

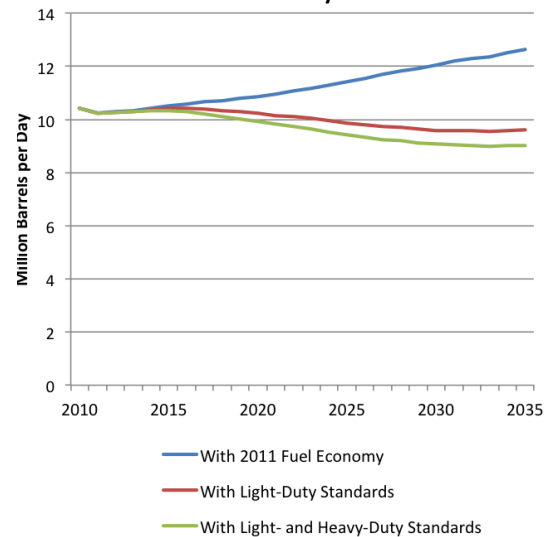
# Fuel Economy Standards Bring Major Oil Savings Benefits

Corporate Average Fuel Economy (CAFE) standards for light-duty vehicles were first adopted in 1975 following the oil embargo of 1973–74. The standards remained largely unchanged from the mid-1980s to the mid-2000s, though average fuel economy declined slightly, from 25.9 miles per gallon (MPG) in 1987 to 24 MPG in 2004. While automotive technology progressed throughout this period, most advances were used to increase horsepower and reduce acceleration times. Meanwhile, sport utility vehicles (SUVs) and other light trucks greatly increased their share of the light-duty vehicle market. After modest increases in light truck standards were adopted for model years 2005 through 2010, the Energy Independence and Security Act of 2007 (EISA) mandated that cars and light trucks achieve an average of 35 MPG by 2020. EISA also required that these standards be “attribute-based,” rather than having a single value for cars and a single value for light trucks as had been the case for earlier CAFE standards.

In 2010, the National Highway Traffic Safety Administration (NHTSA) and the U.S. Environmental Protection Agency (EPA), together with the California Air Resources Board (CARB), adopted harmonized fuel economy and greenhouse gas (GHG) emissions standards for vehicles of model years 2012 through 2016. Under the agencies’ projected sales mix, cars and light trucks together would achieve an average of 34.1 MPG by 2016, accelerating progress toward the increase mandated by EISA. The next major step came in 2012 when EPA, NHTSA, and CARB adopted light-duty vehicle standards for model years 2017 to 2025 to further cut the nation’s petroleum consumption and GHG emissions. In the rule, the agencies project that these standards will bring average fuel economy in 2025 to between 48.7 and 49.7 MPG, an increase of about 75 percent from 2010 levels. The companion GHG standards, which reflect emissions reductions from both fuel efficiency improvements and better vehicle air conditioning systems, are projected to yield the GHG equivalent of 54.5 MPG (163 grams per mile carbon dioxide).<sup>1</sup>

<sup>1</sup> All fuel economy numbers shown here are “laboratory” values, which are approximately 25 percent higher than the “real-world” values displayed on the vehicle label at the time of sale.

Car and Truck Fuel Consumption with and without Recent Fuel Economy Standards



Source: ACEEE, using Argonne National Laboratory’s VISION Model

EISA also required the establishment of fuel efficiency standards for heavy-duty vehicles for the first time. NHTSA and EPA jointly adopted fuel efficiency and GHG standards in 2011 covering heavy-duty vehicles of model years 2014 through 2018. These standards require long-haul tractor trucks, the largest component of heavy-duty fuel use, to lower their fuel consumption by 18 to 23 percent, depending on configuration, by 2017. Heavy pickup trucks and vans (over 8,500 lbs. Gross Vehicle Weight Rating) and “vocational” vehicles, which include delivery trucks, refuse trucks, and buses, have smaller reduction requirements. Average fuel consumption reduction for new heavy-duty vehicles as a whole will be 15 percent in 2018. A second phase

of heavy-duty standards is now under development; adoption is anticipated for 2015.

### OIL SAVINGS

New vehicle standards take over a decade to percolate through the vehicle stock and thus realize their maximum benefit many years after the standards are first implemented. Fuel savings attributable to the light- and heavy-duty vehicle standards out to 2035 are shown in the figure. Based on 2012 forecasts of vehicle activity by the U.S. Department of Energy's Energy Information Administration (EIA), savings from the vehicle standards will reach 3 million barrels per day by 2035, a 24 percent reduction from fuel consumption levels that would have occurred had fuel economy remained at 2011 levels.

### CONSUMER SAVINGS

To meet fuel economy standards, manufacturers will add new technologies to their vehicles, raising purchase price. EPA estimates an average price increase of \$950 for light-duty vehicles meeting the standards for 2016 and an additional \$1,800 for vehicles meeting the 2025 standard.<sup>2</sup> These higher prices will be paid back in fuel savings over time, however.

An average new vehicle complying with the standards in 2025 will deliver over \$900 in fuel savings in the first year relative to an average 2010 vehicle, and will fully repay the increase in purchase price in less than three years. A buyer who finances a new car or light truck with a loan will typically realize net savings starting from the month of purchase.

In the case of heavy-duty vehicles, the costs of efficiency technologies needed to meet the standards vary greatly across the wide array of vehicles covered, but the agencies calculate that all vehicle types can meet the standards with technologies having a payback period of two years or less. For long-haul trucks, which in many cases travel over 100,000 miles annually, technology improvements adopted to meet the 2014–2018 standards will typically pay back in fuel savings within the first year.

### NATIONAL ECONOMIC BENEFITS

In addition to saving vehicle buyers money, fuel economy standards will produce benefits to the U.S. economy as a whole. Less money spent on petroleum products means more money spent elsewhere in the economy. Using an input-output model, ACEEE estimates that the 2017–2025 light-duty standards will result in a net gain of 570,000 jobs and an increase of \$75 billion in annual Gross Domestic Product by 2030.

Additional economic benefits will follow from the reduction in oil imports. While imports are falling due to increasing domestic oil and biofuels production as well as declining consumption, they will continue for the foreseeable future. Benefits of minimizing imports include reducing the U.S. trade deficit, reducing the risk of economic turmoil caused by sudden oil shortages in the United States, and reducing the military expenses associated with maintaining access to oil produced overseas.

Even as United States imports decline, oil will remain a global commodity and its price will be set on the world market. Oil and petroleum product prices are expected to remain at least at today's high levels. EIA's Annual Energy Outlook projects gasoline prices of \$3.67 per gallon in 2030 and \$4.32 in 2040. Hence the greatest economic benefit of reducing oil consumption will remain the reduced burden of fuel expenditures on the budgets of U.S. consumers and businesses.

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<sup>2</sup> See EPA and NHTSA (2010) "Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards; Final Rule." Federal Register 75 (88), and EPA and NHTSA (2012) "2017 and Later Model Year Light Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards: Final Rule." Federal Register 77 (199).