

Heavy-Duty Vehicle Global Warming Emissions and Fuel Economy Standards

Model year 2014–2018 truck standards deliver big savings—but more can be done

HIGHLIGHTS

Fuel economy and global warming standards for medium- and heavy-duty vehicles have shifted clean truck technology into gear. These first-of-their-kind standards, finalized in 2011, apply to vehicles ranging from pickup trucks to big-rig tractors manufactured in model years 2014 through 2018. These vehicles collectively represent only 7 percent of vehicles on the road, but account for over 25 percent of the fuel used to travel those roads. The new standards will cut fuel consumption across the nation's trucking fleet, reduce global warming emissions, and create new jobs.

Reducing global warming emissions and fuel consumption from the nation's heaviest vehicles will help cut America's oil use, reduce pollution, and save truck drivers money at the pump. In August 2011, the U.S. Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHTSA) jointly issued the first-ever global warming emissions and fuel efficiency standards for medium- and heavy-duty vehicles (M/HDV) and engines. The standards apply to new medium- and heavy-duty vehicles, from pickup trucks to big-rig tractors, manufactured in model years (MY) 2014 through 2018. These vehicles collectively represent only 7 percent of vehicles on the road, but account for over 25 percent of the fuel used to travel those roads (ORNL 2013).¹ The standards are an important first step in tackling the oil consumption and global warming emissions from the nation's truck fleet and were supported by a diverse set of stakeholders including engine and vehicle manufacturers, end users, and fleet owners as well as science and environmental nonprofit organizations.

Boosting Efficiency and Cutting Pollution

The MY 2014–2018 medium- and heavy-duty vehicle standards will:

- Reduce annual oil consumption by 390,000 barrels per day in 2030, roughly equivalent to the amount of oil we import each year from Iraq (EIA 2013a).²
- Cut carbon dioxide equivalent pollution by 270 million metric tons (EPA and NHTSA 2011a)—equal to the emissions from more than 4 million of today's



Combination tractors will be required to reduce fuel consumption by 10 to 23 percent under the standards.



Vocational vehicles are the most diverse category of heavy-duty trucks covered by the MY 2014–2018 standards. They vary significantly in size and use and include garbage trucks, box trucks (like those shown here), large delivery vans, buses, and motor homes.

passenger cars and trucks over their lifetimes (EIA 2013b, ORNL 2013).

- Save individual truck drivers up to \$73,000 in fuel costs over the life of a tractor after recouping an upfront investment of \$6,200 (EPA and NHTSA 2011a).

MY 2014–2018 Standards: An Overview

The three main vehicle categories covered by the standard are: *combination tractors* (“big-rigs”) which pull various types of trailers; *vocational vehicles* such as delivery trucks, utility trucks, and cement mixers; and *large pickup trucks and vans* not currently captured under the light-duty vehicle standards.³ The standards involve a combination of engine-only and full-vehicle standards tailored to each truck category, resulting in different levels of reductions as noted in Table 1.

COMBINATION TRACTORS

Combination tractors are the largest fuel consumers covered under the standards, accounting for about two-thirds of the fuel consumption by and global warming emissions from medium- and heavy-duty vehicles. An individual tractor moving loads across the country can travel well over 100,000 miles per year, while consuming more than 20,000 gallons of diesel fuel. The different levels of reductions required from these vehicles reflect the different functions and designs of tractors. The largest improvements in efficiency are required of tractors that

travel long distances at highway speeds and provide sleeping accommodations for the drivers. Tractors that primarily perform local, short-haul freight transportation are subject to less stringent standards.

VOCATIONAL VEHICLES

Vocational vehicles are the most diverse category and include garbage trucks, box trucks, large delivery vehicles, buses, and motor homes. The standards require modest improvements in engine performance as well as better-performing tires.

PICKUP TRUCKS AND VANS

For pickup trucks and vans, requirements are based on sales-weighted average emissions and fuel efficiency performance, a

TABLE 1. MY 2014–2018 Standards Reap Significant Oil Savings

	Combination Trailers	Vocational Vehicles	Large Pickups and Vans
Share of total M/HDV fuel consumption	66%	22%	12%
Total fuel consumption reduction [†]	10–23%	6–9%	10–15%

[†] Compared with MY 2010 vehicles. All values taken from EPA and NHTSA 2011a and EPA and NHTSA 2011b.

format similar to light-duty vehicle global warming emission and fuel economy standards. The standards account for towing, payload capacity, and four-wheel drive capability of the vehicles.

INDUSTRY INITIATIVE

In response to the recent rule making, a number of manufacturers have taken this opportunity to not only meet the MY 2014 targets but to do so ahead of schedule. In the combination tractor market, for example, the entire MY 2013 Daimler Trucks North America fleet met the 2014 fuel economy targets. Daimler also updated the Freightliner Cascadia Evolution for MY 2014, enabling it to achieve approximately 10 miles to the gallon in real world conditions, a 7 percent improvement on the MY 2010 version (Fleets and Fuel 2012). Cummins, a medium- and heavy-duty engine manufacturer, announced that all of its 2013 engines will meet the 2014 standards. The Cummins ISX15 engine, a top-seller for heavy-duty trucks, was the first engine to be certified as compliant with the 2014 standards and offers a 2 percent boost in fuel economy over the previous model (Cummins 2012).

Future Vehicle Standards Could Do Even Better

The MY 2014–2018 medium- and heavy-duty vehicle and engine standards are critical for starting our nation’s trucks on an oil diet, but are only the first step. For example, combination tractors are subject to the standards, but the trailers they pull are not. The tractor and vocational truck standards also fail to fully capture the potential improvements available across the entire vehicle, including weight reductions, better transmissions, and hybrid powertrains. The Union of Concerned Scientists (UCS) found that including trailer improvements in addition

With technologies expected to be available in the next decade, combination trucks could nearly halve their fuel consumption compared with today.

to tractor improvements could reduce fuel consumption from combination trucks by as much as 35 percent with technologies available by 2017 compared with 23 percent required by the current standards.⁴ Looking even further into the future with technologies expected to be available in the next decade, combination trucks could nearly halve their fuel consumption compared with today (NRC 2010). Accounting for these additional technologies could deliver even greater oil savings and emissions reductions.

In July 2013, President Obama announced his climate action plan, which directs the EPA to continue to reduce carbon emissions from our transportation system, including establishing the next round of standards for heavy duty vehicles. According to the analysis in the UCS Half the Oil plan,⁵ doubling the efficiency of commercial vehicles from 2013 levels could reduce oil consumption by 1 million barrels a day in 2035, more than the maximum capacity of the Keystone XL pipeline. The EPA, working with NHTSA, should build upon the successful stakeholder engagement from the first-ever medium- and heavy-duty standards to achieve further significant and measurable reductions in global warming emissions and oil consumption from medium- and heavy-duty trucks.

ENDNOTES

- 1 These values include all medium- and heavy-duty vehicles, from Class 2b pickup trucks and vans to Class 8 combination tractors.
- 2 Iraqi oil imports averaged 475,000 barrels per day in 2012. For more information, see EIA 2013a.
- 3 For more on the light-duty car and truck standards, see UCS 2012a.
- 4 For more information, see UCS 2010.
- 5 For more information see UCS 2012b.

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Vocational vehicles will be required to reduce fuel consumption by 6 to 9 percent under the MY 2014–2018 standards.

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Heavy-duty vehicles, like the buses and tractor-trailer shown here, collectively represent only 7 percent of vehicles on the road, but account for more than 25 percent of the fuel used to travel those roads.

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NATIONAL HEADQUARTERS

Two Brattle Square
Cambridge, MA 02138-3780
Phone: (617) 547-5552
Fax: (617) 864-9405

WASHINGTON, DC, OFFICE

1825 K St. NW, Suite 800
Washington, DC 20006-1232
Phone: (202) 223-6133
Fax: (202) 223-6162

WEST COAST OFFICE

2397 Shattuck Ave., Suite 203
Berkeley, CA 94704-1567
Phone: (510) 843-1872
Fax: (510) 843-3785

MIDWEST OFFICE

One N. LaSalle St., Suite 1904
Chicago, IL 60602-4064
Phone: (312) 578-1750
Fax: (312) 578-1751