VOLKSWAGEN

GROUP OF AMERICA

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October 26, 2021 Date

Attention:

NHTSA Docket ID No. NHTSA–2021–0053

Subject: Corporate Average Fuel Economy Standards for Model Years 2024-2026 Passenger Cars and Light Trucks, Notice of Proposed Rulemaking

Dear Sir or Madam,

On behalf of Volkswagen Group of America, Inc., ("Volkswagen") we are pleased to submit written comments to the Notice of Proposed Rulemaking ("NPRM") for Corporate Average Fuel Economy ("CAFE") Standards for Model Years 2024-2026 Passenger Cars and Light Trucks published in the Federal Register on September 3, 2021. These comments are submitted by Volkswagen Group of America, Inc. on behalf of Volkswagen AG, Audi AG, Bentley Motors, Ltd., Porsche AG, Automobili Lamborghini, S.p.a. and Bugatti Automobiles S.A.S. (collectively, "Volkswagen").

Volkswagen supports the Administration's decision to reconsider Corporate Average Fuel Economy stringency for model years ("MY") 2024-2026

Volkswagen supports NHTSA's decision to reconsider CAFE stringency for MY2024-2026 in order to review potential additional improvements in our Nation's energy security and to further reduce the dependence of our light-duty vehicle fleet on petroleum. Over the past 40 years, NHTSA has on occasion reconsidered standards in light of evolving energy and environmental conditions. Many of those updates have resulted in improvements to the fuel economy of America's cars and trucks and provided increased benefits for American drivers and our environment. This reconsideration is timely given the renewed focus of the Administration on strengthening our commitments to global climate targets and in helping to enable the progressive transformation of our fleet to a net-zero emission, electrified future.

Together with standards for light-duty greenhouse gas (GHG) emissions being proposed by the Environmental Protection Agency ("EPA"), this proposal from NHTSA can be consequential both for the future transformation of the auto industry and for meeting the imperative of energy independence and climate change. Volkswagen continues to support coordinated Federal and State policies that will improve fuel economy and dramatically lower GHGs from the transportation sector. Most importantly, Volkswagen supports the focus of Federal and State agencies to accelerate the adoption of electric vehicles. In fact, Volkswagen brands now offer more plug-in all-electric models in the United States market, than any other OEM. Volkswagen believes that electrification of the

light-duty fleet provides the most direct and efficient pathway forward to achieve our shared energy, climate, and local air quality goals.

With these comments and through further dialogue, Volkswagen seeks to help inform NHTSA's upcoming decision on the final determination of maximum feasible fuel economy standards for MY2024-2026. Volkswagens' comments will focus on specific elements within the CAFE program and highlight the importance that these elements can have on our goal of achieving concurrent compliance with the full range of Federal and State greenhouse gas and fuel economy targets.

Volkswagen believes that the US market has an opportunity to significantly expand consumer adoption of electric drive vehicles. Volkswagen has invested in a global electrification strategy that will bring increased variety of electric vehicles, with greater features, higher ranges, and lower costs to our American customers. This strategy also includes investing in our American factories and in the high tech skills of our employees to build EVs in the United States as key component in our extensive global manufacturing and supply base. Volkswagen believes EVs can be successful with expanded support from public policies and stakeholder investments that together will build customer confidence and increase adoption of electric vehicles.

Volkswagen projects that with the successful execution of our US electrification strategy, we will deliver to our customers a fleet of new, exciting EVs that will contribute to the energy security and environmental goals envisioned in NHTSA's proposal. Electric vehicles will help secure the energy independence of America and will leverage the complimentary public and private investment in decarbonizing the country's electricity grid. Electric vehicles enable reductions in local air pollutants and will play a key role in achieving a future carbon neutral transportation system.

Volkswagen Group is committed to Achieving Long-Term Carbon Neutrality

Volkswagen Group is committed to the Paris climate targets. By 2050, the entire Group intends to be CO_2-neutral on the balance sheet, comprehensive of vehicles, plants and operations. As an intermediate target, by 2030, the Group aims to reduce global greenhouse gas emissions from production and use of its vehicles by 30 percent compared to 2018. The independent Science Based Targets initiative[1] (SBTi) has certified that Volkswagen's climate targets meet the Paris Climate Agreement requirements.

Volkswagen's US operations are fully integrated within our global decarbonization strategy. Electrification will serve as the foundation for reducing the carbon emissions from our new vehicles. In addition, Volkswagen is committed to reducing the carbon footprint of our manufacturing, logistics and corporate operations. Our US leadership has implemented forward leaning programs using employee input to identify and drive holistic improvements in our efficiency.

Globally, the Volkswagen Group has committed over $85 Billion in investment in the development of advanced vehicle technologies such as digitalization, connected services, and electric drive. In alignment with supportive public policies, Volkswagen projects a cumulative volume of 26 million electrified vehicles produced by 2030, globally. For our brands in America, we will continue to lead and expand our EV offerings for our American customers, including models built at our factory in the United States.

Supporting improved environmental outcomes reflects values embedded within Volkswagen's sustainability policies[2]. These policies articulate the importance of pursuing economic, social and ecological objectives simultaneously and with equal emphasis. It is Volkswagen's aim to create lasting value, offer good working conditions, and conserve resources and improve the environment. To that end, Volkswagen supports continuous reductions in vehicle fleet average GHG emissions, commensurate with the Paris Climate Agreement targets, and looks forward to working with the Administration and other stakeholders in the US on pathways that ensure a level

[1] https://sciencebasedtargets.org/
[2] https://www.volkswagenag.com/en/sustainability.html

playing field for all manufacturers for 2027 and beyond. Achieving our collective, shared vision of zero emission mobility will require solutions developed at scale and at price points available to more and more drivers. Volkswagen is working diligently developing new technologies and business models to bring electric drive to more markets around the world.

Aligning Federal Standards and Coordinating into the Future

Volkswagen has commented separately on the parallel rulemaking being conducted by EPA to update MY2023-2026 light-duty GHG standards. With the consideration of several modifications, Volkswagen supports EPA's proposed standards and the level of CO_2 reduction being targeted by that proposal. Volkswagen believes that the combination of standards and flexibilities strikes a good balance between achievable standards that incentivize electrification and deliver meaningful carbon reductions. Volkswagen urges NHTSA and EPA to continue their engagement to ensure that their final rules provide aligned pathways that will continue to ensure concurrent compliance with both regulatory programs.

Volkswagen appreciates NHTSA's consideration of the Settlement Agreement between California Air Resources Board and Volkswagen Group of America, Inc.[3] ("Framework"). Volkswagen committed to the Framework agreement with California because it ensured significant CO_2 reductions and included pragmatic incentives that support our shared long-term vision for vehicle electrification. We have advocated that the overall stringency of the terms within the Framework represent an appropriate benchmark for revised Federal programs through MY2026. Volkswagen is confident that our focus on electrification will help us be successful in meeting the climate goals embodied within the Framework. We must note, however, we are extremely concerned by proposals in Congress that will hurt our ability to compete in the US market by creating discriminatory and distortionary purchase incentives for EVs that, as currently proposed, would significantly disadvantage Volkswagen Group's EVs manufactured both here in the U.S. as well as those imported into the market. Limiting consumer choice severely compromises the nation's ability to meet GHG reduction, air quality improvements and future EV adoption goals, and creates a discouraging and counterproductive signal to Volkswagen and the other auto manufacturers working in good faith to support those important objectives.

Volkswagen has been actively participating with the State of California and the other Section 177 States on their development of the longer-term Advanced Clean Cars II program (ACC2). To date, the workshops have outlined plans to implement new standards to control motor vehicle emissions and to fully commercialize zero emission vehicles (ZEV) through 2035. Volkswagen supports the intention of the Administration to begin examining similar Federal pathways for 2027 and the direction for the Federal and State agencies to coordinate on the development of future standards. Volkswagen is committed to be a constructive partner in the dialogue for those future standards and to find pathways that can further expand the market for electrification in the US. Discussions regarding post-2027 is helping Volkswagen define its own "New Auto" strategy.

Over 60 years of Commitment to the US Auto Market and the American Economy

Incorporated in the United States in 1955, Volkswagen Group of America has for over 60 years been a member of the vibrant US auto industry. Volkswagen Group directly employs over 8,000 Americans spread across 28 operation centers located in 15 US States. These 8,000 high paying, high technology auto jobs provide our employees with career growth opportunities and their families with exceptional benefits.

[3] https://ww2.arb.ca.gov/sites/default/files/2020-08/final-vw-framework-agreement.pdf

Building Electric Vehicles in America for the American Market

Globally, Volkswagen Group is one of the largest producers of cars and trucks in the world with over twelve vehicle brands and an expanding array of high tech businesses. Along with our industry leading push into vehicle electrification, Volkswagen is accelerating our efforts in advanced digitalization and autonomy that is set to define the future of mobility.

Volkswagen Group of American benefits from the global scale of the company to help electrification and other advanced technologies become more affordable and more accessible to American customers. Much of Volkswagen's product offering is increasingly sourced domestically within our integrated North American operational region, including for our newest Volkswagen ID.4 electric SUV. The Volkswagen brand has made significant investments to bring vehicle production and engineering capabilities into the United States. Building the ID.4 at our Platinum LEED Certified factory in Chattanooga, Tennessee is driving an additional $800 million expansion and over 1,000 new employees. Our factory in Chattanooga is gearing up to start domestic production of the ID.4 in 2022. Vehicles like the ID.4 are products that reflect American tastes at price points aimed right at the heart of the American family car market. ID.4, and other future electric products, will help drive further adoption of electric vehicles by American drivers.

Policies Critical to the Success of Electrification

As ambitious and committed as VWGoA is to the accelerated deployment of zero-emissions battery electric vehicles, we want to underscore how critical it is that all elements of the surrounding EV ecosystem be worked equally aggressively. Otherwise, our ambitions as well as those of the Administration, will be put at significant risk. It is also important to again note that the aforementioned proposed discriminatory EV tax credit in the draft Reconciliation Bill would severely jeopardize our EV plans in the U.S., even if the below list of key activities and initiatives occur.

To build sufficient market momentum, policies are needed that build consumer awareness, offer financial and non-financial consumer incentives, and fund the accelerated deployment of new EV charging infrastructure. All are critical to providing consumers the confidence they need, both at the point of sale and over the lifetime of ownership, to consider an EV as their next vehicle. We highlight the following critical activities and initiatives, many of which have also been identified by the broader industry, which must occur in parallel, to meet the stated national EV adoption ambitions:

- **Purchase incentives** which are fully available to *all* electric vehicles. Restricted incentives that discriminate against particular EVs will distort the market, limit consumer choice, and impact the ability of all manufacturers to meet increasingly stringent regulations

- **EV infrastructure** in sufficient quantity and type (e.g., charge rate) to meet current and future EV charging needs (i.e., residential, workplace, and publicly accessible *high-speed* chargers) commensurate with each year's EV adoption targets;

- **Fleet purchase requirements** that facilitate federal, state, and local governments leading by example in EV adoption that meets or exceeds consumer adoption goals.

- **Inclusion of EV charging in EPA's national Renewable Fuels Program (RFS)** and/or a new national Low Carbon Fuels program that provides *direct incentive* to OEMs to deploy EVs;

- Robust support and properly structured **incentives for EV and battery manufacturing**, including sourcing of critical minerals, **that do not distort the consumer market**;

- Research, collaboration and guidance supporting the **development of a battery component and EV recycling system** in the United States consistent with global standards;

- **Consumer and commercial fleet EV education programs** to dramatically improve technology awareness and overcome persistent misunderstanding of how electric vehicles operate, as well as their capability to meet a diverse range of use cases.

- Adopting global standards for electrification technology and design

It is worth reiterating that the first item in the above list, purchase incentives, are a point of intense debate at the moment. Although not within the direct purview of the agency, we would underscore the criticality of accelerating electric vehicle adoption across all segments of the light-duty fleet to meet not only the Administration's climate goals, but air quality requirements that many local governments are struggling to meet. Discriminatory EV purchase incentives which are not available to all electric vehicles could ultimately delay EV adoption by U.S. drivers through distortions in the consumer marketplace, particularly if the subset of "qualifying vehicles" does not meet the full range of consumer needs. We believe that the stakes are too high to tinker with the market in this way -- transportation is the #1 source of greenhouse gas emissions in the U.S. and to pursue demand side policies that distort the marketplace would put the entire EV adoption trajectory at serious risk.

Investing in America's Next Generation High-Tech Automotive Workforce

Our greatest asset in helping to execute our electrification strategy is our people. The success of future electrification will be dependent on having an advanced workforce capable of developing, building and servicing the exciting new electrified vehicles Volkswagen will be bringing to the US market. Volkswagen has adopted proactive strategies in the US to help create the next generation of diverse and talented American autoworkers. We are investing in our people to ensure a sustainable future business and to help strengthen the communities in which our employees and customers live.

We are proud of our history in the US and are invested in the future of the American auto industry. Volkswagen Group appreciates the opportunity to provide comments to this NPRM and looks forward to further, collaborative engagement with NHTSA and EPA. Should you have any questions regarding technical content of these comments, please contact Nick Tamborra at (248) 464-1836.

Sincerely,

--Signature on File--

Rob Sutschek
Vice President

Appendix: Volkswagen Group of America (VWGoA) Comments to the Corporate Average Fuel Economy Standards for Model Years 2024-2026 Passenger Cars and Light Trucks, Notice of Proposed Rulemaking

Contents

1.0 Overview

Volkswagen is supportive of the Administration's decision to review CAFE standards for MY2024-2026. We agree that additional stringency in fleet average standards will help strengthen the energy independence of the Nation and reduce the dependency of light-duty vehicles on petroleum. Volkswagen's investment in the transformation of our fleet to electrified vehicles offers a direct pathway to achieving both of these goals, in addition to our shared goal of cleaner air and carbon neutral transportation.

The comments presented in this summary illustrate Volkswagen's projected compliance with the proposed standards from NHTSA. Our goal is to help inform NHTSA's final decision on maximum feasible standards for MY2024-2026. Our comments focus in on key programmatic elements within CAFE that complicate the comparison with EPA's GHG regulation and the terms of our Framework agreement. We hope that by exploring these differences we can help NHTSA define a pathway forward that will enable concurrent compliance of our future electrified fleet with the full suite of Federal and State obligations. Volkswagen seeks to achieve a stable and clear regulatory pathway, supported with complimentary policies, that aligns with our aggressive transformational investment in electrification.

Volkswagen supports the comments submitted by the AFAI. These additional comments help illustrate conditions specific to Volkswagen's projected compliance and market plans through MY2026. As such, certain sections are marked as **CONFIDENTIAL**. We appreciate NHTSA's consideration of our comments and look forward to reviewing the Final Rule.

2.0 [SECTION CONFIDENTIAL] Volkswagen Group Global Focus on Electrification

[redacted]

[redacted]

[redacted]

3.0 [SECTION CONFIDENTIAL] Volkswagen Projected CAFE Compliance for Proposed MY2024-2026 Standards

[redacted]

[redacted]

[redacted]

[redacted]

3.1 [SECTION CONFIDENTIAL] Volkswagen Group GHG Compliance Projections

[redacted]

[redacted]

3.1.1 [SECTION CONFIDENTIAL] Projected Compliance with Proposed EPA GHG Standards through MY2026

[redacted]

[redacted]

3.1.2 [SECTION CONFIDENTIAL] Projected Compliance with the Terms of the California Framework Agreement

[redacted]

[redacted]

3.2 [SECTION CONFIDENTIAL] Volkswagen Group CAFE Compliance Projection Through 2026

[redacted]

3.3 [SECTION CONFIDENTIAL] Flexibility Limitations within CAFE

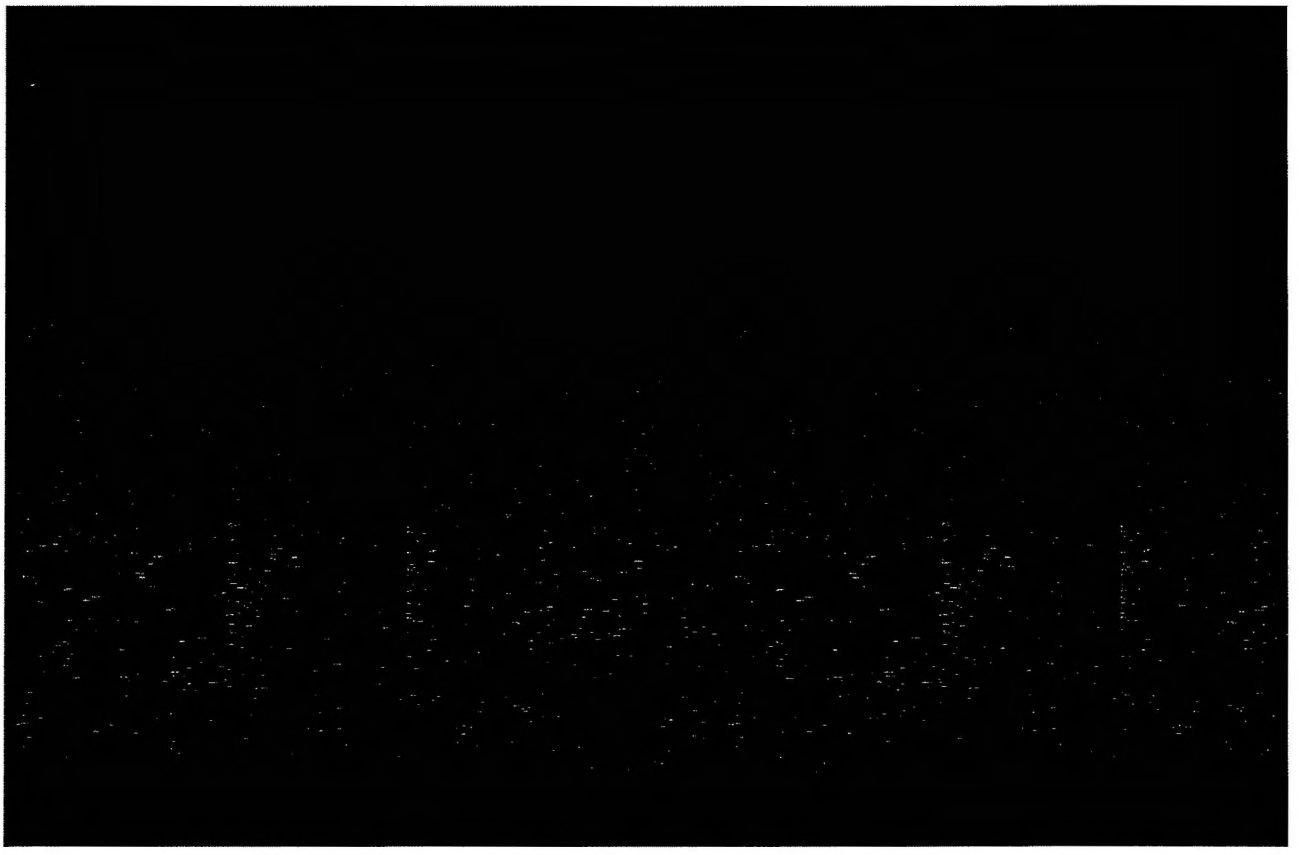
[redacted]

[redacted]

[redacted]

[redacted]

[redacted]



3.3.1 [SECTION CONFIDENTIAL] Separation of Domestic and Import Passenger Car Fleets

[redacted]

[redacted]

[redacted]

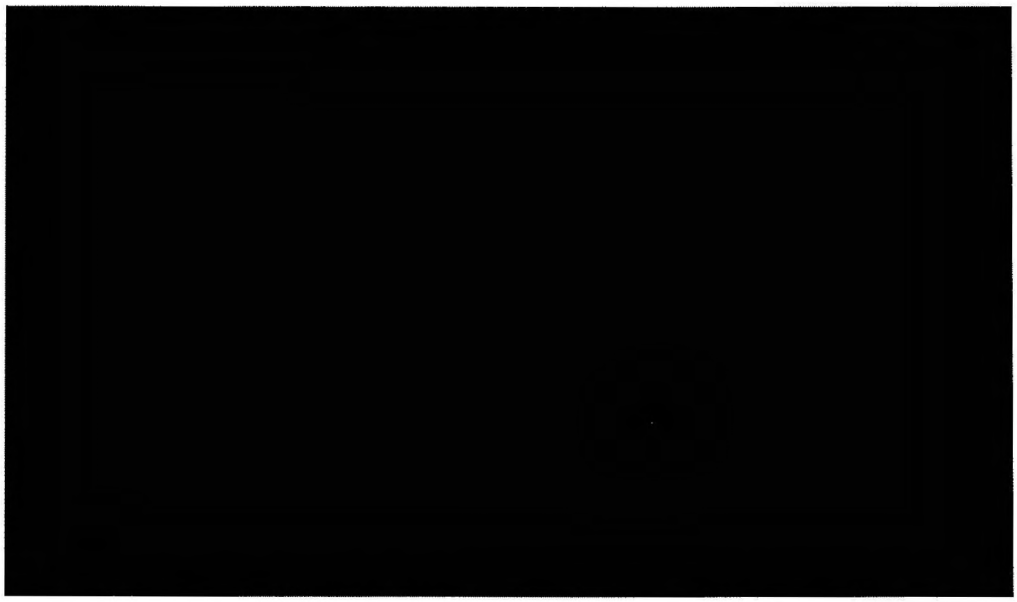
[redacted]

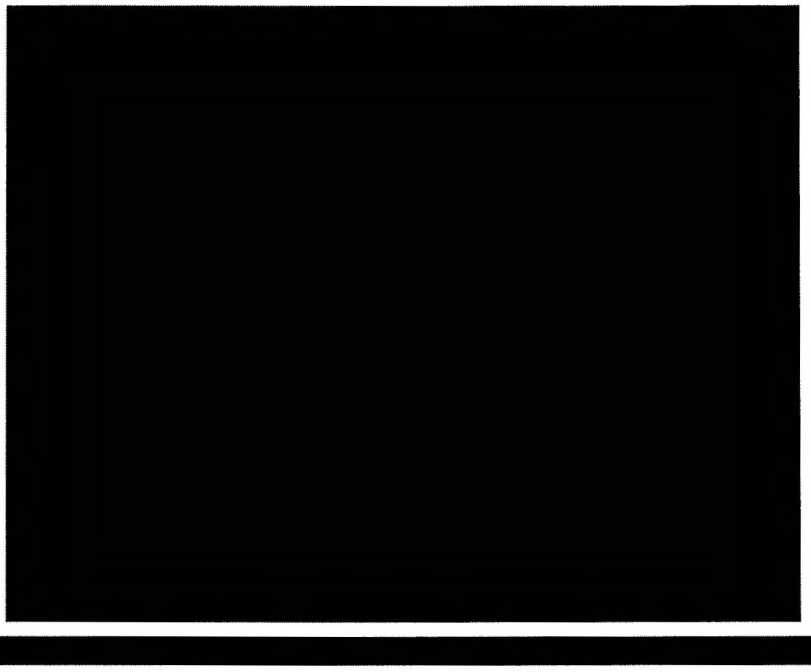
3.3.2 [SECTION CONFIDENTIAL] Credit Trading and Transfer Limits

[redacted]

[redacted]

[redacted]





[redacted]

[redacted]

[redacted]

3.3.3 [SECTION CONFIDENTIAL] Limited Market Availability of CAFE Compliance Credits

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

3.3.4 Fuel Economy Calculation for Dedicated Electric Vehicles

The Petroleum Equivalency Factor calculation within CAFE does not appear to provide an equivalent level of support and incentive for zero-emission electrified vehicles

NHTSA made note in the 2010 rulemaking that the Petroleum Equivalency Factor ("PEF") includes a sufficient multiplicative effect given the inclusion of the 0.15 factor by Department of Energy ("DoE") in the development of the PEF conversion factors (kw-hr/mile to miles per gallon). Given the harmonic averaging technique used within CAFE, the effect of high mpg vehicles in fleet average performance calculations does not appear to provide an equivalent level of support as the zero-emission upstream and advanced vehicle multiplier effects in the EPA GHG and Framework terms. Volkswagen recognizes that the CAFE model does include a factor to indicate projected use of vehicle multipliers, but it was not clear in the description for Alternative-2 how the multiplier was modeled to reflect the differences between the multiplier in the proposed EPA standards and the terms of the Framework.

Volkswagen recognizes that the PEF factor is not under review within this rulemaking and that the factor is defined by DoE, not NHTSA. This topic would be worth exploring further given the prominence of electric vehicle multipliers for Volkswagen's fleet of electrified models and to consider the extent to which differences between the PEF and EV multiplier flexibilities are having on overall projected compliance outcomes.

4.0 Proposals for Revisions to CAFE Program Elements

4.1 Revised Attribute Related to Fuel Economy through MY2026

[4] 86 FR 49820
[5] 86 FR 49820

Incentivize dedicated and dual-fuel vehicles with zero-emission operation through a modification to the footprint attribute

Under the authority of 32902(b)(3)(A), NHTSA has the ability to select multiple attributes related to fuel economy that can be expressed as a mathematical function. Within the TSD, NHTSA considered the use of "% cycle run on electric" as a potential second attribute and stated that this approach would not conflict with the restriction on considering dedicated fuel vehicles in setting standards. However, for the NPRM, NHTSA proposed to remain with footprint as the single attribute for determining fleet average standards.

Volkswagen would need more time to consider the approach discussed within the TSD to understand how adding a second attribute alongside of footprint into the determination of targets could affect future planning. Volkswagen has extensive product planning tools and processes that have been developed using footprint as the sole attribute. As MY2024-2026 falls within near to mid-term planning for Volkswagen, it would be difficult at this point to update planning tools to include a second attribute that would create a multidimensional aspect for compliance planning and projection activities.

However, NHTSA could consider a near-term, temporary inclusion of "% cycle on electric" applicable for model years through 2026 as a modifier to the footprint attribute for dedicated and dual fuel vehicles operating on electricity. This approach could be limited in scope and applicable model years as a way to incentivize electric vehicles and to explore the impact of adding an electric related attribute to the standard.

Dedicated vehicles operating on electricity could include an additional multiplier within the mathematical function in the calculation of **Footprint** as defined within 49 CFR Part 523.2. The multiplier could be one plus the percent of cycle operated on electricity, which would result in a value of two, given that a dedicated vehicle operating on electricity would by definition run the 2-cycle test on electricity. This multiplier could be limited through MY2026. This approach would be consistent with 32902 in that the calculation of footprint retains the form of a mathematical function and as NHTSA has stated within the NPRM and TSD, the agency believes the percent of cycle run on electricity does not conflict with the restriction to consider the fuel economy of dedicated vehicles.

Volkswagen proposes to modify the term 'Footprint' as defined in 49 CFR Part 523.2 to read:

> ***Footprint*** is defined as the product of track width (measured in inches, calculated as the average of front and rear track widths, and rounded to the nearest tenth of an inch) times wheelbase (measured in inches and rounded to the nearest tenth of an inch), divided by 144 and then rounded to the nearest tenth of a square foot. For purposes of this definition, track width is the lateral distance between the centerlines of the base tires at ground, including the camber angle. For purposes of this definition, wheelbase is the longitudinal distance between front and rear wheel centerlines. *Through model years 2026, Footprint shall be multiplied by two for dedicated vehicles operating on electricity or hydrogen. For electric dual fueled vehicles, Footprint shall be multiplied by either one point five, or one plus the model specific percentage utilization of the model on electricity measured in accordance with 49 USC 32905(e).*

This approach would affect the model type targets within Part 531 and 533 for those model types that are dedicated vehicles operating on electricity, but would not affect EPA's calculation of the PEF based fuel economy for those model types. Adding this modifier would not disrupt the calculation of model type targets for conventional and would not require extensive revisions to manufacturer's internal planning tools to include a separate, multidimensional attribute system.

The agency has in multiple rulemakings retained footprint as the sole attribute for CAFE and has consistently stated that NHTSA feels footprint adequately meets the need for attribute-based standards. However, with the transformation to electric vehicles, there could be merit in NHTSA exploring electric related attributes for future CAFE standards. In the near-term through 2026, using electric operation as a modifier to footprint is an incremental

approach that NHTSA could use before shifting completely to a multi-attribute system. NHTSA would benefit from the opportunity to gather data and review trends that the influence of a second attribute may have and to determine if there are any unforeseen complications or unintended compliance consequences. As this approach would be exploratory in nature and applicable to a very limited subset of manufacturers model types, Volkswagen does not believe that including this modification would necessitate an increase in the maximum feasible standards being considered by NHTSA through 2026 (i.e. standards proposed for Alternative-2). Should NHTSA review future data and determine that including this modifier created excessive programmatic erosion to projected CAFE benefits, NHTSA could include this in their consideration of future targets for MY2027 and later. All of this information could help inform a more in-depth review of future multi-attribute based targets.

Volkswagen believes that modifying the Footprint value for dedicated and dual fuel vehicles operated on electricity would send a clear incentivizing policy signal to manufacturers to help accelerate the introduction of electrified vehicles to the market. As noted throughout the comments, Volkswagen believes that electric vehicles align with the energy security and petroleum reductions goals of the CAFE program and will help the agency achieve their long-term objectives.

4.2 High Efficiency Vehicle Fuel Consumption Improvement Values (FCIVs)

Reconsider broadening the applicability of high efficiency FCIVs for a wider range of highly efficient vehicles

Volkswagen requests NHTSA consider extending the applicability of high efficient vehicle FCIV factors to vehicles other than just full-size pick-up trucks. Volkswagen recognizes that this would require modification by EPA to Part 600 regulations, but that this effort would need to be conducted in coordination with EPA. The additional FCIV would help to incentive a broader suite of highly fuel efficient or electrified vehicles extending upon the basis of that used for full-size pick-ups.

4.3 Modeling Inputs

Consider modifications to the CAFE modeling projections to align with Volkswagen's focused investment in electrification and with consumer and legal limitations on future combustion volumes

As noted earlier, Volkswagen has implement a capital spending plan and technology roadmap that primary focuses on electrification as our main pathway for achieving deep decarbonization and petroleum reduction goals. In parallel with increasing consumer demand for electrification, the increase in States with ZEV mandates and the emergence and recent passage of State legislation banning combustion, it is unlikely that OEMs will invest significant resources in researching new combustion technologies or developing all new powertrains.

Engine development programs are long-lead time, often requiring 5 years to fully design and validate new engines. Powertrain production is also capital intensive and the high upfront costs often consider 10 plus years of steady volume to amortize the production and development costs. The effects have been studied extensively by NHTSA and the National Academies and are reflected in such factors as Retail Price Equivalency (RPE) values. However, with the shift to legislative and regulatory programs that are reducing and eliminating future market volumes for combustion technologies, it is unlikely that OEMs will make significant investments in this space.

Volkswagen has publically stated that investments into combustion technologies will wane with a point in the next several years where there will be no new combustion engine families developed for the Group. Volkswagen recognizes that remaining combustion models will continue to be sold in high volume for the next several years and

that it is important to preserve the fuel economy of remaining ICEs as electrification volumes increase. As noted earlier, Volkswagen's remaining ICE engines will primary focus on evolutions of existing downsized, charged engines to incorporate incremental hardware and software improvements.

In light of this shift away from combustion, Volkswagen requests that NHTSA to consider two issues for updates to the CAFE modeling tool. The first is to consider the chain of combustion and hybrid technologies that should be applicable in the modeling for Volkswagen during the analysis of standards for MY2024-2026. Second, Volkswagen recommends the CAFE modeling reconsider the cost outlooks for new and incremental combustion technologies due to the limited lifetime that those technologies could be used (prior to being banned) and the declining cumulative market volume that may be available for combustion in light of electrification mandates.

[redacted]

Concerning cost projections, Volkswagen recommends NHTSA consider the forecast for remaining combustion volumes in the US in light of the proposed Advanced Clean Cars 2 program for updated ZEV pathways through 2035 and the Executive Order examining 50% electric volume by 2030. These types of pathways could greatly reduce the potential future volume for ICE vehicles, which could alter long-standing assumptions used in the cost modeling for technologies. Volkswagen recommends that the volumes used to determine cost projections be adjusted to reflect declining future volumes especially in light of the long-lead time and long lifetime of combustion technologies. Any new engines being assessed within the CAFE modeling may not come into market until ZEV volumes are approaching 25-30% (ACC2 2026 target) and could end up being outlawed within the lifetime of the technology in certain States. The impact should be that the cost per unit would be higher given declining market volume over which to spread development and production costs.

5.0 Comments Regarding Maximum Feasible Standards through MY2026

As outlined above in previous sections, the primary source of projected compliance challenges for Volkswagen's fleet of light-duty vehicles appear rooted in the programmatic constraints within the CAFE regulation. Volkswagen recognizes that many of these constraints are governed by statute. Volkswagen requests that NHTSA consider the extent of these constraints in relation to the economic practicability of achieving our accelerated transformation towards electrification.

5.1 Economic Practicability

Consider the impact of transformative industrial investment in electrification in the determination of maximum feasible standards

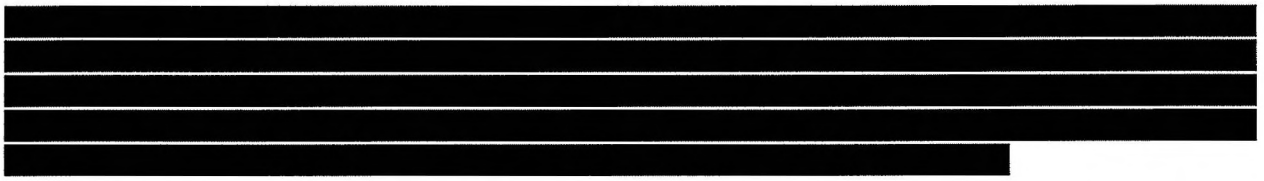
Volkswagen is in the process of implementing a global shift towards transformative electric drive technology. As noted earlier, this investment is approaching over $40 billion in capital expenditures and is also creating a ground shift in the focus of our technical research and development. Given the global scale and reach of Volkswagen within the automotive industry, this transformation is also resulting in significant changes in the operations and focus of our business partners and suppliers.

Combustion is a highly matured, incumbent technology in the global automotive market. Technical expertise and worldwide production capacity is well established and capable of supporting the annual demand for automobiles.

Electrification while present, is largely still growing. While the technology for electric drive components has greatly matured in recent years, traction battery technology continues to evolve rapidly. Furthermore, the global supply chain for electric drive components and battery cell production is in process of being built. Plans to bring high volume electric vehicles to market largely do not involve just developing the vehicle itself, but must be accompanied with parallel plans to develop all new battery cell production and raw material supply chain capacity to go along with the vehicle.

Industrial transformation often requires a high-risk, "all-in" approach in order to create the focus needed to achieve aggressive targets for timing, volume and cost. Because electrification not only requires vehicle development, but also development of a whole new supply chain, Volkswagen believes that an "all of the above" approach is becoming less feasible, especially as it applies to creating all new combustion technology developments in parallel to electrification.

Across many markets, including the US, the projected future volume of combustion technology vehicles is projected to quickly ramp down. In some cases, including within several US states, legislative bans on ICE vehicles or political targets for "100% electric" are providing a clear indication that the timeframe for ICE vehicles is limited.



Considering changes in max feasible standards to account for the restrictions within the CAFE pogrom may appear to create an inconsistent policy for achieving near-term petroleum reductions. However, the outcome would be to create a stable compliance environment that avoids distracting investment in electrification which helps to strengthen and reinforce a durable long-term path for energy independence and deep carbon reductions.

5.2 Social Cost of Carbon in Consideration of Net Benefits

Volkswagen recommends NHTSA retain the current assumptions on Social Cost of Carbon and consider updates in future rulemakings

While we agree that the intergenerational negative impacts (costs) of climate change justify an aggressive SCC, because the specific SCC value (and associated discount rate) used in the analyses have such an enormous impact on the net benefits and thus on our ability to formulate our own set of business cases for both levels and timing of technology investment, we think the most prudent course of action is to keep the SCC value and discount rate used in the NPRM fixed until the next subsequent rule making. This approach allows us to thoroughly assess the proposed alternatives and provide the agency with the most informed feedback, particularly considering the compressed timeframe for review and comment.

6.0 Summary

Volkswagen appreciates the opportunity to provide these comments to NHTSA. We would welcome additional opportunity to engage with the agency to review these points in further detail. Volkswagen's plan to expand our electrification portfolio in the US and globally sets us on a path to achieve deep decarbonization and to reduce our reliance on petroleum. We look forward to engaging with Federal and State agencies to begin discussions on longer-term regulatory pathways that will outline an efficient and stable pathway to an electrified future.