BEFORE THE
ENVIRONMENTAL PROTECTION AGENCY
AND THE
DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

COMMENTS OF THE
OWNER-OPERATOR INDEPENDENT DRIVERS ASSOCIATION, INC.;
IN RESPONSE TO A PROPOSED RULE

GREENHOUSE GAS EMISSIONS AND FUEL EFFICIENCY STANDARDS FOR
MEDIUM- AND HEAVY-DUTY ENGINES AND VEHICLES—PHASE 2
DOCKET NOS. EPA-HQ-OAR-2014-0827; NHTSA-2014-0132
October 1, 2015

JAMES J. JOHNSTON

President

Owner Operator Independent

Drivers Association, Inc.
I. STATEMENT OF INTEREST


OOIDA is a not-for-profit corporation incorporated in 1973 under the laws of the State of Missouri, with its principal place of business in Grain Valley, Missouri. OOIDA is the largest international trade association representing the interests of independent owner-operators, small-business motor carriers, and professional drivers. The approximately 150,000 members of OOIDA are professional drivers and small-business men and women located in all 50 states and Canada who collectively own and operate more than 200,000 individual heavy-duty trucks. Single-truck motor carriers represent nearly half of the total of active motor carriers operated in the United States. The mailing address of the Association is:

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The Association actively promotes the views of professional drivers and small-business truckers through its interaction with state and federal government agencies, legislatures, courts, other trade associations, and private businesses to advance an equitable and safe environment for commercial drivers, including those with their own federal motor carrier operating authority. OOIDA is active in all aspects of highway safety and transportation policy, and represents the positions of professional drivers and small-business truckers in numerous committees and various forums on the local, state, national, and international levels. OOIDA’s mission includes the promotion and protection of the interests of independent truckers on any issue which might touch on their economic well-being, their working conditions, or the safe operation of their motor vehicles on the nation’s highways. As the term indicates, owner-operators purchase and operate their own trucking equipment. Many other OOIDA members operate small, several-truck motor carriers. These rules will affect the cost and operability of every piece of new equipment they will buy from model year 2027 forward.

II. COMMENTS OF THE ASSOCIATION

The joint notice of proposed rulemaking (NPRM) published by the Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHTSA) seeks to establish standards which were estimated to reduce fuel consumption in diesel engines by 24% over its 2017 baseline and reduce greenhouse gas (GHG) emissions through a technology-forcing program beginning in the 2018 model year (MY) and culminating in MY 2027. While OOIDA believes that EPA and NHTSA’s (the agencies) goals are laudable, we are concerned that the agencies have not accurately estimated the costs and benefits of the proposed
rule, nor have they adequately considered the excessive burden that will placed upon small
business owners and professional truck drivers from exorbitantly expensive, untested, and in
some cases unproven technologies which are being proposed under the agencies’ preferred
alternative, Alternative 3.

According to the NPRM, the agencies “recognize that there is some uncertainty in
projecting costs and effectiveness, especially for those technologies not yet widely available, but
believe that the thresholds proposed for consideration account for realistic projections.\(^1\)”
(Emphasis added). Whereas the agencies are content with the uncertainty of costs and
effectiveness of the technologies, owner-operators do not unfortunately have that luxury. The
livelihood of an owner-operator, who frequently operates his or her business on small profit
margins, depends on affordable and reliable equipment in order to compete and survive in a
highly competitive industry. OOIDA strongly believes that the market should drive fuel efficient
technologies instead of expensive mandates. The agencies stated in their proposed rule that
“both public and confidential historical information shows that tractor trailer fuel efficiency
improved steadily through improvements in engine efficiency and vehicle aerodynamics over the
past 40 years.\(^2\)” In particular, these improvements have been driven by fleet owners and owner-
operators seeking fuel efficient trucks, as fuel is the number one expense of every trucking
operation. The average one truck owner-operator spends approximately $70,000 in fuel every
year.\(^3\) If there was affordable and reliable technology which improved fuel efficiency by 24%

\(^1\) Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-duty Engines and Vehicles –
\(^3\) OOIDA Foundation, Owner-Operator Member Profile Survey 2014, OOIDA (July 2014).
over the 2017 baseline, there would be no need of a mandate, as truck drivers would be more than willing to purchase such equipment.

A. **Fuel economy is only one factor truckers must use in making equipment decisions.**

There are many factors in a tractor, engine, or trailer that a truck owner must consider when making an equipment purchase. Fuel economy is certainly one of those factors, as it is the greatest expense of the owner-operator, but other needs and requirements of the job matter. Primary among these is reliability and the equipment specifications required by the function served by different types of truck operation in our economy. For example, while lower rolling resistant (LRR) tires can be beneficial for a trucking company operating around the flat plains of Kansas, they can become a safety hazard while operating in the mountainous regions, such as the Tejon Pass in California or the Loveland Pass in Colorado. Additionally, the National Academy of Sciences (NAS) has demonstrated that the fuel efficiency will decrease for a sleeper cab tractor pulling a flatbed trailer if it is equipped with a full-height air deflector because the high roof sleeper increases the frontal area of the truck beyond what the trailer requires. Thus, there are many equipment decisions which affect the purchase of a truck.

Furthermore, it is imperative to note that fuel economy has a non-linear relationship with the percent of fuel consumed. The agencies have created confusion on this topic which must be addressed. “Fuel economy” is not used in reference to heavy-duty vehicles as it can be misleading based on the type of freight hauled, route, traffic conditions, speed limits, driver skill,

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4 *Technologies and Approaches to Reducing the Fuel Consumption of Medium- and Heavy-Duty Vehicles*, National Academies of Sciences (2010), pg. 98.
Therefore, a technology which might increase the fuel economy by 24% does not necessarily equate to fuel consumption savings. In fact, there is a higher probability that the fuel consumption savings will be much less. While the agencies claim that the Phase II regulations will be based upon performance standards, they still do not properly address the diversity which exists in the trucking industry and in the various duty cycles (type of freight, weight, routes, etc.). According to NAS 2010 research analysis entitled *Technologies and Approaches to Reducing the Fuel Consumption of Medium- and Heavy-Duty Vehicles*, “in [h]eavy vehicles the most meaningful metric of fuel efficiency must be viewed in relationship to the work performed.” They call this load-specific fuel consumption (LSFC). This vital metric is missing in the agencies testing and analysis. According to the NAS study, “Regulators need to use a common procedure to develop a baseline LSFC data for various applications, to determine if separate standards are required for different vehicles that have a common function.”

The Oak Ridge National Laboratory performed a study in 2011 in partnership with the Department of Energy (DOE) and industry to research the impact real-world conditions can have on the fuel efficiency of Class 8 trucks (trucks with a gross vehicle weight rating (GVWR) of 33,001 pounds). Oak Ridge collected data on over 1,000 trips covering some 700,000 miles of primarily highway travel. When looking at the fuel efficiency of Class 8 trucks by weight over flat terrain and traveling 65 miles per-hour (“mph”), the result demonstrates that fuel

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6 *Technologies and Approaches to Reducing the Fuel Consumption of Medium-and-Heavy-Duty Vehicles.*
economy/mpg is not an appropriate measure of fuel efficiency for the heavy-duty industry due to the effects of the weight of the load.\textsuperscript{7}

The Oak Ridge study also monitored the weight, speed, fuel efficiency, and actual road location/grade of certain trucks. When the fuel economy of the same truck carrying the same load over different terrain was analyzed, results show that fuel economy can vary substantially even for the same truck. On severe uphill sections of terrain, fuel economy of the same truck can be 60 percent worse, while on severe downhill grades, the same truck’s fuel economy is 221 percent better. The opportunities for inappropriate mpg claims to be made for heavy-duty vehicles are almost infinite, especially when operational differences are factored in. For example, using the data from Figure 1 it can be shown that the gain/loss from going uphill or downhill is not equivalent. This means that a truck traveling up and back down a hill with no net elevation change will only get approximately 70 percent of the fuel economy as the truck would on level ground.\textsuperscript{8}

\textsuperscript{7} Complete Vehicle Standards for Heavy-Duty Trucking.
\textsuperscript{8} Ibid.
Figure 1: How roadway grade can affect fuel economy of Class 8 trucks

OOIDA appreciates the fact that the agencies decided to add road grade to Phase II’s Greenhouse Gas Emission Model (GEM) simulation tool in order to better reflect real-world operation. However, while the addition of road grade is laudable, it is disconcerting that the agencies could propose Phase I standards without considering terrain, as the Oak Ridge National Lab found that the impact of a mild upslope of one to four percent led to a decrease in average fuel economy from 7.33 mpg to 4.35 mpg. It is equally disturbing that while road grades were included for the urban and rural interstate driving cycles as part of the Phase II NPRM and Regulatory Impact Analysis (RIA), it was not included for the stop-and-go city driving. This fact coupled with the absence of considering LSFC, demonstrates the agencies lack of understanding of the trucking industry and ultimately the customers who purchase the vehicle. In addition, these facts have caused OOIDA to question the legitimacy of the agencies assertions.

B. Lead time, stringency, and technology

The agencies preferred alternative, Alternative 3, proposes a ten year lead time for manufacturers to meet the Phase II standards by MY 2027, “which the agencies believe is adequate to implement the technologies...to meet the proposed standards. For some of the more advanced technologies production prototype parts are not yet available.” Again, the livelihood of millions of truck drivers and thousands of small business owners should not be predicated on the agencies belief that Alternative 3 and its ten year lead time is adequate to meet the Phase II standards. No matter how great the hoped for benefits of any technology may be, if it’s not ready for prime time, it can be a business killer for owner-operators and small fleets which make up the vast majority of the US truck fleet.

The objective for this rulemaking is to provide more fuel efficient trucks while also reducing both GHG and non-GHG emissions. Nevertheless, this goal will be ruined, along with the careers of those employed throughout the trucking industry, if the agencies do not heed the concerns of the drivers concerning appropriate lead time, stringency, and testing. Although agencies have stated that they desire to avoid disrupting the market, such as the infamous “pre-buys” in 2007, it appears as if the warnings of drivers, and original engine manufacturers (OEMs) have again fallen on deaf ears.

As noted by the agencies in their proposed rule, they received warnings from a number of industry stakeholders that owner-operators, as well as large fleets, often plan to purchase their trucks more than a year in advance. Therefore, if they fear a reduction in reliability, increased operating costs, reduced residual value, or large increases in purchase prices, they will adjust

\[10\] Ibid., 40154.
their purchase plans to avoid these business killing aggravations. The agencies stated, “The proposed Phase 2 standards would represent a more technology-forcing approach than the Phase 1 approach, predicated on use of both off-the-shelf technologies and emerging technologies that are not yet in widespread use. The agencies are proposing standards for MY 2027 that would likely require manufacturers to make extensive use of these technologies. For existing technologies and technologies in the final stages of development, we project that manufacturers would likely apply them to nearly all vehicles.” (Emphasis added). The agencies are approaching Phase II with the belief various technologies will experience high market penetration rates. However, an overestimation of adoption rates will negatively affect the cost and benefit analysis. For example, Alternative 3 assumes that 90% of the market will adopt auxiliary power units (APUs) by MY 2024, which is simply not realistic, as many trucking operations have absolutely no need for an APU. Moreover, the agencies have assumed that waste heat recovery (WHR) technology, which is still in prototype stage, will have a market penetration of 15% by MY 2027 under Alternative 3. The OEMs have stated very clearly that WHR has numerous technical challenges for which no solutions have been discovered as yet, therefore the technology is still unproven. The complexity and the cost for such a technology would create positive conditions for a pre-buy situation, as owner-operators will not risk their livelihood on unproven technologies.

Among the technologies listed under Alternative 3, where the agencies believe CO₂ emissions and fuel consumption could be improved, were:

- Combustion optimization

11 ibid.
- Turbocharging system
- Engine friction and other parasitic losses
- Exhaust aftertreatment
- Engine breathing system
- Engine downsizing
- Waste heat recovery
- Transient control for vocational engines only

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Though the agencies have estimated rather high penetration rates, EPA has historically overestimated penetration rates while also underestimating the cost to OEMs to implement the required changes to the engine and drive-train. Additionally, EPA has also historically overestimated the acceptance and benefits of their RIAs. Prior to promulgating EPA’s 2000 emission standard, the EPA and the OEMs perhaps should have predicated the now famous pre-buys which occurred before the October 2002 deadline. According to five engine manufacturers that were contacted by the Government Accountability Office (GAO), the pre-buys caused a
rippling effect on OEMs, which stated that in order to meet the increased demand for the pre-October 2002 MY engines, their companies hired new workers, increased operations, and experienced concurrently increasing sales. However, after the deadline, engine orders dropped and did not level off again until the end of the 2003 fiscal year. The rapid decline in orders forced the manufacturers to both lay off new-hires and to suspend operations at some plants. According to the engine manufacturers’ representatives, such instability resulted in increased costs and a net loss of revenue.\textsuperscript{12} In addition, according to the GAO, those manufacturers which produced cleaner engines lost out in the marketplace because their engines faced significant reliability and durability issues. Truckers using these engines paid the ultimate price in dollars and downtime and even reduced fuel mileage.

As part of the 2000 emission standard, EPA estimated that within the first 15-months, 233,000 new clean engines would be on the road, when in market reality only 148,000 were actually on the road.\textsuperscript{13} EPA also estimated that the consent decrees would require 865,000 older trucks to adjust their computers in order to reduce NOx emissions. However, GAO found that only 12 percent of that number actually adjusted their computers.\textsuperscript{14} Further, a recent market analysis done by the American Truck Dealers in 2012, noted that the EPA grossly underestimated emission system costs to the industry. Looking at the cost estimates of EPA along with the actual increase in cost of the new cleaner engines, the report found that the actual

\begin{footnotesize}
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\item Ibid, pg. 22.
\item Ibid, pg. 24.
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cost was more than $21,000, while the EPA estimate was $5,000.\textsuperscript{15} All of the facts presented above demonstrate one of the most fundamental problems associated with EPA’s estimates and their myopic vision of emission standards, which is, though the agency can mandate cleaner engines, they cannot mandate that people buy them. This is known as “risk aversion,” and according to the National Economic Research Associates, is not accounted for in environmental policy evaluations.\textsuperscript{16}

As part of the proposed rule the agencies stated, “We request comment on the sufficiency of the proposed Phase 2 structure, lead time, and stringency to avoid market disruptions. We note an important difference, however, between standards for criteria pollutants, with generally no attendant fuel savings, and the fuel consumption/GHG emission standards proposed today, which provide immediate and direct financial benefits to vehicle purchasers, who will begin saving money on fuel costs as soon as they begin operating the vehicles. It would seem \textit{logical}, therefore, that vehicle purchasers (and manufacturers) would weigh those significant fuel savings against the potential for increased costs that could result from applying fuel-saving technologies sooner than they might otherwise choose in the absence of the standards.\textsuperscript{17}” (Emphasis added). While it would seem logical on paper, the real-world effect of costly and unreliable technology will prevent any owner-operator or fleet owner from purchasing such a vehicle. Again, fuel is the largest cost for the owner of a truck, and therefore reducing fuel consumption is crucial in operating a successful and viable business. Wherefore, it is of the utmost importance for

\textsuperscript{17} 80 Fed. Reg. 40155.
regulators to allow innovation on part of the OEMs to continue by not overly constraining engine design.\footnote{Complete Vehicle Standards for Heavy-Duty Trucking.} If OEMs were able to produce an affordable fuel efficient vehicle, then both owner-operators and fleet owners would readily purchase them in the market. Forcing unproven technologies will only impede the agencies objectives.

1. **Lead Time**

A crucial aspect of this rulemaking is the amount of time which the manufacturers will be given in order to comply with the new standards. OOIDA members are concerned that if there is not sufficient lead time to develop and test new technologies, that trucking companies will be forced to purchase, at an extra cost, unreliable equipment which is susceptible to frequent repairs – further increasing the truck owners costs.

For the past decade, the trucking industry has been flooded with emission reduction regulations including EPA 2007, EPA 2010, Onboard Diagnostic (OBD) in 2013, GHG14, OBD in 2016, and GHG17. The rapid succession of regulations has not given the manufactures time to work to reduce the costs of new vehicles, therefore, these forced regulations will dramatically increase the cost of medium- and-heavy-duty trucks. A study published in 2012 entitled *A Look Back at EPA’s Cost and Other Impact Projections For MY 2004-2010 Heavy-Duty Truck Emissions Standards,* detailed EPA’s significant underestimation of real-world vehicle costs.
Further, the decreased reliability of EPA compliant truck and engine models has been well documented. A 2011 J.D. Power and Associates study suggested that, “With the new technology required to meet emissions standards, today’s engines simply are more problematic than the previous generation. So, while it’s possible that manufactures can continue to improve the quality of the engines, it’s unlikely that they’ll quickly get back to the pre-2004 levels.” In addition, Daimler Trucks North America has stated that vehicle efficiency improvements reduce real-world NOx emission benefits in proportion to power demand reduction. The combustion fundamentals state that any increase in stringency of NOx standards will compromise the ability to optimize for minimum CO2 emissions and maximum fuel efficiency. While EPA admits that there were some problems with the Phase I trucks, the agency fails to recognize that similar problems could develop with Phase II.

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For example, the MaxxForce engine produced by Navistar was labeled as an “approved engine.” As Navistar attempted to perfect its exhaust gas recirculation (EGR) technology, many trucking companies with MaxxForce powered trucks experienced repeated breakdowns and engine failure between 2010 and 2012, many of which were directly related to the EGR system.

Problems with components such as EGR valves, EGR coolers, EGR inlet tubes, EGR sensors, and defective ECM modules were being experienced by trucking companies throughout the United States. Not surprisingly, both Navistar's International trucks and MaxxForce engines experienced numerous recalls and dozens of service bulletins related to the EGR system. These problems led to increased breakdowns, downtime, repair costs, and lost profits for the companies operating these trucks.

Without proper lead time, the OEMs will not have sufficient time to produce proven and reliable trucks, which could create a pre-buy scenario in which the agencies have hoped to avoid. OOIDA’s preferred option is Alternative 1. This Alternative will allow the market to drive fuel efficient technologies at a pace that is conducive to healthy growth and actual consumer costs, which will assist the agencies in reaching their objectives that much sooner by avoiding pre-buys, risky technology, and negative outlooks on any future rulemakings.

2. Stringency

OEMs have voiced very significant concerns regarding the proposed emission standards, which was a significant point in their joint testimony during the Long Beach Public Hearing. These noteworthy concerns included:
- The agencies recommendation that the 2017 aero baseline utilizes the best aero trucks available rather than the average, this has an effect of increasing stringency about 2.5%.

- The baseline assumes 30% or more sleeper tractors are equipped with non-programmable idle shutdown timers when, in fact, very few customers take this feature. This increases stringency about 1.5% (30% of 5%).

- Cab aerodynamic expectations (Bins V, VI, and VII) cannot be achieved with the specified test trailer. This means vehicle OEMs must try to find about 4.5% more fuel economy elsewhere.

- The compliance margins for aerodynamic bins have been removed. In contrast, Phase 1 allowed a full bin margin. This means that OEMs would have to declare worse aero performance to ensure passing an audit, with as much as 5% impact on declared fuel economy that they would need to make up somehow.

- No compliance margin is provided for engine fuel map audits, compared to the 3% margin allowed in Phase 1 for engine efficiency. This would require that OEMs declare worse engine efficiency than their certification measurement to ensure passing an audit, considering production and test variability.

- In summary, these test and protocol issues add as much as 17% greater reduction in fuel consumption than the proposed rule estimates.

When combined, these issues create an impossible challenge that could not be met with any reliable, cost-effective technology, which will negatively affect the owner-operators,
professional truck drivers, and the general public that the agencies are hoping to serve. In conversations with EPA staff, OOIDA has been assured that the agencies are working to resolve many of these issues, and that meetings have taken place between respective teams of engineers to resolve them. This will be especially crucial because of the agencies seeming reliance on new technology. The testing methods and protocols must be accurate to avoid an overly stringent regulation which can have several unintended consequences. Without these corrections, this rulemaking will force OEMs to specify a truck optimized for simulated duty cycles which EPA has chosen rather than meet the needs of consumers operating in the real-world, which would ultimately lead to increased fuel consumption and GHG emissions. If these concerns are not adequately addressed, this further endangers the goal of this NPRM and puts the livelihoods of hard working individuals at a grave risk for failure.

3. Technologies

a. Aerodynamic Devices

For the first time ever the agencies proposed a set of CO$_2$ emission and fuel consumption standards for OEMs of new trailers that would be phased-in between MY 2018 and 2027. A portion of these standards included provisions to improve aerodynamic performance of the regulated trailers. Specifically, the agencies have proposed standards by separating the various types of trailers in operation today into ten subcategories. The agencies have also proposed to group aerodynamic technologies into packages, also called bins, in order to evaluate the performance and the costs of these technologies.

It should be understood that whenever an aerodynamic device is used, the benefit of the other devices will be affected. For example, installing a gap fairing will affect the aerodynamic drag of the side skirts. Therefore, the benefits gained by combining aerodynamic technologies
cannot be summed by adding the individual estimated fuel savings. Combining all the various aerodynamic devices, such as side skirts, front gap fairings, and rear fairings, which individually are estimated to produce 4 to 7 percent, 1 to 2 percent, and 1 to 5.1% in fuel savings respectively, will not result in a grand total of 6 to 14 percent in fuel savings.

The benefits of aerodynamic technology fluctuate greatly depending on the trailer type and cargo. For instance, as stated above, front trailer fairings are not designed for refrigerated-vans, and are most effective when installed on tractor-trailers with a gap greater than 36 inches.

While aerodynamic technologies sound good academically, they often do not make sense in the real world. In some instances aerodynamic technology can actually cost fuel rather than save fuel. For example, a sleeper cab tractor with a full-height air deflector that is pulling a flatbed trailer will decrease fuel efficiency because the high roof sleeper increases the frontal area of the truck beyond what the trailer requires.20

Trucking operations not only vary by types of cargo, but also by geographic region and length of haul, which greatly affects the benefits of aerodynamic technology. Truck drivers in coastal and urban areas run very different routes than those who operate on the great plains of the Midwest. Short-haul operations primarily use day cab tractors, which constitute approximately one-third of Class 8 trucks.21

In an article published in the Brow Beat, Susan King, a spokesperson for the American Trucking Associations, stated that aerodynamic technology does not make sense for every truck.

20 Technologies and Approaches to Reducing the Fuel Consumption of Medium- and Heavy-Duty Vehicles, National Academies Press (2010), pg. 98.
21 Ibid.
The drag on a vehicle increases with the square velocity, so reducing drag becomes much more important as the average speed of a truck increases. Ms. King pointed out that this technology does not start to be effective until the truck is averaging 60 to 65 mph. “So you wouldn’t see these panels on trucks that handle local deliveries.”

Therefore, unless an owner-operator is running long-haul where they average 60 to 65 mph, these aerodynamic technologies would have little to no effect on fuel savings, and it would be difficult for owner-operators to see a return-on-investment. For example, in California, the speed limit for heavy-duty vehicles is 55 mph, thus these technologies would not be able to reach their maximum effect. Additionally, tens of thousands of owner-operators service our nation’s ports, and many never exceed 45 mph.

b. APU’s

Auxiliary power units (APUs) can be used instead of idling the main engine of the truck to provide both power and climate control for the driver. While APU’s unquestionably offer multiple benefits, an adoption rate of 90% that the agencies are estimating by MY 2024 is completely unreasonable. Additionally, while many carriers purchase sleeper cabs because they are the most versatile choice, this does not mean that a driver will routinely be sleeping in the cab of the truck. Depending on the operation and length of haul, a driver might only spend one to two nights a week in the cab. In these types of situations an APU is merely 400 lbs. of extra and unneeded weight and maintenance.

Ironically, while the agencies’ NPRM hopes to reduce the weight of a truck, a typical APU adds approximately 400 lbs. to the weight of a truck. Whereas most states allow a 400 lb. exemption for trucks equipped with an APU, the following states do not: CA, DC, HI, KY, MA, NC, and RI. If the agencies mandate the installation of an APU on a truck which operates in one of these states, then the potential income for that carrier will be reduced. This issue was not addressed by the NPRM.

c. Automatic Engine Shutoff

OOIDA is concerned that installing automatic engine shutoff (AES) in a class 8 vehicle may compromise safety in different circumstances. Overall, AES can easily produce negative consequences for long-haul drivers who frequently visit new facilities (warehouses, shippers, receivers, etc.). These facilities rarely have similar check-in procedures, which can be problematic. For example, a driver might leave the truck believing that it will only take a few moments for him or her to access the check-in area and then return. However, this is not always the case and delays can easily ensue. While this might not be an issue for a single truck driver, it can create a safety hazard for team driving operations, if a co-driver was left asleep in the sleeper berth and the truck shut off, he or she could be left out in extreme weather conditions, which could interrupt the driver’s valuable sleeping time and thus increase fatigue. Additionally, this situation could be especially harmful for drivers with certain medical conditions, such as those who have experienced a heat stroke in the past.

According to OOIDA Foundation’s Member Profile Surveys, 16% of OOIDA members indicate that they have a pet with them in their truck. This leads to the same concerns as those presented above. However, a pet will not have the ability to turn the truck back on. Such areas of concern were not a part of the agencies analysis and subsequent costs.
d. **Automatic Tire Inflation**

Automatic tire inflation technology is among the agencies’ list of approved technologies in order for OEMs to achieve compliance goals. The agencies have projected as part of the NPRM that 50 percent of dry van and refrigerated trailers will have automatic tire inflation (ATI) systems installed to maintain optimal tire pressure by MY 2018. This penetration rate is far too high, as many owner-operators would prefer to purchase tire pressure monitoring (TPM) systems rather than ATI systems because of the reduced cost and complexity while achieving similar savings. It is important that ATI systems are not forced onto consumers by assuming such high adoption rates.

It is well-accepted that poorly inflated tires decrease a truck’s fuel economy, and that proper tire pressure is essential to avoiding blow outs. Tire failure for an owner-operator is a costly expense, as the driver will both lose productivity while waiting for a replacement tire and will incur costs to purchase the replacement tire. This alone is a proper incentive for owner-operators to ensure that tires are inflated to the proper pressure. While ATI systems are capable of monitoring tire pressure, they are often expensive and unreliable, whereas TPM systems are much less expensive and can be utilized to achieve the same results.

e. **Low Rolling Resistance Tires**

Lower Rolling Resistance Tires can be a useful technology which reduces the energy needed in order to move a truck, but it is important to understand that they do not work for all types of truck operations. Low rolling resistance (LRR) tires are designed to improve fuel efficiency of a tractor pulling a trailer by minimizing its rolling resistance, which consists of energy lost as heat within the rubber itself, as well as aerodynamic drag of the tire, and friction between the tire and the road and between the tire and the rim when the tire is rolling under load;
rolling resistance is expressed as the energy consumed per unit distance as the tire rolls under load.\textsuperscript{23}

According to the EPA SmartWay program, for every 5 percent reduction in tire rolling resistance, a 1 percent reduction in fuel savings might be attained. Tests have confirmed that most LRR tires have a long stopping distance at high speeds and lack grip in the corners, both of which could ultimately lead to an accident.\textsuperscript{24} Sheldon Brown, an executive program manager at the Toyota Technical Center, has said, “There have been significant trade-offs with this type of tire, namely wear performance and stopping distance.\textsuperscript{25}”

Regardless of the higher cost of LLR tires and the concerns of its effectiveness in fuel savings, the tire is not designed for all types of operations. An owner-operator running routes in mountainous terrain does not want a tire that has less friction and less traction equipped on their tractor-trailer, especially while driving in extreme weather conditions. The LRR tire may be beneficial on flat terrain, but it is a safety concern in many geographical regions. Steven Bixler, an OOIDA Board Member, who frequently operates in winter conditions and mountainous terrain, stated “Asking me to run LRR’s would be like asking someone to walk up and down Lombard Street in San Francisco in a pair of smooth soled penny loafers on an inch of ice.”

By the very nature of their job, truckers must be prepared for just about any possible situation at all times, whether it is foreseeable or not. In the course of a single day, a truck driver

\textsuperscript{23} Final Regulation Order: Tractor-Trailer Greenhouse Gas Regulation, CARB (2011) pg. 5.
can be faced with many varying situations and scenarios, and a large part of being properly prepared is choosing the right equipment and accessories for a job that can change as quickly as the weather. Understanding this fact is vital because making a poor equipment choice can have dire consequences. The tires on a tractor-trailer are not only a significant financial investment, but can be the difference between safely completing a trip, or not. A LRR tire achieves much of its potential fuel savings benefit by reducing the very component of friction or resistance that a truck driver needs to have faith in, which is not an option for many owner-operators.

When a truck driver is navigating a curve, static friction is the main force that keeps the truck on the pavement. If an owner-operator is running a route over a mountain pass such as California’s Interstate 5, which is infamously known for its curves as the unforgiving Grapevine, they must be equipped with the proper tire. The heavily traveled Grapevine is part of the Tejon Pass located in the Tehachapi Mountains. The peak reaches over 4,100 feet and has a steep grade of up to 6 percent. In addition, on any given day a driver may encounter conditions such as rain, snow, ice, fog, and condensation. If the static friction is reduced, the driver has a much greater possibility of encountering kinetic friction, or in other words a skid, which may result in a crash.

For another example, the Eisenhower-Johnson Memorial Tunnel in Colorado is one of the highest vehicular tunnels in the world with a maximum elevation of 11,158 ft. However, if an owner-operator is transporting hazardous materials, they are not allowed to use the tunnel. Instead, the driver must travel on top of the mountain across Loveland Pass, which is almost another 1,000 ft. higher. For the two routes mentioned, LRR tires are simply not an option. The
small fuel saving benefit associated with LRR tires is greatly outweighed by the potential loss of friction that may cause an accident.

While a much more mundane situation than an accident, without proper traction a truck can get stuck. Un-laden truck suspensions do not lend themselves to good traction, even when equipped with tires which have a more aggressive tread depth. The towing bill for a class 8 truck is costly and being extracted is time-consuming.

f. **6x2’s**

It is obvious that the agencies have not properly researched 6x2 axle configurations, as 6x2’s are not safe for all operations, nor are they legal in all 50 states and Canada. When considering the purchase of a truck, it is imperative for an owner-operator that the vehicle is able to legally operate in all states and provinces. A truck which is not able to do so is not desirable and thereby can have a dramatic effect upon the resale value of the vehicle. EPA should include in its cost and benefit analysis the negative impact on the resale value, as well as the potential for increase tire wear and costs associated with the 6x2 axles. While a 6x2 configuration can lead to fuel savings, a market penetration rate of 60% by 2027 does not appear to be a realistic estimate when considering the potential limitations.

g. **Speed Limiters**

In the NPRM, the agencies proposed to permit the use of speed limiters in order to grant credits to OEMs as a way to improve fuel economy. However, OOIDA strongly cautions that the agencies must fully consider the significant negative consequences of speed limiters. Julie Cirillo, a former Assistant Administrator and Chief Safety Officer of the Federal Motor Carrier Safety Administration (FMCSA), stated in a sworn affidavit, “it is my opinion that the Speed Limiter Legislation does not increase safety, and in fact decreases safety on the highways
travelled by those heavy trucks and can cause dangerous situations to arise.\textsuperscript{26} Specifically, these dangerous situations arise from a differential in speed limits. Mrs. Cirillo also stated, “Jurisdictions responsible for ensuring the safety of the travelling public should not take any action that could result in creating an unsafe situation. Included in these actions would be the establishment and enforcement of differential speed limits for passenger cars and commercial vehicles. Adherence to differential speed limits creates a situation where a significant percentage of traffic is operating more slowly than general traffic.”

In 1964, David Solomon wrote a report entitled \textit{Accidents on Main Rural Highways Related to Speed, Driver, and Vehicle} published by the Bureau of Public Roads (predecessor to the Federal Highway Administration). In order to define the relationship between speeds, characteristics of drivers and vehicles, and accidents, Solomon collected data from 11 cooperating states on 600 miles of main rural highways. The study recorded 10,000 drivers across 2-lane and 4-lane highways, and discovered vehicles travelling 10-15 mph less than the average speed of all traffic had a much greater chance of being involved in a crash. Solomon presented his findings in a distinguished “U-shape” curve, which has now become famous.\textsuperscript{27}

In fact, Solomon wrote that regardless of the average speed on the highway, the more a driver deviates from the average speed, the greater his or her chance of being involved in an accident. Low speed drivers are more likely to be involved in accidents than high-speed drivers.

\begin{flushleft}
\textsuperscript{26} Affidavit of Julie Cirillo
\textsuperscript{27} David Solomon, \textit{Accidents on Main Rural Highways Related to Speed, Driver, and Vehicle}, Bureau of Public Roads (1964), pg. 1.
\end{flushleft}
are, as 80% of rear-end collisions involving a large truck and a car resulting in a fatality, the passenger vehicle rear-ended the truck.\(^{28}\)

Additional research studies have been published through the years that support Solomon’s conclusions, such as the *Interstate System Accident Research Study II* published by the Bureau of Public Roads (now the FHWA) and the *Commercial Motor Vehicle Speed Control Devices* published in 1991 by the National Highway Traffic Safety Administration (NHTSA). Both studies confirmed the “U-shape” curve established initially by Solomon.

In 2005 Dr. Steven L. Johnson of the University of Arkansas conducted a study entitled *Cost-Benefit Evaluation of Large Truck-Automobile Speed Limit Differentials on Rural Interstate Highways* which found that differentiating speeds were shown to produce more interactions between vehicles. Moreover, Dr. Johnson found that as the speed of an individual vehicle deviates from the mean traffic speed on a roadway, the number of interactions between vehicles increases and the potential for being involved in accidents increases. The frequency of interactions with other vehicles by a vehicle traveling 10-mph below the posted speed limit is 227% higher than moving at traffic speed.\(^{29}\)

In similar fashion, in 1993 the Transportation Research Board of the National Research Council published a study by John E. Baerwald, which found that vehicles travelling at or about the same speed minimized the need for overtaking, passing and lane changes and, as a result,

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\(^{29}\) Steven L. Johnson, *Cost-Benefit Evaluation of Large Truck-Automobile Speed Limit Differentials on Rural Interstate Highways*, Mack-Blackwell Transportation Center, University of Arkansas (2005), pg. 98.
caused fewer accidents. This too was supported recently by the United Kingdom, which in April 2015, increased the national speed limit for heavy goods vehicles from 40-mph to 50-mph in order to reduce risky overtakes by frustrated car drivers.

When a truck is artificially limited to a lower speed than other traffic, this will create an obstruction in the traffic flow. As other vehicles approach from behind in traffic there will invariably be situations where they will need to reduce speed before passing. The vehicle will then have to regain their cruising speed. This will cause the vehicle to use more fuel than it would if it could have maintained cruising speed. While this type of interaction will occur in any traffic flow situation, it will occur more frequently if VSLs are mandated.

The agencies are correct to note that reducing the speed of all trucks will lead to a greater number of trucks being necessary to haul the same amount of freight. With an artificial reduction in freight capacity, due to a loss in total miles operating within the allowed hours of service, more trucks and drivers would be needed to compensate. This would also require more truck parking spaces, which are already in shortage (cite Jason’s law study) and come with their own GHG footprint. A larger amount of trucks on the road would also add to congestion which would increase GHG emissions.

OOIDA is opposed to the utilization of speed limiters as a way for OEMs to receive credits in order to comply with the Phase II fuel efficiency and GHG emission standards. A

30 Affidavit of Julie Cirillo, Fair Fax County, Virginia, 8 September 2011.
technology which has been proven to decrease highway safety is completely and utterly inappropriate, and should not be included in any form as part of the proposed rule.

h. Waste Heat Recovery

The agencies proposed phase-in standards from 2021 through 2027 for OEMs to gradually introduce various technologies, one of which is waste heat recovery (WHR). EPA assumes that WHR will cost up to $11,000, but because this technology is not currently available in any production form, the actual costs are unknown and more than likely much higher than EPA has estimated. Though the technology has some promise, its potential benefits are dependent upon many confounding variables. According to the researchers at the Southwest Research Institute, not all duty cycles can expect to benefit from WHR. Again, this speaks to the diversity of the trucking industry, while also demonstrating the unsuitability of forcing technology. It is important for the agencies to remember that while OEMs may utilize WHR to receive credits, the customers will more than likely never actually benefit from this technology. This is especially likely with Alternatives 3, 4, and 5.

Ultimately, with multiple fluid pumps, additional hoses, and heat exchangers, the WHR system has a great potential for failure. Until more is known and understood about WHR and until more real-world data is collected, OOIDA suggests that WHR not even be considered as part of Phase II. With an estimated 200 parts, this technology is certain to be expensive to purchase and maintain, and will add a notable amount of weight to the vehicle, thus WHR would be counter-productive to the agencies proposal to reduce weight. This as-yet-developed technology is so far from even being tested to determine if it actually will work in a class 8 truck environment those who are testing it continue to drastically alter the very method in which they propose to capture the waste heat. It is doubtful that any owner-operator would risk purchasing a
truck with such a technology, which will once again prime the market for a pre-buy or no-buy situation.

i. Weight Reduction

The Notice proposes that heavy duty vehicles would save fuel and lower emissions if trucks were redesigned to use less mass, possibly using lighter, higher strength materials. Before such standards are created, however, OOIDA has and continues to encourage NHTSA to establish a rule for the crash-worthiness of trucks. Without a baseline standard for the forces that a truck and its components must withstand in a crash, what guidelines would truck manufacturers follow to ensure that mass reduction designs do not compromise the safety of the truck driver?

In the academic world, the idea of reducing the vehicle weight sounds like a good way to tackle fuel inefficiency in CMVs. However, this is a frightening concept for a truck driver. The goal of better fuel efficiency is a noble one, but it is not worth the expense of a weaker and lighter cabs. Currently, the United States does not have any cab crashworthiness standards for vehicles with a gross vehicle weight rating over 10,000 pounds.

In 2009, Carl VanWasshnova, an OOIDA member from Port Orange, FL, was killed in a low-speed crash after his day cab collapsed around him. According to the Federal Motor Carrier Safety Administration, approximately 700 truck drivers have died annually the past 10 years in single or multi-vehicle crashes. Accidents involving truck rollovers are among the most deadly as they account for approximately 63 percent of fatal injuries to truck occupants. While millions are being spent to develop new technologies, basic and common sense features such as air bags and truck cab crashworthiness are being left behind.
In response to a 20 percent increase of truck occupant deaths in 2011, OOIDA released a statement saying, “What is wrong with this picture?  NASCAR drivers walk away from collisions at 200 miles per hour but truck drivers are losing their lives at 30 miles per hour. Families are being destroyed because we are making cabs lighter and lighter while efforts persist to make the loads heavier. Accidents will happen – period. We won’t be able to outsmart that.” Reducing the weight of CMVs in order to improve fuel efficiency should not be a compromise for safety.

Section 32201 of the Moving Ahead for Progress in the 21st Century Act (MAP-21) directed the Secretary of Transportation to conduct a comprehensive analysis of the need for crashworthiness standards for property carrying commercial motor vehicles with a gross vehicle weight rating or gross vehicle weight of 26,001 pounds involved in interstate commerce including an evaluation of the need for roof strength, pillar strength, air bags, and other occupant protections standards, and frontal and back wall standards. NHTSA contracted with the University of Michigan Transportation Research Institute to conduct a study on heavy truck fatal and injury crashes. After breaking down the crash data from TIFA, GES, and the LTCCS, and researching SAE’s Recommend Practices, UMTRI identified four primary countermeasures. However, the research team stated that an assessment of the countermeasures’ effectiveness to reduce truck occupant injury and death in crashes was beyond the scope of the study. The countermeasures included:

• Measures to increase seat belt usage. These may include the installation of enhanced seat belt warning systems that activate a visual and audible warning when truck drivers and other vehicle occupants fail to use their seat belt.

• Increasing the integrity and robustness of cab structures and the protection of cabs particularly with respect to rollover.

• The installation of side curtain air bags to prevent occupant ejection through the side windows and head trauma.

• Increasing occupant head space during rollover events through installation of automatic pull-down seats.

UMTRI also recommend that since SAE’s Recommended Practices and standards were formed over a decade ago with the cooperation of manufacturers and associations from various countries, that SAE reassess and update their Recommended Practices. NHTSA has stated that they will closely follow and participate in this work. OOIDA feels this issue needs to be addressed before other regulations are initiated.

Again, while reducing the weight of the truck and trailer appears to work on paper, the real-world effects are often different. As part of the agencies analysis, they described in detail what is known as a “rebound effect.” According to the NPRM, “The “rebound effect” has been defined a number of ways in the literature, and one common definition states that the rebound effect is the increase in demand for an energy service when the cost of the energy service is
reduced due to efficiency improvements. The agencies attributed this effect to vehicle miles traveled; however, they did not consider the rebound effect for weight reduction. In the reality of a highly competitive industry, if the weight of the tractor and trailer is reduced then the shipper will simply add weight to the load being hauled, essentially making any proposed or mandated weight reduction ineffective.

Today, many tractors and trailers are already specified for maximum weight savings based upon the vehicle usage. For example, it is common for an aluminum end dump trailer with aluminum wheels and wide based tires to be loaded to the max in order to take full advantage of the weight savings. It is a common occurrence for such trucks to be loaded while on a scale so that they can be loaded until the total vehicle weight reaches 80,000 lbs. It is imperative that the agencies consider the rebound effect beyond just vehicle miles traveled.

It also worth noting that the topic of a “rebound effect” validates that the trucking industry is well aware of methods to conserve fuel, and thereby decrease GHG emissions, and will actively pursue them when it they are appropriate for their operation.

C. Alternatives

The Agencies have proposed an overall level of fuel economy stringency labeled as Alternatives 3 for all engines, vehicles, and most categories of trailers. Unlike in Phase I where the agencies projected that manufacturers could meet the Phase I standards with off-the-shelf technologies only, the agencies project that Alternative 3 standards could be met through a combination of off-the-shelf technologies applied at higher market penetration rates and new

\[33\text{ 80 Fed. Reg. 40446}\]
technologies that are still in various stages of development and not yet in production. However, as previously mentioned in the comments above, the agencies cost and benefit analysis of Alternative 3 is founded upon unrealistic and inappropriate adoption rates, which have effectively skewed the benefits proposed as part of NPRM and RIA. While the agencies do “recognize that there is some uncertainty in projecting costs and effectiveness, especially for those technologies not yet widely available, but believe that the thresholds proposed for consideration account for realistic projections34” (emphasis added), the livelihood of hundreds of thousands of small business owners depends on affordable and reliable equipment to compete and survive in a highly competitive industry.

While the proposal does not mandate any specific technologies, the proposed performance standards of Alternative 3, which require a 10.4 percent fuel and CO\textsubscript{2} emission reduction by MY 2027 for long-haul tractor-trailers, along with a 17.9 percent reduction in tire rolling resistance, a 26.9 percent reduction in aerodynamic drag, and a 304 lbs. reduction in weight, require the adoption of unproven and unreliable technologies, such as WHR. Though the agencies seem to be congratulating themselves for allowing 10 years of lead time in order for OEMs to comply with Alternative 3, the manufacturers have clearly stated in their comments that such stringency is not conducive to producing affordable and reliable tractors and trailers.

According to OOIDA President and CEO Jim Johnston, as well as OOIDA Board Members, who have made their living by driving a truck, “We know that it’s the manufacturers’ responsibility to make the equipment to accomplish that [the fuel efficiency and GHG standards],

but it is the EPA that sets the rules. And it’s setting them at a pace that does not allow for enough time to road test the equipment. This results in expensive repairs and time-consuming breakdowns that are wrecking profit margins and interfering with operations.35 “There’s no time to figure out the standards, to see what works, and how to fix it before the government is putting out new rules…When you are a one-truck business, being down for repair is a real problem. And failures with this technology can keep a truck in the shop all the time. Fleets on the other hand, aren’t running all their trucks at the same time and they have the ability to simply pull another truck out while one truck is down…When you [EPA] are developing these rules, you must keep in mind that most of the freight is moved by small-business trucking operations, not the big companies.36"

OOIDA strongly believes that the market should drive fuel efficient technologies instead of expensive mandates. The agencies stated in their proposed rule that “both public and confidential historical information shows that tractor trailer fuel efficiency improved steadily through improvements in engine efficiency and vehicle aerodynamics over the past 40 years.37” In fact, since 1949 and even earlier, truck manufactures have sought to increase the fuel efficiency and performance of heavy-duty diesel engines and trucks, and these improvements have been driven by fleet owners and owner-operators seeking fuel efficient trucks, as fuel is the number one expense of every trucking operation. OOIDA proposes that agencies’ preferred alternative, Alternative 3, as well as Alternatives 4 and 5, are unrealistic and if adopted as part of this rulemaking process, will severely compromise the agencies’ praiseworthy objectives to

35 Sandi Soendker, “EPA takes notes on OOIDA concerns,” Landline Magazine (April 2014)
36 Ibid.
increase the fuel efficiency of medium-and heavy-duty trucks and reduce GHG emissions. Truck drivers certainly desire fuel efficient trucks and appreciate cleaner air to breathe. While various governmental agencies and environmental groups tend to paint owner-operators as individuals who do not care about the environment, nothing could be further from the truth. It is crucial to understand that owner-operators are not only hardworking Americans who help to move our economy, but that they also spend a majority of their life around tractor-trailers. Therefore, it is in their best interest, as well as in the interest of the public, to operate clean and efficient trucks.

OOIDA recommends that the agencies do not so easily disregard Alternative 2. According to the NPRM, Alternative 2 represents a stringency level which is approximately half as stringent overall as the preferred alternative. The agencies developed Alternative 2 to consider a continuation of the Phase 1 approach of applying off-the-shelf technologies rather than requiring the development of new technologies or fundamental improvements to existing technologies. For tractors and vocational vehicles, this also involved less integrated optimization of the vehicles and engines. Put another way, Alternative 2 is not technology-forcing. The agencies’ decisions regarding which technologies could be applied to comply with Alternative 2 considered not only the use of off-the-shelf technologies, but also considered other factors as well, such as how broadly certain technologies fit in-use applications and regulatory structure. The resulting Alternative 2 could be met with most of the same technologies the agencies project could be used to meet the proposed standards, although at lower application rates. Alternative 2 is estimated to be achievable without the application of some technologies, at any level.\textsuperscript{38}

\textsuperscript{38} 80 Fed. Reg. 40492-40923
Nevertheless, the agencies stated that they are not proposing Alternative 2 because they do not believe that it represents the “maximum feasible improvement” within the meaning of 49 U.S.C. 32902(k)(2). However, OOIDA would argue that Alternative 2 is the “maximum feasible improvement” because it does not force technologies that could be harmful to consumers or to the market. In addition, while the some of the adoption rates for the various technologies are still too high, such as for the APU estimate, overall this Alternative is far more realistic.

Ultimately however, OOIDA believes that Alternative 1 would be the best alternative to reach the agencies goals, as this will allow for the healthy development of technologies without the possible risk of a pre-buy or a no-buy situation. Additionally, this will help prevent the forcing of unreliable and costly technologies that could easily put an owner-operator out of business. According to FMCSA, 96 percent of motor carriers operate 20 trucks or less, while 90 percent of carriers operate 6 trucks or less. The owner-operator represents approximately half of all motor carriers. Alternatives 3 or 4 very well could put many owner-operators out of business, and thus would have a major unintended consequence on the nation’s economy, as 70 percent of all freight is moved by a truck.

Finally, OOIDA proposes that the agencies also include as part of their Alternatives an option which contains driver training. According to the NAS:\textsuperscript{39}

- Driver training offers potential savings for the trucking industry that rival the savings available from technology.

\textsuperscript{39} Technologies and Approaches to Reducing the Fuel Consumption of Medium- and Heavy-Duty Vehicles
Indications are that this could be one of the most cost-effective and best ways to reduce fuel consumption and increase fuel productivity of the trucking sector.

Establish a curriculum and process for certifying fuel-saving driving techniques as part of commercial driver certification and to regularly evaluate the effects of such curriculum.

The agencies failed to address truck driver training as a possible Alternative, which could realize greater benefits at a significantly lower cost. A study done by SmartDrive, an innovative solutions company, conducted a study of 695 Class 8 truck drivers to determine the effect of fuel efficiency training. The study results showed that 80% of fuel waste involves acceleration, deceleration, speeding and turning. Furthermore, the study found that by following eco-driving best practices, drivers could improve fuel economy on average up to 22%. That average reduction in fuel consumption could save fleet operators as much as $12,553 per vehicle in fuel cost annually.\(^\text{40}\)

In fact, by simply changing the driving habits to improve smooth driving performance, driving at appropriate speeds and reduce unnecessary idling, fleets affirmed that eco-driving can realize significant improvement in fuel mileage and reduce operating expenses, and reduce emissions. Within two months of driver training, the fuel economy increased to an average of 6.73 mpg from a baseline of 5.92 mpg, which is a 14 percent increase. The top 25 percent performing drivers improved their fuel economy to 7.98 mpg after two months of training.\(^\text{41}\)

\(^{40}\) Fuel Efficiency Study: Commercial Transportation, SmartDrive (May 2011).
\(^{41}\) Ibid.
D. The Cost/Benefit Equation

The agencies estimated a $10,000 to $13,000 increase in the cost of a new truck and a $1,400 increase for a new trailer by MY 2027 as part of Alternative 3. OOIDA believes that these estimates are far below the actual costs of proposed technologies, and thereby suggests that the agencies reevaluate their cost and benefit analysis in order to more appropriately reflect reality. For example, the agencies have estimated that the cost of an APU will be $4,327 by MY 2027. Nonetheless, the OOIDA Foundation, which has received two grants through EPA and the SmartWay Program in order to assist OOIDA members in purchasing APUs, has helped over 500 members purchase and install APUs in their truck. The average cost however was $8,000 with an additional installation cost of between $100 and $500. According to the market today, an APU produced by Thermo King costs $11,000. Moreover, the agencies failed to include maintenance costs within their analysis as APU’s require standard service maintenance after a minimum of 2,000 hours of operation, the cost of which is approximately $250. The agencies have grossly underestimated the cost of APU’s, and thus have created false benefits and costs in their analysis, especially considering the agencies excessively high adoption rates.

In addition to the underestimation of APUs, the agencies have not properly addressed the costs associated with LRR tires. Because of their lessened tread depth, LRR tires do not have the same lifespan as other tires, meaning that they will need to be replaced more often. The agencies have failed to recognize that the purchasing of tires is not the only cost an owner-operator must account for, instead labor costs, which include the removal of the wheel, removal of the tire, mounting of the new tire, balancing of the wheel, remounting of the wheel, and finally the FET, must be considered over the useful value life of 10 years. The table below is an example of such a cost.
Table 2: Labor Costs associated with the purchase of four tires on one axle\textsuperscript{42}

<table>
<thead>
<tr>
<th>Service</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mount/Dismount Labor</td>
<td>$139.96</td>
</tr>
<tr>
<td>Valve Stem</td>
<td>$28.00</td>
</tr>
<tr>
<td>Tire Fee</td>
<td>$7.00</td>
</tr>
<tr>
<td>F.E.T.</td>
<td>$75.96</td>
</tr>
<tr>
<td>Sales Tax</td>
<td>$85.79</td>
</tr>
<tr>
<td><strong>Total excluding cost of tires</strong></td>
<td><strong>$336.71</strong></td>
</tr>
</tbody>
</table>

A total cost of $336.71 for fees which do not include the actual tire is substantial. This fee would be repeated for each axle, which for a standard 18-wheeler would amount to $1,434.32. While the agencies “expect minimal increases in maintenance costs under the proposed standards, having estimated increased maintenance costs associated only with installation of lower rolling resistance tires,\textsuperscript{43}” OOIDA believes that the agencies did not adequately analyze the costs of maintenance associated with the proposed technologies.

1. Cost of Trucks

The agencies claim an owner of a new truck designed under the proposal will be able to recoup costs in “less than two years” due to fuel savings, however, the agencies have yet to show a direct connection between specific technologies and specific costs savings. The GEM model that the agencies utilized to make these estimates does not reflect all types of operations or geography. Moreover the OEMs have unmistakably declared that such a payback period is unrealistic considering the actual costs of the rule. Again, the agencies estimated that a new MY 2027 tractor will cost roughly between $10,000 and $13,000 more due to the Phase II standards. Nevertheless, this is based on the false assumption that typical heavy-duty truck costs

\textsuperscript{42} Appendix A
\textsuperscript{43} 80 Fed. Reg. 40445
$100,000.\textsuperscript{44} According to the OOIDA Foundation’s *Owner-Operator Member Profile Survey*, the *average* price of a new truck today is $123,351.

![Chart 2: The Price of a New Truck between 2001-2014](chart2.png)

While a $10,000 increase, which is an underestimation of actual costs, does not seem to be a large sum to the agencies proposing the rule, this cost is quite substantial for an owner-operator who takes home a net revenue of approximately $30,000 per year. If an individual were to purchase a new 2016 Kenworth T660 and a new 2016 Reitneour Dropdeck flatbed trailer for $164,593\textsuperscript{45} and $49,500,\textsuperscript{46} respectively, before taxes and fees. This price does not include the additional costs for chains, tarps, nylon straps, ratchet binders, etc., which are necessary in order to secure a load to the trailer. Even with a promise of a return on their investment via improved fuel economy, which again, is not realistic, the investment must be attainable in order to receive any positive benefits from the technology. An increase of $10,000 can easily put the purchase of a new truck out of reach for an owner-operator or small fleet. Simply stated, if the cost of the

\textsuperscript{44} Ibid., 40483  
\textsuperscript{45} Appendix B  
\textsuperscript{46} http://www.trailermarketinginc.net/
equipment exceeds the point where a person can attain credit in order to purchase it, an owner-operator will not buy it. This is an increasingly likely scenario with the Phase 2 NPRM, thus the opportunity for safe and experienced drivers to become an owner-operator will be reduced. It is important for the agencies to also include as part of their cost and benefit analysis, the increased purchase price of used trucks in response to the uptick in demand for vehicles without Phase II technologies.

2. Cost of Trailers

In addition to the increase in price for a tractor, the agencies projected a $1,400 increase for a new trailer by MY 2027 as part of Alternative 3. According to the California Air Resource Board, the retail price for a set of side skirts, which weigh between 150 and 350 pounds on average depending on the material, length, and configuration of the skirt, ranges between $1,000 and $2,600, not including the cost of installation, front trailer fairings cost between $800 and $1,000, and rear trailer fairings cost approximately $2,000.47

<table>
<thead>
<tr>
<th>Aerodynamic Technology</th>
<th>Initial Cost</th>
<th>Weight</th>
<th>Estimated Fuel Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Side Skirts</td>
<td>$1,000-$2,600</td>
<td>150-350 pounds</td>
<td>4%-7%</td>
</tr>
<tr>
<td>Front Gap Fairings</td>
<td>$800-$1,000</td>
<td>75-140 pounds</td>
<td>1%-2%</td>
</tr>
<tr>
<td>Rear Fairings</td>
<td>$2,000</td>
<td>75 pounds</td>
<td>1%-5.1%</td>
</tr>
<tr>
<td>Grand Total</td>
<td>$3,800-$5,600</td>
<td>300-565 pounds</td>
<td></td>
</tr>
</tbody>
</table>

The costs detailed above do not take into account annual maintenance costs, which are projected to be almost $300 annually, or replacement costs, for example a trailer side skirt can cost between $80 and $500. Additionally, it is imperative to note that some owner-operators,

and most fleet owners, own more than just one trailer, while also hauling different types of cargo. Overall, the current trailer to truck ratio is approximately 2.8. Therefore, you can expect these costs to double for many owner-operators.

Ultimately, the potential economic savings must be more concrete or proven in order for these proposed technologies to present a good enough incentive for owner-operators to purchase new, more expensive trucks and trailers.

Is it more than probable that the increased price of both a truck and trailer will mean that some truck owners will not be able to afford to purchase new equipment (or even afford a used truck with an increased price). A dramatic increase in the price of a truck and trailer might act as an incentive for many truck owners to hold on to their older equipment for a longer period of time, therefore not gaining the benefit of the promised improved fuel economy and denying the agencies their projected gains in air quality improvement.

To compound this problem, the new proposal would limit the number of glider kits that could be produced and sold –under the assumption that drivers who use them would have less incentive to purchase a new truck that would achieve even greater efficiency. The unavailability of gliders kits is not likely a sufficient factor to overcome the fact that new trucks may be prohibitively expensive for many truck owners. The agencies should not discourage the modification of older equipment at the expense of incremental environmental benefits. This is especially true considering that one of the major benefits of a glider kit is reduced fuel consumption. When a reliable engine is placed into a new aerodynamic tractor, this will clearly result in a reduction of GHG emissions, which should be applauded by the agencies. If the
agencies wish to address glider kits in any way OOIDA believes this issue should be the subject of a separate rulemaking.

3. Warranty, Maintenance, and Downtime Costs

The proposed rule will force new technologies into the market and with new technologies will come increased warranty costs, maintenance costs, and costs associated with increased downtime. The proposed rule only counts some of the increased maintenance costs associated with tires. In doing so, the agencies are greatly underestimating the overall impact of new technology. The agencies should calculate in the analysis additional warranty, maintenance and downtime costs. In an April 2014 Board Meeting, OOIDA Board Member Lewie Pugh presented to the EPA a 7-foot long printout of everything that had gone wrong with the MaxxForce engine truck that he had purchased in 2011. He said, “When the truck breaks down, the mechanics don’t even know what’s wrong. They don’t know how to work on them. The dealership I go to is packed with trucks with emission problems.”

If an Alternative that forces new technologies is chosen by the agencies, the impact of increased repairs beyond traditional warranty coverage needs to be taken into account. Small business owners and fleets cannot continue to bear the cost of forced technologies and the ensuing repairs. The irony with this situation is that any increased warranty coverage would increase the purchase price of a new truck. Additionally, this will negatively impact the resale value of the truck. For example, the trucks subject to the Phase I standards, such as the MaxxForce engine which caused large amounts of downtime, will be passed along to the new

48 “EPA takes notes on OOIDA concerns.”
49 Appendix C
consumer, without an extended warranty, many owner-operators could be placed out of business. According to the OOIDA Foundations Member Profile Survey, 74 percent of owner-operators purchase used trucks. Any unreliable or problematic truck produced as a consequence of the Phase II standards will eventually be placed on the used market, thus adversely impacting owner-operators who purchase them several years into the future.

E. Impacts on niche segments of the industry

Niche segments such as oversized and heavy haul are recognized as being unique. The agencies have acknowledged that niche industries present unique concerns not shared with the most prevalent truck operations. However, one area that the agencies have not adequately addressed is post-purchase modification, which is a specialty for small business owner-operators. In particular, owner-operators are able to change their schedule in order to meet a customer’s demands with relative ease. This can mean that a truck which was spec’d for one particular niche might need to be modified for use in another niche at a customer’s request, or as the markets change. This could require different types, or even sizes, of tires and a completely different type of trailer. These small-business owner-operators should not be penalized or prevented from making changes to their equipment in order to stay in business.

The proposed rules would prohibit the future post-purchase modification of the new proposed technologies in a truck unless it can be shown that the modifications improve fuel economy. While OOIDA appreciates this flexibility, it is concerned that this important issue is not explained in adequate detail. For example, as stated above, a standard truck built for pulling a dry van trailer might be used to pull a flatbed, or the original purchaser of the truck might decide to change from a dry van operation to flatbed operation by removing the dry van-focused
roof fairing. According to the current proposal, such modifications could be a violation of the Clean Air Act, unless it would improve the vehicle's fuel efficiency. OOIDA members would appreciate more specific information on how they would be able to prove the merits of their modifications, well short of being a defendant accused of violating the Clean Air Act.

**III. CONCLUSION**

The joint NPRM published by the agencies seeks to establish standards which were estimated to reduce fuel consumption in diesel engines by 24% over its 2017 baseline and reduce GHG emissions through a technology-forcing program beginning in the MY 2018 and culminating in MY 2027. While OOIDA believes that the agencies goals are laudable, we are concerned that the agencies have not accurately estimated the costs and benefits of the proposed rule. In particular, the agencies have overestimated technology penetration rates while simultaneously underestimating associated costs, including maintenance costs. OOIDA believes that the agencies should utilize actual costs rather than average costs. In addition, OOIDA believes that the agencies have not adequately considered the excessive burden that will be placed upon small business owners and professional truck drivers from exorbitantly expensive, untested, and in some cases unproven technologies which are being proposed under the agencies’ preferred alternative, Alternative 3. These facts coupled with the quickened lead time for OEMs to produce compliant technologies will create strong grounds for a pre-buy or no-buy scenario, such as occurred with the 2000 and 2007 EPA emission rules, which will only prohibit the agencies objectives while also putting thousands of small business owner-operators out of business.
As mentioned previously, the agencies “recognize that there is some uncertainty in projecting costs and effectiveness, especially for those technologies not yet widely available, but believe that the thresholds proposed for consideration account for realistic projections.” (Emphasis added). While the agencies are content with the uncertainty of costs and the effectiveness of the technologies, owner-operators do not have this luxury. The livelihood of an owner-operator, who frequently operates his or her business on small profit margins, depends on affordable and reliable equipment in order to compete and survive in a highly competitive industry. OOIDA strongly believes that the market should drive fuel efficient technologies instead of expensive mandates. The agencies stated in their proposed rule that “both public and confidential historical information shows that tractor trailer fuel efficiency improved steadily through improvements in engine efficiency and vehicle aerodynamics over the past 40 years.” In particular, these improvements have been driven by fleet owners and owner-operators seeking fuel efficient trucks, as fuel is the number one expense of every trucking operation.

OOIDA proposes that agencies’ preferred alternative, Alternative 3, as well as Alternatives 4 and 5, are unrealistic and if adopted as part of this rulemaking process, will severely compromise the agencies’ positive objectives to increase the fuel efficiency of medium- and heavy-duty trucks and reduce GHG emissions.

Ultimately OOIDA believes that Alternative 1 would be the best alternative to reach the agencies goals, as this will allow for the healthy development and adoption of technologies without the possible risk of a pre-buy or a no-buy situation. Additionally, this will help prevent

50 80 Fed. Reg. 40155
the forcing of unreliable and costly technologies upon small business owners which could easily put an owner-operator out of business. According to FMCSA, 96 percent of motor carriers operate 20 trucks or less, while 90 percent of carriers operate 6 trucks or less. The individual owner-operator represents approximately half of all motor carriers. Alternatives 3 or 4 very well would put many owner-operators out of business, and thus would have a major unintended consequence on the nation’s economy, as 70 percent of all freight is moved by a truck.

Respectfully submitted,

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