



Institute for
Policy Integrity

NEW YORK UNIVERSITY SCHOOL OF LAW

January 10, 2020

VIA ELECTRONIC SUBMISSION

Dr. Thomas Armitage
Designated Federal Officer
EPA Science Advisory Board (1400R)
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington, D.C. 20460
armitage.thomas@epa.gov

Re: January 2020 Meeting of the Chartered Science Advisory Board; The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks, RIN 2060–AU09

The Institute for Policy Integrity (“Policy Integrity”) at New York University School of Law¹ submits the following comments to the Environmental Protection Agency (“EPA”) Chartered Science Advisory Board (“SAB”). These comments concern the SAB’s draft report on the scientific and technical basis of the EPA’s proposed Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy (2060-AU09) (“Proposed Rule”).² Policy Integrity commends the SAB for producing an important report on the technical and legal basis—including the flaws—underlying the Proposed Rule. In these comments, we provide supplementary information to reinforce many of the key conclusions presented in the draft report, but also to encourage the SAB to reconsider its discussion of the social cost of carbon.

Policy Integrity is a non-partisan think tank dedicated to improving the quality of government decisionmaking through advocacy and scholarship in the fields of administrative law, economics, and public policy. Policy Integrity has conducted a rigorous examination of the August 2018 joint EPA and National Highway Traffic Safety Administration (“NHTSA”) (collectively “the agencies”) Notice of Proposed Rulemaking, the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks (“Proposed

¹ This document does not purport to present New York University School of Law’s views, if any.

² SAB Draft Report, Consideration of the Scientific and Technical Basis of the EPA’s Proposed Rule Titled The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks (2019),

<https://yosemite.epa.gov/sab/sabproduct.nsf/ea5d9a9b55cc319285256cbd005a472e/3bd8a1aea4943223852584e1005463de!OpenDocument> [hereafter “SAB Draft Report”].

Rule”).³ In October 2018, Policy Integrity submitted comments (“October comments”) raising concerns with the economic analysis that the agencies used to support the Proposed Rule,⁴ and, along with other organizations, comments on the agencies’ failure to accurately and fully monetize the climate damages from greenhouse gas emissions.⁵ In December 2018, Policy Integrity submitted supplemental comments (“December comments”) highlighting concerns with an alternative economic analysis of the Proposed Rule presented in a report by NERA Economic Consulting and Trinity Consultants.⁶ In May 2019, Policy Integrity submitted additional comments (“May comments”) responding to a purported rebuttal from NERA of those critiques.⁷

The SAB’s draft report has identified areas of significant weakness in the agencies’ analysis supporting the Proposed Rule and areas where significant improvement in the Proposed Rule are feasible.⁸ In particular the draft report focuses on NHTSA’s Volpe CAFE Model and the agencies’ sales and scrappage models. Policy Integrity’s evaluation of these models as part of the public comment process reveals that they are inconsistent with basic economic theory, fail to conform to the best practices developed in the economic literature, and contain numerous econometric flaws, and, as a result, they produce anomalous outputs. Policy Integrity commends the SAB for highlighting these critical concerns in its draft report and urges the SAB to adopt a final report that does the same.

In order to aid the SAB in finalization of the draft report, Policy Integrity attaches the four sets of comments submitted to the agencies on the Proposed Rule, which describe the flaws in the agencies’ analysis in greater detail. In addition, these comments highlight key areas of agreement with the draft SAB Report and provide additional technical detail to support or clarify the SAB’s conclusions. Policy Integrity further urges the SAB to review the comments submitted to the agencies in October 2018 on the social cost of carbon—and the key points from those comments summarized below—and to adjust the draft report’s discussion of uncertainty around the social cost of carbon to reflect the fact that the bulk of uncertainty, as well as omitted factors, point toward a *higher* and not a lower value for the benefits of reducing greenhouse gas emissions.

³ 83 Fed. Reg. 42,986 (Aug. 24, 2018).

⁴ Comments of the Institute for Policy Integrity to EPA and NHTSA on The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks, NHTSA-2018-0067-12213 and EPA-HQ-OAR-2018-0283-5083 (Oct. 26, 2018), https://policyintegrity.org/documents/Emissions_Standards_EPA_NHTSA_Comments_Oct2018.pdf [hereafter “Policy Integrity October 2018 Comments”]

⁵ See Policy Integrity et al., Comments on Quantifying and Monetizing Greenhouse Gas Emissions in the Safer Affordable Fuel-Efficient Vehicles Proposed Rule and Preliminary Regulatory Impact Analysis, EPA-HQ-OAR-2018-0283 and NHTSA-2018-006 (October 26, 2018), https://policyintegrity.org/documents/Emissions_Standards_PRIASCC_Comments_Oct2018.pdf [hereafter “Joint SCC Comments”].

⁶ See Supplemental Comments by the Institute for Policy Integrity at New York University School of Law, NHTSA-2018-0067-12362 (Dec. 21, 2018) [hereafter “Policy Integrity December Comments”].

⁷ Reply Comments of the Institute for Policy Integrity to EPA and NHTSA on The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks, NHTSA-2018-0067 and EPA-HQ-OAR-2018-0283 (May 31, 2019), https://policyintegrity.org/documents/Policy_Integrity_comments_to_NHTSA_and_EPA.pdf [hereafter “Policy Integrity May 2019 Comments”].

⁸ SAB Draft Report at 1.

Finally, EPA has recently indicated that it has made substantial changes to the modeling that will be used to support a final rule.⁹ Given the critical importance of the modeling to the agencies' conclusions, and the substantial flaws that underlie the modeling used in the Proposed Rule,¹⁰ the SAB should review any substantially revised or newly developed models that the EPA intends to use to support a final rule. The SAB should request that EPA delay finalization of a final rule until such time as the SAB is able to offer a meaningful review of any substantially revised and new modeling.

A. Cost of Compliance.

Manufacturer Beliefs About Consumer Willingness to Pay for Efficiency. In Section 4.2, the draft report supports EPA's conclusion that manufacturers believe that consumers value 2.5 years of fuel savings when evaluating new vehicle purchases, and that, as a result, manufacturers will include the technology that would achieve such savings even without regulatory standards.¹¹ The economics literature does support a variety of estimates of consumers' observed willingness to pay for fuel efficiency improvements.¹² However, EPA's assumption about manufacturer behavior does not follow from consumers' observed willingness to pay for fuel efficiency improvements. As explained in Policy Integrity's October comments, the historical evidence shows that manufacturers have not improved fuel economy when not required to do so, even though consumers value fuel economy.¹³ Policy Integrity's comments also explained how supply-side market failures, asymmetrical information, positional externalities, rational inattention, and a host of other influences can result in manufacturers not providing consumers with the amount of fuel efficiency they value.¹⁴ Notwithstanding the draft report's statements,¹⁵ EPA has consistently recognized that manufacturers would include *no* fuel economy technology improvements beyond what was required by standards, as reflected in the assumptions used both in the Draft Technical Assessment Report,¹⁶ and in the 2012 rulemaking setting model year 2017-2025 standards.¹⁷ As a result, Policy Integrity urges the SAB to revise this section of the draft report and to encourage EPA to adopt a more realistic assumption about manufacturer behavior in the absence of regulatory standards.

⁹ See Doug Obey & Lee Logan, *Citing Changes, Wheeler Rejects SAB Critique on Auto GHG Rollback*, INSIDEEPA (Jan. 6, 2020), <https://insideepa.com/daily-news/citing-changes-wheeler-rejects-sab-critique-auto-ghg-rollback> (quoting EPA Administrator Wheeler as stating that "a lot has changed in the proposed regulation").

¹⁰ SAB Draft Report at 34 ("these issues are of sufficient magnitude that the estimated net benefit of the proposed revision may be substantially overstated. In fact, the weaknesses are sufficiently important that they could reverse the sign of result, indicating that the augural standards provide a better outcome than the proposed revision").

¹¹ *Id.* at 11.

¹² David Greene, Anushah Hossain, Julia Hofmann, Gloria Helfand & Robert Beach, *Consumer Willingness to Pay for Vehicle Attributes: What Do We Know?*, 118 TRANSP. RES. 258 (2018).

¹³ See Policy Integrity October Comments at 40-46; see also ICCT Comments, Docket #EPA-HQ-OAR-2018-0283-5456, NHTSA-2018-0067-11741, Attachment 3, p. II-1.

¹⁴ Policy Integrity October Comments. at 38-40, 47-51.

¹⁵ SAB Draft Report at 11 (asserting agencies used an assumption of 3 years in the Draft TAR).

¹⁶ See EPA 2016 Technical Support Document (November, 2016), EPA-420-R-16-021, at 4-15 to 4-16.

¹⁷ 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, 62,915 (Oct. 15, 2012) (EPA stating that it did "not have a basis to expect that auto makers will go beyond the standards for [model year] 2016 in the absence of this rule").

Treatment of Flexibility Mechanisms. In Section 4.6, the draft report criticizes EPA for failing to fully account for the optimal use of available flexibility mechanisms by manufacturers when estimating the costs of compliance.¹⁸ Policy Integrity supports this critique. EPA’s failure to correctly consider flexibility mechanisms in the Proposed Rule leads to an overstatement of compliance costs and vehicle price increases, which in turn have a significant effect on other modeling components.

However, the SAB should revise its statement about the auto industry’s historical use of flexibility mechanisms.¹⁹ Flexibility mechanisms available to automakers under EPA’s emission standards include credit banking, borrowing, trading and transferring between fleets, as well as air-conditioning and off-cycle credits/adjustments.²⁰ The flexibilities of the type that manufacturers were familiar with from the CAFE program have been heavily used, as documented in EPA’s Automotive Trades Reports.²¹ The other flexibility mechanisms have been steadily increasing in popularity and more recent studies suggest that they have been applied significantly. As reported by Resources for the Future, in 2016, tradeable credits represented around 33 percent of the additional required emissions reduction per vehicle from the regulations.²² In 2017, the latest year with available data, the volume of trades has further increased by almost 40%.²³ This data shows that car manufacturers have become familiar and comfortable with the use of trading. The number of fleet-wide air-conditioning credits and off-cycle credits have also been increasing.²⁴ While we agree with the SAB that in the future, use of flexibility mechanisms will become even more prevalent in response to increases in regulation stringency, it is also important to acknowledge the *current* popularity of flexibility mechanisms. The preexisting use of such mechanisms implies that the Proposed Rule overestimates compliance costs in the early years—with the bias further compounding over time.

In addition, Policy Integrity encourages the SAB to discuss additional issues concerning the treatment of compliance flexibilities in the Proposed Rule. As discussed in Policy Integrity’s October comments, modeling of banking behavior that ignores strategic early overcompliance,

¹⁸ SAB Draft Report at 17-18.

¹⁹ *Id.* at 17 (“Thus, even though economic models predict that extensive use of flexibility mechanisms would reduce compliance costs, the real-world use of flexibility mechanisms has been quite limited in the auto industry”).

²⁰ For CAFE standards they also include the possibility of paying a penalty in lieu of compliance.

²¹ EPA, THE 2018 AUTOMOTIVE TRENDS REPORT: GREENHOUSE GAS EMISSIONS, FUEL ECONOMY, AND TECHNOLOGY SINCE 1975 at ES9, ES11 (2018), <https://nepis.epa.gov/Exe/ZyPDF.cgi/P100W5C2.PDF?Dockey=P100W5C2.PDF> [hereafter “2018 Automotive Trends Report”] (showing number of credits accumulated by large manufacturers and shown and industry-level credits report). While credit borrowing behavior cannot be easily inferred from the data, the experiences with CAFE show that manufacturers do use that option in practice for decreasing their compliance costs.

²² Benjamin Leard & Virginia McConnell, *Agencies Should Account for Credit Trading in Estimating Costs of CAFE Compliance*, RESOURCES (Nov. 01, 2018), <https://www.resourcesmag.org/common-resources/agencies-should-account-for-credit-trading-in-estimating-costs-of-cafe-compliance/>.

²³ Benjamin Leard & Virginia McConnell, *Credit Trading Accelerates as Passenger Vehicle Fuel Economy and Greenhouse Gas Standards Tighten*, RESOURCES (Dec. 09, 2019), <https://www.resourcesmag.org/common-resources/credit-trading-accelerates-passenger-vehicle-fuel-economy-and-greenhouse-gas-standards-tighten/>.

²⁴ 2018 AUTOMOTIVE TRENDS REPORT at 106 (Table 5.6).

lack of borrowing, faulty modeling of credit transfers and imposing strong assumptions on the future off-cycle and air-conditioning efficiency technology are other areas that, in absence of adjustments, will lead to overestimated compliance costs.²⁵

B. Fleet Size and Composition

Consumer Willingness to Pay for Fuel Efficiency. Section 5.1 of the draft report is critical of EPA for failing to use consistent assumptions about consumer willingness to pay for fuel efficiency throughout the Proposed Rule.²⁶ As explained in our October comments, Policy Integrity supports this critique of the Proposed Rule.²⁷ The draft report also presents evidence that there is an energy efficiency gap—that is, that consumers do not appear willing to pay for all of the fuel savings that would be rational to demand.²⁸ Policy Integrity supports this general conclusion. That said, the draft report’s suggestion that behavioral factors and not information effects are the cause of the gap fails to account for the myriad market failures that the economics literature has identified as a cause of the energy efficiency gap.²⁹ As Policy Integrity outlined in detail in prior comments, there are a number of theorized and empirically measured market failures that may be the cause of the observed energy efficiency gap including consumer-side market failures (such as split incentives, inattention, salience, use of rules of thumb, consumer loss aversion, capital market failures, and positional externalities), as well as manufacturer-side market failures (such as market power and technology spillover effects).³⁰ One recent study is worth highlighting because it was released after the comment period for the Proposed Rule closed. Kenneth Gillingham, Sebastian Houde, and Arthur van Benthem have found significant empirical evidence of consumer myopia.³¹ That study, which takes advantage of a sophisticated natural experiment, also finds empirical evidence that U.S. consumers substantially undervalue fuel economy and that a number of the studies that the agencies pointed in the Proposed Rule in order to claim consumers fully value fuel savings suffer from upward estimation bias.³² The SAB should expand its discussion of market failures that cause the energy efficiency gap in its final report.

²⁵ See Policy Integrity October Comments at 18-23.

²⁶ SAB Draft Report at 19-21.

²⁷ Policy Integrity October Comments at 33-35.

²⁸ SAB Draft Report at 21.

²⁹ *Id.* (“the undervaluation is unlikely to be attributable to a pure information effect A sustained program of behavioral economics research is necessary to fully understand consumer attitudes and decision making about vehicles”).

³⁰ Policy Integrity October Comments at 47-51; Policy Integrity December Comments at 4; Policy Integrity May Comments at 11-12.

³¹ Kenneth Gillingham, Sebastian Houde, & Arthur van Benthem, *Consumer Myopia in Vehicle Purchases: Evidence from a Natural Experiment* (Nat’l Bureau of Econ. Research, Working Paper No. 25845, 2019), <https://www.nber.org/papers/w25845>

³² *Id.* at 16-17.

In addition, the SAB should revise the report to clarify that observed estimates of consumer willingness to pay for efficiency is not the appropriate metric for the calculation of fuel saving benefits produced by fuel economy and emission standards. The need for such clarification is not merely speculative. In comments to the agencies, NERA Economic Consulting provided an economic analysis that calculated the economic benefits of fuel savings based only on purported measures of consumer willingness to pay for fuel efficiency improvements.³³ However, limiting the benefits of fuel economy to that level is incorrect and is a departure from the approach that the agencies have consistently taken for calculating the benefits of fuel savings since the first proposed fuel economy regulations over 40 years ago.³⁴ As Policy Integrity explained in its May comments, due to market failures, observed consumer willingness to pay for fuel economy may not reflect the full economic value of the future fuel savings consumers will experience over time.³⁵ But avoided fuel consumption represents real resource savings to the economy regardless of what consumers expected at the time of purchase. And, once those savings appear in their pocketbooks, consumers will fully value and use that money, regardless of the expectations for fuel savings that consumers had when they initially decided which car to buy.³⁶ Policy Integrity urges the SAB to revise its report to clarify that while the agencies should consistently apply consumer willingness to pay estimates when evaluating consumer decisionmaking regarding the purchase of vehicles, it would not be appropriate to use such a measure for calculating the social benefits of fuel savings.

Impact of Regulatory Alternatives on New Vehicle Sales. In Section 5.2 of the draft report, the SAB reviews the evidence regarding consumer willingness to pay for non-efficiency attributes and the effect such willingness to pay will have on vehicle sales. The draft SAB report concludes that “it is not yet feasible to quantify the impact on new vehicle sales of additional vehicle characteristics (beyond fuel economy) that are desired by consumers but restrained by federal standards.”³⁷ Policy Integrity agrees that “it is not yet feasible to quantify the impact on new vehicle sales of additional vehicle characteristics (beyond fuel economy)” but does not believe that the evidence clearly supports the suggestion that “additional vehicle characteristics (beyond fuel economy) that are desired by consumers [are] restrained by federal standards.”

The draft report’s initial conclusion is consistent with long-standing EPA positions. In a study commissioned by EPA for the 2016 Technical Assessment Report, researchers concluded that “we have found very little useful consensus” regarding “estimates of the values of various

³³ See NERA Economic Consulting & Trinity Consultants, Evaluation of Alternative Passenger Car and Light Truck Corporate Average Fuel Economy (CAFE) Standards for Model Years 2021-2026 at 54 (Oct. 26, 2018) (attached to Comments of the Alliance of Automobile Manufacturers, NHTSA-2018-0067-12073 and EPA-HQ-OAR-2018-0283-6186 (Oct. 26, 2018)).

³⁴ Policy Integrity December Comments at 5-14.

³⁵ Policy Integrity May Comments at 11-13.

³⁶ Policy Integrity December Comments at 3-5.

³⁷ SAB Draft Report at 22.

vehicle attributes,”³⁸ and that the usefulness of willingness-to-pay estimates “encompasses such a wide range of values that is of little use for informing policy decisions.”³⁹ In a follow-up paper, the author of EPA’s commissioned study found “striking[ly]” high variation in willingness-to-pay estimates across the literature.⁴⁰ As such, Greene et al. (2018) concluded that focusing on any specific willingness-to-pay estimate is methodologically suspect.⁴¹ The agencies themselves reached a similar conclusion in their economic analysis of the Proposed Rule:

There are few empirical estimates of the[] values [that buyers of new cars and light trucks appear to attach to various attributes], and the range of estimates for the values of individual attributes reported in each study is very wide. Where the two studies included in the table report comparable measures, their estimates also differ widely.⁴²

As Policy Integrity explained in its May comments, the available evidence does not clearly show that “vehicle characteristics (beyond fuel economy) that are desired by consumers [are] restrained by federal standards.”⁴³ As a result of uncertainty in the tradeoff between vehicle characteristics and fuel economy, in their economic analysis of the Proposed Rule, the agencies found that “sufficiently detailed information on the potential improvements in car and light truck attributes . . . is not currently available,”⁴⁴ and that “the specific improvements in attributes other than fuel economy that producers are likely to make to their individual car and light truck models when they face less demanding fuel economy standards cannot be estimated.”⁴⁵ In fact, the agencies modeling of compliance costs explicitly assumes that vehicle characteristics will be held constant.⁴⁶ As a result, in order to be consistent and non-arbitrary, the CAFE model would have to be substantially revised if the agencies made different assumptions regarding non-efficiency vehicle characteristics in their sales model.

Policy Integrity urges the SAB to finalize the report with language making clear that the economics literature does not yet support the agencies’ reliance on estimates of consumer willingness to pay for non-efficiency attributes in a real-world policymaking context. However,

³⁸ EPA, CONSUMER WILLINGNESS TO PAY FOR VEHICLE ATTRIBUTES: WHAT IS THE CURRENT STATE OF KNOWLEDGE? at 7-1 (2018) https://cfpub.epa.gov/si/si_public_record_report.cfm?Lab=OTAQ&dirEntryId=339388.

³⁹ *Id.*

⁴⁰ See David Greene, Anushah Hossain, Julia Hofmann, Gloria Helfand & Robert Beach, *Consumer Willingness to Pay for Vehicle Attributes: What Do We Know?*, 118 TRANSP. RES. PART A 258, 264, 273-74 (2018) (even after trimming outlines, “one standard deviation exceeds the mean of the [willingness to pay] estimates for most of the attributes...[and] the interquartile range also exceeds the median”).

⁴¹ *Id.* at 274.

⁴² NHTSA & EPA, Preliminary Regulatory Impact Analysis: The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Year 2021-2026 Passenger Cars and Light Trucks 1095 (Aug. 23, 2018) [hereafter “Proposed Rule RIA”].

⁴³ Policy Integrity May Comments at 17-19.

⁴⁴ Proposed Rule RIA 1091 (Aug. 23, 2018).

⁴⁵ *Id.* at 1097.

⁴⁶ Policy Integrity May Comments at 24.

the final report should not inadvertently overstate the fact that the standards are restraining the availability of other vehicle characteristics that consumers desire.

In addition, Section 5.2 of the draft report is critical of the Proposed Rule's methodology for calculating the price elasticity of demand for new vehicles.⁴⁷ While Policy Integrity does not dispute the reasonableness of the estimated -0.2 to -0.3 elasticity estimate used in the Proposed Rule, Policy Integrity raised similar concerns regarding the sales model methodology that was used to derive these elasticity estimates.⁴⁸ However, Policy Integrity recommends that the SAB more clearly indicate that a return to the prior estimate of elasticity of -1 is not supported by the economics literature and so would not be appropriate in a final rule. As the draft report explains, that estimate "was not based on a particular analysis or study in the academic literature."⁴⁹ The inappropriateness of using a -1 value for price elasticity of demand for new vehicles is also supported by the peer review of the 2018 Volpe model commissioned by NHTSA.⁵⁰

In Section 5.2, the draft report also states "[i]n the regulatory setting, it is assumed that all major vehicle manufacturers (Tesla is a notable exception) will raise prices since they are all incurring costs due to binding CAFE and GHG regulations."⁵¹ Policy Integrity urges the SAB to revise this statement to more accurately reflect the fact that not all manufacturer cost increases will be passed through to consumers as price increases. As Policy Integrity explained in its October comments, the agencies' assumption that all cost increases will be passed on to consumers is unreasonable for three reasons:

- the existing level of market power in the vehicle industry means that firms may not pass on all of their costs to consumers;
- manufacturers can cross-subsidize the purchase of certain vehicles by adjusting prices across their fleet to optimally attract customers toward more fuel-efficient vehicles; and,
- historical price changes do not support an assumption of full passthrough.⁵²

C. Fleet Utilization

Impact of Alternative Regulatory Policies on the Total Fleet Size, Older Vehicles, and Characteristics of the Vehicle Fleet; Use of Fixed Schedules for Vehicle Miles Traveled. In Section 5.3, the draft report recounts and concurs with the significant criticism that the agencies have received for their estimates of fleet size,⁵³ in Section 6.1, the draft report recounts and concurs with the criticisms that that agencies have received for their use of fixed schedules for vehicle miles traveled (VMT).⁵⁴ Policy Integrity strongly agrees with these criticisms of the

⁴⁷ SAB Draft Report at 22-23.

⁴⁸ Policy Integrity October Comments at 33; *id.* at 57-59 (identifying general economic errors in the agencies' new modeling including the sales model).

⁴⁹ SAB Draft Report at 22.

⁵⁰ NHTSA, CAFE Model Peer Review Revised, at B-33, B035 (2019), <https://www.regulations.gov/contentStreamer?documentId=NHTSA-2018-0067-0055&attachmentNumber=2&contentType=pdf> (peer review of John Graham).

⁵¹ SAB Draft Report at 22.

⁵² Policy Integrity October Comments at 27-31.

⁵³ SAB Draft Report at 23-24.

⁵⁴ *Id.* at 25-26.

scrapage and VMT models that are used in the Proposed Rule. As Policy Integrity discussed extensively in October comments, the agencies' analysis of the implications of new vehicle price increases is fundamentally flawed for two critical reasons.⁵⁵ First, the agencies' estimates and modeling of the impact of price increases on total fleet size and VMT violate economic theory. Correcting the agencies' errors in this area will significantly reduce (or even reverse) the purported effect of the current standards on safety. Second, even if the agencies were right that increased new vehicle prices lead to an increase in the number and proportion of older vehicles in the market, the safety impact of those vehicles is overstated. The data supporting the agencies' conclusions are improperly inflated in ways that contradict the agencies' prior analyses and the available evidence. Given the magnitude of these errors and the importance of the scrapage, VMT, and safety models to the agencies' conclusions, the SAB should retain these discussions in any final report.

Magnitude of the Rebound Effect. In Section 6.2, the draft report correctly criticizes the agencies for moving from a 10 percent estimate of rebound to a 20 percent estimate.⁵⁶ In particular, the draft report explains that a 20 percent rebound estimate does not properly account for changes over time (and with income) in demand for driving, and is the result of the inappropriate use of simple averaging of studies rather than the more accurate use of quality and relevance metrics. Policy Integrity strongly supports the SAB's conclusions. Policy Integrity provided substantial additional technical support for these conclusions, including analysis of the academic literature, in its October comments.⁵⁷

D. Handling of Uncertainty

The draft SAB report includes a discussion of the social cost of carbon and climate sensitivity that significantly overstates the uncertainties involved in those estimates and appears to undermine their use in policymaking.⁵⁸

To begin, it is incorrect for the draft report to say that using a "domestic value of \$7 per ton" is "consistent with prior practices of the Interagency Working Group (IWG) when scaling global estimates to domestic value."⁵⁹ Though in 2010 the Interagency Working Group did report an "approximate, provisional, and highly speculative" domestic range, the 2010 technical support document also concluded that "[t]here is no a priori reason why domestic benefits should be a constant fraction of net global damages over time"; explained that the underlying models did "not account for how damages in other regions could affect the United States (e.g., global migration, economic and political destabilization"; and ultimately "concluded that using the global (rather than domestic) value . . . is the appropriate approach."⁶⁰ By 2015, the Interagency Working Group's clear position was that "a purely domestic measure is likely to understate

⁵⁵ Policy Integrity October Comments at 59-98.

⁵⁶ SAB Draft Report at 26-27.

⁵⁷ Policy Integrity October Comments at 99-118.

⁵⁸ SAB Draft Report at 32-33.

⁵⁹ *Id.* at 32.

⁶⁰ Interagency Working Group on the Social Cost of Carbon, Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12866, at 11 (2010).

actual impacts to the United States”; that “from a technical perspective” there were few reliable estimates of a domestic social cost of carbon; that the prior “highly speculative” range was based on only ‘two strands of evidence’; and that ultimately it would “continue to recommend the use of global SCC estimates in regulatory impact analyses.”⁶¹ In the Interagency Working Group’s most recent guidance, from 2016, no range of domestic estimates is given, because instead “a global measure of the benefits from reducing U.S. emissions is appropriate” and is necessary to reflect foreign spillover effects on the United States, foreign reciprocal benefits to the United States, and the global nature of the climate problem.⁶² And in the 2016 case *Zero Zone v. Department of Energy*, the Court of Appeals for the Seventh Circuit found, in response to petitioners’ challenge that the Department of Energy’s consideration of the global social cost of carbon in an appliance efficiency standard rulemaking was arbitrary, that the agency had acted reasonably in considering the global climate effects.⁶³

It is also somewhat misleading for the draft report to suggest that “the National Academies observed . . . that further research is needed to develop a more comprehensive measure [of a domestic social cost of carbon]”⁶⁴—a summary which seems to imply that the National Academies recommended more research on a domestic value and perhaps even endorsed the use of such a value. The National Academies did not endorse the use of a domestic value. Instead, the National Academies observed that existing methodologies could not accurately calculate a domestic value and then noted that *if* agencies were to undertake a more accurate estimate of a domestic value, they “would therefore need to” engage in more research on international spillover effects and foreign reciprocal actions.⁶⁵ Overall, the National Academies found reason to fundamentally reconsider what even “constitutes domestic impact in the case of a global pollutant” and endorsed the use of the global social cost of carbon values.⁶⁶ On these and other key issues, the recommendations from the National Academies supported the Interagency Working Group’s methodology to date, while suggesting improvements for the future.

The SAB draft report refers to the social cost of carbon as “complex and highly uncertain,” emphasizing the uncertainty around the climate sensitivity estimate, the damage function, and the discount rate.⁶⁷ The draft report further highlights a single paper from 2017 that argued for a dramatically lower valuation of the social cost of carbon, and refers vaguely to work by “others” to support the possibility that the social cost of carbon could even be negative (suggesting that increased emissions produce a net benefit to society).⁶⁸ This discussion overstates the uncertainties involved in calculating the social cost of carbon, seems to suggest that perhaps the current estimates are too high, and could even be read to cast doubt on the legitimacy of using

⁶¹ Interagency Working Group on the Social Cost of Carbon, *Response to Comments: Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12866*, at 32 (2015).

⁶² Interagency Working Group on the Social Cost of Greenhouse Gases, *Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12866*, at 17 (2016).

⁶³ *Zero Zone v. Dept. of Energy*, 832 F.3d 654, 679 (7th Cir., 2016).

⁶⁴ SAB Draft Report at 32.

⁶⁵ NAS, VALUING CLIMATE DAMAGES: UPDATING ESTIMATION OF THE SOCIAL COST OF CARBON DIOXIDE, at 53 (2017).

⁶⁶ *Id.*

⁶⁷ SAB Draft Report at 32.

⁶⁸ *Id.*

social cost of carbon estimates in regulatory analysis. The SAB should therefore adjust this discussion to reflect instead the facts that the Interagency Working Group’s estimates were vetted through hundreds of public rulemakings, that its methodologies were endorsed by the National Academies of Sciences and the Government Accountability Office, and that the values’ use in regulatory analysis has been upheld by federal courts as reasonable. As our comments detail—along with their technical appendices on uncertainty, discounting, and damages⁶⁹—though a few uncertainties might point in the direction of slightly lower social cost of greenhouse gas values, the models already account for such uncertainties around adaptation and carbon benefits; instead, on balance, most uncertainty *very strongly* point toward *higher*, not lower, social cost of greenhouse gas estimates—perhaps significantly higher. Indeed, many experts consider the Interagency Working Group’s estimates to be conservative underestimates because the estimates currently omit many key damage categories, as well as tipping points, option value, and risk aversion.⁷⁰ On discount rates in particular, for example, both *Circular A-4* and the economic literature agree that uncertainty would point toward a lower discount rate,⁷¹ or a declining discount rate framework,⁷² which would almost certainly result in much higher estimates of the social cost of greenhouse gases than those used by the agencies in the Proposed Rule. Most importantly, uncertainty is not a reason to abandon the social cost of greenhouse gas metrics.

On the draft report’s reference in particular to a single paper by Dayaratna et al., as the SAB knows, the work by the Intergovernmental Panel on Climate Change represents the gold standard for determining the equilibrium climate sensitivity distribution. Crucially, the National Academies fully reviewed the literature available through 2017 (note that Dayaratna et al.’s work was available on SSRN in April 2016 and as a discussion paper by July 2016⁷³) and concluded that changing the Interagency Working Groups’ approach to climate sensitivity was not necessary in the short term.⁷⁴ Finally, singling out a single study to cast doubt on whether the social cost of carbon may be too high is strange given the SAB’s failure to similarly identify other literature that might strongly point toward much higher estimates of the social cost of carbon, such as Nobel Prize winner William Nordhaus’s recent choice to increase the ECS from 2.9 to 3.1 from the DICE-2013 mode to the DICE-2016R2 model. Overall, the SAB should explain both that most uncertainties surrounding the social cost of carbon would point toward a higher value, and also that uncertainty is not a reason to abandon use of the metrics.

Finally, the draft report observes that the 2018 Proposed Rule used a deterministic sensitivity analysis by changing the values of uncertain inputs one at a time, and the SAB recommends either an even “more systematic exploration of alternative scenarios” or else moving “toward

⁶⁹ See Joint SCC Comments, *supra*.

⁷⁰ See generally *id.*; see also, e.g., Richard L. Revesz et al., *Global Warming: Improve Economic Models of Climate Change*, 508 NATURE 173 (2014) (coauthored with Kenneth Arrow, Lawrence H. Goulder, Rober E. Kopp, Michael Oppenheimer, & Thomas Sterner) .

⁷¹ *Id.* at 24.

⁷² *Id.* at 27.

⁷³ <http://www.uoguelph.ca/economics/repec/workingpapers/2016/2016-08.pdf>.

⁷⁴ NAS, *supra*, at 34 (summarizing findings of the Phase 1 report and “recommend[ing] against a near-term update to the social cost of carbon based simply on a recalibration of the probability distribution of the equilibrium climate sensitivity).

comprehensive probabilistic analysis.”⁷⁵ However, the regulatory impact analysis for the Proposed Rule failed to conduct even a minimally acceptable sensitivity analysis on the social cost of carbon. As explained in our October 2018 comments, not only do the agencies fail to consider a global number even in a sensitivity analysis (let alone focusing on the global estimate as the Interagency Working Group would recommend),⁷⁶ but the agencies’ reports on their alleged run of a 2.5% discount rate as a sensitivity analysis is “incomplete and inapplicable to this proceeding,” as the language was clearly cut-and-pasted from an entirely different regulatory impact analysis.⁷⁷ The agencies’ also failed to give proper consideration to a 95th percentile “high-impact” estimate that the Interagency Working Group intended to serve a tool to address uncertainty over catastrophic damages, tipping points, option value, and risk aversion.⁷⁸ In a similar kind of oversight, the agencies also ignored entire categories of significant upstream emissions;⁷⁹ and since, as the draft report acknowledges, “higher emissions” would change the rule’s ultimate climate impacts,⁸⁰ it is crucial to accurately estimate emissions. The SAB should make clear that a proper analysis of climate effects would first more accurately quantify all upstream and downstream emissions, and then would apply the full range of estimates from the Interagency Working Group’s 2016 technical support document, including a focus on the central values based on a 3% discount rate, as well as sensitivity analysis using a 2.5% discount rate and a high-impact 95th percentile number to account for uncertainty.

Thank you for the opportunity to comment on the draft SAB report. For additional information, please feel free to contact Avi Zevin at (949) 302-6179 or avi.zevin@nyu.edu.

Respectfully,



Avi Zevin
Sylwia Bialek
Peter Howard
Jason Schwartz

Institute for Policy Integrity
New York University School of Law

⁷⁵ SAB Draft Report at 33.

⁷⁶ Joint SCC Comments at 6-20.

⁷⁷ *Id.* at 28; *see also id.* at 20-27 (explaining why the choice of a 7% discount rate for the main analysis is not justified).

⁷⁸ *Id.* at 28-32.

⁷⁹ Joint SCC Comments at 2-3.

⁸⁰ SAB Draft Report at 33.

Attachments:

Comments of the Institute for Policy Integrity to EPA and NHTSA on The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks, NHTSA-2018-0067-12213 and EPA-HQ-OAR-2018-0283-5083 (Oct. 26, 2018)

Policy Integrity et al., Comments on Quantifying and Monetizing Greenhouse Gas Emissions in the Safer Affordable Fuel-Efficient Vehicles Proposed Rule and Preliminary Regulatory Impact Analysis, EPA-HQ-OAR-2018-0283 and NHTSA-2018-006 (October 26, 2018)

Supplemental Comments by the Institute for Policy Integrity at New York University School of Law, NHTSA-2018-0067-12362 (Dec. 21, 2018)

Reply Comments of the Institute for Policy Integrity to EPA and NHTSA on The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks, NHTSA-2018-0067 and EPA-HQ-OAR-2018-0283 (May 31, 2019)