ACEEE Comments on EPA's Proposed Determination
Docket ID No. EPA-HQ-OAR-2015-0827
December 30, 2016

Introduction

The American Council for an Energy-Efficient Economy (ACEEE) submits these comments in response to EPA's Proposed Determination on the Appropriateness of the Model Year 2022-2025 Light-Duty Vehicle Greenhouse Gas Emissions Standards under the Midterm Evaluation (PD), issued in November 2016.

Through the analysis laid out in the draft Technical Assessment Report (TAR), the National Highway Safety Administration (NHTSA) and EPA demonstrated that the standards set out in the 2012 joint NHTSA/EPA rulemaking remain achievable and cost-effective. This is true despite the reductions in oil price projections, in part because the benefits of the standards as initially projected so far outweighed the projected costs, but also due to the availability of emerging technologies not included in the compliance packages the agencies constructed in the 2012 rulemaking.

In the PD, EPA responds in detail to the comments submitted on the draft TAR and, in many instances, improves upon its analysis by accepting recommendations made in those comments. These changes do not alter the conclusion of the draft TAR that the standards are achievable and cost-effective. EPA acknowledges in the PD that standards more stringent than those in place for MY 2022-2025 are feasible (p.ES-7). However, citing the importance to the industry of long lead time and the need to support ongoing activities of NHTSA and the California Air Resources Board relating to the standards, EPA proposes to leave the standards unchanged for those years.

In comments on the draft TAR, ACEEE discussed the importance of considering stronger standards for MY 2022-2025 and the availability of technologies to achieve stronger standards.[1] Our comments also noted that Volpe model runs indicate that the maximum net benefit from the standards would occur at rates of improvement higher than those required by the standards. Indeed, as we noted in an addendum to our TAR comments, the rate of maximum net benefits exceeds 9 percent per year according to the Volpe model runs.[2] While we recognize that the Volpe model does not apply directly to EPA's GHG emission standards and that the standards need not be set at levels that maximize net benefits, we do believe this is compelling evidence that the optimal level for the standards could be substantially higher than the level of the adopted standards for MY 2022-2025.

However, ACEEE acknowledges the validity of the factors cited by EPA in the PD to explain its proposed decision to reaffirm the standards already in place. We support those standards, which will deliver major reductions in GHG emissions and energy use relative to a no-action scenario. At the same time, we appreciate EPA's discussion of the need to continue steadily reducing vehicle emissions rates beyond 2025, and specifically its observation that "maintaining the 4.5 percent annual stringency rate of improvement reflected in the current National Program will yield long-term GHG emissions reductions

[1] ACEEE Comments to the Environmental Protection Agency and the National Highway Traffic Safety Administration on the Technical Assessment Report; Docket ID No. EPA-HQ-OAR- 2015-0827 and/or Docket No. NHTSA-2016-0068. September 26, 2016.
[2] Addendum to ACEEE Comments to the Environmental Protection Agency and the National Highway Traffic Safety Administration on the Technical Assessment Report. November 17, 2016.

close to the upper bound IPCC projection of what is necessary to maintain the global temperature rise to 2 degrees C" (p.59).

Below we primarily discuss issues regarding the agencies' analyses for the midterm evaluation raised by various parties in their comment on the draft TAR or elsewhere. All references are to EPA's PD unless otherwise noted.

Technology Effectiveness

Alliance of Automobile Manufacturers ("Alliance") discussed the feasibility of the standards at length in its comments on the draft TAR. Their critique of the agencies' compliance demonstration relies heavily on an analysis conducted for the Alliance by Novation Analytics.[3] The Alliance states: "The results of the [Novation] study, shared with the Agencies and CARB, show that the MY2021 and MY2025 targets cannot be met with the suite of technologies at the deployment rates projected by the Agencies in the 2012 FRM. It concludes that more technology will be needed than predicted by the Agencies."[4] The Alliance goes on to say: "Novation Analytics concludes, '[m]oving the entire industry to the current best spark-ignition powertrains would provide compliance only to MY 2020. Advanced [spark ignition] SI technologies, unproven in production, and/or high rates of electrification will be required by MY 2025.'"[5] The Alliance then argues that hybridization and electrification are expensive, and that standards requiring large-scale adoption of these technologies present consumer acceptance challenges.

In the technical support document for the PD, EPA points out basic flaws in Novation analysis, effectively rebutting it.[6] We concur with EPA's objection that Novation improperly limits advances in efficiency technologies in the following ways:

- Assumes a given technology can be no more efficient on average in 2025 than the best implementations of that technology in 2014. This is an arbitrary constraint that clearly does not apply for all technologies. In particular, there will be technologies available in 2025 that had not entered the market in 2014. Novation claims to recognize the concept of continuous improvement and recognizes that best-in-class efficiency may increase over time,[7] but their analysis nonetheless caps average future efficiency by technology implementations in 2014 vehicles.
- Adopts plausibility tests for engine efficiency in 2025 that are not even valid for today's engines and will become less valid over time. For example, the plausibility test that the ratio of test cycle efficiency to peak efficiency should not exceed 0.78 is violated by engines now in prototype. Lowering this ratio is precisely the objective of much ongoing work on conventional SI engines. A second Novation plausibility test based on city-to-highway engine efficiency ratio is violated by MY 2016 conventional vehicles.

EPA found possible merit in two points in Novation's critique, namely the need to acknowledge variations in technology effectiveness based on performance specifications and the need for quality control (QC) checks on the powertrain efficiency of vehicles in the compliance package. For the PD, EPA

[3] Novation Analytics Final Report for Technology Effectiveness—Phase I: Fleet Assessment (version 1.1). October 19, 2015.
[4] Alliance draft TAR comments, p.iii.
[5] Ibid, p.ix.
[6] EPA Technical Support Document for the PD. EPA-420-R-16-021. November 2016, p.2-279.
[7] Novation, p.13.

undertook substantial additional analysis to further investigate those topics. In order to capture variations in power train technology effectiveness, EPA i) altered its vehicle classification to reflect variations in power-to-weight ratio and road load power[8] and ii) used a power-to-weight correction factor within each class to adjust the effectiveness values produced by the lumped parameter model before those values were input to OMEGA.[9] To address the QC point, EPA backed out power train efficiency for a representative set of vehicles in the compliance package and found that the resulting efficiencies were in fact reasonable. The agency's results support the conclusion that the 2025 compliance scenario presented in the PD is plausible.

Overall, it should be noted that a "top-down" analysis such as that offered by Novation should cast doubt on a detailed, simulation-based analysis such as that conducted by EPA only to the extent that the top-down analysis demonstrates that the simulation-based approach violates fundamental principles. The Novation report does not make any such demonstration, but rather imposes artificial constraints on how far and how fast technology can advance. For example, "if modeling of a vehicle with a spark ignition, non-electrified powertrain results in a projected conversion efficiency exceeding the efficiency of the current best-in-class full hybrid system, the spark ignition projected performance result would be deemed non-plausible."[10] A plausibility test of this type—that the efficiency of technology X in the future cannot exceed that of technology Y today—is at best a rule of thumb, not a fundamental constraint, and is entirely inadequate to respond to a fully specified and modeled technology package that demonstrates such efficiencies. The constraints adopted by Novation, which are based on properties of vehicles in the market today, are particularly problematic in that they reflect precisely the power train efficiency limitations that current technology development efforts are designed to overcome. The role of the vehicle GHG standards is to help drive this development further and faster than market forces alone might take it, while shielding the auto industry from adverse economic impacts---including loss of competitiveness in global markets--and providing net benefits to consumers and society.

It is interesting to note that, with all the flaws of the Novation analysis, Novation's findings do not at the end of the day contradict the agencies' conclusions regarding the technologies required to meet the 2025 standards. While Novation's presentation of its results to the agencies indicates that high penetration of full hybrids needed for compliance in 2025,[11] this is only one of four 2025 compliance scenarios the full Novation report presents. Novation's Scenario C shows a mix of powertrain technologies that requires substantially less electrification than the EPA PD compliance package requires, as shown in table 1. Plug-in vehicles appear in roughly the same percentages in the EPA and Novation scenarios, while EPA shows substantial mild hybrid penetration against Novation's zero hybrid penetration. Novation's conventional vehicles rely very heavily on turbodownsized engines at 24 bar BMEP, while EPA relies on a combination of turbodownsized engines (largely 18 bar) and Atkinson cycle engines. Novation's scenarios are clearly constrained by their limited number of technology options, but the conclusion nonetheless is that the role of advanced technologies is in fact at least as great in Novation's Scenario C as in EPA's compliance scenario.

[8] TSD, p.2-274.
[9] Ibid, p.2-280.
[10] Novation, p.7.
[11] Novation Analytics, Trade Association Technical Briefing to California Air Resources Board, May 17 2016, slide 13.

Table 1: Powertrain Technology Penetration to Meet 2025 Standards

	SI NA	Atkinson Cycle	SI TC	Advanced SI TC (24 bar)	Mild Hybrid	Full Hybrid	Battery Electric/ PHEV
Novation Scenario C: Cars	5%			87%			8%
Novation Scenario C: Light Trucks	5%			93%			2%
EPA PD Primary Analysis: Cars		31%	22%	4%	9%	4%	6%
EPA PD Primary Analysis: Light Trucks		22%	33%	9%	29%	0%	3%

Source: Novation 2015 Figures 49 and 50; EPA PD Table C.18.
Note: Table reflects Novation's 90th percentile efficiencies and the EPA 2008 Baseline.

This further undermines the claim that the Novation analysis demonstrates fundamental flaws in the agencies' analysis and, given Novation's failure to properly account for technology advances, instead supports the conclusion that more stringent standards than those in place for MY 2022-2025 could be achieved.

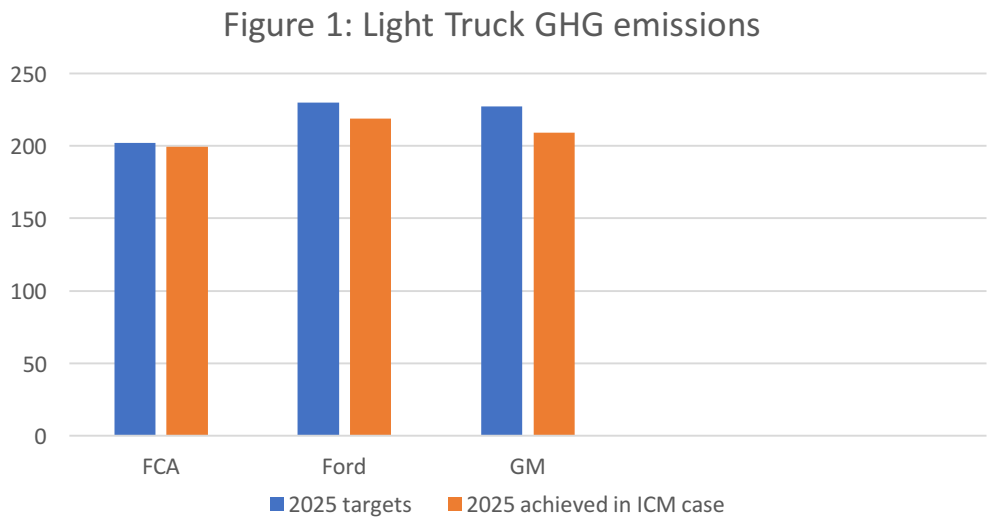
Feasibility of the standards for light trucks

In setting fuel economy and greenhouse gas standards for MY 2017-2025, the agencies incorporated several features specific to light trucks, and in particular full-size pickups, to respond to industry concerns that these vehicles might present special challenges to increased fuel economy and reduced greenhouse gas emissions. Notwithstanding these special provisions, the Center for Automotive Research (CAR) released a report in October 2016 focusing on potential difficulties light truck manufacturers face in meeting the new standards and the consequent adverse economic implications.[12] The CAR report perpetuates misconceptions about the standards and in particular how they affect light trucks. Here we address some of the main issues raised in the report.

First, CAR claims that the agencies' action shifting higher fuel economy models from light truck to passenger car classification lessens the ability of manufacturers to meet light-duty truck standards, thus putting greater pressure on vehicle manufacturers to increase fuel economy for body-on-frame trucks. Similarly, this shift is alleged to hinder automakers' ability to meet the car standards. However, the current classification has been in place in the fuel economy and greenhouse gas emissions standards for MY2012-16, and the standards for both cars and trucks were set accordingly, with full acknowledgement and consideration of this classification. Accordingly, both car and light truck fuel economy targets were set lower than they would have been under the old classification scheme.

CAR also asserts that technology costs to meet the body-on-frame duty cycle required may be excessive and in particular that it will be challenging to substantially lower the coefficient of drag or add lower rolling resistance tires to these vehicles due to their unique duty requirements. However, the agencies' compliance packages demonstrate in detail how these vehicles can meet their targets. In fact, in EPA's compliance scenario, the light truck fleets of the U.S. manufacturers over comply, as shown in figure 1.

[12] CAR "The Economic Implications of Potential NHTSA and EPA Regulatory Revisions on U.S. Light Truck Sales and Manufacturing." October 2016.



Source: ACEEE using data from draft TAR 2016

The CAR report mentions differences in duty cycles for body-on-frame pickups but did not specify the differences or provide any supporting data. Many pickups are used as personal vehicles. Moreover, in the course of the recent rulemaking for the Phase 2 heavy-duty vehicle fuel efficiency and greenhouse gas standards, no one produced evidence of a markedly different duty cycle even for heavy-duty pickups. In addition, vehicle compliance will be determined through 2-cycle testing, not on test cycles specific to vehicle type.

CAR also claims mid-sized pickup trucks will have difficulty meeting the standards throughout the regulation time period. It notes that these trucks are not on the flat part of the footprint curve, and thus face a greater challenge in meeting the standards.[13] In reality, trucks on the flat part of the curve have a greater challenge because their fuel economy target does not go down as footprint goes up. Note also that the middle part of the curve experienced a lower rate of increase in fuel economy requirement than cars did in 2017-2021, so they should be ahead of the curve now and have technologies available to meet or exceed their targets going forward. Also, mid-sized pickups do not have the same towing and payload capacities that body-on-frame pickups have and are not likely to have a harder time than other vehicles in increasing fuel economy. Furthermore, over compliance of light trucks as a whole in EPA's compliance scenario, as shown in figure 1 for domestic manufacturers, indicates substantial flexibility through averaging. Other trucks can be used to compensate for any shortfall in improvement in mid-size pickups, which constitute a much smaller percentage of trucks than large full size pickups do. For example, out of 2.3 million pickups sold in 2014 about 2.0 million trucks were large pickups.[14]

Finally, CAR states that meeting stringent CAFE standards will require improvements in powertrain efficiency that will likely add cost, and may adversely impact towing and drivability characteristics. While adding fuel efficient technologies generally will add to vehicle cost, that additional cost will be recovered through fuel savings in the early years of ownership. Moreover, the agencies have taken care to maintain (and in some cases, improve) performance when adding fuel efficiency technologies to

[13] CAR, p.22.
[14] Alliance of Automobile Manufacturers, "Cars Move America," http://www.autoalliance.org/files/2016_CarsMoveAmerica-Report_ForWeb.pdf. p.20.

construct their compliance scenarios. Neither the agencies' analysis nor the recent experience of real-world improvements in light truck fuel efficiency bear out this concern.

Consumer Impacts

1. New vehicle expenditures

The PD discusses several aspects of the issue of vehicle affordability that we do not comment on in detail here. However, all of these issues relate directly or indirectly to new vehicle prices, a subject on which misinformation abounds, so we underscore some key facts in this section.

When adjusted for inflation using the U.S. Bureau of Labor Statistics' consumer price index for all urban consumers (CPI-U),[15] the average price that consumers paid for new cars as reported by the U.S. Bureau of Economic Analysis[16] has decreased by 16% since 1992, as shown in figure 2.

Figure 2: Average New Car Expenditure

Source: ACEEE, using price data from the BEA and CPI-U from the BLS.

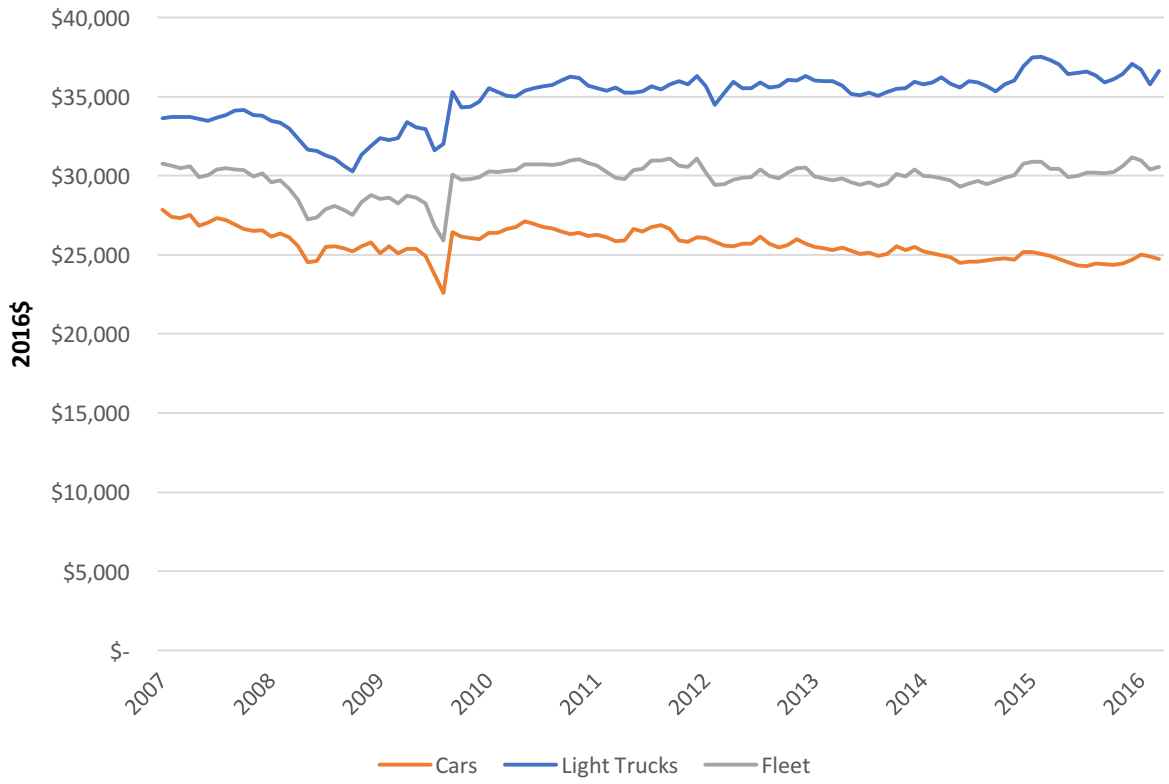
[15] U.S. Bureau of Labor Statistics (BLS), Consumer Price Index for All Urban Consumers: All Items [CPIAUCSL], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/CPIAUCSL. Accessed December 21, 2016. There is a strong argument that the CPI-U better reflects for the true consumer expenditure on automobiles over time. The GDP price index (deflator) does not include price changes of imported goods, whereas CPI-U includes all consumer items. In 2015, 43% of vehicle sales were imports (Davis, et al., Transportation Energy Data Book: Edition 35, Oak Ridge National Laboratory 2016), representing hundreds of billions of dollars of consumer spending not accounted for in the GDP price index. Adjusting historic vehicle prices using CPI-U shows a larger decrease in price over time than adjusting by the GDP price index shows. Hence EPA's vehicle price analysis using GDP (p.A-70) is conservative.

[16] U.S. Bureau of Economic Analysis (BEA), "Table 7.2.5S. Auto and Truck Unit Sales, Production, Inventories, Expenditures, and Price". http://bea.gov/iTable/iTableHtml.cfm?reqid=12&step=3&isuri=1&1203=2055. Accessed December 21, 2016.

BEA data on expenditures for light trucks is not available throughout this period, but expenditure data for all light-duty vehicles is available for more recent years. EPA notes (p. A-71) that both the Alliance and Fiat Chrysler claim that vehicle prices are increasing, presumably because they have not adjusted for inflation. The Alliance commissioned a Defour Group paper that states that new vehicle prices have increased by 10.9% since October 2008, based on the CPI for new vehicles.[17] Because 2008 fell in the midst of a major recession, it is not a sound starting point for analyzing price trends. Moreover, Defour neglects to compare the vehicle CPI to the CPI-U for all items, which has increased by 11.5% since October 2008.[18] Thus, the rate of inflation for light duty vehicles is slower than that of all consumer items.

Since the recession, the average expenditure on cars has decreased, while the average expenditure on trucks has increased, as shown in figure 3. The average expenditure for all vehicles increased slightly, due in part to the increasing share of vehicle purchases that are light trucks, which cost more.

Figure 3: Average Vehicle Expenditure



Note: Expenditure data from BEA 2016, adjusted by ACEEE using CPI-U (BLS 2016a)

[17] Defour Group. "The Impact of Future Fuel Economy Standards on Low Income Households." September 21, 2016. https://www.regulations.gov/contentStreamer?documentId=NHTSA-2016-0068-0072&attachmentNumber=10&disposition=attachment&contentType=pdf p.12.

[18] U.S. Bureau of Labor Statistics (BLS). 2016a. Consumer Price Index for All Urban Consumers: All Items [CPIAUCSL], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/CPIAUCSL. Accessed December 21, 2016.

ACEEE finds that holding the fleet mix constant at the 2009 level using the BEA 2016 data would have reduced fleet average expenditure in 2016 (through August) by $1,331. Alternatively, correcting for the shift in mix of vehicle sold, average expenditure on vehicles has increased by less than $1,000 since the recession.

2. Effects on low-income households

Regarding the question of whether or not increased fuel economy standards are regressive (p. A-66), substantial credible research and evidence indicates that this conclusion cannot be supported. In general, it is well understood that low-income households tend to spend a larger share of their income on gasoline than higher-income households. Fuel efficiency standards that reduce gasoline purchases by low-income households are progressive, all else being equal. The critical questions are then whether fuel economy standards increase expenditures on car purchases by low-income households, and to the extent that they do, whether this increase is larger than the savings in gasoline expenditures. The PD cites several studies on these questions and concludes that there is insufficient evidence to support regressivity.

A recent working paper by Davis and Knittel[19] finds that, when effects on both new and used vehicle prices are taken into account, CAFE standards are mildly regressive, costing the lowest income decile roughly 0.4% more of household income than the highest income decile. Notably, the study did not include the value of the fuel savings that CAFE standards generate. Because gasoline expenditures cost low income households substantially more of their household income than they cost high income households, the reduction in fuel expenditures that will result from the proposed CAFE standards would more than offset the mild regressivity of auto price increases due to the standards found by Davis and Knittel. By finding that the auto price regressivity of CAFE standards is so low, Davis and Knittel's research adds further evidence to reject the notion that the standards will be regressive and lends strong evidence to the contrary.

Other limitations of the Davis and Knittel paper reduce the relevance of the paper to the standards under review in the PD. In particular, the authors note: "[O]ur analysis is short-run in that we do not model the impact of fuel economy standards on innovation." Given that promoting innovation is one of the primary aims of the standards program, this is indeed an important limitation of the analysis in this context.

Program credits, incentives, and flexibilities

1. Off-cycle technologies

EPA notes that industry commenters requested multiple expansions of off-cycle technology credits, and that the Alliance claimed "[t]he industry needs the off-cycle credit program to function effectively to fulfill the significant role that will be needed for generating large quantities of credits from this type of emission reduction" (p.A-103). However, as the EPA has demonstrated once again in the PD, the claim that manufacturers will need large quantities of off-cycle credits to comply with the standards is incorrect. Furthermore, as we commented in response to the draft TAR, requested changes to the off-

[19] Davis, L. and C. Knittel. "Are Fuel Economy Standards Regressive?" E2e Working Paper 026. December 2016. http://e2e.haas.berkeley.edu/pdf/workingpapers/WP026.pdf.

cycle credit program could undermine both the credibility of the off-cycle credits and the effectiveness of the standards overall. We urge that EPA continue to observe the following principles in considering whether to grant credits for off-cycle technologies:

- The purpose of off-cycle credits is to bring into the market new technologies that reduce emissions and fuel consumption.
- Off-cycle credits should be awarded only based on a credible technical demonstration that the technologies will provide benefits in the real-world.
- To generate credit, a technology must reduce emissions from the vehicles receiving the credit.

EPA notes that it is proposing to determine that the MY 2022-2025 standards remain appropriate and therefore does not propose any changes to the off-cycle credit program (A-104). Nonetheless, EPA explains the rationale for several off-cycle credit features questioned in industry comments, including the menu credit values for stop-start technology, for which EPA cites its "conservative" estimate of benefits (p.A-105). ACEEE takes this opportunity to reiterate our comment to the docket for the 2013 Mercedes-Benz petition, in which we pointed out that EPA's and Mercedes' calculation of percent idle time in the combined cycle was incorrect, because they neglected to convert from time-based to distance-based cycles.[20] The relevant section of our comments is:

> The combined test is created using a weighted average (55%/45%) of the city and highway cycles on a distance basis. The percent idle in the combined cycle must be calculated on a time basis to give the correct result. The city/highway weightings are quite different on a time basis, because the average speed on the highway cycle (48.3 mph) is more than twice the average speed on the city cycle (21.2 mph). Therefore, the fraction of combined cycle time spent on the city cycle is:
>
> city fraction (time) = (.55 / 21.2 mph) / ((.55 / 21.2 mph + .45 / 48.3 mph) = 0.74.
>
> Given that idle time is 19% on the city cycle and 0.5% on the highway cycle (2017–2025 light-duty rule Technical Support Document at 5–86), idle time on the combined cycle is:
>
> 0.74 * 19% + (1-0.74)*0.5% = 14.1%,
>
> rather than 10.7% as assumed in the Mercedes petition.

In responding to this comment, EPA stated: "While this argument has some merit, this would create an inconsistency between the gram per mile CO2 standards in the 2017-25 GHG Rule generated from the 2-Cycle Tests, since they also use the distance-based weighted average of 55 percent city and 45 percent highway, and the credit values in the off-cycle program. Therefore, we did not incorporate this comment in the calculations nor consider this comment in the decision on the Mercedes application."[21] However, this same calculation error on EPA's part implies that the menu credit value for stop-start is by no means conservative; in fact, the correction would essentially eliminate the justification for any off-cycle credit for start-stop systems. Whatever the merits of EPA's response to ACEEE's comment in the context of the Mercedes-Benz petition, EPA should now correct the error, rather than perpetuate it. This would require acknowledging that the menu credit is in fact not warranted and adjusting the menu accordingly at the earliest opportunity.

[20] "ACEEE Comments on Alternative Method for Calculating Off-Cycle Credits for Mercedes-Benz Vehicles Under the Light-Duty Greenhouse Gas Emissions Program: Docket EPA-HQ-OAR-2013-0643." October 31, 2013.
[21] "EPA Decision Document: Mercedes-Benz Off-Cycle Credits for MYs 2012-2016." EPA-420-R-025. September 2014, p.14.

2. Plug-in and other advanced technology vehicles

The Alliance argues that EPA should count the cost of ZEVs in calculating compliance costs for the federal program, claiming that "the Draft TAR violates the basic tenets of cost-benefit analysis, counting the GHG reductions that result from the ZEV Program as part of the benefit of the federal GHG program, but ignoring the significant associated costs."[22] As EPA notes, the Alliance is incorrect in asserting that EPA attributes the benefits of the ZEV program to the federal standards. EPA includes ZEVs in its reference fleet, and consequently attributes neither benefits nor costs of ZEVs to the federal program.[23] This treatment is both consistent and appropriate, since the ZEV program is a separate program of the state of California.

The Alliance requests that EPA use non-zero upstream accounting for EVs in its compliance analysis for any manufacturers expected to reach the cap that triggers upstream accounting.[24] This would ensure that the compliance benefits of EVs to manufacturers are not overstated. In the PD, EPA does this and in fact goes further, counting upstream for all EVs in 2025 (TAR p. A-118), which makes it harder for manufacturers to reach the standards through EV production. EPA's approach is therefore conservative in this regard.[25]

The Alliance and Global also ask that the zero-upstream treatment of EVs be made permanent (p.A-107). The Alliance claims including upstream emissions disadvantages EVs because conventional vehicles' upstream emissions are not counted. This is incorrect: the attribution of upstream emissions to EVs per the MY 2017-2025 rule adjusts those emissions downward to compensate for the upstream emissions of an average gasoline-powered vehicle of the same footprint. Industry commenters also cite EPA's adoption of the Clean Power Plan to argue that EVs' upstream emissions are addressed elsewhere and consequently need not be addressed in vehicle emissions standards. The CPP is currently being litigated, however, and the Alliance's argument is certainly not persuasive at this time.

EPA requests comment on the appropriateness of maintaining the current incentive provisions for EVs in MY2022-2025 (p. A-108). EPA has demonstrated the feasibility of achieving the standards for MY2022-2025 cost-effectively, with very low penetration of EVs, and with no changes to the existing EV incentives. Therefore, we oppose extension or expansion of these incentive for MY2022-2025, especially given that such changes would reduce the emissions reductions of the program. Vehicle electrification has the potential to dramatically reduce transportation sector emissions, and we support targeted incentives to accelerate that outcome. EV credits in the GHG standards program that do not reflect actual performance can undermine the integrity of the program, however.

The Alliance comments that the advanced technology incentive should be less restrictive, and that its scope should be expanded to include all light trucks. As noted above in the discussion of the CAR report on light trucks, however, the draft TAR indicates that light trucks can over comply with the standards

[22] Alliance draft TAR comments, p.180.
[23] TSD, p.1-32.
[24] Alliance draft TAR comments, p.93.
[25] EPA's approach may inflate slightly the emissions reductions due to the standards, however. For EVs of manufacturers that will not in fact reach the cap, the additional reductions calculated using non-zero upstream accounting are not real. If this possibility has not been recognized in the calculation of benefits of the standards for the PD, EPA should correct the calculation accordingly.

through 2025, so there is no reason to expand these incentives, especially given that they reduce the emissions benefits of the standards.

Conclusion

The draft TAR provided an updated and rigorous technical assessment of MY 2022-2025 light-duty fuel economy and greenhouse gas standards, showing that the standards are feasible and cost effective. In the PD, EPA has responded in detail to the comments submitted on the draft TAR and has revised its analysis in significant ways as a result. The adjustments to the technology effectiveness analysis to better reflect variations in power-to-weight ratio across the fleet are a prime example of the extensive and meticulous work EPA has done to refine its analysis. EPA has made several other changes as well to ensure the comprehensiveness of its analysis. None of these revisions substantially change EPA's draft TAR findings, however.

Various authors have released reports or papers that have been, or could be, interpreted as casting doubts on some aspect of the agencies' analysis of the standards. We concur with EPA's responses to those that appeared before the end of the TAR comment period. As discussed above, we reviewed some reports that appeared more recently and found that they do not undermine the analysis or findings of the PD.

Based on the evidence presented in the draft TAR and PD, EPA must either reaffirm or strengthen the standards for MY 2022-2025. ACEEE agrees with the Administrator that the standards for MY 2022-2025 could be strengthened, and we believe it is crucial that the US continue to drive vehicles' greenhouse gas emissions downward as quickly as is feasible. We also recognize the factors cited in the PD as reasons to reaffirm the standards for MY 2022-2025 as adopted, and we applaud the agency's commitment to pursue further improvements for the years beyond 2025. Hence ACEEE supports the EPA's proposed determination that the standards previously set for MY 2022-2025 are appropriate.