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Attn: Docket No. NHTSA-2018-0067
Docket No. NHTSA-2017-0069
Docket No. EPA-HQ-OAR-2018-0283

Re: Supplemental Comment of Environment America, Environmental Defense Fund, Environmental Law & Policy Center, Natural Resources Defense Council, Sierra Club, Public Citizen, Inc., and Union of Concerned Scientists on the National Highway Traffic Safety Administration's and Environmental Protection Agency's Proposed Rule: The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks; in response to the Alliance of Automobile Manufacturers and Association of Global Automakers' Supplemental Comment dated December 20, 2019

Environment America, Environmental Defense Fund, Environmental Law & Policy Center, Natural Resources Defense Council, Sierra Club, Public Citizen, Inc., and Union of Concerned Scientists respectfully submit this supplemental comment on the Environmental Protection Agency's ("EPA") and National Highway Traffic Safety Administration's ("NHTSA") Proposed Rule, The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks, 83 Fed. Reg. 42,986 (Aug. 24, 2018) ("Proposed Rule"). This comment responds to the Alliance of Automobile Manufacturers and Association of Global Automakers' Supplemental Comment (the "Alliance-Global Supplemental Comment") on the Proposed Rule, dated December 20, 2019,¹ which addresses Novation Analytics' 2019 Baseline Study, published November 29, 2019 (the "2019 Baseline Study").²

It was not possible to provide this comment during the formal comment period, due to the timing of the Alliance-Global Supplemental Comment to which this comment responds. The undersigned ask that the agencies consider this comment as they prepare final rules and supporting documentation to the extent that the agencies determine that the Alliance-Global Supplemental Comment contains material "of central relevance to the rulemaking."³

The Alliance-Global Supplemental Comment states that the "2019 Baseline Study projects that the U.S. fleet, on average, will continue to underperform to [sic] the annual GHG [greenhouse gas] and CAFE [corporate average fuel economy] targets when final compliance assessments are made for MY [Model Year] 2019;" that "the gap between performance and annual targets is projected to grow to 9 grams per mile (g/mi) and 0.9 miles per gallon (MPG);" that this gap exists "despite the growing pace of air-conditioning and off-cycle technology credits generated by manufacturers;" that "[t]he median MY 2019 vehicle under-performs the current MY 2025 GHG standard by over 35%;" and that "although internal combustion engine (ICE) technology advancements continue, less than 0.01% of MY 2019 vehicle production is anticipated to meet MY 2025 targets without electrification."⁴ The Alliance-Global Supplemental Comment also asserts that "[a]lthough some may see continuing trends in electrification as an easy solution, plug-in vehicles continue to face both technological and market challenges."⁵ Each of these assertions in the Alliance-Global Supplemental Comment is misleading, irrelevant or simply incorrect.

Moreover, the Alliance-Global Supplemental Comment expressly acknowledges that it reads the 2019 Baseline Study as "extend[ing] the understanding of current trends provided by the U.S. Environmental Protection Agency's (EPA) *Automotive Trends Report* (as discussed in previous comments by the Alliance)."⁶ Yet the Alliance-Global Supplemental Comment makes no

¹ Docket ID#EPA-HQ-OAR-2018-0283-7635.

² Novation Analytics by IHS Markit, Model Years 2012 to 2019 Baseline Studies (Version 1.1, Nov. 29, 2019). The 2019 Baseline Study is attached to the Alliance-Global Supplemental Comment.

³ 42 U.S.C. § 7607(d)(4)(B)(i); *see also id.* § 7607(d)(7)(A) (providing that such material forms part of the administrative record for judicial review); Proposed Rule, 83 Fed. Reg. at 43,471 (Aug. 24, 2018) (committing to consider late comments "[t]o the extent practicable").

⁴ Alliance-Global Supplemental Comment at 2.

⁵ *Id.*

⁶ *Id.*

attempt to acknowledge or address the various deficiencies in its previous portrayal of the Automotive Trends Report that were described in a comment submitted to the rulemaking dockets by the International Council on Clean Transportation on June 18, 2019 (“ICCT Comment”),⁷ and many of these deficiencies are again present in the Alliance-Global Supplemental Comment.

We address each of the Alliance-Global Supplemental Comment’s assertions below.

MY 2019 compliance projections

As noted above, the Alliance-Global Supplemental Comment states that the “2019 Baseline Study projects that the U.S. fleet, on average, will continue to underperform to [sic] the annual GHG and CAFE targets when final compliance assessments are made for MY [Model Year] 2019” and that “the gap between performance and annual targets is projected to grow to 9 grams per mile (g/mi) and 0.9 miles per gallon (MPG).”⁸ This assertion is fundamentally misleading and irrelevant to any determination on the feasibility of the existing or augural standards.

First, we note that neither the Alliance-Global Supplemental Comment nor the 2019 Baseline Study provides the necessary information to allow the validity of their assumptions, methodologies, and conclusions to be determined. In particular, neither the database used to perform the analysis nor a description of the specific steps taken to arrive at the results presented in the 2019 Baseline Study has been submitted to the docket or otherwise made available. Without access to this basic information underlying the analysis, it is impossible for the agencies or the public to consider, analyze, critique, or comment on the substance of that analysis. In other words, the Alliance-Global Supplemental Comment asks the agencies to take the 2019 Baseline Study at face value, without scrutiny of its methodology. But doing so would be unjustifiable and arbitrary.

Second, even if the fleet’s achieved tailpipe, off-cycle, and air-conditioning emissions values do not alone place the fleet in compliance with the GHG and CAFE standards, that fact would not demonstrate the fleet is “underperforming” the standards. The GHG and CAFE standards are designed to provide compliance flexibilities that allow manufacturers wide discretion regarding when and how to achieve GHG and CAFE targets across their fleets. Thus, for a given model year, a manufacturer may generate credits due to over-compliance, and it can use these credits retroactively for three model years, it can bank them and use them up to five years into the future, or it can sell them to other manufacturers for use in their compliance strategies.⁹ It would be economically counterproductive for the companies to meet their regulatory targets every year in such a system (and even more counterproductive to meet regulatory targets with each vehicle), rather than to maximize cost-effectiveness through averaging over-compliance and under-compliance.

⁷ ICCT Comment, dated June 18, 2019, Docket ID#EPA-HQ-OAR-2018-0283-7576, NHTSA-2018-0067-12418.

⁸ Alliance-Global Supplemental Comment at 2.

⁹ In addition, under EPA’s GHG program, over-compliance credits earned from MY2010-2016 last until the end of MY2021. See, e.g., EPA, *The 2018 EPA Automotive Trends Report: Greenhouse Gas Emissions, Fuel Economy, and Technology since 1975*, EPA-420-R-19-002 (March 2019) (“2018 EPA Automotive Trends Report”), at 107.

As noted in the ICCT Comment, manufacturers have amassed credits worth billions of dollars and stand to save billions of dollars by delaying technology introduction and using up some of those credits.¹⁰ And, as the Alliance of Automobile Manufacturers has previously acknowledged, the majority of these credits must be used by MY 2021 or they expire and become worthless—effectively erasing billions of dollars of value from the manufacturers’ balance sheets with nothing to show for it.¹¹ Against that backdrop, it is completely rational for automakers to defer technology advancement to enable credit usage. In other words, to the extent manufacturers rely on their bank of credits to comply with the standards, they are acting exactly as the program anticipated—capitalizing on early over-compliance to reduce the cost of compliance. That manufacturers are not deploying available technologies in order to achieve fuel economy or GHG emissions improvements and are instead capitalizing on compliance flexibilities does not provide any evidence that they would have been unable to meet annual GHG or fuel economy targets without those flexibilities.

Indeed, standing in contrast to the Alliance-Global Supplemental Comment’s statement that automakers are “underperforming” the standards is the 2019 Baseline Study’s own acknowledgment that “[a]nalysis of OEM credit carry-forward, carry-back, and averaging, banking and trading was outside the scope of [the 2019 Baseline] study.”¹² The omission of over-compliance credits from the analysis fatally undermines the 2019 Baseline Study’s assertion that it is intended to “[c]onduct an independent annual assessment of . . . GHG/CAFE program compliance status within the U.S. light duty fleet.”¹³ Without consideration of over-compliance credits, the 2019 Baseline Study presents an incorrect and misleading characterization that the fleet is “underperforming” the standards when in fact the fleet is fully complying with the standards to date and is fully capable of complying with the standards in future model years, including through the rational use of credits.¹⁴ The correct inference to draw from the 2019 Baseline Study is that automakers are choosing not to apply additional, available technologies to improve the GHG or fuel economy performance of their vehicles *because of* their banked compliance credits.

¹⁰ ICCT Comment at 3. *See also* John German, *U.S. fuel economy trends reflect a business strategy, not a technology challenge*, posted January 19, 2018, <https://theicct.org/blog/staff/us-fuel-economy-trend-reflects-business-strategy-not-tech-challenge> (finding that the total value of the credits accumulated through 2015 was roughly \$12 billion to \$18 billion).

¹¹ *See* Alliance of Automobile Manufacturers Supplemental Comment, May 30, 2019, Docket ID#NHTSA-2018-0067-12405, EPA-HQ-OAR-2018-0283-7563, at 4; *see also* ICCT Comment at 3.

¹² 2019 Baseline Study at 51.

¹³ *Id.* at 13.

¹⁴ While Novation shows “underperformance” starting in MY 2016, EPA’s 2018 Automotive Trends Report shows that after MY 2017, the credit bank is enormous. *2018 EPA Automotive Trends Report* at 121 (Fig 5.17). As stated in the Trends Report, “The industry emerges from model year 2017 with a bank of almost 250 teragrams (Tg) of GHG credits to draw upon in future years. Based on their compliance strategy, many manufacturers used credits in model year 2017. As a result, the industry depleted their collective credit bank by about 18 Tg, or about 7% of the total credit balance, to maintain compliance. If applied entirely to model year 2017, the balance of nearly 250 Tg would be equivalent to a fleetwide GHG reduction of about 70 g/mi. Of those credits, 92% will expire at the end of model year 2021 if not used.” *Id.* at 120.

We also note that Novation's analysis of technology penetration did not include certain technologies, specifically high compression ratio (HCR) engines or cooled exhaust gas recirculation (CEGR). This omission is especially relevant to Novation's assertions about the penetration of turbocharged engines into the fleet. Novation states that the "market share for turbocharging is not keeping pace with the NHTSA and EPA technology pathway assumption and that, "[f]or the first time since MY 2012, the share of turbocharging is estimated to drop [from 2018 to 2019]."¹⁵ But HCR engine penetration is increasing rapidly,¹⁶ and the drop in turbocharging penetration is very likely due in part to manufacturers implementing HCR engines instead of turbocharging. As a result, not only does Novation's analysis omit certain technologies, but it is also misleading in emphasizing the decrease in turbocharging while omitting the increase in HCR engines, among other errors.

We further note that while EPA and NHTSA have both included compliance pathways in previous analyses of the standards, these are not "projections," but rather possible technology options that automakers could pursue to achieve compliance. Deviations from those pathways (e.g., via credit usage or including more HCR engines and less turbocharging) only demonstrate that automakers have found even cheaper compliance pathways.

Air-conditioning and off-cycle technology credits

The Alliance-Global Supplemental Comment observes that the "gap" between automakers' performance and the standards' targets exists "despite the growing pace of air-conditioning and off-cycle technology credits generated by manufacturers."¹⁷ But this statement is entirely irrelevant. Air-conditioning and off-cycle technology credits are included in the program as an effort to capture real-world GHG reductions and fuel economy improvements that would not be reflected on EPA's standard two-cycle test procedure.¹⁸ It does not matter if the standards are achieved in ways that are not reflected in that test—all that is relevant is whether the reductions and improvements are in fact occurring. As a result, the fact that automakers have chosen to utilize air-conditioning and off-cycle technologies demonstrates nothing more than that these were the technologies automakers decided to apply first for specific vehicles—likely because they were the most cost-effective options—to achieve their next increment of improvement.

¹⁵ 2019 Baseline Study at 31.

¹⁶ See ICCT Comment at I-2 to I-5; see also *id.* at I-2 ("In total HCR engines made up over 1 million U.S. vehicle sales in model year 2016, or 6% of total U.S. sales. Comparing this against the model year 2015 data of 4%, deployment of HCR engines has expanded their market share in model year 2016 by approximately 50%." (citations omitted)).

¹⁷ Alliance-Global Supplemental Comment at 2.

¹⁸ NHTSA and EPA, *2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards*, 77 Fed. Reg. 62,624, 62628 (Oct. 15, 2012).

Comparison of the median MY 2019 vehicle with MY 2025 targets

The Alliance-Global Supplemental Comment argues that “[t]he median MY 2019 vehicle underperforms the current MY 2025 GHG standard by over 35%.”¹⁹ This statement is irrelevant and misleading.

First, we reiterate that the Alliance-Global Supplemental Comment and the 2019 Baseline Study do not provide the necessary information to evaluate the validity of such claims. Nevertheless, here again the Alliance-Global Supplemental Comment asks the agencies to take the 2019 Baseline Study at face value, without the information necessary to evaluate its methodology. Doing so would be unjustifiable and arbitrary.

Second, even the scarce details provided in the Alliance-Global Supplemental Comment demonstrate that its analysis is fundamentally flawed. In particular, as was previously noted in the ICCT Comment,²⁰ measuring the *median*²¹ instead of the mean, or average, ignores the fact that the standards only require that automakers meet a fleet-wide production-weighted *average*.²² Thus, the fact that the median car does not achieve its emissions or fuel economy target sheds zero light on the work left to do to actually achieve fleet-wide compliance. As an example, if the standards required an average of 110 g/mi CO₂, and the fleet consisted of three cars that emitted 150 g/mi CO₂ and two cars that emitted 50 g/mi CO₂, the median car would emit 150 g/mi, and thus need to improve by 40 g/mi to meet the target—but the fleet-wide production-weighted *average* would be 110 g/mi, and the fleet would be in compliance. An analysis of the median car in the fleet is completely irrelevant to evaluating the compliance task ahead.

Third, as discussed above, auto manufacturers will rationally choose to use credits rather than deploy technologies where doing so is more cost-effective and/or where the credits will expire. Discussing the median (or even the mean) vehicle without incorporating an analysis of credit use is misleading and irrelevant. As the original rule and the draft Technical Assessment Report (“TAR”) for the Midterm Evaluation of the MY 2022-2025 standards made clear, and as numerous stakeholders have further documented, the existing standards are feasible using readily available technologies.²³ Even in the Proposed Rule, the agencies observed that technological

¹⁹ Alliance-Global Supplemental Comment at 2.

²⁰ ICCT Comment at 10.

²¹ The median is the “middle” value in a dataset. For example, in the set of numbers 1, 3, 4, 7, 8, the median is 4.

²² See 77 Fed. Reg. at 62,639.

²³ EPA and NHTSA, *2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards*, 77 Fed. Reg. 62,624 (Oct. 15, 2012); EPA, NHTSA, and California Air Resources Board, *Draft Technical Assessment Report: Midterm Evaluation of Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards for Model Years 2022-2025*, EPA-420-D-16-900 (July 2016) (“Draft TAR”); see also, e.g., Comment of the International Council on Clean Transportation, Docket ID#NHTSA-2018-0067-11741, EPA-HQ-OAR-2018-0283-5456; Comment of the Union of Concerned Scientists, Docket ID#NHTSA-2018-0067-12039, EPA-HQ-OAR-2018-0283-5840; Comment of the California Air Resources Board, Docket ID#NHTSA-2018-0067-11873; EPA-HQ-OAR-2018-0283-5054; Comment of Meszler Engineering Services, Docket ID#NHTSA-2018-0067-11723, EPA-HQ-OAR-2018-0283-5838; Comment of the Environmental Defense Fund, Docket ID#NHTSA-2018-0067-12108; EPA-HQ-OAR-2018-0283-5775.

feasibility is not a barrier to achieving the existing and augural standards.²⁴ The results of the 2019 Baseline Study have shown nothing more than that auto manufacturers have managed to develop compliance pathways for the standards that do not yet even require them to deploy many of the available technologies—which strongly suggests that the standards should be strengthened, not weakened.

The Alliance-Global Supplemental Comment's assertion that few MY 2019 cars would meet the MY 2025 standards misses the point—indeed, if many MY 2019 cars could meet the MY 2025 standards without any further improvement, that fact would also strongly suggest the standards are too relaxed, and will not actually drive any improvement in fuel economy or GHG emissions over the next six model years. To drive incremental emissions reductions and fuel economy increases, the agencies must adopt standards that require incremental improvement above and beyond the emissions and fuel economy levels achieved by the MY 2019 fleet—as the augural and existing standards do.²⁵

Fleet Electrification

The Alliance-Global Supplemental Comment asserts that “although internal combustion engine (ICE) technology advancements continue, less than 0.01% of MY 2019 vehicle production is anticipated to meet MY 2025 targets without electrification,”²⁶ and that “[a]lthough some may see continuing trends in electrification as an easy solution, plug-in vehicles continue to face both technological and market challenges.”²⁷

Yet again, the Alliance-Global Supplemental Comment and the 2019 Baseline Study do not provide the necessary information to enable evaluation of the validity of their analysis and conclusions. Any projection of technologies required to meet vehicles' MY 2025 targets requires extensive data and analysis, including data regarding the baseline fleet, available technologies, technological effectiveness, and modeling to project the impact from applying combinations of technologies to the full range of vehicles in the fleet. But none of the data or analysis purportedly used to arrive at the results presented in the 2019 Baseline Study has been submitted to the docket or otherwise made available. Without access to this basic information underlying the analysis, it is impossible for the agencies or the public to consider, analyze, critique, or comment on the substance of that analysis. Any reliance on the claims made in the

²⁴ 83 Fed. Reg. at 43,216 (“We continue to believe that technological feasibility, per se, is not limiting during this rulemaking time frame.”)

²⁵ In fact, further demonstrating that future fuel economy improvements and greenhouse gas reductions are feasible, the 2019 Baseline Study's comparison between the MY 2019 fleet and the MY 2025 standards utilizes only the MY 2019 level of AC and off-cycle technology credits. 2019 Baseline Study at 77, 79. But the 2019 Baseline Study itself finds that use of AC and off-cycle technologies has been increasing, and that “[o]n the basis of the credit menu alone, additional potential exists to increase off-cycle credit generation.” *Id.* at 52-56. And the 2019 Baseline Study entirely ignores automakers' ability to implement off-menu off-cycle technologies. See ICCT Comment at 11. Implementing additional AC and off-cycle technologies would reduce any gap between the MY 2019 fleet and the MY 2025 standards, not to mention implementing additional on-cycle technologies.

²⁶ Alliance-Global Supplemental Comment at 2.

²⁷ *Id.*

2019 Baseline Study without access to this information and evaluation of the methodology and analysis would be unjustifiable and arbitrary.

Moreover, as noted above, numerous stakeholders have demonstrated that this argument is unfounded and incorrect, and that automakers can comply with the existing and augural standards without significant fleet electrification.²⁸ Both EPA and NHTSA demonstrated in the original analysis accompanying the standards and in the draft TAR for the Midterm Evaluation that fleet electrification is not required to meet the existing or augural standards, and any challenges automakers may perceive in increasing fleet electrification are irrelevant to the determination of whether the existing and augural standards are feasible.²⁹ There is no new information in the Alliance-Global Supplemental Comment or the 2019 Baseline Study that demonstrates otherwise.

Conclusion

As demonstrated above, the assertions in the Alliance-Global Supplemental Comment are misleading, irrelevant, or simply incorrect, and any reliance on them would be arbitrary.

²⁸ See, e.g., note 23, above.

²⁹ See, e.g., Draft TAR at ES-2 (finding that “Advanced gasoline vehicle technologies will continue to be the predominant technologies, with modest levels of strong hybridization and very low levels of full electrification (plug-in vehicles) needed to meet the standards”).

U.S. fuel economy trends reflect a business strategy, not a technology challenge

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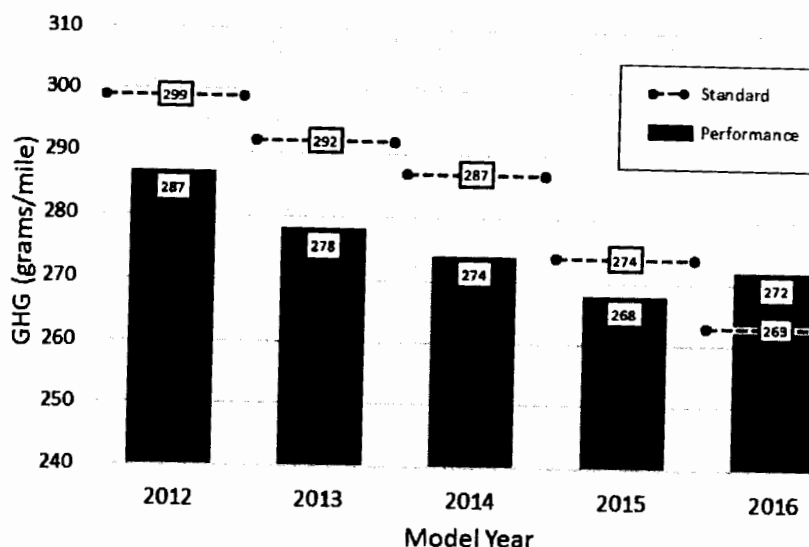
John German

The Environmental Protection Agency recently released its 1975-2017 Fuel Economy Trends report and its 2016 Manufacturer Performance report. For the last year or two the auto manufacturers have been saying that the data in these annual reports support their view (and the Trump administration's) that the light-duty vehicle fuel economy and GHG standards are not achievable and should be rolled back. It's a fair bet that they will eventually do the same with this year's reports, which show similar trends of reduced incremental improvement.

But to do so requires citing the EPA data out of context to arrive at a distorted conclusion. So here are some things you should bear in mind the next time you see somebody crying crocodile tears about how sales trends show the manufacturers struggling to meet the fuel economy standards and falling behind despite their best efforts.

Average fuel economy for cars and light trucks increased slightly in 2016, from 24.6 mpg in 2015 to 24.7. (Note that the fuel economy values in the Trends Report are the values used for fuel economy labels, which have been adjusted downward by about 20% from the official test results. The fuel economy standards use the unadjusted test results and, thus, are much higher.) 2016 also saw a massive shift in sales from cars to light trucks. The fuel economy/GHG targets for light trucks are more than 25% lower than the targets for cars with the same footprint (wheelbase times track width), which means that the average target came down while the average fuel economy went up.

The FE Trends Report does not include the fuel economy target values. Thus, the appropriate comparison from 2015 to 2016 is the average credits calculated in the EPA Manufacturer Performance Report. These calculations are based on both the actual fuel economy of each vehicle and the calculated fuel economy target for that vehicle. On average, manufacturers exceeded the standards every year from 2010 through 2015. But the margin over the standard decreased from 2014 to 2015, and for 2016 the average fell below the average standard level for the first time, by 9 gCO₂/mile. Note that most of the compliance shortfall in 2016 is due to expiration of flexible-fuel vehicle credits after 2015. Flex-fuel vehicle credits were worth 9 gCO₂/mile in 2014 and 6 gCO₂/mile in 2015. But the compliance margin still fell from 13 gCO₂/mile in 2014 to 6 in 2015 to approximately 0 in 2016.



Industry performance versus standards. (Source: [EPA Manufacturer Performance Report](#).)

On the surface, this appears to indicate that the standards are becoming more difficult to meet-but this ignores the effects of normal product-redesign cycles, the 5-year carry-forward and 3-year carry-back credit provisions, and the large amount of credits banked from previous years.

It is prohibitively expensive to redesign vehicles every year. Most vehicles are redesigned every four to five years, and some have longer redesign cycles. This means that annual average improvements in fuel economy are not going to be consistent, but instead will vary depending on when high-volume vehicles are redesigned. In a redesign year, there's a big jump; before that happens, there's a lull, as the same basic design has been in place for a while without much change. For example: the higher-volume mid-size cars (Toyota Camry, Honda Accord, Nissan Altima, Ford Fusion) have all been redesigned for 2018, but overall their fuel-economy numbers didn't change much from 2015 to 2016. The FE Trends report shows that the rate of increase in market penetration of most individual new vehicle technologies (e.g., diesel engines, hybrid vehicles, cylinder deactivation, gasoline direct injection, turbocharging) slowed or even decreased in 2015 and 2016 compared with 2012 to 2014. What this really confirms is that 2015 and 2016 were down years for model redesign, and what it suggests is that the use of credits in 2016 is temporary-not that technical innovation to make vehicles more fuel efficient suddenly became slower and more difficult and more expensive with the change in the administration in Washington.

The fuel economy regulation is specifically designed to accommodate redesign cycles by allowing credits to be carried forward for 5 years and to be carried back for 3 years. The GHG standards are even more generous, allowing credits from 2010 to be carried forward up to 2021. This allows manufacturers to undercomply in certain years, according to their own needs as determined by their own specific redesign cycles, and make up the difference with credits from previous or future years.

Which brings us to the single most important piece of context to understand and bear in mind when hearing complaints about the onerous standards: complying with the standards every single year would be a high-cost compliance strategy, and the regulations are designed specifically around that fact. Every

year a manufacturer exceeds the standards, it generates credits that can be used in the future. These credits are worth real money. In total, manufacturers had accumulated credits of about 285 million Mg (Mg = million grams) of CO₂ at the conclusion of the 2015 model year. A [2017 report](#) from Resources for the Future estimated that GHG credits are worth \$42 to \$63 per Mg, so the total value of the credits accumulated through 2015 is roughly \$12 billion to \$18 billion dollars. Certainly automakers want to maintain a cushion to handle unexpected events—that's part of the rationale for the credit system. But they can save billions of dollars by slowing down the rate of technology introduction and market penetration in order to undercomply at certain points and use up most of these valuable credits.

And that is exactly what occurred in 2015 and 2016. Manufacturers slowed down technology penetration so they could realize the value of some of those credits. It's a good business strategy, and nobody should blame them for using it. It takes brass, though, to turn around and claim that that kind of planned slowdown means that technology innovation itself has slowed or that the standards are climbing out of reach.

TAGS: *CO₂ standards / GHG standards / Vehicle emissions standards / U.S. CAFE standards*

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