

THE BIGGEST SINGLE STEP TO CURBING GLOBAL WARMING AND SAVING OIL



SIERRA CLUB GLOBAL WARMING AND ENERGY PROGRAM



CAFE saves more oil than we import from the Persian Gulf

The biggest single step the United States can take to curb global warming and ensure a safe energy future for America is to adopt stronger automotive fuel-economy standards for cars and light trucks.

Congress passed current Corporate Average Fuel Economy (CAFE) standards in 1975. They have proven to be the most successful energy-saving measure Congress has ever adopted, saving three million barrels of oil per day. The standards require that new cars average 27.5 miles per gallon (mpg) and light trucks average 20.7 mpg. Automakers can produce vehicles with lower mileage as long as enough vehicles exceed the standard. Since automakers achieved the standards in the 1980s, however, average fuel-economy levels have been in decline. The average fuel economy of new vehicles sold in 2000 sank to its lowest point since 1980.

U.S. AUTOS EMIT MORE CO₂ THAN ALL BUT FOUR COUNTRIES.

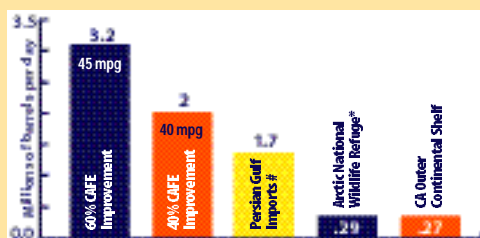
TOP FIVE GLOBAL- WARMING POLLUTERS

1. U.S.
2. CHINA
3. RUSSIA
4. JAPAN
5. U.S. AUTOS

tons and save consumers at least \$45 billion each year at the pump. The U.S. is the world's largest emitter of CO₂ and must take the lead in reducing this pollution — particularly by automobiles.

CAFE can save 3 million barrels of oil per day

Improved CAFE can save three million barrels of oil per day — more than Persian Gulf imports, and potential Arctic National Wildlife Refuge and California Continental Shelf production combined.



* Saudi Arabia, Kuwait, Qatar, Bahrain, United Arab Emirates.

* Median estimate of the maximum amount of oil that could be in the Arctic.

Cars and light trucks guzzle 40% of U.S. oil and emit 20% of the nation's carbon dioxide (CO₂) pollution. Each gallon of gasoline burned pumps 28 pounds of CO₂ into the atmosphere — 19 from the tailpipe and nine pounds from upstream refining, transporting and refueling. The average car emits about 70 tons of CO₂ over its lifetime — the average SUV around 100 tons. America's automobiles produce more global-warming pollution than all sources in Great Britain combined!

Updated CAFE standards could save an additional three million barrels of oil each day when fully implemented. New standards of 45 mpg for cars and 34 mpg for light trucks would cut CO₂ pollution by 600 million

The More You Guzzle, The More You Pollute

Represented below is the total tonnage of CO₂ produced by SUVs and other vehicles over a 124,000-mile lifetime.



Ford Excursion ("Valdez") (13 mpg)

134



Jeep Grand Cherokee (18 mpg)

102



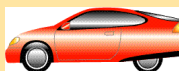
Ford Taurus (23 mpg)

64



Toyota Prius (48 mpg)

36



Honda Insight (65 mpg)

27

Raising automobile fuel economy is like finding a new source of oil under Detroit. Over 40% of the oil we use in this country goes into our cars and trucks. Improving fuel-economy standards would:

- Lessen our dangerous addiction to oil.
- Slash carbon-dioxide (CO₂) pollution, the primary cause of man-made global warming.
- Reduce pressure to drill in sensitive areas like the Arctic National Wildlife Refuge.
- Enhance national security.
- Cut America's trade deficit.
- Save consumers money at the gas pump.



Questions and Answers

Q Can we improve fuel economy without sacrificing safety?

A Absolutely. Long-time safety advocates such as the Center for Auto Safety and Ralph Nader support increasing the CAFE standard to 45 miles per gallon and point out that we can do so safely. In its report on automotive fuel economy, the National Academy of Sciences agreed that improvements in fuel economy need not impair safety: "improved design and the incorporation of new technology can enhance both crash-avoidance and crash-worthiness potential, while improving fuel economy. In fact, the rate of traffic fatalities fell 50% over the same period that CAFE doubled car-fuel economy."

The auto manufacturers claim they can only achieve higher CAFE standards by making "mini-cars." But they said the same thing in 1974 when a Ford spokesperson testified before Congress that a 27.5 mpg standard would result in a "Ford product line consisting of either all Pinto-sized vehicles or some mix of vehicles ranging from a sub-sub-compact to perhaps a Maverick." Obviously, they were wrong then and they are wrong again today.

CAFE improvements would require increases in the average fuel economy of the fleet of automobiles, not every individual vehicle. Manufacturers could use existing technologies (see below) to increase fuel economy, rather than making "Pintos and Mavericks."

Q What technologies are currently available that will help get the average new automobile to 45 mpg?

A Technology accounted for 86% of the fuel-economy improvements between 1975 and the late 1980s. Greater use of technology will again be key to increasing fuel economy and saving oil. Gasoline-electric hybrid engines can be used to achieve significant improvements in fuel economy. Honda's Insight 2-seater travels 70 mpg and the Toyota Prius 5-passenger car gets 55 mpg. Ford has plans for a 40 mpg hybrid SUV in 2003.

A hybrid combines an electric motor that does not need to be plugged in with a clean gas-powered engine, refillable at any gas station. The gasoline engine generates electricity for the electric motor, and the energy typically lost to braking is also directed to recharge the batteries.

Other existing technologies are readily available to improve fuel economy. According to a 1992 National

Academy of Sciences report, "most of these technologies have reached only a fraction of their potential application in vehicles sold in the U.S." These technologies, which still haven't been implemented, in addition to hybrid engines, can be used to improve fuel economy.

- Changing an engine from two to four valves per cylinder improves its fuel economy by over 5%. Engines with four valves per cylinder deliver fuel and oxygen to their engines more efficiently, and increase fuel economy.
- Variable valve timing (VVT) adjusts the air flow at different engine speeds to the optimum level, improving horsepower and fuel economy by about 12%. Adding lean-burn technology, which introduces more air than is needed to the combustion chamber, to engines with VVT can provide further fuel-economy gains. Honda's 1994 Civic VX with a VTEC-E lean-burn engine was 44% more efficient than that year's Civic DX without the lean-burn engine.
- Electronically controlled gear shifting, automatic transmissions with five speeds rather than three or four speeds, and continuously variable transmissions, such as the ones found in Honda's Civic HX and Toyota's Prius, enable cars to operate at optimal efficiency more of the time, wasting less fuel.
- High-strength, lightweight materials, like those found in Saturns and some Audi models, can reduce the load the engine carries without compromising safety. The Congressional Office of Technology Assessment found that 35 pounds of composite plastics or 45 pounds of aluminum can be as strong as 100 pounds of steel. Every 10% reduction in weight yields a 6.6% average improvement in fuel economy.
- Front-wheel-drive vehicles don't have bulky drive shafts, so they are lighter and require less fuel to operate. Automakers could shift most of the millions of rear-wheel-drive vehicles sold annually in the U.S. to front-wheel-drive and improve the fuel economy of each by 12.5%.
- Better aerodynamic designs, like that of the Ford Taurus, can cut down on wind resistance and improve fuel economy by 3 to 5%.

Q The auto industry says higher fuel economy will cost jobs. Is this true?

A No. A study by the American Council for an Energy-Efficient Economy (ACEEE) shows that higher fuel

economy will actually create jobs. Although some sectors of the economy, such as the oil industry, will experience losses, ACEEE estimates the auto industry alone will gain 47,000 new jobs. They project that money saved at the gas pump will be reinvested throughout the economy, creating a net increase of 244,000 new jobs nationwide.

The real danger to auto industry jobs is U.S. automakers' lack of leadership in developing new technologies. While Japanese and European car makers are putting lean-burn engines, continuously variable transmissions, and other efficiency technologies into their cars, American automakers continue to produce primitive, inefficient designs. U.S. fuel economy is actually in decline. During recent years, each Big 3 Automaker has failed to meet the current CAFE standards.

Q Will truck owners still be able to buy the vehicles they need under tighter CAFE standards?

A Yes. According to the Union of Concerned Scientists, technology can make today's best selling SUV, the 19 mpg Ford Explorer, a 34 mpg vehicle. Improved engine, aerodynamics, and transmission along with high-strength, light-weight steel will make the difference. And, this technology will cost \$935 and save around \$5500 at the pump, based on \$1.50 per gallon. The fuel economy of pickup trucks can also be vastly improved with technology at even less cost.

The fuel-economy standards for light trucks have virtually stagnated for 20 years. Light trucks are now half of all new vehicles sold compared to 20% in 1975. The loophole in the law that lets these vehicles meet a lower 20.7 mpg standard means an additional 18.4 billion gallons of gasoline burned each year and 237 million tons of global-warming pollution emitted into the atmosphere. ■

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