

The Automobile Club's Green Car Guide



AUTOMOTIVE RESEARCH CENTER

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2009 Green Car Guide

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The Automobile Club of Southern California's 2009 Guide to Green Cars

What is Green?

Prior to this decade, if you asked motorists what they meant by “green” cars, mainly they would say low-polluting cars that help reduce smog. If you ask the same question today, most people would talk about greenhouse gases or reducing a vehicle’s “carbon footprint.” Who’s right? Actually, both are. Personal transportation vehicles (cars, light trucks, SUVs, and vans) play roles in both smog formation and greenhouse gas production. However, great improvements have been made and many more options are and will be available.

The Automobile Club of Southern California’s Automotive Research Center (ARC) set out to produce this Green Car Guide to inform motorists about:

- The automobile’s role in air pollution
- The automobile’s role in global warming
- Current and future technologies that address these problems
- Conventional and alternative fuels
- Real-world evaluations of available “green” vehicles, including hybrids, low-polluting conventional vehicles (PZEVs), modern clean diesels, natural gas–fueled vehicles, and non-hybrid vehicles with category-leading fuel economy (or, put another way, lower greenhouse-gas emissions).

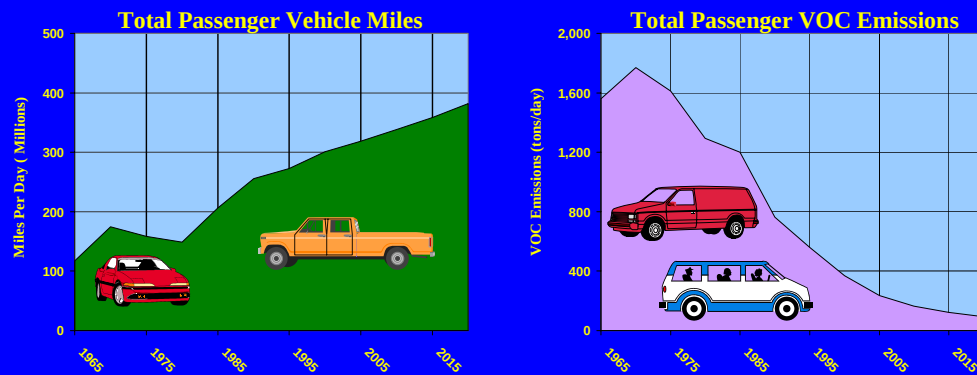
Automobile’s Role in Air Pollution

In the days before emission controls on cars (the 1960s), cars were one of the main sources of the gases that form smog. That has significantly changed. In the 1960s, private passenger vehicles (cars, pickups, and vans) accounted for about 50% of the emissions that led to smog, and at that time there was much more smog. Smog alerts in Southern California (the area of the U.S. with some of the worst air quality) numbered about 100 per year.

Today, private passenger vehicles account for less than 25% of the emissions that lead to smog and air quality is significantly improved. Smog alerts are rare occurrences; there has been only one in Southern California in the last 10 years. This has happened despite the increased number of cars on the road and the increase in distances driven (a more than 200% increase in vehicle miles traveled). New cars emit on average about 97% fewer emissions than those from the 1960s. For example, a new car in 1965 emitted 228 pounds of volatile organic compounds (VOC) per year. A new car today emits less than 2 pounds of VOC per year (both based on 15,000 miles per year).

South Coast Air Basin

PASSENGER VEHICLES MILES TRAVELED vs. PASSENGER VEHICLES VOC EMISSIONS



How has this happened? Technological improvements to vehicles and fuels have led to the development of effective and durable emission-control systems. Components such as catalytic converters, electronic fuel injection, variable valve timing, and on-board diagnostic systems have all played a role in the improvements. Since the late 1980s, the California Air Resources Board (CARB) and U.S. Environmental Protection Agency (EPA) have issued regulations requiring low- and zero-emission vehicles, which have been divided into various categories (with lots of acronyms). In order of increasingly reduced emissions, California vehicles can be certified as:

- Tier 1
- Transitional Low Emission Vehicle (TLEV)
- Low Emission Vehicle (LEV)
- Ultra Low Emission Vehicle (ULEV)
- Super Ultra Low Emission Vehicle (SULEV). This standard is set to approximate the emissions in Southern California by generating electricity to charge an electric vehicle.
- Partial Zero Emission Vehicle (PZEV). This standard has the same tailpipe requirements as SULEV, but requires zero evaporative emissions from the fuel system.
- Zero Emission Vehicle (ZEV)

Principal pollutants from private passenger vehicles are:

- **Volatile Organic Compounds (VOC)**, comprised primarily of unburned fuel and evaporation of hydrocarbons. When VOC combines with NO_x in sunlight, ozone is created. Ozone serves as a protective layer in the Earth's stratosphere, but is unhealthy to breathe in our surface atmosphere.
- **Oxides of Nitrogen (NO_x)**, caused from superheating nitrogen and oxygen, which can result from a variety of causes including fuel combustion.
- **Carbon Monoxide (CO)**, caused from the incomplete combustion of carbon based fuel (oil, natural gas, coal, wood, etc.).
- **Carbon Dioxide (CO₂)** is one of the two main constituents in the exhaust of vehicles using carbon-based fuel (gasoline, diesel, natural gas, and alcohols). If perfect combustion were to occur, then the only constituents in the exhaust would be CO₂ and water vapor. Unfortunately, CO₂ has been shown to be a potent greenhouse gas, leading to global warming. Increased ground-level temperatures attributed to global warming also lead to increased low-level ozone. According to the CARB, passenger vehicles accounted for about 27% of California's CO₂ emissions in 2006.

Light-duty trucks

When emissions regulations were first implemented in the 1960s, most people drove cars. Trucks were work vehicles, and the term "sport utility vehicle" (SUV) didn't even exist. Since trucks were needed to haul heavy loads and early emission controls tended to rob power, trucks were regulated separately, with less-stringent emission standards.

Today, light-duty trucks (pickups, SUVs, and vans) account for about 50% of new-vehicle purchases, and the majority are used as passenger vehicles. And in terms of emission standards, since 2004 in California and 2007 elsewhere in the U.S., light-duty trucks are required to meet the same emission standards as passenger cars.

Fuel Economy and Greenhouse Gas Emissions

Fuel prices hit new highs recently (Summer 2008), and even though they've dropped considerably, they are expected to be even higher sometime in the future. You can track current fuel prices at www.fuelgaugereport.com. There are also concerns about energy security, the large amount of petroleum America imports, and ultimately about its short and long-term availability. These factors have led to increased pressure from EPA, CARB, and consumers on automakers to supply vehicles with improved fuel economy. At the same time, concerns about global climate change have led to California and federal regulations on so-called "greenhouse gas emissions" (largely carbon dioxide – CO₂). The majority of the carbon (99%) coming out of an engine is in the form of CO₂. This means that improvements in fuel economy result in reduced CO₂ emissions.

What is in this report?

To meet the extremely low emissions standards required of modern passenger vehicles, the automobile manufacturers had to employ advanced technologies. There are a wide variety of technologies in use. Gasoline/electric hybrids, natural gas-fueled engines, and advanced internal combustion engines (both gasoline and diesel) are the main categories in current production. The goals of this report include:

- To provide motorists with useful information about purchasing vehicles that meet their needs but produce fewer emissions and use less fuel.
- To identify and clarify the types of technologies in use.
- To improve awareness of the wide variety of existing low-emission technologies.

The ARC's engineers and technicians evaluated the vehicles in this report. A list of candidate vehicles was selected, based on a listing of emission certifications from CARB and fuel-economy ratings from EPA (www.fueleconomy.gov). The list was limited to any of the following criterion: vehicles that met PZEV emission standards, were hybrids, ran on diesel and met any of California's emission standards, ran on compressed natural gas, or had category-leading fuel economy. We tested 46 vehicles; most were from the 2009 model year with a few 2010s, and a few 2008s that were direct carryovers into the 2009 versions. By "carryover" we mean that the 2008 version has the same body, chassis, and powertrain as the 2009 version and will achieve identical results on all of our evaluations. The group of vehicles tested is representative of the "green" vehicles on the market in the fourth quarter of 2009, although we were not able to test the entire list of models available. Models not included in this guide generally were excluded because test vehicles were not available.

The ARC evaluated the following qualities: emissions, fuel economy, crashworthiness, braking, acceleration, handling, cargo-carrying capacity, ride quality, interior noise, ease of entry and exit, maneuverability, and roominess. Tests were performed at the ARC in Diamond Bar, California; the Auto Club Speedway in Fontana, California; and on Southern California roads. Testing procedures were based on those developed by the Society of Automotive Engineers (SAE), EPA, and the Auto Club. Most of the test vehicles were obtained from the public relations departments of the automobile manufacturers; several were rented.



AUTOMOTIVE RESEARCH CENTER
Diamond Bar, CA



Hybrid Vehicle Testing
Auto Club Speedway, Fontana, CA



Setting up test vehicle at
Auto Club Speedway, Fontana, CA

Scoring

After all testing was completed on the 46 vehicles; the scores for each of the test areas noted previously were ranked on a 0-to-10 point basis. The best-scoring vehicle received 10 points and the lowest received 0 points. The scores from all of the tests were then added to determine the overall score for a vehicle. The total points were divided by the “price as tested” to determine the “cost per point.”

Fuel economy ratings We used ratings published by the U.S. EPA to obtain the score in this guide. Miles per gallon accounts for 8 of the 10 possible points. If a vehicle uses regular fuel, it receives 2 more points (1 for mid-grade). We also list the high, low, and average on-the-road fuel economy obtained during our evaluation of the test vehicle.

The EPA develops its fuel-economy ratings by performing tests on a dynamometer (a treadmill-like device for cars). Up until model year 2007, the EPA used tests called the Federal Test Procedure (FTP for urban or “city” mpg) and the Highway Fuel Economy Test (HFET for “highway” mileage). These tests were developed in the early 1970s, when the speed limit was 55 miles per hour. In the 1980s, the EPA determined that the tests did not accurately predict the mpg motorists would get, so they adjusted the ratings downward 10% for city driving and 22% for highway driving. These adjusted numbers are what were listed on the window sticker for model years through 2007.



Emissions Testing on AVL 48” Dyno
AUTOMOTIVE RESEARCH CENTER

In the 1980s, the adjustments mentioned above provided mileage ratings that fairly accurately predicted on-road performance. Since then, however, cars and the way we drive them have changed. Freeway driving is often more congested, but when it is free-flowing, people typically drive faster than they did in earlier decades. They tend to accelerate more rapidly, and vehicles are generally larger and more aerodynamic. All these changes combined to make EPA’s fuel economy ratings optimistic. This problem was especially severe for hybrid vehicles, probably because hybrids achieve different fuel-economy ratings depending upon the battery’s initial state-of-charge.

Based in large part on efforts from the ARC and AAA, the EPA adopted new, more accurate methods for estimating mpg ratings. Three newer dynamometer tests had recently been developed to more accurately measure emissions under real-world driving conditions, but the EPA was not using the fuel economy measured as part of these tests. By incorporating the “US06” (higher speeds and more aggressive driving), “SC03” (high temperature with A/C on), and “Low-Temp CO” (start up at low temperature) tests with the FTP and HFET, a new method of estimating mpg was developed and implemented for 2008 and later model-year vehicles.

As you can see from our actual test mpg figures for individual cars, virtually all our mpg measurements fell between the EPA city and highway estimates. Our test procedures include at least one day of testing at the Auto Club Speedway (unusually aggressive driving), so it’s clear that most motorists should be able to achieve in-use mpg in the range EPA now predicts.

Compare Old and New EPA MPG Estimates

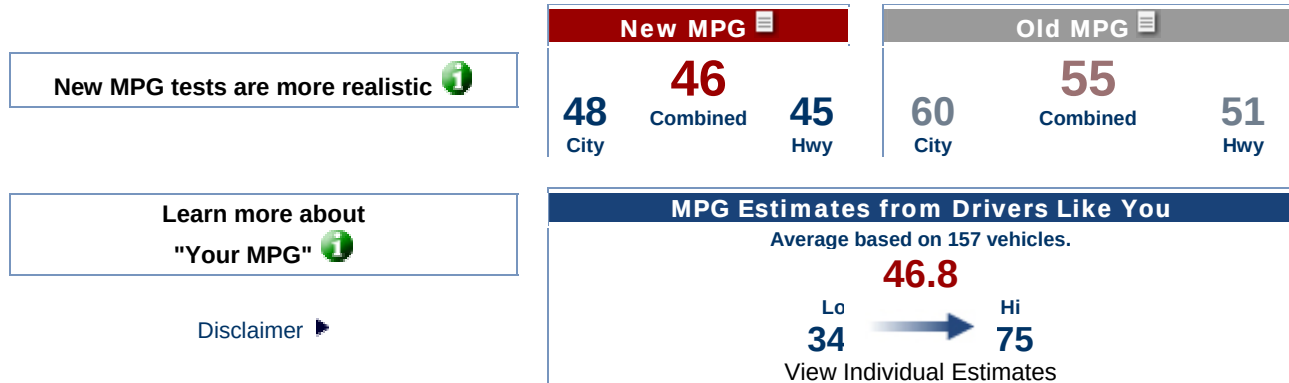
2007 Toyota Prius

Automatic (variable gear ratios)
4 Cylinders
1.5 Liters
Regular Gasoline

[Look up another car](#)



Hybrid Vehicle



*Additional Vehicle Characteristics: Front-Wheel Drive , HEV
Combined MPG estimates are based on 45% highway and 55% city driving*

Use the new EPA MPG estimates to compare to 2008 and later model year vehicles. The old EPA MPG estimates are listed on the window stickers of 2007 and earlier model year vehicles

Example from EPA's www.fueleconomy.gov

Technologies included

- **Hybrid.** A hybrid is a vehicle that uses more than one powertrain. There are many potential hybrid technologies, but all those currently in production are gas/electric hybrids, which combine a conventional gasoline engine with an electric motor/generator, a large battery pack, and a controller. Hybrids take advantage of the efficiencies of the two powertrains to increase the vehicle's overall fuel efficiency. The electric motors are very efficient in stop-and-go city driving, and the gasoline engine is more efficient when driving at higher speeds. Hybrids also are equipped with regenerative braking. When the vehicle is braking, the electric motor functions as a generator and converts the vehicle's kinetic energy into electricity to charge the batteries. None of the hybrids tested in this report need to be plugged in, although some manufacturers have plans to produce "plug-in hybrids" in the future. There are a number of prominent myths about hybrids. We will try to debunk some of them here:
 - **Myth 1 – You'll save money by buying a hybrid because of its improved fuel economy, even though the initial purchase price is greater.** In general, this is false. On average, the "hybrid premium"—the extra cost of buying a hybrid versus

the same model with a gasoline-powered powertrain—is about \$6,950 (the range is from \$2,715 to \$21,455). Depending on the vehicle brand, some of this extra cost may be offset by a federal tax credit, which is calculated according to the mile per gallon (mpg) improvement. But each manufacturer has a quota that limits how many cars it can sell before the tax credit is reduced and eventually eliminated. A listing of current tax credits can be found at www.fueleconomy.gov. The hybrid sales leaders, Toyota and Honda, have used up their quotas, so none of their vehicles qualify. Fuel-economy improvements for hybrids range from less than 1 mpg to over 12 mpg compared to conventional versions of the same car. When considering how many years it takes to recoup your initial investment (the “hybrid premium”), the average is nearly 26 years; most consumers don’t keep their cars anywhere near that long. Some models provide a better “return,” than others, specifically:

- Ford Escape Hybrid (3 years counting the tax credit, 7 without it)
- Toyota Highlander (7 years – no tax credit available)
- Toyota Camry (7 years – no tax credit available)

Other resources have obtained different results because they’ve assumed hybrids will have better resale values than traditional cars. This may be valid; however, consumers may loathe taking on the responsibility of replacing a battery pack (\$3,500 to \$5,000) when it wears out (likely after the 150,000 mile warranty expires).

Note: These calculations were performed based on estimates of 15,000 miles per year, \$3.78 per gallon for regular, and \$4.01 per gallon for premium. These are relatively “hybrid-friendly” fuel prices. As prices go up, hybrids begin to look more affordable; as gas prices go down, they look less so. Only vehicles available in both hybrid and conventional models were used for our calculations.

- o **Myth 2 – You have to plug hybrid vehicles in to charge them.** False. Currently available hybrids charge their own batteries when they’re running on their gasoline engine but not using full engine power, or through regenerative braking, which occurs when the vehicle is slowing down or stopping. However, a newer type of hybrid is being developed called a PHEV—a plug-in hybrid electric vehicle. This type of vehicle has batteries that can be recharged by connecting to an external electric power source. PHEVs offer the advantage of being able to operate on battery power alone for a significant portion of their driving range before they have to operate as a conventional hybrid vehicle, using the gasoline engine to power the vehicle and generate electricity to power the electric motor(s) and charge the batteries. PHEVs provide a longer driving range than purely electric vehicles, and, because they run solely on electricity more of the time, their overall fuel economy

is better than that of a conventional hybrid. In general, the electricity used to recharge a hybrid (or even a pure-electric vehicle) is significantly lower in cost compared to the cost of gasoline or diesel fuel. This is especially true for those utilities that provide discounts for off-peak nighttime charging.

- o **Myth 3 – Hybrids are all “econoboxes.”** False. Hybrids can range in size from the now-discontinued two-passenger Honda Insight to the Lexus LS 600h (a large luxury sedan), the Chevrolet Tahoe Hybrid (a full-sized SUV), or the Silverado full-size pickup hybrid. Performance can also be very impressive for these larger vehicles. Several hybrids offer more power than their gasoline counterparts when using both of their power plants—for example, the Lexus LS 600h and the Toyota Camry Hybrid (with an inline-4 gasoline engine).
- o **Myth 4 – You can drive a hybrid “solo” in the carpool (HOV) lane in California.** This is true for three high-mileage hybrids: the Honda Insight (the original 2-seater), the Honda Civic, and the Toyota Prius—but only if you have an HOV lane sticker. The California Department of Motor Vehicles originally issued 75,000 HOV lane stickers and later added 10,000 HOV lane stickers for hybrids meeting the requirements. However, all of the HOV lane stickers have now been issued. If you purchase a used hybrid with this sticker, it is still legal to drive solo in the HOV lane. But these stickers are only valid until January 1, 2011, at which time this access program expires.
- o **Myth 5 – Hybrid vehicle battery packs need to be replaced fairly often** – False. A hybrid vehicle’s battery pack will usually last at least 150,000 miles. Furthermore, battery pack prices have steadily declined. When Toyota first introduced the Prius in 2000, a replacement battery pack would have set you back about \$4,500; today, a replacement would be approximately \$3,000. Toyota expects to have recycled battery packs available at reduced prices when today’s Prius owners need replacements.

Toyota’s usual warranty covering hybrid-related components, including the battery pack, is eight years/100,000 miles for most states. In California and states adopting California emissions standards, those hybrids certified as Advanced Technology Partial Zero Emissions Vehicle (AT-PZEV), like the Prius, Honda Civic, and Nissan Altima are covered by a 15-year/150,000-mile hybrid-related component warranty and a 150,000 mile emissions warranty.

- **Natural gas engine.** We tested one vehicle (the Honda Civic GX) that had its internal combustion engine (ICE) converted to run on compressed natural gas. This vehicle is equipped with a high-pressure (3600-psi) fuel tank as well as a system of regulators and injectors to get the fuel into the engine. A common question related to natural gas

fueled vehicles is “where can I get fuel and can I go anywhere I want and expect fuel to be available?” The answer varies depending on where you are. In California, there is an extensive network of CNG fueling stations. You can find where they are (and for that matter any other alternative fuel) at www.cleancarmaps.com. In other states, though, obtaining CNG can be a problem. Honda offers a home refueling system that compresses the CNG piped into most homes for a “slow fill” that takes overnight. As long as you don’t go more than 115 miles from home, you will never run out of fuel or have to go to a filling station again.

- **Advanced-technology internal-combustion engine.** We tested a number of vehicles that met low-emission standards using traditional gasoline-fueled internal-combustion engines. Few people seem to be aware that a number of such vehicles, which meet PZEV standards, are available, some of them very popular mainstream models. They employ a variety of technologies to reduce emissions and fuel use. These include:
 - Reduced vehicle size and weight
 - Variable valve timing
 - Direct fuel injection (injecting fuel directly into the cylinder instead of the intake port)
 - Turbocharging
 - Increased number of transmission speeds (for both manual and automatic transmissions)
 - Continuously Variable Transmissions (CVT)
 - Disabling cylinders under low power demands
 - Improving the aerodynamic shape of the vehicle (reducing wind drag)
 - Reducing the rolling resistance of tires
 - Enabling the engine to shut off at a stop and automatically restart
- **Flex Fuel Vehicles.** The term “flex fuel” means that the vehicle is capable of running on gasoline and blends of gasoline and alcohol in ratios up to 85% alcohol. Initially the alcohol of choice was methanol, but more recently this has been supplanted by ethanol. E85 (85% ethanol and 15% unleaded gasoline) is available in many service stations (although most of them are concentrated in the Midwest). This fuel is quite scarce in other areas. For example, as of this writing (December 2009), only four stations offer E85 in Southern California.

Why flex fuel? Ethanol is domestically produced (currently from corn), and reduces the need to import as much petroleum. Ethanol burns cleanly and reduces greenhouse gas emissions from the vehicle. Unfortunately, recent studies have shown that ethanol production creates roughly as much extra greenhouse-gas emissions as it saves at the tailpipe. (Some studies show a net benefit from E85; others show a net detriment. It’s clear that we don’t really know the full effect, but either way the increase or decrease

in greenhouse gas emissions is very likely small.) Of the 46 vehicles tested for this report, only the Chevrolet HHR was a flex-fuel vehicle.

- **“Clean diesel.”** Diesel-fueled light-duty vehicles are extremely popular in Europe (where fuel prices are easily double those in the U.S.) because of their improved fuel efficiency, reduced CO₂ emissions, and durability. The market for these vehicles has been quite small in the U.S., with the exception of heavy-duty pickup trucks and SUVs. This is mainly because diesel vehicles have a reputation for being noisy, smelly, rough-running, and dirty. Additionally, the poor durability of 1970s passenger-car diesels from Detroit still looms in many potential buyers’ minds.

In California, no new passenger-car diesels have been available for sale until recently (2008). There’s a myth that diesels were banned in California, but that’s not true. The facts are: Diesels are held to the same emission standards that gasoline vehicles are held to, and until the advent of low-sulfur diesel fuel (which allows for the use of exhaust after-treatment, including catalytic converters and particulate traps), diesels couldn’t meet California’s stringent tailpipe-emission standards. A few models started to be certified for sale in California in the 2008 model year, and we tested vehicles from Mercedes-Benz, BMW, and Volkswagen. Even with low-sulfur diesel and exhaust after-treatment, these vehicles still can only meet California’s ULEV standards, meaning that they are among the highest-emitting new vehicles currently sold in California.

- **Hydrogen.** We didn’t test any hydrogen-fueled vehicles, but as test vehicles become available, we will add them. Hydrogen is the most abundant element in the universe, and when used to power a fuel cell, is the only currently known full-zero-emissions technology besides battery-electric vehicles. Hydrogen can also be used in internal-combustion engines with no carbonaceous emissions, but NO_x may still be emitted in small quantities.

Hydrogen is generally not available directly; rather, it must be produced. Today, the majority of it is produced from natural gas. Even though hydrogen use produces no greenhouse gases, its production from natural gas does result in some CO₂ emissions (but less than the emissions from a modern hybrid car). However, hydrogen can be produced from water with little or no resultant CO₂ emissions. Current methods of producing hydrogen this way require the use of large quantities of electricity to split water into hydrogen and oxygen (electrolysis).

The Auto Club is in a partnership with California State University Los Angeles (CSLA) in the construction and operation of a demonstration hydrogen production and distribution facility on the CSLA campus. When the facility is completed (currently scheduled for Summer 2010) it will dispense high-pressure (10,000 psi) hydrogen gas

produced from water using electricity generated from renewable sources, primarily wind and solar. Currently, and for the foreseeable future, fuel cell vehicles are expensive to produce (although the price is coming down), and a hydrogen-dispensing infrastructure does not exist, and will be expensive to create.

- **Battery Electric Vehicles (EV).** We also did not test any EVs for this report. Again, as test vehicles become available, we will add them. EVs have been around as long as ICE vehicles, but the convenience, quick refill capabilities, and low cost of gasoline pushed them out of the market. In the late 1990s, as a result of California's ZEV program, a number of small scale "demonstration fleets" of EVs became available (for example General Motor's EV1, Toyota's RAV4 EV, and Honda's EV PLUS).

EVs have zero emissions from the vehicle. The CARB seems enamored of EVs because, unlike ICEs, their emissions remain at zero no matter how badly their condition deteriorates as they age. They are also more efficient than ICE vehicles and the electricity to recharge them is less expensive than gasoline.

The 1990s demonstration vehicles actually performed pretty well, and we expect the more modern EVs to perform even better. The problem with EVs is largely a psychological issue with the drivers. These cars have typical ranges around 100 miles, and depending on what type of electrical service you have (110 volt, 220 volt, or 480 volt) recharge times can range from a few hours to over 12 hours. EV drivers tend to watch the remaining charge in the batteries and worry "Will I get there, and if I do, can I get back?" This is despite the fact that most of us have roundtrip commutes of less than 100 miles. The hope for the coming generation of EVs is that people will realize that these cars are cleaner and less costly to operate and will use them as commuter cars. Most households have more than one car and it seems to make sense to use your ICE vehicle for longer trips and the EV for short ones.

More needs to be done

We recognize that emission standards for new vehicles must continue to be tightened in order to overcome the effects of the growing number of cars and the increase in the total number of vehicle miles traveled in the coming decades. Also, the latest EPA ambient air quality standards for ozone issued in January 2010 are the most stringent ever, placing even more emphasis on reducing emissions from all sources. However, by purchasing one of the extremely low emitting vehicles that are now available (as the report shows, there are low emission vehicles available in just about every category), using them in a responsible manner, and by properly maintaining them, motorists can do their part to help protect our environment from air pollution, reduce their carbon footprint, and use less petroleum.

How to use less fuel and reduce your carbon footprint

Regardless of the kind of vehicle you now own or plan to buy, you can minimize your fuel usage, save money, and reduce your carbon footprint simply by paying attention to how you drive and maintain your car. You might increase your chances of getting to your destination safely, too.

The ARC has researched fuel consumption, recording the mileage motorists achieve driving the way they normally do (or in several cases, driving more aggressively) and comparing that to their mileage when they employed the following techniques. Mileage improvements ranged from a low of 25% to as much as 100% (from 10 mpg to 20 mpg).

- Avoid “jack-rabbit” starts and accelerate gently. Accelerating the mass of a car uses more fuel than any other facet of driving, so imagine there is a raw egg between your right foot and the accelerator pedal and you don’t want to break it.
- Slow down—not necessarily a lot, because we are all in a hurry; but how about actually following the speed limit? Typically, the faster you go, the greater the aerodynamic and drivetrain friction losses will be. Therefore it takes more fuel to maintain a higher speed. Remember, however, that traveling slower than the flow of traffic can cause a safety hazard. You may want to even consider driving in one of the “slower” lanes on the freeway, and let those more-aggressive drivers waste their own fuel in the “fast” lane.
- Anticipate slower traffic and traffic lights. When you see stopped or slow traffic or a red light ahead of you, take your foot off of the accelerator and coast. There’s no benefit to zooming up to the light and then slamming on the brakes. Cars use very little fuel when coasting, and if you’re driving a hybrid, coasting will generally recharge the battery, further improving mileage.
- There’s no need to let a modern car (1980s and newer) warm up or for you to race the engine upon start up. Follow the starting instructions in your owner’s manual; generally, it will tell you to start the car, put it in gear, and drive off at a moderate speed until the car warms up.
- Use your air conditioning wisely. Air conditioning use in newer cars can reduce gas mileage by about 5% (on older cars, this number can be much higher). On hot days, open your windows when you’re driving slowly (under 45 mph), but close them and turn on the air conditioner at higher speeds. (Driving with the windows open increases aerodynamic drag; this effect increases the faster you drive).
- Keep your vehicle maintained at a AAA Approved Auto Repair facility according to the manufacturer’s service schedule (found in the owner’s manual). Regular oil and

filter changes, plus other services, will keep your vehicle running smoothly, prolong its life, and save fuel. Also, be sure to have more comprehensive services performed as specified by the manufacturer for longer intervals (generally every 30,000 miles). Simple things like keeping your tires properly aligned and inflated will not only save you up to 2% on gas for every pound they're underinflated, they will also prolong the life of your tires and improve safety, ride, and handling. Track your fuel economy; if it drops suddenly, have the cause determined and corrected.

- Many families have more than one vehicle, so when you take a trip, select the one that best suits the task at hand. Don't automatically jump into your big SUV when the sedan will do. To save on fuel costs, consider renting a fuel-efficient model for vacations and long trips. Conversely, consider renting a full-size truck instead of buying one if you need its capabilities only occasionally. Put the wear on the rental and save your daily driver.
- "Get the junk out of your trunk": reducing extra weight in your car can save up to 2% fuel economy for every 100 lbs. you remove, depending on the weight of the vehicle. Also, lose the roof rack. Carrying things on a roof rack increases aerodynamic drag and reduces fuel economy – year round (no matter how cool the ski rack looks!)
- Plan your route efficiently and combine trips. Combining shopping trips and avoiding excessive idling (by parking and going into the fast-food place or bank instead of using the drive-through) will save gas. Choose a shopping center where you can park and walk to most of the stores you need. Review your work schedule. Can you alter your working hours to avoid bumper-to-bumper traffic? Is carpooling an option? Both measures save fuel and reduce vehicle wear.
- Check your owner's manual for your vehicle's recommended grade of fuel. If it says "regular unleaded gasoline" is recommended, using anything else is a waste of money; if it says "premium required," you must use that for proper vehicle operation. However, if your manual says midgrade or premium is "recommended," read carefully; sometimes it indicates that you can use regular unleaded, although you may experience reduced power or a small reduction in fuel economy. Keep your eye open for low fuel prices, but don't waste gas driving to a distant filling station to save a few cents.

All of these strategies will save fuel and likely extend the life of your vehicle. Also, carefully consider your future requirements when you buy a new vehicle. Purchase one you can afford that fulfills your needs and not those of a manufacturer trying to sell its latest "über wagon." For assistance in purchasing a new vehicle, you can utilize the AAA Car Buying Service at www.aaa.com.

Aftermarket Parts

At the dawn of emission controls for cars (1966), it seemed that the requirements for reducing exhaust emissions and/or reducing fuel use would cause the end of fun, sporty performance-oriented cars (and for a few years it looked like the doom-sayers were right). Newer cars, however, are the least polluting, most efficient, and best performing cars ever built. That is not to say that they can't be made better and more "personalized". The automotive aftermarket industry has seen tremendous growth, and the variety of aftermarket parts available is staggering. There are parts available that can:

- Improve your car's looks
- Increase horsepower
- Reduce fuel consumption
- Improve handling
- Improve traction
- Improve ride quality
- Improve audio quality
- Add connectivity to phones, the internet, GPS, etc.
- Lots more!

On each individual vehicle report page you will see a list of some popular aftermarket upgrades that are available for the vehicle. We thank SEMA (Specialty Equipment Market Association) Marketing Research Department for providing this data.

What is on the horizon?

This report evaluates currently available "mainstream" vehicles. There is tremendous pressure from CARB and EPA to continually reduce emissions of criteria pollutants, reduce greenhouse gas emissions, and reduce (or eliminate) use of petroleum.

Tremendous progress has been made, but the momentum needs to continue. What will the automotive market look like in the future? What kinds of cars and fuels will be prevalent?

There are lots of predictions being made, but since the ARC does not have a crystal ball, we will refrain from prognosticating (at least not too much). Rather, we will briefly discuss the trends, and time will tell which technologies the market will adopt.

In the near-term, we should see a continuation of the progress we see today including:

- Further improvements to traditional gasoline fueled internal combustion engines "ICE" including camless engines using solenoids to activate the valves, 42-volt electrical systems, and countless other changes
- More hybrid vehicles

- Plug-in hybrid vehicles, and even PHEVs using alternative fuels (natural gas, diesel, or hydrogen) either to fuel ICEs or gas turbines
- Full electric vehicles (EVs) from start-ups like Tesla, Fisker, and AC Propulsion, as well as the more-established OEM manufacturers
- More use of renewable fuels, especially “bio-diesel”, and ethanol (generally blended with diesel and gasoline, respectively)
- More natural-gas fueled vehicles
- Growth in the diesel passenger car market
- Hydrogen powered (ICE and fuel cell) vehicles in demonstration fleets

The mid- to long-term picture is not as clear. It is likely that a significant portion of our vehicle fleet will still be traditional gasoline or diesel vehicles. Some prognosticators envision networks of “fast-charging” stations for electric vehicles that can recharge an EV battery to 80% of its capacity in a matter of minutes, others see a hydrogen pump on every corner (like today’s gasoline stations), while others expect an entirely new technology to provide clean, safe, and economical power for our vehicles. But as we have said many times before, only time will tell.

GREEN CAR GUIDE
GREEN CAR SCORES

Ranking	Vehicle Type	Year	Make	Model	Scores
1	Compact Sport Utility	2009	Subaru	Forester 2.5X	88.11
2	Passenger Car	2009	Lexus	LS 600h L Sedan	84.46
3	Compact Sport Utility	2009	Mercedes-Benz	ML 320 BlueTEC	83.98
4	Compact Sport Utility	2010	Lexus	RX 450h	83.19
5	Passenger Car	2009	Lexus	GS 450h	82.79
6	Passenger Car	2009	BMW	335d Sedan	82.76
7	Compact Sport Utility	2009	Toyota	Highlander Hybrid	82.72
8	Passenger Car	2010	Toyota	Prius IV	82.69
9	Passenger Car	2010	Ford	Fusion Hybrid	79.88
10	Full Size Sport Utility	2009	Cadillac	Escalade 2WD Platinum Hybrid	79.22
11	Passenger Car	2009	Honda	Accord EX V6	78.59
12	Passenger Car	2009	Nissan	Altima Hybrid	78.53
13	Compact Sport Utility	2009	Toyota	Venza	78.12
14	Passenger Car	2009	BMW	128i	77.10
15	Passenger Car	2009	Kia	Rondo EX	76.20
16	Passenger Car	2009	Toyota	Camry LE PZEV	76.11
17	Passenger Car	2010	Kia	Forte EX	75.74
18	Passenger Car	2009	Toyota	Camry Hybrid	75.65
19	Compact Sport Utility	2009	Subaru	Outback 2.5i Limited PZEV	75.23
20	Passenger Car	2009	Volkswagen	Jetta TDI	74.94
21	Passenger Car	2010	Ford	Fusion SEL	74.78
22	Passenger Car	2009	Mitsubishi	Lancer GTS	74.76
23	Passenger Car	2009	Honda	Fit Sport	74.70
24	Passenger Car	2009	Ford	Escape Hybrid Limited FWD	74.56
25	Passenger Car	2009	Mazda	Mazda6i Sedan Grand Touring	74.06
26	Passenger Car	2008	Hyundai	Elantra SE PZEV	73.37
27	Full Size Sport Utility	2009	Chrysler	Aspen Limited Hybrid 4X4	73.24
28	Passenger Car	2009	Nissan	Altima 2.5 SL	72.33
29	Passenger Car	2009	Hyundai	Sonata SE	72.01
30	Passenger Car	2009	Ford	Focus SES	71.41
31	Passenger Car	2010	Kia	Soul Exclaim	70.64
32	Passenger Car	2009	Toyota	Corolla S	70.16
33	Passenger Car	2008	Nissan	Versa 1.8 SL HB	70.15
34	Passenger Car	2009	Chevrolet	Malibu LT	70.12
35	Passenger Car	2008	Toyota	Yaris S	69.84
36	Passenger Car	2009	Honda	Civic EX-L Navi	69.42
37	Compact Sport Utility	2008	Jeep	Compass Sport 4x2	68.26
38	Passenger Car	2010	Honda	Insight EX Navi	68.25
39	Compact Sport Utility	2008	Jeep	Patriot Limited 4x2 FWD	67.86
40	Compact Sport Utility	2009	Ford	Escape XLT FWD	67.63
41	Full Size Truck	2009	GMC	Sierra 2WD Hybrid Crew Cab 3HB	67.04
42	Passenger Car	2009	Honda	Civic GX NGV	66.00
43	Passenger Car	2008	Kia	Rio5 SX	63.50
44	Compact Sport Utility	2009	Chevrolet	HHR LT FlexFuel	60.09
45	Passenger Car	2009	Smart	Passion Coupe	59.89
46	Passenger Car	2009	Chevrolet	Aveo LT	57.44

GREEN CAR GUIDE
GREEN CAR COST PER POINT

Cost Per Point Ranking	Year	Make	Model	Points	Price as Tested	Cost Per Point
1	2008	Kia	Rio5 SX	63.50	\$15,025	\$237
2	2010	Kia	Forte EX	75.74	\$18,090	\$239
3	2008	Toyota	Yaris S	69.84	\$17,153	\$246
4	2009	Chevrolet	Aveo LT	57.44	\$14,255	\$248
5	2009	Honda	Fit Sport	74.70	\$18,780	\$251
6	2009	Smart	Passion Coupe	59.89	\$15,205	\$254
7	2008	Hyundai	Elantra SE PZEV	73.37	\$18,635	\$254
8	2009	Kia	Rondo EX	76.20	\$19,845	\$260
9	2010	Kia	Soul Exclaim	70.64	\$18,595	\$263
10	2009	Subaru	Forester 2.5X	88.11	\$24,264	\$275
11	2009	Toyota	Corolla S	70.16	\$19,683	\$281
12	2008	Nissan	Versa 1.8 SL HB	70.15	\$19,830	\$283
13	2009	Ford	Focus SES	71.41	\$20,615	\$289
14	2009	Toyota	Camry LE PZEV	76.11	\$23,093	\$303
15	2009	Mitsubishi	Lancer GTS	74.76	\$23,810	\$318
16	2009	Hyundai	Sonata SE	72.01	\$23,220	\$322
17	2009	Chevrolet	HHR LT FlexFuel	60.09	\$19,549	\$325
18	2010	Ford	Fusion SEL	74.78	\$24,700	\$330
19	2009	Chevrolet	Malibu LT	70.12	\$23,720	\$338
20	2008	Jeep	Compass Sport 4x2	68.26	\$23,455	\$344
21	2010	Honda	Insight EX Navi	68.25	\$23,770	\$348
22	2009	Honda	Civic EX-L Navi	69.42	\$24,325	\$350
23	2009	Toyota	Camry Hybrid	75.65	\$26,568	\$351
24	2008	Jeep	Patriot Limited 4x2 FWD	67.86	\$24,155	\$356
25	2009	Ford	Escape XLT FWD	67.63	\$24,115	\$357
26	2009	Toyota	Venza	78.12	\$28,330	\$363
27	2010	Toyota	Prius IV	82.69	\$30,709	\$371
28	2009	Honda	Accord EX V6	78.59	\$29,375	\$374
29	2009	Volkswagen	Jetta TDI	74.94	\$28,038	\$374
30	2009	Nissan	Altima 2.5 SL	72.33	\$27,260	\$377
31	2010	Ford	Fusion Hybrid	79.88	\$30,245	\$379
32	2009	Honda	Civic GX NGV	66.00	\$25,860	\$392
33	2009	Mazda	Mazda6i Sedan Grand Touring	74.06	\$29,440	\$397
34	2009	BMW	128i	77.10	\$31,925	\$414
35	2009	Subaru	Outback 2.5i Limited PZEV	75.23	\$31,646	\$421
36	2009	Toyota	Highlander Hybrid	82.72	\$35,985	\$435
37	2009	Nissan	Altima Hybrid	78.53	\$34,705	\$442
38	2009	Ford	Escape Hybrid Limited FWD	74.56	\$34,755	\$466
39	2010	Lexus	RX 450h	83.19	\$47,375	\$569
40	2009	BMW	335d Sedan	82.76	\$50,895	\$615
41	2009	Chrysler	Aspen Limited Hybrid 4X4	73.24	\$46,120	\$630
42	2009	Mercedes-Benz	ML 320 BlueTEC	83.98	\$58,165	\$693
43	2009	GMC	Sierra 2WD Hybrid Crew Cab 3	67.04	\$46,495	\$694
44	2009	Lexus	GS 450h	82.79	\$67,775	\$819
45	2009	Cadillac	Escalade 2WD Platinum Hybrid	79.22	\$85,885	\$1,084
46	2009	Lexus	LS 600h L Sedan	84.46	\$113,560	\$1,344

BMW 128i

GREEN CAR SCORES

Score For This Vehicle

77.10

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: \$30,225

Price as Tested: \$31,925

Cost per Point for this Vehicle

\$414

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type Unleaded Premium

Fuel Capacity (gal): 14.0

EPA Urban MPG: 18

EPA Highway MPG: 28

Auto Club Highest MPG: 28.1

Auto Club Average MPG: 22.3

Auto Club Lowest MPG: 17.7

MODEL YEAR TESTED - 2009



OVERALL OBSERVATIONS

Our BMW 128i was fast, handled great, & was a blast to drive. It was also bright red, with sporty styling & every cop in town noticed! You don't usually think of a sporty coupe & being good to the environment at the same time, but the 128i, with the 230 horsepower 6 cylinder engine, is certified as a clean PZEV. On the other hand, this is a subcompact coupe & it suffers from the usual maladies of this style of car. It is difficult to get in & out of, the interior is cramped (the rear seat is only good for small children), the rear seat lacks a center armrest, the trunk is small (the folding rear seats help some), & the rear windows don't roll down at all. Still, for \$32k, you can get a hot, but nearly pollution-free sport coupe!

REASON THIS VEHICLE WAS TESTED

PZEV

DESCRIPTION/COMMENTS

Subcompact 2-door Coupe

STRONG POINTS

- Nimble & responsive handling
- Quick acceleration
- Fun to drive
- Certified as a PZEV

WEAK POINTS

- Difficult to get in & out of, especially the rear
- Cramped interior
- Cupholders: none in rear & front too small & can interfere with the shifter
- Lacks rear center armrest
- Rear windows do not open
- Requires expensive premium fuel

AFTERMARKET PARTS

Tires, wheels, performance exhaust

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/2
Curb Weight (lbs):	3210
Exterior Length (in):	171.7
Exterior Width (in):	76.1
Exterior Height (in):	56.0
Wheelbase (in):	104.7
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	48/50,000
Tire Manufacturer:	Goodyear P225/45R17
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Manual 6 Speed
Drivetrain Type:	Rear Wheel
Engine Size	3.0L DOHC 24V I6
Horsepower @ RPM:	230 @ 6500

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	7.61
Crashworthiness:	5.16
Visibility:	7.00
Slalom Handling:	9.85
Ride Quality:	7.25
Fuel Economy:	0.32
Interior Noise:	5.75
Acceleration:	9.62
Ease of Entry and Exit:	5.98
Interior Size:	1.84
Turning Circle:	7.07
Luggage Capacity:	0.65

BMW 335d Sedan

GREEN CAR SCORES

Score For This Vehicle	82.76
Highest Scoring Green Car	88.11
Lowest Scoring Green Car	57.44

VEHICLE PRICE

Base Price:	\$44,725
Price as Tested:	\$50,895
Cost per Point for this Vehicle	\$615
Highest Green Car Cost/Point	\$1,344
Lowest Green Car Cost/Point	\$237

FUEL ECONOMY

Fuel Type	Diesel #2
Fuel Capacity (gal):	16.1
EPA Urban MPG:	23
EPA Highway MPG:	36
Auto Club Highest MPG:	31.5
Auto Club Average MPG:	27.6
Auto Club Lowest MPG:	24.9

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

Clean Diesel

DESCRIPTION/COMMENTS

Compact 4-door Sedan

STRONG POINTS

- Powerful and fun to drive
- Good mpg for sporty car
- Sirius radio
- Powerful ABS brakes provide short straight stops
- Responsive handling

WEAK POINTS

- High purchase price (\$51K)
- Difficult entry & exit, especially the rear
- Control stalks hidden behind wheel
- Rear seat room
- Narrow front seats

OVERALL OBSERVATIONS

A diesel sports car seems unlikely to those who know that "diesels are for trucks", but BMW begs to differ. The 335d sedan is very sporty, with a 0-60 mph acceleration time of 6.75 seconds, amazing brakes, and responsive handling. And it is a diesel, (that provides 7 mpg better fuel economy than the similar 335i with a gasoline engine) but when you drive the car, you would never really know. Of course you pay \$3600 more (of the expensive \$51K MSRP) for the diesel but fuel savings (due to the lower price of diesel, compared to the premium the 335i needs, & improved mpg) allow you to recoup the cost in about 5 years. Diesel in a sports car? You bet!

AFTERMARKET PARTS

Low-profile tires, wheels, brake kits

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3790
Exterior Length (in):	178.8
Exterior Width (in):	78.3
Exterior Height (in):	55.9
Wheelbase (in):	108.7
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	48/50,000
Tire Manufacturer:	Bridgestone 255/35R18
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 6 Speed
Drivetrain Type:	Rear Wheel
Engine Size	3.0L DOHC 24V I6 Diesel
Horsepower @ RPM:	265 @ 4200

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	10.00
Crashworthiness:	5.85
Visibility:	7.10
Slalom Handling:	9.69
Ride Quality:	7.17
Fuel Economy:	3.96
Interior Noise:	5.51
Acceleration:	9.23
Ease of Entry and Exit:	6.15
Interior Size:	3.83
Turning Circle:	6.31
Luggage Capacity:	0.95

Cadillac Escalade 2WD Platinum Hybrid

GREEN CAR SCORES

Score For This Vehicle

79.22

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$85,885**

Price as Tested: **\$85,885**

Cost per Point for this Vehicle

\$1,084

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **26.0**

EPA Urban MPG: **20**

EPA Highway MPG: **21**

Auto Club Highest MPG: **20.8**

Auto Club Average MPG: **17.0**

Auto Club Lowest MPG: **15.7**

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Large 4-door SUV

Similar to Chevrolet Tahoe and GMC Yukon

STRONG POINTS

- Roomy and flexible interior
- Powerful
- Good MPG for this type of vehicle
- Hi-Fidelity sound system with XM
- Loaded with safety and convenience features

WEAK POINTS

- Rear seat difficult to enter or fold down
- Vague and slow steering
- Unresponsive handling
- High purchase price (\$86K)

OVERALL OBSERVATIONS

The Cadillac Escalade (& the similar Chevy Tahoe/GMC Yukon) Hybrids represent a blending of 2 world views. They are behemoth SUVs, seen as somehow "evil" by some, but in hybrid form they get over 20 mpg as opposed to 15. The power, room, utility, and perception of safety and substance that have made big SUVs so popular remain with mpg like a big sedan. The Escalade Platinum (\$86K) we tested was loaded with features including heated and cooled seats, navigation system with XM Nav Traffic, Bluetooth, backup sensor and camera, and even heated and cooled cupholders! You can be "evil" and "green" at the same time.

AFTERMARKET PARTS

Chrome wheels, audio systems, DVD players

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3/3
Curb Weight (lbs):	6010
Exterior Length (in):	202.5
Exterior Width (in):	79.0
Exterior Height (in):	74.3
Wheelbase (in):	116.0
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	4 Air Bags
Warranty (Months/Miles):	48/50,000
Tire Manufacturer:	Bridgestone P285/45R22
Towing Cap. (lbs) W/WO Brakes:	5800 Maximum
Transmission Type:	2-Mode Hybrid
Drivetrain Type:	Rear Wheel
Engine Size	6.0L Vortec V8 SFI LIVC
Horsepower @ RPM:	332 @ 5100
Electric Motor Horsepower:	N/A

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	6.00
Braking:	4.92
Crashworthiness:	7.50
Visibility:	8.10
Slalom Handling:	4.15
Ride Quality:	7.06
Fuel Economy:	2.04
Interior Noise:	7.53
Acceleration:	6.15
Ease of Entry and Exit:	7.06
Interior Size:	5.91
Turning Circle:	4.17
Luggage Capacity:	8.62

Chevrolet Aveo LT

GREEN CAR SCORES

Score For This Vehicle

57.44

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$12,120**

Price as Tested: **\$14,255**

Cost per Point for this Vehicle

\$248

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **11.9**

EPA Urban MPG: **27**

EPA Highway MPG: **34**

Auto Club Highest MPG: **29.7**

Auto Club Average MPG: **26.7**

Auto Club Lowest MPG: **16.9**

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Subcompact 4-door Sedan

STRONG POINTS

- Inexpensive sales price
- Fuel economy
- Small turning radius
- Can fit in small parking spots
- Easy and flexible folding rear seat

WEAK POINTS

- Shifter difficult to use/vague
- Underpowered engine
- Driver can't reach right side mirror adjuster
- Noisy, bumpy and unstable ride
- Rear seat cramped for tall passengers

OVERALL OBSERVATIONS

Some of us remember the Metro—a little box with great mpg (seeing a resurgence of popularity in the used car market). The Chevrolet Aveo is essentially the 2009 Metro. Our test vehicle delivered a high of nearly 30 mpg for slightly over \$14,000. However, this is a case of you get what you paid for, because the Aveo, more than any other car in this comparison reminds us of the “econo-boxes” of old. The shifter is hard to use, the engine is weak, and the ride is noisy and bumpy. If low cost/high mpg is your main priority, the Aveo is the way to go, otherwise?????

AFTERMARKET PARTS

Cargo/trunk mat, floor mats

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2760
Exterior Length (in):	169.7
Exterior Width (in):	67.3
Exterior Height (in):	59.2
Wheelbase (in):	97.6
Anti-lock Braking System:	None
Restraint Type:	4 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Kumho P185/60R14
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Manual 5 Speed
Drivetrain Type:	Front Wheel
Engine Size	1.6L DOHC I4
Horsepower @ RPM:	103 @ 5800

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	2.58
Crashworthiness:	3.62
Visibility:	5.40
Slalom Handling:	5.92
Ride Quality:	5.56
Fuel Economy:	4.59
Interior Noise:	2.61
Acceleration:	2.99
Ease of Entry and Exit:	6.01
Interior Size:	3.02
Turning Circle:	7.14
Luggage Capacity:	1.02

Chevrolet HHR LT FlexFuel

GREEN CAR SCORES

Score For This Vehicle

60.09

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$18,604**

Price as Tested: **\$19,549**

Cost per Point for this Vehicle

\$325

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **16.2**

EPA Urban MPG: **22**

EPA Highway MPG: **30**

Auto Club Highest MPG: **28.7**

Auto Club Average MPG: **23.5**

Auto Club Lowest MPG: **20.5**

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

4-door SUV

STRONG POINTS

- Flexible interior with individually folding rear seats and adjustable trunk shelf
- Retro styling
- Small SUV/Wagon easy to fit in garage

WEAK POINTS

- Narrow windows impede visibility
- Long emergency stopping distance (even with ABS)
- Underpowered
- Cheap looking plastic interior trim
- Lacks rear center armrest

OVERALL OBSERVATIONS

Chevrolet's HHR is their answer to the PT Cruiser, combining "retro" styling with compact SUV utility (both are sometimes called wagons, sometimes SUVs). We averaged almost 24 mpg, impressive for this type of vehicle, although the tradeoff was poor acceleration. The 2.2 liter engine is "Flex-Fuel" capable and runs on any combination of gasoline or ethanol (up to 85% ethanol). The HHR LT has ABS brakes standard, but stopping distances were still fairly long. Narrow windows caused limited visibility to the rear and sides. Note: Towing a trailer more than 1000 miles per year is not recommended.

AFTERMARKET PARTS

Panel van conversion, wheels, tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3380
Exterior Length (in):	176.2
Exterior Width (in):	69.1
Exterior Height (in):	63.1
Wheelbase (in):	103.5
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	4 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Firestone P215/55R16
Towing Cap. (lbs) W/WO Brakes:	1000
Transmission Type:	Auto 4 Speed
Drivetrain Type:	Front Wheel
Engine Size	2.2L DOHC I4 "Ecotec"
Horsepower @ RPM:	155 @ 6100

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	3.08
Crashworthiness:	4.36
Visibility:	6.90
Slalom Handling:	5.44
Ride Quality:	6.67
Fuel Economy:	3.29
Interior Noise:	2.02
Acceleration:	2.33
Ease of Entry and Exit:	5.83
Interior Size:	4.33
Turning Circle:	5.79
Luggage Capacity:	3.05

Chevrolet Malibu LT

GREEN CAR SCORES

Score For This Vehicle

70.12

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$23,225**

Price as Tested: **\$23,720**

Cost per Point for this Vehicle

\$338

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **16.0**

EPA Urban MPG: **22**

EPA Highway MPG: **30**

Auto Club Highest MPG: **27.1**

Auto Club Average MPG: **24.1**

Auto Club Lowest MPG: **20.8**

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

PZEV

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- Low emission PZEV in a larger car with reasonable mpg
- Large trunk with a convenient pull strap
- Sliding sun visors
- ABS brakes

WEAK POINTS

- Lacks rear center armrest
- Park brake push on/push off foot pedal hard to use
- Mildly flawed fit and finish

OVERALL OBSERVATIONS

The 2009 Chevrolet Malibu received significant resources from GM while it was being developed. They wanted to prove that they could compete with the Japanese imports that had taken over the mid-sized category (Toyota Camry and Honda Accord) and in many ways they have succeeded. The Malibu is clearly a more modern and higher quality car than its predecessor and at least comes close to Camry and Accord. The standard 4-cylinder engine meets the stringent PZEV emission standards, provides reasonable acceleration, and a surprising (for a car this size that is not a hybrid) 25 mpg. Our test vehicle was the mid-level LT, with minimal options and was an affordable \$24K.

AFTERMARKET PARTS

Custom grilles, headlight/tailight covers, exhaust kits

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3430
Exterior Length (in):	191.8
Exterior Width (in):	70.3
Exterior Height (in):	57.1
Wheelbase (in):	112.3
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	4 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Firestone P215/55R17
Towing Cap. (lbs) W/WO Brakes:	1000/1000
Transmission Type:	Auto 4 Speed
Drivetrain Type:	Front Wheel
Engine Size	2.4L I4
Horsepower @ RPM:	169 @ 6400

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	7.38
Crashworthiness:	4.42
Visibility:	6.80
Slalom Handling:	6.38
Ride Quality:	6.92
Fuel Economy:	3.29
Interior Noise:	5.18
Acceleration:	4.93
Ease of Entry and Exit:	6.50
Interior Size:	4.09
Turning Circle:	3.79
Luggage Capacity:	1.44

Chrysler Aspen Limited Hybrid 4X4

GREEN CAR SCORES

Score For This Vehicle	73.24
Highest Scoring Green Car	88.11
Lowest Scoring Green Car	57.44

VEHICLE PRICE

Base Price:	\$46,120
Price as Tested:	\$46,120
Cost per Point for this Vehicle	\$630
Highest Green Car Cost/Point	\$1,344
Lowest Green Car Cost/Point	\$237

FUEL ECONOMY

Fuel Type	Unleaded Midgrade
Fuel Capacity (gal):	27.0
EPA Urban MPG:	20
EPA Highway MPG:	22
Auto Club Highest MPG:	18.2
Auto Club Average MPG:	17.3
Auto Club Lowest MPG:	16.2

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Large 4-door SUV

STRONG POINTS

- Good MPG for a big SUV
- Roomy and flexible interior (rear seat not so good for tall occupants)
- Adjustable pedal cluster
- Ride quality on smooth roads
- Power outlets (12 volt and 110 volt AC)
- High fidelity sound system with Sirius radio

WEAK POINTS

- Blind spots caused by A & C pillars & side mirror
- Mushy brake pedal travels to the floor on startup
- Sluggish handling (as you would expect from a large truck-based SUV)

OVERALL OBSERVATIONS

What has a "Hemi" and is a hybrid too? The Chrysler Aspen Hybrid is a full-sized hybrid SUV. The Aspen Hybrid has the advantages that make big SUVs so popular, 67 cu. ft. of cargo space behind the second row seat, room for 8, 4-wheel drive traction, and the capability to tow a 6000 pound trailer. But this is also a full-hybrid and averages 21 mpg, excellent for a 5800 pound V8 SUV. Our test vehicle also had some luxury touches, including a navigation system with SiriusTraffic real-time traffic display, rear view camera and sensors, power liftgate, and heated front seats. In this market, the \$46K MSRP does not seem outlandish.

AFTERMARKET PARTS

Cargo net, mesh grilles, tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3/3
Curb Weight (lbs):	5840
Exterior Length (in):	200.8
Exterior Width (in):	76.0
Exterior Height (in):	74.3
Wheelbase (in):	119.2
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	4 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Goodyear P265/60R18
Towing Cap. (lbs) W/WO Brakes:	6000/1000
Transmission Type:	Auto 4 Speed
Drivetrain Type:	All Wheel - Full Time
Engine Size	5.7L V8 Hemi Hybrid
Horsepower @ RPM:	345 @ 5300
Electric Motor Horsepower:	87 HP

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	6.00
Braking:	3.42
Crashworthiness:	6.30
Visibility:	7.10
Slalom Handling:	3.05
Ride Quality:	6.92
Fuel Economy:	1.16
Interior Noise:	6.81
Acceleration:	7.33
Ease of Entry and Exit:	6.69
Interior Size:	5.08
Turning Circle:	3.65
Luggage Capacity:	9.72

Ford Escape Hybrid Limited FWD

GREEN CAR SCORES

Score For This Vehicle

74.56

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$32,360**

Price as Tested: **\$34,755**

Cost per Point for this Vehicle

\$466

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	15.1
EPA Urban MPG:	34
EPA Highway MPG:	31

Auto Club Highest MPG:	29.9
Auto Club Average MPG:	26.4
Auto Club Lowest MPG:	23.0

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

4-door SUV

Similar to Mazda Tribute and Mercury Mariner

STRONG POINTS

- Excellent fuel economy with good performance
- Extremely low emissions (AT-PZEV)
- Equipped with Sync
- Has the utility of an SUV

WEAK POINTS

- Lacks rear center armrest
- High purchase price (\$34K)
- Rear window only opens 2/3
- Distracting reflections from the instrument panel

OVERALL OBSERVATIONS

The Ford Escape Hybrid is the most fuel efficient SUV available. Its combination of a 153 horsepower 2.5 liter engine and a 94 horsepower electric motor provide acceleration similar to its V6 powered sibling, with extremely low emissions (AT-PZEV). The Escape Hybrid scores 5 stars on all NHTSA crash tests. It maintains virtually all of the utility (except trailer towing is not recommended) that have made SUVs so popular. It even has the option of a 110 volt AC power outlet in the cabin. If you want a compact SUV, but value being "green", the Escape Hybrid (& the similar "sisters" the Mercury Mariner & Mazda Tribute Hybrids) can meet your needs.

AFTERMARKET PARTS

Wheels, tires, bike rack

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3750
Exterior Length (in):	174.7
Exterior Width (in):	81.3
Exterior Height (in):	67.7
Wheelbase (in):	103.1
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	4 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Michelin P235/70R16
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size	2.5L I4 Atkinson Cycle
Horsepower @ RPM:	153 @ 6000
Electric Motor Horsepower:	94 @ 5000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	3.63
Crashworthiness:	4.80
Visibility:	7.50
Slalom Handling:	5.37
Ride Quality:	6.96
Fuel Economy:	5.36
Interior Noise:	5.77
Acceleration:	6.38
Ease of Entry and Exit:	6.84
Interior Size:	4.42
Turning Circle:	5.08
Luggage Capacity:	3.46

Ford Escape XLT FWD

GREEN CAR SCORES

Score For This Vehicle	67.63
Highest Scoring Green Car	88.11
Lowest Scoring Green Car	57.44

VEHICLE PRICE

Base Price:	\$23,460
Price as Tested:	\$24,115
Cost per Point for this Vehicle	\$357
Highest Green Car Cost/Point	\$1,344
Lowest Green Car Cost/Point	\$237

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	16.5
EPA Urban MPG:	20
EPA Highway MPG:	28
Auto Club Highest MPG:	25.4
Auto Club Average MPG:	22.9
Auto Club Lowest MPG:	21.2

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

4-door SUV

Similar to Mazda Tribute and Mercury Mariner

STRONG POINTS

- SUV utility and versatility
- Equipped with Sirius radio and Sync
- Dash & steering wheel controls well laid out
- Good mpg (for a non-hybrid SUV)

WEAK POINTS

- Rough idle (although other vehicles we have tested with the same engine idled OK). This might be peculiar to our specific test vehicle (they live a tough life!)
- Shifter lacks positions for intermediate gears
- Rear windows do not open fully
- Lacks rear grab handles & center armrest

OVERALL OBSERVATIONS

The Ford Escape was one of the big beneficiaries of the Cash for Clunkers program, showing significant sales. Why? The Escape is a "compact" 4-door SUV that averages 23 mpg without the purchase price premium of a hybrid. It has the versatility (rear seats fold down independently) and ruggedness that SUV buyers desire, in an economical (our lightly optioned test vehicle had an MSRP of \$24K) and compact package. One interesting new feature on the Escape (and other new Ford products) is the fuel filler has a seal built into the filler flap—no gas cap to forget or to tighten improperly (and no gasoline smell on your hands!) Even though "Clunkers" is over, this SUV makes lots of sense.

AFTERMARKET PARTS

Fog lamps, bike rack, floor mats

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3390
Exterior Length (in):	174.7
Exterior Width (in):	81.3
Exterior Height (in):	67.9
Wheelbase (in):	103.1
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Michelin P235/70R16
Towing Cap. (lbs) W/WO Brakes:	1500/1500
Transmission Type:	Auto 6 Speed
Drivetrain Type:	Front Wheel
Engine Size	2.5L I4 IVCT
Horsepower @ RPM:	171 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	4.42
Crashworthiness:	5.37
Visibility:	7.00
Slalom Handling:	4.61
Ride Quality:	6.83
Fuel Economy:	2.73
Interior Noise:	4.94
Acceleration:	5.07
Ease of Entry and Exit:	6.35
Interior Size:	4.72
Turning Circle:	5.12
Luggage Capacity:	3.46

Ford Focus SES

GREEN CAR SCORES

Score For This Vehicle	71.41
Highest Scoring Green Car	88.11
Lowest Scoring Green Car	57.44

VEHICLE PRICE

Base Price:	\$18,265
Price as Tested:	\$20,615
Cost per Point for this Vehicle	\$289
Highest Green Car Cost/Point	\$1,344
Lowest Green Car Cost/Point	\$237

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	13.5
EPA Urban MPG:	24
EPA Highway MPG:	35
Auto Club Highest MPG:	30.0
Auto Club Average MPG:	27.8
Auto Club Lowest MPG:	23.8

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

PZEV

DESCRIPTION/COMMENTS

Compact 2-door Coupe

STRONG POINTS

- Economical with reasonable price, good mpg, and well equipped
- Certified as a PZEV
- Hi fidelity sound system with Sirius and Sync
- Responsive handling

WEAK POINTS

- Hard to get in and out of rear seat
- Lacks rear center armrest
- Rear windows don't open
- Lacks passing power in high gear

OVERALL OBSERVATIONS

The Focus is Ford's attempt to compete with the successful Japanese/Korean entry-level compacts, and it does so quite well. We tested a Focus SES with several options. It had quality equal to any of the competition, and the standard and optional features including PZEV emission rating, "Sync", heated seats, and Sirius radio made it seem more like a luxury car for around \$20,000. The 2.0 liter engine/5-speed manual transmission combination averaged about 28 mpg with good acceleration, although a little more low RPM torque would be welcome. The Focus was very popular during "Cash-For-Clunkers" and it is obvious why.

AFTERMARKET PARTS

Wheels, body kits, custom seats

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2780
Exterior Length (in):	175.0
Exterior Width (in):	78.4
Exterior Height (in):	58.6
Wheelbase (in):	102.9
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Kumho P215/45R17
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Manual 5 Speed
Drivetrain Type:	Front Wheel
Engine Size	2.0L DOHC I4
Horsepower @ RPM:	140 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	3.72
Crashworthiness:	4.65
Visibility:	7.00
Slalom Handling:	8.12
Ride Quality:	7.04
Fuel Economy:	4.09
Interior Noise:	4.51
Acceleration:	6.26
Ease of Entry and Exit:	6.69
Interior Size:	3.15
Turning Circle:	5.95
Luggage Capacity:	1.24

Ford Fusion Hybrid

GREEN CAR SCORES

Score For This Vehicle	79.88
Highest Scoring Green Car	88.11
Lowest Scoring Green Car	57.44

VEHICLE PRICE

Base Price:	\$27,995
Price as Tested:	\$30,245
Cost per Point for this Vehicle	\$379
Highest Green Car Cost/Point	\$1,344
Lowest Green Car Cost/Point	\$237

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	17.5
EPA Urban MPG:	41
EPA Highway MPG:	36
Auto Club Highest MPG:	42.5
Auto Club Average MPG:	32.3
Auto Club Lowest MPG:	30.2

MODEL YEAR TESTED - 2010



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan
Similar to the Mercury Milan Hybrid

STRONG POINTS

- Excellent MPG
- Certified as an AT-PZEV
- Sync voice activation system with Sirius radio
- Optional rear view camera and cross-traffic alert
- No gas cap needed

WEAK POINTS

- Small trunk/rear seat doesn't fold down
- High purchase price (\$30K)
- Rear seat entry/exit for tall passengers

OVERALL OBSERVATIONS

For 2010, Ford introduced a Hybrid version of their popular mid-sized sedan the Fusion. This is a "full hybrid" offering nearly 40 mpg average, good acceleration, and clean "AT-PZEV" emissions. Generally, the features that make the Fusion so popular remain in the Hybrid with one exception, the rear seats don't fold down to increase trunk capacity/flexibility due to placement of the hybrid components. We especially liked the optional Driver's Vision Group which places a display of the rear-view camera on the rear-view mirror, sounds an alarm if cars are coming down the aisle while you are backing out of a blind parking spot, and warns you if there are cars in the blind spots on either side as you drive down the road.

AFTERMARKET PARTS

Wheels, tires, audio systems

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3790
Exterior Length (in):	190.6
Exterior Width (in):	80.1
Exterior Height (in):	56.9
Wheelbase (in):	107.4
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Michelin P225/50R17
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size	2.5L I4 HEV
Horsepower @ RPM:	156 @ 6000
Electric Motor Horsepower:	106 @ 6500

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	6.69
Crashworthiness:	5.85
Visibility:	7.20
Slalom Handling:	7.14
Ride Quality:	7.42
Fuel Economy:	7.00
Interior Noise:	5.53
Acceleration:	7.05
Ease of Entry and Exit:	6.84
Interior Size:	3.91
Turning Circle:	5.33
Luggage Capacity:	0.92

Ford Fusion SEL

GREEN CAR SCORES

Score For This Vehicle

74.78

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: \$24,700

Price as Tested: \$24,700

Cost per Point for this Vehicle

\$330

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type Unleaded Regular

Fuel Capacity (gal): 17.5

EPA Urban MPG: 22

EPA Highway MPG: 31

Auto Club Highest MPG: 23.9

Auto Club Average MPG: 22.1

Auto Club Lowest MPG: 19.3

MODEL YEAR TESTED - 2010



REASON THIS VEHICLE WAS TESTED

PZEV

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

Similar to the Mercury Milan

STRONG POINTS

- Good mpg for a non-hybrid mid-sized sedan (25)
- PZEV available (test car ULEV)
- Well lighted interior
- Equipped with Sirius radio and Sync
- Smooth ride

WEAK POINTS

- Shifter lacks positions for intermediate gears
- Displays some torque steer
- Some controls positioned too low
- Limited visibility out of rear window

OVERALL OBSERVATIONS

Ford's Fusion has been increasingly popular and has even garnered some awards. Why? You can get an attractive mid-sized sedan, with available PZEV emissions, 25 mpg (without the cost premium of a hybrid), heated leather seats, power everything, 6 airbags, Sirius satellite radio, and "Sync" for under \$25K! Our tester rode well without sacrificing handling. The 4-cylinder engine provided average acceleration, but two available 6-cylinder engines (a 3.4 liter with 240 hp and a 3.5 liter with 263 hp) would do better, but with increased fuel consumption. All-in-all, the Fusion seems to be a quality sedan, and it is no wonder its popularity is on the rise.

AFTERMARKET PARTS

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3390
Exterior Length (in):	190.6
Exterior Width (in):	80.1
Exterior Height (in):	56.9
Wheelbase (in):	107.4
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Michelin P225/50R17
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 6 Speed
Drivetrain Type:	Front Wheel
Engine Size	2.5L DOHC 16V I4
Horsepower @ RPM:	175 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	6.27
Crashworthiness:	5.37
Visibility:	7.30
Slalom Handling:	7.13
Ride Quality:	7.44
Fuel Economy:	3.37
Interior Noise:	7.00
Acceleration:	5.76
Ease of Entry and Exit:	7.17
Interior Size:	4.05
Turning Circle:	5.24
Luggage Capacity:	1.67

GMC Sierra 2WD Hybrid Crew Cab 3HB

GREEN CAR SCORES

Score For This Vehicle	67.04
Highest Scoring Green Car	88.11
Lowest Scoring Green Car	57.44

VEHICLE PRICE

Base Price:	\$45,500
Price as Tested:	\$46,495
Cost per Point for this Vehicle	\$694
Highest Green Car Cost/Point	\$1,344
Lowest Green Car Cost/Point	\$237

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	26.0
EPA Urban MPG:	21
EPA Highway MPG:	22
Auto Club Highest MPG:	20.3
Auto Club Average MPG:	18.2
Auto Club Lowest MPG:	16.6

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Large 4-door Pickup
Similar to Chevrolet Silverado

STRONG POINTS

- Good MPG for a full-sized pickup truck
- XM radio
- Adjustable pedal cluster
- Roomy interior with the cargo capacity of a truck
- NAV system with live traffic alerts

WEAK POINTS

- High purchase price (\$46K+)
- Entry to and exit from rear seat
- Large turning circle & sluggish handling

OVERALL OBSERVATIONS

The GMC Sierra and the similar Chevy Silverado Hybrids are the only full-size hybrid pickups on the market today. One might ask why a hybrid pickup? Trucks have unbeatable utility, and if you can operate one at 21 mpg vs. 16 mpg it makes sense. Besides, the large size of a truck provides lots of room to package the hybrid components. Power adjustable seats and pedals, along with a tilt steering wheel, should allow any driver to fit in the Sierra properly. It should be noted that the score for "Luggage Capacity" on this page reflects a comparison of the interior (lockable) space to the trunk space of the SUVs and cars in this guide, not the pickup bed volume.

AFTERMARKET PARTS

Wheels, lift kits, lowering kits, off-road tires, tonneau covers

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	5690
Exterior Length (in):	230.0
Exterior Width (in):	79.9
Exterior Height (in):	73.8
Wheelbase (in):	143.5
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	4 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Bridgestone P265/65R18
Towing Cap. (lbs) W/WO Brakes:	6100 Maximum
Transmission Type:	2-Mode Hybrid
Drivetrain Type:	Rear Wheel
Engine Size	6.0L SFI OHV V8
Horsepower @ RPM:	332 @ 5100
Electric Motor Horsepower:	N/A

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	6.00
Braking:	5.94
Crashworthiness:	7.12
Visibility:	7.40
Slalom Handling:	1.45
Ride Quality:	6.54
Fuel Economy:	2.32
Interior Noise:	6.37
Acceleration:	6.44
Ease of Entry and Exit:	7.44
Interior Size:	5.71
Turning Circle:	0.00
Luggage Capacity:	4.31

Honda Accord EX V6

GREEN CAR SCORES

Score For This Vehicle	78.59
Highest Scoring Green Car	88.11
Lowest Scoring Green Car	57.44

VEHICLE PRICE

Base Price:	\$29,375
Price as Tested:	\$29,375
Cost per Point for this Vehicle	\$374
Highest Green Car Cost/Point	\$1,344
Lowest Green Car Cost/Point	\$237

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	18.5
EPA Urban MPG:	19
EPA Highway MPG:	29
Auto Club Highest MPG:	23.9
Auto Club Average MPG:	21.5
Auto Club Lowest MPG:	19.5

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

PZEV

DESCRIPTION/COMMENTS

Large 4-door Sedan

STRONG POINTS

- Extremely clean PZEV emissions from a powerful V6
- Security of items in trunk, since release is lockable & backfold control is in trunk
- ABS brakes provide short stops

WEAK POINTS

- When using the remote to unlock, if a door is not opened within 30 seconds, the doors relock
- Shifter lacks a detent for OD
- Rear windows don't open fully

OVERALL OBSERVATIONS

The Honda Accord is extremely popular, routinely finishing in the top three car models for nationwide sales year after year. For 2009, the 271 horsepower (which provides sub-8 second 0-60 mph acceleration times), top-of-the-line V6 edition meets stringent PZEV emission standards. This means that you can experience all of the qualities that make the Accord so popular (reputation for good build quality and reliability, powerful brakes, smooth but taut ride, easy to see out of, etc.) while contributing to clean air!

AFTERMARKET PARTS

Rear spoiler, tires, custom graphics

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3380
Exterior Length (in):	194.3
Exterior Width (in):	72.7
Exterior Height (in):	58.1
Wheelbase (in):	110.2
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Michelin P225/50R17
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 5 Speed
Drivetrain Type:	Front Wheel
Engine Size	3.5L SOHC 24V VTEC V6
Horsepower @ RPM:	271 @ 6200

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	7.40
Crashworthiness:	5.36
Visibility:	7.30
Slalom Handling:	7.49
Ride Quality:	7.13
Fuel Economy:	2.60
Interior Noise:	7.49
Acceleration:	8.09
Ease of Entry and Exit:	6.53
Interior Size:	3.82
Turning Circle:	5.12
Luggage Capacity:	1.27

Honda Civic EX-L Navi

GREEN CAR SCORES

Score For This Vehicle

69.42

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$24,325**

Price as Tested: **\$24,325**

Cost per Point for this Vehicle

\$350

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **13.2**

EPA Urban MPG: **25**

EPA Highway MPG: **36**

Auto Club Highest MPG: **35.2**

Auto Club Average MPG: **29.9**

Auto Club Lowest MPG: **25.0**

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Subcompact 4-door Sedan

STRONG POINTS

- Good MPG
- Security of items in trunk (interior release lockable, backfold release in the trunk)
- XM radio
- Handling

WEAK POINTS

- Cramped rear seat
- Shifter lacks a detent for OD
- When using the remote to unlock, if a door isn't opened in 30 seconds, the doors relock (even if you pop the trunk)
- Buzzy engine at or near WOT

OVERALL OBSERVATIONS

The Honda Civic has been one of the most popular small cars in the US for years. We tested the top-of-the-line Civic EX-L NAVI and it was loaded, including ABS brakes, six air bags, voice activated navigation, Bluetooth, heated front seats and side mirrors, cruise control, power moonroof, and lots more. All this for just over \$24K (MSRP) and it gets an average of 29 mpg too! It has an advanced 5-speed automatic transmission, but like other Honda's we have tested, when you shift it to drive forward, the shifter stops at fourth, going right past the fifth gear position (which is the recommended gear selection and provides the best mpg).

AFTERMARKET PARTS

Body kits, rear spoilers, brake kits

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2830
Exterior Length (in):	177.3
Exterior Width (in):	69.0
Exterior Height (in):	56.5
Wheelbase (in):	106.3
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Bridgestone P205/55R16
Towing Cap. (lbs) W/WO Brakes:	1000/1000
Transmission Type:	Auto 5 Speed
Drivetrain Type:	Front Wheel
Engine Size	1.8L SOHC 16V i-VTEC I4
Horsepower @ RPM:	140 @ 6300

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	6.61
Crashworthiness:	4.71
Visibility:	7.20
Slalom Handling:	7.43
Ride Quality:	7.13
Fuel Economy:	4.38
Interior Noise:	3.26
Acceleration:	5.33
Ease of Entry and Exit:	6.80
Interior Size:	2.83
Turning Circle:	5.81
Luggage Capacity:	0.95

Honda Civic GX NGV

GREEN CAR SCORES

Score For This Vehicle

66.00

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: \$18,925

Price as Tested: \$25,860

Cost per Point for this Vehicle

\$392

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type	Natural Gas
Fuel Capacity (gal):	8.0
EPA Urban MPG:	24
EPA Highway MPG:	36
Auto Club Highest MPG:	39.8
Auto Club Average MPG:	33.2
Auto Club Lowest MPG:	23.8

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

Alternative Fuel

DESCRIPTION/COMMENTS

Subcompact 4-door Sedan

STRONG POINTS

- Certified to AT-PZEV emissions standards
- Domestically available fuel (non-petroleum)
- Home refueling possible
- Efficient operation (28 mpg equivalent)
- Based on a popular and common vehicle

WEAK POINTS

- Small trunk and rear seat does not fold down
- Drivers tend to be nervous due to perceived lack of refueling facilities (especially outside of California). 235 mile range does not help.
- Underpowered
- Lacks rear cupholders and center armrest
- Shifter lacks a detent for OD

OVERALL OBSERVATIONS

The Honda Civic GX is the only model available that runs on clean burning CNG. Honda claims the 1.8-liter 4-cylinder engine is the cleanest internal combustion engine available. The 235-mile range and sparse population of CNG fuel stations can cause some trepidation, but for those with normal commutes and Honda's "PHIL" home refueling system, visits to the gas station can be a thing of the past! Like the Civic Hybrid, the GX shares most of the advantages that make the Civic a top-selling compact car.

AFTERMARKET PARTS

Exhaust kits, body kits, rear spoiler

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2870
Exterior Length (in):	177.3
Exterior Width (in):	69.0
Exterior Height (in):	56.5
Wheelbase (in):	106.3
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Dunlop P195/65R15
Towing Cap. (lbs) W/WO Brakes:	1000/1000
Transmission Type:	Auto 5 Speed
Drivetrain Type:	Front Wheel
Engine Size	1.8L SOHC 16V I4
Horsepower @ RPM:	113 @ 6300

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	5.95
Crashworthiness:	3.75
Visibility:	6.80
Slalom Handling:	6.35
Ride Quality:	6.92
Fuel Economy:	4.17
Interior Noise:	3.41
Acceleration:	3.13
Ease of Entry and Exit:	6.70
Interior Size:	3.54
Turning Circle:	6.28
Luggage Capacity:	0.00

Honda Fit Sport

GREEN CAR SCORES

Score For This Vehicle	74.70
Highest Scoring Green Car	88.11
Lowest Scoring Green Car	57.44

VEHICLE PRICE

Base Price:	\$18,780
Price as Tested:	\$18,780
Cost per Point for this Vehicle	\$251
Highest Green Car Cost/Point	\$1,344
Lowest Green Car Cost/Point	\$237

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	10.6
EPA Urban MPG:	27
EPA Highway MPG:	33
Auto Club Highest MPG:	34.7
Auto Club Average MPG:	31.2
Auto Club Lowest MPG:	25.1

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Small 5-door Wagon

STRONG POINTS

- Good MPG
- Excellent and flexible utilization of interior space
- Responsive and nimble handling
- Shifter and clutch easy to use
- Equipped with a Navigation system

WEAK POINTS

- Controls for the radio and NAV system are small (can be voice activated)
- Lacks rear center armrest
- Buzzy/bouncy ride at freeway speeds
- Can be blown around by side-winds

OVERALL OBSERVATIONS

EPA calls the Honda Fit a "small station wagon", but it looks like a compact 4-door hatchback. The 1.5 liter 4 cylinder engine with 5-speed manual transmission averaged over 31 mpg, while still providing better than average acceleration. It has excellent ABS brakes, nimble handling, & can fit easily into most parking spots. Like many other small cars, the rear seat is cramped & has no center armrest. Similar to most Honda models there are few options, but the "Sport" model we tested has the most equipment (including a voice activated navigation/sound system but surprisingly lacks a Bluetooth link for a cellular phone), all for \$18,780.

AFTERMARKET PARTS

Custom floor mats, fog lamps, sport grilles

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2550
Exterior Length (in):	161.6
Exterior Width (in):	66.7
Exterior Height (in):	60.0
Wheelbase (in):	98.4
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Dunlop 185/55R16
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Manual 5 Speed
Drivetrain Type:	Front Wheel
Engine Size	1.5L SOHC 16V i-VTEC I4
Horsepower @ RPM:	117 @ 6600

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	5.78
Crashworthiness:	4.37
Visibility:	7.10
Slalom Handling:	7.67
Ride Quality:	6.79
Fuel Economy:	4.49
Interior Noise:	4.30
Acceleration:	6.41
Ease of Entry and Exit:	6.94
Interior Size:	4.42
Turning Circle:	7.11
Luggage Capacity:	2.32

Honda Insight EX Navi

GREEN CAR SCORES

Score For This Vehicle

68.25

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$23,770**

Price as Tested: **\$23,770**

Cost per Point for this Vehicle

\$348

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	10.6
EPA Urban MPG:	40
EPA Highway MPG:	43

Auto Club Highest MPG:	42.8
Auto Club Average MPG:	37.9
Auto Club Lowest MPG:	31.2

MODEL YEAR TESTED - 2010



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Compact 5-door Sedan

STRONG POINTS

- Excellent fuel economy
- Certified as an AT-PZEV
- Affordable purchase price for a hybrid
- Has that "green look"

WEAK POINTS

- Underpowered
- Cramped rear seat
- Rough transition from engine stop to start especially in econ mode
- Front cup holders too small, rears are in the door = spills when you close the door

OVERALL OBSERVATIONS

Honda introduced the new Insight to take on the Toyota Prius. They wanted to have a car that was available exclusively as a hybrid (not a conversion) that looked "aerodynamic" and was identifiable as a hybrid. Well, a wind tunnel is a wind tunnel and many have a hard time telling the Insight and the Prius apart at a glance! The Insight is less expensive than the Prius (or most other hybrids), gets great mileage, and is also an AT-PZEV. However, its performance and overall utility lag behind the other hybrids on the market today.

AFTERMARKET PARTS

Car cover, cargo mat, nose cover

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2750
Exterior Length (in):	172.3
Exterior Width (in):	66.7
Exterior Height (in):	56.2
Wheelbase (in):	100.4
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Dunlop P175/65R15
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size	1.3L SOHC i-VTEC I4
Horsepower @ RPM:	98 @ 5800
Electric Motor Horsepower:	10 @ 1500

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	3.78
Crashworthiness:	3.61
Visibility:	6.90
Slalom Handling:	5.68
Ride Quality:	6.08
Fuel Economy:	7.73
Interior Noise:	5.37
Acceleration:	2.89
Ease of Entry and Exit:	5.89
Interior Size:	2.62
Turning Circle:	7.13
Luggage Capacity:	1.56

Hyundai Elantra SE PZEV

GREEN CAR SCORES

Score For This Vehicle

73.37

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$18,540**

Price as Tested: **\$18,635**

Cost per Point for this Vehicle

\$254

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **14.0**

EPA Urban MPG: **25**

EPA Highway MPG: **33**

Auto Club Highest MPG: **32.3**

Auto Club Average MPG: **26.9**

Auto Club Lowest MPG: **23.6**

MODEL YEAR TESTED - 2008



OVERALL OBSERVATIONS

The Hyundai Elantra has a lot going for it. It is a PZEV, so emissions are as clean as any hybrid; it gets almost 27 mpg on average, and has an excellent factory warranty. It has a quieter interior than most of its competitors, but the engine is underpowered. Like other small cars, the rear seat is cramped (especially for tall occupants) and the trunk is small. This is a well-equipped mid-size sedan with XM radio, 6 airbags, ABS, power everything, and heated side mirrors, all for around \$18,000.

REASON THIS VEHICLE WAS TESTED

PZEV

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- Low emissions (certified as a PZEV)
- Affordable purchase price
- Good fuel economy
- Nimble and easy to steer
- Smooth & quiet engine

WEAK POINTS

- Underpowered
- Cramped rear seat for taller passengers
- Small trunk

AFTERMARKET PARTS

Custom grilles, exhaust kits

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2900
Exterior Length (in):	177.4
Exterior Width (in):	69.9
Exterior Height (in):	58.3
Wheelbase (in):	104.3
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	60/60,000
Tire Manufacturer:	Kumho P205/55R16
Towing Cap. (lbs) W/WO Brakes:	1500/750
Transmission Type:	Auto 4 Speed
Drivetrain Type:	Front Wheel
Engine Size	2.0L DOHC I4 16V CVVT
Horsepower @ RPM:	132 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	5.50
Crashworthiness:	4.79
Visibility:	6.90
Slalom Handling:	7.96
Ride Quality:	6.75
Fuel Economy:	4.12
Interior Noise:	6.41
Acceleration:	3.46
Ease of Entry and Exit:	6.85
Interior Size:	3.81
Turning Circle:	6.53
Luggage Capacity:	1.30

Hyundai Sonata SE

GREEN CAR SCORES

Score For This Vehicle	72.01
Highest Scoring Green Car	88.11
Lowest Scoring Green Car	57.44

VEHICLE PRICE

Base Price:	\$22,770
Price as Tested:	\$23,220
Cost per Point for this Vehicle	\$322
Highest Green Car Cost/Point	\$1,344
Lowest Green Car Cost/Point	\$237

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	17.7
EPA Urban MPG:	22
EPA Highway MPG:	32
Auto Club Highest MPG:	32.2
Auto Club Average MPG:	25.0
Auto Club Lowest MPG:	19.0

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

PZEV

DESCRIPTION/COMMENTS

Large 4-door Sedan

STRONG POINTS

- PZEV engine available
- A lot of "car" for the money
- Excellent warranty
- Scores 5 stars on all NHTSA crash tests (roll-over rating = 4 stars)
- Good mpg for a "large" car

WEAK POINTS

- Engine noisy at high RPM
- Rear seat difficult to enter for tall passengers
- Optional Bluetooth system has a weak speaker & doesn't mute sound system

OVERALL OBSERVATIONS

The Hyundai Sonata is a loaded "near-luxury" full-sized car equipped with power-everything, electronic stability control, 6 airbags, sound system with AM/FM/XM/CD, and cruise control. All of this can be had for only \$23,000 (MSRP). A PZEV (2.4 liter 4 cylinder, the same size as the ULEV engine in our test car) engine can be purchased (for no extra charge) in California and the other states that adopted CA emission standards. A PZEV equipped test vehicle was not available. Fuel economy and horsepower ratings of the PZEV & ULEV engines are the same. For value and security (due to an excellent warranty) the Sonata could be the right choice.

AFTERMARKET PARTS

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3330
Exterior Length (in):	189.9
Exterior Width (in):	72.0
Exterior Height (in):	58.0
Wheelbase (in):	107.4
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	60/60,000
Tire Manufacturer:	Kumho P215/55R17
Towing Cap. (lbs) W/WO Brakes:	1000/500
Transmission Type:	Auto 5 Speed
Drivetrain Type:	Front Wheel
Engine Size	2.4L DOHC CVVT I4
Horsepower @ RPM:	175 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	5.63
Crashworthiness:	5.30
Visibility:	7.10
Slalom Handling:	6.63
Ride Quality:	7.08
Fuel Economy:	3.45
Interior Noise:	5.92
Acceleration:	5.61
Ease of Entry and Exit:	6.89
Interior Size:	4.21
Turning Circle:	5.56
Luggage Capacity:	1.63

Jeep Compass Sport 4x2

GREEN CAR SCORES

Score For This Vehicle

68.26

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$20,195**

Price as Tested: **\$23,455**

Cost per Point for this Vehicle

\$344

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **13.5**

EPA Urban MPG: **21**

EPA Highway MPG: **25**

Auto Club Highest MPG: **24.9**

Auto Club Average MPG: **22.4**

Auto Club Lowest MPG: **15.4**

MODEL YEAR TESTED - 2008



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

4-door SUV

STRONG POINTS

- Flexible interior with individually folding/reclining rear seats
- Lots of headroom
- Powerful air conditioning system
- Sliding sunvisors
- Good MPG for an SUV

WEAK POINTS

- Cramped/uncomfortable rear seat is also difficult to get in and out of
- Exposed seat tracks can catch your feet
- Poor rearward visibility

OVERALL OBSERVATIONS

The Jeep Compass is another of those rare high-mpg SUVs. The 2.4 liter 4 cylinder engine and continuously variable transmission (CVT) gave us better than 22 mpg average but passing power was weak. For 2009, a PZEV engine is available, with the same 172 HP. The rear seats fold down individually providing load/passenger flexibility. The air conditioning system is powerful, since we were testing it in the middle of a summer heat wave. Chrysler has addressed Jeep's past reliability issues by providing a limited lifetime warranty on the powertrain. The Compass proved popular in the CARS (cash for clunkers) program in summer 2009.

AFTERMARKET PARTS

Seat covers, cargo nets, bike racks

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3180
Exterior Length (in):	173.4
Exterior Width (in):	71.3
Exterior Height (in):	64.2
Wheelbase (in):	103.7
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	4 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Goodyear P215/65R17
Towing Cap. (lbs) W/WO Brakes:	2000/1000
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size	2.4L DOHC I4 Dual VVT
Horsepower @ RPM:	172 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	4.55
Crashworthiness:	4.12
Visibility:	7.00
Slalom Handling:	6.29
Ride Quality:	5.88
Fuel Economy:	2.64
Interior Noise:	5.54
Acceleration:	4.05
Ease of Entry and Exit:	6.50
Interior Size:	5.60
Turning Circle:	6.43
Luggage Capacity:	2.65

Jeep Patriot Limited 4x2 FWD

GREEN CAR SCORES

Score For This Vehicle

67.86

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$22,860**

Price as Tested: **\$24,155**

Cost per Point for this Vehicle

\$356

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **13.5**

EPA Urban MPG: **23**

EPA Highway MPG: **28**

Auto Club Highest MPG: **25.1**

Auto Club Average MPG: **23.1**

Auto Club Lowest MPG: **21.6**

MODEL YEAR TESTED - 2008



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

4-door SUV

STRONG POINTS

- Good sound system, includes Sirius
- Flexible interior with individually folding/reclining rear seats
- Comfortable freeway ride
- Lots of headroom
- Good MPG for an SUV

WEAK POINTS

- Cramped/uncomfortable rear seat
- Rear view mirror hard to reach/adjust
- Dives on hard braking, anything on rear seat falls off.
- Lacks rear center armrest

OVERALL OBSERVATIONS

You don't often think of an SUV & good mpg at the same time, but a few examples do exist and the Jeep Patriot is one! It has the utility of an SUV but still gets mpg in the low to mid 20s. It has surprisingly good ride quality on the freeway and the 2.4 liter 4 cylinder engine/5 speed manual transmission combination gives better than average acceleration. For 2009, a PZEV engine is available, with the same 172 HP. The Patriot has electronic stability control, ABS, and front & rear side curtain airbags (side bags are optional) to help keep the family safe. Have your cake and eat it too, with a high mpg SUV.

AFTERMARKET PARTS

Bike rack, cargo mat, splash guards

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3360
Exterior Length (in):	173.6
Exterior Width (in):	69.1
Exterior Height (in):	65.7
Wheelbase (in):	103.7
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Firestone P215/60R17
Towing Cap. (lbs) W/WO Brakes:	1000/1000
Transmission Type:	Manual 5 Speed
Drivetrain Type:	Front Wheel
Engine Size	2.4L DOHC I4 Dual VVT
Horsepower @ RPM:	172 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	6.00
Braking:	5.74
Crashworthiness:	5.34
Visibility:	6.70
Slalom Handling:	6.15
Ride Quality:	7.00
Fuel Economy:	3.29
Interior Noise:	2.77
Acceleration:	6.13
Ease of Entry and Exit:	6.36
Interior Size:	3.42
Turning Circle:	6.27
Luggage Capacity:	2.70

Kia Forte EX

GREEN CAR SCORES

Score For This Vehicle

75.74

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: \$16,795

Price as Tested: \$18,090

Cost per Point for this Vehicle

\$239

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type Unleaded Regular

Fuel Capacity (gal): 13.7

EPA Urban MPG: 27

EPA Highway MPG: 36

Auto Club Highest MPG: 31.8

Auto Club Average MPG: 29.0

Auto Club Lowest MPG: 25.5

MODEL YEAR TESTED - 2010



REASON THIS VEHICLE WAS TESTED

PZEV

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- Certified as a PZEV
- Good MPG (30)
- Reasonable purchase price (\$18K)
- Equipped with Sirius satellite radio & Bluetooth
- Excellent warranty

WEAK POINTS

- Lack of instruments (not even a temp gauge)
- Rear windows don't open fully
- Steering too stiff on center
- Stiff ride
- High package shelf impedes rear visibility

OVERALL OBSERVATIONS

The Forte is Kia's new midsize sedan and it does what Kia seems to do best, supply value. This \$18K sedan (we tested the mid-line "EX") comes very well equipped at this price. It includes ABS (that provided short, straight stops), ESC, power "everything", 6 airbags, optional 5-speed automatic transmission, Sirius satellite radio (first 3 months subscription free), 10 year/100,000 mile powertrain warranty, and Bluetooth connectivity for your cellular phone. Add in 30 mpg and PZEV emissions and you have a lot of car for a little money (scoring second best in our "cost per point" category)!

AFTERMARKET PARTS

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2870
Exterior Length (in):	178.3
Exterior Width (in):	69.8
Exterior Height (in):	57.4
Wheelbase (in):	104.3
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	60/60,000
Tire Manufacturer:	Hankook P195/65R15
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 5 Speed
Drivetrain Type:	Front Wheel
Engine Size	2.0L 16V DOHC CVT I4
Horsepower @ RPM:	156 @ 6200

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	8.25
Crashworthiness:	4.75
Visibility:	6.70
Slalom Handling:	7.08
Ride Quality:	6.83
Fuel Economy:	4.77
Interior Noise:	4.44
Acceleration:	5.59
Ease of Entry and Exit:	6.86
Interior Size:	3.71
Turning Circle:	6.38
Luggage Capacity:	1.38

Kia Rio5 SX

GREEN CAR SCORES

Score For This Vehicle

63.50

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: \$14,930

Price as Tested: \$15,025

Cost per Point for this Vehicle

\$237

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type Unleaded Regular

Fuel Capacity (gal): 11.9

EPA Urban MPG: 27

EPA Highway MPG: 33

Auto Club Highest MPG: 29.6

Auto Club Average MPG: 28.7

Auto Club Lowest MPG: 19.3

MODEL YEAR TESTED - 2008



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Compact 4-door Hatchback

STRONG POINTS

- Affordable purchase price
- Good fuel economy
- Nimble and fun to drive
- Warranty (5 years/60,000 miles with 10 years/100,000 miles for powertrain)

WEAK POINTS

- Test vehicle not equipped with optional power door locks and windows
- No ABS (optional)
- Cramped & uncomfortable rear seat
- Small trunk - but individually-folding rear seats provide more room

OVERALL OBSERVATIONS

The Rio is Kia's entry-level car. We tested the Rio5 SX, the top of the line 4-door hatchback and it was still priced at \$15,000. We would strongly recommend adding the "Power Package" (locks, windows, etc.) and the optional ABS brakes if you are planning on purchasing a Rio (\$1000 for both). Our test car (not equipped with ABS) gave poor stopping distances since the tires tended to lock and slide. On the plus side, we saw 29 mpg (& the 2009 and later models – we tested a 2008, get better highway mpg with an EPA rated 33 mpg), nimble handling, and some even called it "fun-to-drive". Like all Kias, it has an excellent warranty.

AFTERMARKET PARTS

Front-end bra, seat covers

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2520
Exterior Length (in):	158.1
Exterior Width (in):	66.7
Exterior Height (in):	57.9
Wheelbase (in):	98.4
Anti-lock Braking System:	None
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	60/60,000
Tire Manufacturer:	Hankook P195/55R15
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Manual 5 Speed
Drivetrain Type:	Front Wheel
Engine Size	1.6L DOHC I4 16V CVVT
Horsepower @ RPM:	110 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	0.00
Crashworthiness:	4.34
Visibility:	6.30
Slalom Handling:	7.06
Ride Quality:	6.38
Fuel Economy:	4.49
Interior Noise:	4.99
Acceleration:	4.25
Ease of Entry and Exit:	6.85
Interior Size:	3.47
Turning Circle:	7.43
Luggage Capacity:	0.94

Kia Rondo EX

GREEN CAR SCORES

Score For This Vehicle

76.20

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$19,845**

Price as Tested: **\$19,845**

Cost per Point for this Vehicle

\$260

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **15.8**

EPA Urban MPG: **20**

EPA Highway MPG: **27**

Auto Club Highest MPG: **29.2**

Auto Club Average MPG: **23.0**

Auto Club Lowest MPG: **17.9**

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

PZEV

DESCRIPTION/COMMENTS

4-door SUV (EPA calls it a mid-sized station wagon)

STRONG POINTS

- Interior flexibility (can seat up to 7)
- Lots of headroom
- Easy to see out of (especially to the front)
- Purchase price (under \$20K)
- Equipped with lots of standard features
- Excellent warranty

WEAK POINTS

- Lacks rear center armrests
- Sirius satellite radio loses signal too often
- Leather seats are nice, but can be slippery, reducing lateral support

OVERALL OBSERVATIONS

The Kia Rondo EX epitomizes value in a crossover, (or is it a "mid-sized station wagon" in disguise?) You get seating for 7, ABS, ESC, heated mirrors, 6 airbags, satellite radio, leather seats (first 2 rows), fog lights, and a 10 year/100,000 mile powertrain warranty for less than \$20K. Add to this a reasonable 22 mpg (by SUV standards) and clean PZEV emissions (on 4 cylinder models), and you can drive this economical CUV without environmental guilt too! On the other hand, your \$20K does not buy you a luxury car. Our Rondo test vehicle did not exhibit the fit and finish we are used to, and it was not equipped with center armrests in the rear seating rows. All in all, though, the Kia Rondo is a great value.

AFTERMARKET PARTS

Cargo liner, seat covers, bike racks

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3/2
Curb Weight (lbs):	3500
Exterior Length (in):	178.9
Exterior Width (in):	71.6
Exterior Height (in):	65.0
Wheelbase (in):	106.3
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	60/60,000
Tire Manufacturer:	Michelin P225/50R17
Towing Cap. (lbs) W/WO Brakes:	1500/1000
Transmission Type:	Auto 4 Speed
Drivetrain Type:	Front Wheel
Engine Size	2.4L 16V DOHC I4
Horsepower @ RPM:	162 @ 4000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	6.56
Crashworthiness:	5.50
Visibility:	7.40
Slalom Handling:	6.98
Ride Quality:	6.71
Fuel Economy:	2.64
Interior Noise:	5.59
Acceleration:	5.25
Ease of Entry and Exit:	7.54
Interior Size:	5.58
Turning Circle:	5.33
Luggage Capacity:	4.13

Kia Soul Exclaim

GREEN CAR SCORES

Score For This Vehicle

70.64

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$18,595**

Price as Tested: **\$18,595**

Cost per Point for this Vehicle

\$263

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **12.7**

EPA Urban MPG: **24**

EPA Highway MPG: **30**

Auto Club Highest MPG: **27.8**

Auto Club Average MPG: **24.3**

Auto Club Lowest MPG: **18.9**

MODEL YEAR TESTED - 2010



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Small Station Wagon

STRONG POINTS

- Economical with reasonable price, good mpg, and well equipped
- The box shape is "cute" and provides a roomy interior
- Has a better than average sound system with Sirius radio, but the flashing lights around the speakers can be distracting (or at least annoying)
- Excellent warranty

WEAK POINTS

- Choppy ride
- Underpowered
- Lacks rear seat center armrest
- Small trunk, but folding rear seats help

OVERALL OBSERVATIONS

Jelly beans or cubes? There were some pundits who predicted that all cars would eventually look the same (like jelly beans) due to aerodynamics, but if recent trends continue, they will be proven wrong. One of the more popular recent trends is cube-shaped cars. The Kia Soul is their entry into this field, and it has a lot going for it. Like many Kia models, it comes surprisingly well equipped, with an equally surprising MSRP under \$19K. Add to that a 10yr/100K mile powertrain warranty and you have a good deal! Even though the 2.0 liter engine can use a little more power, and the ride is choppy, the youth-oriented styling allows a roomy interior, and you still get 26 mpg. This cube is sweet!

AFTERMARKET PARTS

Wheels, tires, headlight covers

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2980
Exterior Length (in):	161.6
Exterior Width (in):	70.3
Exterior Height (in):	65.4
Wheelbase (in):	100.4
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	60/60,000
Tire Manufacturer:	Hankook P225/45R18
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 4 Speed
Drivetrain Type:	Front Wheel
Engine Size	2.0L DOHC 16V I4
Horsepower @ RPM:	142 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	5.78
Crashworthiness:	4.88
Visibility:	7.20
Slalom Handling:	7.28
Ride Quality:	6.21
Fuel Economy:	3.66
Interior Noise:	3.71
Acceleration:	4.24
Ease of Entry and Exit:	7.06
Interior Size:	5.15
Turning Circle:	6.36
Luggage Capacity:	2.11

Lexus GS 450h

GREEN CAR SCORES

Score For This Vehicle	
82.79	
Highest Scoring Green Car	
88.11	
Lowest Scoring Green Car	
57.44	

VEHICLE PRICE

Base Price:	\$57,225
Price as Tested:	\$67,775
Cost per Point for this Vehicle	
\$819	
Highest Green Car Cost/Point	
\$1,344	
Lowest Green Car Cost/Point	
\$237	

FUEL ECONOMY

Fuel Type	Unleaded Premium
Fuel Capacity (gal):	17.2
EPA Urban MPG:	22
EPA Highway MPG:	25
Auto Club Highest MPG:	24.9
Auto Club Average MPG:	23.1
Auto Club Lowest MPG:	20.0

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Compact 4-door Sedan

STRONG POINTS

- Powerful with excellent acceleration
- Adaptive cruise control
- SULEV emissions
- High fidelity sound system
- Loaded with advanced safety and convenience features
- Quiet interior

WEAK POINTS

- High purchase price (\$68K)
- Requires expensive premium fuel
- Small trunk and rear seat does not fold down

OVERALL OBSERVATIONS

The Lexus "GS series" is a family of rear-wheel drive luxury-sport sedans. Lexus takes advantage of hybrid powertrain characteristics (electric motors provide their peak torque at low speeds) to provide excellent performance while still improving fuel economy. The GS 450h we tested gets 15% better mpg than the comparable non-hybrid GS 460 with equivalent or even better performance. Our test car was loaded with safety & convenience features including auto leveling HID headlights, Bluetooth, voice activated navigation, auto up/down (with pinch control) power windows & a long list of others. The bottom line, the GS 450h is a wonderful luxury-sport sedan. If you have \$60K, then check it out!

AFTERMARKET PARTS

Body kits, wheels, low profile tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	4250
Exterior Length (in):	190.7
Exterior Width (in):	71.6
Exterior Height (in):	56.1
Wheelbase (in):	112.2
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	48/50,000
Tire Manufacturer:	Dunlop P245/40R18
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	CVT
Drivetrain Type:	Rear Wheel
Engine Size	3.5L 24V V6 Hybrid
Horsepower @ RPM:	292 @ 6400
Electric Motor Horsepower:	MG1 180;MG2 197

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	6.30
Crashworthiness:	7.40
Visibility:	8.00
Slalom Handling:	6.90
Ride Quality:	8.19
Fuel Economy:	0.81
Interior Noise:	8.59
Acceleration:	9.66
Ease of Entry and Exit:	7.36
Interior Size:	3.19
Turning Circle:	6.65
Luggage Capacity:	0.73

Lexus LS 600h L Sedan

GREEN CAR SCORES

Score For This Vehicle

84.46

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: \$106,710

Price as Tested: \$113,560

Cost per Point for this Vehicle

\$1,344

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type	Unleaded Premium
Fuel Capacity (gal):	22.2
EPA Urban MPG:	20
EPA Highway MPG:	22
Auto Club Highest MPG:	22.2
Auto Club Average MPG:	20.9
Auto Club Lowest MPG:	17.9

MODEL YEAR TESTED - 2009



OVERALL OBSERVATIONS

Most of the time when you hear "hybrid" you think of a high mpg, low performing "green-mobile". Lexus however thinks "green-performance". Their flagship model line is the LS and they elected to place the hybrid model (LS600h L) at the top-of-the-line. This is a marvelous luxury/performance sedan that is powerful, quiet, comfortable and loaded with just about every convenience and safety feature you can imagine. All this and you still get a respectable 21 mpg while meeting strict SULEV7 emission standards. You don't get this cheap, but this is a car that can compete with comparable offerings from the elite manufacturers of the world, and still offer the environmental benefits of a hybrid!

REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- Powerful & seamless hybrid powertrain
- Quiet and comfortable interior
- Advanced safety equipment (12 airbags)
- Adaptive cruise control
- 21 mpg and SULEV7 emissions

WEAK POINTS

- Small trunk and rear seat doesn't fold
- High purchase price (we can't all afford luxury!)
- Requires expensive premium fuel
- Long rear doors cause entry/exit problems in "compact parking spaces"

AFTERMARKET PARTS

Chrome wheels, body kits, low-profile tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	5270
Exterior Length (in):	202.8
Exterior Width (in):	73.8
Exterior Height (in):	58.3
Wheelbase (in):	121.7
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags
Warranty (Months/Miles):	48/50,000
Tire Manufacturer:	Bridgestone P245/45R19
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	CVT
Drivetrain Type:	All Wheel - Full Time
Engine Size	5.0L 32V DOHC Dual VVT-i
Horsepower @ RPM:	389 @ 6400
Electric Motor Horsepower:	MG2 221 HP

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	4.57
Crashworthiness:	9.12
Visibility:	7.80
Slalom Handling:	6.97
Ride Quality:	8.33
Fuel Economy:	0.16
Interior Noise:	9.86
Acceleration:	9.74
Ease of Entry and Exit:	8.26
Interior Size:	5.81
Turning Circle:	3.94
Luggage Capacity:	0.90

Lexus RX 450h

GREEN CAR SCORES

Score For This Vehicle

83.19

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$42,535**

Price as Tested: **\$47,375**

Cost per Point for this Vehicle

\$569

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type **Unleaded Premium**

Fuel Capacity (gal): **17.2**

EPA Urban MPG: **28**

EPA Highway MPG: **27**

Auto Club Highest MPG: **27.2**

Auto Club Average MPG: **25.7**

Auto Club Lowest MPG: **24.6**

MODEL YEAR TESTED - 2010



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

4-door SUV

STRONG POINTS

- Balance of good mpg with excellent power
- High fidelity sound system featuring XM
- Certified as an AT-PZEV
- SUV utility
- Equipped with many safety/convenience systems including rear view camera

WEAK POINTS

- Requires expensive premium fuel
- High purchase price (we can't all afford luxury!)
- Dives on hard braking

OVERALL OBSERVATIONS

The Lexus RX 450h was the first luxury SUV on the market. It offers excellent V8-like performance, but still provides fuel economy about 40% better than similar non-hybrid SUVs and meets PZEV emission standards to boot. It is loaded with the safety and convenience features you would expect from a modern luxury vehicle including Bluetooth, rear view camera, reclining rear seats, and front, side, side curtain, and driver's knee airbags. The "utility" of an SUV is maintained & the RX can even tow a 3500 pound trailer. The 2009 RX scored 5 stars on all NHTSA crash tests and we anticipate that the 2010 will too. If you want to be "Green" with performance, luxury, & utility then the RX 450h is for you!

AFTERMARKET PARTS

Wheels, audio systems

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	4610
Exterior Length (in):	187.8
Exterior Width (in):	74.2
Exterior Height (in):	66.3
Wheelbase (in):	107.9
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	48/50,000
Tire Manufacturer:	Michelin P235/60R18
Towing Cap. (lbs) W/WO Brakes:	3500
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size	3.5L 24V V6 Hybrid
Horsepower @ RPM:	245 @ 6000
Electric Motor Horsepower:	MG2 167 HP

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	5.79
Crashworthiness:	7.83
Visibility:	7.80
Slalom Handling:	5.45
Ride Quality:	7.79
Fuel Economy:	1.98
Interior Noise:	6.71
Acceleration:	8.30
Ease of Entry and Exit:	7.45
Interior Size:	4.60
Turning Circle:	5.10
Luggage Capacity:	5.40

Mazda Mazda6i Sedan Grand Touring

GREEN CAR SCORES

Score For This Vehicle

74.06

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$25,580**

Price as Tested: **\$29,440**

Cost per Point for this Vehicle

\$397

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **18.5**

EPA Urban MPG: **20**

EPA Highway MPG: **29**

Auto Club Highest MPG: **29.2**

Auto Club Average MPG: **24.1**

Auto Club Lowest MPG: **21.3**

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

PZEV

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- PZEV emissions available with auto trans only (test car man trans, certified as LEV)
- HID headlights illuminate well and are height adjustable
- Blind zone monitoring system
- Optional Bose audio system with Bluetooth and Sirius satellite radio

WEAK POINTS

- When using the remote to unlock, if a door isn't opened in 30 seconds, the doors relock
- Poor audio quality of other person on phone when using Bluetooth
- Front shoulder belt too low for tall drivers

OVERALL OBSERVATIONS

The mid-sized sedan has been the "bread and butter" of the American car market for ages. Mazda's entry into this market is simply called the "6". The "6" is attractively styled (some might even call it sporty) & our "I Grand Touring" version was well equipped. It comes standard with 6 airbags, ABS, ESC, adjustable HID headlights, blind-zone monitoring, power everything, & heated leather seats. The 2.5 liter 4 cylinder engine provided decent acceleration & averages 23 mpg. Since our test car had a manual trans, PZEV emissions were not available, but if you get an automatic, the clean burn engine can be had. The Mazda "6", especially the automatic, merits a good look even in the crowded mid-sized market.

AFTERMARKET PARTS

Exhaust kits, body kits, wheels, tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3350
Exterior Length (in):	194.5
Exterior Width (in):	72.4
Exterior Height (in):	57.9
Wheelbase (in):	109.8
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Michelin P215/55R17
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Manual 6 Speed
Drivetrain Type:	Front Wheel
Engine Size	2.5L DOHC 16V VVT I4
Horsepower @ RPM:	170 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	6.00
Braking:	8.11
Crashworthiness:	5.33
Visibility:	7.40
Slalom Handling:	6.85
Ride Quality:	7.31
Fuel Economy:	2.81
Interior Noise:	7.66
Acceleration:	6.42
Ease of Entry and Exit:	6.48
Interior Size:	2.59
Turning Circle:	5.42
Luggage Capacity:	1.68

Mercedes-Benz ML 320 BlueTEC

GREEN CAR SCORES

Score For This Vehicle	
83.98	
Highest Scoring Green Car	
88.11	
Lowest Scoring Green Car	
57.44	

VEHICLE PRICE

Base Price:	\$49,475
Price as Tested:	\$58,165
Cost per Point for this Vehicle	
\$693	
Highest Green Car Cost/Point	
\$1,344	
Lowest Green Car Cost/Point	
\$237	

FUEL ECONOMY

Fuel Type	Diesel #2
Fuel Capacity (gal):	25.1
EPA Urban MPG:	18
EPA Highway MPG:	24
Auto Club Highest MPG:	22.6
Auto Club Average MPG:	22.4
Auto Club Lowest MPG:	22.2

MODEL YEAR TESTED - 2009



OVERALL OBSERVATIONS

Mercedes-Benz has long been a proponent of diesel, and the development of their "Bluetech" system finally allowed their light-duty diesels to meet California's strict emission standards and bring them to market throughout the US. Mercedes attention to detail allowed the ML 320 to be one of the top scoring vehicles in this Guide, doing well on most tests, but without being on top of any one category. It has lots of advanced safety and convenience features, a comfortable ride (especially for an SUV), powerful ABS brakes, averages over 20 mpg, and the diesel engine provides good acceleration and will likely last forever (well almost)!

REASON THIS VEHICLE WAS TESTED

Clean Diesel

DESCRIPTION/COMMENTS

4-door SUV

STRONG POINTS

- Traction (AWD + ESC)
- Taut ride quality
- Sunvisors
- Advanced safety features (8 airbags)
- Good mpg for a 5000 pound SUV

WEAK POINTS

- Only meets ULEV emissions
- Transmission lags between shifts under heavy acceleration
- Easy to activate cruise control when reaching for turn indicator
- High purchase price (\$58k)

AFTERMARKET PARTS

Chrome wheels, exhaust kits, custom grilles

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	5080
Exterior Length (in):	188.5
Exterior Width (in):	83.6
Exterior Height (in):	71.5
Wheelbase (in):	114.7
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	48/50,000
Tire Manufacturer:	Bridgestone P225/50R19
Towing Cap. (lbs) W/WO Brakes:	7200 Max.
Transmission Type:	Auto 7 Speed
Drivetrain Type:	All Wheel - Full Time
Engine Size	3.0L V6 24V DOHC Diesel
Horsepower @ RPM:	210 @ 3400

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	8.08
Crashworthiness:	8.39
Visibility:	7.30
Slalom Handling:	4.93
Ride Quality:	7.90
Fuel Economy:	2.00
Interior Noise:	6.68
Acceleration:	6.80
Ease of Entry and Exit:	7.32
Interior Size:	6.71
Turning Circle:	5.30
Luggage Capacity:	5.56

Mitsubishi Lancer GTS

GREEN CAR SCORES

Score For This Vehicle	74.76
Highest Scoring Green Car	88.11
Lowest Scoring Green Car	57.44

VEHICLE PRICE

Base Price:	\$19,260
Price as Tested:	\$23,810
Cost per Point for this Vehicle	\$318
Highest Green Car Cost/Point	\$1,344
Lowest Green Car Cost/Point	\$237

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	15.3
EPA Urban MPG:	21
EPA Highway MPG:	28
Auto Club Highest MPG:	24.2
Auto Club Average MPG:	23.4
Auto Club Lowest MPG:	22.0

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

PZEV

DESCRIPTION/COMMENTS

Compact 4-door Sedan

STRONG POINTS

- Sporty and fun to drive
- Responsive handling, steering, and engine
- Excellent (optional) sound system with Sirius
- Optional HID headlights provide good forward illumination
- PZEV emissions available (test car LEV)

WEAK POINTS

- The main audio controls are on the screen. We prefer knobs you can feel so your eyes can stay on the road.
- Uncomfortable rear seat
- Entry and exit of rear seat
- Rearward visibility obstructed by the spoiler

OVERALL OBSERVATIONS

The Mitsubishi Lancer GTS we tested comes with a 2.4 liter engine & is certified as a LEV. We were trying to test a Lancer with a 2.0 liter engine that is certified as a PZEV, but a suitable test car was not available. Our Lancer GTS was very sporty & fun to drive due to its 168 hp engine, but it is unclear if the 143 hp PZEV would have the same character. On the plus side, the PZEV gets 2 mpg better fuel economy (25 vs. 23). Otherwise, the cars should be the same. The Lancer is a compact, & you can tell due to the cramped, uncomfortable, & hard to enter rear seat. We enjoyed the optional "Sun & Sound, Navigation, & Touring" packages. All this was under \$24K & you get a 10 year/100K mile powertrain warranty too!

AFTERMARKET PARTS

Chin spoiler, graphics, exhaust kits

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3070
Exterior Length (in):	180.0
Exterior Width (in):	69.4
Exterior Height (in):	58.7
Wheelbase (in):	103.7
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	7 Air Bags
Warranty (Months/Miles):	60/60,000
Tire Manufacturer:	Dunlop P215/45R18
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Manual 5 Speed
Drivetrain Type:	Front Wheel
Engine Size	2.4L DOHC I4 MIVEC
Horsepower @ RPM:	168 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	6.00
Braking:	7.26
Crashworthiness:	5.49
Visibility:	7.10
Slalom Handling:	8.84
Ride Quality:	7.38
Fuel Economy:	2.92
Interior Noise:	4.80
Acceleration:	7.20
Ease of Entry and Exit:	6.31
Interior Size:	3.27
Turning Circle:	7.18
Luggage Capacity:	1.00

Nissan Altima 2.5 SL

GREEN CAR SCORES

Score For This Vehicle	72.33
Highest Scoring Green Car	88.11
Lowest Scoring Green Car	57.44

VEHICLE PRICE

Base Price:	\$22,235
Price as Tested:	\$27,260
Cost per Point for this Vehicle	\$377
Highest Green Car Cost/Point	\$1,344
Lowest Green Car Cost/Point	\$237

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	20.0
EPA Urban MPG:	23
EPA Highway MPG:	31
Auto Club Highest MPG:	26.1
Auto Club Average MPG:	24.9
Auto Club Lowest MPG:	23.0

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

PZEV

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- PZEV emissions available (test car LEV)
- Optional Bose audio system with Bluetooth and XM satellite radio
- 4 cylinder engine was responsive & powerful
- Roomy front seats
- Smooth & comfortable ride on the freeway

WEAK POINTS

- Rear seatback releases hard to reach
- Parking brake (push on – push off)
- Steering too light with vague feel

OVERALL OBSERVATIONS

The Nissan Altima is a “nice” mid-sized sedan. It does not have any really outstanding aspects to its driving character, but it also does not have any glaring weaknesses, rather it does pretty well at everything it should. The 2.5 liter 4 cylinder engine provides surprisingly good acceleration & is available as a PZEV (our test car was a LEV). The fuel economy (26 mpg) is reasonable, & it scores 5 stars on all NHTSA crash tests. Like most of our test vehicles, our Altima was loaded. We especially liked the connection package which included a Bose CD changer with 9 speakers & Bluetooth phone connectivity (we don't recommend talking on the phone while driving, even hands-free).

AFTERMARKET PARTS

Audio systems, wheels, tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3250
Exterior Length (in):	189.8
Exterior Width (in):	70.7
Exterior Height (in):	57.9
Wheelbase (in):	109.3
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Continental P215/60R16
Towing Cap. (lbs) W/WO Brakes:	1000/1000
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size	2.5L DOHC 16V I4
Horsepower @ RPM:	175 @ 5600

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	6.00
Braking:	5.37
Crashworthiness:	5.21
Visibility:	7.10
Slalom Handling:	6.79
Ride Quality:	7.25
Fuel Economy:	3.57
Interior Noise:	5.69
Acceleration:	7.28
Ease of Entry and Exit:	7.34
Interior Size:	3.80
Turning Circle:	5.46
Luggage Capacity:	1.48

Nissan Altima Hybrid

GREEN CAR SCORES

Score For This Vehicle

78.53

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$27,345**

Price as Tested: **\$34,705**

Cost per Point for this Vehicle

\$442

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **20.0**

EPA Urban MPG: **35**

EPA Highway MPG: **33**

Auto Club Highest MPG: **33.1**

Auto Club Average MPG: **28.9**

Auto Club Lowest MPG: **21.4**

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- Certified to AT-PZEV emissions standards
- Excellent MPG (34)
- Loaded test car had excellent sound system with XM
- Powerful
- Easy to use rear view camera

WEAK POINTS

- Small trunk and rear seat does not fold down
- Blending of electric motor/gas engine not smooth
- Vague steering feel and there is some jerky torque steer

OVERALL OBSERVATIONS

Toyota, Honda, & Ford seem to be getting most of the ink about their hybrids, but Nissan is in the game too. Their Altima Hybrid is a quality entry, & it scored 3 points higher than the Toyota Camry Hybrid in this comparison. Both have similar mileage (34 mpg) but the Altima has lower overall emissions & better acceleration than Camry! One thing they have in common (& it appears that the hybrid sedan conversions all have) is a small trunk & rear seat backs that don't fold down or only do so in a limited fashion. This is the price we pay for locating batteries & controllers into cars not originally designed for them. In our "loaded" test car, this pales in significance when you consider all of the creature comforts the Altima offers!

AFTERMARKET PARTS

Wheels, intake kits, chin spoiler

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3350
Exterior Length (in):	189.8
Exterior Width (in):	70.7
Exterior Height (in):	57.9
Wheelbase (in):	109.3
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Continental P215/60R16
Towing Cap. (lbs) W/WO Brakes:	1000/1000
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size	2.6L DOHC 16V I4
Horsepower @ RPM:	158 @ 5200
Electric Motor Horsepower:	40 @ 0-1500

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	6.89
Crashworthiness:	5.33
Visibility:	7.20
Slalom Handling:	6.36
Ride Quality:	7.17
Fuel Economy:	5.76
Interior Noise:	6.50
Acceleration:	8.26
Ease of Entry and Exit:	7.26
Interior Size:	3.62
Turning Circle:	4.54
Luggage Capacity:	0.65

Nissan Versa 1.8 SL HB

GREEN CAR SCORES

Score For This Vehicle

70.15

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$17,050**

Price as Tested: **\$19,830**

Cost per Point for this Vehicle

\$283

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **13.2**

EPA Urban MPG: **27**

EPA Highway MPG: **33**

Auto Club Highest MPG: **31.5**

Auto Club Average MPG: **28.0**

Auto Club Lowest MPG: **24.4**

MODEL YEAR TESTED - 2008



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Mid-Sized 4-door Hatchback

STRONG POINTS

- Nimble
- ABS brakes provide short/straight stops
- Good fuel economy
- "Smart" key – you never have to take it out of your pocket/purse

WEAK POINTS

- Poor leg and headroom in front seat
- Lack of instrumentation
- Hard to see ends of car for parking

OVERALL OBSERVATIONS

Several years ago some of the Japanese automakers saw the writing on the wall and anticipated high gas prices. Entry-level models with good mpg were developed for the US market. Nissan's example is the Versa, a small car (but somehow categorized a "mid-size" by EPA) that provides around 28 mpg on average. Our test car featured excellent (optional) ABS brakes with brake assist and an efficient hatchback design. Like most small cars, the Versa has a tight turning radius of only 35.4 feet. The 1.8 liter engine makes only 122 hp but the CVT transmission makes good use of the limited "grunt".

AFTERMARKET PARTS

Body kits, performance shocks, custom graphics

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2800
Exterior Length (in):	169.1
Exterior Width (in):	66.7
Exterior Height (in):	60.4
Wheelbase (in):	102.4
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Continental P185/65R15
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size	1.8L DOHC I4 16V
Horsepower @ RPM:	122 @ 5200

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	7.33
Crashworthiness:	4.67
Visibility:	6.70
Slalom Handling:	7.49
Ride Quality:	6.63
Fuel Economy:	4.49
Interior Noise:	3.49
Acceleration:	4.99
Ease of Entry and Exit:	6.91
Interior Size:	2.10
Turning Circle:	6.46
Luggage Capacity:	1.87

Smart Passion Coupe

GREEN CAR SCORES

Score For This Vehicle	59.89
Highest Scoring Green Car	88.11
Lowest Scoring Green Car	57.44

VEHICLE PRICE

Base Price:	\$14,235
Price as Tested:	\$15,205
Cost per Point for this Vehicle	\$254
Highest Green Car Cost/Point	\$1,344
Lowest Green Car Cost/Point	\$237

FUEL ECONOMY

Fuel Type	Unleaded Premium
Fuel Capacity (gal):	8.7
EPA Urban MPG:	33
EPA Highway MPG:	41
Auto Club Highest MPG:	36.5
Auto Club Average MPG:	34.8
Auto Club Lowest MPG:	32.2

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Mini-Compact 2-seat Coupe

STRONG POINTS

- Economical purchase price
- Good MPG, but requires expensive premium fuel
- Small turning circle
- Cute and noticeable styling

WEAK POINTS

- Bouncy ride with interior rattles
- "See-saw" like shifting of automated manual trans
- Hard to keep in lane at freeway speeds
- Noisy
- Underpowered
- Small trunk
- Feels unsafe due to small size

OVERALL OBSERVATIONS

The Smart has been popular in Europe (they are used to small cars & mpg is a major factor), but Daimler-Benz was hesitant to bring the Smart to the US (the home of giant SUVs). \$4 gas in 2008 cemented the deal & the Smart is here! The unusual styling & tiny size make every Smart noticed. A small car should get good mpg & the Smart does so, averaging 36 mpg. Our tester was only \$15k so small car=small price. Driving the Smart though is another story. Underpowered, with a bouncy, noisy ride, the Smart wanders at freeway speeds, requiring maximum driver attention to stay in the lane. The bottom line, if you want a small economical "city-car" then the Smart works, but otherwise it may not be best.

AFTERMARKET PARTS

Wheels, dash kits

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2
Curb Weight (lbs):	1820
Exterior Length (in):	106.1
Exterior Width (in):	69.0
Exterior Height (in):	60.7
Wheelbase (in):	73.5
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	4 Air Bags
Warranty (Months/Miles):	24/24,000
Tire Manufacturer:	Continental 175/55R15
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 5 Speed
Drivetrain Type:	Rear Wheel
Engine Size	1.0L I3
Horsepower @ RPM:	70 @ 5800

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	6.59
Crashworthiness:	2.50
Visibility:	6.60
Slalom Handling:	6.95
Ride Quality:	4.96
Fuel Economy:	4.34
Interior Noise:	2.30
Acceleration:	0.00
Ease of Entry and Exit:	6.80
Interior Size:	1.56
Turning Circle:	10.00
Luggage Capacity:	0.29

Subaru Forester 2.5X

GREEN CAR SCORES

Score For This Vehicle

88.11

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$23,360**

Price as Tested: **\$24,264**

Cost per Point for this Vehicle

\$275

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **16.9**

EPA Urban MPG: **20**

EPA Highway MPG: **26**

Auto Club Highest MPG: **29.4**

Auto Club Average MPG: **25.9**

Auto Club Lowest MPG: **21.5**

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

PZEV

DESCRIPTION/COMMENTS

4-door AWD SUV

STRONG POINTS

- Extremely low emissions (PZEV)
- AWD Traction
- Flexible and roomy interior
- Easy to use satellite (XM) radio
- Value (a lot of SUV for \$24K)

WEAK POINTS

- Interior materials don't appear durable
- Could use more power
- Some control knobs too small

OVERALL OBSERVATIONS

This guide contains data on vehicles that cost over \$100K, but which one comes out on top? How about a \$24K Subaru Forester? This compact SUV does about everything well, combining clean PZEV emissions with a respectable 22 mpg (for an AWD SUV), along with powerful ABS brakes, a flexible and quiet interior that can carry a surprising amount of cargo, and nimble handling. It even scores 5 stars on all of NHTSA's crash tests and has a 4 star rollover rating which is excellent for an SUV. On the down side, this is a \$24K vehicle and the interior materials and controls show it. If you are in the market for a small AWD SUV, the Forester should be on the top of your list to consider.

AFTERMARKET PARTS

Sport mesh grilles, side molding, floor mats

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3340
Exterior Length (in):	179.5
Exterior Width (in):	70.1
Exterior Height (in):	66.9
Wheelbase (in):	103.0
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Yokohama 225/55R17
Towing Cap. (lbs) W/WO Brakes:	2400/1000
Transmission Type:	Manual 5 Speed
Drivetrain Type:	All Wheel - Full Time
Engine Size	2.5L SOHC HO4
Horsepower @ RPM:	170 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	8.10
Crashworthiness:	4.31
Visibility:	7.10
Slalom Handling:	7.65
Ride Quality:	6.83
Fuel Economy:	2.56
Interior Noise:	7.12
Acceleration:	6.21
Ease of Entry and Exit:	7.51
Interior Size:	4.97
Turning Circle:	6.82
Luggage Capacity:	9.94

Subaru Outback 2.5i Limited PZEV

GREEN CAR SCORES

Score For This Vehicle

75.23

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$31,190**

Price as Tested: **\$31,646**

Cost per Point for this Vehicle

\$421

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **16.9**

EPA Urban MPG: **20**

EPA Highway MPG: **26**

Auto Club Highest MPG: **23.5**

Auto Club Average MPG: **21.9**

Auto Club Lowest MPG: **19.7**

MODEL YEAR TESTED - 2009



OVERALL OBSERVATIONS

Is it a station wagon, or an SUV? Subaru used to call the Outback the "Legacy Outback", since it was a wagon version of the Legacy sedan, but the Legacy name has disappeared from Outback, and EPA & NHTSA both call it an SUV. Either way, the Outback is popular in snowy climates, especially due to the traction provided by "Symmetrical AWD and Vehicle Dynamics Control". Add to that the standard (on "Limited" trim level) heated front seats and mirrors, leather upholstery, and even windshield wiper deicers, and you can tell why. Now, the Outback can even be ordered as a clean PZEV, so you can have all this ruggedness without guilt!

REASON THIS VEHICLE WAS TESTED

PZEV

DESCRIPTION/COMMENTS

4-door AWD SUV

STRONG POINTS

- Certified as a PZEV
- Good traction (AWD & ESC)
- Well laid out and comfortable interior
- Utility & versatility
- Frameless windows aid visibility, entry, & exit

WEAK POINTS

- Cramped rear seat
- Rear windows don't open fully
- Auto HVAC only allows dual temperature control, requiring the driver to set 2 temperatures when traveling alone

AFTERMARKET PARTS

Car covers, seat covers, air filters

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3540
Exterior Length (in):	188.4
Exterior Width (in):	68.1
Exterior Height (in):	58.1
Wheelbase (in):	105.1
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Bridgestone P225/55R17
Towing Cap. (lbs) W/WO Brakes:	2700/1000
Transmission Type:	Auto 4 Speed
Drivetrain Type:	All Wheel - Full Time
Engine Size	2.5L SOHC HO4
Horsepower @ RPM:	170 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	5.94
Crashworthiness:	5.55
Visibility:	7.30
Slalom Handling:	6.77
Ride Quality:	7.17
Fuel Economy:	2.56
Interior Noise:	6.77
Acceleration:	3.95
Ease of Entry and Exit:	6.16
Interior Size:	3.41
Turning Circle:	6.29
Luggage Capacity:	4.37

Toyota Camry Hybrid

GREEN CAR SCORES

Score For This Vehicle

75.65

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$26,010**

Price as Tested: **\$26,568**

Cost per Point for this Vehicle

\$351

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	17.2
EPA Urban MPG:	33
EPA Highway MPG:	34

Auto Club Highest MPG:	31.1
Auto Club Average MPG:	30.8
Auto Club Lowest MPG:	29.8

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- Excellent MPG
- Certified as a SULEV
- Tilt/telescopic steering wheel can be positioned for virtually all drivers
- The most popular sedan in the US goes green!
- Good acceleration for an "economy car"

WEAK POINTS

- Rear seats fold down, but there is only a "pass-through" opening
- Small trunk
- Auto engine startup can startle driver
- Integration of regenerative braking can make stopping somewhat jerky

OVERALL OBSERVATIONS

Some people drive hybrids to make a statement (Prius and Insight owners), others to save fuel and to be environmentally responsible. Camry hybrid drivers tend to be in the second group. The Camry Hybrid looks like any other Camry with the exception of badging, but it gets 36% better mpg (34 vs. 25). With an MSRP of \$26.5K, fuel savings (based on 15,000 mi/yr and \$3/gal) covers the \$3500 extra cost of the hybrid in about 7 years, quite a bit better than some other hybrids. And of course, better mpg means proportionally lowered CO2 emissions. So you can have a traditionally reliable Camry, save money on fuel, and help the planet all at the same time.

AFTERMARKET PARTS

Body kits

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3590
Exterior Length (in):	189.2
Exterior Width (in):	71.7
Exterior Height (in):	57.9
Wheelbase (in):	109.3
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Michelin P215/60R16
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size	2.4L 16V VVTi I4
Horsepower @ RPM:	147 @ 6000
Electric Motor Horsepower:	105 KW @ 4500

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	8.00
Braking:	3.97
Crashworthiness:	7.11
Visibility:	7.10
Slalom Handling:	6.17
Ride Quality:	7.00
Fuel Economy:	5.59
Interior Noise:	5.56
Acceleration:	7.34
Ease of Entry and Exit:	7.11
Interior Size:	4.10
Turning Circle:	5.87
Luggage Capacity:	0.73

Toyota Camry LE PZEV

GREEN CAR SCORES

Score For This Vehicle	76.11
Highest Scoring Green Car	88.11
Lowest Scoring Green Car	57.44

VEHICLE PRICE

Base Price:	\$21,885
Price as Tested:	\$23,093
Cost per Point for this Vehicle	\$303
Highest Green Car Cost/Point	\$1,344
Lowest Green Car Cost/Point	\$237

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	18.5
EPA Urban MPG:	21
EPA Highway MPG:	31
Auto Club Highest MPG:	30.7
Auto Club Average MPG:	27.7
Auto Club Lowest MPG:	24.5

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

PZEV

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- Tilt/telescopic steering wheel can be positioned for virtually all drivers
- Extremely low emissions (PZEV)
- Comfortable for the price and size
- Value – respectable mpg and reasonable purchase price

WEAK POINTS

- Could use more power
- Lots of plastic in interior
- Rear seat folds down, but the opening is narrow
- Steering “fights back” during emergency maneuvers

OVERALL OBSERVATIONS

How do you improve the best selling car in the US in today's environmentally-conscious times? By reducing emissions to PZEV, which is as clean as generating the electricity to charge an electric car. Nothing suffers (power is reduced by only 3 horsepower) and you still have a Camry. The value, comfort, and reputation for reliability remain, only you can rest assured that you are doing your part to eliminate smog. Our test car was a Camry LE (one level above base) equipped with optional stability control, mats, and a security system. MSRP was only \$23K and mpg averages 25 so this popular car will be gentle on your pocketbook, and it also scores 5 stars on NHTSA's crash tests!

AFTERMARKET PARTS

Rubber floor mats, dash trim kits, exhaust tips

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3270
Exterior Length (in):	189.2
Exterior Width (in):	71.7
Exterior Height (in):	57.9
Wheelbase (in):	109.3
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	7 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Bridgestone P215/60R16
Towing Cap. (lbs) W/WO Brakes:	1000/1000
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size	2.4L DOHC 16V VVT-i I4
Horsepower @ RPM:	158 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	6.16
Crashworthiness:	4.73
Visibility:	6.80
Slalom Handling:	6.18
Ride Quality:	7.29
Fuel Economy:	3.17
Interior Noise:	7.89
Acceleration:	6.07
Ease of Entry and Exit:	7.27
Interior Size:	4.18
Turning Circle:	5.93
Luggage Capacity:	1.43

Toyota Corolla S

GREEN CAR SCORES

Score For This Vehicle	70.16
Highest Scoring Green Car	88.11
Lowest Scoring Green Car	57.44

VEHICLE PRICE

Base Price:	\$16,320
Price as Tested:	\$19,683
Cost per Point for this Vehicle	\$281
Highest Green Car Cost/Point	\$1,344
Lowest Green Car Cost/Point	\$237

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	13.2
EPA Urban MPG:	26
EPA Highway MPG:	35
Auto Club Highest MPG:	32.8
Auto Club Average MPG:	30.6
Auto Club Lowest MPG:	28.3

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Compact 4-door Sedan

STRONG POINTS

- Fuel economy
- Sound system includes XM
- Well equipped for a compact car inc. Bluetooth and tilt/telescopic steering wheel
- Nimble handling

WEAK POINTS

- Small sunvisors
- Could use more power
- No rear center armrest
- Tends to wander in the lane
- Drivetrain whine

OVERALL OBSERVATIONS

The Corolla has been a stalwart for Toyota for many years. It is often seen as the standard for quality in a compact car. The 2009 model we tested generally lives up to this reputation. It gets excellent mileage (we averaged over 30 mpg, including a day of testing at the Auto Club Speedway), and the test car had optional equipment making it seem more like a luxury car than a high-mpg compact. Taken with Toyota's reputation for reliability, the Corolla seems a wise choice if you are in the market for a compact car.

AFTERMARKET PARTS

Seat covers, dash kits

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2820
Exterior Length (in):	178.7
Exterior Width (in):	69.3
Exterior Height (in):	57.7
Wheelbase (in):	102.4
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Goodyear P205/55R16
Towing Cap. (lbs) W/WO Brakes:	Maximum 1500
Transmission Type:	Manual 5 Speed
Drivetrain Type:	Front Wheel
Engine Size	1.8L DOHC I4 VVT-i
Horsepower @ RPM:	132 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	4.35
Crashworthiness:	4.69
Visibility:	6.70
Slalom Handling:	7.63
Ride Quality:	7.21
Fuel Economy:	4.49
Interior Noise:	4.44
Acceleration:	5.56
Ease of Entry and Exit:	6.96
Interior Size:	3.07
Turning Circle:	7.05
Luggage Capacity:	1.00

Toyota Highlander Hybrid

GREEN CAR SCORES

Score For This Vehicle	82.72
Highest Scoring Green Car	88.11
Lowest Scoring Green Car	57.44

VEHICLE PRICE

Base Price:	\$35,445
Price as Tested:	\$35,985
Cost per Point for this Vehicle	\$435
Highest Green Car Cost/Point	\$1,344
Lowest Green Car Cost/Point	\$237

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	17.2
EPA Urban MPG:	27
EPA Highway MPG:	25
Auto Club Highest MPG:	24.0
Auto Club Average MPG:	21.1
Auto Club Lowest MPG:	19.0

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

4-door SUV

STRONG POINTS

- AWD + stability control = good traction
- Certified to SULEV emissions standards
- Good MPG for an SUV (26)
- Roomy and versatile
- Powerful

WEAK POINTS

- Auto engine startup can startle driver
- Multi-function display was small and dim
- Weak low-speed throttle response, especially in "econ" mode
- Dives during hard braking

OVERALL OBSERVATIONS

Why do so many love SUVs? Because they have room & the capability to perform many tasks, & because they are perceived as "tough" & "safe". Why do so many hate SUVs? Because they are seen as egregious wasters of resources "gas hogs"! The Toyota Highlander Hybrid can silence these critics. It performs like the SUVs many love, but still gets better mpg (26) than many sedans (& is not so huge as to appear arrogant like some others). In this case the safety & toughness of the Highlander is more than skin deep, since it scores 4 or 5 stars on all NHTSA crash tests & comes equipped with 7 airbags, ABS, & stability control. This is another example where "you can have your cake & eat it too".

AFTERMARKET PARTS

Wheels, tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	4530
Exterior Length (in):	188.4
Exterior Width (in):	69.3
Exterior Height (in):	68.1
Wheelbase (in):	109.8
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	7 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Bridgestone P245/65R17
Towing Cap. (lbs) W/WO Brakes:	3500 Max.
Transmission Type:	CVT
Drivetrain Type:	All Wheel - Full Time
Engine Size	3.3L V6 VVT-i
Horsepower @ RPM:	209 @ 5600
Electric Motor Horsepower:	MG2 167;MG Rear 68

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	4.02
Crashworthiness:	6.23
Visibility:	7.30
Slalom Handling:	6.05
Ride Quality:	7.38
Fuel Economy:	3.58
Interior Noise:	6.79
Acceleration:	8.25
Ease of Entry and Exit:	7.73
Interior Size:	6.22
Turning Circle:	4.41
Luggage Capacity:	5.76

Toyota Prius IV

GREEN CAR SCORES

Score For This Vehicle

82.69

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$26,500**

Price as Tested: **\$30,709**

Cost per Point for this Vehicle

\$371

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **11.9**

EPA Urban MPG: **51**

EPA Highway MPG: **48**

Auto Club Highest MPG: **43.5**

Auto Club Average MPG: **40.8**

Auto Club Lowest MPG: **37.2**

MODEL YEAR TESTED - 2010



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- Excellent fuel economy
- Extremely low emissions (AT-PZEV)
- Fully automatic window controls
- High tech styling layout, the "in" car to have
- Advanced features: navigation, smart key, XM, solar panels in roof

WEAK POINTS

- Confusing sound system controls (integrated with navigation system)
- High purchase price over \$30k for an "economy car" (our test car was "loaded", though)
- Lack of traditional engine gauges
- Limited rear seat headroom for tall passengers

OVERALL OBSERVATIONS

The Toyota Prius is seen by many as the state of the art vehicle of today. It has a sophisticated hybrid powertrain that mates a 1.8 liter 4-cylinder engine with an 80 hp electric motor and meshes the operation of both to extract the maximum efficiency each is capable of. It achieves fuel economy that is second to none in the US. The Prius scores 4 or 5 stars in all NHTSA crash tests, is equipped with many advanced safety technologies, and is certified as an AT-PZEV. The futuristic styling has become "en vogue" and owners who purchased the car to save fuel and drive a clean car are now driving a modern status symbol!

AFTERMARKET PARTS

Seat covers, floor mats, tailight covers

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3190
Exterior Length (in):	175.6
Exterior Width (in):	68.9
Exterior Height (in):	58.7
Wheelbase (in):	106.3
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	7 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Yokohama P195/65R15
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size	1.8L DOHC 16V VVT-i I4
Horsepower @ RPM:	98 @ 5200
Electric Motor Horsepower:	MG2 = 80

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	7.12
Crashworthiness:	5.63
Visibility:	6.90
Slalom Handling:	6.32
Ride Quality:	7.08
Fuel Economy:	10.00
Interior Noise:	6.36
Acceleration:	5.41
Ease of Entry and Exit:	6.78
Interior Size:	2.87
Turning Circle:	6.74
Luggage Capacity:	2.48

Toyota Venza

GREEN CAR SCORES

Score For This Vehicle

78.12

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$26,190**

Price as Tested: **\$28,330**

Cost per Point for this Vehicle

\$363

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **17.7**

EPA Urban MPG: **21**

EPA Highway MPG: **29**

Auto Club Highest MPG: **23.4**

Auto Club Average MPG: **22.0**

Auto Club Lowest MPG: **20.6**

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

PZEV

DESCRIPTION/COMMENTS

4-door SUV

STRONG POINTS

- PZEV available (test car ULEV)
- Roomy and versatile interior
- Rear seat backs recline
- Easy to operate power window controls with express up and down and auto-reverse
- Equipped with optional XM satellite radio

WEAK POINTS

- Could use more power
- Visibility to the rear and sides
- Rear windows don't open fully
- Dives under hard braking and your stuff on the rear seat falls on the floor

OVERALL OBSERVATIONS

You might ask why does Toyota need another SUV model? Well in the days of \$4 gas, "crossovers or CUVs" are a hot ticket since they are built on car chassis rather than being truck-based, providing improved ride & fuel efficiency while retaining the versatility, utility, & perceived ruggedness of an SUV. The Venza is Toyota's new CUV, & it fills the size niche "larger than the compact RAV4". It is surprisingly roomy & comfortable, gets a respectable 24 mpg, & the 4-cylinder model is available as a PZEV (our test vehicle was a prototype & was only rated a ULEV). Even though CUVs are really station wagons disguised as SUVs, they can still be "cool" & the Venza is a good example.

AFTERMARKET PARTS

Wheels, tires, body kits

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3810
Exterior Length (in):	189.0
Exterior Width (in):	75.0
Exterior Height (in):	63.4
Wheelbase (in):	109.3
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Toyo P245/55R19
Towing Cap. (lbs) W/WO Brakes:	2500 with tow package
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size	2.7L DOHC VVT-i I4
Horsepower @ RPM:	182 @ 5800

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	4.79
Crashworthiness:	7.37
Visibility:	7.10
Slalom Handling:	7.67
Ride Quality:	7.04
Fuel Economy:	3.01
Interior Noise:	5.67
Acceleration:	6.55
Ease of Entry and Exit:	7.78
Interior Size:	5.15
Turning Circle:	4.49
Luggage Capacity:	4.51

Toyota Yaris S

GREEN CAR SCORES

Score For This Vehicle	69.84
Highest Scoring Green Car	88.11
Lowest Scoring Green Car	57.44

VEHICLE PRICE

Base Price:	\$14,775
Price as Tested:	\$17,153
Cost per Point for this Vehicle	\$246
Highest Green Car Cost/Point	\$1,344
Lowest Green Car Cost/Point	\$237

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	11.1
EPA Urban MPG:	29
EPA Highway MPG:	36
Auto Club Highest MPG:	34.8
Auto Club Average MPG:	30.6
Auto Club Lowest MPG:	27.2

MODEL YEAR TESTED - 2008



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Subcompact 3-door Liftback

STRONG POINTS

- Nimble
- ABS brakes provide short/straight stops
- Good fuel economy

WEAK POINTS

- Underpowered
- Small trunk
- Rear windows don't open
- Lack of instrumentation

OVERALL OBSERVATIONS

Toyota's entry in the current crop of sub-compacts for the US market is the Yaris. We tested an "S" 3-door liftback with a 1.5 liter 4 cylinder engine and a 5-speed manual transmission. This combination provided over 30 mpg, can turn on a dime (almost), and has excellent (optional) ABS brakes. It is a sub-compact, so it suffers some of the weaknesses typical of the genre: small trunk, weak acceleration, and cramped rear seats. Still at \$17,153 (fairly loaded) with Toyota's reputation for reliability, the Yaris should be a quality commuter car.

AFTERMARKET PARTS

Wheels, low-profile tires, audio systems

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2380
Exterior Length (in):	150.6
Exterior Width (in):	66.7
Exterior Height (in):	60.2
Wheelbase (in):	96.9
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Bridgestone P185/60R15
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Manual 5 Speed
Drivetrain Type:	Front Wheel
Engine Size	1.5L DOHC I4 16V VVT-i
Horsepower @ RPM:	106 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	5.96
Crashworthiness:	4.17
Visibility:	6.70
Slalom Handling:	6.21
Ride Quality:	6.17
Fuel Economy:	5.14
Interior Noise:	5.29
Acceleration:	4.60
Ease of Entry and Exit:	6.49
Interior Size:	3.05
Turning Circle:	8.53
Luggage Capacity:	0.53

Volkswagen Jetta TDI

GREEN CAR SCORES

Score For This Vehicle

74.94

Highest Scoring Green Car

88.11

Lowest Scoring Green Car

57.44

VEHICLE PRICE

Base Price: **\$22,970**

Price as Tested: **\$28,038**

Cost per Point for this Vehicle

\$374

Highest Green Car Cost/Point

\$1,344

Lowest Green Car Cost/Point

\$237

FUEL ECONOMY

Fuel Type	Diesel #2
Fuel Capacity (gal):	14.5
EPA Urban MPG:	29
EPA Highway MPG:	40
Auto Club Highest MPG:	40.8
Auto Club Average MPG:	34.1
Auto Club Lowest MPG:	27.1

MODEL YEAR TESTED - 2009



REASON THIS VEHICLE WAS TESTED

Clean Diesel

DESCRIPTION/COMMENTS

Compact 4-door Sedan

STRONG POINTS

- Excellent MPG (33)
- Test car equipped with many nice features inc: Sirius radio, heated seats, voice activated navigation & 110V outlet
- Balance between ride and handling

WEAK POINTS

- Cramped rear seat
- HVAC fan noisy on high
- Sluggish initial acceleration
- Noisy interior (diesel engine improved but still noisy and tire noise on some roads)

OVERALL OBSERVATIONS

Volkswagen diesels are very popular in Europe and have been available in States that have not adopted California emission standards for some time. For 2009, they can meet even California's strict emission standards (although only at the least stringent ULEV level) and are available throughout the US. The Jetta TDI we tested gets a hybrid-like 33 mpg combined city/highway fuel economy. We in the US used to think of diesels as sluggish, noisy, and smelly. The VW still exhibits a little of these characteristics but is much improved from past versions. The excellent mpg and the diesel reputation for durability make this combination one worthy of consideration.

AFTERMARKET PARTS

Audio systems, bike racks

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3370
Exterior Length (in):	179.0
Exterior Width (in):	70.1
Exterior Height (in):	59.2
Wheelbase (in):	101.4
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Michelin P225/45R17
Towing Cap. (lbs) W/WO Brakes:	1000/1000
Transmission Type:	Auto 6 Speed
Drivetrain Type:	Front Wheel
Engine Size	2.0L TDI I4
Horsepower @ RPM:	140 @ 4000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	6.28
Crashworthiness:	5.35
Visibility:	6.70
Slalom Handling:	7.90
Ride Quality:	7.33
Fuel Economy:	5.50
Interior Noise:	4.16
Acceleration:	5.91
Ease of Entry and Exit:	6.82
Interior Size:	3.23
Turning Circle:	7.18
Luggage Capacity:	1.59

APPENDIX 1

Some common acronyms include:

- **CNG, LNG, NGV.** CNG is *compressed natural gas* (mostly methane), the same substance that's piped into homes. Natural gas is compressed to either 3,000 psi or 3,600 psi when used in motor vehicles. LNG is *liquefied natural gas*, which is cryogenically chilled to temperatures as low as -275° F to liquefy it, at which point it occupies 1/600 its volume as a gas, making efficient storage and transportation possible. NGV stands for *natural gas vehicle*, one that has been designed or converted to use CNG or (less often) LNG for its fuel source.
- **ZEV, PZEV, AT-PZEV, SULEV, ULEV, LEV.** Emission certification levels for California and other states that have adopted California's emission standards:
 - o **ZEV** = Zero-emission vehicle. A vehicle that produces no harmful emissions. Currently the only technologies that can meet this standard are battery-electric vehicles and vehicles powered by hydrogen fuel cells.
 - o **PZEV** = Partial-zero-emission vehicle. These vehicles produce only very miniscule amounts of harmful pollutants from the tailpipe and are certified to produce no emissions from fuel evaporation. The tailpipe standards have been set by the California Air Resources Board (CARB) to be equivalent to the emissions caused by electricity generation needed to charge a battery-electric car. This level is based on the relatively clean mix of electricity-generation sources (natural gas, hydro, nuclear, and renewable) in California. For other regions, where electricity is not as "clean" because it is generated from burning coal or oil, operating a PZEV is actually cleaner than operating a battery-electric vehicle. PZEVs also have a 15 year/150,000-mile emission warranty.
 - o **AT-PZEV** = Advanced-technology partial-zero-emission vehicle. These vehicles meet the same emission standards as a PZEV but utilize technologies CARB deems to be "advanced," thus earning the manufacturer additional zero-emission-vehicle credits.
 - o **SULEV** = Super ultra-low-emission vehicle. This is a vehicle has the same tailpipe standards as a PZEV but with some evaporative emissions.
 - o **ULEV** = Ultra-low-emission vehicle.
 - o **LEV** = Low-emission vehicle.

- **E85, M85, FFV.** E85 is 85% *ethanol* or *grain alcohol*; M85 is 85% *methanol* or *wood alcohol*. E85 or M85 fuel uses 15% gasoline, rather than 100% alcohol, for two reasons: Gasoline enables the vehicle to start more easily in cold temperatures. Also, alcohol burns with an invisible flame; adding gasoline provides a bright orange flame and thick black smoke, which, in case of a collision or accident, alerts drivers, passengers, and emergency responders to the presence of fire. FFV refers to a *flexible fuel vehicle*, which is capable of running on regular gasoline as well as E85.
- **GGE.** GGE refers to *gasoline gallon equivalents*. Each fuel has a different energy density, and the most common way to measure how much petroleum or gasoline is displaced by using an alternative fuel is to apply a conversion factor to it. This is done by converting the energy density of an alternative fuel “unit” to the energy density in a gallon of gasoline. The GGE conversion factor is useful in calculating the “fuel economy” of an alternative-fueled vehicle.
- **PHEV.** A *plug-in hybrid electric vehicle* is a hybrid vehicle with batteries that can be recharged by connecting the vehicle to an external electric power source, typically at a lower cost than by running the vehicle’s gasoline engine. These vehicles can operate on battery power for a significant portion of their driving range before they must switch over to conventional hybrid mode (i.e., using both electricity and a gasoline engine). This configuration overcomes concerns about the limited driving range of pure battery-electric vehicles. A PHEV’s overall fuel economy can be significantly higher than that of a conventional hybrid.
- **DRL.** Many newer vehicles have *daytime running lights*, which are reduced-intensity headlights that make daytime driving safer. Vehicles with DRLs but without automatic headlamps generally still need to have their normal “nighttime” headlamps switched on manually. It always helps to see and be seen at night!
- **VIN.** This 17-digit number is a car’s unique *vehicle identification number*, a vehicle’s “serial number”. The VIN is broken down into groups of numbers and letters, as follows: the first three are the manufacturer identifier; the next five are vehicle attributes (body style, engine, model, series, etc.); the next three are the check digit, model year, and assembly plant; and the remaining six characters identify a specific vehicle that came off the assembly line.
- **MPG.** *Miles per gallon* (usually lower case: mpg) is a number that indicates the vehicle distance traveled per gallon of fuel used, typically categorized as “city,” “highway,” and “mixed” driving. The website www.fueleconomy.gov reports the mpg of recent car models.

- **GVWR.** This term refers to *gross vehicle weight rating*; this number is usually found on the driver's door or the lower door pillar. It refers to the maximum allowable total weight, including the weight of the vehicle, fuel, passengers, and cargo.
- **10W-30 or 5W-30.** These numbers refer to *oil grade and viscosity* (weight). The specific number—the manufacturer's recommendation for the type of oil to use in your vehicle—is in your owner's manual. Multi-grade oil designations include two numbers—for example, 10W-30. The first number (10) means that an engine can pump this grade of oil as easily as it can a single-grade SAE 10 oil. (W means *winter*, not *weight*.) And it's even easier for an engine to pump 5W, a “thinner” oil, at a given temperature than it is to pump 10W. The second number, 30 in this example, means that the viscosity of this multi-grade oil at a 100°C (212°F) operating temperature is equivalent to the viscosity of a single-grade SAE 30 oil at the same temperature.
- **P285/35ZR20.** This series of letters and numbers, found on a tire's sidewall, refers to the following *tire characteristics*: The first letter indicates the tire's intended use or vehicle class; the next numbers indicate the tire's width in millimeters; the numbers following the slash are the ratio of the tire sidewall height compared to the width, expressed as a percent; the next two letters refer to the tire's speed rating (S, T, H, or Z) and tire fabric construction (bias, diagonal, or radial); the final two digits refer to the wheel diameter.
- **OEM.** This term means *original equipment manufacturer*, the manufacturer of record for the fully assembled vehicle (e.g., General Motors, Ford, and Toyota). Many vehicle parts are built by external suppliers, but the OEM is responsible for the final production of the vehicle.
- **HID.** *High-intensity discharge* headlights send a high-voltage discharge through a mix of special gases, including Xenon, in a micro-discharge bulb to produce an extra-white (or even bluish) light that's three times brighter than a conventional halogen headlight but is more tightly controlled, with a distinct edge to the illumination area. HID headlights allow drivers to see objects more clearly and at greater distances. They're becoming available in increasing numbers of vehicles as expanded demand and production drives prices down.
- **ABS.** *Antilock brake systems* typically use speed sensors at each wheel to tell a vehicle's computer how much brake force to apply to prevent the wheel from “locking up” under hard braking, which could result in the vehicle skidding out of control. ABS brakes allow the driver to maintain control and steer around obstacles while applying the brakes as hard as possible. The proper technique for ABS

brakes is keeping a hard, constant pressure on the brake pedal rather than pumping them.

- **SRS.** *Supplemental restraint system* describes air bags that supplement conventional seatbelts as safety devices. During a frontal crash, the air bags inflate rapidly; when the driver or passengers are thrown forward, they're met by a fully inflated air bag, which absorbs energy and helps keep them from colliding with the vehicle's interior. First-generation airbags used sensors to "decide" when to activate; they deployed at a single level of force, sometimes causing injuries or even fatalities to older, smaller, or frail occupants.

Overall, the number of lives first-generation air bags saved was significant, but their shortcomings led to the development of second-generation air bags, which use additional sensors to take into account an occupant's size, weight, and the severity of the impact and to adjust the speed and force of deployment accordingly. Side-impact air bags inflate for side impacts, and side-curtain air bags above the side windows help protect an occupant's head; in the case of a rollover accident, they stay inflated in case the vehicle rolls over multiple times. Some vehicles also have a knee bag under the steering column, which helps protect the driver's feet and legs and also helps to keep the driver in a normal driving position, so they can maintain some level of control over the vehicle after a crash.

- **OBD.** *On-board diagnostics* refers to a mandated diagnostic system that monitors whether a vehicle's emission-control system is operating correctly. Early versions of OBD illuminated a malfunction indicator light (MIL) on the dashboard if it detected a problem, often using the terms "service engine soon" or "check engine soon." OBD2 is a computer-based system built into all 1996 and later passenger vehicles and light-duty trucks. OBD2 enables a technician to diagnose problems with a vehicle's engine or emission-control system. It provides a standardized way to locate problems by reading diagnostic trouble codes and operating data.
- **Dub.** *A slang term for 20-inch custom wheels* (from "double dime") normally coupled with low-profile tires, which give a radical, custom look to a vehicle. Larger, 22-inch wheels are called "Dub two's," and so on. These larger wheels and tires can degrade ride quality; however, low-profile performance tires may offer an improvement in handling over stock tires if the overall wheel height is close to OEM height. If they're much more than an inch or two taller than stock equipment, however, handling may suffer because of the increased mass of the wheel/tire unit.
- **V8, V6, I4.** These terms refer to a *vehicle's engine configuration and number of cylinders*. A V engine has two banks of cylinders (typically three or four cylinders

per bank) offset by 60° or 90° from each other. An “I” engine configuration has the individual cylinders in a vertical line, or “inline.”

- **VSS.** *Variable suspension system* refers to a vehicle that has a suspension system (springs, shock absorbers, and linkages) that vary in stiffness and ride height. Fully active suspensions electronically monitor vehicle conditions and modify suspension settings in real time to directly control the motion of the car.
- **VVT.** *Variable valve timing* refers to an enhanced engine valve-train configuration in use in many of today’s automobiles. VVT allows the lift, duration, or timing (any or all of these) of the intake and/or exhaust valves to be changed during engine operation.

The position and shape (“profile”) of the engine’s camshaft lobes is optimized for a certain “ideal” engine rpm. As a result, there is a tradeoff between low-engine speed (low-end) torque and high-end power; typically, an engine without VVT can usually perform well at one end of the power band but not both. VVT technology provides a way to dynamically alter the camshaft profile at different engine speeds and loads, thus resulting in higher efficiency, lower emissions, and greater engine power across a broader rpm range.

- **TCS.** *A traction control system* uses the same wheel-speed sensors as antilock brakes, with additional electronic controls to sense the speed of each drive wheel. It then applies braking force and/or reduces power to the drive wheel(s) to prevent wheel spin and the loss of traction on slick or loose surfaces. Some sophisticated all-wheel-drive vehicles have advanced systems that supply power to only one wheel and simultaneously apply braking force to the others in an attempt to maintain traction when needed. Traction control does not give a vehicle more traction; it simply prevents the drive wheels from spinning.
- **ESC.** *Electronic stability control* refers to a variety of systems designed to improve a vehicle’s handling or regain driver control. ESC uses antilock brake sensors and braking capability and other sensors to help the driver maintain directional control of the vehicle. Sensors monitor individual wheel speed, steering angle (the driver’s intended path), lateral acceleration (cornering force), and yaw rate (the tendency to spin around a central axis). From these inputs, ESC determines if the car is going in the direction the driver intends. If the car begins to slide or spin, ESC temporarily applies brake pressure at one or more wheels and/or reduces engine power to help restore the driver’s intended path. Some manufacturers have developed enhanced ESC systems, which provide features ranging from limited rollover prevention to advanced “rollover mitigation” systems, which incorporate additional sensors, such as gyroscopes, to detect possible rollovers and add

advanced-control strategies to help prevent that from happening. The details differ among manufacturers, but all try to keep the vehicle not only from rolling over but also on its intended path.