# Fuel Economy Fraud

*Closing the Loopholes That*
*Increase U.S. Oil Dependence*


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# EXECUTIVE SUMMARY

In 1987, the fuel economy of the new U.S. car and truck fleet reached a peak of nearly 26 miles per gallon. By 2004, it had fallen to 24.4 miles per gallon, hovering around a 20-year low. This backsliding occurred because fuel economy standards have remained essentially unchanged over the past 20 years and automakers have increasingly exploited loopholes in Congressional and regulatory language. In addition, a flawed U.S. tax code actually provides financial incentives for consumers to switch to gas guzzlers. While most of these loopholes have been around for decades, government has either turned a blind eye to them or made them larger.

This report documents three major loopholes in fuel economy standards and two major cracks in the tax code, and highlights the possibility that a whole new set of loopholes could be created as the Bush administration considers radical changes to the federal fuel economy standards program. Finally, we suggest solutions for closing or modifying these loopholes. The six loopholes considered are:

- **The non-passenger loophole** (or "truck" loophole)—allows automakers to misclassify minivans, SUVs, station wagons, and even some cars as non-passenger vehicles, thereby qualifying them to meet a lower fuel economy standard. Congress or the National Highway Traffic Safety Administration (NHTSA) must modernize the definition of non-passenger vehicles to end this gaming.
- **The 8,500-pound loophole**—exempts the largest pickups, vans, and SUVs from fuel economy standards altogether and denies consumers any fuel economy information on these vehicles. NHTSA must move to include these vehicles in the fuel economy program, since standards for them are both practical and necessary.
- **The dual-fuel loophole** (recently extended by the 2005 energy bill)—gives automakers extra credit toward meeting fuel economy standards in exchange for manufacturing vehicles that can run on alternative fuels but almost never do. Congress should either eliminate this failed program or fix it by tying credits more directly to actual alternative fuel use.
- **The luxury SUV tax loophole**—provides small-business owners with significantly higher tax breaks for large luxury trucks than smaller trucks or cars, regardless of the owner's needs. Congress must create a reasonable limit on tax breaks for larger trucks and update the amounts for smaller vehicles.
- **The gas guzzler loophole**—excludes SUVs, minivans, and pickups from paying a tax on excessive fuel use despite the fact that tax applied to gas-guzzling cars has effectively reduced their numbers. Congress should require trucks that get less than 17.5 mpg on the CAFE test to pay progressively higher taxes based on the amount of gas they guzzle.
- **The next loophole?—attribute-based standards**—a potential new set of loopholes that could be created if the government imposes new fuel economy standards based on vehicle attributes without also introducing an oil savings "backstop." NHTSA must include a backstop in any attribute-based system.

Based on government fuel economy data and consumer travel projections, our solutions could cut U.S. oil dependence by 1.5 million barrels per day in 2025 if they are phased in over the next five years (Table ES-1). In addition, consumers would save more than $30 billion, even after paying for off-the-shelf technologies that would help close the loopholes.

**Table ES-1:** Savings from Closing Loopholes in Current Fuel Economy Standards

| | 2010 | 2015 | 2025 |
|---|---|---|---|
| Oil savings (million barrels per day) | 0.3 | 0.8 | 1.5 |
| Net consumer savings (billions)* | $3.5 | $14.2 | $33 |
| Reduction in global warming pollution (million metric tons $CO_2$-equivalent) | 50 | 150 | 240 |

*Assumes a gasoline price of $2 per gallon.

While the most effective step that could be taken to cut U.S. oil dependence is higher fuel economy standards for every car and truck on the road, closing regulatory and tax loopholes is an important first step. Not only would this save oil in the near term, but it would also avoid the erosion of any future fuel economy increases and ensure that the planned benefits are realized.

Below are summaries of each of the five loopholes investigated in this report. A potential new loophole, attribute-based standards, is also discussed. The full body of the report contains additional details on each.

## 1. The Non-Passenger Vehicle Loophole

When Congress created the Corporate Average Fuel Economy (CAFE) program in the 1970s, it distinguished between passenger and non-passenger automobiles. Passenger automobiles were defined as any vehicle manufactured primarily for transporting 10 or fewer people and excluded vehicles capable of off-highway operation. This was done in an attempt to increase the fuel economy of all cars and light trucks while accommodating the extreme cargo-hauling requirements of commercial operators such as farmers and contractors.

This definition backfired, however, as automakers exploited it to replace station wagons with more profitable minivans and SUVs. Because millions of these vehicles are misclassified as non-passenger vehicles (which are only required to meet a fuel economy standard 25 percent lower than the passenger vehicle standard), an extra 16 billion gallons of gasoline was consumed in 2004 while consumers were stuck with an extra $30 billion in gasoline costs. This loophole is often called the SUV or light-truck loophole as a result.

When CAFE was created, less than 20 percent of automobile sales were classified as non-passenger vehicles, and more than two-thirds of those were pickups with a seating capacity of no more than three persons. By 2004, the non-passenger class had swelled to nearly 50 percent of sales, despite the fact that pickups and cargo vans—the original non-passenger automobiles—had dwindled to less than 15 percent. This dramatic growth was propelled by the rise of the minivan in the 1980s and the SUV in the 1990s.

These vehicles provided significant profits to automakers because they were basically modifications of relatively inexpensive cargo vans and pickup trucks. This profitability, however, would have been reduced if these vehicles had to meet the stronger safety and fuel economy standards of passenger vehicles, so automakers took advantage of, and even helped expand, loopholes in the fuel economy law to ensure these vehicles were classified as non-passenger autos despite their clear passenger-carrying duties.

The non-passenger loophole can be fixed if three key problems are addressed. First, the non-passenger fuel economy standard has been set too low. The technology exists today to increase the fuel economy of every automobile currently classified as a non-passenger vehicle to well over the passenger vehicle standard of 27.5 mpg.

The simplest solution for Congress would be to eliminate the non-passenger category entirely, since it has outlived its usefulness and has been so badly abused. The simplest approach for the National Highway Traffic Safety Administration (NHTSA) would be to raise the fuel economy of the non-passenger category to the same level as the passenger standard. If done by 2011, this would cut oil demand 1.2 million barrels per day by 2025 and would save consumers nearly $30 billion in that year alone (Table ES-2). All of this could be done while retaining the same vehicle size and acceleration available to consumers today, and with improved safety.

**Table ES-2:** Savings from Increasing Light-Truck Fuel Economy to 27.5 mpg by 2011

| | **2010** | **2015** | **2025** |
|---|---|---|---|
| Oil savings (million barrels per day) | 0.16 | 0.62 | 1.18 |
| Net consumer savings (billions) | $2.9 | $12.1 | $28.9 |
| Reduction in global warming pollution (million metric tons $CO_2$-equivalent) | 28 | 106 | 201 |

The second problem is that Congress assumed vehicles capable of off-highway operation would not be used primarily for transporting people, as is the case with today's SUVs. In fact, SUVs are rarely used off-highway; their four-wheel drive merely represents an added safety and utility feature. The simplest and safest solution would be to eliminate off-highway capability as a qualification for non-passenger vehicles. Until Congress is willing to make this change, NHTSA (which is responsible for defining the specific vehicle features that qualify for off-road classification) must tighten the off-highway definition to limit the number of vehicles that qualify.

The third contributor to the non-passenger loophole is the fact that NHTSA oversimplified the passenger and non-passenger categories into passenger cars and light trucks. Because cargo vans and pickups once accounted for the vast majority of non-passenger vehicles, it probably seemed logical to simplify the classifications by applying the term "truck." That same logic would suggest that a vehicle derived from a truck must also be a non-passenger vehicle, but this is not true of minivans and most SUVs. Nevertheless, vehicles whose rear seats can be removed to make room for cargo—including minivans, smaller two-wheel drive SUVs, and even cars such as the Chrysler PT Cruiser, Dodge Magnum, Ford Freestyle, and Subaru Outback—qualify as non-passenger vehicles. If NHTSA eliminates this provision, and Congress eliminates the off-highway provision, only pickups and cargo vans would be classified as non-passenger vehicles.

## 2. The 8,500-pound Loophole

The non-passenger loophole may be the worst of the flaws in CAFE regulations, but it is not alone. Congress defined automobiles as all four-wheeled vehicles with a gross vehicle weight rating (GVWR, a measure of how much weight a vehicle can carry) of up to 10,000 pounds, but allowed NHTSA to use its discretion and ignore those above 6,000 pounds unless fuel economy standards for such vehicles were feasible and would save a significant amount of energy. While NHTSA did apply the standards to vehicles up to 8,500 pounds, trucks with a GVWR between 8,500 and 10,000 pounds—known as commercial light-duty trucks (CLDTs) or Class 2b trucks—do not have to meet any fuel economy requirements. Today, these vehicles include a number of large pickups, vans, and SUVs such as the Ford Excursion, GMC Yukon XL, and Hummer H2, many of which conveniently exceed the 8,500-pound limit by no more than 100 pounds.[1]

Despite the fact that most off-the-shelf technologies that can be used to improve light-truck fuel economy can also be used on CLDTs, the 8,500-pound barrier has never been lifted. This has left a loophole responsible for an estimated 900 million gallons of excess gasoline and diesel consumption in 2005, costing consumers another two billion dollars. Adding insult to injury, Congress also exempted CLDTs from fuel economy labeling requirements, denying purchasers of these vehicles the information necessary to even consider fuel costs in their decision.

Farms and other businesses that require these bigger vehicles deserve to save money on gasoline and reduce their operating costs, especially with gasoline prices at their all-time high. With current technology, the fuel economy of CLDTs could be raised from an estimated CAFE value of 17 mpg to at least 27.5 mpg. NHTSA should therefore close this loophole by simply including these vehicles in the existing fuel economy regulations that apply to light trucks. At a minimum, this would eventually erase the current excess gasoline and diesel demand created by these vehicles.

Further, if NHTSA were to increase the light-truck fuel economy standard to match the passenger auto standard, we could save another 177,000 barrels of oil per day and cut consumer fuel costs by nearly four billion dollars (Table ES-3). Congress should also step in and require that all automobiles have posted fuel economy values; until that happens, NHTSA should develop a voluntary fuel economy reporting system.

**Table ES-3:** Savings from Increasing Commercial Light-Truck Fuel Economy to 27.5 mpg by 2011

| | **2010** | **2015** | **2025** |
|---|---|---|---|
| Oil savings (barrels per day) | 33,000 | 114,000 | 177,000 |
| Net consumer savings (billions) | $0.6 | $2.1 | $ 3.8 |
| Reduction in global warming pollution (million metric tons $CO_2$-equivalent) | 6 | 19 | 30 |

## 3. The Dual-Fuel Loophole

The dual-fuel loophole allows manufacturers to produce, without penalty, fleets of cars and trucks that average as much as 1.2 mpg below the required CAFE standards. In return, they must sell dual-fuel vehicles—cars and trucks that can run on either gasoline or an alternative fuel. While this sounds good in theory, most of these vehicles never actually run on alternative fuel. As a result, this loophole will increase U.S. oil dependence by about 80,000 barrels per day in 2005 alone, while enabling automakers to avoid as much as $1.6 billion in CAFE fines to date. And now that this loophole has been extended through 2010 and possibly 2014, the total increase in oil dependence could reach 200,000 barrels per day in 2015.

The problem with the program that created the dual-fuel loophole, the Alternative Motor Fuels Act, was the assumption that if vehicles were capable of running on an alternative fuel, a market would develop for that fuel. More than a decade after the program began, government data show that dual-fuel vehicles use an alternative fuel less than one percent of the time

[1]The original congressional language also excludes the Hummer H1, which has a GVWR of 10,200 pounds.

(automakers get credit for an alternative fuel being used half the time). This is hardly surprising considering that only about 400 of the nearly 200,000 gas stations in the United States carry the fuel that most dual-fuel vehicles could use: E85 (a blend of 85 percent ethanol and 15 percent gasoline)—and one-third of those are in Minnesota.

Because of this loophole, a dual-fuel vehicle that gets 20 mpg running on gasoline receives credit as if it were achieving better than 30 mpg. The biggest abusers of this loophole—DaimlerChrysler, Ford, and GM—thereby save money they would otherwise have to spend on improvements to their vehicles' actual fuel efficiency, and avoid paying fines even though their fleets actually fall short of federal fuel economy targets. Ultimately, consumers foot the bill by paying more at the pump.

There are two ways to fix the dual-fuel loophole. The first is to simply eliminate it. NHTSA had the opportunity to end this failed program, but instead opted to extend it through 2008 despite data indicating the Alternative Motor Fuels Act had actually increased oil dependence. The 2005 energy bill took things a step further and extended the loophole through 2010—with an option for NHTSA to extend it yet again, through 2014.

Since Congress is unlikely to retreat on this issue, an alternative solution is to reform the system so it is more closely tied to the actual use of alternative fuels. First, dual-fuel credits could be based on the assumption that alternative fuels are used 20 percent of the time instead of 50 percent. Even with this reduction in credits, the loophole would remain a profitable incentive for automakers to produce dual-fuel vehicles. At the same time, the current 1.2 mpg credit toward an automaker's overall fleet fuel economy could be split in half: the first 0.6 mpg could still be applied regardless of the actual use of alternative fuels, but the remaining 0.6 mpg would be tied to increased use of alternative fuels. The full 1.2 mpg credit would only be available once the actual use of alternative fuels reaches 20 percent.

This set of reforms would continue to encourage the sale of at least as many dual-fuel vehicles as are currently sold, while reducing the program's negative impact on oil dependence. It would also encourage automakers to help ensure the vehicles they sell actually end up using alternative fuels. Automakers could invest in increased use of alternative fuels through direct financial support for new E85 fueling stations, local government efforts to create or expand E85 fueling infrastructure, and customer education. These investments could be recouped by continuing to sell dual-fuel vehicles, and automakers would also avoid having to pay fines.

## 4. The Luxury SUV Tax Loophole

Small-business owners who purchase heavier light-duty trucks are eligible for generous tax deductions. Because these deductions are so much larger than those for cars or lighter trucks, this has encouraged many self-employed lawyers, realtors, and accountants to purchase gas-guzzling luxury SUVs "for business use," regardless of whether such a vehicle has a valid business purpose.

Ironically, this loophole exists partly because of an attempt to address a similar problem in the 1980s. To stop small-business owners from deducting the cost of luxury vehicles, the tax code was changed to limit how much of a vehicle's cost could be deducted over the first six years of ownership. Since trucks were not part of the problem at the time, the new deduction limits were only applied to vehicles with a GVWR under 6,000 pounds, which exempts many of today's large vans, pickups, and SUVs. The fact that the deduction limits have failed to keep up with the price of new vehicles exacerbates the situation—if a small-business owner wants to depreciate a car over the standard six-year period, he must buy one costing less than $14,540 (or a small truck costing less than $16,250).

This loophole also allows purchasers of luxury SUVs to deduct much of the cost in the first year. Starting in 2003, SUVs costing up to $100,000 could be fully deducted in the year they were purchased; this became known as the Hummer loophole because it allowed people to write off the full cost of the Hummer H2 and most of the cost of the larger H1. Though this particular loophole was partially closed in 2004, purchasers of luxury SUVs can still deduct more than $25,000 in the year of purchase, and a Hummer can still be fully depreciated in just six years.

These factors can have a significant impact on a small-business owner's decision-making process. A $26,000 Ford Freestyle station wagon, for example, could cut a business owner's taxes by about $4,700 over six years, but a much larger and less fuel-efficient $26,000 Ford F-150 pickup could increase the tax cut to $7,800—all of which could be claimed in the first year of ownership. Though the pickup's larger gasoline bills would eventually eat up the additional $3,100 in tax savings, the business owner might find it hard to reject the bigger vehicle even if the smaller one was a better fit for his or her needs.

Two steps need to be taken to close this loophole. First, the existing deduction limits need to be brought in line with current car prices, so that small-business owners can recover the cost of safe, practical vehicles in a reasonable timeframe. Second, deduction limits need to be introduced for vehicles over 6,000 pounds, thereby eliminating the incentive to pay for size that isn't needed while ensuring that larger vehicles are still available to small-business owners who need them.

## 5. The Gas Guzzler Loophole

Cars that consume large quantities of gasoline are subject to a "gas guzzler" tax that was intended to encourage automakers to improve particularly inefficient automobiles (or at least require the vehicles' owners to pay a luxury tax for their excessive contribution to U.S. oil dependence). However, this luxury tax does not apply to gas-guzzling vehicles classified as light trucks for fuel economy purposes, such as DaimlerChrysler's Mercedes M-class, Ford's Lincoln Navigator and Land Rover, GM's Cadillac Escalade, and Toyota's Land Cruiser.

According to the Energy Tax Act of 1978, a gas guzzler is a car that gets less than 22.5 mpg, thereby consuming at least 1,500 more gallons of gasoline over its lifetime than one meeting the CAFE standard of 27.5 mpg. To discourage sales of such vehicles and encourage automakers to improve the fuel economy of the worst offenders, gas guzzler taxes ranging from $1,000 up to $7,700 for the least fuel-efficient models are applied to today's cars. These taxes have clearly been effective: of all cars sold in the United States during model year (MY) 2003, less than 100,000 (or 1.3%) were gas guzzlers.

Unfortunately, there are no such taxes on light trucks, and the fuel economy of many of these vehicles falls well below the corresponding CAFE standard. Since light trucks now account for half of all vehicle sales, and most are used for the same purposes as cars, a system of gas guzzler taxes could be introduced that would encourage automakers to increase the fuel economy of their least efficient light trucks, just as they did with cars. In Table ES-4 we propose a tax schedule for light trucks whose lifetime fuel consumption will exceed that of a truck meeting the MY2003 CAFE standard by more than 1,500 gallons.

**Table ES-4:** Proposed Gas Guzzler Tax Schedule for Non-Passenger Automobiles

| Fuel Economy* (mpg) | Tax |
|---|---|
| > 17.5 | $0 |
| 16.5-17.5 | $1,100 |
| 15.5-16.5 | $1,800 |
| 14.5-15.5 | $2,400 |
| 13.5-14.5 | $3,200 |
| 12.5-13.5 | $4,200 |
| < 12.5 | $5,300 |

*Unadjusted fuel economy values used for CAFE compliance.

If this schedule had been applied to MY2003 light-truck sales, the tax revenues would have totaled approximately $880 million, more than 60 percent of which would have been due to large SUVs such as the Cadillac Escalade, Lexus LX-470, Lincoln Navigator, and Mercedes M-class. More than two-thirds of gas guzzler tax revenues from pickups would have derived from versions of DaimlerChrysler's Dodge Ram, which is woefully inefficient by any standard. Ford and GM's more efficient pickups would have been affected far less.

Under this tax structure, automakers would most likely find it far more cost-effective to use existing technology to increase fuel economy, rather than paying the tax. For example, a modest package of fuel-saving technologies—costing just $750—could increase the fuel economy of an SUV getting 15.5 mpg by 35 percent (to 20.9 mpg). In addition to avoiding the $1,800 gas guzzler tax, this improvement would save the vehicle's owner $4,900 in gasoline costs over the life of the vehicle.

## 6. The Next Loophole?

As of the writing of this report, NHTSA is considering alternatives for restructuring the light-truck CAFE program. Although this is an ideal opportunity for the agency to close fuel economy loopholes, it may instead create new ones by replacing the single non-passenger fuel economy standard with multiple standards based on vehicle attributes such as weight, interior volume, or size. Such a system would provide lower fuel economy targets for larger or heavier vehicles, and because it is generally less expensive to add weight or size than to improve fuel economy, automakers will have an incentive to modify their vehicles' attributes so they can be categorized in classes with lower standards. This is what has already happened with the shift to increased light-truck sales.

The simplest way to avoid this repeat performance would be for NHTSA to eliminate loopholes altogether and make the non-passenger fuel economy standard the same as the passenger standard. Even if the agency does not choose this straightforward solution, new loopholes can be avoided or at least reduced by taking two critical steps when implementing attribute-based standards.

First, some type of "backstop" must be introduced to prevent fuel economy from drifting downward. One example would be a ratchet mechanism that would automatically increase fuel economy standards for all vehicle classes if the average fuel economy of non-passenger vehicles falls below a certain trigger point.[2] This would still provide different standards for automakers with fleets having different attributes, but would guarantee the oil savings promised by increased standards. Without such a trigger, fuel economy would be free to slide backward.[3]

The second critical step would be to avoid using weight as an attribute. Vehicle weight increases that would occur without a backstop in place would lead to more dangerous highways because that extra weight brings more energy into accidents and causes more severe damage. Even with a backstop in place, a weight-based standard would increase the cost of fuel economy improvements by precluding the use of high-strength lightweight materials, since the resulting weight reduction would only force automakers to meet an even higher fuel economy standard. A weight-based system will also make little sense to consumers, because weight is a byproduct of other consumer-oriented features and does not provide any utility on its own.

## The First Steps to Cutting Oil Dependence

This report shows that the current U.S. fuel economy program and tax structure are filled with loopholes that increase our oil dependence, undermine our energy security, and continuously increase the burden our cars and trucks place on the environment. Together, these loopholes cost consumers billions of dollars each year while at the same time sending the message that purchasing gas guzzlers is acceptable—or even worthy of special treatment. If the United States is serious about reducing the harmful impact our oil dependence has on our security, economy, and climate, these loopholes must be closed.

Automakers already have the technology they need to compete and thrive under a fuel economy program that encourages innovation rather than a search for the lowest common denominator. By simultaneously closing loopholes and tapping into automaker ingenuity, we can finally establish fuel economy standards that are easier for manufacturers to meet than manipulate. And we'll no longer have to watch potential oil savings go down the drain.

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[2]To provide continued progress in cutting U.S. oil dependence, this trigger could be increased at a rate of at least 0.8-1.0 mpg each year.

[3]In one scenario, this report shows that if NHTSA had implemented its proposed weight-based standard in 2003, historical weight trends in the light-truck fleet would have led to a 1.5 mpg decrease in overall fuel economy by 2015.

# NON-PASSENGER VEHICLE LOOPHOLE

When Congress created the CAFE program in the 1970s, it created a distinction between passenger and non-passenger automobiles, permitting the Secretary of Transportation to set a lower standard for non-passenger automobiles than the passenger automobile standard set by Congress. Since that time, automakers have increasingly replaced passenger cars with vehicles that exploit loopholes in the non-passenger automobile definitions in order to meet a lower fuel economy standard. This occurs despite the fact that the primary function of these vehicles is to carry passengers in the same manner as cars.

## Two Different Standards

Congress created a distinction between passenger and non-passenger vehicles to ensure that the fuel economy of all cars and light trucks would be increased, while accommodating the extreme cargo hauling requirements of commercial operators such as farmers and contractors. The CAFE law defined passenger automobiles as any vehicle manufactured primarily for transporting ten or fewer people, excluding vehicles capable of off-highway operation (49 U.S.C. 32901(a)(16)). However, Congress delegated to the Secretary of Transportation the responsibility to define what specifically constitutes off-road capability and for determining what vehicles are intended primarily for transporting passengers. The National Highway Traffic Safety Administration (NHTSA, 2004), part of the Department of Transportation, has been responsible for implementing regulations relating to fuel economy.

Congress set the fuel economy standard for passenger vehicles to 27.5 mpg for model year 1985 and later (49 U.S.C. 32902(b)), though this was temporarily lowered by the Secretary of Transportation from 1986-1989. Congress entrusted the Secretary with the responsibility for setting fuel economy standards for non-passenger automobiles to "the maximum feasible average fuel economy level," (49 U.S.C. 32902(a)) taking into consideration "technological feasibility, economic practicability, the effect of other motor vehicle standards of the Government on fuel economy, and the need of the United States to conserve energy." (49 U.S.C. 32902(f)) A summary of passenger and non-passenger fuel economy standards since 1985 is presented in Table 1.

## Automakers Shift Production to "Non-passenger" Automobiles

When CAFE standards were established in 1975, less than 20% of automobile sales were classified as non-passenger automobiles, and more than two-thirds of those were pickups (Hellman and Heavenrich, 2004), most of which had a seating capacity of no more than 3 persons. Since that time, automakers have produced more and more passenger vehicles that exploit loopholes allowing them to be classified as non-passenger vehicles. Rather than discouraging it, regulations implemented by NHTSA (49 C.F.R. 523.5) have expanded opportunities for gaming of the system.

Several interesting trends in the breakdown of automobile sales since 1975 are apparent in Figure 1. Since the introduction of the CAFE law in 1975, sales of passenger vehicles have been steadily eroded by sales of vehicles classified as non-passenger automobiles. Minivan sales grew rapidly in the early 1980s, and as they leveled off in the 90s, SUV sales exploded. Over the last several years, crossover utility vehicles[4] (CUVs) have emerged as the industry's fastest growing segment. In each case, these new classes of vehicles have not displaced existing non-passenger automobile sales, but rather car sales. This shift towards less-efficient vehicles has resulted in an overall decrease of 1.5 mpg in fuel economy, fleetwide, since 1988 (Figure 2).

**Table 1:** CAFE Standards, 1985 - Present[5]

| Model Year | Passenger Automobiles | Non-Passenger Automobiles |
|---|---|---|
| 1985 | 27.5 | 19.5 |
| 1986 | 26.0 | 20.0 |
| 1987 | 26.0 | 20.5 |
| 1988 | 26.0 | 20.5 |
| 1989 | 26.5 | 20.5 |
| 1990 | 27.5 | 20.0 |
| 1991 | 27.5 | 20.2 |
| 1992 | 27.5 | 20.2 |
| 1993 | 27.5 | 20.4 |
| 1994 | 27.5 | 20.5 |
| 1995 | 27.5 | 20.6 |
| 1996 | 27.5 | 20.7 |
| 1997 | 27.5 | 20.7 |
| 1998 | 27.5 | 20.7 |
| 1999 | 27.5 | 20.7 |
| 2000 | 27.5 | 20.7 |
| 2001 | 27.5 | 20.7 |
| 2002 | 27.5 | 20.7 |
| 2003 | 27.5 | 20.7 |
| 2004 | 27.5 | 20.7 |
| 2005 | 27.5 | 21.0 |

There are a number of ways in which automakers game the system in order to have their vehicles classified as non-passenger automobiles. The key flaw in NHTSA's regulations is that they do not correctly make the distinction between passenger and non-passenger automobiles, as Congress intended. Instead of implementing Congress' intent, NHTSA took it upon itself to create a different distinction, between cars and something they called "light trucks." By creating a light truck class, NHTSA provided a veil of legitimacy to the practice of producing passenger-carrying vehicles that fail to meet the passenger vehicle fuel economy standards mandated by Congress. Passenger-carrying vehicles are able to slip into the light truck class in several ways.

[4] Crossover vehicles, by their very definition, are difficult to define absolutely. In general, they are wagon-like vehicles that offer the utility of an SUV but generally employ unibody construction, giving them more car-like ride and handling characteristics. Often they are more car-like in appearance and geometry as well.

[5] Through 1991 two- and four-wheel-drive non-passenger autos had separate standards. The non-passenger numbers in this table represent NHTSA's reported combined values (NHTSA 2004).

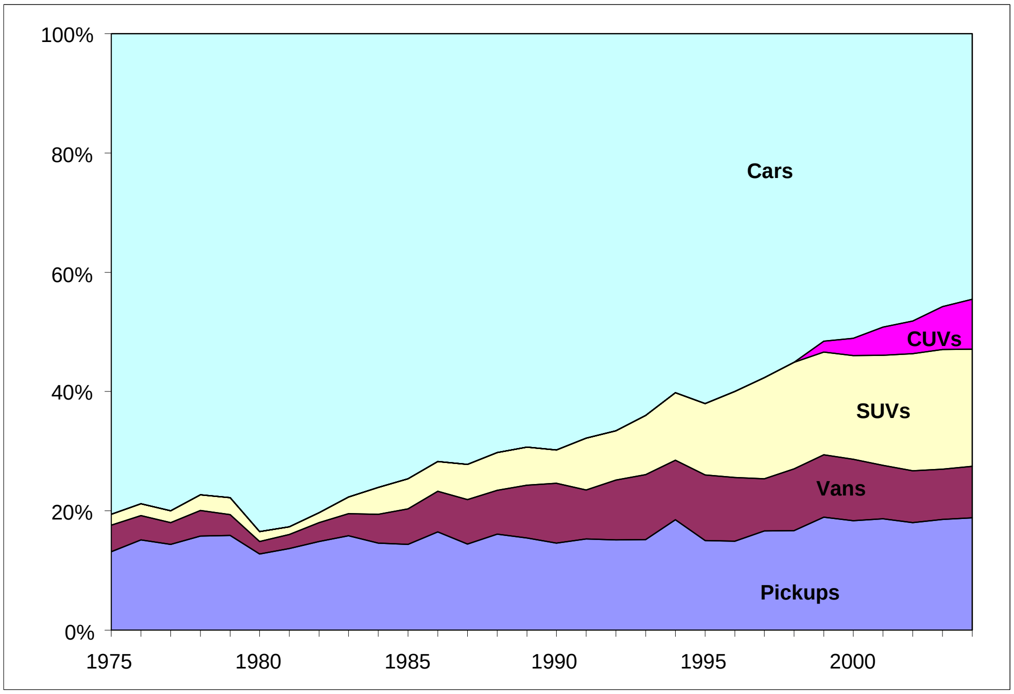


**Figure 1:** Sales Distribution Since 1975

Source: 1975 – 1998, Hellman and Heavenrich,.2004; 1999 – 2004, Wards. Some CUVs and SUVs do not match Wards' original classification. See Tables A-1 and A-2 in the Appendix.

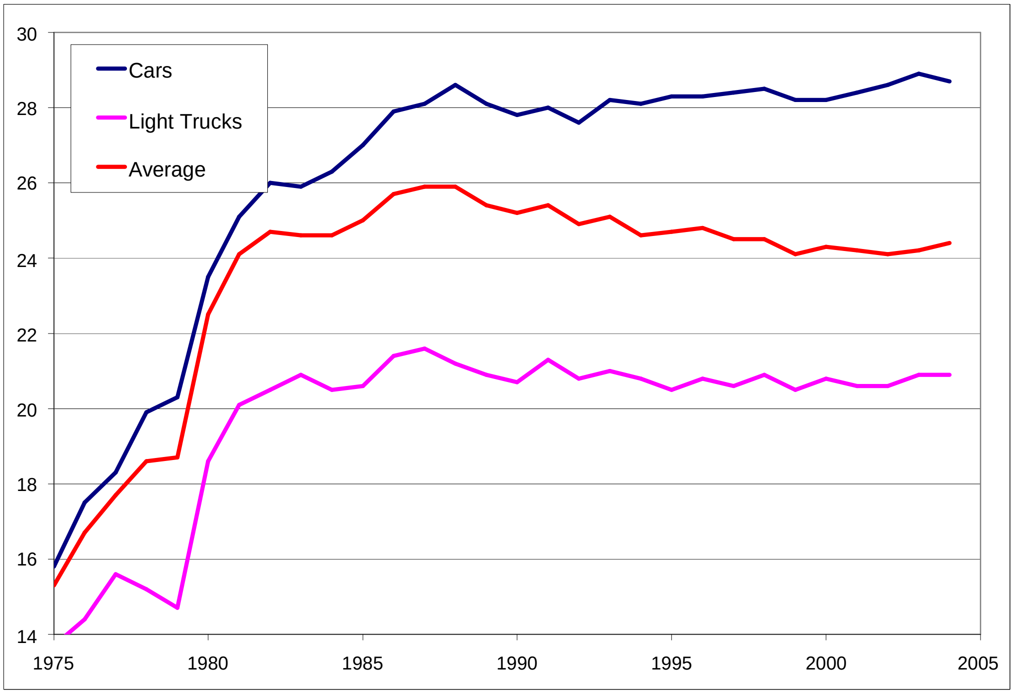


**Figure 2:** Average Fuel Economy of Cars and Light Trucks, 1975-2004 (Hellman and Heavenrich, 2004)

One of the most egregious loopholes in NHTSA's regulations is the so-called flat-floor provision (49 C.F.R. 523.5(a)(5)), which states that a vehicle is not a passenger automobile if it has seats that can be removed to create a flat, floor-level surface in the rear of the vehicle. This provision was put in place in the 1980s in response to pressure from Chrysler to have minivans classified as non-passenger vehicles, despite their primary duty as passenger vehicles. This has led to countless minivans, SUVs, and, recently, even cars being classified as non-passenger vehicles. For example, the Chrysler PT Cruiser, Ford Freestyle, and Dodge Magnum are all classified as non-passenger vehicles by virtue of the flat floor provision although there is little question that they are station wagons, intended as passenger-carrying vehicles.

Another way for a vehicle to be qualified as a non-passenger automobile is for it to be capable of off-highway operation. To qualify as off-road capable under NHTSA's regulations, a vehicle must meet four out of five geometric criteria[6], plus have either four-wheel drive or a gross vehicle weight rating (GVWR) over 6,000 pounds.[7] (49 C.F.R. 523.5(b)) For example, Subaru recently tweaked the design of its 2005 Outback wagon *and sedan* to qualify them as light trucks under these criteria. Nevertheless, they are clearly intended for the same passenger-carrying duties as their predecessors.

## Costs of the Loophole

The non-passenger loophole is costing us an immense amount of oil, and the cost continues to rise as automakers classify more vehicles every year as non-passenger automobiles. The losers here are average Americans, who are saddled with unnecessarily high gas bills, increasing oil dependence, and the constantly growing threat of global climate change (Table 2)

**Table 2:** Impacts of Non-Passenger Loophole on Current Energy Demand, Cost, and Emissions

| | Current Non-Passenger Vehicle Fleet | If Current Non-Passenger Vehicles Met Passenger Standard |
|---|---|---|
| Light Truck Stock Average Fuel Economy, mpg | 20.7 | 27.5 |
| Light Truck Energy Demand, million barrels per day | 4.19 | 3.15 |
| Annual Gasoline Costs, billion of dollars* | $ 128 | $ 97 |
| GHG Emissions, million metric tons CO2-equivalent | 716 | 539 |

*Assumes gasoline price of $2.00/gallon, same vehicle stocks and mileage in both cases.

## The Potential to Increase Fuel Economy

Technology is readily available to improve the fuel economy of today's light trucks. In 2003, new pickups, vans, and SUVs had an average fuel economy of 20.9 mpg, exactly the same as two decades earlier. Over the same period, their average weight increased by 22%, their average horsepower by 89%, and their 0-60 time was reduced by 29% (Table 3).

[6] Approach angle of not less than 28 degrees. Breakover angle of not less than 14 degrees. Departure angle of not less than 20 degrees. Running clearance of not less than 20 centimeters. Front and rear axle clearances of not less than 18 centimeters

[7] Gross vehicle weight rating, or GVWR, is the maximum design loaded weight specified by the manufacturer

**Table 3:** Average Characteristics of Pickups, SUVs, and Vans

| | 1983 | 2003 | Change |
|---|---|---|---|
| Inertia Weight (lb) | 3763 | 4595 | 22% |
| Horsepower | 118 | 223 | 89% |
| 0-60 time (s) | 14.5 | 10.3 | -29% |
| Fuel Economy (mpg) | 20.9 | 20.9 | 0% |

The gains shown in Table 3 were made possible by advances in technology. New technologies are being developed continually, and a broad suite of technologies[8] is available today that automakers could utilize to produce vehicles that deliver the same size, performance, and safety as today's vehicles, but with vastly improved fuel economy. UCS analysis indicates that conventional (non-hybrid) off-the-shelf technologies could increase the average fuel economy of gasoline-powered SUVs, minivans, and pickups to 35 mpg by 2014. (Monahan and Friedman, 2004) This would save the average owner $5,760 in fuel costs (@ $2.00 per gallon) over the life of the vehicle, but would add only $2,320 to its price. If automakers started phasing in these technologies beginning in Model Year 2008, these vehicles could reach an average of 27.7 mpg in MY2010, effectively closing the non-passenger loophole in that year. Table 4 shows the fuel savings and costs that would be realized by purchasers of SUVs, minivans, and pickups with improved fuel economies.

**Table 4:** Fuel Economy Potential of Pickups, SUVs, and Minivans in 2010 and 2014

| | SUV | | Minivan | | Pickup | | Average Truck | |
|---|---|---|---|---|---|---|---|---|
| Baseline MPG | 20.8 | | 22.4 | | 20.3 | | 20.9 | |
| | 2010 | 2014 | 2010 | 2014 | 2010 | 2014 | 2010 | 2014 |
| Improved MPG | 27.7 | 35.0 | 30.8 | 39.8 | 26.4 | 32.5 | 27.7 | 34.8 |
| Cost of Increasing MPG | $910 | $2,460 | $930 | $2,080 | $810 | $2,190 | $890 | $2,320 |
| Lifetime Fuel Savings | $3,310 | $5,880 | $3,350 | $5,900 | $3,110 | $5,560 | $3,230 | $5,760 |
| Payback Period (years) | 2.5 | 4.0 | 2.5 | 3.3 | 2.3 | 3.8 | 2.5 | 3.8 |

UCS recently analyzed the results reported in the National Academy of Sciences (NAS, 2001) report *Effectiveness and Impact of Corporate Average Fuel Economy Standard* for Path 3 technologies. These are technologies that the report identified as being available between 2011 and 2016. Based on NAS results, Path 3 technologies have the potential to increase the fuel economy of GM's light truck fleet, the least efficient of all the major automakers, to 29.5 mpg. This accounts for performance being maintained at 2004 levels, increases in weight due to additional safety equipment, and the use of high-strength materials and better designs to reduce weight in only a few vehicle classes. Other automakers could exceed 29.5 mpg using the same set of technologies. Through better engineering and greater use of high-strength, lightweight materials, fuel economy could be increased further, as indicated by UCS modeling.

The above results employ advanced conventional technologies, but not hybrids. Hybrid electric technology could further increase the average fuel economy of SUVs, minivans, and pickups to nearly 50 mpg while maintaining performance at current levels. (Monahan and Friedman, 2004)

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[8] These technologies include vehicle load reduction through better aerodynamics and high-strength materials, better transmissions such as six-speed automatics and high-torque CVTs, more efficient engines such as gasoline direct-injection engines, and electrical components such as integrated starter-generators. For more details on UCS' modeling of these and other technologies, refer to the UCS report *A New Road: The Technology and Potential of Hybrid Vehicles* by David Friedman (2003).

## Methods for Closing the Loophole

Clearly, technology is available to enable all passenger vehicles to meet higher fuel economy standards. There are a number approaches that could be taken to eliminate the non-passenger loophole and ensure that all passenger vehicles are held to the appropriate fuel economy standard. Solutions could be implemented through either legislative or administrative means. Regardless of the approach taken, there is plenty of technology available, as shown above, for automakers to continue producing vehicles with the same performance, utility, and safety that consumers have come to expect.

### Legislative Solutions

The simplest way to close the non-passenger loophole would be to eliminate the distinction between passenger and non-passenger automobiles and set the standard for all automobiles to at least 27.5 mpg. Such a distinction has been rendered moot by the advent of technology that can make today's fleet of SUVs, vans, and pickups not just as efficient, but in fact much more efficient than the current standard for passenger automobiles. This solution has the advantages of simplicity, streamlining the CAFE system, and eliminating any opportunities for gaming the system in the future. In addition, it would ensure that all consumers reap the benefits of having cost-effective fuel-saving technologies in their vehicles.

A similar interim solution would be to maintain the distinction between passenger and non-passenger fleets, but set a statutory CAFE standard of 27.5 mpg for non-passenger automobiles. This approach was offered by Senator Dianne Feinstein as an amendment to the 2005 Senate Energy Bill. By holding both vehicle classes to the same standard, this solution would also eliminate the incentive for gaming the system. For this latter solution to remain effective in the long term, however, the standards would always have to be linked as they are raised above 27.5 mpg. This solution could also be implemented administratively by NHTSA under current law.

### Administrative Solutions

In the absence of any Congressional action to close the non-passenger loophole, there are several administrative steps that NHTSA could take to fully, or at least partially, solve the problem. However, it must be recognized that any administrative approach, while capable of reducing gaming opportunities, cannot eliminate gaming by the automakers.

At a minimum, NHTSA needs to update the regulations to strike the use of the term "light truck" and replace it with "non-passenger automobile." This would more clearly represent the language specified by Congress, and might help avoid classification by name association.

To address the problem directly, the simplest solution with the greatest energy and environmental benefits would be to increase the CAFE standard for non-passenger automobiles to match that of passenger automobiles. This would close the loophole by eliminating the difference in fuel economy between the two classes, and would offer a number of advantages. First, NHTSA would move closer to fulfilling its obligation to set fuel economy standards to "the maximum feasible average fuel economy level," although the maximum possible level would still be much higher, as discussed above. Second, it would eliminate the largest incentive to classify passenger vehicles as non-passenger automobiles. Finally, it would ensure that all buyers of SUVs, vans, and pickups are able to reap the benefits of having cost-effective, fuel-saving technology on board their vehicles. This solution would do administratively what Senator Feinstein's amendment would have mandated, and would be expected to deliver the same oil savings.

A second, less effective solution is for NHTSA to refine its definition of light trucks to exclude minivans, SUVs, crossovers, and any other passenger vehicles that are currently being classified as non-passenger automobiles. This would serve to move roughly two-thirds vehicles currently classified as light trucks into their correct class.

To achieve this latter approach, several steps would need to be taken. First, a restriction should be added to exclude all luxury vehicles, regardless of carrying capacity and off-road capability, from the definition of non-passenger automobiles. It is difficult, if not impossible, to believe that a vehicle with luxury features could be considered a non-passenger automobile (a load of plywood doesn't have much use for heated leather seats, after all). Furthermore, it is hard to imagine that any buyer of a work truck who can afford luxury features cannot also afford the technology needed to get all the torque and power they need along with the fuel economy of a passenger vehicle.

The second necessary refinement in NHTSA's definition of non-passenger automobiles is the elimination of the "flat-floor" provision. ( 49CFR523.5(a)(5)) This provision violates the letter of the law, which notes that a passenger vehicle is one "manufactured primarily for transporting not more than 10 individuals." While minivans and crossovers like the Dodge Magnum, PT Cruiser, and Ford Freestyle can be used to do other things besides transporting people, a simple look around the highways indicates that they are used the same way station wagons were used 20 years ago—to carry passengers and the stuff of daily life.

Third, the "off-highway operation" features (49CFR523.5(b)(2)) need to be updated and expanded to account for the prevalence of 4-wheel drive and the ease of gaming the existing requirements. This problem is highlighted by the example of Subaru making some minor design tweaks and then classifying a vehicle as a non-passenger automobile after years of classifying it as a passenger automobile. The current off-highway system is flawed because technology has advanced to the point where automakers no longer have to make major sacrifices in passenger carrying attributes to provide off-highway capabilities.

The evolution of technology argues for Congress eliminating the off-highway provision altogether. However, until that occurs, NHTSA must look into creating further differentiation between vehicles that just happen to be tall and have four wheel drive (or are over 6,000 pounds GVWR) and those that are more specifically designed and used for off-road operation. For example, off-road operation presents increased risk of rollover or other safety hazards. Therefore, to establish off-road capability, vehicles might only qualify as non-passenger automobiles if they include safety features such as roll-bars and 4 or 6 point seat belts.

Finally, the non-passenger category regulations (49CFR523.5(a)) should be changed to allow only vehicles with fixed cargo space of a minimum size (i.e. cargo vans or pickups) and limited passenger space to qualify as a vehicle with a primary purpose that is not carrying passengers.

In all of the cases above, there remains potential for gaming, but the purpose of the changes is to reduce that potential. Automakers will find ways to game definitions of "luxury features." Even if the flat floor provision is eliminated, automakers might sell minivans with only two seats, but with the ability to add seats at an after-market supplier, or even right at the dealership. Automakers might continue to respond to refinements in off-road feature definitions by adjusting their vehicles to fit.

The provision to limit more of the non-passenger definition to pickups and cargo vans might just lead to increases sales of pickups that can carry 6 or 8 people, but have a sufficiently sized bed to meet the standard (e.g. larger versions of the Ford Explorer Sport Trac or the Cadillac Escalade EXT, or crew-cab pickups) In all of these cases, however, the hurdles are higher than today, either requiring added costs, complexity, consumer preference shifts. These changes are therefore a step in the right direction, but only represent a stop-gap solution until Congressional action is taken.

## Savings From Closing the Loophole

Rather than evaluate the impacts of the various possible approaches, the savings were evaluated only for the option with the greatest potential savings. All others noted above will provide less. Therefore, the reduction in oil demand was modeled for the case where the non-passenger fuel economy standard is increased to 27.5 mpg by 2011, as proposed under the Feinstein amendment and the first administrative solution above. The results of this modeling are summarized in Figures 3 and 4, below, and in Table 5.

**Table 5:** Savings from Raising Light Truck Fuel Economy to 27.5 mpg by 2011

| | 2010 | 2015 | 2025 |
|---|---|---|---|
| Oil Savings, million barrels per day | 0.16 | 0.62 | 1.18 |
| Net Consumer Savings, billions of $ | 2.9 | 12.1 | 28.9 |
| GHG Reduction, million metric tons $CO_2$-equivalent | 28 | 106 | 201 |

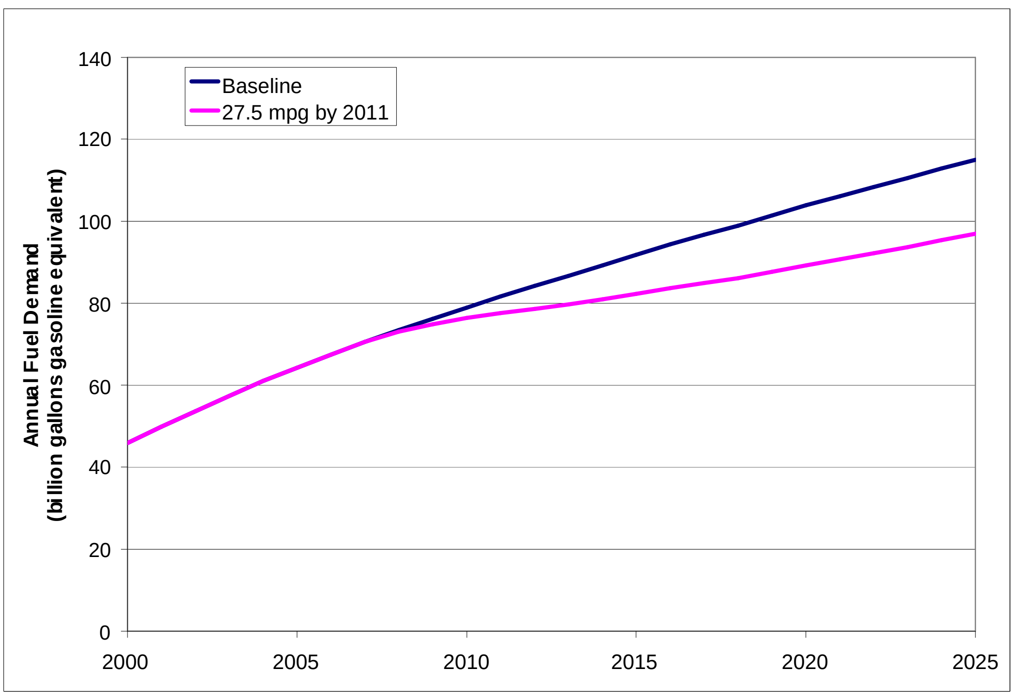


**Figure 3:** "Light Truck" Gasoline Demand: Business-as-Usual and Closing the Non-Passenger Loophole

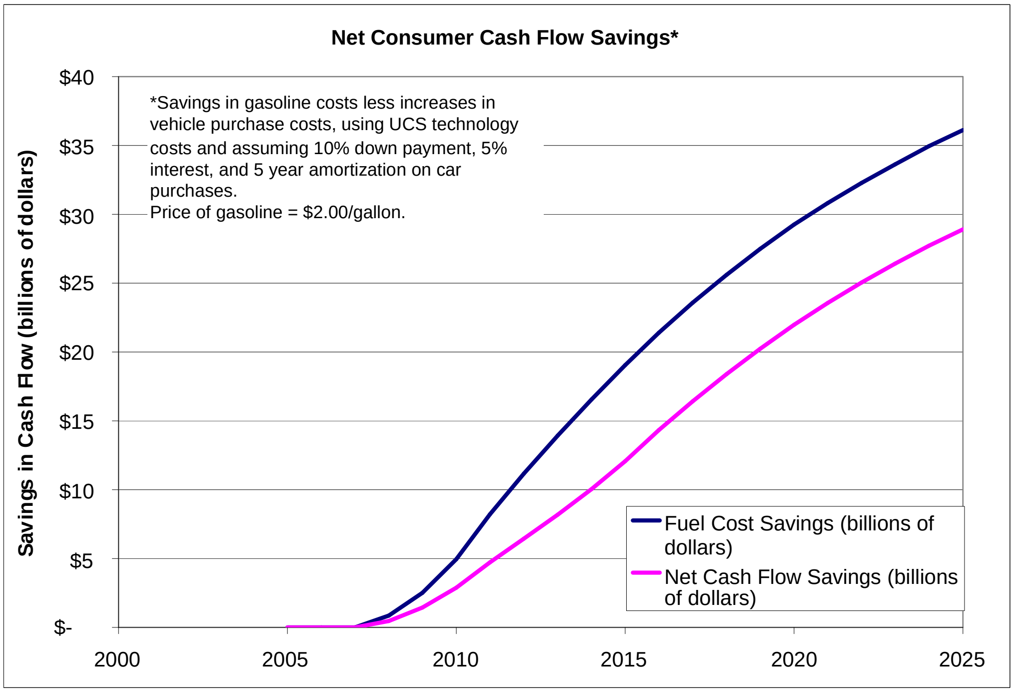


**Figure 4:** Consumer Savings Due to Closing Light Truck Loophole by MY2011

By the time the loophole was closed in 2011, oil demand would be reduced by more than one-quarter of a million barrels per day (4 billion gallons per year), and the savings would continue to grow rapidly as new vehicles replace the existing fleet. Ten years later, the savings would hit 1 million barrels per day (15 billion gallons per year). At the same time, consumers would be saving large amounts of money on fuel, more than making up for the initial investment in the technology for more efficient vehicles. The price of the average pickup, van, and SUV would increase by about $700 compared to the baseline case, but fuel savings over the lifetime of the vehicle would be $2,500. The original $700 investment would be made back in less than three years, assuming a gas price of $2.00 per gallon. As shown in Figure 4, this would lead to a net savings to consumers of $12 billion in 2015, and $22 billion in 2020.

# THE 8,500 LB LOOPHOLE

When the CAFE program was created, Congress required that automobiles sold by a manufacturer meet an average fuel economy standard. Congress specifically defined certain types of vehicles as automobiles, but delegated to the Secretary of Transportation the responsibility for defining whether or not certain other vehicles were automobiles. As a result, trucks with a gross vehicle weight rating (GVWR) over 8,500 lbs are excluded from fuel economy regulations.

## Background

In section 32901(a)(3) of Title 49, US Code, Congress defined an automobile, for fuel economy purposes, as a 4-wheeled vehicle less than 6,000 lbs GVWR; or a 4-wheeled vehicle between 6,000 and 10,000 lbs GVWR, if the Secretary of Transportation determines that fuel economy regulations for such vehicles are feasible and would result in significant energy savings. When they implemented this law (49CFR523), NHTSA chose to exclude vehicles between 8,500 and 10,000 pounds GVWR from their definition of automobile. As a result, NHTSA's "light truck" category of automobiles is limited to vehicles with a GVWR of 8,500 lbs or less, while vehicles from 8,500 – 10,000 lbs GVWR, known as Commercial Light Duty Trucks (CLDTs) or Class 2b trucks, are left without any regulations to improve their fuel economy.[9]

The definition created by Congress specifically for purposes of fuel economy labeling (49USC32908(a)(1)) also excludes trucks over 8,500 lbs GVWR from being classified as automobiles. As a result, automakers are not required to post fuel economy ratings on the windows of Class 2b trucks, and purchasers of these vehicles are denied the opportunity to consider fuel costs in their decision-making processes. Ironically, since these trucks have such low fuel economy, fuel costs are high and would figure significantly in any rational business decision on purchasing one.

Class 2b trucks include a number of large pickups, vans, and the largest SUVs, such as the Ford Excursion, GMC Yukon XL, and Hummer H2.[10] (Refer to Table A-3 in the Appendix for a complete list) Because these vehicles are exempted from fuel economy standards and labeling requirements, it is difficult to know exactly their fuel economy. However, some reasonable estimates can be made. Davis and Truett conclude that "the [on-road] fuel economy of the class 2b population would be expected to be no more than… 14 mpg[11]." In its Annual Energy Outlook 2005, the Energy Information Administration appears to adopt this assumption and uses an on-road average of 14 mpg for the stock of Class 2b trucks on the road in 2005. Assuming that Class 2b trucks would show a similar gap between their test fuel economy and their on-road fuel economy as do Class 1 and Class

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[9] Trucks are subdivided into a number of classes based on gross vehicle weight. Class 1 trucks are those with a GVWR of 6,000 lbs or less. This generally includes small pickups, small to medium SUVs, and minivans. Class 2 trucks are those with a GVWR of 6,001-10,000 lbs. Class 2 trucks are subdivided into Class 2a (GVWR 6,001-8,500 lbs) and Class 2b (8,501-10,000 lbs). Class 2a includes full size pickups like the F-150 and Chevrolet Silverado 1500, medium to large SUVs, and vans. Class 2b trucks include heavy duty pickups (F-250, Silverado 2500), the largest SUVs, and some large vans. Class 1 and 2a trucks are referred to collectively as light-duty trucks (LDTs) and Class 2b trucks are known as commercial light-duty trucks (CLDTs).

[10] The Hummer H1, which has a gross vehicle weight of 10,200 pounds, is excluded by the original Congressional language.

[11] This 14-mpg figure is the average for all Class 2 trucks. Since Class 2a trucks are lighter than Class 2b trucks and likely get better fuel economy, 14 mpg may be a generous assumption for Class 2b trucks. For the two-thirds of Class 2b vehicles sales that are gasoline powered, this 14-mpg is almost certainly quite generous. For the remaining one-third of the Class 2b vehicles, which are diesel powered, the higher efficiency of the diesel engines may compensate somewhat for the increased weight.

2a trucks[12], a 14 mpg on-road average corresponds to an average CAFE test fuel economy of 17.2 mpg, well below the light truck standard that has been at 20.7 mpg for the past nine years.

## Costs of the Loophole

Given the Congressional language, one test of whether this loophole should be maintained is whether fuel economy regulations for the vehicles that have been excluded would lead to significant energy savings. Based on the 14-mpg on-road fuel economy assumption and Davis and Truett data that Class 2b trucks account for 6% of the total sales, UCS analysis shows that these vehicles represent 7.3% of the fuel use of non-passenger automobiles under 10,000 lbs GVWR. If these vehicles had been held to the same fuel economy standard as other light-duty trucks, the total fuel consumption by trucks under 10,000 lbs GVWR would be approximately 890 million gallons less this year, for a savings of nearly 60,000 barrels of oil per day. This corresponds to about 18% of Class 2b fuel use.

This clearly represents a significant savings. Further, the impact would more than double if the Class 2b vehicles were included in a non-passenger vehicle category that met a 27.5 mpg fuel economy standard. These fuel savings show that fuel economy standards for Class 2b trucks pass one of Congress's two tests for including them in the regulation – it would result in significant energy savings (49USC32901(a)(3)(B)(ii)).

## Closing the Loophole

Many of the technologies that are available to automakers to increase the fuel economy of cars and lighter trucks can also be used to increase the fuel economy of Class 2b trucks. UCS has modeled the potential for increasing the fuel economy of a full-size pickup, the Chevy Silverado 1500. (Monahan and Friedman, 2004) It was found that by employing a suite of advanced conventional technologies, the fuel economy could be improved by 66% over the next ten years while maintaining current size, safety, and performance characteristics. The National Academy of Sciences also studied the potential for fuel economy improvement in various vehicle classes, and determined that without using diesel or hybrid technologies, the fuel economy of large pickups could be increased by 59% and that of large SUVs by 65%.

In light of the fuel economy potential of large light-duty trucks, it is reasonable to conclude that an increase of at least 60% could be achieved in the fuel economy of Class 2b trucks. Since these vehicles are estimated to have a CAFE test fuel economy of 17.2 mpg, a 60% increase would lead to a fuel economy of 27.5 mpg. Thus, Class 2b trucks not only have the potential to meet the current light-duty truck standard, but to exceed it and in fact meet current passenger car standard of 27.5 mpg. This means that Class 2b vehicles pass the second Congressional test for being included in fuel economy standards: fuel economy regulations for such vehicles are feasible (49USC32901(a)(3)(B)(i)).

NHTSA already has a responsibility to set fuel economy standards for vehicles under 10,000 lbs GVWR for which a standard is feasible and will result in significant energy savings. It is incumbent

[12] In its Annual Energy Outlook 2005, the Energy Information Administration assumes that the on-road fuel economy of light trucks is 18.6% below the test value that is used for CAFE compliance purposes. (EIA 2005) This gap is due to the evolution of driving conditions over the 30+ years since the CAFE tests were developed. Today's cars go faster, accelerate and brake harder, spend more time in stop and go traffic, and make greater use of power-hungry accessories like air conditioning than vehicles did 30 years ago.

upon NHTSA to fulfill this responsibility by expanding its definition of automobile to include all vehicles under 10,000 lbs. Given the potential of Class 2b trucks to reach 27.5 mpg, the fuel economy standard for all light trucks up to 10,000 lbs should be increased to at least 27.5 mpg, as discussed in the section on the Light Truck Loophole.

If NHTSA fails to fulfill its obligation to set fuel economy standards for Class 2b trucks, Congress should act to simplify the definition of "automobile" in Section 32901(a)(3) to mean any vehicle under 10,000 lbs GVWR. Furthermore, Congress should modify or remove the requirement that an automobile be a 4-wheeled vehicle.[13] Automakers may attempt to take advantage of this requirement to argue that vehicles with four rear wheels ("duallies") should be excluded. If this argument were successful, automakers could add extra rear wheels where they are not necessary just to avoid regulation. Instead, purchasers of duallies should also be given the ability to purchase higher fuel economy versions to save money on fuel.

## Savings from Closing the Loophole

A recent amendment developed by Senator Dianne Feinstein of California would have increased the CAFE standard for light trucks to 27.5 mpg by 2011, and also would have included trucks up to 10,000 lbs GVWR with the other light trucks beginning in 2011. This amendment would have effectively closed both the light truck and Class 2b loopholes at the same time.

UCS has modeled the oil savings that would have resulted from Sen. Feinstein's amendment; the results are shown in Figure 5. Closing the Class 2b loophole would save a substantial amount of oil beyond what would be saved by simply closing the light truck loophole. In addition, consumers would save money at the pump and we would be cutting down on our emissions of heat-trapping gases. (Table 6)

**Table 6:** Savings due to Increasing Commercial Light Truck Fuel Economy to 27.5 mpg by 2011

| | 2010 | 2015 | 2025 |
|---|---|---|---|
| Oil Savings, barrels per day | 33,000 | 114,000 | 177,000 |
| Net Consumer Savings, billions of $ | $ 0.6 | $ 2.1 | $ 3.8 |
| GHG Reduction, million metric tons $CO_2$-equivalent | 6 | 19 | 30 |

The technologies needed to increase the fuel economy of class 2b trucks to 27.5 mpg could be expected to add less than $2,200 to the price of a new vehicle.[14] This investment would be recovered within four years, however, and the vehicle's owner would ultimately save more than $6,200 in fuel costs over the life of the vehicle.[15] As shown in Figure 6, the nationwide effect of this would be a net consumer savings of $2 billion in 2015, and $3.3 billion in 2020, assuming a gas price of $2.00 per gallon.

[13] For example, Congress could replace the requirement that an automobile be a 4-wheeled vehicle with a requirement that it be a two-axle vehicle.

[14] Price based on UCS analysis of technology prices.

[15] Assumes a fixed gas price of $2.00 per gallon and an interest rate of 5%.Vehicle is driven 15,600 miles in its first year, decreasing by 4.5% per year over its 15 year life.

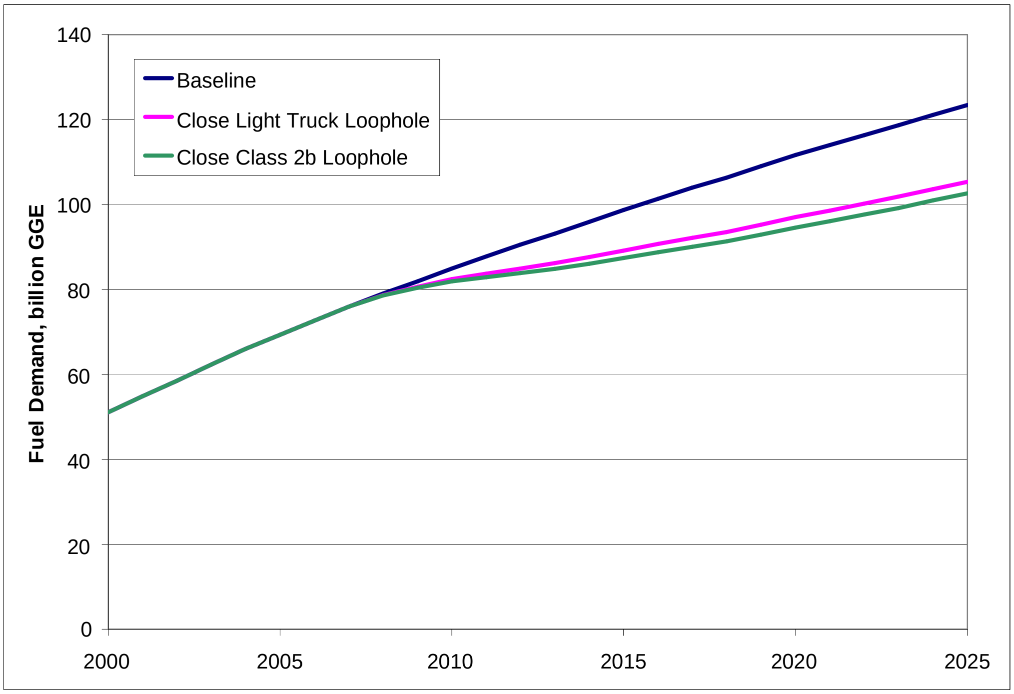


**Figure 5:** Fuel Demand from Trucks Less than 10,000 lbs GVWR

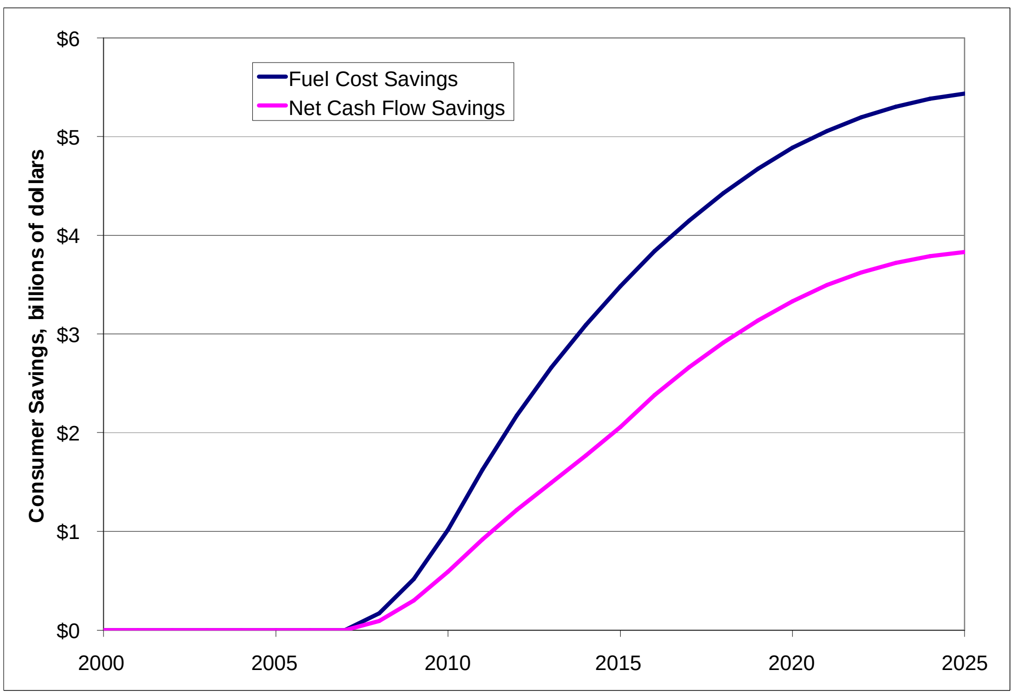


**Figure 6:** Net Consumer Cash Flow Savings Due to Closing the Class 2b Loophole

# DUAL-FUEL LOOPHOLE

The dual-fuel loophole allows manufacturers to produce, without penalty, vehicle fleets with average fuel economies less than the applicable CAFE standards. The loophole permits manufacturers to claim a generous bonus on the fuel economy of vehicles that are capable of operating on an alternative fuel, even though such vehicles almost always use gasoline in practice. As a result, our oil dependence today is approximately 80,000 barrels per day higher than it otherwise would have been, while manufacturers have avoided as much as $1.6 billion in CAFE fines to date.

## Background

Natural gas and ethanol are alternative fuels which offer both environmental and security advantages compared to oil. Both fuels release less fossil carbon per unit of energy delivered, and thus can help to reduce heat-trapping gas emissions. Second, they are produced mainly from domestically available resources, and so offer important energy security benefits.

Ethanol is usually burned in blends of up to 10% by volume with gasoline (E10), which can be used in any gasoline-engine vehicle. Ethanol can also be used in flexible-fuel vehicles (FFVs), which are capable of running on gasoline, E85 (a blend of 85% ethanol and 15% gasoline, by volume), or any mixture in between. A FFV costs about $125 more to manufacture than an identical gasoline-only vehicle.

The Alternative Motor Fuels Act of 1988 (AMFA) was intended to stimulate the use of alternative fuels, namely alcohols and natural gas, by the nation's vehicle fleet (Pub. L. 100-94). It was premised on the notion that if vehicles were capable of operating on an alternative fuel, then a market would develop for that fuel. The incentive for automakers to produce these vehicles came in the form of a credit towards meeting their CAFE requirement. From 1993-2004, manufacturers were able to increase their CAFE by up to 1.2 mpg by producing dual-fuel vehicles which are capable of running on both gasoline and an alternative fuel (49USC32906) The vast majority of dual-fuel vehicles produced to date have been FFVs.

CAFE credits for FFVs are determined using a statutory formula (49USC32905(b)) that assumes that the vehicles use gasoline 50% of the time and E85 50% of the time, which leads to a credited fuel economy approximately 65% higher than the real fuel economy. These inflated fuel economy values are averaged with the fuel economies of non-FFVs in order to increase the overall CAFE by as much as 1.2 mpg. A partial list of FFVs sold over the past two years and their actual and credited fuel economies is shown in Table 7. Table A-4 in the Appendix contains a list of MY2005 FFVs.

**Table 7:** CAFE Test vs. Credited Fuel Economy Values for Selected FFVs

| Vehicle | CAFE Test MPG | Credited MPG | Sales |
|---|---|---|---|
| 2004 Ford Explorer 4WD | 19.9 | 33.1 | 129,671 |
| 2004 Dodge Stratus | 27.6 | 45.9 | 20,861 |
| 2003 Ford Taurus | 26.0 | 42.9 | 85,475 |
| 2003 Chevy Tahoe 4WD | 18.2 | 30.3 | 93,235 |
| 2003 Dodge Caravan | 24.6 | 40.8 | 158,674 |

If FFVs were actually using E85 50% of the time, as they are assumed to do under the law, the decrease in fuel economy would almost be offset by the increase in alternative fuel use. In practice, FFVs almost never operate on E85, according to a report by the US DOT, DOE and EPA. Data in the

2002 Report to Congress on the effects of AMFA indicate that in 2000, FFVs operated on alternative fuel "somewhat less than 1%" of the time. More recent estimates indicate that little progress has been made on increasing this figure, with FFVs using E85 about 0.8% of the time in 2004.[16] Projections in the *Annual Energy Outlook 2005* (*AEO 2005*) show a total of nearly 21 million FFVs on the road by 2025. This corresponds to FFVs maintaining their MY2003 sales share for the next 20 years. Yet despite this enormous growth in the stock of FFVs, *AEO 2005* projects that in 2025, FFVs will be operating on E85 less than one quarter of one percent of the time, and using just 47 million gallons of E85. In fact, *AEO 2005* projects that in 2025, US fuel ethanol consumption will total 4,493 million gallons, and that almost all of that (99.2%) will be burned in low-percentage blends, just like today.

Past experience and government forecasts clearly indicate that merely putting FFVs on the road is inadequate to stimulate meaningful growth in alternative fuel use. Despite rapid growth in the number of FFVs on the road, these vehicles today satisfy less than 1% of their energy requirements with E85. Energy Information Administration (EIA) forecasts indicate that over the next 20 years, this figure will actually fall, not rise. Furthermore, more than 99% of current fuel ethanol use is in low-percentage blends that can be burned in any gasoline vehicle, and EIA forecasts predict that this is not going to change in the next 20 years either.

## Costs of the Loophole

The dual fuel loophole has increased America's oil dependence and allowed automakers to avoid paying fines for producing inefficient fleets. Despite the failure of the incentive program to reduce oil dependence, it was first extended by the Administration and has now been further extended by the 2005 energy bill.

### Increased Oil Dependence

The most perverse consequence of the AMFA incentive program is that it has actually increased our oil dependence by permitting automakers to sell fleets of vehicles that get fewer miles per gallon than required by CAFE standards. If these vehicles were actually using the alternative fuels at least 50% of the time, this would not be a problem, but since FFVs are operating on gasoline more than 99% of the time, the amount of oil we use has actually gone up. UCS estimates that if automakers had actually produced the CAFE values they were credited with under AMFA, the United States' oil consumption in 2004 would have been 78,000 barrels per day lower than it was. Moreover, we would have burned 4 billion fewer gallons of gasoline since 1998.

AMFA gave the Secretary of Transportation the discretion to extend the credit program through MY2008 at a maximum credit level of 0.9 mpg, and this is exactly what he did, despite clear evidence that the program was actually increasing our dependence on foreign oil.[17] Now, the 2005 energy bill has extended the loophole through MY2010 at 1.2 mpg and given the Secretary of Transportation the discretion to continue it through MY2014 at 0.9 mpg. This extension is expected to increase oil demand by 129,000 barrels per day in 2014, bringing the total increase due to the FFV loophole to 213,000 barrels per day. By 2015, we will have burned an extra 32 billion gallons of gasoline as a consequence of the FFV loophole.

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[16] *AEO 2005* estimates that FFVs had a total energy demand of 2.7 billion GGE in 2004. UCS analysis of reported and estimated sales data for MY1998-MY2004 cars and light trucks indicates that the total energy demand for FFVs was 2.9 billion GGE in 2004. EIA's *Alternatives to Traditional Transportation Fuels 2003* estimated 22.4 million GGE of E85 used in 2004.

[17] As reported, for example, in the *Report to Congress* by DOT, DOE, and EPA.

## A Cash Cow for Automakers

The enforcement mechanism of the CAFE program lies in a system of fines designed to penalize manufacturers who fail to meet fuel economy standards. By crediting FFVs with greatly inflated fuel economy values, the AMFA program allows manufacturers to avoid these fines even while their fleets fall short of fuel economy targets. Since MY1998, DaimlerChrysler, Ford, and GM have earned enough FFV credits to avoid more than $1.6 billion in CAFE fines, as shown in Table 8. The total cost to the manufacturers to produce these vehicles was approximately $470 million, at $125 per FFV. In other words, the manufacturers have essentially pocketed more than a billion dollars in profits while producing vehicles that do not actually meet fuel economy standards.

**Table 8:** Fines Avoided Using AMFA Credits (Millions of Dollars)

| Year | DaimlerChrysler | Ford | GM | Total |
|---|---|---|---|---|
| 1998 | 62 | 0 | 0 | 62 |
| 1999 | 89 | 76 | 0 | 165 |
| 2000 | 95 | 164 | 36 | 295 |
| 2001 | 78 | 65 | 41 | 184 |
| 2002 | 107 | 64 | 0 | 171 |
| 2003 | 105 | 184 | 159 | 448 |
| 2004 | 25 | 149 | 121 | 295 |
| Total | 562 | 702 | 356 | 1,621 |

## Fixing the Problem

As discussed above, ethanol offers important reductions in heat-trapping gas emissions while enhancing energy security, and using ethanol in E85 may deliver air quality benefits compared to using it in E10. But for FFVs to make a positive contribution to reducing our oil dependence, it is necessary for them to actually use E85. It is clear that merely producing vehicles that can use an alternative fuel does not ensure that they actually will use that fuel. There are several reasons for this. For one, as the Report to Congress acknowledged, “it is safe to say that many people who have purchased flexible-fuel vehicles do not know they could use E85.” No one is going to buy a fuel if he doesn’t even realize his car can use it. Right now, if a person wants to determine if his vehicle can use E85, he has to decode its vehicle identification number using a guide from a source like the National Ethanol Vehicle Coalition[18].

A second reason that E85 use is so low is that out of a total of 176,000 gas stations in the country, fewer than 400 sell E85[19], and one third of those are in Minnesota. Even if someone wanted to buy E85, she would be hard pressed to find a place to buy it in most parts of the country. In contrast, FFVs are mixed in with the general vehicle fleet, and sold all over the country without regard to the availability of E85, as shown in Figure 7. More than half the E85 stations in the country are located in the West North Central region[20], but this region ranks fifth out of the nine census regions for FFV sales. The top region in the country for FFV sales, the South Atlantic, has just 28 stations selling E85 as of August 2005.

[18] For example, the NEVC website tells you that if the second and third characters of the 17-digit VIN on your Ford Explorer are “FM” and the eighth character is “K,” your vehicle is probably a FFV.

[19] DOE, Alternative Fuels Data Center, as of August 12, 2005.

[20] North Dakota, South Dakota, Minnesota, Iowa, Missouri, Kansas, and Nebraska

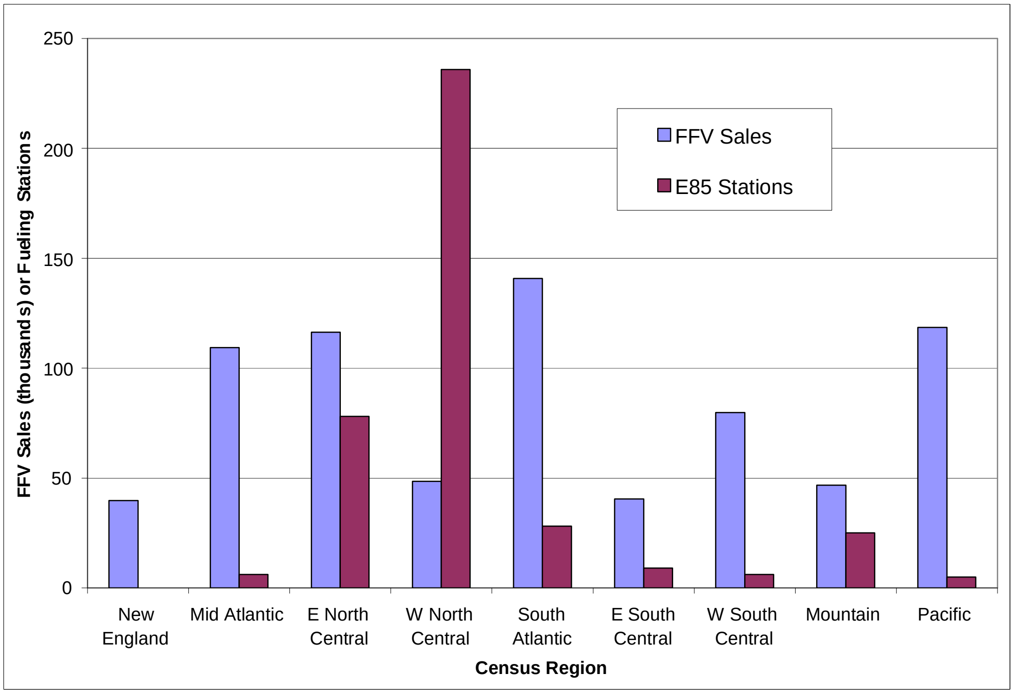


**Figure 7:** Distribution of FFV Sales and E85 Fueling Stations[21]

Automakers could take a number of steps to increase alternative fuel usage, including consumer education and partnering with fuel suppliers. For example, automakers could include badges on their FFV models and prominent labels on sun visors and/or gas tank doors to improve consumers' awareness of their ability to use an alternative fuel. A more advanced solution would be to integrate a database of E85 fueling stations into on-board navigation systems, to help consumers find E85 stations on the go. Finally, automakers could cooperate with fuel suppliers to develop fueling infrastructure and sell FFVs in the same markets. A modest direct investment would be adequate to spur the introduction of new E85 pumps. In March of 2005 the Illinois Department of Commerce and Economic Opportunity announced a program to pay for 50% of the cost of converting existing refueling facilities to pump E85 (up to $2,000 per site), or for construction of new E85 refueling facilities (up to $40,000 per site). Although the total commitment is capped at $500,000, the number of E85 refueling sites in Illinois more than doubled from 24 to 59 between May and August of 2005. (Green Car Congress, 2005; EERE 2005)

As explained previously, if actual fuel use matched the fuel use assumed for AMFA credit purposes, the increase in oil use due to FFV credits would be negligible, and the loophole would disappear. For this reason, ideally, it would be desirable to link the credited fuel use directly to the actual amount of E85 used by FFVs on the road. However, because E85 use is currently so low, doing this would eliminate, at least in the near term, the financial incentive for automakers to produce FFVs. An alternative solution would be to reduce the credited fuel use from 50% to some lower value, while also reducing the maximum credit given. This would serve to reduce the size of the loophole, increase sales of FFVs, and ensure that automakers earn handsome returns on their investments in building FFVs. Increases to the maximum credit given could then be linked to actual

[21] Fueling station data from Alternative Fuels Data Center. Sales estimates from AEO 2005.

fuel use, to provide an incentive to automakers to promote alternative fuel use. UCS analysis has shown that these goals could be accomplished my making the following improvements to the CAFE credit system:

1. **The assumed E85 usage used to determine the bonus credit for each dual fuel vehicle should be modified from 50% to 20%.** Dual fuel vehicles are currently given a CAFE bonus credit that assumes they operate on E85 50% of the time. This results in a very large return on investment (ROI) to automakers who produce the vehicles (about 200% to 300%). In reality, the vehicles operate on E85 less than 1% of the time on average. Lowering the assumed usage to 20% would adjust the credit automakers receive for each vehicle towards a more realistic level, while still providing automakers with a generous incentive to produce dual fuel vehicles (a ROI of at least a 33%).
2. **The total CAFE credit given to an automaker for producing dual fuel vehicles should be split into two parts, the first representing 0.6-mpg.** A manufacturer can currently earn up to 0.9 mpg towards CAFE targets through the sale of dual fuel vehicles. The House energy bill would increase this to 1.2 mpg. The UCS proposal would set aside the first 0.6-mpg as fixed incentive for automakers which, along with the first change, would result in 20-30% more dual fuel vehicles than expected under the House bill.
3. **As an incentive for the use of E85 in dual fuel vehicles, the remaining potential CAFE credits would be made available as actual alternative fuel use in dual fuel vehicles increases**, according to the schedule in Table 9. The ability to garner even more credit will provide manufacturers with an incentive to promote the use of alternative fuels in the vehicles they sell. As the program succeeds in stimulating alternative fuel use, the overall size of the dual fuel vehicle loophole will be reduced. When E85 is used in dual fuel vehicles 20% of the time, the loophole will fall to almost zero. This portion of the credits will provide automakers with a ROI of over 50% on the additional vehicles they make in order to garner credit above 0.6 mpg.

**Table 9:** Current and Proposed Dual Fuel Vehicle Credit Systems*

| | Actual Use | Assumed Use | Max. Credit (mpg) | Size of loophole (mpg) | Annual Dual Fuel Vehicle Sales |
|---|---|---|---|---|---|
| Baseline | 1% | 50% | 0.9 | 0.88 | 732,000 |
| Energy Bill | 1% | 50% | 1.2 | 1.18 | 1,057,000 |
| UCS Proposal | 1% | 20% | 0.6 | 0.57 | 1,249,000 |
| | 4% | 20% | 0.7 | 0.57 | 1,442,000 |
| | 7% | 20% | 0.8 | 0.55 | 1,633,000 |
| | 10% | 20% | 0.9 | 0.49 | 1,826,000 |
| | 13% | 20% | 1.0 | 0.41 | 1,996,000 |
| | 16% | 20% | 1.1 | 0.30 | 2,161,000 |
| | 20% | 20% | 1.2 | 0.10 | 2,325,000 |

*Analysis based on Model Year 2003 sales and fuel economy data.

Making these changes to the system would deliver positive results all around. First of all, automakers who took full advantage of the first 0.6 mpg of the allowable credit (or who produced enough vehicles to earn the same credit they do today, whichever is less) would produce about 70% more dual fuel vehicles than under the previous law and about 25% more than expected under the 2005 energy bill. This would increase the potential market for alternative fuel while providing a 33% ROI to automakers. Assuming all automakers currently using the credits continue to do so as noted above, excess projected oil consumption would be reduced by a total of more than 100 million barrels by 2014.

If automakers take advantage of the program and help promote the use of E85 in order to raise usage from 1% to 4% (expressed as a fraction of fuel used by all dual fuel vehicles for which automakers have received CAFE credits) the credit cap would be raised to 0.7 mpg and the Big Three would be able to get credit for almost 200,000 more dual fuel vehicles per year. The return on automakers' marginal investment in producing dual vehicles above the 0.6-mpg level would be more than 50%. This would include 170,000 additional flex-fuel trucks with a value of $32.1 million in avoided CAFE fines, but would have an incremental cost of only $21 million to build. The Big Three could invest $4.7 million promoting increased E85 usage in order to get the cap raised to 0.7-mpg; their total cost in this case would then be $26 million and their ROI would still be 25%.

If, because of efforts to increase alternative fuel use, all automakers currently using credits reach the maximum allowable credit of 1.2 mpg based on fuel use, E85 consumption in 2014 would grow by 4 billion gallons and oil use would be 160,000 barrels per day lower than expected under the 2005 energy bill. In this scenario, sales of dual fuel vehicles in 2014 would be more than three times the number expected under the new energy bill, leading to a stock of 17.5 million dual fuel vehicles on the road. Furthermore, consumer choice would be increased by providing greater awareness of the option of purchasing dual fuel vehicles and using alternative fuels.

# THE LUXURY SUV TAX LOOPHOLE

Small business owners who purchase heavier light-duty trucks are eligible for generous deductions on their taxes. Because these deductions are so much larger than those for cars or lighter light-duty trucks, this has encouraged many small business owners, such as lawyers, realtors, and accountants (especially!) to purchase large, fuel-thirsty luxury SUVs "for business use," regardless of whether the vehicles' large capacities are necessary for their businesses.

## Background

Small business owners who purchase vehicles for their businesses are able to recover the purchase costs of those vehicles in a number of ways, including depreciating the vehicle over a number of years and/or deducting the cost as an expense in the year of purchase. Deductions for smaller vehicles are subject to limits intended to prevent luxury vehicles from being deducted as business expenses, but these limits do not apply to larger trucks.

### Modified Accelerated Cost Recovery System

The traditional method of cost recovery for business vehicles has been to depreciate the cost over six years according to the Modified Accelerated Cost Recovery System (MACRS). One of three depreciation methods, summarized in Table 10, can be used to depreciate a vehicle under MACRS. All three methods have the potential to fully depreciate a vehicle within six years. (26USC168; IRS 2004)

**Table 10:** Fraction of Purchase Cost Deducted by Year of Service

| Year of Service | 200% Declining Balance | 150% Declining Balance | Straight Line |
|---|---|---|---|
| 1st | 20% | 15% | 10% |
| 2nd | 32% | 25.5% | 20% |
| 3rd | 19.2% | 17.85% | 20% |
| 4th | 11.52% | 16.66% | 20% |
| 5th | 11.52% | 16.66% | 20% |
| 6th | 5.76% | 8.33% | 10% |

### Depreciation Limits

In the 1980's, seeing that many people were writing off pricey luxury cars as business expenses, Congress placed limits on the amount that could be deducted for a car or light truck with a gross vehicle weight of less than 6,000 pounds (26USC280F). The idea was to allow regular depreciation deductions for utilitarian vehicles, while requiring more extravagant vehicles to be depreciated over a longer period of time. The IRS is responsible for updating the maximum depreciation amounts in step with the automobile component of the Consumer Price Index (CPI); Table 11 lists the maximum depreciation deductions that can be taken for cars and lighter trucks placed into service in 2005 (IRS 2005). These limits apply to the combined deductions from Section 179 (discussed below) and MACRS depreciation.

When considered along with the MACRS depreciation methods, these depreciation limits imply a maximum cost of $14,540 for a car that can be fully depreciated in six years. In other words, to fully depreciate a car in six years, a small business owner must buy a car priced at $7,500 less than today's average car expenditure. The maximum for lighter trucks is slightly higher at $16,250 – near the base prices of small pickups like the Chevy Colorado and Mazda B2300. If a business owner purchases a vehicle costing more than these limits, she can depreciate the remaining cost of the vehicle over as many years as she needs to fully recover the cost, but her annual deductions may not exceed the limit for the later years (e.g. $1,675 per year for a 2005 car).

**Table 11:** Depreciation Limits for Cars and Trucks < 6,000 lbs GVWR

| | 2005 | |
|---|---|---|
| Year of Service | Cars | Light Trucks |
| 1st | $ 2,960 | $ 3,260 |
| 2nd | $ 4,700 | $ 5,200 |
| 3rd | $ 2,850 | $ 3,150 |
| 4th & later | $ 1,675 | $ 1,875 |
| Max Depreciable in 6 Years | $14,540 | $16,250 |

Certain small business owners, such as farmers and contractors, may require large, heavy-duty trucks as integral parts of their businesses. Such vehicles are generally more expensive than smaller vehicles. To address this, Congress exempted from the depreciation limits any light truck with a gross vehicle weight rating (GVWR) of more than 6,000 lbs. (26USC280F(d)(5)) A heavier truck can therefore be fully depreciated in six years according to the MACRS, regardless of its purchase price. This means that luxury vehicles can still be fully depreciated within 6 years as long as they have a high enough weight rating.

## Depreciation Limits Falling Behind

In 1988, the depreciation limits allowed a car or truck costing $12,760 or less to be fully depreciated in six years. At the time, this was slightly less than the average new car expenditure of approximately $14,000. Since 1988, the average new car expenditure has increased by 60% to approximately $22,000. (Wards, 2005) So why has the maximum amount depreciable over six years increased by less than $1,800 over the same period? The reason is that the depreciation limits are tied to the CPI. The CPI tracks the relative price *of the same item* over a period of time. This methodology is fine for comparing the price of a jar of pickles in 2005 to the price of a jar of pickles in 1988 – it's essentially the same jar of pickles – but it does not work well for cars.

The CPI automobile component tracks the price of a "comparable car" from 1967 to the present. In other words, the depreciation limits for cars in 2005 have been determined by comparing the cost of a 1967-type car in 1987 to the cost of the same 1967-type car in 2004. However, vehicles today have added safety equipment and emission controls that were not available to save lives and protect public health in 1988, let alone in 1967—these improvements add to the cost of the vehicle. New vehicles have also added costs from additional technology that has increased standard features and improved utility. Put simply, you cannot, and would not want to, buy the same car or truck in 2005 that was available 10, 20 or 40 years ago. By linking to the auto CPI, the depreciation limits have failed to keep up with advances in safety and technology, falling behind the needs of small businesses. Although the average new car is much safer, cleaner, more comfortable and convenient than cars in 1988, a business owner cannot deduct the additional costs due to these improvements. Instead, if he wants to fully depreciate a business car over six years, he is forced to buy an economy car, or to search in vain for a non-existent car with 20-year old technology. Alternatively, he is forced to purchase a truck exceeding 6,000 lbs GVW, and deal with higher gas bills, lackluster safety, and driving a large, unwieldy vehicle.

## Section 179 and the Guzzler/Luxury SUVs

It is bad enough that small business owners who want cars and lighter trucks are falling behind on tax deductions, while large guzzlers and large luxury vehicles can be fully depreciated over six years. But making it worse is a section of the tax code that allows even more to be written off in the first year, further increasing the incentive to guzzle gas.

Section 179 of the Internal Revenue Code permits small businesses to treat a limited amount of eligible property, including vehicles, as an expense. That is, the full cost of a vehicle can potentially be deducted in the year of purchase, rather than being depreciated over multiple years. The problem for small business owners, however, is that the first year depreciation limits still apply for vehicles under 6,000 pounds GVWR, leaving them with no 179 benefit unless they upsize, again leading to higher gasoline bills for their businesses and increased oil dependence for the country.

Thankfully, the 179 deduction is not unlimited for all vehicles over 6,000 pounds. While the Jobs and Growth Tax Relief Reconciliation Act of 2003 (Pub. L. 108-27, Sec. 202) increased the limit on this deduction from $24,000 in 2001 to $100,000 for the years 2002-2006, the American Jobs Creation Act of 2004 introduced a $25,000 cap on the price of an SUV, but not a pickup, that can be expensed under Section 179.( Pub. L. 108-357, Sec. 910)[22] This means that you can still deduct the full cost of large pickups in the first year, but for large gas guzzling and/or large luxury SUVs, you are limited to $25,000 under Section 179. However, you can still depreciate the balance of the large SUV cost over 6 years according to the MACRS schedule, beginning in the year of purchase.

# Expoiting the Loophole

At the time the limits on vehicle price and the corresponding exemptions for vehicles over 6,000 lbs were established, such vehicles were almost exclusively large pickups and cargo vans, utilitarian in design and not intended for comfort or luxury. Back then, the gross vehicle weight criterion may have been a reasonably reliable means for distinguishing working vehicles from passenger vehicles. Now, due to the tremendous rise in the popularity of SUVs and the rise of luxury SUVs and pickups, many large luxury and passenger vehicles are now eligible for the deduction. As a result, any small business owner who plans to use the vehicle for business-related purposes at least 50% of the time can claim a deduction. It does not matter what type of business the purchaser is engaged in, whether he “needs” a vehicle with a 6,000 lb gross vehicle weight rating, or that taxpayers end up stuck with the bill for large luxury and gas guzzling vehicles.

The Appendix contains a list of MY2005 vehicles that are eligible for the deduction limit exemption, along with their gross vehicle weight ratings. (Table A-5) It is very interesting that some vehicles, such as the Saab 9-7X, conveniently exceed the 6,000 lb threshold by as little as one pound.

The different tax treatment of large trucks and SUVs compared to cars and smaller trucks has the effect of driving business owners towards larger vehicles for several reasons. First, Table 12 shows that car and small truck purchases are eligible for much smaller deductions in the year of purchase than are large trucks. Second, any truck with a gross vehicle weight rating of more than 6,000 lbs can be fully depreciated in just 6 years, and some in just one year, but as shown in Table 13, there is essentially no limit to how long it might take to depreciate a car or a smaller truck. Because the deduction limits have failed to keep up with advances in automotive technology, the only way for a

[22] The American Jobs Creation Act of 2004 also extended the $100,000 limit (indexed to inflation) through 2008. (Pub. L. 108-357, Sec. 201)

business owner to deduct the cost of a reasonably comfortable vehicle is to purchase one that is not subject to deduction limits. In the current system, that means going to a large truck or SUV. The net effect of all of this is to create an incentive for small business owners to purchase vehicles in a weight class that guzzles 40% more gasoline than vehicles with the lower weight rating.

**Table 12:** Maximum Deductions in Year of Purchase by Vehicle Type and Price

| Purchase Price | Cars | Trucks <6,000 lbs | SUVs >6,000 lbs GVWR | | |
|---|---|---|---|---|---|
| | First-Year Deduction | First-Year Deduction | Section 179 | 200% D.B. Depreciation | First-Year Deduction |
| **$10,000** | **$2,960** | **$3,260** | $10,000 | $- | **$10,000** |
| **$20,000** | **$2,960** | **$3,260** | $20,000 | $- | **$20,000** |
| **$30,000** | **$2,960** | **$3,260** | $25,000 | $1,000 | **$26,000** |
| **$40,000** | **$2,960** | **$3,260** | $25,000 | $3,000 | **$28,000** |
| **$50,000** | **$2,960** | **$3,260** | $25,000 | $5,000 | **$30,000** |
| **$75,000** | **$2,960** | **$3,260** | $25,000 | $10,000 | **$35,000** |
| **$100,000** | **$2,960** | **$3,260** | $25,000 | $15,000 | **$40,000** |

**Table 13:** Minimum Number of Years Needed to Fully Depreciate a Vehicle

| Purchase Price | Cars | Trucks <6,000 lbs | SUVs >6,000 lbs | Pickups & Vans >6,000 lbs |
|---|---|---|---|---|
| **$ 10,000** | 6 | 6 | 1 | 1 |
| **$ 20,000** | 9 | 8 | 1 | 1 |
| **$ 30,000** | 15 | 13 | 6 | 1 |
| **$ 40,000** | 21 | 19 | 6 | 1 |
| **$ 50,000** | 27 | 24 | 6 | 1 |
| **$ 75,000** | 42 | 37 | 6 | 1 |
| **$100,000** | 57 | 51 | 6 | 1 |

## Examples

Tables 14 and 15 summarize the tax consequences and fuel costs for buyers choosing between a vehicle less than 6,000 lbs and a truck over 6,000 lbs. The buyer in Table 14 needs a vehicle for getting around from one worksite to another, and moving miscellaneous work-related materials, but does not necessarily require the heavy hauling capabilities of a full-size truck. He would like to buy a modest, functional vehicle, and has determined that a Ford Freestyle crossover utility vehicle would suit his needs well. However, his accountant has suggested that he may want to consider a Ford F-150 SuperCab. By buying the pickup, he would save a net of $6,000 in the year he purchases the vehicle, but in the end, this tax deduction fails on two accounts. First, over 6 years, the increased gasoline costs wipe out any benefit to the purchaser from the tax deduction. Meanwhile, US taxpayers will have paid out over $3,000 to the small businessman in exchange for an increase in oil dependence that saves the small business owner almost nothing.

Now consider a small business owner who plans to buy a luxury vehicle and write it off against her business: she could choose to buy a luxury sedan like the Lexus GS-300, or she can choose the Lexus GX-470 luxury SUV. As shown in Table 15, even though the SUV costs $3,000 more than the sedan, due to the favorable tax treatment it receives, she will save $4,000 in the year she purchases the vehicle, and nearly $3,000 over the first six years. In this case, taxpayers are being asked to subsidize nearly a 50% increase in gasoline consumption by paying out $9,000 so a small business owner can upgrade to a luxury vehicle.

**Table 14:** Comparison of Costs for a Crossover Utility Vehicle and a Pickup

| | | Ford Freestyle | Ford F-150 SuperCab |
|---|---|---|---|
| MSRP | | $25,715 | $26,060 |
| EPA Estimated MPG | | 23 | 17 |
| Annual Miles Driven | | 15000 | 15000 |
| Gas Price per Gallon | | $2.00 | $2.00 |
| Annual Fuel Costs | | $1,388 | $1,877 |
| First Year | Max Deduction | $3,260 | $26,060 |
| | Tax Savings | $978 | $7,818 |
| | Gasoline Costs | $1,388 | $1,877 |
| | Net Cost | $26,125 | $20,119 |
| Six Years | Max Deduction | $17,235 | $26,060 |
| | Tax Savings | $4,710 | $7,818 |
| | Gasoline Costs | $7,395 | $10,005 |
| | Net Cost | $28,400 | $28,247 |

*Analysis assumes a 30% tax rate and a discount rate of 5% on future cash flows. On-road fuel economy is assumed to be 6% below EPA values.

**Table 15:** Comparison of Costs for a Luxury Car and a Luxury SUV

| | | Lexus GS-300 | Lexus GX-470 |
|---|---|---|---|
| MSRP | | $43,550 | $46,875 |
| EPA Estimated MPG | | 25 | 17 |
| Annual Miles Driven | | 15000 | 15000 |
| Gas Price per Gallon | | $ 2.00 | $ 2.00 |
| Annual Fuel Costs | | $1,277 | $1,877 |
| First Year | Max Deduction | $2,960 | $29,375 |
| | Tax Savings | $888 | $8,813 |
| | Gasoline Costs | $1,277 | $1,877 |
| | Net Cost | $43,939 | $39,940 |
| Six Years | Max Deduction | $15,535 | $46,875 |
| | Tax Savings | $4,248 | $13,527 |
| | Gasoline Costs | $6,804 | $10,005 |
| | Net Cost | $46,106 | $43,354 |

*Analysis assumes a 30% tax rate and a discount rate of 5% on future cash flows. On-road fuel economy is assumed to be 6% below EPA values.

Clearly, despite the recent capping of the Section 179 deduction for SUVs at $25,000, there remains a significant incentive for small business owners to purchase heavy SUVs and, especially, pickups.

## Closing the Loophole

The tax loophole exists because business owners who purchase cars and smaller trucks cannot deduct nearly as much as purchasers of larger trucks. As shown in the above examples, this loophole represents an incentive for business owners to purchase larger, less efficient vehicles. Given the nature of the problem, the solution is pretty simple, even while including protections for the agricultural community.

First, to ensure that the federal government is not paying for anyone to upgrade to a luxury vehicle, depreciation limits should be introduced for vehicles over 6,000 pounds GVWR. Second, the maximum vehicle price depreciable over six years should be updated to be in line with current prices for vehicles that offer sufficient functionality but not luxury features. Third, higher depreciation limits for larger vehicles should be maintained, in recognition of their higher costs, but should not be excessive. Table 16 lays out a possible set of deduction limits for cars and trucks. These limits would allow business owners to fully deduct functional work vehicles within 6 years, while eliminating full deductions for more luxurious models.

**Table 16:** Possible Depreciation Limits

| **Year of Service** | **Cars** | **Trucks <6,000 lbs GVWR** | **Trucks >6,000 lbs GVWR** |
|---|---|---|---|
| 1st | $ 4,000 | $ 5,000 | $ 6,000 |
| 2nd | $ 6,400 | $ 8,000 | $ 9,600 |
| 3rd | $ 3,850 | $ 4,800 | $ 5,775 |
| 4th & Subsequent | $ 2,325 | $ 2,900 | $ 3,475 |
| **Max Depreciable in 6 Years** | **$ 20,000** | **$ 25,000** | **$ 30,000** |

The result of introducing these revised deduction limits would be to eliminate the incentive to purchase more of a vehicle that you want, while increasing the tax break available to business owners who purchase more modest cars and smaller trucks. Tables 17 and 18 show the effects that the revised depreciation limits would have on the two examples considered previously. Clearly, the incentive to purchase a larger vehicle than necessary would be eliminated, as would the opportunity for fully writing off a luxury vehicle. At the same time, business owners who need large, rugged trucks would not be unfairly penalized, and would be able to fully depreciate these vehicles in six years, much less than the vehicle's actual useful life.

**Table 17:** Comparison of Costs for a Crossover Utility Vehicle and Pickup Under Revised Depreciation Limits

| | | Ford Freestyle | Ford F-150 SuperCab |
|---|---|---|---|
| MSRP | | $25,715 | $26,060 |
| EPA Estimated MPG | | 23 | 17 |
| Annual Miles Driven | | 15000 | 15000 |
| Gas Price per Gallon | | $2.00 | $2.00 |
| Annual Fuel Costs | | $1,388 | $1,388 |
| First Year | Max Deduction | $5,000 | $5,212 |
| | Tax Savings | $1,500 | $1,564 |
| | Gasoline Costs | $1,388 | $1,877 |
| | Net Cost | $25,603 | $26,374 |
| Six Years | Max Deduction | $25,081 | $26,060 |
| | Tax Savings | $6,907 | $7,180 |
| | Gasoline Costs | $7,395 | $10,005 |
| | Net Cost | $26,203 | $28,886 |

*Analysis assumes a 30% tax rate and a discount rate of 5% on future cash flows. On-road fuel economy is assumed to be 6% below EPA values.

**Table 18:** Comparison of Costs for a Luxury Car and a Luxury SUV Under Revised Depreciation Limits

| | | Lexus GS-300 | Lexus GX-470 |
|---|---|---|---|
| MSRP | | $43,550 | $46,875 |
| EPA Estimated MPG | | 25 | 17 |
| Annual Miles Driven | | 15000 | 15000 |
| Gas Price per Gallon | | $ 2.00 | $2.00 |
| Annual Fuel Costs | | $1,277 | $1,277 |
| First Year | Max Deduction | $4,000 | $6,000 |
| | Tax Savings | $1,200 | $1,800 |
| | Gasoline Costs | $1,277 | $1,877 |
| | Net Cost | $43,627 | $46,952 |
| Six Years | Max Deduction | $21,225 | $31,025 |
| | Tax Savings | $5,799 | $8,507 |
| | Gasoline Costs | $6,804 | $10,005 |
| | Net Cost | $44,555 | $48,373 |

*Analysis assumes a 30% tax rate and a discount rate of 5% on future cash flows. On-road fuel economy is assumed to be 6% below EPA values.

# GAS GUZZLER LOOPHOLE

Cars that consume excessively large quantities of gasoline are often known as gas guzzlers. These cars are subject to a gas guzzler tax, a market mechanism intended to either encourage particularly inefficient automobiles to improve, or at least require them to pay a luxury tax on their excessive contribution to oil dependence. However, this market tool does not currently apply to vehicles that are classified as "light-trucks" for fuel economy purposes. This has left the door open to a free ride for gas guzzling luxury SUVs and pickups exemplified by Toyota's Land Cruiser, Ford's Lincoln Navigator and Land Rovers, GM's Cadillac Escalade and DaimlerChrysler's Mercedes M class.

## Background

The Energy Tax Act of 1978 created a gas guzzler tax to be applied to cars that get especially low fuel economy. The amount of the tax and the threshold for what constitutes a gas guzzler have gradually increased over time; the current tax amounts are shown in Table 19. The fuel economy values used to determine the gas guzzler tax are the unadjusted test values, weighted 55% city / 45% highway, like those used for CAFE compliance purposes. (26USC4064)

**Table 19:** Gas Guzzler Tax Amounts (26USC4064) and Lifetime Excess Gasoline Consumption

| Unadjusted 55/45 Fuel Economy (MPG) | Gas Guzzler Tax | Excess Gasoline Consumption[23, 24] |
|---|---|---|
| > 22.5 | $ - | < 1,515 |
| 21.5-22.5 | $ 1,000 | 1,705 |
| 20.5-21.5 | $ 1,300 | 2,110 |
| 19.5-20.5 | $ 1,700 | 2,557 |
| 18.5-19.5 | $ 2,100 | 3,050 |
| 17.5-18.5 | $ 2,600 | 3,598 |
| 16.5-17.5 | $ 3,000 | 4,211 |
| 15.5-16.5 | $ 3,700 | 4,901 |
| 14.5-15.5 | $ 4,500 | 5,682 |
| 13.5-14.5 | $ 5,400 | 6,575 |
| 12.5-13.5 | $ 6,400 | 7,605 |
| < 12.5 | $ 7,700 | 8,807 |

A car that meets the CAFE standard of 27.5 mpg will consume 6,818 gallons of gasoline over a 150,000 mile lifetime, while a car that gets 22.5 mpg on the CAFE test (the lowest fuel economy possible without being classified as a gas guzzler) will consume 8,333 gallons.[23] Therefore, the current gas guzzler is effectively a car that will guzzle at least 1,500 gallons above and beyond a car meeting the CAFE standard over a 150,000-mile lifetime. Figure 8 plots the existing gas guzzler tax as a function of lifetime excess fuel consumption relative to a vehicle meeting the prevailing standard. The relationship between the amount of tax and the fuel consumption is nearly linear, requiring a larger tax for the worst offenders.

[23] Excess gasoline consumption compared to a car meeting the CAFE standard of 27.5 mpg, assuming a 150,000 mile vehicle life and on-road fuel economy 20% below CAFE test values.

[24] Fuel economy assumed to be equal to the midpoint of each range (e.g. 22.0 mpg for vehicles in the 21.5-22.5 mpg bin). Cars in the <12.5 mpg category are assumed to have a fuel economy of 12.0 mpg.

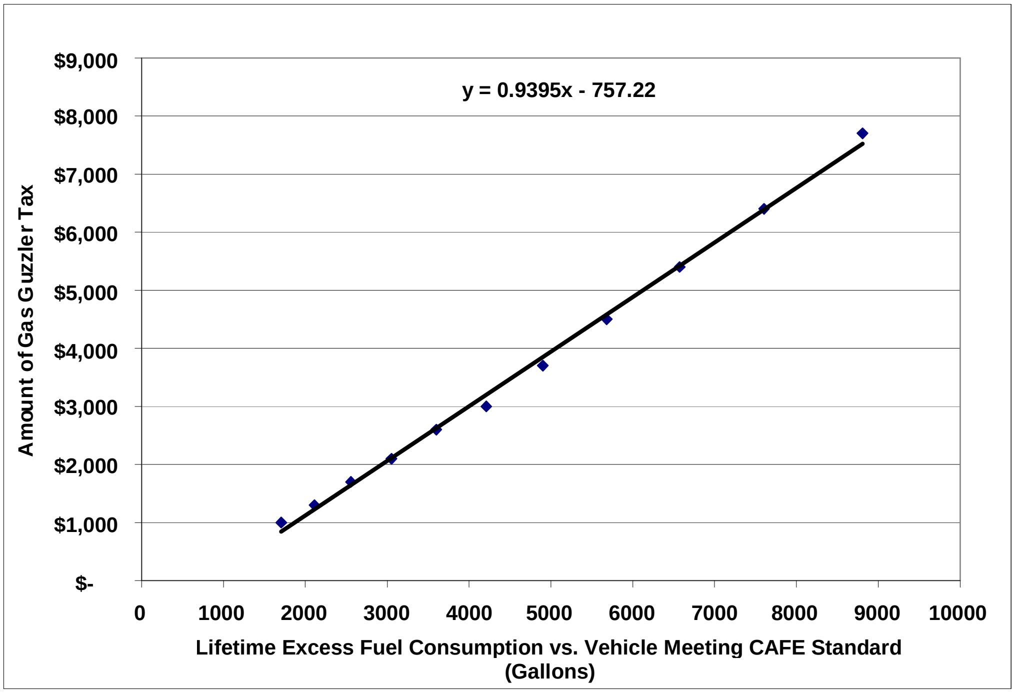


**Figure 8:** Gas Guzzler Tax versus Fuel Consumption

For MY2003, the latest year for which sales and fuel economy data are available, automakers were liable for an estimated $143 million in gas guzzler taxes, as shown in Table 20. All of the taxes are due to luxury brands or high-performance models. Nearly all of DaimlerChrysler's gas guzzler taxes were owed on Mercedes-Benz models, with the balance due to Dodge Viper sales. Ford's taxes were primarily due to sales of the Mustang Cobra, with some attributable to Aston Martin and Jaguar models. Volkswagen's gas guzzler liability was due to sales of Audi, Bentley, and Lamborghini models. The gas guzzler tax has clearly been very effective at discouraging the sale of gas guzzlers; out of a total of 7.8 million cars sold in MY2003, less than 100,000 (1.3%) were gas guzzlers.

**Table 20:** Estimated Gas Guzzler Taxes, MY2003[25]

| Manufacturer | Gas Guzzler Sales | Gas Guzzler Taxes |
|---|---|---|
| BMW | 14,300 | $ 19,224,000 |
| DaimlerChrysler | 63,673 | $ 87,547,300 |
| Fiat | 2,470 | $ 11,816,000 |
| Ford | 14,195 | $ 16,013,400 |
| Lotus | 150 | $ 195,000 |
| Porsche | 2,569 | $ 4,033,400 |
| Volkswagen | 2,027 | $ 4,514,500 |
| **Total** | **99,384** | **$ 143,343,600** |

Unfortunately, there exists in the gas guzzler law a loophole very similar to the one that permits the classification of certain passenger vehicles as non-passenger automobiles. Indeed, the gas guzzler

[25] Based on sales and fuel economy data from NHTSA. Vehicles were sorted into bins defined by the data in Table 19 and the amount of gas guzzler tax for each vehicle was multiplied by that vehicle's sales to obtain the total tax due. Automakers with no vehicles qualifying for the tax are excluded.

tax does not apply to "any vehicle which is treated as a non-passenger automobile under the rules which were prescribed by the Secretary of Transportation for purposes of section 32901 of title 49, United States Code, and which were in effect on the date of the enactment of this section." (Nov. 9, 1978) As a result, 66 percent of vehicles classified as non-passenger automobiles get less than 22.5 mpg, and although they guzzle just as much gasoline as a car with the same meager fuel economy, they are not subject to any gas guzzler tax whatsoever.

## Closing the Loophole

It is difficult to determine with certainty just how much higher the overall fuel economy of the "non-passenger" automobile fleet would be if these vehicles were subject to a gas guzzler tax. While a gas guzzler tax on such vehicles would undoubtedly encourage manufacturers to increase the fuel economy of many of the less-efficient models, a meaningful prediction of the size of this improvement is beyond the scope of this report. Instead, we will focus here simply on the amount of tax that would be due if current "non-passenger" automobiles were subject to a gas guzzler tax. It must be recognized that if such a tax were imposed, actual revenues would likely be lower than the values presented below, since it would be much more cost-effective for manufacturers to increase the fuel economy of vehicles by adding technology rather than pay gas guzzler taxes. Below we present one possible method for developing a fair gas guzzler tax on "non-passenger" automobiles and we discuss possible alternatives that might be required if some of the other fuel economy loopholes are fixed.

### A Gas Guzzler Tax for Non-passenger Automobiles

One reasonable way to calculate a gas guzzler tax for "non-passenger" automobiles is to establish a schedule based on the amount by which the vehicle's fuel consumption exceeds that of a vehicle meeting the applicable CAFE standard. Such a tax scheme would be applied to non-passenger automobiles, while the existing scheme (Table 19) would continue to be applied to cars. For MY2003, the CAFE standard for non-passenger automobiles was 20.7 mpg. A vehicle with a CAFE test fuel economy of 20.7 mpg will consume 9,058 gallons of gasoline over a 150,000-mile lifetime. Therefore, a non-passenger automobile that consumes more than 10,600 gallons over its lifetime (i.e. a CAFE test fuel economy of 17.7 mpg or less) would be considered a gas guzzler according to the definition established above. Using the same relationship between lifetime excess fuel consumption and the associated tax currently in use for cars (Figure 8), a tax rate schedule for non-passenger automobiles can be developed (Table 21).

If the tax rates in Table 21 were applied to the fleet of "non-passenger" vehicles sold in MY2003, the tax amounts shown in Table 22 would have been due. The majority of the tax, more than 60 percent, would have been due to very large or luxury SUVs. In the case of GM, 73 percent of their gas guzzler tax would have been due to sales of the Suburban, Tahoe, Yukon, and Cadillac Escalade. In Ford's case, 89 percent of the tax would be due to the Expedition, Lincoln Navigator, and Land Rover models. Toyota's tax would be due to sales of the Land Cruiser and Lexus LX-470 SUVs, and BMW's to the X5 SUV.

DaimlerChrysler is an interesting case, as the only manufacturer whose gas guzzler tax would be primarily due to pickup truck sales. While Ford and GM both sell substantial numbers of large and luxurious SUVs, DaimlerChrysler does not. However, DaimlerChrysler's pickup trucks, notably the Dodge Ram, are woefully inefficient. GM's and Ford's pickups are somewhat better, and so would not be subject to a gas guzzler tax. As such, the gas guzzler tax would not be a tax on pickups, but rather a tax on only the most inefficient pickups. The tax would be expected to serve as an incentive to DaimlerChrysler to increase the fuel economy of the Dodge Ram to a more reasonable level.

**Table 21:** Proposed Gas Guzzler Tax Rates for Vehicles Classified as Non-passenger Automobiles

| Unadjusted 55/45 Fuel Economy (MPG) | Excess Gasoline Consumption[26,27] | Gas Guzzler Tax |
|---|---|---|
| > 17.5 | < 1,656 | $ - |
| 16.5-17.5 | 1971 | $ 1,100 |
| 15.5-16.5 | 2661 | $ 1,800 |
| 14.5-15.5 | 3442 | $ 2,400 |
| 13.5-14.5 | 4335 | $ 3,200 |
| 12.5-13.5 | 5365 | $ 4,200 |
| < 12.5 | 6567 | $ 5,300 |

**Table 22:** Gas Guzzler Taxes Applied to MY2003 Non-passenger Automobiles

| Manufacturer | Pickups | SUVs | Vans | Total |
|---|---|---|---|---|
| BMW | | $ 1,650,000 | | $ 1,650,000 |
| DaimlerChrysler | $ 223,598,400 | $ 31,212,300 | $ 4,894,200 | $ 259,704,900 |
| Ford | $ 28,490,400 | $ 275,990,400 | $ 6,023,600 | $ 310,504,400 |
| GM | $ 72,403,000 | $ 213,308,700 | $ 7,960,600 | $ 293,672,300 |
| Toyota | $ - | $ 16,738,700 | $ - | $ 16,738,700 |
| **Total** | $ 324,491,800 | $ 538,900,100 | $ 18,878,400 | $ 882,270,300 |

While the taxes in Table 22 may appear hefty, manufacturers would most likely find it far more cost-effective to add technology to vehicles and avoid the gas guzzler taxes, rather than pay the taxes. The fuel economy of SUVs, minivans, and pickups in the 15.5 - 17.5 mpg range, which would be otherwise subject to gas guzzler taxes ranging from $1,100 - $1,800, could be increased to 20 mpg or above at a cost to the purchaser of $750 or less per vehicle, thus avoiding the gas guzzler taxes completely. In the case of an SUV getting 15.5 mpg, a modest package of fuel-saving technologies, costing just $735, could increase fuel economy some 35% to 20.9 mpg. (Monahan and Friedman, 2004) In addition to avoiding the $1,800 gas guzzler tax, such an increase would save the owner $4,900 in gasoline costs over the life of the vehicle, while the initial $750 investment would be recovered in a little over one year of driving.[28]

## Alternative Implementation Schemes

There are additional ways in which a gas guzzler tax could be implemented for vehicles that are currently exempt from the tax. For example, a single uniform gas guzzler tax might be applied to both cars and trucks. According to NHTSA data, 7.8 million cars and 7.7 million light trucks were sold in MY2003. Based on these sales figures, the average CAFE standard for cars and trucks is 23.6 mpg.[29] A vehicle meeting a standard of 23.6 mpg on the CAFE test will consume 7,945 gallons of

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[26] Assumes a 150,000 mile vehicle life and on-road fuel economy 20% below CAFE test values.

[27] Fuel economy assumed to be equal to the midpoint of each range (e.g. 17.0 mpg for vehicles in the 16.5-17.5 mpg bin). Vehicles in the <12.5 mpg category are assumed to have a fuel economy of 12.0 mpg.

[28] Assumes 15,600 miles traveled in first year, declining at 4.5% per year over 12-year life. Real-world fuel economy is 20% below CAFE test fuel economy. Gas price = $2.00 per gallon. Discount rate = 5%.

[29] Harmonic average of 20.7 mpg and 27.5 mpg.

gasoline over a 150,000-mile lifetime.[23] Applying the definition of gas guzzler as any vehicle whose lifetime fuel consumption exceeds the standard by more than 1,500 gallons, a gas guzzler in this case would be any vehicle with a lifetime gasoline consumption of more than 9,500 gallons, which corresponds to a CAFE test fuel economy 19.7 mpg. A gas guzzler tax would be applied on any vehicle getting less than this threshold, regardless of whether it were a car or a truck. This would eliminate the inherent unfairness in charging gas guzzler taxes on a car that gets 22 mpg but not on an SUV that is used for the same purposes but gets only 18 mpg. At the same time, it would not impose gas guzzler taxes on all of the 66 percent of MY2003 light trucks that get less than 22.5 mpg.

A second approach would be to further break out the tax rates into a series of classes, rather than applying the same taxes to all non-passenger vehicles. This may be particularly worthy of consideration if NHTSA chooses to implement an attribute-based system of fuel economy standards in its current rulemaking process. In this case, there would be a different standard depending on certain size or weight characteristics of a vehicle. The gas guzzler tax for each class would depend on how much extra fuel a vehicle consumed compared to the standard for that class.

In creating any sort of alternative system, particularly a class-based system, care would need to be taken to prevent unintended consequences. For example, in a weight-based system, more lax gas guzzler standards for heavier vehicles could create a significant financial incentive for manufacturers to increase the weight of a vehicle in order for it to be held to a weaker standard and be subject to a lower tax. Conversely, care would need to be taken with a uniform tax system not to penalize small business owners, such as farmers and contractors, who need to purchase vehicles that may not always be particularly fuel efficient. It would be critically important to structure any gas guzzler tax in such a way as to encourage manufacturers to add sufficient technology to make their vehicles more efficient.

# THE NEXT LOOPHOLE?

This report shows that the current CAFE structure is rife with loopholes. Each of these has etched away at the potential oil savings that could be garnered through fuel economy standards. At present, NHTSA is considering alternatives for restructuring the light truck CAFE standard (40CFR533). Unfortunately, it seems that, rather than reducing the number of loopholes, NHTSA may be creating more by replacing the single non-passenger fuel economy standard with multiple standards based on vehicle attributes. Without a provision to keep automakers from pushing vehicles towards attributes with lower fuel economy standards, this will once again lead to increased oil dependence and higher gasoline bills because of leaks in the CAFE system.

## Attribute-based CAFE Standards

A concern that has been expressed with the current CAFE system is that it holds all manufacturers to the same fleet average standard regardless of the mix of vehicles that they sell. One proposal to change CAFE standards is to move to an attribute-based system. This concept was recently brought up by the National Academies in their 2002 CAFE report. In an attribute-based system, CAFE standards would be set relative to a given vehicle attribute, rather than a fleet average standard. For example, standards would be set for a given vehicle weight, interior volume, or size.

Attribute based standards can be structured in a variety of ways. At its most basic, an attribute-based standard provides for tighter standards on vehicles that already get higher fuel economy and weaker standards on vehicles that guzzle more gas. Standards can be set for several defined ranges of a given attribute (e.g. weight bins). Alternatively, the standard can be set as a continuous function of a given attribute (e.g. a weight-FE relationship). One approach would be to require a manufacturer's individual vehicles meet the standard in their weight classes without holding the manufacturer to meet an overall fleet standard. In the case of a binned standard, manufacturers could also be allowed to trade credits in one bin to offset debits in another in meeting a class-weighted fleet standard for each automaker.

The rationale behind an attribute-based system is that it will create a more level playing field for the automakers. By setting standards relative to a vehicle attribute, for example weight, a manufacturer who sells heavier vehicles will not be penalized relative to a manufacturer with a lighter vehicle fleet. But, despite these lofty goals, an attribute-based CAFE system could actually encourage automakers to sell heavier or larger vehicles that guzzle more gas. If this is the case, attribute-based CAFE will be the next looming loophole in federal fuel economy policy.

## Problems with Attribute-based Standards

There are three primary concerns with attribute-based standards. First, if they do not provide a single fleetwide standard or some other backstop mechanism, they do not guarantee any oil savings as they provide perverse incentives for manufacturers to build more vehicles in the least stringent categories. Second, attribute-based standards can limit cost-effective options that manufacturers have to improve fuel economy. Finally, attribute-based systems can be based on attributes that are not representative of consumer choice.

The primary concern with an attribute-based system is that it will provide an incentive for manufacturers to skew their fleets toward vehicles that have the most lenient fuel economy standard. For example, in a weight-based system, manufacturers would have an incentive to upweight vehicles so that they are held to a less stringent standard rather than to improve fuel economy. Therefore, absent a backstop in the regulation or a mechanism to automatically ratchet up the standard if oil savings goals are not met, fuel economy would erode as manufacturers skew their fleets to the lowest common denominator.

In addition, attribute-based standards can limit the cost-effective options available to manufacturers to increase fuel economy. For example, a weight-based standard removes the possibility of using weight reduction through lightweight, high strength materials as a means of improving fuel economy. Reducing the weight of a vehicle is a very cost-effective means of improving fuel economy, but could lead to a vehicle being held to a more stringent standard. Therefore, manufacturers will be less likely to pursue this option as a means of improving fuel economy.

Attribute based systems are intended to address manufacturer equity issues and, therefore, to protect consumer choice. But, attribute-based systems are not necessarily based on an attribute that consumers value. For example, consumers do not often go out in search of the heaviest vehicle – they seek out vehicle utility features such as cargo carrying capacity, towing capacity, or seating. These features may or may not be well-represented by the attribute chosen as the basis for a CAFE standard.

In the following sections we demonstrate the problems with two potential attribute-based standard systems. The first is a weight-based system and the second is a size-based system.

## Weight-based CAFE System

There are several drawbacks to a weight-based CAFE standard. First, it builds in an incentive to upweight vehicles so that they are held to less stringent standards. Recent work indicates that increased weight of the average vehicle means increased fatalities on U.S. highways (DRI, 2005). This is both because heavier vehicles carry more dangerous energy into a crash and because this would only exacerbate the existing incompatibility between trucks and cars on the road (Friedman, Nash, and Ditlow, 2003).

This risk of upweighting the vehicle fleet will also erode potential oil savings that can be gained through a CAFE standard. Even absent the incentive to upweight that a weight-based system would provide, the weight of the current vehicle fleet is steadily increasing. The incentives in a weight-based system would only accelerate this. For example, Figure 9, below, shows how the distribution of light truck sales by weight will change between 2002 and 2015 if weight trends over the past 20 years continue.

As Figure 9 shows, by 2015, the lightest light trucks will be virtually non-existent. And, light trucks over 4,900 pounds will account for nearly 40% of new light truck sales. Because there is a single fleet-averaged standard for these vehicles, light truck fuel economy has remained constant in spite of this weight creep. However, if a weight-based CAFE standard were created using the weight categories shown above, this weight increase would result in substantial loss in oil savings. Assuming that standards were set at the current average fuel economy in four weight classes that were put forth by NHTSA in their 2004 Advanced Notice of Proposed Rulemaking and that vehicle weights continue to increase at the historic rate of one percent per year, the average fuel economy of the light truck fleet would decrease by another 1.5 mpg, or just over 7% by 2015. This is shown in Table 23 below.

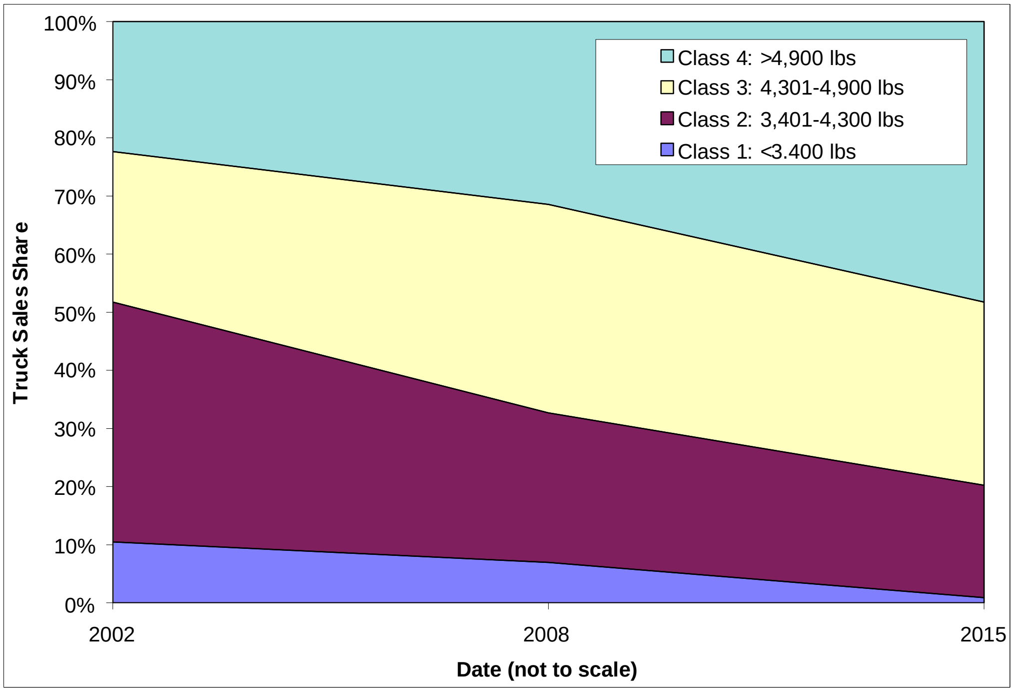


**Figure 9:** Projected Shift in Light Truck Sales Given Past Trends in Weight Increase

**Table 23**: Fuel Economy Loss Due to Upweighting

| | Weight category | | | | |
|---|---|---|---|---|---|
| | <3.400 lbs | 3,401-4,300 lbs | 4,301-4,900 lbs | >4,900 lbs | Total Fleet |
| 2002 FE (mpg) | 26.6 | 21.9 | 19.7 | 17.7 | 20.6 |
| 2002 market share | 10% | 41% | 26% | 22% | |
| | | | | | |
| 2015 FE (mpg) | 26.6 | 21.9 | 19.7 | 17.7 | 19.1 |
| 2015 market share | 1% | 19% | 32% | 48% | |
| | | | | | |
| Fuel economy loss as a result of current upweighting trend (mpg) | | | | | 1.5 |
| Percent reduction in light truck fuel economy as a result of upweighting | | | | | 7.3% |

The fuel economy loss shown in Table 23 results from upweighting of the vehicle fleet continuing at historic rates. This is a very conservative estimate of what would occur under a weight-based system where there is a strong incentive for manufacturers to upweight vehicles. As long as it is less expensive for manufacturers to add weight to a vehicle than to add technology to improve its fuel economy, this weight creep will be accelerated and the losses in fuel economy will be greater.

The current fleet average CAFE standard compensates for this potential loss by requiring all manufacturers to maintain a minimum fleet average fuel economy. The risks of a weight-based standard, therefore, could be mitigated by the addition of a backstop or ratcheting mechanism. A backstop would represent a minimum fleet average fuel economy that manufacturers would not be allowed to fall below. Alternatively, the backstop could represent an industry average target, which, if violated, would cause the standards for all classes to be ratcheted up. This latter method would still provide flexibility for automakers with different product lines. In our hypothetical example above, the fuel economy standard for each class would have to be increased by at least seven percent by 2015.

### Size-based CAFE System

An alternative to a weight-based standard is to use a metric related to vehicle size or footprint, such as vehicle length times width. A size-based metric has some advantages over a weight-based system. First, a size-based metric maintains the option to incorporate lightweight materials as a way to improve vehicle fuel economy. In addition, vehicle size is a more meaningful metric as it is more closely related to vehicle utility and consumer preferences.

Despite its advantages, a size-based system is open to the same problems as a weight-based system. Under current conditions, vehicles are getting larger and this trend will be further exacerbated by a size-based standard.

For example, Figure 10 below shows the size trend in new pickup truck sales from 1990 to 2004. Given data availability limitations, this analysis is based on size-class as defined in the EPA fuel economy trends report, which is based on vehicle wheel-base measurement (Heavenrich, 2005).[30]

As this figure shows, pickup truck sales are increasingly composed of large pickups while small pickups are becoming a smaller and smaller portion of sales. A similar trend is seen for SUVs, as shown in Figure 11.[31]

Given this trend, a size-based standard is likely to result in the same type of losses as a weight-based standard. Again, a backstop or automatic ratchet could alleviate this problem.

## Guarding Against New Loopholes

Attribute-based standards, as evidenced by both the weight-based and size-based examples, leave open tremendous potential for automakers to game the system. Each system creates incentive for manufacturers to tweak vehicles in order to be held to a less stringent standard – something this report has demonstrated manufacturers are already doing. Absent a backstop, an attribute-based CAFE standard is likely to create a whole new opportunity for manufacturers to game the system. And, we will once again have a CAFE system designed to be gamed and potential oil savings will go down the drain.

[30] Pickup size class definitions: small: wheelbase < 105”; mid-size: wheelbase = 105”-115”; large: wheelbase > 115”.

[31] Van sales have been dominated by mid-size vans since 1990, likely due to the popularity of minivans.

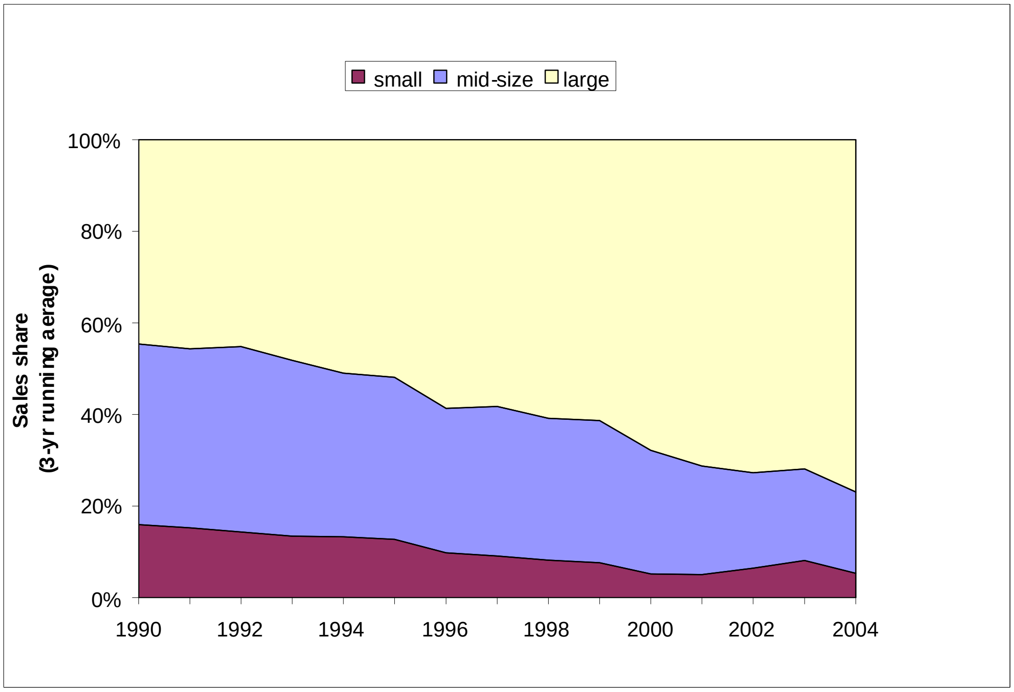


**Figure 10:** Trends in Pickup Truck Sales (Heavenrich, 2005)

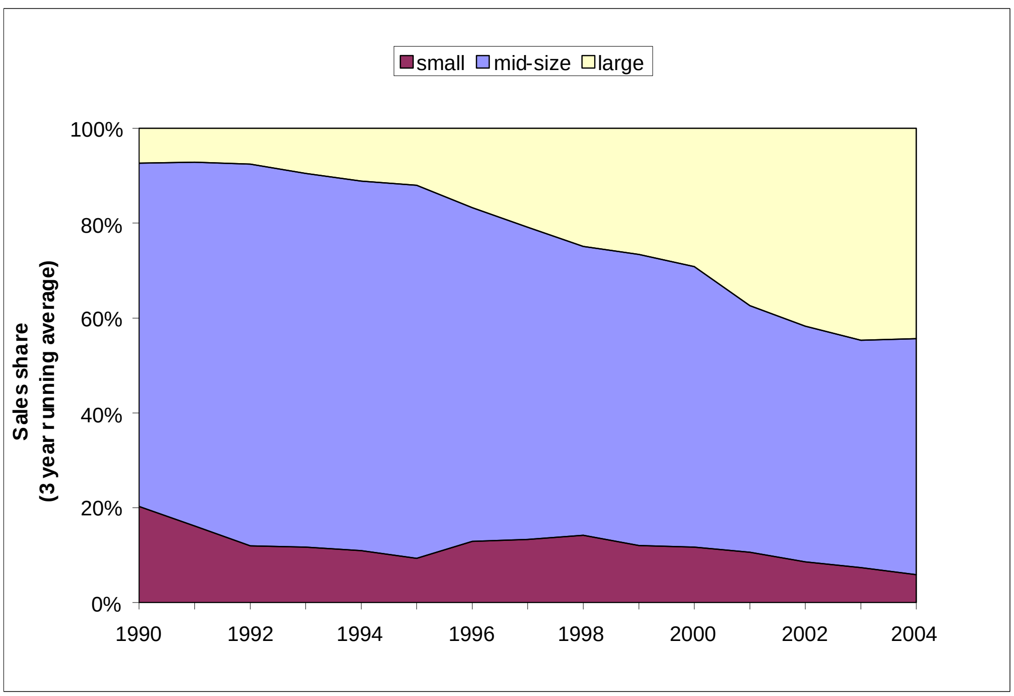


**Figure 11:** Trends in SUV Sales (Heavenrich, 2005)

# APPENDIX: VEHICLE LISTS

**Table A-1:** Models Classified as Sport Utility Vehicles (SUVs).

| | | |
|---|---|---|
| Acura MDX* | Honda Pilot | Lincoln Navigator* |
| BMW X5* | Hummer H1* | Mercedes G-Class* |
| Buick Rainier* | Hummer H2* | Mercedes M-Class* |
| Buick Rendezvous | Infiniti QX4* | Mercury Mountaineer |
| Cadillac Escalade* | Infiniti QX56* | Mitsubishi Montero* |
| Cadillac Escalade ESV* | Isuzu Ascender | Mitsubishi Montero Sport |
| Cadillac SRX* | Isuzu Axiom | Nissan Armada |
| Chevrolet S Blazer | Isuzu Rodeo | Nissan Pathfinder |
| Chevrolet Suburban | Isuzu Trooper | Nissan Pathfinder |
| Chevrolet Tahoe | Jeep Grand Cherokee | Nissan Xterra |
| Chevrolet Tracker | Jeep Liberty | Oldsmobile Bravada* |
| Chevrolet TrailBlazer | Jeep Wrangler | Porsche Cayenne* |
| Dodge Durango | Kia Sorento | Suzuki Grand Vitara |
| Ford Excursion | Kia Sportage | Suzuki Vitara |
| Ford Expedition | Land Rover Discovery* | Suzuki Vitara XL7 |
| Ford Explorer | Land Rover Freelander | Toyota 4Runner |
| GMC Envoy | Land Rover LR3* | Toyota Highlander |
| GMC S Jimmy | Land Rover Range Rover* | Toyota Land Cruiser* |
| GMC Yukon | Lexus GX 470* | Toyota Sequoia |
| GMC Yukon XL | Lexus LX 470* | Volkswagen Touareg* |
| Honda Passport | Lincoln Aviator* | Volvo XC90* |

* Indicates luxury models classified as non-passenger vehicles.

**Table A-2:** Models Classified as Crossover Utility Vehicles (CUVs).

| | | |
|---|---|---|
| Audi Allroad* | Honda Element | Mitsubishi Endeavor |
| BMW X3* | Hyundai Santa Fe | Mitsubishi Outlander |
| Chevrolet Equinox | Hyundai Tucson | Nissan Murano |
| Chrysler Pacifica* | Infiniti FX* | Pontiac Aztek |
| Chrysler PT Cruiser | Isuzu VehiCross* | Saturn Vue |
| Dodge Magnum | Lexus RX 300* | Subaru Forester |
| Ford Escape | Lexus RX 330* | Toyota RAV4 |
| Ford Freestyle | Mazda Tribute | Volvo Cross Country* |
| Honda CR-V | Mercury Mariner | |

* Indicates luxury models classified as non-passenger vehicles.

**Table A-3:** Truck Models Classified as Class 2b (Commercial Light Duty) Trucks.

| Make | Model | GVWR (lbs.) |
|---|---|---|
| Chevrolet | Avalanche 2500 | 8,600 |
| Chevrolet | Express  G2500 | 8,600 |
| Chevrolet | Express  G3500 | 9,600 |
| Chevrolet | Silverado 1500 Crew Cab | 8,600 |
| Chevrolet | Silverado 2500 | 9,200 |
| Chevrolet | Suburban 2500 | 8,600 |
| Dodge | Ram 2500 | 8,650 |
| Dodge | Ram Quad Cab 3500 | 9,900 |
| Dodge | Sprinter 2500 High-Ceiling Van | 9,990 |
| Ford | Econoline E250 Super Duty Van | 8,600 |
| Ford | E350 Super Duty | 9,500 |
| Ford | Excursion | 8,600 |
| Ford | F250 | 9,400 |
| GMC | Savana  G2500 | 8,600 |
| GMC | Savana  G3500 | 9,600 |
| GMC | Sierra  2500 | 9,200 |
| GMC | Yukon XL 2500 | 8,600 |
| Hummer | H2 | 8,600 |

*Some models may also be available in versions with GVWR outside the range 8,500 – 10,000 lbs

**Table A-4:** Model Year 2005 Flexible-Fuel Vehicles.

| Make | Model | CAFE Test Fuel Economy | Approximate Credited Fuel Economy |
|---|---|---|---|
| Chevrolet | Avalanche 2WD | 18.7 | 30.9 |
| Chevrolet | Avalanche 4WD | 18.3 | 30.2 |
| Chevrolet | Silverado 2WD | 20.5 | 33.9 |
| Chevrolet | Silverado 4WD | 19.1 | 31.5 |
| Chevrolet | Suburban 2WD | 19.5 | 32.2 |
| Chevrolet | Suburban 4WD | 18.3 | 30.2 |
| Chevrolet | Tahoe 2WD | 19.9 | 32.8 |
| Chevrolet | Tahoe 4WD | 19.5 | 32.2 |
| Chrysler | Sebring Convertible | 27.6 | 45.5 |
| Chrysler | Sebring Sedan | 27.6 | 45.5 |
| Chrysler | Voyager/Town & Country 2WD | 24.8 | 41.0 |
| Dodge | Caravan 2WD | 25.6 | 42.3 |
| Dodge | Ram 2WD | 15.9 | 26.3 |
| Dodge | Ram 4WD | 15.9 | 26.3 |
| Dodge | Stratus Sedan | 27.6 | 45.5 |
| Ford | Explorer 2WD | 19.5 | 32.1 |
| Ford | Explorer 4WD | 19.1 | 31.5 |
| Ford | Explorer Sport Trac 2WD | 19.9 | 32.8 |
| Ford | Explorer Sport Trac 4WD | 19.0 | 31.4 |
| Ford | Taurus | 26.5 | 43.7 |
| Ford | Taurus Wagon | 25.2 | 41.6 |
| GMC | Sierra 2WD | 20.5 | 33.9 |
| GMC | Sierra 4WD | 19.1 | 31.5 |
| GMC | Yukon 2WD | 19.9 | 32.8 |
| GMC | Yukon 4WD | 19.5 | 32.2 |
| GMC | Yukon XL 2WD | 19.5 | 32.2 |
| GMC | Yukon XL 4WD | 18.3 | 30.2 |
| Mercedes Benz | C240 | 18.8 | 31.0 |
| Mercedes Benz | C240 Wagon | 18.8 | 31.0 |
| Mercedes Benz | C320 | 18.8 | 31.1 |
| Mercedes Benz | C320 Sports Couple | 18.1 | 29.9 |
| Mercury | Mountaineer 2WD | 19.5 | 32.1 |
| Mercury | Mountaineer 4WD | 18.5 | 30.4 |
| Mercury | Sable | 26.5 | 43.7 |
| Mercury | Sable Wagon | 25.2 | 41.6 |
| Nissan | Titan 2WD | 18.4 | 30.3 |
| Nissan | Titan 4WD | 17.8 | 29.4 |

**Table A-5:** Model Year 2005 Vehicles Eligible for Preferential Tax Code Treatment.

| Make | Model | Gross Vehicle Weight (lbs) | Luxury? |
|---|---|---|---|
| BMW | X5 | 6,008 | X |
| Cadillac | Escalade | 6,800 | X |
| Cadillac | Escalade ESV | 7,200 | X |
| Cadillac | Escalade EXT | 7,000 | X |
| Cadillac | SRX | 6,008 | X |
| Chevrolet | Astro Wagon | 6,100 | |
| Chevrolet | Avalanche | 6,800 | |
| Chevrolet | Express Cargo Van & Wagon | 6,200 | |
| Chevrolet | Silverado | 6,100 | |
| Chevrolet | SSR | 6,050 | |
| Chevrolet | Suburban | 7,000 | |
| Chevrolet | Tahoe | 6,500 | |
| Chevrolet | TrailBlazer EXT | 6,200 | |
| Dodge | Dakota | 6,010 | |
| Dodge | Durango | 6,400 | |
| Dodge | Ram | 6,350 | |
| Dodge | Sprinter Van | 8,550 | |
| Ford | Econoline Van & Wagon | 7,000 | |
| Ford | Excursion | 8,600 | |
| Ford | Expedition | 6,900 | |
| Ford | F-series | 6,500 | |
| GMC | Envoy Denali | 6,200 | |
| GMC | Envoy XL | 6,200 | |
| GMC | Envoy XUV | 6,200 | |
| GMC | Safari Wagon | 6,100 | |
| GMC | Savana Van & Wagon | 7,200 | |
| GMC | Sierra | 6,100 | |
| GMC | Yukon | 6,500 | |
| GMC | Yukon XL | 7,000 | |
| Hummer | H1 | 10,300 | X |
| Hummer | H2 | 8,600 | X |
| Infiniti | QX56 | 6,800 | X |
| Isuzu | Ascender 7 | 6,200 | |
| Jeep | Grand Cherokee | 6,100 | |
| Land Rover | LR3 | 7,121 | X |
| Land Rover | Range Rover | 6,724 | X |
| Lexus | GX 470 | 6,200 | X |
| Lexus | LX 470 | 6,860 | X |
| Lincoln | Aviator | 6,110 | X |
| Lincoln | Navigator | 7,225 | X |
| Mercedes-Benz | G-Class | 6,834 | X |
| Mercedes-Benz | M-Class | 6,283 | X |
| Mitsubishi | Montero | 6,085 | X |
| Nissan | Armada | 6,800 | |
| Nissan | Titan | 6,422 | |

*Certain models may also be available in versions with GVWR < 6,000 lbs.

**Table A-5:** Model Year 2005 Vehicles Eligible for Preferential Tax Code Treatment (continued)

| Make | Model | Gross Vehicle Weight (lbs) | Luxury? |
|---|---|---|---|
| Porsche | Cayenne | 6,493 | X |
| Saab | 9-7X | 6,001 | X |
| Toyota | 4Runner | 6,005 | |
| Toyota | Land Cruiser | 6,680 | X |
| Toyota | Sequoia | 6,600 | |
| Toyota | Tacoma | 7,500 | |
| Toyota | Tundra | 6,010 | |
| Volkswagen | Touareg | 6,490 | X |
| Volvo | XC 90 | 6,005 | X |

*Certain models may also be available in versions with GVWR < 6,000 lbs.