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VIA ELECTRONIC FILING

David J. Friedman, Acting Administrator
U.S. Department of Transportation
National Highway Traffic Safety Administration
1200 New Jersey Avenue, SE, West Building
Washington, D.C. 20590

Re: Docket No. NHTSA-2014-0074 – Comments on the Notice of Intent to Prepare an
Environmental Impact Statement for New Medium- and Heavy-Duty Vehicle Fuel
Efficiency Improvement Program Standards

Dear Mr. Friedman,

Please find enclosed comments submitted on behalf of The Volvo Group in Docket No. NHTSA-2014-0074.

Any questions with respect to these comments should be directed to Mr. Anthony Greszler, Vice President Government and Industry Relations, Volvo Group Truck Technology (301-790-6700, anthony.greszler@volvo.com).

Respectfully submitted,



Scott E. Benfield

Enclosure

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The Volvo Group respectfully submits the following comments on the Notice of Intent to Prepare an Environmental Impact Statement (EIS) for New Medium- and Heavy-Duty Vehicle Fuel Efficiency Improvement Program Standards, Docket No. NHTSA-2014-0074 79 FR 38842 (July 9, 2014).

Background

Volvo Group develops, manufactures, and sells heavy-duty trucks, buses and motor coaches in the USA under the brand names of Volvo Trucks, Mack Trucks, Volvo Bus, Nova Bus, and Prevost. Volvo develops and manufactures medium- and heavy-duty diesel engines for use in these vehicles. We have a strong interest and background in the fuel efficiency of these commercial vehicles. Fuel efficiency is one of the primary considerations of our customers and is a top priority in our design and development efforts.

Volvo Group has long placed the environment as one of its three core values, along with product safety and quality. We share a strong concern about greenhouse gas (GHG) impacts on the global climate and the unsustainability of heavy reliance by commercial transportation on petroleum-based fuel. We support the effort by EPA and NHTSA to move the industry toward lower GHG emissions and more sustainable commercial transportation. We also note that there are many opportunities for improving freight efficiency that are beyond the reach of in-vehicle technology, including congestion mitigation, smart highway systems, permitting longer combination vehicles, improved shipping logistics and packaging. We believe that improvements to the transport infrastructure and market incentives to enhance shipping efficiency should be part of any effort to reduce GHG emissions, in addition to vehicle regulations.

Volvo Group is committed to support GHG regulation that delivers real value to our customers and to society through reduced fuel consumption and reductions in GHG emissions. Volvo Group has been actively working with EPA, NHTSA, and the California ARB to help develop both the current rule and the new phase II rule. We recognize there are immense challenges in accomplishing this due to the complexity of the heavy-duty vehicle market and the lack of available data for many segments of the market. We remain concerned that, with a regulation of this breadth and complexity, it is extremely difficult to fashion a rule that meets all objectives. Because vehicle fuel efficiency has such a strong influence on the profitability of commercial fleet operations, the actual results of efficiency regulation will be closely measured and monitored by fleet owners. Thus, it is important that the regulation deliver the expected in-use performance.

Because medium- and heavy-duty vehicles are uniquely built for specific applications, we understand that it will not be feasible to develop regulatory protocols that can accurately predict efficiency in each application duty cycle, the number of which must be limited to enable compliance and enforcement of the regulation. This trade-off compromises in-use effectiveness in an effort to reduce regulatory complexity. For reasons more fully explained below, it is vital that the EIS consider the potential for unintended or negative consequences in various market segments.

Unique Market Requirements Must be Considered

The heavy-duty vehicle market is extremely diverse, as NHTSA notes in its request for comment:

“The HD sector is extremely diverse in several respects, including types of manufacturing companies involved, the range of sizes of trucks and engines they produce, the types of work the trucks are designed to perform.” 79 FR 38844

This diversity is particularly problematic for the broad group of vehicles included under the “vocational” classification in the current rule; dump trucks, concrete mixers, crane carriers, street sweepers, utility trucks, refuse trucks, urban delivery trucks, and buses, are all considered vocational vehicles. Each of these vehicle types has unique requirements and duty cycles, dictated by the customer-specific application. With such a range of diversity, it is reasonable to conclude that the negative consequences of optimizing the vehicle to more far-reaching regulatory requirements may outweigh any real world benefits. In such cases, maintaining the current Phase 1 vehicle regulation without changes may be the optimum approach for the vocational sector.

Examine whether Separate Engine Standards are Necessary, or even Counter-productive

During the phase I heavy-duty vehicle efficiency rulemaking, the Administration did not include any option for a complete vehicle standard without separate requirements for the engine. The agencies explained this in the preamble to the phase I rule:

“By focusing on existing technologies and well-developed regulatory tools, the agencies are able to adopt rules that we believe will produce real and important reductions in GHG emissions and fuel consumption within only a few years. Within the context of this regulatory time frame, our program is very aggressive—with limited lead time compared to historic heavy-duty regulations—but pragmatic in the context of technologies that are available and that can be reasonably implemented during the regulatory time frame.” (76FR57133)

The Agencies went on to say:

“To more completely capture the complex interactions of the total vehicle and the potential to reduce fuel consumption and GHG emissions through the optimization of those interactions may require a more sophisticated approach to vehicle testing than we are adopting today for the largest heavy-duty vehicles. In future regulations, the agencies expect to fully evaluate the potential to expand the use of vehicle compliance models to reflect engine and drivetrain performance.”

One of the most significant evolutions of heavy-duty vehicle fuel efficiency since the phase I rulemaking has been the advances in integrated transmission and engine technologies that enable operation of engines at lower speeds and higher torque where engine efficiency is optimized. In addition, improvements in vehicle efficiencies, such as lower rolling resistance and better aerodynamics, continue to reduce the vehicle cruise power demand. These developments allow for smaller engines to be effectively deployed in many applications, reducing size, weight, and cooling requirements such that cab aerodynamics can be further improved, with even greater impact on vehicle efficiency. Separate engine efficiency requirements are not able to reflect these significant changes in the way engines are deployed and can force sub-optimization of in-use operation in favor of optimization to meet regulatory requirements on the engine test cycles. Transmission technology continues to evolve along with complete powertrain and vehicle

integration. Volvo recently began marketing a heavy-duty, dual-clutch transmission in Europe that maintains engine torque during gear shifts, further changing the way engines operate. It is not feasible for any fixed engine test cycle to reflect the impact of all these evolving changes. Because the engine test cycles used in the current rule are obsolete, the certified efficiencies do not correlate with in-use performance. Evaluation of engines on these cycles results in misleading conclusions about the efficiency impacts of new engine technologies.

A separate engine requirement also prevents manufacturers from choosing the most cost-effective approaches to achieve efficiency objectives. Achieving engine efficiency targets may require expensive, complex technologies that drive up R&D costs, increase product cost, and increase operating costs due to maintenance, repairs, mission failures (replacement vehicle, towing, etc.) , and downtime. Some engine efficiency technologies, such as Rankine waste heat recovery, increase cooling demand requiring cab designs with larger frontal areas and cooling systems that increase aerodynamic drag. It makes no sense to increase engine efficiency at the expense of vehicle efficiency. Manufacturers and customers must have the flexibility to achieve the best efficiencies through vehicle design innovations and increasing penetration of available fuel-saving technologies with lowest total cost of operation.

Instead of requiring separate engine efficiency standards, the Agencies should promulgate complete vehicle standards that include the integrated contribution of technically feasible, cost-effective engine and other vehicle improvements. With this approach, there is no loss of the potential for engine contributions, since they are fully accounted as part of the vehicle. NHTSA must consider this as a primary approach in its EIS. It is very important that the EIS consider these discrepancies in a regulatory scheme that includes a separate engine regulation, and how a separate engine regulation might drive the deployment of premature engine technologies that may have reduced in-use efficiency. The Administration should provide justification as to why it would promulgate a rule where some customers might be forced to accept costlier, higher-risk engine technologies in cases where more cost effective solutions, better suited to the customer's operational requirements may be available.

The Benefits and Costs of a Separate Engine Requirement Must be Established

The benefits (or lack thereof) and costs of a separate engine regulation must be considered. Since the engine is already part of the complete vehicle, it is difficult to imagine any quantifiable benefit from additional engine regulation beyond providing the necessary data to include the engine in vehicle simulation and testing. Costs associated with engine efficiency standards include design and development for regulatory test cycles, testing, documentation and reporting, potentially sub-optimization of the engine and vehicle as noted above, added product costs, and added operational costs for maintenance and downtime.

Resolution of Potential Safety Issues and GHG Emissions is Necessary Before any Technology can be Considered Ready for Deployment

The administration must ensure that the potential for any negative impact on vehicle safety or GHG emissions be resolved before any new technologies can be expected to contribute to vehicle efficiency. A few prototype versions of a system run under carefully controlled conditions cannot be construed as an

indication of production readiness. For example, Rankine waste heat recovery (WHR) requires a working fluid to be heated by exhaust gases to high temperature such that the fluid evaporates under high working pressure. The energy in this working fluid is then extracted by expanding the vapor in a mechanical device (typically a turbine). The fluid must then be condensed and pumped back into the heating cycle. The choice of working fluid is critical to the efficiency of this cycle but may also present challenges if it is flammable, has a high global warming potential (GWP), or other environmental consequences. Avoiding the use of such fluids may also compromise the efficiency of the cycle and any potential benefits. The working temperatures and pressures of these systems are much higher than those in vehicle air conditioning systems that the Agencies have long deemed necessary to regulate.

Impacts of potential technologies on braking, vehicle stability, visibility, and other safety concerns must also be considered. Time for NHTSA and industry testing and resolution of any issues must be included in the timeline for implementation.

Cost Effectiveness Must Consider Market Requirements and Costs of Market Disruption

Medium and heavy-duty trucks are business tools. The cost to purchase and operate them must provide an adequate return-on-investment or they will not be purchased. Businesses have the option to maintain and rebuild older vehicles indefinitely if this can be accomplished at lower cost than purchase and operation of new vehicles. Although business considerations vary, most truck fleets expect technology acquisition costs to pay back within 18 months to two years. In evaluating the payback, business must consider not only the initial purchase cost (and available financing), but costs of maintenance, repair, down-time, and mission disablement (towing, replacement vehicle, late delivery penalties, etc.). Because of this, businesses are rightfully skeptical of complex, unproven technologies and expect reliability, durability, and fuel savings to be demonstrated in their operation before making large purchases. As has been demonstrated in the past (particularly associated with the 2007 emissions change), forced introduction of complex technology can drive a large pre-buy followed by an extended period of low sales volume.

Environmental benefits are delayed and possibly never achieved (due to deterioration of the aging fleet) when purchases are postponed or avoided, and the existing vehicle fleet continues to age, or is rebuilt as opposed to replaced. NHTSA must consider the impact of forcing complex and costly technology into this market. In addition, adequate time must be provided, not only for design and development (which varies depending on complexity and development status), but for at least two years of low volume customer testing to avoid market disruption. The EIS should weigh the risk of environmental disbenefits and market disruptions associated with engine-forcing technologies.

Clearly, factors that potentially will drive customers away from purchasing new vehicles must be considered in any assessment of the environmental benefits associated with new unproven technologies. If new vehicles are not purchased, the GHG emissions and fuel savings benefits anticipated from these vehicles will not be achieved.

Market disruptions, such as pre-buys followed by an extended period of low volume sales, have severe economic consequences as suppliers and manufacturers scramble to increase capacity only to be idled when the rule becomes effective. Impacts on labor were devastating in 2007 as many factories were nearly shut down for months, followed by the long recession period. It is essential that these factors be weighed in the EIS.

The GHG Impact of Methane Emissions from Natural Gas Vehicle Operation Must be Considered

Although the current rule includes GHG impacts of methane emissions from vehicle tailpipe and engine crankcase, it does not consider other methane emissions associated with vehicle operation and maintenance. These emissions potentially include fuel system leaks, fuel system venting during normal operation, fuel tank venting for maintenance, connection and disconnection of refueling lines, LNG fuel tank venting to facilitate refueling, and LNG fuel tank venting to relieve excess pressure. Some of these sources may be subject to deterioration, e.g. vacuum insulated LNG storage tanks. It is widely recognized that emissions of methane have a far greater global-warming potential than CO₂, making it imperative to consider the potential for leaks in such systems in developing these standards. The Administration therefore must account for the potential consequences of increased methane emissions and the need for appropriate controls to ensure expected benefits from natural gas vehicles are achieved.

Volvo Group would like to thank NHTSA for the opportunity to provide this input to the Environmental Impact Statement, and we look forward to our continued cooperation with the Agencies in the development of these important Phase 2 standards.