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# fuel economy guide

# 2009

- ▶ MPG and Fuel Cost Estimates
- ▶ Driving Tips To Save Fuel



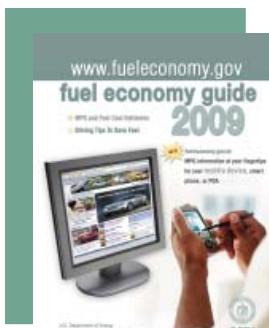
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U.S. Department of Energy  
Office of Energy Efficiency and Renewable Energy  
U.S. Environmental Protection Agency

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# USING THE FUEL ECONOMY GUIDE

The U.S. Environmental Protection Agency (EPA) and U.S. Department of Energy (DOE) produce the *Fuel Economy Guide* to help car buyers choose the most fuel-efficient vehicle that meets their needs. The Guide is published in print and on the Web at [www.fueleconomy.gov](http://www.fueleconomy.gov). For additional print copies, please call the EERE Information Center at 1-877-337-3463 or mail your request to EERE Information Center, 20440 Century Boulevard, Suite 150, Germantown, MD 20874.

## Fuel Economy Estimates

Each vehicle in this Guide has two fuel economy estimates:

- ▶ A city estimate that represents urban driving, in which a vehicle is started in the morning (after being parked all night) and driven in stop-and-go traffic
- ▶ A highway estimate that represents a mixture of rural and interstate highway driving in a warmed-up vehicle, typical of longer trips in free-flowing traffic

These fuel economy estimates are based on laboratory testing. All vehicles are tested in the same manner to allow for fair

comparisons. For answers to frequently asked questions about fuel economy estimates, visit [www.fueleconomy.gov](http://www.fueleconomy.gov).

## Annual Fuel Cost Estimates

This Guide provides fuel cost estimates for each vehicle. The estimates are based on the assumptions that you travel 15,000 miles per year (55% under city driving conditions and 45% under highway conditions) and that fuel costs \$4.10/gallon for regular unleaded gasoline and \$4.30/gallon for premium. Cost-per-gallon assumptions for vehicles that use other fuel types are discussed at the beginning of those vehicle sections. The fuel costs were determined in advance to allow time for printing fuel economy labels and the Guide and may not reflect current fuel prices.

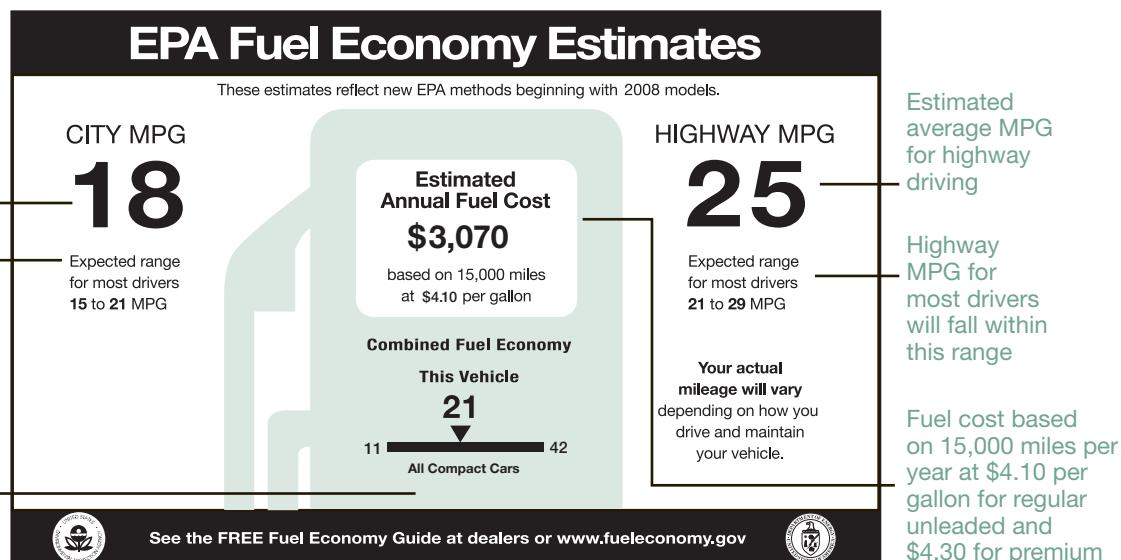
Visit [www.fueleconomy.gov](http://www.fueleconomy.gov) to personalize fuel costs based on current fuel prices and your driving habits.

## Your Fuel Economy Will Vary

Even though EPA recently improved its methods for estimating fuel economy, your vehicle's fuel economy will almost certainly vary from EPA's estimate. Fuel economy is not a fixed number; it varies

## Sample Fuel Economy Label

(Attached to New Vehicle Window)



Check the fuel economy label on the vehicle at the dealer showroom for its specific fuel economy (MPG) ratings. The ratings may vary slightly from the values in this guide because of engine and fuel system differences not listed here.

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## VEHICLE CLASSES USED IN THIS GUIDE

CARS		TRUCKS	
CLASS	Passenger and Cargo Volume (cu. ft.)	CLASS	Gross Vehicle Weight Rating* (pounds)
<b>TWO-SEATER CARS</b>		<b>PICKUP TRUCKS</b>	
<b>SEDANS</b>		Small	Under 6,000
Minicompact	Under 85	Standard	6,000 to 8,500
Subcompact	85 to 99	<b>VANS</b>	Under 8,500
Compact	100 to 109	Passenger	
Midsize	110 to 119	Cargo	
Large	120 or more	<b>MINIVANS</b>	Under 8,500
<b>STATION WAGONS</b>		<b>SPORT UTILITY VEHICLES</b>	Under 8,500
Small	Under 130	<b>SPECIAL PURPOSE VEHICLES</b>	Under 8,500
Midsize	130 to 159		
Large	160 or more		

\*Gross Vehicle Weight Rating = vehicle weight plus carrying capacity.

## TAX INCENTIVES AND DISINCENTIVES

### Tax Credits and Deductions

If you purchase a qualifying hybrid, diesel, or dedicated alternative fuel vehicle (AFV) in 2008–09, you may be eligible for a federal income tax credit of up to \$3,400 for hybrids and diesels or \$4,000 for AFVs—compressed natural gas (CNG) vehicles are the only AFVs commercially available as of publication of the Guide. The credit amount varies from vehicle to vehicle, and the hybrid and diesel credit will be gradually phased out based on manufacturer sales. Flexible fuel vehicles (FFVs) are not eligible for the alternative fuel credit.

Visit [www.fueleconomy.gov](http://www.fueleconomy.gov) for more information on qualifying models, credit amounts, and phase-out dates.

### Gas Guzzler Tax

The Energy Tax Act of 1978 requires auto companies to pay a gas guzzler tax on the sale of cars with exceptionally low fuel economy. Such vehicles are identified in the Guide by the word “Tax” in the “Notes” column. In the dealer showroom, the words “Gas Guzzler” and the tax amount are listed on the vehicle’s fuel economy label. The tax does not apply to light trucks.

## WHY CONSIDER FUEL ECONOMY?

### Save Money

You could save \$300–\$2,000 in fuel costs each year by choosing the most fuel-efficient vehicle in a particular class. This can add up to thousands of dollars over

a vehicle’s lifetime. Fuel-efficient models come in all shapes and sizes, so you need not sacrifice utility or size.

Each vehicle listing in the *Fuel Economy Guide* provides an estimated annual fuel cost (see page i). The online guide at [www.fueleconomy.gov](http://www.fueleconomy.gov) features an annual fuel cost calculator that allows you to insert your local gasoline prices and typical driving conditions (percentage of city and highway driving) to obtain the most accurate fuel cost information for your vehicle.

### Strengthen National Energy Security

Buying a more fuel-efficient vehicle can help strengthen our national energy security by reducing our dependence on foreign oil. More than half of the oil used to produce the gasoline you put in your tank is imported. The United States uses more than 20 million barrels of oil per day, two-thirds of which is used for transportation. Petroleum imports cost us about \$5.7 billion a week—that’s money that could be used to fuel our own economy.

### Protect the Environment

Burning fossil fuels such as gasoline and diesel adds greenhouse gases, mostly carbon dioxide (CO<sub>2</sub>), to the Earth’s atmosphere. Large-scale increases in greenhouse gases in the Earth’s atmosphere can lead to global climate change.

Vehicles with lower fuel economy burn more fuel, creating more CO<sub>2</sub>. Your vehicle creates about 20 lbs. of CO<sub>2</sub> (170 cu. ft.) per gallon of gasoline it consumes. Therefore, you can reduce your contribution to global climate change by choosing a vehicle with higher fuel economy.

**By choosing a vehicle that achieves 25 miles per gallon rather than 20, you can prevent the release of about 17 tons (260,000 cu. ft.) of greenhouse gases over the lifetime of your vehicle.**

## FUELING OPTIONS

### Ethanol Blends – E85 and E10

Ethanol is an alcohol fuel made by fermenting and distilling starch crops, such as corn. It may also be made from “cellulosic biomass” such as trees and grasses in the near future. The use of ethanol can reduce U.S. dependence on foreign oil and reduce greenhouse gases.

E10 or “gasohol” is a blend of 10% ethanol and 90% gasoline sold in many parts of the country. All auto manufacturers approve the use of blends of 10% ethanol or less in their gasoline vehicles.

E85, a blend of 85% ethanol and 15% gasoline, can be used in FFVs, which are specially designed to run on gasoline, E85, or any mixture of the two. FFVs are offered by several vehicle manufacturers. To determine if your vehicle is an FFV, check the inside of your car’s fuel filler door for an identification sticker or consult your owner’s manual. More than 1,600 filling stations in the United States currently sell E85. Visit [http://www.eere.energy.gov/afdc/stations/find\\_station.php](http://www.eere.energy.gov/afdc/stations/find_station.php) for locations near you.

There is no noticeable difference in vehicle performance when low-level ethanol blends are used. However, FFVs operating on E85 usually experience a 20–30% drop in MPG due to ethanol’s lower energy content.

## Biodiesel

Biodiesel is a commercially available diesel-replacement fuel manufactured from vegetable oils or animal fats. It produces fewer greenhouse gases than petroleum diesel and, since it is made domestically from renewable resources, increases national energy security.

Biodiesel can be blended at any ratio with petroleum diesel, but it is most commonly sold at ratios of 2%, 5%, or 20%, denoted as B2, B5, and B20. The vehicle manufacturers that produce the diesels listed in the *Fuel Economy Guide* currently approve the use of biodiesel

blends of up to 5% (B5) in their vehicles but state that vehicle damage caused by using higher blends will not be covered under the manufacturer's warranty. Check your owner's manual or with your vehicle manufacturer to determine the right blend for your vehicle.

Use of biodiesel blends may reduce fuel economy slightly, less than 1% for B5.

**Purchase commercial-grade biodiesel from a reputable dealer. Never refuel with clean or used grease or vegetable oil that has not been converted to biodiesel. It will damage your engine.**

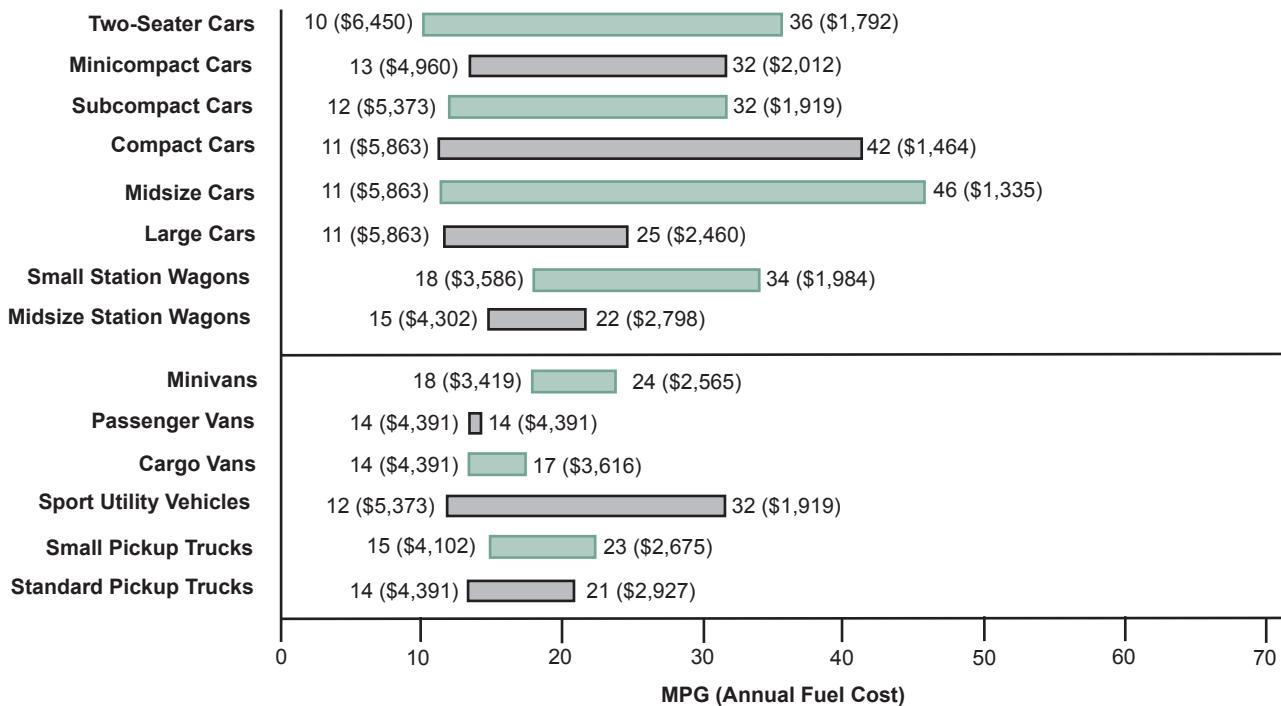
Visit [http://www.eere.energy.gov/afdc/stations/find\\_station.php](http://www.eere.energy.gov/afdc/stations/find_station.php) for locations of service stations selling biodiesel.

## Premium- vs. Regular-Grade Gasoline

The recommended gasoline for most cars is regular unleaded. Using a higher-octane gasoline than recommended by the owner's manual does not improve performance or fuel efficiency; it only costs more money. Check your owner's manual to determine the lowest grade of fuel you can use.

## FUEL ECONOMY AND ANNUAL FUEL COST RANGES FOR VEHICLE CLASSES

The graph below provides the fuel economy and annual fuel cost ranges for the vehicles in each class so you can see where a given vehicle's fuel economy and cost fall within its class. Combined city and highway MPG estimates are used; these assume you will drive 55% in the city and 45% on the highway. Annual fuel costs assume you travel 15,000 miles each year and fuel costs \$4.10/gallon for regular unleaded gasoline and \$4.30/gallon for premium. Visit [www.fueleconomy.gov](http://www.fueleconomy.gov) to calculate annual fuel cost for a specific vehicle based on your own driving conditions and per-gallon fuel costs.





































## ELECTRIC VEHICLES

This section contains the driving range and fuel consumption for fully electric-powered passenger vehicles. Fuel consumption for electric vehicles is measured in kilowatt-hours per 100 miles, instead of miles per gallon. **A lower number of kilowatt-hours/100 miles means a more efficient vehicle.**

The driving range represents the maximum distance in miles the vehicle can travel under optimum conditions before the battery needs recharging. The actual energy consumption and range of the vehicle will vary depending on driving conditions, battery condition, and accessory usage, and is strongly affected by outside temperature and the use of heating and air conditioning. Fuel costs will vary considerably because of the differences in electricity costs across the United States.

You can calculate the fuel cost (in dollars) of driving your electric vehicle for a year by multiplying the energy consumption for the vehicle (in kilowatt-hours/100 miles) by your local electricity rate (in dollars per kilowatt-hour), multiplying that by the annual miles the vehicle will be driven, and dividing by 100.

Battery	Motor	City/Hwy	Fuel	Range
<b>TWO SEATER</b>				
TESLA Roadster	Lithium-Ion.....185kW AC Induction	TBD	Electricity Only	TBD

## FUEL CELL VEHICLES

Fuel cell vehicles (FCVs) may not reach the mass market for a decade or more, but a limited number will be available for sale or lease in 2008-09 to demonstration fleets in areas with a readily accessible hydrogen supply. FCVs are propelled by electric motors powered by fuel cells, which produce electricity from the chemical energy of hydrogen. Fuel cell technology is more efficient than internal combustion engines and environmentally cleaner—the only by-product of a hydrogen fuel cell is water. However, many challenges must be overcome before FCVs are mass-marketed and sold at local dealerships. For more information about FCVs, visit [www.fueleconomy.gov](http://www.fueleconomy.gov) and the Hydrogen, Fuel Cells and Infrastructure Technologies Program Web site at [www.eere.energy.gov/hydrogenandfuelcells/](http://www.eere.energy.gov/hydrogenandfuelcells/).

Type of Fuel Cell	Motor Type & Power	Energy Storage Device & Rating	Fuel Type	Miles Per Kilogram City/Hwy	Driving Range (miles)
<b>MIDSIZE CARS</b>					
HONDA FCX Clarity	PEM .....DC Brushless.....288V Lithium-Ion .....100 kW	Hydrogen	TBD	TBD	TBD
<b>SPORT UTILITY VEHICLE 2WD</b>					
TOYOTA FCHV-adv	PEM .....AC Induction.....90 kW	274V Ni-MH	Hydrogen	TBD	TBD

The Honda FCX Clarity will be leased to private individuals in the Southern California area only.

The Toyota FCHV-adv availability was unknown at publication time, see [www.fueleconomy.gov](http://www.fueleconomy.gov) for up-to-date information.





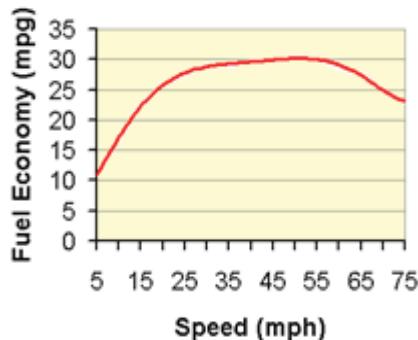




## IMPROVE YOUR FUEL ECONOMY

### Drive More Efficiently

- Aggressive driving (speeding and rapid acceleration and braking) can lower your gas mileage by as much as 33% at highway speeds and 5% around town.
- Observe the speed limit—each 5 MPH you drive over 60 MPH can reduce your fuel economy by 7-8%.



- Avoid idling—idling gets 0 miles per gallon!

- Using cruise control on the highway helps you maintain a constant speed and, in most cases, will save gas.

### Keep Your Car in Shape

- Fixing a car that is noticeably out of tune can improve your gas mileage by about 4%.
- Keeping tires inflated to the recommended pressure and using the recommended grade of motor oil can improve fuel economy by up to 5%.

The manufacturer's recommended tire pressure can be found on the tire information placard and/or vehicle certification label located on the vehicle door edge, doorpost, glove-box door, or inside the trunk lid.
- Keep your tires aligned and balanced.
- Replacing a clogged air filter can improve gas mileage.

### Plan and Combine Trips

- A warmed-up engine is more fuel-efficient than a cold one. Many short

trips taken from a cold start can use twice as much fuel as one multipurpose trip covering the same distance.

**Note:** Letting your car idle to warm up doesn't help your fuel economy; it actually uses more fuel and creates more pollution.

### Other Solutions

- Avoid carrying unneeded items. An extra 100 lbs. can decrease fuel economy by 1-2%.
- A roof rack or carrier provides additional cargo space and may allow you to meet your needs with a smaller car. However, a loaded roof rack can decrease your fuel economy by 5%.

Reduce aerodynamic drag and improve your fuel economy by placing items inside the trunk whenever possible.

For more mileage tips and information about gasoline pricing, visit [www.fueleconomy.gov](http://www.fueleconomy.gov).