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RE: Comments Regarding Amendments to Advanced Clean Cars II

July 26, 2024

Thank you for the opportunity to comment on the Advanced Clean Cars II (ACCII) amendment concepts presented at the June 26, 2024, workshop. The Union of Concerned Scientists (UCS) supports a strong ACCII regulation to protect public health and reduce emissions and many of the proposed revisions to ACCII would help further these goals.

We agree with the proposed modifications to align with EPA light-duty and medium-duty standards where appropriate and have the following recommendations for development of greenhouse gas (GHG) emissions standards to support state climate goals. We also agree with the proposed changes to labeling standards and the addition of charging communications interoperability requirements.

Recommendations on ACCII light-duty greenhouse gas curves

In the development of its light-duty vehicle greenhouse gas regulations, "EPA assessed ways to modify the shape of the footprint curves and the relative difference between cars and trucks to minimize the incentive for manufacturers to change vehicle size or regulatory class as a compliance strategy, which is not a goal of the program and could in turn potentially reduce the projected GHG emissions reductions."[1] In doing so, not only did the agency significantly flatten the curve to reduce upsizing, but it did so by returning to first principles' analysis beginning from an ICE-only fleet.[2]

While EPA did not directly provide all cutpoint, slope, and intercept information for the curves depicted, by following the procedures described, we have estimated the agency's ICE-only curves in Table 1. These curves could then be used by the California Air Resources Board to set an ICE-only standard that would be directly consistent with the federal greenhouse gas program.

[1] Section 1.1.3, EPA 2023. Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles: Draft Regulatory Impact Analysis.
[2] *Ibid.*, Figure 1-10.

TABLE 1. Passenger car (PC) and light truck (LT) ICE-only attribute curves (g/mi).[3]

PC Curves	EPA ICE-only	UCS (Adjusted LT Values)	NHTSA 2030 GHG equivalent	UCS (Adj. LT+ Stringency)
Minimum (g/mi)	185.0	185.0	135.4	167.0
Cutoff **(ft.²)**	45	45	41	45
Intercept (g/mi)	146.2	146.2	22.8	128.2
Slope (g/mi/ft.²)	0.860	0.860	2.747	0.860
Maximum (g/mi)	194.4	194.4	176.6	176.4
Cutoff **(ft.²)**	56	56	56	56

LT Curves	EPA ICE-only	UCS (Adjusted LT Values)	NHTSA 2030 GHG equivalent	UCS (Adj. LT+ Stringency)
Minimum (g/mi)	194.8	194.8	174.1	177.0
Cutoff **(ft.²)**	45	45	41	45
Intercept (g/mi)	146.2	85.7	43.1	67.7
Slope (g/mi/ft.²)	3.440	2.424	3.194	2.424
Maximum (g/mi)	280.6	250.8	279.5	232.8
Cutoff **(ft.²)**	70	68.1	74	68.1

However, additional considerations could further refine these curves, resulting in more protective greenhouse gas emissions standards consistent with CARB's regulatory authority.

Reducing the slope of the truck curve to better reflect additional power demands

In determining the shape of the light truck attribute curve, EPA appropriately based its shape on the passenger car curve, compensating for different features that distinguish a passenger car and light truck. However, EPA overestimated the impacts of those factors, and CARB should not repeat that error.

The first characteristic EPA used to distinguish a light truck is the addition of 4- or all-wheel-drive (4/AWD) to a crossover utility vehicle, an act which shifts a vehicle from the passenger car to light truck classification.[4] EPA estimated this value in a similar manner to previous work and arrived at a comparable but slightly reduced value for the difference in CO_2 values, likely resulting from improvements in all-wheel-drive packages that has diminished the powertrain losses associated with the driveshaft and differential. This is a reasonable estimate to use as an offset, *if* the offset is applied solely to the share of light trucks with 4/AWD, as EPA has done.[5]

The other additional criterion used by EPA to distinguish the light truck curve from the passenger car curve is the application of towing. Considering the maximum towing capacity, we were largely able to reproduce the slope of the curve for maximum towing capacity v. footprint independently. However, maximum towing capacity does not actually reflect the real

[3] These curves reflect greenhouse gas emissions from two-cycle lab tests plus the maximum credit for A/C efficiency only, under the presumption that CARB will appropriately eliminate all off-cycle/leakage credits.
[4] This is true provided the vehicle also meets the requirements of 49 CFR § 523.5(b)(2).
[5] "Based on this analysis, EPA's proposed footprint curves reflect an offset between the car and truck curves of 10 g/mi for ICE vehicles equipped with AWD." EPA Final RIA at 1-10.

towing capabilities of the fleet because the *maximum* towing capability for a large share of models is dependent upon additional equipment installation. As a result, EPA's regulatory curves reflect excess performance capability—while there may be variance for a vehicle's maximum tow capability based on powertrain and drivetrain, without a tow package (which may include a trailer hitch, changes to wiring to support connection to a trailer, and an upgraded rear axle), a vehicle's ability to tow may be significantly more limited (Table 2). With one ton or more difference between a vehicle's capability with and without the tow package, ascribing the maximum capability to all vehicles could allow more than 20 g/mi additional emissions based on the Agency's estimate of 9 g/mi per 1,000 pounds payload.[6]

TABLE 2. Maximum towing capacity for the 10 most popular light trucks[7]

Vehicle Make and Model	Maximum Towing Capacity (lbs.)	
	With Tow Package	Without Tow Package
Ford F-150	14,000	11,300
Chevy Silverado/GMC Sierra	13,300	9,900
Ram 1500	12,750	10,100
Toyota RAV-4	3,500	1,500
Honda CR-V	1,500	n/a
Toyota Tacoma	6,800	3,500
Jeep Grand Cherokee	7,200	3,500
Toyota Highlander	5,000	n/a
Chevy Equinox	1,500	n/a
Ford Explorer	5,600	3,000

In contrast to its application of the 4/AWD emissions factor, EPA did not apply its adjustment for towing-related emissions in a sales-weighted fashion. By instead applying the assumed maximum tow capability regardless of application of the towing package needed to support this, EPA again based its curve on outsized performance characteristics. CARB should thus adjust this curve to reflect only those features which are actually deployed. Recent survey data on Ford F-150 owners found that just 7 percent of them tow frequently, with 63 percent of them not towing at all,[8] suggesting that only a very small percentage of owners are likely to upgrade to the maximum tow package, even in the light-duty vehicle with the highest tow rating.

While this small subset of the market may seek additional towing performance, the additional emissions offset should be applied on a sales-weighted basis solely to the respective segment of the fleet that is utilizing the maximum tow package. For the remainder of the fleet, only the base tow capability should be considered. This will necessarily reduce the slope of the attribute curve as currently defined.

To reassess this slope, it is possible to utilize more recent sales data accompanying the recent Corporate Average Fuel Economy (CAFE) rulemaking from the National Highway Traffic

[6] EPA Final RIA at 1-12.
[7] These towing capacities reflect the trim variant with the highest towing packages, both with and without the vehicle's tow package. Many of these vehicles have engine options that offer lower towing capability.
[8] https://www.axios.com/ford-pickup-trucks-history

Safety Administration (NHTSA).[9] This data set readily includes tow rating and sales data at a granular level, dividing the fleet into over 4,000 trim packages for the nearly 300 different vehicle models. Using this data, we can similarly obtain a linear relationship between payload and footprint for light trucks, which yields a 5 percent lower change in associated emissions from a footprint of 45 to 70 $ft.^2$ than EPA's analysis.

This analysis is not the only reason to reduce the slope of the truck curve, however. While EPA looked at the payload of light trucks (LTs) as a function of footprint, the Agency did not similarly account for this relationship for passenger cars (PCs), something which is particularly important when such a large share of the PC fleet is made up of Small SUVs, which often do have some tow capability. While there is a much more reduced change in payload capability over the PC footprint range, it nonetheless does exist because the payload capability for SUVs in part reflects a range of power-based considerations for vehicles as they increase in size. The observed linear relationship is already largely captured in the slope of the PC curve designed by EPA, but by not accounting for its existence, EPA has inadvertently double-counted this slope, overstating the additionality of the payload-specific component of the truck curve. After correcting for this, the adjustment for trucks related to payload capability is nearly halved from EPA's original curves (Table 1).

Reducing the footprint cut point for light trucks based on pickup certification

EPA finalized the footprint cut point ("elbow") of the light truck attribute curve at 70 sq. ft., phasing it down over time. CARB should reduce it further, and faster, for its own ICE-only curves.

EPA mischaracterized the need for the reduction in the cut point, focusing on the average footprint of full-size pickups.[10] While it is true that the average footprint has increased, and there is a legitimate concern about incentivizing increasing size of the pickup fleet, a large part of the reason for this increasing footprint is related to the growing share of four-door pickups: for example, the Ford F-150 has shifted from a mix of standard/extended/crew cab split of 17/50/33 in 2012 to 5/30/65 in 2022,[11] which increases the average wheelbase significantly for a standard bed and, thus, the footprint. However, key to setting an appropriate cut point is not the average footprint but the relationship between the certified emissions from a full-size pickup truck and its footprint. Here, EPA has erred significantly.

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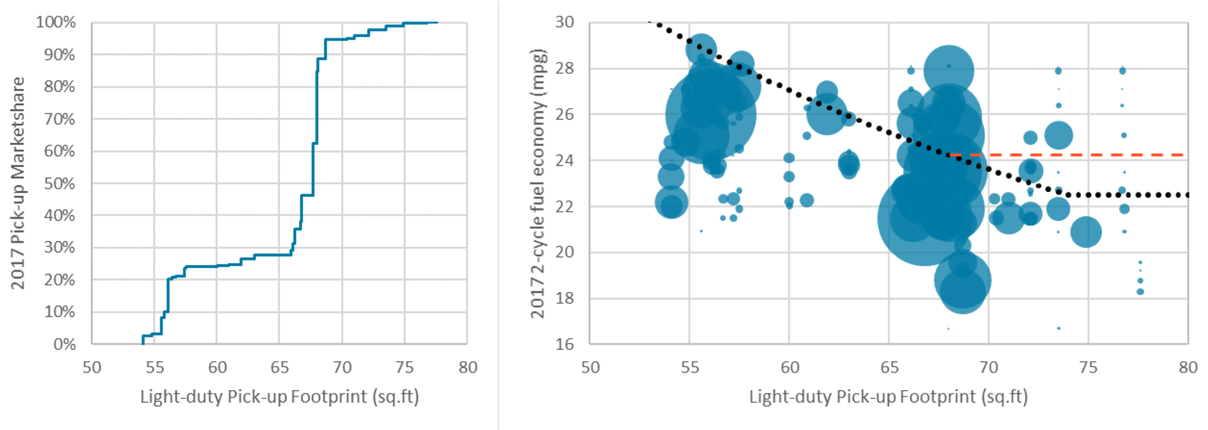
[9] Here we refer to the reference market data file accompanying the Volpe Compliance model, available at https://www.nhtsa.gov/file-downloads?p=nhtsa/downloads/CAFE/2024-FRM-LD-2b3-2027-2035/. While this data is based on preliminary MY2023 submissions from automakers, the results discussed are similar for the MY2022 data accompanying the NPRM, so we think they are reasonably dispositive of the underlying physics.
[10] Draft RIA at 1-14.
[11] Data from Wards Intelligence, "U.S. Domestic Light Trucks by Body Style, '22 Model Year" and "'12 Model U.S. Domestic Light Truck Production by Body Style."

FIGURE 1. 2017 light-duty pickup sales and fuel economy, by footprint[12]



(left) While one-quarter of pick-up sales are so-called "mid-size" pick-ups, the full-size pick-up market in 2017 was highly concentrated around a footprint of 66 to 69 square feet, with 65 percent of all pick-up sales falling in that narrow range. (right) While some larger pickups exist, those vehicles have virtually the same fuel economy and emissions because they have similar capability as the smaller vehicle, even if they have a larger bed and/or cab. This is indicated by the single "line" of dots for a given sub-model trim (e.g., the five 28-mpg pickups), which is in contrast to strong standards (dotted black line). By reducing the footprint elbow (red dashed v. dotted black lines), an updated standard would better reflect the capability of the mix of pickups.

The effect of increasing the footprint at which the cut point occurs is to relax the standard for full-size pick-up trucks, particularly those with longer beds and larger cabs. This does not reflect the level of technical feasibility or certification of those larger pick-ups, however. As can be seen in Figure 1, pick-ups of a given powertrain and towing package configuration are certified to virtually identical fuel economy and emissions standards, as indicated by the flat rows of dots in Figure 1 spanning a range of footprints. This suggests that these larger pickup trucks should have standards consistent with the smallest full-size footprint vehicles, as was identified when the curves were first designed.

CARB should set the cut point of its standards at the average footprint of full-size pickups with a standard cab and bed because any vehicles with a larger footprint will be certified at virtually identical emissions levels, and it is precisely this flattening that the position of the cut point of the curve is meant to reflect. This would correspond to a reduced value of 68.1 sq. ft. rather than 70 sq. ft. as EPA has used.

Comparison to recent fuel economy standards that do not deploy EVs to meet standards

NHTSA recently finalized its latest round of fuel economy standards, which includes MY2030 and later model years.[13] Under CAFE, NHTSA holds that NHTSA concludes that the levels of those standards are "the maximum feasible for these model years as discussed in more detail in Section VI of this preamble, and in particular given the statutory constraints that prevent

[12] MY2017 data taken from the CAFE Compliance and Effects Modeling System supporting the final MY2021-2026 CAFE standards. https://www.nhtsa.gov/filebrowser/download/178091.
[13] 89 FR 52540-954 (June 24, 2024).

NHTSA from considering the fuel economy of battery electric vehicles (BEVs) in determining maximum feasible CAFE standards."[14]

According to NHTSA's analysis, manufacturers are capable of complying with these standards with no deployment of electric vehicles whatsoever.[15] Assuming that these standards will be met exclusively through gasoline-powered ICEVs, it is possible to directly translate these standards into an equivalent greenhouse gas standard (Table 2).[16]

TABLE 2. Greenhouse gas curves for passenger cars(PC) and light trucks(LT) based on CAFE standards[17]

PC Curves	2027	2028	2029	2030	2031
Minimum (g/mi)	145.1	142.5	139.9	135.4	131
***Cutoff* (ft.²)**	41	41	41	41	41
Intercept (g/mi)	25.4	25.2	25.0	22.8	20.6
Slope (g/mi/ft.²)	2.919	2.860	2.803	2.747	2.692
Maximum (g/mi)	188.9	185.4	182.0	176.6	171.4
***Cutoff* (ft.²)**	56	56	56	56	56

LT Curves	2027	2028	2029	2030	2031
Minimum (g/mi)	182.6	182.6	179.3	174.1	168.9
***Cutoff* (ft.²)**	41	41	41	41	41
Intercept (g/mi)	46.3	46.3	45.7	43.1	40.6
Slope (g/mi/ft.²)	3.325	3.325	3.259	3.194	3.130
Maximum (g/mi)	292.3	292.3	286.8	279.5	272.2
***Cutoff* (ft.²)**	74	74	74	74	74

Beginning in MY2029, NHTSA standards increase in stringency by 2 percent per year for both cars and light trucks.[18] Since 2010, industry has improved the efficiency of its fleet at a rate of more than 2 percent per year, even as performance attributes like acceleration and power have improved.[19] It would therefore be appropriate for CARB to assume at least such a level of improvement over the time period it is considering.

Comparison to EPA modeling of non-BEV modeling pathway to compliance

In determining the feasibility of federal greenhouse gas emissions standards, EPA found that the most cost-effective pathway for manufacturers to comply with its final rules is to electrify their fleet. However, they also looked at sensitivity cases as part of that analysis, including one

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[14] 89 FR 52547.

[15] "When the standards are assessed relative to the no ZEV alternative baseline, the industry as a whole overcomplies with the final standards in every year covered by the standards. The passenger car fleet overcomplies handily, and the light truck fleet overcomplies in model years 2027–2030, until model year 2031 when the fleet exactly meets the standard." 89 FR 52835.

[16] Here we have also eliminated the availability of off-cycle credits, consistent with our recommendations elsewhere and the curves described in Table 1.

[17] As in Table 1, off-cycle credits have been eliminated from consideration here, in contrast to the finalized CAFE standards. This was done for simplify comparison to other curves.

[18] 89 FR 52546, Table I-1.

[19] "Between 2010 and 2023, standards increased substantially and the fuel economy of these vehicles has improved at a rate of around 2.4 percent per year over this period. However, this has not caused improvements in other attributes to slow down. Instead, weight (0.5 percent), horsepower (1.7 percent), and 0 to 60 time (-1.4 percent) all improved at faster rates than the previous period." 89 FR 52690.

modeling run which did not increase battery electric vehicles (BEVs) beyond what is already present in the fleet.[20] This analysis is both compliant with the federal greenhouse gas emissions standards through MY2032 and primarily drives that compliance with improvements to vehicles with an engine, emphasizing the degree to which such vehicles can be improved.

FIGURE 2. Certification levels achieved by combustion engine vehicles under EPA standards[21]

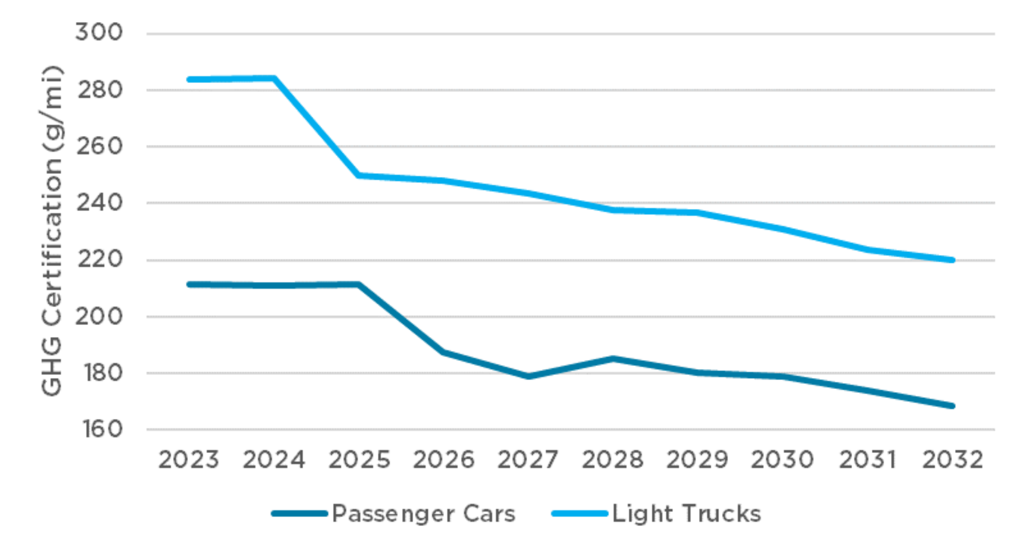

Figure 2 shows the direct certification values of those ICE vehicles. To include PHEVs in this analysis we have included only the ICE certification level, counted in proportion to its utilization according to the fleet utility factor (FUF) calculation phased in by the agency in 2031.[22] It is clear from this data that significant improvement beyond EPA's "ICE only" curves is possible in the timeframe of this rule.

Recommendation on level of improvement available for combustion engines

While it makes sense to utilize EPA's "first principles" approach to the design of the PC and LT curves, it is clear that the levels set by this redesign to not reflect the technological capabilities of vehicles with combustion engines in the timeframe of CARB's rule. This is evidenced by both EPA and NHTSA modeling of future vehicles.

To establish a recommended curve, we have first crafted ICE-only curves based on the same approach as EPA, adjusted to reflect more accurate reflections of LT capabilities and size. These are indicated in Table 1, second column. We have then adjusted the levels of those curves such that they are credit neutral with respect to NHTSA's MY2030 standards based on the CAFE model. This final curve is shown in the last column of Table 1.

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[20] This is referred in EPA's modeling as the "No Additional BEVs" sensitivity case.
[21] Here again the certification levels only reflect 2-cycle emissions and A/C efficiency credits to simplify comparison.
[22] This FUF calculation is an underestimate of the likely utilization of the ICE in a PHEV, as is evident in the BAR data used by EPA to adjust this utility factor (see Figures 3-40 and 3-41 in EPA's RIA). However, because this was what the agency finalized, it felt reasonable to use that in this exercise for simplicity.

TABLE 3. Representative certification levels for ICE-only passenger cars(PC) and light trucks(LT)[23]

PC GHG Cert.	EPA ICE-only	EPA MY2032 No Add'l BEVs	NHTSA MY2030 GHG Equivalent	UCS (Adj. LT + Stringency)
Minimum (g/mi)	185.0	--	135.4	167.0
Average (g/mi) [fp. = 44.66 ft.^{2}]	185.0	168.5	145.5	167.0
Maximum (g/mi)	194.4	--	176.6	176.6

LT GHG Cert.	EPA ICE-only	EPA MY2032 No Add'l BEVs	NHTSA MY2030 GHG Equivalent	UCS (Adj. LT + Stringency)
Minimum (g/mi)	194.8	--	174.1	177.0
Average (g/mi) [fp. = 54.37 ft.^{2}]	227.4	220.1	216.8	199.5
Maximum (g/mi)	280.6	--	279.5	232.8

To compare the relative stringency of the respective curves, Table 3 indicates the greenhouse gas certification level for the minimum, maximum, and average footprint for PCs and LTs. For an additional comparison to the relative level of stringency, we have also included the MY2032 average values modeled by EPA in its "No Additional BEVs" scenario (Figure 2). It is clear that our recommended ICE-only level of stringency falls within the technically achievable ICE levels of improvement identified by both federal agencies under their current standards.

Plug-in electric vehicle GHG emissions should be based solely on charge-sustaining mode operation

CARB is correct to use the charge-sustaining mode GHG emissions for plug-in electric vehicles (PHEVs) in the ICE-only fleet average standard. Any formulation that includes a 0 g/mi component for charge-depleting mode in conjunction with a utility factor would distort the ICE-only fleet average and reduce the effectiveness of the GHG standard to prevent backsliding of non-hybrid ICE vehicles.

If in the alternative CARB chose to include a utility factor-based PHEV emissions value for the ICE-only average calculation, the sales volume for PHEVs should also be reduced by the same utility factor in the calculation of the average emissions to reflect the proportion of ICE usage in both the emissions and sales volume.

A fleet-averaged greenhouse gas emissions standard (MY2030-2035)

Currently, both federal and state light-duty vehicle emissions standards are set as a fleetwide average, rather than solely for combustion engine vehicles. While CARB already incentivizes deployment of zero-emission technology through its ZEV program, continuing a fleet-average

[23] As in all curves and datasets shown, off-cycle credits have been eliminated from consideration here.

approach may both offer a guarantee against emissions backsliding resulting from ICE vehicles and encourage any PHEVs in the fleet to exceed the minimum level of range set under the ZEV program. Because ZEV targets are already determined through the ZEV program and such vehicles are treated as 0 g/mi under a GHG program that excludes off-cycle credits and A/C leakage credits, crafting a fleet-average standard is a simple mathematical exercise, once it is understood the levels of achievement possible for ICE vehicles (Table 4).[24]

TABLE 4. Fleetwide greenhouse gas curves for passenger cars (PC) and light trucks (LT)[25]

PC Curves	2030	2031	2032	2033	2034	2035
Minimum (g/mi)	64.8	52.8	43.8	34.7	25.7	16.7
***Cutoff* (ft.²)**	45	45	45	45	45	45
Intercept (g/mi)	49.7	40.5	33.6	26.7	19.7	12.8
Slope (g/mi/ft.²)	0.334	0.272	0.225	0.179	0.132	0.086
Maximum (g/mi)	68.5	55.7	46.2	36.7	27.2	17.6
***Cutoff* (ft.²)**	56	56	56	56	56	56

LT Curves	2030	2031	2032	2033	2034	2035
Minimum (g/mi)	68.7	55.9	46.4	36.8	27.3	17.7
***Cutoff* (ft.²)**	45	45	45	45	45	45
Intercept (g/mi)	26.3	21.4	17.7	14.1	10.4	6.8
Slope (g/mi/ft.²)	0.94	0.766	0.635	0.504	0.373	0.242
Maximum (g/mi)	90.3	73.6	61	48.4	35.9	23.3
***Cutoff* (ft.²)**	68.1	68.1	68.1	68.1	68.1	68.1

Fleetwide GHG standards that include ZEVs should use conservative, real-world utility factors for PHEVs

If a fleetwide GHG standard is set under ACCII, CARB should adopt a fleet utility factor (FUF) for plug-in hybrid vehicles that reflects the best available real-world data. CARB has presented data from the Bureau of Automotive Repair (BAR) that clearly shows that both the SAE 2841 FUF and the FUF adopted by EPA for the MY27+ rule overestimate the fraction of driving in charge-depleting (CD) mode compared to actual operation.

Prior to the availability of PHEV models and therefore without data on their actual usage, it was rational to use the Fleet Utility Factor as formulated in SAE 2841 in 2010 as the basis for estimating the percentage of operation without ICE engine use occurring in CD mode. However, there is now a significant body of real-world data that can be used to develop utility factors that more accurately reflect the actual tailpipe CO_2 emissions from PHEV operation. Because a zero gram per mile value for operation in CD mode is used, the choice of utility factor will play an important role in determining the compliance value for PHEVs in a fleetwide standard.

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[24] These standards assume that manufacturers will maximize the allowed sales of PHEVs under CARB's program, and that those vehicles will have a FUF of 0.5, which corresponds to the UF of a vehicle with a charge-depleting range of 40 miles under EPA's adjusted FUF factor. If CARB were to deploy its own UF that better matched the available data, the GHG levels of these curves would be adjusted upwards, owing to a reduction in electric miles assumed for PHEVs.

[25] As in Table 1, off-cycle credits have been eliminated from consideration here, in contrast to the finalized CAFE standards. This was done for simplify comparison to other curves.

The BAR data that was submitted by CARB to EPA from onboard diagnostics devices (OBD) that shows the real-world utilization of PHEVs in CD mode. The data show that all PHEV models in the dataset have actual utility factors lower than the current (SAE 2841) FUF. In some cases, the BAR data show real-world utility factors that are nearly 50% lower than the current FUF values. For example, the BAR data show the Honda Clarity PHEV as having a real-world utility factor of 0.359 while the SAE 2841 method gives the Clarity a FUF of 0.676. These results show that the SAE2841 method is a poor estimator of actual vehicle usage. If CARB uses a GHG standard that includes a FUF, this factor should be consistent with the actual in-use data from BAR.

A curve that correctly credits PHEV reductions in emissions will not disincentivize adoption of PHEVs, but instead will provide a lower incentive for the partial elimination of tailpipe emissions and a greater incentive for reducing emissions when under engine power. Even with a lower FUF, the ability to reduce the compliance emissions values by use of zero grams per mile for the CD mode phase will provide a significant incentive for a manufacturer to choose a PHEV powertrain over a non-plug-in hybrid. Choice of a lower FUF curve will at the same time ensure that there is a sufficient incentive to encourage the continued development and deployment of true zero tailpipe emission technologies, longer range PHEVs, and efficient ICE vehicles.

It has been proposed that future models with longer electric range and greater all-electric performance will lead to future real-world performance that increases the FUF. This is not supported by the available data. The one of the longest electric range PHEVs currently available is the Toyota RAV4 Prime. The RAV4 Prime data from the BAR dataset show a real-world utility factor of 0.35, significantly lower than the FUF in the EPA rule for a 42-mile AER vehicle (0.50). CARB should also consider the possibility that purchasers (especially in the secondary market) may buy a PHEV without the ability to plug in because of incentives that make the purchase more attractive relative to a non-plug-in vehicle, again increasing the use of the ICE in real-world PHEV driving.

Support for battery labeling and State of Health testing

We support the implementation of required battery labels to provide better information to those repairing, reusing, repurposing, and recycling vehicle batteries. We recommend that CARB expand the digital identifier requirement to create a *unique digital identifier* (accessible via a QR code) for each individual battery. This identifier will enable a system that compiles information already on the battery label, information on proper handling at end of life, and the ability to trace if the battery eventually becomes reused, repurposed or recycled. The availability of this information will help determine if proper end of life processes is occurring, such as recycling. Recycling is essential to create a sustainable, resilient, and local supply chain for the manufacturing of EV batteries.

We recommend that ACCII require the ability and standardization of battery testing not only when it is in the vehicle, but also after it is removed to better enable battery reuse, repair, and repurposing. The required ability to read battery state of health when the battery is in the EV is a great start. Having battery heath metrics will further the ability for vehicle owners, dismantlers, and others handling the retired vehicle, if the battery should be assessed for reuse or repurposing (a higher value product than a battery going to recycling). We recommend this requirement be expanded to when the battery is outside the vehicle because in many instances the battery is already removed when it is purchased and then assessed for reuse and repurposing, making determination of the battery state of health more difficult.

Amendments to ACCII are important to ensure that GHG and criteria pollutants are reduced as quickly as possible to protect public health and the environment. We look forward to working with CARB in this process.

Sincerely,

Dave Cooke, PhD
Jessica Dunn, PhD
David Reichmuth, PhD

Clean Transportation Program
Union of Concerned Scientists