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Glider Kit, Engine, and Vehicle Regulations

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Summary

On October 25, 2016, the U.S. Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration jointly published the second phase of greenhouse gas (GHG) emissions and fuel efficiency standards for medium- and heavy-duty vehicles and engines. The Phase 2 rule affects commercial long-haul tractor-trailers, vocational vehicles, and heavy-duty pickup trucks and vans. It phases in between model years 2018 and 2027.

Under the rulemaking, EPA proposed a number of changes and clarifications for standards respecting "glider kits" and "glider vehicles." A glider kit is a chassis for a tractor-trailer with a frame, front axle, interior and exterior cab, and brakes. It becomes a glider vehicle when an engine, transmission, and rear axle are added. Engines are often salvaged from earlier model year vehicles, remanufactured, and installed in the glider kit. The final manufacturer of the glider vehicle (i.e., the entity that assembles the parts) is typically a different entity than the original manufacturer of the glider kit. Glider kits and glider vehicles are produced arguably for purposes such as allowing the reuse of relatively new powertrains from damaged vehicles.

The Phase 2 rule contains GHG and criteria air pollution emission standards for glider vehicles. The rule sets limits for glider vehicles similar to those for new trucks, with some exemptions. Under the rulemaking, EPA and various commentators argued that glider vehicles should be considered new because the glider market had recently become distorted. In the decade leading up to the rulemaking, sales of glider vehicles increased by an order of magnitude—from several hundred annually to several thousand or more. EPA and various commentators interpreted this change to be more than an attempt to replace damaged chassis, seeing it instead as an attempt by glider vehicle assemblers to circumvent various federal regulations. At the time, the older model year engines being used in glider vehicles were not required to meet current EPA emission standards for nitrogen oxide and particulate matter (which began in 2007 and took full effect in 2010), nor did they need to abide by some other federal regulations, including the Department of Transportation's requirements on electronic logging devices and electronic stability control and the Internal Revenue Service's excise taxes. With respect to pollution requirements, the Phase 2 rulemaking had estimated that NO_x and PM emissions from glider vehicles using pre-2002 engines (prior to exhaust aftertreatment requirements) were 20-40 times higher than current engines.

Subsequent to the Phase 2 rulemaking, EPA received petitions for reconsideration for, among other provisions, the glider requirements. On November 16, 2017, EPA (under Administrator Scott Pruitt) proposed to repeal the emission standards and other requirements for heavy-duty glider vehicles, glider engines, and glider kits, arguing that EPA lacks the authority to regulate them under the Clean Air Act. On July 26, 2018, EPA (under acting Administrator Andrew Wheeler) stated that it would "move as expeditiously as possible on a regulatory revision regarding the requirements that apply to the introduction of glider vehicles into commerce to the extent consistent with statutory requirements and due consideration of air quality impacts." A rule has not been finalized.

Some in Congress have supported the Trump Administration's efforts to reverse the standards and provide relief to the affected glider vehicle assembler industry. However, EPA's efforts to delay and repeal the rule have prompted criticism from other trucking industry officials, some state air agencies, environmentalists, and other lawmakers who fear that increasing production of glider vehicles could result in a fractured vehicle market and significantly higher in-use emissions of air pollutants associated with a host of adverse human health effects, including premature mortality.

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Introduction

The federal government requires the U.S. fleet of heavy-duty engines and vehicles—including commercial long-haul tractor-trailers—to meet various requirements, including those for safety, fuel economy, and air pollution emissions. The first federal emissions standards for heavy-duty engines and vehicles were introduced in 1974 and were gradually tightened in a number of steps. On January 18, 2001, the U.S. Environmental Protection Agency (EPA) set current emission standards for criteria air pollutants and their precursors, including nitrogen oxide (NO_x) and particulate matter (PM).[1]

Further, on October 25, 2016, EPA and the National Highway Traffic Safety Administration (NHTSA) jointly published the second (current) phase of greenhouse gas (GHG) emissions and fuel efficiency standards for medium- and heavy-duty engines and vehicles (Phase 2).[2] The Phase 2 requirements set emission standards for commercial long-haul tractor-trailers, vocational vehicles, and heavy-duty pickup trucks and vans, and they phase in between model year (MY) 2018 and MY 2027. The rule expands on the Phase 1 standards (promulgated on September 15, 2011, for MYs 2014 through 2018)[3] and introduces first-ever controls on trailers (i.e., the part of the vehicle pulled by the tractor) and glider kits and vehicles (i.e., a new chassis combined with an older engine).

This report examines EPA's and selected other federal agencies' requirements on glider kits and glider vehicles and outlines the congressional response.

Glider Kits, Glider Engines, and Glider Vehicles

A glider kit is a tractor chassis with a frame, front axle, interior and exterior cab, and brakes (see **Figure 1**). It becomes a glider vehicle when an engine, transmission, and rear axle are added.[4] Engines are often salvaged from earlier model year vehicles, remanufactured, and installed in glider kits. The final manufacturer of the glider vehicle (i.e., the entity that assembles the parts) is typically a different entity than the original manufacturer of the glider kit. Glider kits and glider vehicles are produced arguably for purposes such as allowing the reuse of relatively new powertrains from damaged vehicles.

Four original equipment manufacturers (OEMs) currently produce glider kits in the United States: Peterbilt, Kenworth, Freightliner, and Western Star.[5] Numerous companies of varying sizes

[1] EPA, "Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements," 66 *Federal Register* 5001, January, 18, 2001. "Criteria" air pollutants are the six common air pollutants that EPA has identified under Section 108 of the Clean Air Act. EPA has determined that these pollutants endanger public health or welfare and that their presence in ambient air results from numerous or diverse sources. "Precursor" pollutants are emissions that contribute to the formation of criteria pollutants. For more information, see CRS Report RL30853, *Clean Air Act: A Summary of the Act and Its Major Requirements*, by James E. McCarthy.

[2] EPA and NHTSA, "Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles—Phase 2," 81 *Federal Register* 73478, October 25, 2016. For a summary of the standards and additional considerations, see CRS In Focus IF10927, *Phase 2 Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles*, by Richard K. Lattanzio.

[3] EPA and NHTSA, "Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles; Final Rule," 76 *Federal Register* 57106, September 15, 2011.

[4] The term *glider* is borrowed from its original use in aviation to describe a plane that soars in the air on wind currents and does not have an engine.

[5] Peterbilt Motors Company (a subsidiary of PACCAR), Denton, TX, https://www.peterbilt.com/about/; Kenworth

unassociated with the OEMs serve as the final manufacturers or assemblers of glider vehicles.[6] These companies specialize in installing remanufactured main components from donor trucks (commonly Detroit, Cummins, and Caterpillar engine options) into new glider kits purchased from the OEMs. Some representatives of the glider assembler industry report the benefits of a glider vehicle to be a more reliable and fuel efficient truck that requires less maintenance, yields less downtime, and yet offers a range of currently available safety features and amenities. Further, they report that a glider vehicle is approximately 25% less expensive than a new truck, which makes it popular with small businesses and owner-operators.[7]

Figure 1. Typical Glider Kit Configuration

Source: EPA and NHTSA, "Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles—Phase 2," 81 *Federal Register* 73478, October 25, 2016, p. 73513.

EPA Phase 2 Emission Standards for Gliders

The Phase 2 standards require, among other provisions, that all glider vehicles be covered by both vehicle and engine certificates. The vehicle certificate requires compliance with the GHG vehicle standards of 40 C.F.R. Part 1037. The engine certificate requires compliance with the GHG engine standards of 40 C.F.R. Part 1036, plus the criteria pollutant (i.e., NO_x and PM) standards

Truck Company (a subsidiary of PACCAR), Kirkland, WA, https://www.kenworth.com/; Freightliner Trucks (a subsidiary of Daimler Trucks North America), Portland, OR, https://freightliner.com/; and Western Star Truck Sales (a subsidiary of Daimler Trucks North America), Portland, OR, https://www.westernstartrucks.com/.

[6] During the Phase 2 rulemaking, EPA found that a majority of glider vehicles are produced by a small number of assemblers and that several hundred more produced 10 or fewer glider vehicles per year.

[7] See petitioner comments in EPA, "Repeal of Emission Requirements for Glider Vehicles, Glider Engines, and Glider Kits," 82 *Federal Register* 53442, November 16, 2017, p. 53443.

of 40 C.F.R. Part 86. Under the Phase 2 rule, used or rebuilt engines may be installed in glider vehicles, provided that

- they meet all standards applicable to the year in which the assembly of the glider vehicle is completed, or
- they meet all standards applicable to the year in which the engine was originally manufactured and also meet one of the following criteria:
  - the engine is still within its original useful life in terms of both miles and years,8
  - the engine has less than 100,000 miles of engine operation, or
  - the engine is less than three years old.

Thus, the standards allow for installation of relatively newer engines in glider kits for purposes consistent with their original intended use—the salvaging of relatively new powertrains from vehicle chassis that have been damaged or have otherwise failed prematurely.

The Phase 2 rule has a transitional program for glider manufacturers. For calendar year 2017, each manufacturer's combined production of glider kits and glider vehicles is capped at the manufacturer's highest annual production of glider kits and glider vehicles for any year from 2010 to 2014. Any glider kits or glider vehicles produced beyond this allowance are subject to all requirements applicable to new engines and new vehicles for MY 2017. Effective January 1, 2018, the permissible number of glider vehicles that may be produced without meeting the Phase 2 long-term requirements is limited as follows: Small businesses may produce a limited number of glider vehicles without meeting the long-term engine or vehicle requirements (or larger vehicle manufacturers may provide glider kits to these small businesses without the assembled vehicles meeting the long-term vehicle requirements) capped at the small vehicle manufacturer's highest annual production volume in 2010 through 2014 or 300, whichever is less. The 2018 allowances mostly continue after 2020, but effective January 1, 2021, all glider vehicles are required to meet the Phase 2 GHG vehicle standards.[9]

Statutory Authorities for the Phase 2 Rulemaking

EPA cited its authority to regulate glider vehicles as Clean Air Act (CAA), Section 202(a), which authorizes standards for emissions of pollutants from new motor vehicles that cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare.

Regarding its statutory authority to regulate criteria pollutants[10] under the CAA, EPA noted that it has broad authority to control all pollutant emissions from "any" rebuilt heavy duty engines (including engines beyond their statutory useful life) under CAA Section 202(a)(3)(D):

> Rebuilding practices.—The Administrator shall study the practice of rebuilding heavy-duty engines and the impact rebuilding has on engine emissions. On the basis of that study and other information available to the Administrator, the Administrator may prescribe

[8] Useful life is defined based on specific emission requirements, vehicle class, weight, and vintage. See 40 C.F.R. Part 86 for details.

[9] For a summary of EPA's standards for glider vehicles, see 81 *Federal Register* 73941-73946.

[10] The CAA requires EPA to set National Ambient Air Quality Standards for six common air pollutants (also known as "criteria air pollutants" (i.e., particulate matter, photochemical oxidants including ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead.

> requirements to control rebuilding practices, including standards applicable to emissions from any rebuilt heavy-duty engines (whether or not the engine is past its statutory useful life), which in the Administrator's judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare taking costs into account.[11]

Regarding its statutory authority to regulate vehicle-based GHG emissions, the Phase 2 rule defines the completed glider vehicle as a "motor vehicle" under CAA Sections 216(2 and 3):

> (2) The term "motor vehicle" means any self-propelled vehicle designed for transporting persons or property on a street or highway.
>
> (3) Except with respect to vehicles or engines imported or offered for importation, the term "new motor vehicle" means a motor vehicle the equitable or legal title to which has never been transferred to an ultimate purchaser; and the term "new motor vehicle engine" means an engine in a new motor vehicle or a motor vehicle engine the equitable or legal title to which has never been transferred to the ultimate purchaser.[12]

Thus, according to the Phase 2 rule, if a used engine is placed in a new glider vehicle, the engine is considered a "new motor vehicle engine" under CAA Section 216(3), because it is being used in a "new motor vehicle." In short, EPA argued that "it is reasonable to require engines placed in newly-assembled vehicles to meet the same standards as all other engines in new motor vehicles."[13]

Additionally, CAA Section 202(a)(1) not only authorizes EPA to set standards "applicable to the emission of any air pollutant from any … new motor vehicles" but states further that these standards are applicable whether such vehicles "are designed as complete systems or incorporate devices to prevent or control such pollution."[14] Thus, according to the Phase 2 rule, the CAA not only contemplates but in some instances directs that EPA establish standards for "incomplete vehicles" and vehicle components for purposes of controlling emissions from the completed vehicle. With this interpretation, EPA adopted provisions in the Phase 2 rule stating that a glider kit becomes a vehicle when "it includes a passenger compartment attached to a frame with one or more axles."[15]

The Phase 2 rule contains no emission standards for glider kits in isolation, but the standards for glider vehicles reflect the contribution of the glider kit. However, manufacturers of glider kits are subject to production caps as discussed above and would be required to obtain certificates of conformity before shipping any glider kits based on EPA's interpretation that the kits are considered "incomplete motor vehicles."[16]

Impacts of the Current Glider Market[17]

The production and use of glider vehicles has the potential to increase emissions of criteria pollutants—specifically NO_x and PM—from heavy-duty vehicles.

[11] 42 U.S.C. §7521.

[12] 42 U.S.C. §7550.

[13] For a summary of EPA's legal justification, see 81 *Federal Register* 73945-73946.

[14] 42 U.S.C. §7521.

[15] 81 *Federal Register* 73515.

[16] 81 *Federal Register* 73513-15, 73941-943.

[17] Unless otherwise noted, the material presented in this section is referenced from the Phase 2 final rule at 81 *Federal Register* 73942-73943.

Current EPA emission standards for NO_x and PM (which began in 2007 and took full effect in 2010) are at least 90% lower than previous standards (see **Table 1**). Thus, the NO_x and PM emissions of any glider vehicles using pre-2007 engines could be 10 times higher than emissions from equivalent vehicles being produced with new engines. Additionally, based on prior standards, NO_x and PM emissions of any glider vehicles using pre-2002 engines (i.e., before exhaust aftertreatment requirements) could be 20-40 times higher than those of current engines.

Table 1. EPA Exhaust Emissions Standards for Heavy-Duty Engines

Standards are expressed in grams per brake horsepower-hour (g/bhp-hr)

Year	HC	NMHC	NMHC+ NOx	NOx	PM	CO
1974-1978	-	-	16.00	-	-	40.00
1979-1984	1.50	-	10.00	-	-	25.00
1985-1987	1.30	-	-	10.70	-	15.50
1988-1989	1.30	-	-	10.70	0.60	15.50
1990	1.30	-	-	6.00	0.60	15.50
1991-1993	1.30	-	-	5.00	0.25	15.50
1994-1997	1.30	-	-	5.00	0.10	15.50
1998-2003	1.30	-	-	4.00	0.10	15.50
2004-2006	-	-	2.4 (or 2.5 with a limit of 0.5 on NMHC)	-	0.10	15.50
2007+	-	0.14	-	0.20	0.01	15.50

Source: EPA, Heavy-Duty Highway Compression-Ignition Engines and Urban Buses: Exhaust Emission Standards, https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100O9ZZ.pdf.

Notes: HC is hydrocarbon, NMHC is non-methane hydrocarbon, NO_x is nitrogen oxide, PM is particulate matter, CO is carbon monoxide.

Standards for 1990 apply only to diesel-fueled heavy-duty engines (HDE). Standards for 1991+ apply to both diesel- and methanol-fueled HDEs.

For methanol-fueled engines, the standard is for total hydrocarbon equivalent.

Under 1998 consent decrees, several manufacturers supplied 2004 compliant engines from October 2002.

NO_x and NMHC standards for 2007 were phased in on a percent-of-sales basis: 50% in 2007-2009 and 100% in 2010. Most manufacturers certified their 2007-2009 engines to a NO_x limit of about 1.2 g/bhp-hr based on a fleet average calculation.

These emission impacts are compounded by the recent increase in sales of glider vehicles. Estimates provided to EPA during the Phase 2 rulemaking indicate that production of glider vehicles increased by an order of magnitude since 2006—from a few hundred each year to several thousands. EPA noted during the rulemaking

> While the few hundred glider vehicles produced annually in the 2004-2006 timeframe may have been produced for arguably legitimate purposes, such as salvaging powertrains from vehicles otherwise destroyed in crashes, EPA believes (as did many commenters) that the more than tenfold increase in glider kit production since the MY 2007 criteria pollutant

> emission standards took effect reflects an attempt to avoid these more stringent standards and (ultimately) the Clean Air Act.[18]

The agency's regulatory analysis of the environmental impacts of glider vehicles assumes annual sales of 10,000 for 2015 and later, which is consistent with the comments received on the Phase 2 proposed rule. The modeling also assumes that glider vehicles emit at the level equivalent to the engines meeting the MY 1998-2001 standards, since most glider vehicles currently being produced reportedly use remanufactured engines of this vintage. The analysis shows that without the new restrictions, glider vehicles on the road in 2025 could emit nearly 300,000 tons of NO_x and nearly 8,000 tons of PM annually. Thus, glider vehicles could represent 5% of heavy-duty tractors on the road, and their emissions could represent about one-third of all NO_x and PM from the sector.

> According to EPA's estimates during the Phase 2 rulemaking, in 2025, glider vehicles could represent 5% of heavy-duty tractors on the road, and their emissions could represent about one-third of all NO_x and PM from the sector.

Under the Phase 2 rule, EPA argued that by restricting the number of glider vehicles with high polluting engines on the road, excess NO_x and PM emissions could decrease dramatically, leading to substantial public health benefits. Put into monetary terms (using PM-related benefit-per-ton values), EPA estimated that the removal of all unrestricted glider vehicle emissions from the atmosphere could yield between $6 billion and $14 billion in health benefits annually (in 2013 dollars).

Subsequent to the rulemaking, EPA's National Vehicle and Fuel Emissions Laboratory (NVFEL) conducted dynamometric emissions tests[19] comparing selected glider vehicles (with remanufactured engines originally certified in a MY between 1998 and 2002) to selected conventionally manufactured MY 2014 and MY 2015 tractors (with engines compliant with 2010 standards). The analysis finds that "under highway cruise conditions, NO_x emissions from the [selected] glider vehicles were approximately 43 times as high, and PM emissions were approximately 55 times as high as the [selected] conventionally manufactured 2014 and 2015 MY tractors." Under transient operations, NO_x emissions were four to five times higher, and PM emissions were 50-450 times higher.[20]

However, the production and use of glider vehicles currently has a positive impact on fuel efficiency and GHG emissions in the U.S. fleet of heavy-duty vehicles. Several studies, including the NVFEL 2017 study, find that GHG emissions from selected glider vehicles are actually "lower [by 10%-20%] than the conventionally manufactured vehicles when measured on the chassis dynamometer without taking into account the differences in the aerodynamic drag between the vehicles."[21] These results are not unexpected given the known trade-off between NO_x and GHG emissions regarding injection timing and similar engine calibration techniques. Further, many of the current aftertreatment technologies used to mitigate criteria pollutant emissions require energy to operate and thus cut into the engine's fuel efficiency. Other studies have these GHG emission numbers at 7%-9% lower and 4% lower using estimates with on-road operating

[18] 81 *Federal Register* 73943.

[19] In standard emissions testing cycles defined by EPA, dynamometers are used to provide simulated road loading of either the engine or full powertrain in laboratory settings. See 40 C.F.R. Part 86, Subpart N.

[20] NVFEL, "Chassis Dynamometer Testing of Two Recent Model Year Heavy-Duty On-Highway Diesel Glider Vehicles," November 20, 2017, Docket No.: EPA-HQ-OAR-2014-0827-2417.

[21] NVFEL, "Chassis Dynamometer Testing," p. 3.

assumptions and/or more recently manufactured vehicles.[22] Several of these studies argue that recent advancement in engine design "makes clear just how quickly any possible short-term fuel economy advantage for glider vehicles disappears."[23]

Further, representatives of the glider assembler industry contend that glider vehicles reduce GHG and other air emissions on a lifecycle basis because of the savings created by using recycled materials, including the reuse of cast steel in the remanufacturing process.[24]

Proposed Repeal of Glider Requirements

Following promulgation of the Phase 2 rule, EPA received from representatives of the glider assembler industry a joint petition requesting that the agency reconsider the application of the Phase 2 rule to glider vehicles, glider engines, and glider kits.[25] The petitioners made three principal arguments. First, they argued that EPA is not authorized by CAA Section 202(a)(1) to regulate glider kits, glider vehicles, or glider engines. Second, they contended that in the Phase 2 rule EPA "relied upon unsupported assumptions to arrive at the conclusion that immediate regulation of glider vehicles was warranted and necessary." Third, they asserted that reconsideration was warranted under Executive Order 13783 of March 28, 2017, "Promoting Energy Independence and Economic Growth."

On November 16, 2017, EPA (under Administrator Scott Pruitt) proposed a repeal of the emission standards and other requirements on heavy-duty glider vehicles, glider engines, and glider kits.[26] In support of proposed repeal, EPA summarized several comments made by the petitioners.

First, EPA stated that the petitioners took particular issue with what they characterized as EPA's assumption that the NO_x and PM emissions of glider vehicles would be increased significantly. They highlighted the findings of a Tennessee Tech University (TTU) study that analyzed NO_x, PM, and carbon monoxide emissions from both remanufactured and OEM engines. The results of the study show that "remanufactured engines from model years between 2002 and 2007 performed roughly on par with OEM 'certified' engines" and "in some instances even out-performed the OEM engines."[27] Since the proposal, TTU leaders and other stakeholders have raised questions about the accuracy of the TTU study, the role engineering experts at the university played in it, and the relationship between specific glider kit manufacturers and the

[22] See, for example, David W. Cooke, Union of Concerned Scientists, "Comments Regarding the Repeal of Emission Requirements for Glider Vehicles, Glider Engines, and Glider Kits," January 5, 2018, Docket No.: EPA-HQ-OAR-2014-0827.

[23] Cooke, "Comments Regarding the Repeal of Emission Requirements," p. 10.

[24] See petitioner comments summarized at 82 *Federal Register* 53444.

[25] Petition for Reconsideration of Application of the Final Rule Entitled "Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles—Phase 2 Final Rule" from Fitzgerald Glider Kits, LLC, Harrison Truck, July 10, 2017, https://www.epa.gov/sites/production/files/2017-07/documents/hd-ghg-fr-fitzgerald-recons-petition-2017-07-10.pdf.

[26] EPA, "Repeal of Emission Requirements for Glider Vehicles, Glider Engines, and Glider Kits," 82 *Federal Register* 53442, November 16, 2017.

[27] The only publicly available report of the test results from the TTU project is found in a letter from Philip Oldham, president of Tennessee Tech University, and Thomas Brewer, associate vice president of the Center for Intelligent Mobility, to Representative Diane Black dated June 15, 2017. The results are referenced in EPA's proposal at 82 *Federal Register* 53444.

university.[28] TTU has since asked EPA to "withhold any use or reference to said study pending the conclusion of [an] internal investigation."[29]

Second, EPA stated that the petitioners argued that the Phase 2 rule had failed to consider the significant environmental benefits that glider vehicles create. They noted that glider vehicle GHG emissions are less than those of OEM vehicles due to glider vehicles' greater fuel efficiency and that the carbon footprint of glider vehicles is further reduced by the savings created by recycling materials.

Statutory Authorities for the Proposed Repeal

In the proposed repeal, EPA determined that its previous statutory interpretation of its authority to regulate glider engines, vehicles, and kits was "incorrect" and "not the best reading" of the CAA.[30] EPA based the proposed repeal on a different interpretation of the CAA under which glider vehicles would be found not to constitute "new motor vehicles" within the meaning of CAA Section 216(3), glider engines would be found not to constitute "new motor vehicle engines" within the meaning of CAA Section 216(3), and glider kits would not be treated as "incomplete" new motor vehicles. Under this new interpretation, EPA said it lacked authority to regulate glider vehicles, glider engines, and glider kits under CAA Section 202(a)(1).

To support its new statutory interpretation, EPA stated that it has "inherent authority to reconsider, revise, or repeal past decisions to the extent permitted by law so long as the agency provides a reasoned explanation."[31] Based on the agency's reading "of the structure and history" of the Motor Vehicle Air Pollution Control Act of 1965 and the Automobile Information Disclosure Act of 1958, EPA contended in the proposed repeal that

> it would seem clear that Congress intended, for purposes of Title II, that a "new motor vehicle" would be understood to mean something equivalent to a "new automobile"—i.e., a true "showroom new" vehicle. It is implausible that Congress would have had in mind that a "new motor vehicle" might also include a vehicle comprised of new body parts and a previously owned powertrain.[32]

In summary, EPA interpreted legislative history to conclude that "it seems likely that Congress understood a 'new motor vehicle' … to be a vehicle comprised entirely of new parts."[33]

Additionally, under EPA's proposed interpretation, the agency would not have the authority to regulate glider kits under CAA Section 202(a)(1). If glider vehicles are not "new motor vehicles" under CAA Section 216(3), then the agency said it would lack authority to regulate glider kits as

[28] See, for example, letter from Christine Todd Whitman, former EPA Administrator, and Carol Browner, former EPA Administrator, to Scott Pruitt, EPA Administrator, March 9, 2018; letter from the Environmental Defense Fund to Scott Pruitt, EPA Administrator, March 11, 2018; and letter from Tom Carper, Ranking Member, Senate Environment and Public Works Committee, and Tom Udall, Ranking Member, Senate Appropriations Subcommittee on the Department of the Interior, Environment and Related Agencies, to Scott Pruitt, EPA Administrator, March 12, 2018.

[29] Letter from Philip Oldham, President, Tennessee Tech University, to Scott Pruitt, EPA Administrator, February 9, 2018.

[30] 82 *Federal Register* 53444-53445.

[31] 82 *Federal Register* 53443. EPA argues for this authority in part because the agency's interpretations of the statutes it administers "are not carved in stone." Chevron U.S.A. Inc. v. NRDC, Inc., 467 U.S. 837, 863 (1984). For further discussion on repealing regulations, see CRS Report R41546, *A Brief Overview of Rulemaking and Judicial Review*, by Todd Garvey.

[32] 82 *Federal Register* 53446.

[33] 82 *Federal Register* 53446.

"incomplete" new motor vehicles. Further, given that a glider kit lacks a powertrain, EPA stated that a glider kit would not explicitly meet the definition of *motor vehicle*, which is defined to mean "any self-propelled vehicle" under 42 U.S.C. 7550(2).

Status of the Proposal

EPA's proposed "Repeal of Emission Requirements for Glider Vehicles, Glider Engines, and Glider Kits" has not been finalized. The comment period for the proposal closed on January 5, 2018. The proposal received over 4,000 comments.

Numerous comments from the trucking sector—including original equipment manufacturers, large fleets, and advanced technology firms—have pushed back against the proposal, arguing that EPA's legal justification could "effectively nullify" the agency's statutory authority over new vehicles and engines and disadvantage numerous OEM businesses that have invested in cleaner engine and emission control technologies.[34] Several large truck manufacturers have expressly supported the limits on glider vehicles, including Volvo Group, Daimler Trucks North America, and Navistar International Corp (notably, some of the same manufacturers that sell glider kits).[35] Also, comments from 12 attorneys general—from states including California, New York, Illinois, Pennsylvania, and North Carolina—argued that the "proposed repeal rests on a legally untenable reinterpretation of the Agency's duty to regulate harmful air pollutants from 'new motor vehicles' and 'new motor vehicle engines.'"[36] Further, comments from state and local air quality agencies (e.g., the National Association of Clean Air Agencies) noted that the proposed repeal would likely force state and local regulators to place new requirements on stationary sources (e.g., power plants and factories) in their State Implementation Plans in order to meet National Ambient Air Quality Standards for ozone and PM.[37]

On February 8, 2018, the California Air Resources Board proposed to adopt the glider vehicle requirements into the state's broader rulemaking aligning California's GHG standards for medium- and heavy-duty trucks and trailers with the federal Phase 2 standards for MYs 2018-2027.[38] The new California rule, when final, would allow only 2010 and later model year heavy-duty truck engines in glider kits. EPA has approved California's waiver request under Section 209(b) of the CAA to adopt its own MY 2014-2018 Phase 1 standards for heavy-duty vehicles.[39]

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[34] Comments from Jed Mandel, President of the Truck and Engine Manufacturers Association, at EPA's public hearing on the proposed repeal on December 4, 2017.

[35] See comments at Heavy Duty Manufacturers Association, "Press Release—Glider Kits: Environmentalists Sue to Force EPA to Reinstate Original Cap," July 19, 2018, https://www.hdma.org/news/glider-kits-environmentalists-sue-force-epa-reinstate-original-cap.

[36] Letter from Attorneys General of California, New York, Connecticut, Illinois, Maryland, Massachusetts, New Mexico, North Carolina, Oregon, Pennsylvania, Vermont, and Washington, to EPA, Docket No. EPA-HQ-OAR-2014-0827, January 5, 2017.

[37] Letter from Steven Flint and Eric White, National Association of Clean Air Agencies, to EPA, Air and Radiation Docket and Information Center, Docket ID No. EPA-HQ-OAR-2014-0827, January 5, 2018. For more on State Implementation Plans and National Ambient Air Quality Standards for ozone and PM, see CRS Report RL30853, *Clean Air Act: A Summary of the Act and Its Major Requirements*, by James E. McCarthy.

[38] California Air Resources Board, "Proposed California Greenhouse Gas Emissions Standards for Medium- and Heavy-Duty Engines and Vehicles (Phase 2) and Proposed Amendments to the Tractor-Trailer GHG Regulation," https://www.arb.ca.gov/regact/2018/phase2/phase2.htm?utm_medium=email&utm_source=govdelivery#anchor.

[39] EPA, "California State Motor Vehicle Pollution Control Standards; Greenhouse Gas Emissions from 2014 and Subsequent Model Year Medium and Heavy-Duty Engines and Vehicles; Notice of Decision," 81 *Federal Register* 95982, December 29, 2016.

It is uncertain how California and the federal government would proceed with the adoption of the state's Phase 2 program and its glider vehicle provisions if changes are made at the national level.

The Administration's 2018 Spring Regulatory Agenda projected a final rule to repeal the glider requirements by May 2018. However, as reported on May 2, 2018,[40] the White House Office of Management and Budget (OMB) rejected EPA's draft final rule on the grounds that EPA had yet to craft a regulatory impact analysis detailing the pollution impacts of the plan. This analysis is required for deregulatory actions according to OMB Guidance, released April 5, 2017,[41] which addresses the requirements of Executive Order 13771 of January 30, 2017, "Reducing Regulation and Controlling Regulatory Costs."

On July 6, 2018, EPA issued an 18-month enforcement pause of the Phase 2 production limits on glider vehicles, giving the agency more time to formally revisit the provisions. According to a "no-action assurance" memorandum,[42] the agency would exercise its "enforcement discretion" over production caps that apply to the vehicles if they do not meet modern emissions limits. The exercise of such discretion is one of two "interim steps" the agency planned to take to reduce adverse impacts on the industry. The memorandum states that the agency would also plan to formally extend the regulatory compliance date to December 31, 2019.

In a July 13, 2018, letter,[43] 13 states—led by California—urged acting EPA Administrator Andrew Wheeler to withdraw or stay the agency's no-action assurance regarding the production limits on glider vehicles, stating that EPA's enforcement discretion "circumvents the substantive and procedural requirements that EPA must meet in order to modify a rule." Further, on July 17, 2018, three environmental groups filed a petition[44] with the U.S. Court of Appeals for the District of Columbia Circuit seeking an emergency stay of EPA's enforcement discretion, citing the need for "urgent relief in order to avert" substantial and irreparable public health consequences while also urging that the court consider immediately vacating the no-action assurance memorandum. On July 18, 2018, in a 2-1 decision, the D.C. Circuit granted an emergency stay of the memorandum to give the court "sufficient opportunity" to consider the emergency motion.[45] The court also ordered EPA to file a response to the emergency motion by July 25, 2018. Because of the

[40] Michael Bastasch, "Sources: EPA's Effort to Save an Industry from Obama Regulations Is Being Held Up by Bureaucratic Delays," The Daily Caller, May 2, 2018.

[41] "EO 13771 does not change the requirements of EO 12866, which remains the primary governing EO regarding regulatory review and planning. In particular, EO 13771 has no effect on the consideration of benefits in informing any regulatory decisions. For all EO 13771 regulatory actions and EO 13771 deregulatory actions, except where prohibited by law, agencies must continue to assess and consider both benefits and costs and comply with all existing requirements and guidance, including but not limited to those in EO 12866 and OMB Circular A-4." Dominic J. Mancini, Acting Administrator, Office of Information and Regulatory Affairs, "Guidance Implementing Executive Order 13771, Titled 'Reducing Regulation and Controlling Regulatory Costs,'" M-17-2, April 5, 2017, p. 13, https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2017/M-17-21-OMB.pdf.

[42] Letter from Susan Bodine, Assistant Administrator, Office of Enforcement and Compliance Assurance, to William Wehrum, Assistant Administrator, Office of Air and Radiation, "Memorandum on Conditional No Action Assurance Regarding Small Manufacturers of Glider Vehicles," July 6, 2018, https://www.epa.gov/sites/production/files/2018-07/documents/glidernoactionassurance070618.pdf.

[43] Letter from Attorneys General of California, Connecticut, Illinois, Maine, Maryland, Massachusetts, New Jersey, New York, North Carolina, Oregon, Pennsylvania, Vermont, and Washington and the Pennsylvania Department of Environmental Protection and the California Air Resources Board to Andrew Wheeler, EPA Acting Administrator, July 13, 2018, https://insideepaclimate.com/sites/insideepaclimate.com/files/documents/2018/jul/epa2018_1239.pdf.

[44] Environmental Defense Fund, Center for Biological Diversity, and Sierra Club, Emergency Motion for Stay or Summary Disposition and Request for Administrative Stay, July 17, 2018, https://insideepaclimate.com/sites/insideepaclimate.com/files/documents/2018/jul/epa2018_1249.pdf.

[45] Order, Envtl. Def. Fund v. EPA, No. 18-1190 (D.C. Cir. July 18, 2018).

emergency stay, EPA cannot implement the no-action assurance memorandum until the court resolves the merits of the motion or orders otherwise.

On July 26, 2018, EPA withdrew the no-action assurance. In a memorandum to EPA assistant administrators,[46] Wheeler noted that the agency suspends enforcement only in rare circumstances and that after consulting with EPA lawyers and policy experts, he "concluded that the application of the current regulations to the glider industry does not represent the kind of extremely unusual circumstances that support the EPA's use of enforcement discretion." However, the memo states that the agency would "continue to move as expeditiously as possible on a regulatory revision regarding the requirements that apply to the introduction of glider vehicles into commerce to the extent consistent with statutory requirements and due consideration of air quality impacts."

Other Requirements Pertaining to Gliders

Glider kits and glider vehicles have presented challenges to the interpretation and enforcement of other federal requirements. Some notable examples include safety standards and tax provisions.

Safety Standards

NHTSA and the various agencies under the Department of Transportation consider a truck to be "newly manufactured" and subject to Federal Motor Vehicle Safety Standards[47] when a new cab is used in its assembly "unless the engine, transmission, and drive axle(s) (as a minimum) of the assembled vehicle are not new, and at least two of these components were taken from the same vehicle."[48] Thus, many glider vehicles may not be classified as "newly manufactured" for the purposes of federal safety standards. Such vehicles would only need to comply with the standards under 49 C.F.R. Part 571, Subpart B, that were promulgated prior to the date of manufacture for the engine, transmission, and drive axle(s) of the assembled vehicle. One example of a recent requirement from which such glider vehicles would be exempt is the standard for Electronic Stability Control promulgated in 2015, which promised to "prevent 40 to 56 percent of untripped rollover crashes and 14 percent of loss-of-control crashes" annually.[49]

Under NHTSA's existing definition, glider vehicles could also be exempt from future safety standards for emerging technologies. Safety technologies that could be left off future glider vehicles due to their exemption could include automatic emergency braking (now required in Europe on most new heavy-duty vehicles), lane departure warning and lane-keeping assist, and vehicle-to-vehicle electronic communication.[50]

Further, according to guidance published by the Federal Motor Carrier Safety Administration (FMCSA) in July 2017, vehicles equipped with pre-MY 2000 engines are not subject to the

[46] Letter from Andrew Wheeler, Acting Administrator, to Susan Parker Bodine, Assistant Administrator, Office of Enforcement and Compliance Assurance and William L. Wehrum, Assistant Administrator, Office of Air and Radiation, "Memorandum on Withdrawal of Conditional No Action Assurance Regarding Small Manufacturers of Glider Vehicles," July 26, 2018, https://www.epa.gov/sites/production/files/2018-07/documents/memo_re_withdrawal_of_conditional_naa_regarding_small_manufacturers_of_glider_vehicles_07-26-2018.pdf.

[47] 49 C.F.R. Part 571, Subpart B.

[48] 49 C.F.R. §571.7(e).

[49] 49 C.F.R. §571.136; NHTSA, "Final Rule: Federal Motor Vehicle Safety Standards; Electronic Stability Control Systems for Heavy Vehicles," 80 *Federal Register* 36049, June 23, 2015.

[50] See discussion in Cooke, "Comments Regarding the Repeal of Emission Requirements."

requirements for electronic logging devices.[51] As this exemption is based on the model year of the engine—not the chassis—any glider vehicle equipped with a pre-MY 2000 engine would be exempt. The policy deviates from FMCSA's previous guidance, which emphasized the model year as determined by the Vehicle Identification Number on a truck's chassis. The logging device requirement is designed to help reduce fatigue-related crashes by improving enforcement of hours-of-service limits for truck drivers.[52]

For more information on truck safety issues, see CRS Report R44792, *Commercial Truck Safety: Overview*, by David Randall Peterman.

Excise Taxes[53]

Internal Revenue Code (IRC) Section 4051 imposes a 12% excise tax on the first retail sale price of certain heavy trucks, trailers, and tractors. Specifically, "articles" subject to tax under Section 4051 include (1) automobile truck bodies and chassis having a gross vehicle weight of more than 33,000 pounds, (2) truck trailer and semitrailer bodies and chassis suitable for use with a vehicle having a gross weight of more than 26,000 pounds, and (3) tractors of the kind chiefly used for highway transportation in combination with a trailer or semitrailer.[54] A tractor with a gross weight of 19,500 pounds or less is not subject to the 12% tax if its weight when combined with a trailer or semitrailer is 33,000 pounds or less.[55]

One issue of confusion among taxpayers in recent years has been whether a glider kit modification or renovation of a heavy truck chassis triggers excise tax liability. According to IRC Section 4052(f)(1), "repairs or modifications" of a taxable article that do not exceed 75% of the retail price of a comparable new vehicle do not trigger excise tax liability, and this provision serves as a taxpayer safe harbor provision from excise tax liability.[56] The safe harbor provision allowed some glider vehicles to avoid triggering the tax.

However, in 2014, the IRS Office of Chief Counsel released an advisory memorandum on the tax treatment of chassis renovations in which a glider kit dealer, or "outfitter," combines components (i.e., glider kits) to produce a highway tractor or truck chassis in four hypothetical scenarios.[57] According to the scenarios in the memorandum—which is not official or binding guidance—the first retail sale of vehicles refurbished using new parts from gliders kits can be treated as new vehicles subject to the 12% excise tax. The memorandum also explained that the constructed price of the glider kit vehicle subject to tax should be calculated as the price of the refurbished vehicle plus a 4% markup minus the value of used components provided by the customer. The advisory opinion was based on an interpretation that a glider kit vehicle triggers tax liability because it was effectively a "new vehicle" and that Congress's intent in enacting the Section

[51] 49 C.F.R. Part 395, Subpart B. FMCSA, "Final Rule: Electronic Logging Devices and Hours of Service Supporting Documents," 80 *Federal Register* 78292, December 16, 2015.

[52] For more information, see CRS Insight IN10948, *The Electronic Logging Device (ELD) Controversy*, by David Randall Peterman.

[53] This section was written by Sean Lowry, Analyst in Public Finance.

[54] IRC §4051(a).

[55] IRC §4051(a)(4).

[56] IRC §4052(f)(1).

[57] Stephanie Bland, IRS, "Memorandum Number: 201403014, on Section 4051: Chassis Renovation," October 31, 2013, https://irs.gov/pub/irs-wd/1403014.pdf. The memorandum was in response to questions arising from a prior memorandum issued on January 7, 2013.

4052(f) safe harbor was to apply it only to "repairs" to an "existing vehicle."[58] Some industry representatives and tax planning professionals saw this as a change in previous practice that such refurbishments would not trigger excise tax liability so long as they collectively did not exceed the 75% of price threshold.[59]

More recent IRS guidance seems to confirm an enforcement trend toward treating more glider kit vehicles as subject to excise tax. In 2016 and 2017, IRS issued interim guidance on defining what constitutes a "chassis" subject to excise tax under Section 4051.[60] IRS defined a "chassis" as the frame and supporting structure and all those "components" that are attached to it, except for components specifically exempt from tax.[61] The following is a nonexhaustive list of chassis components: engine, axles, transmission, drivetrain, suspension, exhaust aftertreatment system, and cab.[62] Some tax professionals interpret the interim guidance as the IRS requiring that any components that are removed from a previously taxed chassis and are remanufactured or repaired must be put back into the same chassis in order to satisfy the Section 4052(f) safe harbor requirements.[63]

On April 24, 2018, the Department of the Treasury issued a press release indicating that it plans to issue final regulations on Section 4051 as part of the Trump Administration's "burden-reducing guidance" projects, but no date of completion or further details were provided.[64]

Selected Congressional Actions

Members of Congress remain divided on EPA's glider vehicle regulations. Some recent congressional actions regarding glider kits and vehicles, EPA's Phase 2 rule, and the proposed revision include the following:

- Representative Diane Black sponsored two amendments in the 114th Congress to Department of the Interior, Environment, and Related Agencies Appropriations bills (H.Amdt. 1313 and H.Amdt. 630) to prohibit EPA from using funds to implement, administer, or enforce the agency's Phase 2 fuel efficiency and emissions standards or any other rule with respect to glider kits and glider vehicles. Both amendments were agreed to by voice votes, but neither spending bill was enacted.
- In a March 12, 2018, letter to EPA Administrator Scott Pruitt, Senators Tom Carper and Tom Udall—Ranking Members to the Senate Environment and Public Works Committee and the Senate Appropriations Committee,

[58] See Memorandum Number: 201403014, p. 4.

[59] For example, see Tim Reynolds, "IRS Appears to Change Course on Applying Federal Excise Tax to Glider Kits," CliftonLarsonAllen, January 21, 2014, https://claconnect.com/resources/articles/irs-appears-to-change-course-on-applying-federal-excise-tax-to-glider-kits.

[60] See IRS Notice 2017-5, February 6, 2017, https://irs.gov/irb/2017-06_IRB; and IRS Notice 2016-81, December 20, 2016, https://www.irs.gov/pub/irs-drop/n-16-81.pdf

[61] Exemptions from tax are listed in IRC Section 4053(9) and include certain idling reduction devices. See IRS Notice 2017-5.

[62] IRS Notice 2017-5.

[63] Tim Reynolds, "Definitions of Chassis and Body for FET Put Limits on Use of Safe Harbor," CliftonLarsonAllen, February 8, 2017, https://www.claconnect.com/resources/articles/2017/definitions-of-chassis-and-body-for-fet-put-limits-on-use-of-safe-harbor.

[64] U.S. Department of the Treasury, "Treasury Releases Report Highlighting Regulatory Reform Accomplishments," press release, April 24, 2018, https://home.treasury.gov/news/press-releases/sm0366.

respectively—asked the agency to provide documentation on the proposed repeal and to "immediately announce plans to withdraw the proposal."[65]

- In March 2018, 14 Republican Members of Congress—four Senators and 10 Representatives—sent letters to EPA Administrator Scott Pruitt asking the agency to discontinue efforts to repeal the emissions standards for glider vehicles because a repeal would undermine manufacturing industries in their home states.[66]
- In a June 21, 2018, letter,[67] Subcommittee Chairman Greg Gianforte on the House Committee on Oversight and Government Reform asked EPA's Office of the Inspector General to investigate the November 20, 2017, NVFEL study. The letter cites documents that show communications between EPA scientists and stakeholders in the trucking industry that compete with the glider vehicle assembler industry that may have impacted the "objectivity and legitimacy" of the study.
- In a July 12, 2018, letter to EPA Acting Administrator Andrew Wheeler,[68] Republican leaders on the House Committee on Science, Space, and Technology asked EPA officials for documents pertaining to, and a briefing on, the NVFEL study, stating concerns similar to those listed in Chairman Gianforte's letter.

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[65] Letter from Tom Carper, Ranking Member, Senate Environment and Public Works Committee, and Tom Udall, Ranking Member, Senate Appropriations Subcommittee on the Department of the Interior, Environment and Related Agencies, to Scott Pruitt, EPA Administrator, March 12, 2018, https://www.carper.senate.gov/public/index.cfm/2018/3/carper-udall-question-epa-decision-to-repeal-air-emissions-standards-for-high-polluting-glider-trucks.

[66] The letters were sent to Pruitt and have yet to be posted to the rulemaking docket, as reported by Doug Obey, "Hill Republicans Quietly Prod Pruitt to Rethink 'Glider' Truck Rule Repeal," InsideEPA, April 19, 2018, https://insideepaclimate.com/daily-news/hill-republicans-quietly-prod-pruitt-rethink-glider-truck-rule-repeal.

[67] Letter from Greg Gianforte, chairman, House Subcommittee on the Interior, Energy, and Environment, House Committee on Oversight and Government Reform, to Arthur Elkins, EPA Inspector General, June 21, 2018, https://oversight.house.gov/wp-content/uploads/2018/06/2018-06-21-Gianforte-to-Elkins-EPA-Emissions-Testing.pdf.

[68] Letter from Lamar Smith, chairman, House Committee on Science, Space, and Technology, et al. to Andrew Wheeler, EPA Acting Administrator, July 12, 2018, https://science.house.gov/sites/republicans.science.house.gov/files/documents/07_12_2018%20SST%20to%20Wheeler%20re%20Truck%20Gliders.pdf.

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