

January 15, 2024

SUBMITTED VIA ELECTRONIC MAIL TO [cleancars@arb.ca.gov](mailto:cleancars@arb.ca.gov)

**Subject: Advanced Clean Cars II Amendments**

The Alliance for Automotive Innovation (Auto Innovators) and our members appreciate the opportunity to participate in the development of amendments to the Advanced Clean Cars II regulations (ACC II) adopted last year. Incorporating and aligning the California regulations with those of the U.S. Environmental Protection Agency's (EPA's) Multi Pollutant Emissions Standards<sup>1</sup> is critical to a successful and cost-effective program that benefits the environment and California consumers. Beyond alignment with EPA's ongoing rulemaking, CARB staff identified several areas to either expand or clarify the existing ACC II regulations. Likewise, we identify areas of clarity and improvement to the existing ACC II regulations below.

This letter is divided into three sections – criteria emission, zero emission vehicle (ZEV) and greenhouse gas (GHG).

**1. Criteria Emission**

a. Alignment with EPA Tier 4

Auto Innovators has raised significant concerns with EPA's proposed regulations, and we were disappointed their proposed regulations did not better align with CARB ACC II regulations, which were available months before EPA released its proposed rule. We hope EPA's final regulations better align with the ACC II regulations.

---

<sup>1</sup> Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles, 88 Fed. Reg. 29184 (May 5, 2023) (Proposed Rule)

i. Bins

CARB should ensure that every NMOG+NO<sub>x</sub> emission bin for both LDV and MDV available in the EPA Tier 4 regulations is also available in the ACC II regulations. Emission bins have no environmental impact, but they provide manufacturers with much needed flexibility. Thus, while it is not necessary to eliminate bins, CARB should ensure the bins available in Tier 4 are also available in LEV IV.

ii. MDV certification and in-use test requirements

Auto Innovators appreciates CARB's commitment to align the MDV standards with the HD regulations in EPA's Clean Truck Plan. We are committed to working with CARB Staff to ensure these are harmonized between EPA and CARB and across the different CARB areas of responsibility (e.g., HDV vs MDV).

iii. MDV Chassis Certification Requirements

CARB's exhaust emission regulations in 13 CCR 1961.4 require all Class 2b (8.5k-10k GVWR) and Class 3 (10k-14k GVWR) complete gasoline vehicles to certify on the chassis dynamometer. Class 3 (10k-14k GVWR) diesels and gasoline incomplete vehicles may optionally certify on the engine dynamometer according to 13 CCR 1956.8.

EPA's proposed Tier 4 regulations, by contrast, will mandate all vehicles with > 22k GCWR – including most, if not all, Class 2b and 3 pickup trucks – to certify on an engine dynamometer.

Consequently, if the proposed regulations are adopted, EPA will mandate engine dyno testing while CARB mandates chassis dyno testing resulting in a single vehicle certifying to two different standards and two different test procedures. Such duplication is unnecessary and counterproductive.

Auto Innovators recommends CARB allow manufacturers to optionally engine certify any vehicle that EPA requires to be engine certified (i.e., MDVs > 22k GCWR).

b. Industry recommended updates to ACC II

i. Quick Drive-Off Test – Allow 3- and 4-bag full FTP

For certification to the quick drive-off, California test procedures specify running the cold-start portion of the FTP (Bag 1), ending the drive cycle, and then combining this result with data from another full FTP (bags 2 and 3). While this was intended to reduce the testing burden, some manufacturers prefer to run a full FTP using lab automation equipment. Auto Innovators recommends CARB allow a full FTP as an option to the current procedure.

ii. PHEV High Power Cold Start (HPCS)

ACC II regulations require PHEVs to certify to the HPCS standard<sup>2</sup> unless they can run a specified distance on the US06 drive cycle without starting the engine. The stringency of the HPCS standard increases significantly in 2029 and subsequent model years (MYs).

Electrifying larger vehicles (those over 6k pounds GVWR such as pickup trucks and larger SUVs) offer the greatest benefits in terms of reduced greenhouse gas (GHG) emissions. However, cost-effectively meeting the 2029+MY HPCS standard will be difficult if not impossible for these vehicles.

Auto Innovators recommends CARB consider modifying the 2029+MY HPCS standards for vehicles > 6k GVWR, or at least continue to monitor the progress manufacturers are making to cost-effectively develop vehicles that can meet the standard.

---

<sup>2</sup> The HPCS is a cold start US06.

## 2. ZEV Requirements

### a. CARB Proposed Changes

#### i. Environmental Performance Label (EPL)

CARB is considering modifications to the [existing EPL](#) requirements<sup>3</sup> to add range, charging speed, and efficiency for battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs). The current EPL regulation allows manufacturers to comply with California’s requirements by “affixing the Federal Fuel Economy and Environment Label in accordance with 40 CFR Parts 85, 86, and 600 as promulgated on July 6, 2011.” To our best knowledge, all manufacturers use this provision. Thus, the proposal would add another label to these vehicles sold in California and Section 177 States.

Industry recognizes and agrees that the existing Federal Fuel Economy and Environment Label (Figure 1) is of limited value for BEVs (e.g., MPGe, Smog Rating, and Fuel Economy and GHG Rating). However, new labels with new information have the potential to increase costs for testing and reporting while providing no value to customers, or worse yet, confusing customers. Moreover, we would not expect the new labels and additional data to result in increased EV sales.



Figure 1

<sup>3</sup> California Air Resources Board. (2019). California Environmental Performance Label Specifications for 2009 and Subsequent Model Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles. Retrieved on January 10, 2024, from [https://ww2.arb.ca.gov/sites/default/files/2019-09/2009%2B%20MY%20env%20perf%20label\\_clean\\_10-15\\_accessible.pdf](https://ww2.arb.ca.gov/sites/default/files/2019-09/2009%2B%20MY%20env%20perf%20label_clean_10-15_accessible.pdf)

With this in mind, we offer the following suggestions for the EPL:

- No additional tests: CARB should avoid additional testing. CARB now mandates extensive testing and reporting on BEVs which have ZERO emissions. As noted above, more mandated testing will not result in more EV sales (CARB has a sales mandate already), it will just add to the testing burden associated with these zero-emitting vehicles.

Instead of new testing, Auto Innovators recommends CARB work with automakers to inventory the testing and data already available. Then use that data, or information that can be derived from it, to provide better information to the consumer.

- Use SAE Committees: SAE has decades of experience developing metrics (range, charging speed, or efficiency) and test procedures to ensure a consistent determination of those metrics across vehicles and manufacturers. To the extent that new data or tests are required, CARB (and EPA) should use the SAE committees to develop any new metrics and any test procedures.
- Non-Useful Label Information: We recognize that CARB and EPA are, in many cases, bound by legislation. However, to the extent possible, CARB (and EPA) should eliminate information that is not useful in the car buying process (e.g., Smog ranking, Fuel Economy and Global Warming ranking, MPGe values). If the information cannot be eliminated, CARB should consider minimizing it, to better highlight information consumers might find useful.
- Efficiency: This information is already widely available and is reported by EPA as a “kWh per 100 miles.” While it differs from ICE miles per unit of energy consumed (e.g., miles per gallon of gas), it is a better (more linear) method of reporting efficiency with which consumers will undoubtedly become comfortable. We recommend retaining EPA’s “kWh per 100 miles” metric for vehicle efficiency.
- Coordinate with EPA: CARB and EPA should work together to develop new label requirements that can be implemented on all vehicles in all 50-States. Otherwise, California and S177 state BEVs and PHEVs will have additional labels with data that potentially differs from or even conflicts with the

federal label. Duplicative or conflicting information will only confuse customers.

- Provide Clarity on use of Non-EPA Related Range Data to Avoid Conflicts with Federal Trade Policy: The Federal Trade Commission (FTC) maintains regulations in [16 CFR 259](#) governing the use of fuel economy and range data by manufacturers in advertisement, displays and other marketing claims. This includes driving ranges for electric vehicles. This section of the regulation was developed by FTC to help ensure that claimed range values do not result in customer confusion, or worse yet, from being viewed as deceptive.

16 CFR 259 maintains that when manufacturers state driving ranges for electric vehicles, manufacturers should generally use EPA estimated ranges to provide consumers with a basis for understanding the claims being made. While not prohibited from making claims using “non-EPA estimates”, 16 CFR 259.4(l) provides specific requirements regarding how non-EPA range data is used and the requirements for accompanying disclosures.

*“Given consumers’ exposure to EPA estimated fuel economy values over the last several decades, fuel economy and **driving range estimates derived from non-EPA tests can lead to deception if consumers understand such estimates to be fuel economy ratings derived from EPA-required tests.**”*

Auto Innovators recognizes that the driving ranges being envisioned on the EPL would constitute “non-EPA estimates” and displaying the EPL range, or using the EPL ranges in advertising would trigger disclosure requirements in 16 CFR 259(l). FTC regulations do not appear to provide any relief for non-EPA estimated ranges even if those ranges would be required by CARB regulation.

To avoid triggering any potential conflicts with FTC regulations, or drawing consumer complaints to the FTC, we recommend CARB actively engage with FTC to build awareness of these new ranges and to determine in advance how best to ensure compliance with 16 CFR 259.4(l).

- 1) “...advertisers should avoid such claims...” CARB should ensure that FTC is aware that the amended EPL regulations would require manufacturers

to display the EPL ranges on all new EVs sold in California and other S177 states, and that manufacturers would therefore not be able to “avoid such claims”. This would be important in communicating to consumers who may find the claimed ranges on the EPL as being confusing or deceptive in understanding that manufacturers must display these ranges and would be restricted from avoiding display of these non-EPA ranges.

- 2) “...should disclose EPA estimate...with substantially more prominence...” 16 CFR 259.4(l) would likely normally require that the EPL label include disclosure of the EPA ranges and to do so with substantially more prominence than the EPL ranges themselves. However, as the EPL is expected to normally be displayed on the vehicle in close proximity to the Monroney label (containing the EPA ranges), CARB could request that FTC acknowledge that the EPA ranges displayed in the Monroney satisfy this prominence requirement in 16 CFR 259(l). This would avoid having the EPL label needing to repeat the EPA range data.
- 3) Disclosure format: 16 CFR 259.4(l)(2)(iii) includes specific requirements for non-EPA estimated range data including relative font size, display color and location. CARB may seek to clarify with FTC an appropriate disclosure format that would fit within the envisioned EPL physical format and style. Should FTC determine that the EPA ranges on the Monroney label need to be repeated on the EPL label itself, CARB should recognize that the EPA range would need to be included in font “at least twice as large” as that of the EPL ranges themselves. We also recommend that CARB propose to FTC standardized disclosure language that could be included on the EPL to help ensure that each manufacturer does not have to individually propose and determine appropriate disclosure language. Having common language in the EPL itself would avoid confusion for consumers who may be shopping for multiple EVs models across various manufacturers brands.

## ii. Interoperability standards and conformance testing

The ability to successfully charge is foundational to EV market development. Automakers have a strong, market-driven motivation to address interoperability, and we share CARB’s goal of a seamless charging experience. Automaker representatives sit on the ISO and SAE committees developing the standards and conformance tests.

However, more development work is still needed on the existing Interoperability standards (ISO 15118-2 and 15118-20) and associated conformance tests before they can be considered as regulatory requirements. At this time, we suggest CARB Staff join the group of industry experts developing the ISO requirements to contribute and gain insights with the expert teams on how best to address the shortcomings and the degree of refinement required, as well as better identify the timeline for readiness.

We also note that “interoperability” between the EV and EVSE is only one possible failure point in the EV charging experience. Successful charging extends well beyond just the vehicle or EVSE communication standards in SAE 1772, ISO 15118-20, ISO 15118-2, or DIN 70121. A recent study by UC Berkeley and Cool the Earth<sup>4</sup> found that that over 27.5 percent of DCFCs in the Greater Bay Area failed to deliver a 2-minute charge – most of these failures were associated with the EVSE (e.g., broken connector, blank screen, error message, payment failure, etc.). These common EVSE issues are not addressed by interoperability regulations being considered, so hardware functional requirements would also be needed in any regulatory requirement package to effectively address customer charging.

Auto Innovators will coordinate with CARB staff and automaker ISO 15118 technical experts to further discuss the interoperability requirements outlined in the workshop.

b. Industry recommended updates to ACC II

i. SOH Metric and Display Alignment

Even though EPA has not finalized their rule, we would like to request alignment with EPA related to the Battery Health display. CARB mandates that the energy content reserved and intended to be released later in life for aging purposes must be considered in the state of health (SOH) calculation, however EPA may mandate that battery health calculations only consider the currently available Usable Battery Energy. Supporting and displaying both methodologies in one vehicle is not only burdensome for automakers but will ultimately lead to customer confusion.

---

<sup>4</sup> University of California, Berkeley. (2022, May). Reliability of EV direct current fast chargers. Retrieved from <https://evadoption.com/wp-content/uploads/2022/05/Cool-the-Earth-UCB-study.pdf>



## ii. Virtual mileage for battery warranty and durability

Consumers assume that vehicle mileage is an appropriate surrogate for vehicle wear and for the past 110 years, this has been the case with ICEs. However, this might not be the case with electric vehicles and specifically the batteries on EVs where degradation can happen independently of mileage. Utilities are considering using EV batteries to power or supplement the electric grid, some BEVs can be used to power house loads discharging the battery when rates are high or power is out. Additionally, some customers may exclusively charge their EVs using high-power DCFC and while this is related to mileage accumulation, battery degradation is accelerated in this case. In these cases, traditional vehicle mileage might mislead potential used vehicle buyers. This is not only a consumer awareness concern but also a warranty concern for manufacturers.

To address this concern, the United Nations Global Technical Regulation on In-Vehicle Battery Durability for Electrified Vehicles (“GTR 22”)<sup>5</sup> includes a “virtual distance” to account for non-mileage-based degradation of the battery. When calculating “virtual distance,” manufacturers will divide the “total discharge energy during V2X and for non-traditional purposes, by the worst-case certified energy consumption of a specific vehicle test group (family). The total distance used for confirming the compliance with the minimum performance requirements will consist of the sum of the distance driven and the virtual distance. The total percentage of the virtual distance shall be recorded and monitored and displayed in a customer facing manner.

Additionally, GTR 22 also outlines provisions when verifying the virtual distance metric. Data on the batteries is to be collected on a yearly basis from a statistically adequate sample of vehicles within the same battery durability family selected randomly from a variety of climate conditions. Accuracy will be tested against what is being displayed on the vehicle. A battery durability family shall fail if less than 90 percent of monitor values read from the vehicle sample are above the Minimum Performance Requirement (MPR) over the total distance threshold.

We recommend CARB incorporate this in their updated ACC II regulations. This would provide consumers with a transparent look at the vehicle and likely

---

<sup>5</sup> [https://unece.org/sites/default/files/2023-01/ECE\\_TRANS\\_180a22e.pdf](https://unece.org/sites/default/files/2023-01/ECE_TRANS_180a22e.pdf)

deterioration of the battery. While we appreciate that CARB has a SOH monitor available to the consumer, a “virtual mileage” metric would be far more accurate to track battery degradation. For durability, this would quantify the otherwise vague “excessive VGI” exclusion.

### iii. Adapter Requirement in EV Charging Regulations

We realize the SAE J3400 will not be finalized until at least mid-2024. However, all but one OEM has announced plans to begin phasing in the SAE J3400 port on at least some of their products starting with the 2025MY.

CARB’s current EV Charging Regulations ([13 CCR 1962.3](#)) require vehicles to either use an SAE J1772 port, or provide an adapter to convert from a SAE J1772 connector (both L2 and the CCS DCFC) to the vehicle’s port. The cost of this adapter is significant (ranging from \$75 to \$200 on Amazon) and given the move toward SAE J3400, it’s likely the supply of adapters will decrease, and the cost of adapters will increase over the next couple of years.

Auto Innovators supports the recommendation in the comments submitted by several automakers that would allow either the SAE J1772 port or SAE J3400 port for both AC and DC charging without the requirement for an adapter.

### iv. Certification Range - Durability Requirements

The ACC II regulations include range-based durability requirements for BEVs, which are not aligned with the United Nations Global Technical Regulation (UN GTR). Failing to meet the durability requirements in the regulations could trigger a very costly (both monetarily and reputationally) recall for battery replacement. The range threshold for durability is set using an “Emissions Data” vehicle (EDV), and the variability of that vehicle could come from battery-to-battery variability (caused by cell or module variability) or vehicle-to-vehicle variability (e.g., variability of every component between the battery and the wheels). The sum of these variations could result in the vehicle used to set durability range representing the longest-range vehicle. This could lead to production vehicles starting life with a lower range.

To account for variability, Auto Innovators recommends CARB consider an adjustment factor for reported durability range.

#### v. Battery label requirements

Auto Innovators recommends the following changes to the battery label requirements to harmonize with global requirements:

- Eliminate requirement to label individual cells, even if they are serviceable/combine labels for pack/label visibility.
  - Auto Innovators requests confirmation that ACC II required info can be combined with information required in other regions on some of the labels i.e., battery side, but not necessarily for under hood (i.e., under hood can limit info to CA ACC II only if desired).
  - Auto Innovators would also like to further explore the location implications under 1962.6. Our concern is if an OEM could service down to the cell level, a label on each cell would likely be unreadable without a magnification device and could impact the fundamental performance of the battery such as heat transfer (i.e., the labels would essentially act as an additional insulator).
  - In terms of vehicle label locations 1962.6(b)(2) (B), we would like to work with CARB to further clarify the location requirements related to engine compartment, front powertrain, cargo compartment, and driver's side doorjamb.
- Simplify website language to English-only
  - Under 1962.6(c)(2)(A)/(C), CARB mandates that the language requirements on the data repository website must be in English, and "additional language options suited to local demographics consistent with section 7295 of the Government Code." 7295 states that if a customer demographic is more than 5% of a particular language, there should be an included language option for that specific dialect. This has increased complexity and cost implications, and therefore request that only English be required.
- Harmonize with EU and other regions:
  - In 2023, the European Union unveiled their plans to mandate an electronic battery label for all batteries starting in 2027. This mandate

requires a universal QR code located on the batteries themselves to provide important information regarding battery chemistry, and components.

- Auto Innovators proposes a QR code regulation to be similar or harmonized with EU and other regional requirements.
- Additional battery label issues: As automakers begin developing battery labels, additional issues will be identified, and we would appreciate working with CARB staff to address these issues.

### 3. Greenhouse Gas (GHG)

CARB has adopted a ZEV mandate to reduce both criteria and GHG emissions. Auto Innovators does not believe that additional GHG regulations to backstop the ZEV mandate are necessary.

EPA's GHG regulations are 50-state, so any improvement in California and the other S177 states (or difference in vehicles delivered because of the ZEV mandate) would not change U.S. GHG emissions. Changes in criteria emissions in California and the Section 177 states are also unlikely to result from a separate California GHG regulation or lack thereof because of the present LEV IV emission standards.

There is also little to be gained from adopting a GHG regulation for the purpose of backstopping federal regulations that may or may not be amended in the future after their initial adoption. The ZEV Mandate already fills that role, requiring half of all vehicles to be at or near zero-emissions by 2028, four out of every five vehicles to be at or near zero-emissions by 2032, and 100 percent of vehicles to be at or near zero-emissions by 2035. It is difficult to imagine a greenhouse gas regulation that would be anything more than duplicative of the ZEV Mandate itself as a federal backstop.

However, if CARB deems it necessary to adopt GHG emission standards in addition to the ZEV regulations, Auto Innovators again recommends that CARB align with EPA. Different, conflicting GHG regulations, certification, test procedures, and/or data reporting requirements only complicate certification, raise costs for both manufacturers and consumers, and divert resources from the transition to electrification – a transition that is the goal of both the agencies and the industry.

For small volume manufacturers, CARB's current GHG emission regulation allows manufacturers with Limited U.S. Sales to comply with alternative targets (13 CCR 1961.3(a)(3)). Auto Innovators recommends CARB retain this option if GHG emission standards are adopted.

a. Ethanol and E85

Auto Innovators and our members support lowering the carbon intensity of liquid fuels, including the adoption of E15 gasoline requirements. Low carbon liquid fuels are an additional pathway for reducing transportation GHG as they are (1) technically feasible today, (2) the only viable decarbonization solution for the legacy vehicle fleet, (3) an important complement to vehicle electrification over a long transition, and (4) affordable for consumers whose needs or budgets require different solutions. Since the vast majority of the 280 million vehicles on US roads today have an internal combustion engine, decarbonizing liquid fuels on a well-to-wheel basis would yield immediate benefits for lowering the carbon intensity of transportation energy.

However, we do not support any regulations that would mandate that gasoline vehicles (either all or part) be capable of running on E85. We currently see no cost-effective way of certifying to the near-zero NMOG+NOx emission standards (30 mg/mile fleet average) using E85. (The regulations require certification of FFVs on both E10 and E85.)

A decade ago, when industry certified significant numbers of flex fuel vehicles (FFVs), the emission standards were at least three times higher than those in ACC II LEV IV. Today, only 10 LDT2, LDT3, and LDT4 test groups are FFVs and most of these certify to a 70 mg/mile NMOG+NOx (233% higher than the LEV IV fleet average standard). No FFV has certified to a standard below SULEV50, which is still 167% higher than the ACC II fleet average standard.

b. Analytically Derived Fuel Economy (ADFE) for hybrid and BEV products

Auto Innovators recommends that ADFE for hybrid and BEV products be included in the ACC II amendments. ADFE processes will be necessary due to the increase in BEV vehicle electrification products and regulatory requirements. Failure to adopt ADFE processes will impact laboratory resources and could reduce product offerings.

c. PHEV Fleet Utility Factor

CARB is considering changes to PHEV fleet utility factors similar to or in alignment with changes proposed by EPA. In our comments to EPA, Auto Innovators described numerous concerns with the data sets and analysis used by EPA to generate proposed utility factors.<sup>6</sup> We encourage CARB to review those comments as it considers its own actions.

PHEVs are likely to play an important role in the transition to a net-zero carbon transportation future. Indeed, CARB has already recognized the importance of PHEVs by including them as a compliance option in the ZEV Mandate. They are well suited to some applications, especially for more capable SUVs and pickup trucks. A number of manufacturers are already building PHEVs or have announced plans to do so. S&P Global Mobility estimates a 5% U.S. market share for PHEVs in 2030.<sup>7</sup>

Manufacturers stand ready to work with both CARB staff and EPA to further develop the fleet utility factor. Additional analysis will be required on the more capable, longer-range PHEVs that will enter the market over the next several years to understand customer behavior and operations. We believe this should be a joint effort between CARB and EPA.

d. AC Leakage Standard

As noted in our comments to EPA, Auto Innovators supports maintaining the AC leakage credit and encourages CARB to do the same.

Such credits recognize the benefits and encourage the use of lower global warming potential (GWP) refrigerants than are strictly required. For example, automakers have generally adopted HFO-1234yf with a GWP of ~1,<sup>8</sup> whereas refrigerants with a GWP of 150 or less are considered to be “low-GWP”. A credit based on refrigerant GWP may be helpful in encouraging the continued use of the lowest GWP refrigerants possible as

---

<sup>6</sup> See Alliance for Automotive Innovation Comments to U.S. Environmental Protection Agency on Proposed Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles (July 5, 2023) at 101 et seq. Available at Regulations.gov, Docket ID No. EPA-HQ-OAR-2022-0829-0701.

<sup>7</sup> S&P Global Mobility, U.S. light vehicle sales forecast by propulsion system design, January 2023.

<sup>8</sup> U.S. Environmental Protection Agency, Technology Transitions GWP Reference Table, <https://www.epa.gov/climate-hfcs-reduction/technology-transitions-gwp-reference-table>.

manufacturers explore new chemicals and blends for electric vehicle heat pump systems.

Similarly, design-based assessments can encourage minimization of refrigerant leakage, regardless to GWP.

Notwithstanding our preference for a credit-based system, if a separate leakage standard is adopted by CARB, a design-based calculation (e.g., SAE J2727, as is currently used for determining leakage) is preferable to a physical test.

e. Deemed to comply provision

Auto Innovators would support CARB adopting the EPA GHG regulations and including a deemed to comply provision for manufacturers in compliance with the EPA final rule (i.e., based on a specific date). Notwithstanding our position on the necessity of a backstop, this approach would provide such a backstop to ensure that future changes to the EPA regulations would not affect the California program since the EPA final rule would be incorporated in CARB regulations. However, this would dramatically streamline compliance with GHG regulations and allow manufacturers to focus on electrification efforts.

A deemed-to-comply provision is also a potential means of addressing the complexities and uncertainties associated with other states' adoption of California's regulations.

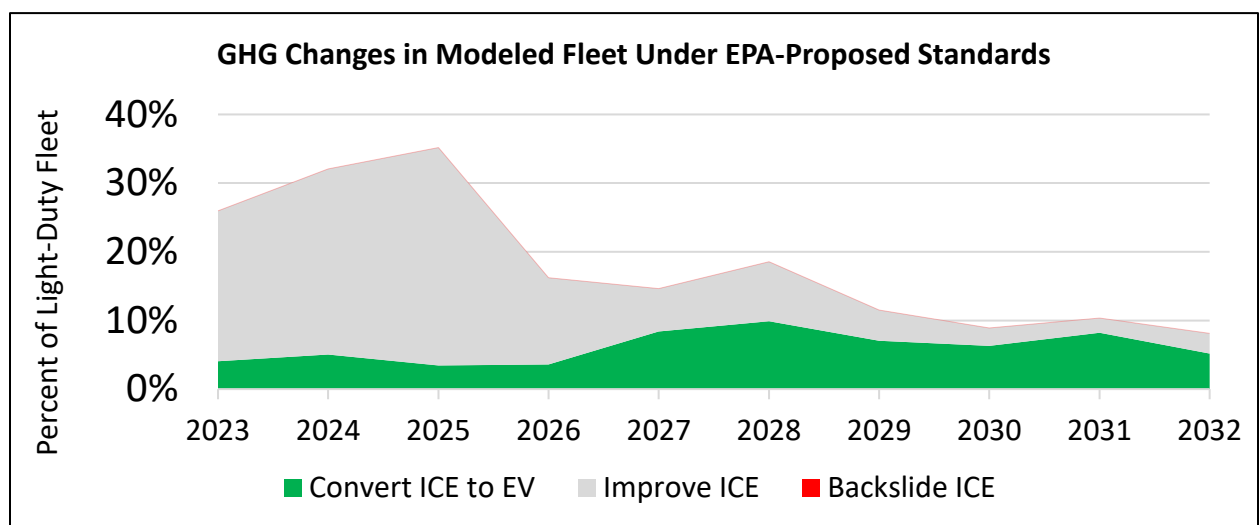
f. ICE GHG Emissions

At the November 15 workshop, CARB expressed concern that the transition to electric vehicles could result in increasing ICE vehicle greenhouse gas emissions.

Auto Innovators believes that action to separately address ICE GHG emissions is simply unnecessary. From an emissions perspective, the total fleet emissions are what is important, particularly for a global pollutant such as greenhouse gases. GHG regulations should reflect a wholistic view of emissions, being set at a level that maximizes the combined potential of ICE emission improvements and increasing application of zero-emission technology while remaining economically practicable (i.e., balancing the investments in and revenue streams of ICE and ZEV technologies.) Separately attempting to control ICE emissions in the automotive fleet while the overall average continues to be reduced only adds to regulatory complexity and related capital and

human resource expenses for ICEs that would detract and distract from the transition to EVs without commensurate climate benefits.

At the November 15, 2023, workshop, CARB showed EPA projections of ICE emissions under EPA’s proposed GHG standards stating, “Non-ZEV fleet average increases 15 g/mile.<sup>9</sup> This high-level overview does not appear to consider whether the projected ICE fleet average increases because relatively lower-emitting vehicles are converted to ZEVs or if the fleet average increases due to changes to the ICE vehicles themselves. Auto Innovators explored these scenarios by remodeling compliance with EPA’s proposed GHG standards using NHTSA’s CAFE Compliance and Effects Modeling System.<sup>10</sup> As shown below, we determined that although NHTSA’s model projected similar increases in the average emissions of ICE vehicles, the increase was attributable to the conversion of ICE vehicles to electric vehicles and that remaining ICE vehicles were either improved (i.e. emissions decreased) or stable.



Moreover, although it is mathematically possible, Auto Innovators also disagrees with the premise that there is any likelihood of a systematic increase ICE vehicle emissions as the fleet is electrified. First, such an increase would presume additional electrification above and beyond that already required to meet GHG and ZEV Mandate regulations.

<sup>9</sup> California Air Resources Board, November 15, 2023 Workshop, Slide 20.

<sup>10</sup> NHTSA’s model provides outputs that allow tracing of projected changes to individual vehicles. As of the time of these comments Auto Innovators has not determined whether a similar analysis can be performed using the output files provided by EPA.



Automakers are already concerned with the supply chain, infrastructure, and market challenges associated with the required (ZEV Mandate) and proposed (EPA GHG) accelerated transition to EVs. If the transition proceeds as envisioned by regulators (or proceeds even faster), ICEs will be less of a concern for a shorter time. If the transition encounters expected or unexpected challenges, manufacturers will be pressed to maintain or improve ICE vehicles beyond what the regulatory agencies are already considering to meet the standards. Moreover, automaker's customers expect at least the same, if not better fuel economy with each generation of vehicles, applying market pressure to maintain or improve the vehicles.

If CARB's concern is that manufacturers could preferentially deliver higher GHG emission variants of ICE vehicles to California given the ZEV Mandate's influence on fleet average GHG emissions, we see this as unlikely in a free market, or as a consumer choice issue in a constrained market. In a free market (where manufacturers are able to meet the ZEV Mandate without constraining ICE vehicle sales), manufacturers would logically offer the same ICE variants nationwide to provide consumers as many options to buy their product as possible and to avoid the inevitable dealer and state-by-state logistical issues that would occur by sending only certain vehicles to certain states. In a constrained market (where manufacturers must limit ICE sales to increase EV share), the ICE vehicles delivered would be those specifically ordered, or generally purchased by customers.

Nevertheless, if CARB proceeds to develop measures to separately regulate the GHG emissions of ICE vehicles, it should proceed with great caution. As described further below there are many pitfalls that need to be avoided. We provide the following thoughts:

- Avoid regulations which would ultimately require a different mix of ICE vehicle technologies than that required by federal regulations.
- Fleet average ICE emissions are expected to change as vehicles (or ICE powertrain variants of vehicles) are replaced by or converted to EVs. Such shifts in ICE average emissions may happen more quickly and become more severe the closer the fleet gets to 100 percent zero-emission vehicles because each removal or conversion of an ICE variant will remove an increasingly large share of the remaining ICE fleet. Managing an increasingly small ICE fleet will, at some point, become an impossibility. Focusing on individual vehicles may be useful, but also requires significant flexibility as described in the following bullet.

- If an ICE measure were to focus on individual vehicles, flexibility to meet unforeseen challenges, emerging requirements, and to continue satisfying customer needs and expectations is critical. For example, emissions might change with added configurations or subconfigurations; changes resulting from supply chain, customer satisfaction, or regulatory requirements; and new/redesigned models that are not directly comparable to prior models. Any regulation of individual vehicles must have sufficient flexibility to avoid unintended consequences and account for a wide variety of actions that are common and commonly handled on a fleet average basis.

#### 4. Conclusion

Again, we sincerely appreciate the opportunity to work with CARB on the update to ACC II regulations. Aligning the EPA and CARB requirements while streamlining the requirements, test procedures, and certification will be essential to accelerating the transitioning to zero emission vehicles. We look forward to working with CARB staff over the next couple of years.

Sincerely,



Dan Bowerson  
Vice President, Energy & Environment  
[dbowerson@autosinnovate.org](mailto:dbowerson@autosinnovate.org)

Copy: Jennifer Gress  
Mike McCarthy  
Belinda Chen  
Anna Wong  
Anna Scodel