the environmental performance label for passenger vehicles is a worthy goal.

The overall direction of the staff proposal appears appropriate. Rivian generally supports publication of highway-speed ranges and estimated charge times as the kinds of performance indicators that EV consumers seek and find helpful. By the same token, too much information can lead to ‘label blindness.’ CARB should strive to strike a balance between informing car shoppers and overwhelming them.

Rivian has several initial points of feedback to highlight.

- Benchmarking fast-charging times at 350kW is likely not representative of the typical fast-charging experience for drivers today. Even high-powered stalls with a nameplate capacity of 350kW often deliver significantly less power in practice over large portions of a charge session. To better set customer expectations, we suggest a 150kW or 200kW benchmark for this purpose.
- Rivian strongly recommends forgoing inclusion of Level 1 charge times on window stickers for BEVs. While Level 1 charging can fill a need in some cases for some drivers, it is not generally recommended due to considerably longer charge time when compared to Level 2 charging. Therefore, we don’t believe furnishing a Level 1 charge time on a window sticker provides useful or generally applicable information. It could even



be discouraging if not presented with sufficient context to an appropriately informed buyer.

- CARB should clarify that any new window sticker requirement will apply to passenger vehicles only. Medium-duty vans should be exempt. While an updated performance label could offer benefits to the general car-buying public, we believe window sticker labeling does not necessarily serve a similarly valuable purpose in the medium-duty market: fleet customers are typically well aware of vehicle attributes. Requiring additional labels will only add cost with little return for the consumer.
- When presented alongside the adjusted range numbers on the EPA label, CARB's use of unadjusted range could confuse customers.
- A new window sticker with the proposed level of detail would seem likely to entail CARB receiving and processing significantly more data than it does today. In our view, changes to the data submission portal will be necessary.

In addition, we wish to pose several questions for further discussion by staff.

- The staff presentation indicated the intent to use a “factor” to determine cold and hot temperature ranges. Can staff share what factor they propose to use?
 - Since a factor-based determination appears to be the intent, does this mean cold and hot testing will remain optional?
- Choice of tire can affect range. Does CARB intend to require unique labels for each tire type offered by an automaker?
- Will there be any flexibility on the design of the label itself?



Charging and Interoperability

Rivian appreciates the CARB's interest in addressing charging reliability issues by looking more closely at the role of vehicle interoperability. We support the intent of improving charging reliability through a focus on interoperability and conformance testing.

However, the implementation details are important and we encourage CARB to leverage the past work of staff on this topic and to continue conversations with industry to inform the technical details. There are several potentially overlapping industry-led efforts already underway that CARB should consider as it moves ahead. These include standards development initiatives at SAE and the work of CharIN to develop test cases for conformance certification and EV declarations of conformity for DIN 70121/2 and ISO 15118-2.

As a guiding principle, minimizing implementation costs is key as automakers continue to pursue the goal of increasingly affordable EVs and to that end we encourage staff to allow for manufacturer self-certification to any standards CARB might ultimately finalize. Self-certification is sufficient to achieve CARB's goals on this front, especially given the strong incentive the industry has to develop interoperable systems that deliver a quality customer experience. This is further reinforced by ongoing and strong industry engagement at regular interoperability-focused testing events and growing industry membership in organizations like CharIN.

Conclusion

Thank you for the opportunity to provide initial feedback and comments. Please contact Tom Van Heeke (tvanheeke@rivian.com) or Chris Nevers (cnevers@rivian.com) with any questions. We look forward to future workshops and engaging with staff and other stakeholders in this matter going forward.

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