



# Translating New Auto Standards into On-Road Fuel Efficiency

## WHY A 54.5 MPG STANDARD MEANS A WINDOW LABEL AVERAGE OF ABOUT 35 MPG

Strengthening fuel efficiency and global warming pollution standards for new passenger vehicles is the most effective step we can take to save consumers money at the gas pump, clean up our air, and cut America’s oil dependence. The Obama administration, in collaboration with California, is currently developing the next phase of standards covering vehicles sold through model year 2025, which could be as strong as 163 grams-per-mile (g/mi) of global warming pollution and approximately 54.5 miles per gallon (mpg). While automakers have the know-how to reach even beyond this level, the standards will nonetheless deliver substantial savings to both consumers and the nation.

Due to the availability of strategies that can reduce vehicle global warming pollution without affecting fuel economy, as well as differences between (a) tests used to measure compliance with Corporate Average Fuel Economy (CAFE) standards and (b) tests used for developing window label mpg values, there is a sizable gap between the fuel economy automakers get credit for, and the mpg value consumers will see on the window label of a new vehicle. **A global warming pollution standard of 163 g/mi means consumers would likely see gasoline vehicles in the showroom in 2025 with fuel economy window label values averaging about 35 mpg.**

### Impact of Global Warming Pollution Standards on New Vehicle Fuel Economy

Year	Global Warming Standard (g/mi CO <sub>2</sub> -e) <sup>1</sup>	If Met Only With Fuel Economy Improvements (combined city/hwy mpg)		With Air Conditioning Improvements <sup>2</sup> (combined city/hwy mpg)		With 5% EV Sales <sup>4</sup> (combined city/hwy mpg)	
		CAFE	Window Label Avg. <sup>3</sup>	CAFE	Window Label Avg. <sup>3</sup>	CAFE	Window Label Avg. <sup>3</sup>
2016	250	35.5	27.1	34.7	26.5		
2025	163	54.5	39.4	50.0	36.6	47.4	34.9

Notes:

- 250 g/mi CO<sub>2</sub>-e is the existing standard for 2016, and a 163 g/mi CO<sub>2</sub>-e standard is under consideration for 2025.
- A/C credits are 10.6 g/mi CO<sub>2</sub>-e in 2016, with 4.8 g/mi achieved through compressor efficiency improvements. A/C credits are assumed to be 20.7 g/mi CO<sub>2</sub>-e in 2025, with approximately one-quarter of that amount achieved through efficiency improvements.
- Window label value averages estimated using the current relationship between CAFE mpg and window label mpg for vehicles tested over EPA’s 5-cycle tests as available in EPA’s 2011 Fuel Economy Guide: Shortfall Factor = -0.0021 \* CAFE mpg + 0.8371
- Vehicle fuel economy in the electric vehicle sales scenario assumes EPA moves forward with plans to credit electric vehicles with 0 g/mi CO<sub>2</sub>-e instead of accounting for power plant emissions occurring from vehicle charging. Mpg values shown are for the remaining vehicles.

### CAFE Compliance Tests Results Are Much Higher Than Window Label MPG

In the showroom, the Honda Civic has a fuel economy window label of 29 mpg, but on tests used to determine compliance with CAFE standards, the Honda Civic earns a whopping 40 mpg. Why the difference?

The test cycles used to determine compliance with the national global warming and fuel economy standards were developed about 40 years ago and were codified by an act of Congress. The test was designed to reflect how drivers operated their vehicles at that time, but our nation’s driving habits have changed significantly, making this test obsolete. Today, we drive more powerful vehicles with faster acceleration, operate them on higher-speed highways, and regularly use energy-consuming devices such as air conditioners—none of which are captured in the compliance test.

Additional test cycles have since been developed and are now used by EPA to derive more accurate estimates of fuel efficiency and global warming pollution which are posted on window labels of new vehicles. These additional test cycles capture events such as hard acceleration, higher speed driving, and air conditioner use. This full suite of tests is now used to develop the “City” and “Highway” fuel economy window label values you see on new cars at the showroom. However, the laws are still on the books giving automakers credit towards compliance with values that today are, on average, about 28% higher than those

seen on window labels, and as much as 42% higher.<sup>1</sup> Thus, a vehicle that earns about 39 mpg on its window label would achieve 54.5 mpg on the test cycles used for compliance.

## Air Conditioning Improvements Lower MPG Requirements

Air conditioning (A/C) systems utilize refrigerants that are potent global warming pollutants. As a result, reducing leakage from A/C systems, improving their efficiency, or replacing refrigerants with less-polluting alternatives can lower the global warming impact of our vehicles. The clean vehicle standards allow manufacturers to earn credits by making these improvements; these credits are then applied toward the manufacturer's global warming pollution standard. Use of A/C credits will allow manufacturers to make vehicles with slightly poorer fuel economy while still meeting their global warming pollution requirements. For example, by using A/C credits, manufacturers could meet the 163 g/mi standard with vehicles averaging 36.6 mpg on the window label, rather than 39.4 mpg.<sup>2</sup>

## Sales of Electric-Drive Vehicles Shave Off More MPGs

We are already seeing electric-drive vehicles on the road today, with the Nissan Leaf and Chevrolet Volt leading a wave of vehicles with electric drivetrains planned by automakers in the next few years. While electric-drive vehicles are not needed to meet a 163 g/mi standard, even modest sales of these vehicles will reduce the fuel efficiency improvements needed from internal combustion powered vehicles. If 5 to 10 percent of new vehicles sold in 2025 are powered by electricity, and those vehicles are accounted as having 0 g/mi emissions, the window label fuel economy of the remaining vehicles will be reduced 2-3 mpg. All told, a modest 5 percent of sales of electric vehicles in 2025 will lower the average new vehicle on-road fuel economy for the remaining 95 percent of vehicles to roughly 35 mpg in 2025—a 9 mpg increase (26 mpg in 2016 vs. 35 mpg in 2025) in nearly 10 years.

## Manufacturers Are Already Making Cars Exceeding the Future Averages

The standards apply to the average of all the vehicles a manufacturer produces, rather than an individual vehicle. This means a mix of vehicles above and below the average will allow automakers to comply. It will be almost 15 years before new global warming pollution standards are fully phased-in, but automakers are already offering several models that exceed the stringency levels under consideration. For example, the Honda Civic achieves a combined city/highway window label fuel economy of 29 miles per gallon, well above the average 26 mpg of the 2016 standards. There are even cars on the road today, including the Toyota's Prius, Honda Civic Hybrid, and Ford Fusion Hybrid, that exceed 35 mpg—the window label value likely needed to meet a 2025 average of 163 g/mi CO<sub>2</sub>-e, assuming modest electric vehicle sales. Of course, both conventional and hybrid technology are going to get more efficient over the next 15 years, making it even easier for manufacturers to meet future standards.

Strong global warming pollution standards will deliver cost savings to drivers of all vehicle types—from pickups to sedans to minivans—protect consumers against spiking gas prices, and improve our nation's energy security.

### CAFE and Window Label MPGs for Select Vehicles and Global Warming Pollution Standards

Model Year 2011 Vehicles	CAFE Test (mpg)	Window Label (mpg)
Toyota Prius	71	50
Honda Civic Hybrid	59	41
Ford Fusion Hybrid	54	39
2025 Standard <sup>1</sup>	47	35
Hyundai Elantra	44	33
Chevy Cruze Eco (manual)	44	33
Ford Escape Hybrid Fwd	44	32
Honda Civic	40	29
2016 Standard <sup>2</sup>	35	26

Source: 2011 Fuel Economy Guide data file available at <http://www.fueleconomy.gov/feg/download.shtml>. Notes: (1) 163 g/mi CO<sub>2</sub>-e standard under consideration for 2025. Translation to mpg assumes use of A/C credits and 5 percent electric vehicle sales. (2) Existing 250 g/mi CO<sub>2</sub>-e standard.

<sup>1</sup> Based on model year 2011 vehicles assessed under the 5-cycle test.

<sup>2</sup> A/C credits are assumed to be equivalent to 20.7 g/mi CO<sub>2</sub>-e in 2025, with approximately one-quarter achieved from compressor efficiency improvements. If higher levels of credits are allowed, requirements for fuel efficiency improvements would be further reduced.

This fact sheet is available online at [www.ucsusa.org](http://www.ucsusa.org).

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