DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

49 CFR Part 535

[NHTSA 2012-0126]

RIN 2127–AK74

Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles

AGENCY: National Highway Traffic Safety Administration (NHTSA), DOT.

ACTION: Denial of petition for rulemaking.

SUMMARY: The National Highway Traffic Administration (NHTSA) is denying the petition of Plant Oil Powered Diesel Fuel Systems, Inc. ("POP Diesel") to amend the final rules establishing fuel efficiency standards for medium- and heavy- duty vehicles. NHTSA does not believe that POP Diesel has set forth a basis for rulemaking. The agency disagrees with the petitioner's assertion that a failure to specifically consider pure vegetable oil, and technology to enable its usage, as a feasible technology in heavy-duty vehicles, led to the adoption of less stringent standards. NHTSA also disagrees with POP's assertion that the agency failed to adequately consider the rebound effect in setting the standards.

FOR FURTHER INFORMATION CONTACT:

For Non-Legal Issues: James Tamm, Office of Rulemaking, National Highway Traffic Safety Administration, 1200 New Jersey Ave SE, Washington, DC 20590, Telephone (202) 493-0515.

For Legal Issues: Lily Smith, Office of Chief Counsel, National Highway Traffic Safety Administration, 1200 New Jersey Ave SE, Washington, DC 20590, Telephone: (202) 366-2992.

SUPPLEMENTARY INFORMATION:

I. Background

On September 15, 2011, NHTSA issued a final rule creating fuel efficiency standards for medium- and heavy-duty vehicles ("heavy-duty rule") (76 FR 57106).

II. The Petition

NHTSA received two petitions from POP Diesel. The first petition was dated November 15, 2011, and was received by the agency shortly thereafter. The second petition was dated February 12, 2012, and was received by the agency on February 27, 2012. Both petitions from POP Diesel were styled as petitions for reconsideration of the heavy-duty rule. Under 49 CFR part 553, a petition for reconsideration must be received within 45 days of the publication of a final rule; a petition received after that date is considered to be a petition for issuance, amendment or revocation of a rule under 49 CFR part 552, i.e., as a petition for rulemaking. As both petitions were received more than 45 days after the final rule was published, they were considered by the agency as petitions for rulemaking under part 552. Based on the agency's review of the February 27 petition, the agency concluded that it contained sufficient original material to fully supplant (as opposed to simply amend) the November 15 petition. Therefore,

this document responds to the February 27 petition ("POP Diesel Petition") according to the process prescribed in 49 CFR part 552.

In its petition, POP Diesel argued that NHTSA did not specifically consider pure vegetable oil, and POP Diesel's proprietary technology to enable its usage, as a feasible technology in medium- and heavy-duty vehicles. POP Diesel claimed that this, as well as a failure to consider the rebound effect,[1] led to the adoption of significantly less stringent standards and could encourage more fossil fuel consumption.

POP Diesel made the following specific arguments in support of its request for amending the standards:

1. The standards should have considered GHG emissions on a life-cycle basis, rather than focusing on tailpipe GHG emissions only. If the agencies had considered life-cycle GHG emissions, they would have apportioned credits to certain technologies and fuels differently.

2. The standards did not take into account technology which POP Diesel designs, engineers, manufacturers, and sells, which would enable a diesel engine to operate on pure vegetable oil fuel, and if they had, the agencies could have considered an alternative regulatory approach of imposing a "manufacturer GHG emissions average, like the corporate average fuel economy standards in place for light duty vehicles."[2]

[1] The "rebound effect" refers to the fraction of fuel savings expected to result from an increase in fuel efficiency that is offset by additional vehicle use. If truck shipping costs decrease as a result of lower fuel costs, an increase in truck miles traveled may occur. *See* 76 FR 57326 (Sept. 15, 2011).

[2] NHTSA notes that the engine and vehicle standards are entirely separate in the heavy-duty rule. Aside from the class 2b-3 pickups and van standards, which are based on a full vehicle test, no vehicle standard would take into account the performance measurement of the fuel that the vehicle would ultimately operate on.

3. The standards do not accomplish their purpose of reducing greenhouse gas (GHG) emissions because the GHG standards fundamentally regulate fuel efficiency, and increasing fuel efficiency creates a "rebound effect," which the agencies did not adequately consider as part of their final rule analysis.

To address these concerns, POP Diesel specifically requested that the agency revise the final standards by doing the following:

A. "De-couple fuel efficiency policy from GHG emissions policy;"
B. "Impose a corporate fleet average for GHG emissions on all classes of manufacturers of engines and vehicles as the most effective way to ramp down such emissions across the medium- and heavy-duty market."[3]
C. Re-evaluate "the weight the Agencies give to various alternative technologies and fuels according to a [life-cycle] approach;"
D. Revise its analysis of the impact of the standards, in terms of GHG emissions, due to the "rebound effect," given information presented by POP Diesel;
E. "Recognize 100 percent plant oil as a viable renewable diesel engine fuel eligible to receive Renewable Identification Number ('RIN') credits under the Renewable Fuels 2 standard;"
F. "Grant POP Diesel's application for a RIN pathway for 100 percent plant oil derived from jatropha oil feedstock;"

The remainder of POP Diesel's petition contained background information on challenges that POP Diesel says pure vegetable oil has faced in the marketplace, regarding which the petitioner

[3] *See* POP Diesel Petition at 2-3.

is involved in litigation. NHTSA does not believe that these portions of the petition necessitate a response, as they do not directly relate to or support POP Diesel's petition for rulemaking.

Additionally, POP Diesel's requests regarding obtaining a Renewable Identification Number for plant oil (Requests E and F above) cannot be directed at NHTSA, given that they pertain to EPA's regulations implementing the Renewable Fuel Standard.

NHTSA notes that POP Diesel has requested the agency to revise the "GHG standards" throughout its petition.[4] NHTSA has no authority to, and did not, set GHG standards. Accordingly, POP Diesel's petition is denied. In the alternative, assuming that POP Diesel intended to petition NHTSA for a revision of the agency's fuel consumption standards, POP Diesel's petition is denied for the reasons discussed below.

III. Discussion and Analysis

The following section will consider POP Diesel's requests, to the extent that they appeared to be directed at NHTSA, in turn.

A. Decouple fuel efficiency policy from GHG emissions policy

If POP Diesel meant to argue that the agencies should have chosen to regulate GHG emissions from a life-cycle perspective, or one that included consideration of plant-based fuels like the one utilized by POP Diesel's technology, rather than setting harmonized, performance-based fuel efficiency standards (NHTSA) and tailpipe GHG emissions standards (EPA), then the request is primarily directed at EPA, but NHTSA notes the following in response.

[4] *See* POP Diesel Petition, *passim*.

As discussed throughout the final rule, close coordination in this first heavy-duty rule enabled EPA and NHTSA to promulgate complementary standards that allow manufacturers to build one set of vehicles to comply with both agencies' regulations, as envisioned by the President. This coordination was widely supported by stakeholders and provided benefits for industry, government, and taxpayers by increasing regulatory efficiency and reducing compliance burdens. The harmonized structure of the final rule is also consistent with Executive Order 13563.[5]

Second, as stated above, NHTSA's statutory obligation is to create and administer a fuel efficiency improvement program – the agency does not have the option of not regulating fuel efficiency. *See* 49 U.S.C. 32902(k)(2). Insofar as NHTSA regulates fuel efficiency and EPA regulates GHG emissions, it makes sense for the agencies to harmonize their standards to the greatest extent possible – CO_2 represents the majority of GHG emissions from motor vehicles, and is the natural by-product of carbon-based fuel consumption, so the same technologies that increase fuel efficiency (by reducing fuel consumption for a unit of work performed) reduce CO_2 emissions at the same time. Moreover, NHTSA has long maintained that a fundamental aspect of the country's need to conserve energy, which prompted the fuel efficiency standards, is to reduce GHG emissions associated with climate change in addition to securing energy independence through reduction of oil imports. Thus, NHTSA believes it is neither feasible nor desirable to "decouple" fuel efficiency policy from GHG emissions policy, given the extent to which the two are related.

[5] EO 13563 states that an agency shall ''tailor its regulations to impose the least burden on society, consistent with obtaining regulatory objectives, taking into account, among other things, and to the extent practicable, the costs of cumulative regulations,'' and ''promote such coordination, simplification, and harmonization'' as will reduce redundancy, inconsistency, and costs of multiple regulatory requirements.

And finally, to the extent that POP Diesel argued that fuel efficiency and GHG emissions are not related because of the rebound effect, NHTSA disagrees. Even if it somewhat decreases the degree of the connection, the rebound effect does not make the connection between improved fuel efficiency and reduced GHG emissions any less real. POP Diesel has not demonstrated otherwise.

B. "Impose a corporate fleet average for GHG emissions on all classes of manufacturers of engines and vehicles as the most effective way to ramp down such emissions across the medium- and heavy-duty market."

POP Diesel argued that the agency should have accounted for the "feasibility of equipping engines to operate on 100 percent untransesterified plant oil," and that if it had, it would have concluded that it should "regulate GHG emissions [by imposing] a manufacturer GHG emissions average, like the corporate average fuel economy standards in place for light duty vehicles…."[6] Assuming that POP Diesel meant to say that NHTSA should have imposed average manufacturer *fuel efficiency* standards, the agency notes that no particular engine or vehicle model is subject to its own standard; rather each manufacturer of vehicles or engines must comply with standards for each regulatory category.[7] NHTSA also notes, although it appears that POP Diesel referred to the corporate average fuel economy standards for light-duty vehicles more for the "corporate average" element than for the metric, that the medium- and heavy-duty standards are based on the ability of engines or vehicles to perform a certain amount of work (carry or haul weight) over a particular distance. This is a very different measurement than fuel economy, which is simply based on the amount of fuel consumed over a certain distance.

[6] POP Diesel Petition at 2.
[7] This, along with the rule's allowance for averaging, banking, and trading of credits across "averaging sets," makes the standards effectively corporate averages.

As discussed above, for this first regulatory phase of the medium- and heavy-duty vehicle fuel efficiency improvement program, NHTSA has adopted a fuel-neutral approach based on measurement of fuel consumption through measurement of tailpipe CO_2 emissions. NHTSA does not agree that expressly including POP Diesel's proprietary technology in its rulemaking analysis would change the agency's analysis in any substantive way that would support an amendment to the rulemaking either in terms of the agency's decision regarding levels of standard stringency, or in terms of the structure of the standards. 49 U.S.C. 32902(k)(2), the statutory provision granting NHTSA authority for the medium- and heavy-duty fuel efficiency improvement program, requires the agency to set maximum feasible standards that are "appropriate, cost-effective, and technologically feasible." The agency has neither the obligation to set standards under 49 U.S.C. 32902(k)(2) based on all potentially feasible motor vehicle technologies, nor the capacity to do so. The existing standards are performance-based, and not expressly predicated on the use of any specific technology. Manufacturers are free to use whatever technologies they choose to meet the standards, including POP Diesel's technology. This allows for innovation.

POP Diesel also mentioned EPA's Renewable Fuel Standards, and stated that because "pure plant oil is not eligible for the RFS," therefore the final rule does "not provide any incentive for the use of 100 percent plant oil or an engine specially equipped to run on this fuel."[8] NHTSA presumes that POP Diesel's argument was that if NHTSA had considered that the RFS does not include specific incentives for pure vegetable oil, the agency would have compensated for this by creating incentives within the heavy-duty rule. As explained above, the final rule was designed to be fuel-neutral. If POP Diesel's technology helps manufacturers reduce fuel consumption,

[8] POP Diesel Petition at 7.

then it will have the same opportunities as any other technology that manufacturers will use to meet NHTSA's standards. Moreover, NHTSA notes that POP Diesel has not correctly characterized NHTSA's consideration of the interaction between the RFS program and the heavy-duty fuel efficiency standards. As explained in the final rule, NHTSA determined that the performance measurement of alternative fuels provides sufficient incentives for their use. While the agencies noted that incentives in the RFS pointed to a lack of a need for further incentives, the rule's treatment of alternative fuels was not premised on each alternative fuel being covered by the RFS Standard.[9] Indeed, other alternative fuels are similarly not covered by the RFS standard, such as liquefied natural gas, compressed natural gas, propane, hydrogen and electricity.

C. Re-evaluate "the weight the Agencies give to various alternative technologies and fuels according to a [life-cycle] approach;"

NHTSA recognizes the potential benefits of increasing the use of any fuel type that reduces the nation's dependence on petroleum. As the President noted in his March 30, 2011 "Blueprint for a Secure Energy Future,"[10] biofuels are one such fuel type with the potential to reduce the nation's demand for oil. NHTSA commends efforts to develop alternative fuels for light-, medium- and heavy-duty vehicles, and POP Diesel's work to make pure vegetable oil a more viable alternative fuel is in line with this goal.

POP Diesel's technology allows the use of fuels that it states are less carbon-intensive than other fuels, and POP Diesel argued in its petition that by considering only tailpipe rather than life-cycle GHG emissions of technologies and fuels, the agencies arbitrarily favor certain

[9] *See* 76 FR 57124.
[10] http://www.whitehouse.gov/sites/default/files/blueprint_secure_energy_future.pdf.

technologies and fuels and disfavor others. While reducing GHG emissions is a direct outcome of improving the fuel efficiency of the medium- and heavy-duty on-road fleet, the task that Congress gave to NHTSA was specifically to improve fuel efficiency. Therefore, any consideration that NHTSA may give to GHG emissions in general, and life-cycle GHG emissions in particular, is in the context of that directive. The final rule is performance-based and does not dictate particular technology. As the agency noted in the final rule,[11] alternative fueled vehicles provide fuel consumption benefits that should be, and are, accounted for in the standard. However, the agencies' approach to fuels does not provide additional incentives for fuels based on their petroleum content.

As POP Diesel noted, the agency calculates the fuel consumption performance of engines and heavy-duty pickup trucks and vans by measuring tailpipe CO_2 emissions and converting the measured value to an equivalent fuel consumption value. This method aligns with the EPA measurement method that is used to determine CO_2 emissions performance, and by aligning, promotes consistency in the national program. NHTSA recognized that it could have selected other methods of measuring fuel consumption, such as deriving fuel consumption performance based on gasoline or diesel energy equivalency.[12] However, the agency decided that maintaining consistency with the EPA measurement of CO_2 emissions to establish an aligned national program was the most appropriate approach for this first regulatory action.

This approach makes it unnecessary to distinguish among alternative fuel types in setting the standards, and this first phase of NHTSA's medium- and heavy-duty regulation does not include reductions in GHG emissions that do not translate directly to fuel consumption. Even if this

[11] *See* 76 FR 57124.
[12] *Id.* at 57124-25.

were not the case, NHTSA believes that POP Diesel's claims regarding the commercial viability of pure vegetable oil and POP Diesel's proprietary technology to enable its usage in medium- and heavy-duty vehicles are speculative.

NHTSA recognized in the rule that this uniform approach to fuels may not take advantage of potential additional energy and national security benefits of increasing fleet percentages of alternative-fueled vehicles. More alternative-fueled vehicles on the road would arguably displace petroleum-fueled vehicles, and thereby increase both U.S. energy and national security by reducing the nation's dependence on foreign oil. However, for the reasons discussed above, the agency determined that the benefits of a harmonized initial program outweighed those potential benefits for this first phase of heavy-duty vehicle and engine standards.[13]

NHTSA continues to believe that the current fuel-neutral performance measurement is the most appropriate treatment of alternative fuels for this first phase of the heavy-duty fuel efficiency standards. As stated in the final rule, the agency intends to revisit this issue in the future to evaluate whether the fuel-neutral approach continues to provide greater benefits than alternative approaches.

D. Revise the final rule analysis of the rebound effect

POP Diesel argued that due to the rebound effect, the final standards will in fact increase total GHG emissions beyond what would have occurred in the absence of the standards, rather than achieving the agencies' stated reductions in CO_2 emissions and fuel consumption.[14] POP Diesel stated that the agencies only considered the rebound effect in terms of improvements in "fuel economy" leading to increases in vehicle miles traveled (VMT), but should also have considered

[13] *Id*.
[14] See POP Diesel Petition, at 3-4.

other direct effects,[15] "indirect" rebound effects,[16] and the "frontier" rebound effect, whereby improvements in energy efficiency promote the development or spread of new products that increase energy consumption and GHG emissions, such as when the availability of lower-cost trucking services leads to substitution of internet shopping and home delivery via truck for conventional retailing.[17] POP Diesel may have meant to suggest that an analysis of the rebound effect that incorporates these aspects would have led the agencies to promulgate different standards, specifically, GHG standards based on fuel CO_2 content rather than fuel efficiency standards.

NHTSA notes that its statutory obligation is to create and administer a fuel efficiency improvement program – the agency does not have the option of not regulating fuel efficiency.[18] As for the question of whether the agency's analysis of the rebound effect in the final rule should have incorporated the aspects discussed in the POP Diesel petition, the agency believes that the agency's analysis of the rebound effect represents the most reliable basis on which to project the increases in commercial truck use that will occur in response to improvements in their fuel efficiency.

---

[15] *See* POP Diesel Petition, at 4; "Exhibit 1" to POP Diesel Petition. Examples of direct rebound effects include shifts of some freight shipments from rail, barge, or other transportation modes to trucking, reorganization of freight shippers' logistics operations in ways that substitute increased use of trucking services for warehousing and inventory holding, shifts to more distant sources of supply for raw materials and expansion of market areas for finished goods, which entail longer trucking distances, reorganization of trucking firms' operations to emphasize objectives other than minimizing fuel consumption, such as use of lower-cost but less fuel-efficient vehicles for some shipments, less intensive truck maintenance, and less careful optimization of vehicle load factors, routing, and scheduling.

[16] *Id*. Examples of indirect rebound effects include increases in consumption of energy-intensive products as consumers reallocate savings from lower prices for goods shipped by truck to purchase other products, and "multi-factor productivity" rebound effects, where firms increase output levels and substitute increased use of trucking services for other production inputs.

[17] *Id.*

[18] *See* 49 U.S.C. 32902(k)(2).

NHTSA believes that its estimates of the increased use of different classes of trucks that are likely to result from the improvements in their fuel efficiency required by the rule are based on sound data and reliable econometric methods. Moreover, the agency is confident that these estimates reflect the various components of the direct rebound effect that POP Diesel alleges they ignore, because the measures of aggregate nationwide truck use from which they are derived fully incorporate historical shifts of freight shipments from other transportation modes to trucking, continuing reorganization of freight logistics toward increased reliance on trucking services, and shifts to more distant sources of supply for raw materials and longer deliveries of finished goods to final markets. The agency's estimates also incorporate the historical response of the use of trucking services to measures of economic activity that generate demands for shipping of raw materials and finished products, including aggregate economic output, foreign trade, and retailing. As the agencies acknowledged in their analysis, however, research on the magnitude of the rebound effect for heavy-duty vehicles has been limited;[19] for this reason, the agencies will monitor and conduct research on the subject in an ongoing effort to improve their estimates.

NHTSA also notes that any increases in economy-wide energy consumption and GHG emissions resulting from indirect rebound effects cannot reasonably be ascribed to the requirement that vehicle manufacturers achieve higher fuel efficiency levels. If the indirect effects that cause those increases were included in the rulemaking analysis, however, they would undoubtedly add significantly to the economic benefits from the rule. Responses to lower-cost trucking services, such as consumers' use of savings from lower prices of goods that utilize trucking services for their production and distribution to purchase other products that embody energy, as well as any

[19] See 76 FR 57327-9.

increases in multi-factor productivity or frontier rebound impacts stemming from reduced truck energy consumption and lower shipping costs, represent important sources of *additional* economic benefits from requiring trucks to achieve higher fuel efficiency. Therefore, NHTSA does not believe that consideration of POP Diesel's claims regarding indirect rebound effects would have led the agency to promulgate different standards.

For purposes of the final standards, we believe that the agency's analysis of the rebound effect represents the best available estimate of the increases in commercial truck use that may result from increases in their fuel efficiency, and the extent to which these increases in use will offset the fuel savings (and thus, CO_2 emissions) projected to result from the recently-adopted rules.

Thus, while NHTSA agrees that the rebound effect is present, we believe that it is adequately accounted for in the final rule. We do not believe that we would have promulgated different standards if our analysis of the rebound effect had been done differently, as POP Diesel recommended.

IV. Conclusion

In consideration of the foregoing, NHTSA is denying the POP Diesel Petition. In accordance with 49 CFR part 552, this completes the agency's review of the petition for rulemaking.

Authority: 49 U.S.C. 32902; delegation of authority at 49 CFR 1.95.

Issued: August 13, 2012

_____

Christopher J. Bonanti
Associate Administrator for Rulemaking
National Highway Traffic Safety Administration
Department of Transportation

Billing Code: 4910-59-P

[FR Doc. 2012-20838 Filed 08/23/2012 at 8:45 am; Publication Date: 08/24/2012]