



Fuel Consumption Standards FOR HEAVY-DUTY VEHICLES

Winston Harrington *urges regulating agencies to keep other options on the table.*

In August 2011, the National Highway Traffic Safety Administration and the Environmental Protection Agency jointly published the first-ever federal regulations mandating improvements in fuel economy and reductions in carbon dioxide (CO₂) emissions by heavy-duty commercial vehicles. While the standards are arguably models of their kind, questions remain about the overall effectiveness and efficiency of even the best such regulations.

The Regulations

Heavy-duty vehicles range from pickups to combination truck trailers. For regulatory purposes, the agencies developed a simplified, three-way classification that aligns with how vehicles are manufactured and used, and thus, with the technological opportu-

nities for fuel savings. Overall, heavy-duty vehicles account for about 17 percent of total greenhouse gas emissions from all transport sources.

The first category is heavy-duty pickups and vans, used for moving relatively small loads of people and goods for short distances. Vehicles in this category account for about 60 percent of the total heavy-duty fleet but just 20 percent of CO₂ emissions. The new standards call for an average fuel intensity of 5.2 or 6.3 gallons per 100 miles, depending on whether they use diesel fuel or gasoline, representing a 17 or 12 percent reduction from the baseline.

Vehicles in the second category, combination trailers, are used in intercity freight hauling. These vehicles are estimated to account for 65 percent of fuel use and CO₂

emissions from the heavy-duty fleet, even though they make up only about 20 percent of the fleet. The new standards for 2018 call for an average fuel intensity of 6.5–11.8 gallons per 1,000 ton-miles, representing a 10–24 percent reduction from the baseline.

The third category, vocational vehicles, is defined as all vehicles that are not in the other two categories. This category is enormously varied by size, use, and body design, and includes fire trucks, cement mixers, dump trucks, and school buses, among others. These vehicles range in size from 8,500 to 80,000 pounds. The new standards call for an average fuel intensity of 21–36 gallons per 1,000 ton-miles, representing a 6–9 percent reduction from the baseline. In general, achieving reductions in fuel intensity is more difficult and expensive in this category. The predominant use of these vehicles at low speeds in urban and off-road settings makes aerodynamic improvements a wasted effort. The great variety of designs implies low volumes and small rewards for fuel-saving innovations.

Some Concerns

The work done by the agencies in developing these standards is admirable. Yet a basic problem arises: like the CAFE (corporate average fuel economy) standards for light-duty vehicles, the new standards regulate the design and initial performance of vehicles rather than their use. Once the vehicles leave the showroom floor, the regulations have no further influence on them. As a result, the standards affect fuel use only by improving fuel intensity in new vehicles and, with appropriate design, the availability of fuels and engines that use fossil fuels less intensively. The current standards do nothing for fuel consumption rates in existing vehicles, vehicle miles traveled, fleet mix, or fleet turnover rates. Worse, they can affect these other margins perversely.

For example:

The rebound effect. Better fuel use will lower cost per mile or ton-mile, potentially increasing the demand for transport and attracting traffic from more energy-efficient modes, such as barges and railroads. This is a mixed blessing; more transport increases wealth, but it is counterproductive with respect to the policy goal.

Fleet turnover effect. While the price per mile traveled is decreasing, the initial price of the vehicle is going up. Potential buyers will have second thoughts and may decide to postpone new vehicle purchases, delaying fuel intensity improvements. This effect could be stronger in heavy-duty vehicles than in light-duty vehicles simply because their expected lifetimes are longer.

Class shifting. Because costs per vehicle can vary considerably, buyers have an incentive to substitute a vehicle in another category for their first choice. Use of vehicles in other categories may produce cost savings for users but could raise CO₂ emissions substantially. And manufacturers may design and build vehicles that do not now exist but that could, with relatively minor alterations, have multiple uses.

Each of these perverse effects is well understood by the agencies, and in their discussion of the regulations, they minimized their significance. The agencies could be right, or not. Policies such as emissions taxes, focusing directly on vehicle use rather than vehicle design, are likely to be at least as efficient without suffering from the unintended consequences described here.

In addition, the percentage improvement in CO₂ emissions reductions is modest compared to the 50 percent cut thought to be technologically possible. This suggests we are now at the very beginning of a long regulatory process. It makes sense to try to keep all options on the table, including emissions fees and fuel taxes. ●