

Automobile Club of Southern California

2012 Green Car Guide



2013 Lexus GS 450h
Top-Scoring Green Car



2012 Nissan Versa 1.6S
Best Green Car Value

Plugged into the Future



Automotive Research Center

1577 So. Valley Vista Drive
Diamond Bar, California 91765

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Green Car Guide 2012



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Green Car Guide

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What Is Green?

Prior to this decade, if a driver was asked what they meant by “green” cars, most likely they would say low-polluting cars that help reduce smog. If the same question was asked today, most people would talk about greenhouse gases or reducing a vehicle’s “carbon footprint.” Which answer is 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) annually produces the Green Car Guide to inform motorists about:

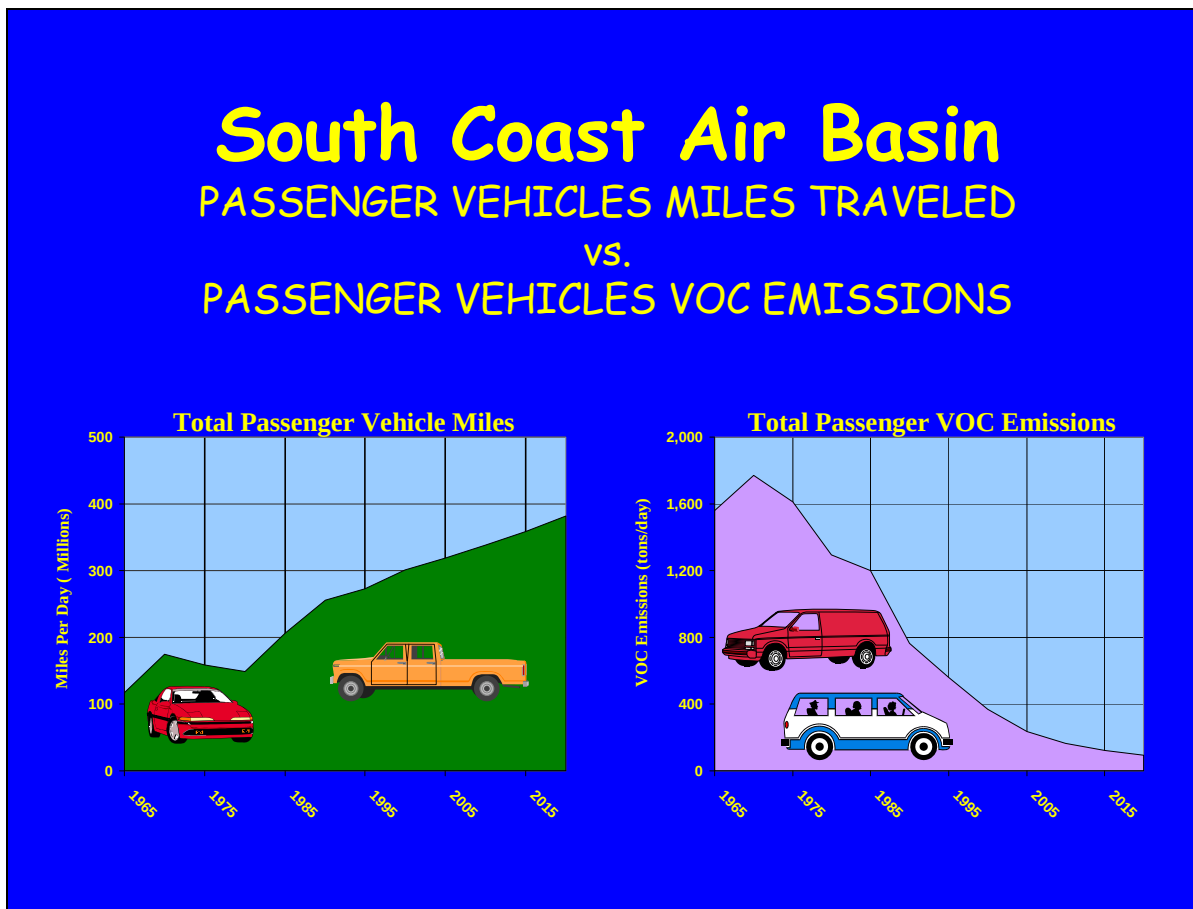
- The automobile’s role in air pollution
- The automobile’s role in global warming
- Current and future technologies that address these problems
- Conventional and alternative fuels
- Real-world evaluations of available “green” vehicles, including hybrids, battery electric vehicles, plug-in hybrid vehicles,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

The 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 changed significantly. 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).



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, vehicles can be certified as (see Appendix for more definitions):

California certifications

- Tier 1
- Transitional Low Emission Vehicle (TLEV)
- Low Emission Vehicle (LEV) (Federal Equivalent “Bin 5”)
- Ultra Low Emission Vehicle (ULEV) (Federal Equivalent “Bin 4”)
- 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. (Federal equivalent “Bin 2”)
- 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). No tailpipe or evaporative emissions at all. (Federal equivalent “Bin 1”)

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, alcohol, coal, wood, etc.).
- **Carbon Dioxide (CO₂)**, 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 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 their highs in the summer of 2008, and due to a variety of factors, 2012 fuel prices are high again. 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.

Green Choices and Tough Decisions

Unless you are a technology “early adopter,” making a car buying decision surrounded by new and emerging technologies can be paralyzing. A growing number of green car choices can cause consumer confusion: choosing the technology, model, and manufacturer are easier with basic understanding of the options.

Hybrids

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 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 coasting or braking, the electric motor functions as a generator and converts the vehicle’s kinetic energy into electricity to charge the batteries (regenerative braking). There are a number of prominent myths about hybrids, many of which cause buyers to stay in their comfort zone with more traditional choices. We will try to debunk some of those myths:

- o **Myth 1 – You’ll save money by buying a hybrid (non-PHEV) 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 \$6000 (the range is from about \$2500 to over \$30,000). It should be noted that the federal tax credits for conventional hybrids have expired. Fuel-economy improvements for hybrids range from just over 1 mpg to over 11 mpg compared to conventional versions of the same car. When considering the number of years it takes to recoup your initial investment (the “hybrid premium”), the average is over 15 years; most consumers don’t keep their cars nearly that long. Of course, some models provide a better “return” than others, so calculating your own costs is an important part of the buying decision. AAA’s advice is to compare the Manufacturer’s Suggested Retail Price (MSRP) of the hybrid and non-hybrid vehicles you are considering to determine the extra cost of the hybrid. Then using the average mpg ratings for both, calculate your annual fuel savings. You can do this in the following way:

Non-hybrid cost

Your typical annual miles driven / non-hybrid mpg = annual gallons used

Multiply the gallons times today's gas price = your annual fuel cost

Hybrid cost

Your typical annual miles driven / hybrid mpg = annual gallons used

Multiply the gallons times today's gas price = your annual fuel cost

Subtract the hybrid annual fuel cost from the non-hybrid and the result is your annual fuel savings. Multiply this times the number of years you plan to keep the vehicle and you will have a good idea of the financial results and the length of time it will take to return your green investment.

For example: Assume you drive 15,000 miles per year. A Honda Civic with a 1.8 liter I4 and 5-speed automatic transmission gets 32 mpg. $15,000/32 = 467$ gallons per year. The 2012 Honda Civic Hybrid gets 44 mpg. $15,000/44 = 341$ gallons per year. If you assume \$4 per gallon for regular unleaded then for the Civic, $467 \times \$4 = \$1868$ annual fuel cost. For the Civic Hybrid, $341 \times \$4 = \$1364$ annual fuel cost. If you take the difference, $\$1868 - \$1364 = \$504$ annual fuel savings with the Civic Hybrid. That annual savings will determine the length of time necessary to recover any extra money paid through the "hybrid premium" (i.e. in this case, it will take six years to pay back an additional \$3,000 added to the hybrid purchase price).

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, \$4 per gallon for regular, and \$4.30 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. Most 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 has been 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 cost of the electricity used to recharge a hybrid (or even a pure-electric vehicle) is significantly lower 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 Honda CR-Z 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-cylinder gasoline engine).

o **Myth 4 – 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 Mercedes-Benz S400 Hybrid are covered by a 15-year/150,000-mile hybrid-related component warranty and a 150,000-mile emissions warranty.

Plug-in Hybrids (PHEV)

Most of the hybrids tested in this report don’t need to be plugged in (in fact, they can’t). We are starting to see the first plug-in hybrids, and tested two for this report, the 2012 Toyota Prius PHEV and the 2012 Chevrolet Volt (General Motors calls the Volt an “extended range electric vehicle” but technically it is a PHEV). Many manufacturers have plans to produce PHEVs in the future. PHEVs have a larger battery pack and operate for some distance in electric-only or electric-predominant (where the gas engine only comes on under the most demanding circumstances) mode. The idea is that they can operate as zero emission vehicles

during short-hop day-to-day driving, but have the range and refueling characteristics of a conventional car.

Natural gas engines (CNG)

We tested one vehicle (the Honda Civic NGV) that had its internal combustion engine designed 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?” The availability of CNG varies depending on where you are traveling. 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 (PHIL) that compresses the CNG piped into most homes for a “slow fill” that takes overnight. As long as you don’t go more than 120 miles (half of the 240-mile range of the Civic) from home, you will never run out of fuel or have to go to a filling station again.

At press time of the Green Car Guide, a number of new vehicle options using CNG (or bi- fuel CNG/Gasoline) are coming to market. The “big three” domestic auto manufacturers (GM, Ford and Chrysler) are all introducing CNG-fueled pickup trucks. This is in response to the drop in CNG price and the increase in its domestic supply, mostly due to the increased use of the controversial practice of “fracking” yielding more CNG for the market.

Advanced-technology Internal-Combustion Engines

A number of vehicles meet low-emission standards using traditional gasoline-fueled internal-combustion engines, and were tested in the Green Car Guide. Few people seem to be aware that a number of such vehicles, which meet PZEV standards, are available. Some of them are very popular mainstream models. They employ a variety of technologies to reduce emissions and fuel use. These include:

- o Reduced vehicle size and weight
- o Variable valve timing
- o Direct fuel injection (injecting fuel directly into the cylinder instead of the intake port)
- o Turbocharging
- o Increased number of transmission speeds (for both manual and automatic transmissions)
- o Continuously Variable Transmissions (CVT)
- o Disabling cylinders under low-power demands
- o Improving the aerodynamic shape of the vehicle (reducing wind drag)
- o Reducing the rolling resistance of tires
- o Enabling the engine to shut off at a stop and automatically restart
- o Electric power steering systems to reduce the parasitic losses on the engine.

Flex-Fuel Vehicles

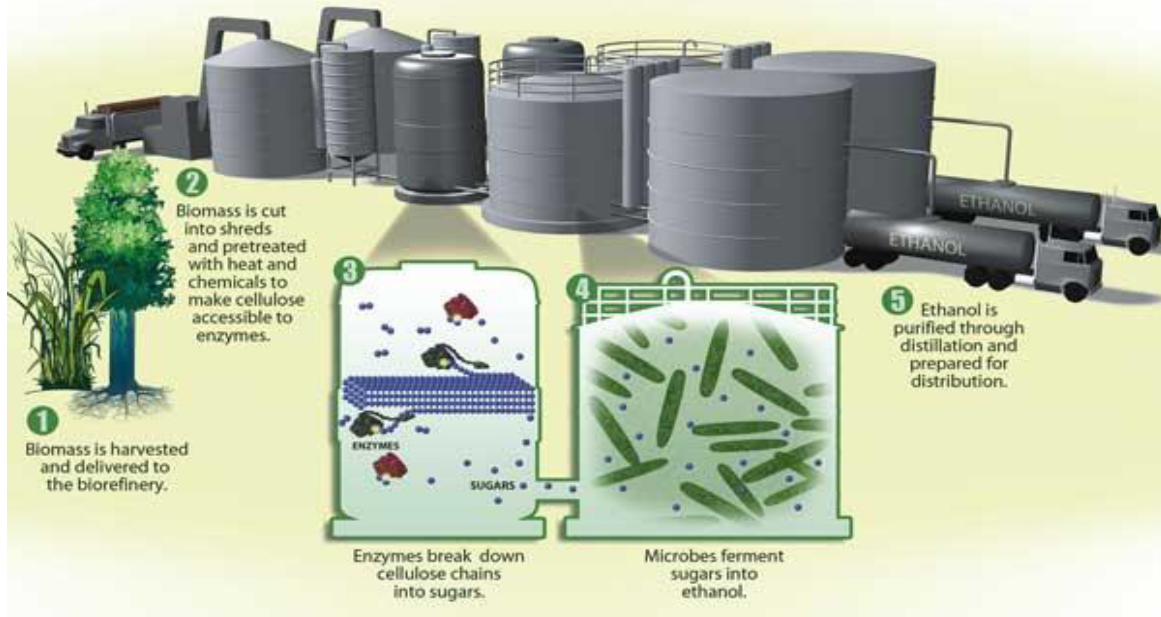
The term “flex fuel” means that the vehicle can run on gasoline and blends of gasoline and alcohol in ratios up to 85% alcohol. Initially the alcohol of choice was methanol, but more recently this has been supplanted by ethanol. E85 (85% ethanol and 15% unleaded gasoline) is available in many service stations (although most of them are concentrated in the Midwest). This fuel is quite scarce in other areas. For now, only a handful of 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 we don’t really know the full effect, but either way the increase or decrease in greenhouse-gas emissions is likely small).

In 2007, Congress passed the Energy Independence and Security Act, which contains a Renewable Fuels Standard (RFS) that requires blending increasing amounts of biofuels with gasoline over time, topping out at 36 billion gallons per year by 2022. Most ethanol used in American gasoline today comes from corn, and over time ethanol production has consumed a growing portion of the nation’s corn crop. In 2012, it is estimated that 39.5 percent of U.S. grown corn will be used to make ethanol, although 12.2 percent of that will reenter the market as dried distiller grains for livestock feed. Many object to using a food crop for fuel, and claim that food prices (and those of meat in particular) have gone up as a result of corn being diverted to ethanol production. The government has added to the controversy by subsidizing ethanol production for many years. Those subsidies ended in 2011, but some argue that RFS ethanol-use targets constitute a de facto subsidy because of corn price increases caused by demand.

Perhaps in recognition of the impact ethanol production has on other corn consumers, the RFS caps the use of corn-based ethanol at 15 billion gallons per year. Since the industry is nearly at that figure now, future increases in ethanol production will have to come from other sources. In Brazil, Sweden and South Africa today, fuel ethanol is made from sugarcane and wood chips. It is expected future U.S. ethanol production will come from “cellulosic” sources such as corn stover (leaves, stalks and other leftovers), wood chips or pulp, rye straw and/or switch grass. However, while this technology is under development, none of the materials is yet being used to produce fuel-quality ethanol on a large scale.

How Cellulosic Ethanol is Made



U.S. Department of Energy
Genomics: GTL Program

“Clean diesel”

Diesel-fueled light-duty vehicles are extremely popular in Europe (where fuel prices are much higher than 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 large in the minds of many potential buyers.

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 Audi, BMW, and Volkswagen. Even with low-sulfur diesel and exhaust after-treatment, these vehicles are still among the highest-emitting new vehicles currently sold, meeting only California’s LEV or ULEV standards.

Hydrogen Vehicles

No hydrogen-fueled vehicles were tested for this Guide, but will be added in future editions as they become available. 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).

Currently, and for the foreseeable future, fuel-cell vehicles will be in scarce supply – they 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)

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. Regulators seem enamored with 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 the more-modern EVs 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, 240 volt, or 480 volt) recharge times can range from a few hours to over 22 hours (480 volt fast-chargers can recharge a battery pack from 20% to 80% state-of-charge in 30 minutes or less). 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.

Does “Going Green” Make Sense?

We Americans can be called “spoiled” when it comes to transportation. On average, each household has about 2.5 cars, gasoline is comparatively cheap, and it is available on every street corner (or at least it seems that way). Traditional internal combustion engine technology is mature, and many would say that “today’s cars are the best ever built”. This is a pretty rosy picture, why would you want to change?

There are a number of good reasons why we, as a society, should transition away from traditional petroleum-based fuels.

- **Fuel cost:**

Gasoline and diesel may be comparatively inexpensive today (if you can call \$4 per gallon “cheap” with a straight face), but petroleum production may have already peaked and, if it has not, it will soon. As production declines and demand increases (largely driven by growth and advancement in China and India), prices will increase.

- **Energy security:**

Few will argue that our supplies of petroleum are immune from natural and geopolitical influences. Rather the opposite is the case. The largest reserves of petroleum reside in some of the least stable regions of the globe. It seems that any natural disaster, refinery fire, or even a threatening statement from an oil producing government can disrupt (or threaten to disrupt) supply and spike prices.

- **Environment (local and global):**

As described earlier in the Guide, passenger vehicles are no longer the main cause of smog, but their emissions of criteria pollutants are not zero, and the number of vehicles and the distance they travel will continue to increase, necessitating continued reductions in their emissions. On a global basis, transportation continues to be one of the prime contributors to greenhouse gas emissions. Again, due to the anticipated growth in vehicle miles of travel, greenhouse gas emissions per mile will need to be continually reduced.

For individual motorists, the question remains, “why should I consider an electric, PHEV, CNG, or hydrogen fueled vehicle?” The rollout of the first few EVs and PHEVs has been slow,

but if we look back, the rollout of the first hybrids (Toyota Prius and Honda Insight) in 1998 was slow too. Today, those cars are ubiquitous, with sales figures growing annually. Then, like now, the initial sales were to environmentalists or “technophiles”.

Most will say, “It only goes 100 miles on a charge and takes hours to recharge” or “it needs to be refueled every 200 miles and I don’t know if a station (CNG or hydrogen) will be close enough.” While these points may be valid, they often don’t need to be a limiting factor.

AAA’s advice is to “step back” and examine how you really use your vehicle(s). You might be surprised to learn that most Americans have commutes of 25 miles or less, and that many (and growing numbers of) employers offer EV charging for employees. If you are in this group, then a vehicle with limited range can still work to satisfy most of your needs. You can take advantage of the low operating costs of electric or CNG vehicles for routine driving.

You should also remember, that even though the MSRP of EVs and PHEVs are higher than conventional vehicles, Federal and state tax credits (when available) can offset some of the initial add-on to the purchase price. However, these are tax credits, so you still must pay the dealer the full price and then the credits can be claimed on your tax return. Also, many states add incentives for the sale of these vehicles by allowing access to car-pool lanes with a solo driver.

If you own or rent your own home and have access to overnight EV charging or CNG refueling, you might just find the freedom of never going to a fueling station liberating! It should also be noted that apartment/condo/town home dwellers are not always completely left out. A number of innovative solutions to provide EV charging for these residents are cropping up around the US and Canada.

If you do occasionally take longer trips (like vacations), use your conventional car/truck. Another option is to rent an SUV or pickup truck for the weekend trip, and save the cost of a second or third vehicle the rest of the time.

Location, location, location:

There is one more consideration if you are thinking of purchasing an EV or PHEV and your primary motivation is environmental. How the electricity your EV or PHEV uses is generated makes a big difference. In California, the mix of electrical generation is the cleanest in the US, featuring CNG, hydroelectric, some nuclear, and a growing mix of renewable sources. Generating the electricity to operate any EV or PHEV in California contributes significantly less smog-forming pollutants or greenhouse gasses than even the cleanest, most efficient gasoline or diesel-fueled vehicle.

However, if you live in a state where most of your electricity comes from coal, this is no longer quite true. The emissions of smog-forming pollutants from coal-based electrical generation

used to charge an EV or PHEV are measurably higher than the emissions from driving a clean gasoline fueled vehicle (SULEV or PZEV). The jury is still out about greenhouse gas emissions, with some studies claiming that coal-based electrical generation emits less CO₂ than driving a gasoline or diesel-fueled car, while others claim that if you drive an efficient car like a Prius or a Jetta TDI, then the CO₂ emissions from driving is less than those produced generating electricity for an EV or PHEV.

Electric Vehicle Charging 101

Although electrical charging is a relatively new need for the mainstream car buying market, there are already lots of options available. Because it is an emerging technology, obtaining quick, convenient and reliable recharging remains a significant concern.

There are three categories of electric vehicle chargers, each with their own cost and charging characteristics:

- **Level 1:**

This is a 110 volt charger. All currently produced electric cars come with a cable that can plug into a standard 110 volt outlet using an SAE J1772 standard connector at the vehicle. They normally require a dedicated circuit with a 20 amp breaker rating, although current draw is generally 15 amps or less, but many motorists simply plug into any available outlet with good success. Most homeowners with garages have an existing outlet that can be used, but apartment or condominium dwellers have had difficulties, even if their parking areas have 110 volt outlets. Recharging time can take as long as 22 hours.



- **Level 2:**

This 240 volt charger can be used by all currently produced electric cars. Most public charging stations are Level 2 (including stations at the AAA Branches).

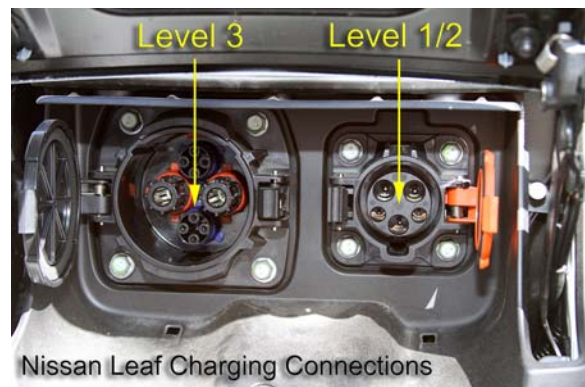
When a motorist purchases an EV, the manufacturers offer to sell a Level 2 charger for installation in the motorist's garage. These also use an SAE J1772 connector at the vehicle

and recharging time is generally 8 to 10 hours. Some cars (Coda, 2013 Nissan Leaf, Tesla, next generation smart EV, and Ford Focus EV) have higher capacity onboard chargers that can speed up Level 2 charging to 4 to 6 hours. If you choose a level 2 charger, your garage (or other charging location) will need a 30 amp 240 volt electrical service. In some cases, garages are pre-wired with this type of circuit for an electric clothes drier. The cars listed above with higher speed Level 2 capabilities will likely need a 50 amp capacity circuit.



- **Level 3:**

A 480 volt charger converts 480 volt AC power to DC. Level 3 chargers are generally fixed-site "high-speed" units and cost as much as \$50,000. They can recharge a battery pack to 80% in about 30 minutes (the final 20% of recharge must be "trickled" in to prevent battery overheating and takes a couple of hours no matter which level charger is used). A Level 3 charger uses a CHAdeMO connector, which is a Japanese standard. Only the Mitsubishi I and some of the Nissan Leafs have the connector (optional on 2011 model Leafs, standard on 2012 and newer Leafs). SAE is planning to develop a new Level 3 charger standard in the next several years. AAA's mobile charging trucks have both Level 3 and Level 2 chargers on board.



Economical, Clean and Safe

Taking your car buying decision in a green direction, whether to save money or to save the planet, doesn't necessarily mean sacrificing you or your family's safety. And just because you've drastically reduced your monthly gas bill doesn't mean you can't squeeze more savings out of that new car. The following describes actions by federal and state agencies, as well as practical actions you can take, to further enhance the safety, air quality and economy of green vehicles.

Safety of Green Cars

When operating an alternative-fueled or small high-mpg conventional car, the question is often asked, "Is that car safe?" No matter how a new car is powered, it must still meet the Federal Motor Vehicle Safety Standards (FMVSS). This includes the National Highway Traffic Safety Administration (NHTSA)'s crash testing program which has been strengthened for 2011 and subsequent model years (including a 1-to-5 star overall safety rating). Information on NHTSA's programs and crash test ratings can be found at www.safercar.gov.

Alternatively-powered vehicles have unique issues including high voltage, high pressure gasses, and high temperatures. Safety standards and procedures have been developed for these vehicles, but as technologies advance, they must evolve too. AAA supports aggressive efforts to ensure motorist safety in any type of vehicle. Our Emergency Roadside Assistance providers are continually trained in response procedures on new technologies as they emerge.

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 -- 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 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 the accelerator and coast. There’s no benefit to zooming up to the light and then slamming on the brakes. You might just find that if you coast up to a red light, that by the time you get there, it will turn green and you won’t have to stop at all! Cars use very little fuel when coasting, and if you’re driving a hybrid or battery electric vehicle, coasting will generally recharge the battery, further improving your 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 more-economical 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 it 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 walking 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 should 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 per gallon.

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.

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's on the Horizon?

The Green Car Guide 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) the 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?

We preview some of those cars on the following pages -- either those just about to be released by manufacturers or some still on the drawing board. Although ARC does not have a crystal ball to predict developments in green car technologies or in the cars finally delivered by the manufacturers, we can safely make a few observations and, yes, some guesses of the future of this emerging new industry.

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, including camless engines using solenoids to activate the valves, 42-volt electrical systems, direct fuel injection, turbocharging, and countless other changes
- More hybrid vehicles
- More plug-in hybrid vehicles, and even PHEVs using alternative fuels (natural gas, diesel, or hydrogen) either to fuel ICEs or gas turbines
- More battery electric vehicles (EVs) from start-ups like Tesla, Fisker, Coda, 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 (with charges possible in mere minutes), others see a hydrogen pump on every corner (like today’s gas stations), while others expect an entirely new technology to provide clean, safe, and economical power for our vehicles. But it is safe to say, only time will tell.

Other available (or soon to be available) green cars not tested in this Guide follow:

- **2012 Coda Electric Car:** This four-door sedan is manufactured by Coda Automotive, a privately-held American company headquartered in Southern California. The vehicle features parts sourced from around the world (mostly from China). The Coda has a top speed of 85 mph and features a 31kWh Lithium Iron Phosphate battery system which is advertised to give a longer range than other vehicles in its class. The vehicle features a 100kW (134 hp) peak hp electric motor and a single speed transmission like many other EV's. The vehicle is on sale now.



- **2013 Chevrolet Spark(S):** The Spark is Chevrolet's latest mini car for the US and Canadian markets. Slightly larger than the Fiat 500, the Spark is a sporty four passenger five door hatchback aimed at first time buyers and city dwellers. It features an EcoTec 1.25L I4 engine and standard M5 or optional A4 transmission. It can be well equipped for its segment, and is intended to go on sale in Fall 2012. The Spark EV is planned to be introduced shortly after the gasoline version.



- **2013 Fiat 500E Electric:** Current plans call for the production version of the 2013 Fiat 500E to be introduced to the press and public at the Los Angeles Auto Show in November 2012. Production vehicles are planned to start arriving at dealers in early December. Final details regarding the specifications of the traction battery and drive motor, etc, haven't been announced at the time this was written.



Gasoline version shown

- **2012 Fisker Karma:** Produced by Fisker which is a new car manufacturer, the 2012 Karma is new for 2012 and is a large four-door luxury sedan with a plug in hybrid powertrain that produces 402 horsepower when both the turbo charged 2.0L 4-cylinder engine and twin 150kW electric drive motors are fully engaged. (Can you say Warp Drive?) An all-electric version is reportedly in the works. The vehicle can go an estimated 32 miles in all electric mode and is available in three different versions ranging in price from \$96k to \$109k.



- **2012 Ford Focus Electric:** The electric version of the 2012 Focus features a 107 kW (141hp) electric motor and a 23kWh lithium-ion battery pack. The Focus EV achieves 105 mpg equivalent, has a top speed of 84mph, and a range of up to 76 miles on a single charge. Charging time is about 4 hours with a 240 volt home charger. Initial production was limited to selected markets in California, New York, and New Jersey and by the end of 2012 the vehicle should be available in 19 markets across the U.S.



- **2013 Ford Fusion Energi:** The all new 2013 Ford Fusion Energi is Ford's midsize plug-in hybrid (PHEV) sedan that should arrive in the fall of 2012. It is reported to have a 20 mile all electric range and be able to reach 85 mph in all-electric mode.



- **2013 Ford Fusion Hybrid** is the conventional hybrid version of the new 2013 Fusion. It is rated an excellent 47 mpg city and 47 mpg highway by EPA. The 2013 Fusion is also offered as a conventional gasoline-powered vehicle.



- **2013 Ford C-max Hybrid and Energi:** The C-max is Ford's new CUV that, at least initially will only be offered as a Hybrid or Plug in Hybrid (Energi). The powertrains and specifications are expected to be similar to the Fusion Hybrid and Fusion Energi above. EPA has already rated the C-max Hybrid the same 47 mpg City and 47 mpg Highway as the Fusion Hybrid.



- **2014 Honda Accord Hybrid and Plug in Hybrid:** Honda will introduce the 2014 Accord Hybrid and Plug in Hybrid early in 2013. The Accord Plug in Hybrid is expected to have an all electric range of 15 miles.



- **Honda FCX Clarity:** The first deliveries of the limited production FCX Clarity began in 2008. The vehicle utilizes hydrogen gas that is fed into a hydrogen fuel cell to generate electricity that drives an electric motor as its main source of power. The FCX Clarity also features a lithium ion battery pack to store electrical energy generated from the fuel cell and through regenerative braking for use when needed. The vehicle is a zero exhaust emission vehicle with water as its only byproduct. These vehicles are currently being used for developmental purposes.



- **2013 Honda Fit EV:** The 2013 Fit EV is based on Honda's popular five-door Fit and Fit Sport. The 100% electric vehicle features a 20kWh lithium-ion battery and a 92kW (123 hp) electric motor that is similar to the motor used in the FCX Clarity. The Fit EV became available for three year leases in key markets in Oregon and California in late July, 2012 with six key east coast markets planned for 2013. Approximately 1,100 FIT EVs will be available over the next three years.



- **Tesla Model S sedan:** The Model S is an all-electric luxury performance vehicle with extended range capability. The S can be equipped with three different lithium-ion battery packs with 40, 60, or 85kWh storage capacity and driving ranges of 160 miles to 265 miles (with base prices ranging from \$58K with the 40 Kwh battery to \$78K with 85 Kwh battery)!



- **2012 Toyota RAV4 EV:** The RAV4 EV is the only all-electric SUV on the market and features a Tesla-designed and produced battery & electric powertrain in one of Toyota's most popular SUV models. The RAV4 EV has an expected driving range of about 100 miles and with a 154 peak horsepower electric motor, its driving dynamics are expected to equal or exceed the V6-equipped RAV4 in certain areas. Sales are planned for late summer in four major California metropolitan areas.



- **Volvo (and Audi)** have both reportedly been developing BEV and PHEV vehicles for the US market, but the reports have changed so many times we will not attempt any concrete predictions.

AAA's Green Auto Initiatives

- **Electric vehicle fleet testing**

In April 2011, the Automobile Club of Southern California started an extensive research program into the utility of EVs by leasing 20 smart EVs for four years. The vehicles are being used in a number of ways in California and several other states. They will be used to provide light roadside assistance (lockout, tire changes, jump starts, etc.), by insurance claims adjusters in the field, and driven by Club employees under a wide range of conditions to be able to evaluate their usefulness and durability. The Club is evaluating adding additional zero emission vehicles to our fleet and has adopted a policy requiring all new passenger vehicles added to our fleet to be PZEVs.

The ARC has one of the smart EVs and initially tested it for the 2011 edition of this Guide and retested it for the current edition (see page 88). What we have learned is that the technology used in the Smart EV is definitely a work in progress. The ARC's car needed numerous repairs and updates, although this is quite typical of what is really a developmental prototype. We have also learned that the efficiency and range (about 85 miles) estimates provided by smart are accurate, as we routinely use ours for 70 mile (one way) commutes and our measurements show it uses about 0.35 kWh per mile. We will continue testing this car and will provide annual updates in each edition of the Auto Club's Green Car Guide.

- **Electric Vehicle Charging**

AAA is evaluating several approaches to EV recharging. The first is fixed site "level 2" 240 volt charging. Quite a few public charging stations have been installed at AAA Branch Offices including: Southern California (Los Angeles, Costa Mesa, and additional charging stations at the Club's Administrative Offices for employee use and at the ARC for research purposes), Arizona (7 locations), New York (4 locations), and Florida (4 locations).

Another approach AAA is evaluating is supplementing our Emergency Roadside Service with vehicles equipped with high-speed chargers that can respond to member calls with a "dead" EV battery. These "mobile charging" trucks can respond to the member and carry generators on board to provide a "boost" similar to providing a gallon of gasoline to a motorist who has run out. These trucks can supply Level 2 (240 volt) and Level 3 (480 volt) fast charges with the goal of providing 10 to 15 miles of charge in 15 to 20 minutes. This is proving possible for EVs with Level 3 capability, but most only have Level 2 inputs, so they get 4 to 5 miles of boost in 20 minutes.

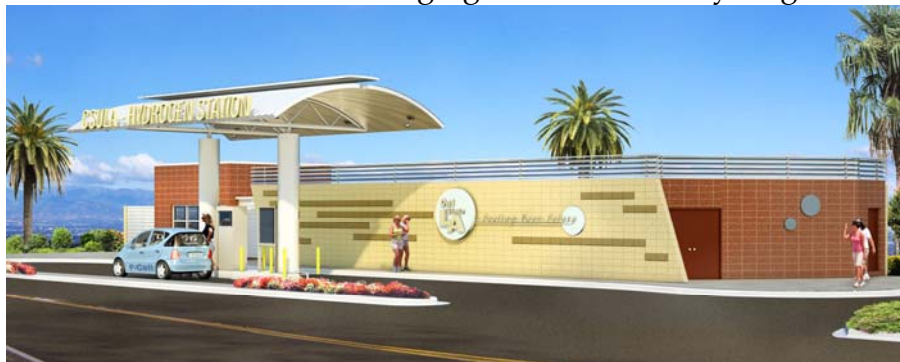
AAA has deployed 6 prototypes of these trucks using several different charging technologies. The trucks are deployed in Los Angeles, Northern California, Oregon, Washington, Tennessee, and Michigan. AAA Arizona has deployed their own truck which carries only Level 2 capability. Several of the trucks use generators powered by CNG. AAA

is also investigating the possibility of supplying CNG to motorists who run out of this fuel from the same truck, since it has a tank of CNG onboard anyway. Initial demand for this service has been understandably weak since there are limited EVs on the road to date. As experience with these trucks grows, this service will be expanded to meet the need.



- **Hydrogen production and dispensing**

The Automobile Club of Southern California is in a partnership with California State University Los Angeles (CSULA) in the construction and operation of a demonstration hydrogen production and distribution facility on the CSULA campus. The facility dispenses high-pressure (10,000 psi) hydrogen gas produced from water using electricity generated from renewable sources, primarily wind and solar. At the urging of the Auto Club, CSULA added two Level 2 EV charging stations to the hydrogen facility.



Testing and Scoring in the Green Car Guide

To meet the extremely low emissions standards required of modern passenger vehicles, the automobile manufacturers have employed a wide variety of advanced technologies, including gasoline/electric hybrids, battery electric vehicles, natural gas-fueled engines, and advanced internal combustion engines “ICE” (using both gasoline and diesel). The Auto Club produces this Guide to:

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

The ARC’s engineers and specialists evaluated each of 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 ZEV or PZEV emission standards
- Hybrids
- Battery electric vehicles
- Vehicles that run on diesel and meet California’s emission standards
- Vehicles that run on compressed natural gas or hydrogen
- Vehicles with category-leading fuel economy

62 vehicles were tested; most were from the 2012 model year with a few 2011s, and a few 2010s that were direct carryovers into the 2012 version. By “carryover” we mean that the 2010 (or 2011) version has the same body, chassis, and powertrain as the 2012 version and will achieve identical results on all of our evaluations. We also included a couple of 2013 prototypes and one 2009 (GMC Sierra 2WD Hybrid Crew Cab). Please note that some of the data for the prototypes is preliminary or estimated since production vehicles were not available. The group of vehicles tested is representative of the “green” vehicles on the market in the second quarter of 2012, although not all models were available for testing at press time.

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
- Roominess

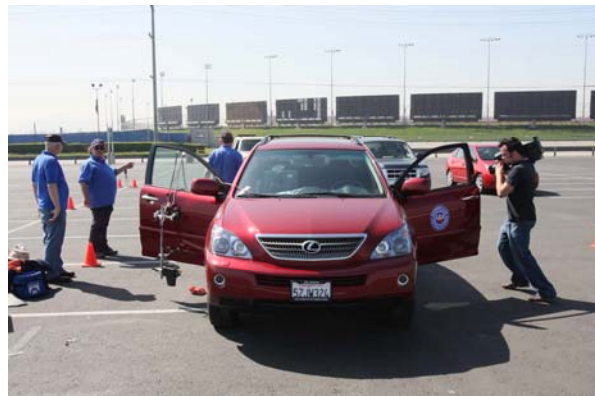
Tests were performed at the ARC in Diamond Bar, California; the Auto Club Speedway in Fontana, California; and on Southern California roads. Testing procedures were based on those developed by the Society of Automotive Engineers (SAE), EPA, and the Auto Club. Most of the test vehicles were obtained from the public relations departments of the automobile manufacturers; several were rented from Enterprise Rental Cars.



AUTOMOTIVE RESEARCH CENTER
Diamond Bar, CA



Hybrid Vehicle Testing
Auto Club Speedway, Fontana, CA



Setting up test vehicle at Auto Club Speedway

Scoring

After testing was completed on the 62 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.”

As part of the “crashworthiness” score, we count the number of airbags, but side-curtain airbags are treated a little differently. Manufacturers use side-curtain airbags in different configurations, either a single air bag that extends along the roofline from the front (driver) to the rear passenger, or two airbags, one for each occupant. Both configurations will protect two people, although the airbag “count” may vary between one and two for each side of the vehicle. For our purposes and scoring, we are most concerned with the number of people who are protected. Therefore, a side curtain air bag on each side of the vehicle, whether it is a single-bag configuration for front and rear or as an individual airbag for each seating position, will result in a “score” of four airbags just for the side-curtain count because they protect four people – two for each side of the vehicle.

Fuel economy ratings: We used ratings published by the U.S. EPA to obtain the score in this guide (see the above example). 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 scientific input 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.

You will see from our actual test mpg figures for individual cars that 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.

Fuel economy ratings for alternative-fueled vehicles: 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 Gasoline Gallon Equivalent (GGE) conversion factor is used in calculating the “fuel economy” of an alternative-fueled vehicle.

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

New MPG tests are more realistic 

Learn more about
"Your MPG" 

[Disclaimer](#)

New MPG

48
City

46
Combined

45
Hwy

Old MPG

60
City

55
Combined

51
Hwy

MPG Estimates from Drivers Like You

Average based on 157 vehicles.

46.8

Lo **34** → **75** Hi

[View Individual Estimates](#)

*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

Green Car Rankings and Test Results

GREEN CAR GUIDE

GREEN CAR SCORES

Ranking	Vehicle Type	Year	Make	Model	Scores
1	Mid-Sized 4-door Sedan	2013	Lexus	GS 450h	89.30
2	4-door SUV	2011	Toyota	Highlander LTD Hybrid 4WD	88.30
3	Mid-Sized 4-door Sedan	2012	Toyota	Camry Hybrid LE	86.94
4	4-door SUV	2012	Audi	Q7 TDI quattro Tiptronic	86.09
5	Mid-Sized 4-door Sedan	2011	Lexus	LS 600h L	85.80
6	4-door SUV	2011	Volkswagen	Touareg Supercharged Hybrid	85.61
7	Mid-Sized 4-door Hatchback	2011	Nissan	Leaf SL	84.75
8	Compact 4-door Hatchback	2011	Lexus	CT 200h Hybrid	84.62
9	4-door SUV	2010	Lexus	RX 450h	84.08
10	Mid-Sized 4-door Sedan	2010	Toyota	Prius IV	83.66
11	Mid-Sized 4-door Sedan	2012	Toyota	Prius PHEV	83.41
12	Mid-Sized Station Wagon	2012	Toyota	Prius V	83.31
13	Full-Sized 4-door Sedan	2012	Mercedes-Benz	S400 Hybrid	82.04
14	4-door SUV	2011	Subaru	Forester 2.5X Premium	81.68
15	Small Station Wagon	2011	Audi	A3 2.0 TDI FWD S-Tronic	81.37
16	Small Station Wagon	2011	Audi	A3 2.0 TFSI FWD MT6	81.35
17	Mid-Sized 4-door Sedan	2010	Ford	Fusion Hybrid	81.17
18	4-door AWD SUV	2010	Subaru	Outback 2.5i Limited PZEV	80.30
19	4-door AWD SUV	2011	BMW	X5 xDrive35d	80.10
20	Mid-Sized 4-door Sedan	2013	Chevrolet	Malibu Eco	79.83
21	2-Seat Coupe	2011	Honda	CR-Z EX	79.64
22	Mid-Sized 4-door Sedan	2012	Volkswagen	Passat TDI SE	79.41
23	Mid-Sized 4-door Sedan	2012	Infiniti	M35h	79.23
24	Full-Size 4-door Sedan	2011	Hyundai	Sonata Hybrid	79.16
25	Compact 4-door Hatchback	2012	Toyota	Prius C Three	78.96
26	Full-Size 4-door Sedan	2011	Hyundai	Sonata Limited	78.83
27	Mid-Sized 4-door Sedan	2010	Subaru	Legacy 2.5i Limited PZEV	78.80
28	Compact 4-door Sedan	2010	Lexus	HS 250h	78.67
29	Mid-Sized 4-door Sedan	2012	Toyota	Camry XLE	77.89
30	Mini-Compact 4-door Hatchback	2012	Mitsubishi	i SE	77.71
31	4-door SUV	2011	Hyundai	Tucson GLS FWD	77.17
32	4-door SUV	2011	Kia	Sorento EX FWD	76.80
33	Small Station Wagon	2012	Kia	Soul !	76.51
34	Large 4-door Sedan	2012	Honda	Accord EX	76.40
35	Mid-Sized 4-door Sedan	2012	Hyundai	Elantra GLS M/T	76.40
36	AWD 5-door Hatchback	2012	Subaru	Impreza 2.0i Sport Limited	76.38
37	Mid-Sized 4-door Sedan	2012	Kia	Optima Hybrid	75.69
38	Subcompact 4-door Sedan	2011	Ford	Fiesta SEL	75.65
39	Compact 4-door Sedan	2011	Chevrolet	Cruze Eco	75.61
40	Compact 4-door Sedan	2012	Ford	Focus SEL	75.12
41	Compact 4-door Sedan	2012	Chevrolet	Volt	75.02
42	Small 5-door Wagon	2012	Honda	Fit Sport NAVI	74.94
43	Compact 4-door Sedan	2013	Acura	ILX Tech Hybrid	74.85
44	Mid-Sized 4-door Sedan	2011	Nissan	Sentra 2.0 SL	74.84
45	Compact 4-door Sedan	2012	Honda	Civic EX-L NAVI	74.46
46	Compact 4-door Sedan	2012	Honda	Civic IMA Hybrid	74.17

**GREEN CAR GUIDE
GREEN CAR SCORES**

Ranking	Vehicle Type	Year	Make	Model	Scores
47	Compact 4-door Sedan	2011	Volkswagen	Jetta SEL	72.41
48	Compact 4-door Sedan	2011	Toyota	Corolla Sport	72.35
49	Subcompact 5-door Liftback	2012	Toyota	Yaris SE Liftback	72.29
50	Mini-Compact 2-door Coupe	2010	Mini	Cooper Camden Hardtop	71.99
51	Compact 5-door Hatchback	2012	Kia	Rio5 EX Eco	71.93
52	Compact 4-door Sedan	2011	Mazda	2 Touring	71.10
53	Compact 2-door Hatchback	2012	Hyundai	Veloster M/T	70.80
54	Mini-Compact 2-Seat Coupe	2011	smart	fortwo passion EV	70.67
55	Mini-Compact 2-door Hatchback	2012	Scion	iQ	70.62
56	Subcompact 4-door Hatchback	2011	Scion	xD	69.48
57	Compact 5-door Sedan	2010	Honda	Insight EX Navi	69.10
58	Compact 4-door Sedan	2012	Nissan	Versa 1.6S	68.97
59	Large 4-door Pickup	2009	GMC	Sierra 2WD Hybrid Crew Cab 3HB	68.96
60	Compact 4-door Sedan	2012	Honda	Civic NGV GX	68.72
61	2-Seat Convertible	2010	Mazda	MX-5 Retractable Hardtop	67.75
62	Mini-Compact 2-door Hatchback	2012	Fiat	500 Sport Hatchback	66.26

GREEN CAR GUIDE
GREEN CAR COST PER POINT

Cost Per Point Ranking	Year	Make	Model	Points	Price as Tested	Cost Per Point
1	2012	Nissan	Versa 1.6S	68.97	\$13,690	\$198
2	2012	Hyundai	Elantra GLS M/T	76.40	\$16,575	\$217
3	2012	Scion	iQ	70.62	\$16,000	\$227
4	2011	Scion	xD	69.48	\$15,765	\$227
5	2011	Mazda	2 Touring	71.10	\$16,985	\$239
6	2012	Toyota	Yaris SE Liftback	72.29	\$17,340	\$240
7	2011	Chevrolet	Cruze Eco	75.61	\$19,420	\$257
8	2012	Kia	Rio5 EX Eco	71.93	\$18,745	\$261
9	2011	Ford	Fiesta SEL	75.65	\$20,495	\$271
10	2012	Honda	Fit Sport NAVI	74.94	\$20,310	\$271
11	2011	Toyota	Corolla Sport	72.35	\$20,199	\$279
12	2011	Nissan	Sentra 2.0 SL	74.84	\$21,390	\$286
13	2012	Toyota	Prius C Three	78.96	\$23,245	\$294
14	2012	Fiat	500 Sport Hatchback	66.26	\$19,700	\$297
15	2012	Kia	Soul !	76.51	\$22,950	\$300
16	2011	Honda	CR-Z EX	79.64	\$23,960	\$301
17	2012	Hyundai	Veloster M/T	70.80	\$21,395	\$302
18	2012	Ford	Focus SEL	75.12	\$22,885	\$305
19	2011	Hyundai	Tucson GLS FWD	77.17	\$23,685	\$307
20	2012	Toyota	Camry Hybrid LE	86.94	\$26,750	\$308
21	2011	Subaru	Forester 2.5X Premium	81.68	\$26,315	\$322
22	2012	Honda	Civic EX-L NAVI	74.46	\$24,225	\$325
23	2012	Subaru	Impreza 2.0i Sport Limited	76.38	\$25,345	\$332
24	2011	Volkswagen	Jetta SEL	72.41	\$24,165	\$334
25	2012	Honda	Civic IMA Hybrid	74.17	\$24,800	\$334
26	2012	Toyota	Prius V	83.31	\$27,925	\$335
27	2012	Honda	Accord EX	76.40	\$25,875	\$339
28	2010	Honda	Insight EX Navi	69.10	\$23,770	\$344
29	2010	Mini	Cooper Camden Hardtop	71.99	\$25,000	\$347
30	2011	Hyundai	Sonata Limited	78.83	\$28,415	\$360
31	2012	Volkswagen	Passat TDI SE	79.41	\$28,665	\$361
32	2013	Chevrolet	Malibu Eco	79.83	\$29,100	\$365
33	2010	Toyota	Prius IV	83.66	\$30,709	\$367
34	2010	Ford	Fusion Hybrid	81.17	\$30,245	\$373
35	2010	Subaru	Legacy 2.5i Limited PZEV	78.80	\$29,380	\$373
36	2012	Toyota	Camry XLE	77.89	\$29,510	\$379
37	2011	Kia	Sorento EX FWD	76.80	\$29,340	\$382
38	2011	Lexus	CT 200h Hybrid	84.62	\$33,200	\$392
39	2012	Toyota	Prius PHEV	83.41	\$33,063	\$396
40	2011	Hyundai	Sonata Hybrid	79.16	\$31,650	\$400
41	2011	Audi	A3 2.0 TFSI FWD MT6	81.35	\$32,645	\$401
42	2010	Subaru	Outback 2.5i Limited PZEV	80.30	\$33,035	\$411
43	2012	Honda	Civic NGV GX	68.72	\$28,425	\$414
44	2011	Nissan	Leaf SL	84.75	\$35,695	\$421
45	2012	Kia	Optima Hybrid	75.69	\$32,500	\$429
46	2012	Mitsubishi	i SE	77.71	\$34,765	\$447

GREEN CAR GUIDE
GREEN CAR COST PER POINT

Cost Per Point Ranking	Year	Make	Model	Points	Price as Tested	Cost Per Point
47	2011	Audi	A3 2.0 TDI FWD S-Tronic	81.37	\$37,250	\$458
48	2010	Mazda	MX-5 Retractable Hardtop	67.75	\$31,300	\$462
49	2013	Acura	ILX Tech Hybrid	74.85	\$35,295	\$472
50	2010	Lexus	HS 250h	78.67	\$39,150	\$498
51	2011	Toyota	Highlander LTD Hybrid 4WD	88.30	\$44,720	\$506
52	2010	Lexus	RX 450h	84.08	\$47,375	\$563
53	2012	Chevrolet	Volt	75.02	\$45,170	\$602
54	2011	smart	fortwo passion EV	70.67	\$45,952	\$650
55	2009	GMC	Sierra 2WD Hybrid Crew Cab 3	68.96	\$46,495	\$674
56	2013	Lexus	GS 450h	89.30	\$62,060	\$695
57	2011	Volkswagen	Touareg Supercharged Hybrid	85.61	\$61,385	\$717
58	2012	Audi	Q7 TDI quattro Tiptronic	86.09	\$70,625	\$820
59	2011	BMW	X5 xDrive35d	80.10	\$65,825	\$822
60	2012	Infiniti	M35h	79.23	\$65,395	\$825
61	2012	Mercedes-Benz	S400 Hybrid	82.04	\$106,615	\$1,300
62	2011	Lexus	LS 600h L	85.80	\$121,869	\$1,420

Acura ILX Tech Hybrid

GREEN CAR SCORES

Score For This Vehicle

74.85

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

Base Price: **\$34,400**

Price as Tested: **\$35,295**

Cost per Point for this Vehicle

\$472

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

FUEL ECONOMY

Fuel Type **Unleaded Premium**

Fuel Capacity (gal): **13.2**

EPA Urban MPG: **39**

EPA Highway MPG: **38**

Auto Club Highest MPG: **44.1**

Auto Club Average MPG: **39.8**

Auto Club Lowest MPG: **36.3**

MODEL YEAR TESTED - 2013



REASON THIS VEHICLE WAS TESTED

Mild Hybrid

DESCRIPTION/COMMENTS

Compact 4-door Sedan

STRONG POINTS

- Excellent fuel economy
- Trunk security (lockable release)
- Comfortable front seats
- Smooth ride while maintaining good handling
- Quality of fit and finish
- Certified as an ATPZEV

WEAK POINTS

- Cramped rear seat
- Expensive premium fuel recommended
- Small trunk and rear seat does not fold down
- When using cruise control on a downgrade, regenerative braking cycles on and off so it feels like the brakes are being applied

OVERALL OBSERVATIONS

The Acura ILX Hybrid is based on the Honda Civic Hybrid (although you can't tell by looking). Both use a 1.5-liter gasoline engine combined with an electric motor to take advantage of the strengths of both to provide excellent fuel economy & low emissions (ATPZEV). The ILX does not seem like a Civic on the inside either, rather the interior seems quite luxurious & the heated leather front seats are very comfortable. It rides well & still was quite fast through our slalom course. Like other hybrids we have tested, the rear seats don't fold down & the trunk is small due to the placement of the battery pack. The ILX is Acura's first shot at a hybrid, but with Honda's hybrid experience to lean on, it should prove to be a success.

AFTERMARKET PARTS

Tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2980
Exterior Length (in):	179.1
Exterior Width (in):	70.6
Exterior Height (in):	55.6
Wheelbase (in):	105.1
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	48/50,000
Tire Manufacturer:	Continental P205/55R16
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size:	1.5L SOHC 8V i-VTEC I4
Horsepower @ RPM:	111 @ 5500

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	7.02
Crashworthiness:	5.88
Visibility:	7.30
Slalom Handling:	7.44
Ride Quality:	7.88
Fuel Economy:	5.21
Interior Noise:	5.44
Acceleration:	3.90
Ease of Entry and Exit:	6.04
Interior Size:	3.77
Turning Circle:	4.85
Luggage Capacity:	1.11

Audi A3 2.0 TDI FWD S-Tronic

GREEN CAR SCORES

Score For This Vehicle

81.37

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

Base Price: **\$31,125**

Price as Tested: **\$37,250**

Cost per Point for this Vehicle

\$458

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

FUEL ECONOMY

Fuel Type	Diesel #2
Fuel Capacity (gal):	14.6
EPA Urban MPG:	30
EPA Highway MPG:	42
Auto Club Highest MPG:	35.6
Auto Club Average MPG:	35.1
Auto Club Lowest MPG:	34.4

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

Clean Diesel

DESCRIPTION/COMMENTS

Small Station Wagon

STRONG POINTS

- Good MPG (34)
- Responsive steering with nimble handling
- Fully automatic window controls & rear windows open fully
- Sporty/fun to drive with good road manners
- Well equipped (Sirius, Bluetooth, navigation)
- Headlight illumination

WEAK POINTS

- Cramped rear seat
- Front seat entry/exit
- Non-intuitive radio controls
- Center armrest interferes with parking brake
- Brake feel
- Small trunk for a wagon

OVERALL OBSERVATIONS

Audi supplied us with 2 versions of the A3: one powered by gasoline with a manual transmission (the red one – see next page) and one with a turbodiesel and an automatic transmission (the black one). Many of the features and test results are similar, but there is one huge difference. The TDI equipped A3 gets a whopping 10 mpg better fuel economy (34 vs. 24). Diesel is running more expensive than gasoline these days, but since the gas version A3 requires premium, the fuel prices are comparable. The TDI engine is smooth and provides good power, with only minor lag from a standing start. If you are interested in the A3 and want amazing mpg, the TDI is your answer.

AFTERMARKET PARTS

Front chin spoiler, rear spoiler

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3380
Exterior Length (in):	168.9
Exterior Width (in):	69.4
Exterior Height (in):	56.0
Wheelbase (in):	101.5
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags or more
Warranty (Months/Miles):	48/50,000
Tire Manufacturer:	Continental 225/45R17
Towing Cap. (lbs) W/WO Brakes:	3500 - Class 2
Transmission Type:	Auto 6 Speed
Drivetrain Type:	Front Wheel
Engine Size:	2.0L DOHC I4 Turbo Diesel
Horsepower @ RPM:	140 @ 4200

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	7.82
Crashworthiness:	6.86
Visibility:	7.30
Slalom Handling:	8.76
Ride Quality:	7.17
Fuel Economy:	6.18
Interior Noise:	4.02
Acceleration:	6.77
Ease of Entry and Exit:	6.36
Interior Size:	4.30
Turning Circle:	6.00
Luggage Capacity:	2.82

Audi A3 2.0 TFSI FWD MT6

GREEN CAR SCORES

Score For This Vehicle	81.35
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$28,145
Price as Tested:	\$32,645
Cost per Point for this Vehicle	\$401
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Premium
Fuel Capacity (gal):	14.6
EPA Urban MPG:	21
EPA Highway MPG:	30
Auto Club Highest MPG:	29.3
Auto Club Average MPG:	24.5
Auto Club Lowest MPG:	22.3

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Small Station Wagon

STRONG POINTS

- Responsive steering with nimble handling
- Fully automatic window controls & rear windows open fully
- Sporty/fun to drive with good road manners
- Powerful and responsive engine
- Fit and finish
- Brakes provide short straight stops

WEAK POINTS

- Cramped rear seat
- Front seat entry/exit
- Center armrest interferes with parking brake
- Small trunk for a wagon
- Requires expensive premium fuel

OVERALL OBSERVATIONS

The Audi A3 is called a "small station wagon" by EPA. When you drive one, it seems more like a sports car in disguise. It achieves one of the fastest times ever in our slalom, takes only 7.2 seconds to accelerate from 0 to 60 mph, & the brakes provided extremely short stopping distances. Even though it is a wagon, you get some of the typical downsides of a sports car too. The seats are hard to get in & out of & the rear seat is cramped. The trunk is surprisingly small, but the rear seats fold down allowing you to take advantage of the wagon shape. One other comment, like so many other imported cars we test, if you use the remote to unlock the doors, but don't open them within 30 seconds, the car relocks itself.

AFTERMARKET PARTS

Front chin spoiler, rear spoiler

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3220
Exterior Length (in):	168.9
Exterior Width (in):	69.4
Exterior Height (in):	56.0
Wheelbase (in):	101.5
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags or more
Warranty (Months/Miles):	48/50,000
Tire Manufacturer:	Bridgestone 225/40R18
Towing Cap. (lbs) W/WO Brakes:	3500 - Class 2
Transmission Type:	Manual 6 Speed
Drivetrain Type:	Front Wheel
Engine Size:	2.0L DOHC Turbo I4
Horsepower @ RPM:	200 @ 5100

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	9.42
Crashworthiness:	6.67
Visibility:	7.30
Slalom Handling:	9.50
Ride Quality:	6.88
Fuel Economy:	1.62
Interior Noise:	3.52
Acceleration:	9.12
Ease of Entry and Exit:	6.36
Interior Size:	5.09
Turning Circle:	6.05
Luggage Capacity:	2.82

Audi Q7 TDI quattro Tiptronic

GREEN CAR SCORES

Score For This Vehicle	86.09
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$51,450
Price as Tested:	\$70,625
Cost per Point for this Vehicle	\$820
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Diesel #2
Fuel Capacity (gal):	26.4
EPA Urban MPG:	17
EPA Highway MPG:	25
Auto Club Highest MPG:	27.2
Auto Club Average MPG:	23.0
Auto Club Lowest MPG:	20.2

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

Clean Diesel

DESCRIPTION/COMMENTS

4-door SUV

STRONG POINTS

- AWD traction and responsive handling
- Excellent sun visors
- Powerful engine with excellent drivability
- Roomy and flexible interior with seating for 7
- Ride quality on freeway
- Loaded

WEAK POINTS

- High sill may impede entry and exit for some
- Complicated and possibly distracting controls
- Occasionally disconcerting shifts
- High purchase price (\$70K)

OVERALL OBSERVATIONS

Audi has been marketing their "Quattro" AWD system on a wide variety of vehicles for years. They supplied us a loaded Q7 SUV equipped with their 225 hp, 406 lb-ft diesel engine. The high torque engine and AWD provided responsive acceleration, excellent handling, good ride quality, and short stops. The tall profile Q7 is easy to see out of and the fold down rear headrests are a nice touch. But all of this costs money, with our test vehicle listing an MSRP of over \$70K. If you can afford it, the Q7 is desirable and gets 20 mpg, not a high number on its own, but impressive in a 5800 pound SUV.

AFTERMARKET PARTS

Tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3/2
Curb Weight (lbs):	5840
Exterior Length (in):	200.3
Exterior Width (in):	78.1
Exterior Height (in):	68.4
Wheelbase (in):	118.2
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags or more
Warranty (Months/Miles):	48/50,000
Tire Manufacturer:	Dunlop 295/35R21
Towing Cap. (lbs) W/WO Brakes:	6615/1000
Transmission Type:	Auto 8 Speed
Drivetrain Type:	All Wheel - Full Time
Engine Size:	3.0L TDI Turbocharged V6
Horsepower @ RPM:	225 @ 3750

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	7.93
Crashworthiness:	9.80
Visibility:	7.70
Slalom Handling:	8.11
Ride Quality:	7.75
Fuel Economy:	2.51
Interior Noise:	4.99
Acceleration:	6.52
Ease of Entry and Exit:	7.71
Interior Size:	6.04
Turning Circle:	3.26
Luggage Capacity:	6.78

BMW X5 xDrive35d

GREEN CAR SCORES

Score For This Vehicle

80.10

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

Base Price: **\$52,175**

Price as Tested: **\$65,825**

Cost per Point for this Vehicle

\$822

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

FUEL ECONOMY

Fuel Type	Diesel #2
Fuel Capacity (gal):	22.5
EPA Urban MPG:	19
EPA Highway MPG:	26
Auto Club Highest MPG:	24.9
Auto Club Average MPG:	22.2
Auto Club Lowest MPG:	19.8

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

Clean Diesel

DESCRIPTION/COMMENTS

4-door AWD SUV

STRONG POINTS

- Powerful engine
- Brakes provide short straight stops
- Good MPG for an SUV
- Responsive handling
- Seats can be adjusted to fit any driver
- Roominess
- Loaded!

WEAK POINTS

- High purchase price
- Noisy engine
- Only meets California's least stringent LEV emission standards
- Confusing controls
- Tall vehicle with high door sills and trunk
- Transmission shifts sluggishly at WOT

OVERALL OBSERVATIONS

BMW likes to call their SUVs Sport Activity Vehicles (SAV) and the X5 certainly qualifies. They supplied us a loaded xdrive 35d version equipped with their 265 hp diesel engine, heated seats and steering wheel, Bluetooth, navigation and many more. The adaptive drive system allowed for a taut and controlled but comfortable ride, coupled with excellent handling. Acceleration was quite good, although the transmission seemed to lag from a start and before wide open throttle upshifts. The ABS brakes were powerful and the X5's tall profile is easy to see out of. But all of this costs money, with our test vehicle listing an MSRP of almost \$66K. If you can afford it, the X5 is a desirable SAV.

AFTERMARKET PARTS

Body kits, custom wheels

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	5220
Exterior Length (in):	191.2
Exterior Width (in):	76.1
Exterior Height (in):	69.9
Wheelbase (in):	115.5
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	48/50,000
Tire Manufacturer:	Michelin 255/55R18
Towing Cap. (lbs) W/WO Brakes:	6000 Maximum
Transmission Type:	Auto 6 Speed
Drivetrain Type:	All Wheel - Full Time
Engine Size:	3.0L DOHC 24V I6 Diesel
Horsepower @ RPM:	265 @ 4200

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	6.00
Braking:	7.83
Crashworthiness:	8.56
Visibility:	7.90
Slalom Handling:	6.87
Ride Quality:	7.71
Fuel Economy:	2.95
Interior Noise:	5.34
Acceleration:	7.88
Ease of Entry and Exit:	6.87
Interior Size:	5.27
Turning Circle:	3.46
Luggage Capacity:	3.47

Chevrolet Cruze Eco

GREEN CAR SCORES

Score For This Vehicle	75.61
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$18,895
Price as Tested:	\$19,420
Cost per Point for this Vehicle	\$257
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	12.6
EPA Urban MPG:	28
EPA Highway MPG:	42
Auto Club Highest MPG:	34.9
Auto Club Average MPG:	28.0
Auto Club Lowest MPG:	19.1

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Compact 4-door Sedan

STRONG POINTS

- Fuel economy
- XM
- Value (only \$19K)
- Tilt and telescopic steering column
- Useful trunk for this size vehicle
- 5 star crash rating

WEAK POINTS

- Lacks rear cupholders
- Lacks rear center armrest
- Cramped rear seat for tall passengers
- Interior includes lots of "old-tech" plastic

OVERALL OBSERVATIONS

Chevrolet's Cavalier begat Cobalt, which begat Cruze. They all start with "C" for "compact". This is the recent family history of Chevrolet's compact sedans. Each generation has been an improvement from the previous & the Cruze is no exception. We tested the "Eco" version with a 6-speed manual transmission because this is the non-hybrid gasoline fuel economy leader in its size category. It also gets a 5-star overall rating in NHTSA's more stringent (for 2011 & beyond) new crash test program. Ours had the optional "connectivity plus cruise" package & still had an MSRP around \$19K. In the past, imports led the way in the compact segment, but the Cruze is a viable option that may eat into that leadership.

AFTERMARKET PARTS

Mesh grille, cold air intake

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3200
Exterior Length (in):	181.0
Exterior Width (in):	70.7
Exterior Height (in):	58.1
Wheelbase (in):	105.7
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags or more
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Goodyear P215/55R17
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Manual 6 Speed
Drivetrain Type:	Front Wheel
Engine Size:	1.4L DOHC Turbo I4
Horsepower @ RPM:	138 @ 4900

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	6.00
Braking:	2.82
Crashworthiness:	6.65
Visibility:	6.90
Slalom Handling:	7.39
Ride Quality:	6.83
Fuel Economy:	5.80
Interior Noise:	6.82
Acceleration:	7.38
Ease of Entry and Exit:	6.23
Interior Size:	5.57
Turning Circle:	5.14
Luggage Capacity:	2.10

Chevrolet Malibu Eco

GREEN CAR SCORES

Score For This Vehicle	79.83
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$26,845
Price as Tested:	\$29,100
Cost per Point for this Vehicle	\$365
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	15.8
EPA Urban MPG:	25
EPA Highway MPG:	37
Auto Club Highest MPG:	31.1
Auto Club Average MPG:	28.1
Auto Club Lowest MPG:	23.6

MODEL YEAR TESTED - 2013



REASON THIS VEHICLE WAS TESTED

Mild Hybrid

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- Roomy and comfortable front seats
- Good MPG for size and price of car
- Well equipped
- Rear view camera works well
- Slalom handling surprisingly good

WEAK POINTS

- Vague steering feel
- Small trunk. The rear seats fold, but only provide limited access
- Scrapes bottom on driveways
- Poor entry and exit for rear seat
- Rear seat cramped for tall passengers

OVERALL OBSERVATIONS

General Motors has chosen to introduce a group of mid-sized sedans equipped with mild hybrid powertrains. A 2.4l 4-cylinder engine is coupled with a 15hp electric motor that provides some acceleration assistance and stop-start functionality. We tested the 2013 Chevrolet Malibu ECO. This technology is also used on the Buick LaCrosse and Regal and is slated to appear on the 2014 Chevy Impala. The mild hybrid Malibu represents a large improvement over previous Malibus and looks like one of the best values in the segment. It is well equipped and averaged better than 28 mpg during testing, quite good for this sized car with a base price under \$27k.

AFTERMARKET PARTS

Custom grilles, headlight/tailight covers, exhaust kits

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3820
Exterior Length (in):	191.3
Exterior Width (in):	73.0
Exterior Height (in):	57.6
Wheelbase (in):	107.8
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags or more
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Goodyear P225/55R17
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 6 Speed
Drivetrain Type:	Front Wheel
Engine Size:	2.4L DOHC 16V I4
Horsepower @ RPM:	182 @ 6200

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	5.00
Braking:	6.36
Crashworthiness:	7.39
Visibility:	7.10
Slalom Handling:	9.11
Ride Quality:	7.08
Fuel Economy:	4.88
Interior Noise:	7.59
Acceleration:	6.46
Ease of Entry and Exit:	5.98
Interior Size:	5.40
Turning Circle:	5.59
Luggage Capacity:	1.90

Chevrolet Volt

GREEN CAR SCORES

Score For This Vehicle

75.02

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

Base Price: **\$39,145**

Price as Tested: **\$45,170**

Cost per Point for this Vehicle

\$602

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

FUEL ECONOMY

Fuel Type **Unleaded Premium**

Fuel Capacity (gal): **9.3**

EPA Urban MPG: Electric/Gas: **95/35**

EPA Highway MPG: Electric/Gas: **93/40**

Auto Club Highest MPG: **67.2**

Auto Club Average MPG: **51.5**

Auto Club Lowest MPG: **43.0**

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Compact 4-door Sedan

STRONG POINTS

- Efficient use of energy
- Technological innovation plus "green" image
- Well equipped
- PZEV now available
- Uses no gasoline in EV mode, but eliminates range anxiety
- Quiet interior although tire noise noticeable in "EV" mode

WEAK POINTS

- Requires expensive premium fuel
- High purchase price
- Air dam can scrape driveways
- Rear seat cramped and hard to enter/exit
- Too many controls on flat panel

OVERALL OBSERVATIONS

The Chevrolet Volt is possibly the most innovative car of today. Chevy calls it "an extended range EV", but it is really a PHEV. It operates as an EV for the first 35 to 40 miles (with fully charged batteries) and then a gas engine comes on and operates a generator to supply electricity for the motor that powers the vehicle. This type of operation can continue as long as there is fuel in the tank, eliminating "range anxiety". It also needs premium fuel, although we understand this is because premium stores better. If you recharge the car each night, and drive less than 40 miles per day, then the gasoline might sit in the tank unused for months!

AFTERMARKET PARTS

Chevy's Z-speed line of aftermarket parts

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	6.00
Braking:	5.79
Crashworthiness:	7.34
Visibility:	6.80
Slalom Handling:	7.96
Ride Quality:	6.56
Fuel Economy:	4.85
Interior Noise:	6.72
Acceleration:	6.81
Ease of Entry and Exit:	5.38
Interior Size:	4.29
Turning Circle:	5.28
Luggage Capacity:	1.25

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/2
Curb Weight (lbs):	3780
Exterior Length (in):	177.1
Exterior Width (in):	70.4
Exterior Height (in):	56.6
Wheelbase (in):	105.7
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags or more
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Goodyear 215/55R17
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 1 Speed
Drivetrain Type:	Front Wheel
Engine Size:	1.4L DOHC 16V I4
Horsepower @ RPM:	83 @ 4800
Electric Motor Horsepower:	149

Fiat 500 Sport Hatchback

GREEN CAR SCORES

Score For This Vehicle	66.26
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$17,500
Price as Tested:	\$19,700
Cost per Point for this Vehicle	\$297
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Premium
Fuel Capacity (gal):	10.5
EPA Urban MPG:	30
EPA Highway MPG:	38
Auto Club Highest MPG:	35.5
Auto Club Average MPG:	32.0
Auto Club Lowest MPG:	28.2

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Mini-Compact 2-door Hatchback

STRONG POINTS

- Good MPG
- Cute
- Easy to use manual transmission and clutch
- Sound system with satellite radio and Bluetooth
- Hill holder device really helps
- Responsive handling and tight turning radius

WEAK POINTS

- Only meets LEV emission standards
- Small trunk
- Cramped rear seat
- Rough ride
- Navigation system looks like an afterthought
- Requires more expensive premium fuel

OVERALL OBSERVATIONS

After many years of absence, Fiat is finally selling cars in the US again. Their first entry is the diminutive Fiat 500 mini-compact. This 2-door hatchback is undeniably cute and averages an excellent 33 mpg. Our tester was the "Sport" model with the Safety and Sound packages, but still had an MSRP under \$20K. Like other cars in this size category it handles nimbly, has a small turning radius, and can fit in any parking spot. On the other hand, the rear seats are basically useless, the engine could use more power, the interior is noisy, and the ride is bumpy. If most of your driving is solo, and you live and work in a congested city, then the Fiat 500 might just be the cute and economical car for you.

AFTERMARKET PARTS

Tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/2
Curb Weight (lbs):	2440
Exterior Length (in):	139.6
Exterior Width (in):	64.1
Exterior Height (in):	59.8
Wheelbase (in):	90.6
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags or more
Warranty (Months/Miles):	48/50,000
Tire Manufacturer:	Pirelli 195/45R16
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Manual 5 Speed
Drivetrain Type:	Front Wheel
Engine Size:	1.4L SOHC 16V I4
Horsepower @ RPM:	101 @ 6500

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	6.00
Braking:	6.70
Crashworthiness:	5.74
Visibility:	7.30
Slalom Handling:	7.42
Ride Quality:	6.13
Fuel Economy:	3.85
Interior Noise:	3.20
Acceleration:	4.07
Ease of Entry and Exit:	5.19
Interior Size:	2.54
Turning Circle:	7.49
Luggage Capacity:	0.62

Ford Fiesta SEL

GREEN CAR SCORES

Score For This Vehicle	75.65
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$17,415
Price as Tested:	\$20,495
Cost per Point for this Vehicle	\$271
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	12.0
EPA Urban MPG:	30
EPA Highway MPG:	40
Auto Club Highest MPG:	53.4
Auto Club Average MPG:	33.0
Auto Club Lowest MPG:	21.5

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

PZEV

DESCRIPTION/COMMENTS

Subcompact 4-door Sedan

STRONG POINTS

- Good fuel economy
- Certified as a PZEV
- Unusually useful trunk for such a small car
- Well equipped for the price including Sync, Sirius radio, and heated seats and mirrors
- ABS brakes
- Responsive handling

WEAK POINTS

- Unusual and sluggish transmission shifting
- Rear seat cramped and hard to enter/exit
- Lacks center armrests
- Engine noise at cold start
- Follows rain grooves on freeway, touchy steering at speed
- Rear windows don't open fully

AFTERMARKET PARTS

Front camber kits, performance air filter

OVERALL OBSERVATIONS

Ford has talked about building "world cars" for quite some time. Their Fiesta has been a perennial favorite in Europe & for 2011 it is now available in the US, which may place it in the world car category. The Fiesta in many ways raises the bar for the subcompact category, coming equipped with 9 airbags, stability control, electrochromic rear-view mirror & a host of comfort & convenience features. It gets 35 mpg & meets PZEV emission standards with responsive handling & short stopping distances. Of course, it is a subcompact & the rear seat is cramped & hard to get in & out of. If a small reasonably priced car is on your radar, the Fiesta deserves a long, hard look.

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	8.38
Crashworthiness:	6.00
Visibility:	6.90
Slalom Handling:	7.79
Ride Quality:	6.67
Fuel Economy:	6.02
Interior Noise:	3.86
Acceleration:	4.46
Ease of Entry and Exit:	5.81
Interior Size:	3.33
Turning Circle:	5.79
Luggage Capacity:	1.64

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2660
Exterior Length (in):	173.6
Exterior Width (in):	77.8
Exterior Height (in):	58.0
Wheelbase (in):	98.0
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags or more
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Hankook 195/50R16
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 6 Speed
Drivetrain Type:	Front Wheel
Engine Size:	1.6L DOHC 16V I4
Horsepower @ RPM:	120 @ 6350

Ford Focus SEL

GREEN CAR SCORES

Score For This Vehicle

75.12

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

Base Price: \$20,500

Price as Tested: \$22,885

Cost per Point for this Vehicle

\$305

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

FUEL ECONOMY

Fuel Type Unleaded Regular

Fuel Capacity (gal): 12.4

EPA Urban MPG: 27

EPA Highway MPG: 37

Auto Club Highest MPG: 35.7

Auto Club Average MPG: 31.7

Auto Club Lowest MPG: 20.9

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

PZEV

DESCRIPTION/COMMENTS

Compact 4-door Sedan

Rented from Enterprise Rental Cars

STRONG POINTS

- Economical with reasonable price, good mpg, and well equipped
- Certified as a PZEV
- Easy to use power window controls with auto up/down for all
- Equipped with blind spot mirrors
- Handling and ease of use in day-to-day driving

WEAK POINTS

- Shifting at low speeds is "quirky"
- Lacks rear center armrest
- Cramped rear seat
- Rear windows don't open fully

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 SEL with several options. It had quality equal to any of the competition, and the standard and optional features including PZEV emission rating, "Sync", automatic AC, and navigation made it seem more like a luxury car for under \$23,000. The 2.0 liter engine with 6-speed auto transmission combination provided almost 32 mpg with decent acceleration. The Focus was very popular during "Cash-For-Clunkers" and the new design is even more stylish.

AFTERMARKET PARTS

Tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3020
Exterior Length (in):	178.5
Exterior Width (in):	71.8
Exterior Height (in):	57.7
Wheelbase (in):	104.3
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Continental 215/55R16
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 6 Speed
Drivetrain Type:	Front Wheel
Engine Size:	2.0L DOHC GDI I4
Horsepower @ RPM:	160 @ 6500

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	7.00
Crashworthiness:	5.93
Visibility:	7.20
Slalom Handling:	8.02
Ride Quality:	6.75
Fuel Economy:	5.25
Interior Noise:	3.63
Acceleration:	5.31
Ease of Entry and Exit:	6.22
Interior Size:	4.11
Turning Circle:	4.99
Luggage Capacity:	1.71

Ford Fusion Hybrid

GREEN CAR SCORES

Score For This Vehicle	81.17
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$27,995
Price as Tested:	\$30,245
Cost per Point for this Vehicle	\$373
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

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

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:	9 Air Bags or more
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:	5.89
Crashworthiness:	7.35
Visibility:	7.20
Slalom Handling:	7.06
Ride Quality:	7.42
Fuel Economy:	7.23
Interior Noise:	5.60
Acceleration:	6.95
Ease of Entry and Exit:	6.84
Interior Size:	4.62
Turning Circle:	4.55
Luggage Capacity:	1.46

GMC Sierra 2WD Hybrid Crew Cab 3HB

GREEN CAR SCORES

Score For This Vehicle	68.96
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$45,500
Price as Tested:	\$46,495
Cost per Point for this Vehicle	\$674
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

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:	6 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:	5.09
Crashworthiness:	8.12
Visibility:	7.40
Slalom Handling:	1.45
Ride Quality:	6.54
Fuel Economy:	2.90
Interior Noise:	6.32
Acceleration:	6.34
Ease of Entry and Exit:	7.44
Interior Size:	6.14
Turning Circle:	0.00
Luggage Capacity:	5.22

Honda Accord EX

GREEN CAR SCORES

Score For This Vehicle	76.40
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$25,105
Price as Tested:	\$25,875
Cost per Point for this Vehicle	\$339
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	18.5
EPA Urban MPG:	23
EPA Highway MPG:	34
Auto Club Highest MPG:	27.7
Auto Club Average MPG:	26.4
Auto Club Lowest MPG:	23.8

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

PZEV available

DESCRIPTION/COMMENTS

Large 4-door Sedan

STRONG POINTS

- PZEV engine available
- Roomy and comfortable interior
- Security of items in trunk, since release is lockable & backfold control is in trunk
- Good MPG for size
- Reasonable purchase price

WEAK POINTS

- When using the remote to unlock, if a door is not opened within 30 seconds, the doors relock
- Poor visibility to the rear
- Over sensitive steering at freeway speeds
- Rear seat folds as one piece

OVERALL OBSERVATIONS

The Honda Accord is extremely popular, routinely finishing in the top three car models for nationwide sales year after year. The standard 190 hp 2.4 liter I4 engine is available as a PZEV. 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, roomy and comfortable interior, etc.) while contributing to clean air! At the same time you can get 27 mpg, as well as 4 and 5 star NHTSA crash test ratings for under \$26K well equipped!

AFTERMARKET PARTS

Rear spoiler, tires, custom graphics

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3360
Exterior Length (in):	194.9
Exterior Width (in):	72.7
Exterior Height (in):	58.1
Wheelbase (in):	110.2
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Michelin P225/50R17
Towing Cap. (lbs) W/WO Brakes:	1000/1000
Transmission Type:	Auto 5 Speed
Drivetrain Type:	Front Wheel
Engine Size:	2.4L DOHC 16V i-VTEC I4
Horsepower @ RPM:	190 @ 7000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	6.00
Braking:	7.02
Crashworthiness:	6.34
Visibility:	6.90
Slalom Handling:	7.79
Ride Quality:	7.33
Fuel Economy:	4.29
Interior Noise:	4.75
Acceleration:	6.01
Ease of Entry and Exit:	7.70
Interior Size:	5.97
Turning Circle:	4.33
Luggage Capacity:	1.97

Honda Civic EX-L NAVI

GREEN CAR SCORES

Score For This Vehicle

74.46

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

Base Price: \$23,455

Price as Tested: \$24,225

Cost per Point for this Vehicle

\$325

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

FUEL ECONOMY

Fuel Type Unleaded Regular

Fuel Capacity (gal): 13.2

EPA Urban MPG: 28

EPA Highway MPG: 39

Auto Club Highest MPG: 39.4

Auto Club Average MPG: 37.9

Auto Club Lowest MPG: 36.4

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Compact 4-door Sedan

STRONG POINTS

- Good fuel economy
- Equipped with XM radio and Bluetooth
- Equipped with heated seats and mirrors
- Easy to read (but incomplete) instruments

WEAK POINTS

- Tire and road noise
- Manual seat controls seem cheap and are hard to use
- When using remote to unlock doors, if you don't open the door soon enough, the doors relock
- Clunk in front end when turning

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, eight 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 32 mpg too! It has an advanced 5-speed automatic transmission, but like other Hondas 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

Tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2820
Exterior Length (in):	177.3
Exterior Width (in):	69.0
Exterior Height (in):	56.5
Wheelbase (in):	105.1
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Continental 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 @ 6500

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	6.00
Braking:	7.89
Crashworthiness:	5.69
Visibility:	7.10
Slalom Handling:	8.44
Ride Quality:	6.81
Fuel Economy:	5.58
Interior Noise:	4.17
Acceleration:	5.64
Ease of Entry and Exit:	6.48
Interior Size:	4.10
Turning Circle:	4.97
Luggage Capacity:	1.58

Honda Civic IMA Hybrid

GREEN CAR SCORES

Score For This Vehicle

74.17

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

Base Price: \$24,050

Price as Tested: \$24,800

Cost per Point for this Vehicle

\$334

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

FUEL ECONOMY

Fuel Type Unleaded Regular

Fuel Capacity (gal): 13.2

EPA Urban MPG: 44

EPA Highway MPG: 44

Auto Club Highest MPG: 43.5

Auto Club Average MPG: 38.6

Auto Club Lowest MPG: 32.9

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Compact 4-door Sedan

STRONG POINTS

- Excellent fuel economy
- High fidelity sound system
- Certified as an ATPZEV

WEAK POINTS

- Small trunk
- Rear seat does not fold down
- Lacks rear seat center armrest & cupholders
- Lacks traditional instrumentation (oil pressure and coolant temperature)

OVERALL OBSERVATIONS

The Honda Civic Hybrid combines a 1.5-liter gasoline engine with an electric motor to take advantage of the strengths of both to provide excellent fuel economy and low emissions. However, even with both powerplants going full tilt, acceleration is weak (though improved from previous versions). ABS and ESC as well as front, side, and side curtain airbags are standard. Like other hybrids we have tested, the rear seats don't fold down and the trunk is smallish to boot. The Civic Hybrid is visually almost identical to other Civic sedans, and shares most of the advantages that make the Civic a top-selling compact car.

AFTERMARKET PARTS

Tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2860
Exterior Length (in):	177.3
Exterior Width (in):	69.0
Exterior Height (in):	56.3
Wheelbase (in):	105.1
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Bridgestone P195/65R15
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size:	1.5L SOHC 8V I4 IMA
Horsepower @ RPM:	110 @ 5500
Electric Motor Horsepower:	23 @ 1546

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	5.89
Crashworthiness:	5.74
Visibility:	6.90
Slalom Handling:	6.65
Ride Quality:	6.67
Fuel Economy:	8.59
Interior Noise:	2.84
Acceleration:	4.63
Ease of Entry and Exit:	6.55
Interior Size:	4.44
Turning Circle:	5.01
Luggage Capacity:	1.27

Honda Civic NGV GX

GREEN CAR SCORES

Score For This Vehicle	68.72
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$27,655
Price as Tested:	\$28,425
Cost per Point for this Vehicle	\$414
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Natural Gas
Fuel Capacity (gal):	8.0
EPA Urban MPG:	27
EPA Highway MPG:	38
Auto Club Highest MPG:	39.3
Auto Club Average MPG:	32.5
Auto Club Lowest MPG:	24.7

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

Alternative Fuel

DESCRIPTION/COMMENTS

Compact 4-door Sedan

STRONG POINTS

- Certified as an ATPZEV
- Equipped with XM radio, Navigation, and Bluetooth
- CNG is less expensive than gasoline
- Refined and easy to drive

WEAK POINTS

- Lack of CNG stations, especially outside of California
- Underpowered
- Small trunk and rear seat does not fold down
- Lacks rear seat center armrest & cupholders

OVERALL OBSERVATIONS

The Honda Civic GX is the only "mainstream" OEM 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 240-mile range and sparse population of CNG fuel stations can cause some trepidation, but for those with normal commutes and a home refueling system, visits to the gas station can be a thing of the past! The CNG-fueled engine is somewhat underpowered; otherwise the car has a refined driving feel. You would never know that a non-petroleum fuel was powering it.

AFTERMARKET PARTS

Tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2860
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:	8 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Firestone P195/65R15
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 5 Speed
Drivetrain Type:	Front Wheel
Engine Size:	1.8L SOHC 16V I4 NGV
Horsepower @ RPM:	110 @ 6300

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	5.89
Crashworthiness:	5.74
Visibility:	6.90
Slalom Handling:	6.69
Ride Quality:	6.71
Fuel Economy:	5.32
Interior Noise:	2.18
Acceleration:	3.85
Ease of Entry and Exit:	6.55
Interior Size:	4.44
Turning Circle:	5.01
Luggage Capacity:	0.44

Honda CR-Z EX

GREEN CAR SCORES

Score For This Vehicle	79.64
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$23,210
Price as Tested:	\$23,960
Cost per Point for this Vehicle	\$301
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	10.6
EPA Urban MPG:	35
EPA Highway MPG:	39
Auto Club Highest MPG:	39.6
Auto Club Average MPG:	35.0
Auto Club Lowest MPG:	29.6

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

2-Seat Coupe

STRONG POINTS

- Fuel economy
- Certified as an AT-PZEV
- Sporty/modernistic styling
- Sporty, fun, and easy to drive
- Loaded with features

WEAK POINTS

- Poor rearward visibility
- Lacks center armrest
- Too many small buttons and controls can be confusing and perhaps distracting
- The front 2 (of 3) cupholders are too small

OVERALL OBSERVATIONS

Honda's CR-Z is their second attempt to produce a small 2-seat sporty hybrid. Their first attempt was the original Insight (the first hybrid in the US market). The CR-Z represents a dramatic improvement. It looks and feels sporty, gets 37 mpg, has above average acceleration, is loaded with safety and convenience features (the Insight was rather Spartan), and is a well-executed modern car. However it is still a small 2-seater, which limits its utility. You are not going to be able to use the CR-Z to pull a trailer or to carry the soccer team. But if a low-emission sporty 2-seater with cutting-edge technology and excellent fuel economy is your style, the CR-Z fits the bill.

AFTERMARKET PARTS

Cat-back exhaust, body kit

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2
Curb Weight (lbs):	2680
Exterior Length (in):	160.6
Exterior Width (in):	68.5
Exterior Height (in):	54.9
Wheelbase (in):	95.9
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Dunlop P195/55R16
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size:	1.5L SOHC i-VTEC I4 IMA
Horsepower @ RPM:	122 @ 6000
Electric Motor Horsepower:	13 @ 1500

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	7.00
Crashworthiness:	5.53
Visibility:	6.80
Slalom Handling:	8.01
Ride Quality:	6.75
Fuel Economy:	6.75
Interior Noise:	4.23
Acceleration:	6.19
Ease of Entry and Exit:	7.24
Interior Size:	2.01
Turning Circle:	6.34
Luggage Capacity:	3.80

Honda Fit Sport NAVI

GREEN CAR SCORES

Score For This Vehicle	74.94
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$19,540
Price as Tested:	\$20,310
Cost per Point for this Vehicle	\$271
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	10.6
EPA Urban MPG:	27
EPA Highway MPG:	33
Auto Club Highest MPG:	39.3
Auto Club Average MPG:	34.0
Auto Club Lowest MPG:	24.1

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Small 5-door Wagon

STRONG POINTS

- Good MPG
- Value (well equipped for \$20K)
- Excellent and flexible utilization of interior space
- Responsive and nimble handling
- Tight turning circle
- Small exterior size makes it easy to park

WEAK POINTS

- Lacks rear center armrest
- Exposed trunk
- When using the remote to unlock, if a door is not opened within 30 seconds, the doors relock
- Close visibility front and rear
- Driver seat has limited adjustability

AFTERMARKET PARTS

Tires

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 automatic transmission averaged 34 mpg, while providing average acceleration. It has good ABS brakes, nimble handling, & can fit easily into most parking spots. Like many other small cars, the rear seat has no center armrest. Similar to most Honda models there are few options, but the "Sport NAVI" model we tested has the most equipment (including a voice activated navigation system), all for \$20K. The Fit does a superior job utilizing interior space for such a small car. As long as your driver or passengers are not tall, all 4 seats have adequate room.

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	6.00
Braking:	6.35
Crashworthiness:	5.53
Visibility:	6.90
Slalom Handling:	7.77
Ride Quality:	6.46
Fuel Economy:	4.91
Interior Noise:	5.14
Acceleration:	4.40
Ease of Entry and Exit:	6.87
Interior Size:	5.49
Turning Circle:	6.10
Luggage Capacity:	3.01

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2680
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:	8 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Dunlop 185/55R16
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 5 Speed
Drivetrain Type:	Front Wheel
Engine Size:	1.5L SOHC 16V i-VTEC I4
Horsepower @ RPM:	117 @ 6600

Honda Insight EX Navi

GREEN CAR SCORES

Score For This Vehicle

69.10

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

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

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

Cost per Point for this Vehicle

\$344

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

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:	8 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:	2.76
Crashworthiness:	4.61
Visibility:	6.90
Slalom Handling:	5.63
Ride Quality:	6.08
Fuel Economy:	7.91
Interior Noise:	5.47
Acceleration:	2.85
Ease of Entry and Exit:	5.89
Interior Size:	3.73
Turning Circle:	6.10
Luggage Capacity:	2.17

Hyundai Elantra GLS M/T

GREEN CAR SCORES

Score For This Vehicle	76.40
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$15,195
Price as Tested:	\$16,575
Cost per Point for this Vehicle	\$217
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	12.7
EPA Urban MPG:	29
EPA Highway MPG:	40
Auto Club Highest MPG:	53.6
Auto Club Average MPG:	36.2
Auto Club Lowest MPG:	29.1

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

PZEV available

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- Affordable purchase price and well equipped
- Good fuel economy
- Excellent warranty
- XM radio with easy to use controls
- Attractive styling

WEAK POINTS

- Poor visibility to front and rear
- Engine noise when first started
- Although the 6-speed manual transmission was OK, we would have preferred an automatic

OVERALL OBSERVATIONS

The Hyundai Elantra has a lot going for it. It is available as a PZEV, so emissions can be as clean as any hybrid; it gets almost 33 mpg on average, and has an excellent factory warranty. Power is significantly improved from previous models. Many cite the Elantra as a modern example of excellent styling, but the downside is poor visibility over the hood and deck. Like other small cars, the rear seat is cramped. This is a well-equipped mid-size sedan with XM radio, 8 airbags, ABS, power everything, and heated side mirrors, all for under \$17,000.

AFTERMARKET PARTS

Tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2740
Exterior Length (in):	178.3
Exterior Width (in):	69.9
Exterior Height (in):	56.5
Wheelbase (in):	106.3
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	60/60,000
Tire Manufacturer:	Continental P205/55R16
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Manual 6 Speed
Drivetrain Type:	Front Wheel
Engine Size:	1.8L DOHC 16V I4
Horsepower @ RPM:	148 @ 6500

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	7.05
Crashworthiness:	5.60
Visibility:	6.70
Slalom Handling:	7.78
Ride Quality:	6.88
Fuel Economy:	5.84
Interior Noise:	3.89
Acceleration:	7.06
Ease of Entry and Exit:	6.78
Interior Size:	4.15
Turning Circle:	5.67
Luggage Capacity:	1.99

Hyundai Sonata Hybrid

GREEN CAR SCORES

Score For This Vehicle

79.16

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

Base Price: **\$26,515**

Price as Tested: **\$31,650**

Cost per Point for this Vehicle

\$400

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **17.2**

EPA Urban MPG: **35**

EPA Highway MPG: **40**

Auto Club Highest MPG: **32.6**

Auto Club Average MPG: **28.1**

Auto Club Lowest MPG: **24.8**

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Full-Size 4-door Sedan

STRONG POINTS

- MPG
- Meets SULEV2 tailpipe emission standards
- Smooth ride
- Lots of content
- Good power and throttle response
- 5 star NHTSA crash test rating

WEAK POINTS

- Visibility to the side and rear
- Small trunk
- Rear seat does not fold down
- Sluggish brake response

OVERALL OBSERVATIONS

The Hyundai Sonata is a loaded "near-luxury" full-sized car (see next page). For 2011, Hyundai added a Hybrid version rated at an excellent 37 mpg. Our Hybrid (with the \$5000 "Premium" package and more) had a reasonable (for a hybrid) MSRP of under \$32K, and maintained the high content level and performance of the Sonata Limited. One notable difference is the Hybrid's small trunk and fixed rear seat backs. Most, if not all, of the hybrid sedans we have tested have the same problem because of the placement of the battery pack and electronics. If you want a full-sized sedan with good mpg, an excellent warranty, and full-tilt modern electronics, then the Sonata Hybrid should be on your radar.

AFTERMARKET PARTS

Dash covers, emblems/decals

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3840
Exterior Length (in):	189.8
Exterior Width (in):	72.2
Exterior Height (in):	57.7
Wheelbase (in):	110.0
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	60/60,000
Tire Manufacturer:	Kumho 215/55R17
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 6 Speed
Drivetrain Type:	Front Wheel
Engine Size:	2.4L Atkinson Cyc I4 Hybrid
Horsepower @ RPM:	166 @ 6000
Electric Motor Horsepower:	40.2

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	5.09
Crashworthiness:	6.91
Visibility:	6.90
Slalom Handling:	5.98
Ride Quality:	7.29
Fuel Economy:	6.85
Interior Noise:	6.67
Acceleration:	6.35
Ease of Entry and Exit:	7.14
Interior Size:	4.62
Turning Circle:	5.08
Luggage Capacity:	1.27

Hyundai Sonata Limited

GREEN CAR SCORES

Score For This Vehicle	78.83
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$26,015
Price as Tested:	\$28,415
Cost per Point for this Vehicle	\$360
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	18.5
EPA Urban MPG:	22
EPA Highway MPG:	35
Auto Club Highest MPG:	23.1
Auto Club Average MPG:	23.1
Auto Club Lowest MPG:	23.1

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

PZEV available

DESCRIPTION/COMMENTS

Full-Size 4-door Sedan

STRONG POINTS

- Content for the price
- PZEV available
- Balance of power with mpg
- Comfortable

WEAK POINTS

- Rear visibility (rear view monitor helps)
- Noisy AC fan on "high"
- Lack of instruments (oil psi and voltage)
- Small side-view mirrors

OVERALL OBSERVATIONS

The Hyundai Sonata (ours was a "Limited") is a loaded "near-luxury" full-sized car equipped with power-everything, electronic stability control, 8 airbags, sound system with AM/FM/XM/CD, heated leather seats (front & rear), Bluetooth, push button start, and optional navigation system. All of this can be had for only \$28K (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 & the other states that adopted CA emission standards. Fuel economy & horsepower ratings of the PZEV & ULEV engines are the same. For value & security (due to an excellent warranty) the Sonata could be the right choice.

AFTERMARKET PARTS

Dash covers, emblems/decals

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3316
Exterior Length (in):	189.8
Exterior Width (in):	72.2
Exterior Height (in):	57.9
Wheelbase (in):	110.0
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	60/60,000
Tire Manufacturer:	Hankook P215/55R17
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 6 Speed
Drivetrain Type:	Front Wheel
Engine Size:	2.4L I4
Horsepower @ RPM:	198 @ 6300

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	8.15
Crashworthiness:	6.29
Visibility:	7.10
Slalom Handling:	7.43
Ride Quality:	6.81
Fuel Economy:	4.16
Interior Noise:	5.59
Acceleration:	6.92
Ease of Entry and Exit:	7.24
Interior Size:	4.98
Turning Circle:	4.89
Luggage Capacity:	2.27

Hyundai Tucson GLS FWD

GREEN CAR SCORES

Score For This Vehicle	77.17
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$23,585
Price as Tested:	\$23,685
Cost per Point for this Vehicle	\$307
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	14.5
EPA Urban MPG:	22
EPA Highway MPG:	31
Auto Club Highest MPG:	23.5
Auto Club Average MPG:	21.9
Auto Club Lowest MPG:	19.2

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

PZEV available

DESCRIPTION/COMMENTS

4-door SUV

STRONG POINTS

- Utility
- PZEV available & gets 25 mpg
- Good value for \$23K
- Excellent warranty
- Tilt and telescopic steering wheel

WEAK POINTS

- High door sills impede entrance
- Difficult to see to the rear
- Underpowered
- Noisy on rough roads
- Rear seat cramped for taller passengers
- When using the remote to unlock, if a door is not opened within 30 sec. the doors relock
- Overly assisted steering, darts to the side on freeway

OVERALL OBSERVATIONS

The Hyundai Tucson is their entry into the crowded compact CUV field. It has a lot going for it, chief the Hyundai strategy of equipping their vehicles with more features for comparable or less money than the competition. Add to that the Tucson's PZEV emission rating, 25 mpg fuel economy, and Hyundai's excellent warranty program and you have a winner. On the down side, it could use some more power and the electric assisted power steering is too sensitive at freeway speeds, causing it to dart right or left with the slightest wiggle of the steering wheel. Hyundai has also made great strides in quality improvement, so if a compact CUV is what you want, check out the Tucson.

AFTERMARKET PARTS

Floor mats, roof rack

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3220
Exterior Length (in):	173.2
Exterior Width (in):	71.7
Exterior Height (in):	66.3
Wheelbase (in):	103.9
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	60/60,000
Tire Manufacturer:	Kumho 225/60R17
Towing Cap. (lbs) W/WO Brakes:	2000/1000
Transmission Type:	Auto 6 Speed
Drivetrain Type:	Front Wheel
Engine Size:	2.4L DOHC 16V I4
Horsepower @ RPM:	176 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	6.31
Crashworthiness:	6.17
Visibility:	7.10
Slalom Handling:	6.09
Ride Quality:	6.58
Fuel Economy:	3.88
Interior Noise:	5.72
Acceleration:	6.66
Ease of Entry and Exit:	6.85
Interior Size:	5.24
Turning Circle:	5.66
Luggage Capacity:	3.91

Hyundai Veloster M/T

GREEN CAR SCORES

Score For This Vehicle	70.80
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$17,300
Price as Tested:	\$21,395
Cost per Point for this Vehicle	\$302
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	13.2
EPA Urban MPG:	28
EPA Highway MPG:	40
Auto Club Highest MPG:	36.8
Auto Club Average MPG:	29.4
Auto Club Lowest MPG:	26.5

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Compact 2-door Hatchback

STRONG POINTS

- Good MPG
- Well equipped for the price
- Easy to use manual transmission
- Rear view video camera
- Front leg room
- Nimble handling

WEAK POINTS

- Underpowered
- Cramped rear seats with limited head room
- Rear seats difficult to get in and out of
- Limited visibility to the rear
- Engine noise
- Uncomfortable front seats

OVERALL OBSERVATIONS

Hyundai has been trying to gain a toehold in the sporty compact market for years. Their latest try is the Veloster, a decidedly sporty-looking 2-door hatchback. Unfortunately, not all of the Veloster's performance characteristics match its looks. Handling is nimble, but the 1.6 liter engine with 6-speed manual transmission only provides below average acceleration and the engine is quite noisy. Our test car was equipped with the "Style" and "Tech" packages, but with an MSRP just over \$21K, is quite a good value. We averaged almost 30 mpg and with Hyundai's excellent warranty, the Veloster should be economical to operate.

AFTERMARKET PARTS

Tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/2
Curb Weight (lbs):	2740
Exterior Length (in):	166.0
Exterior Width (in):	70.5
Exterior Height (in):	55.0
Wheelbase (in):	104.3
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	60/60,000
Tire Manufacturer:	Kumho 215/40R18
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Manual 5 Speed
Drivetrain Type:	Front Wheel
Engine Size:	1.6L DOHC GDI I4
Horsepower @ RPM:	138 @ 6300

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	6.78
Crashworthiness:	5.60
Visibility:	6.60
Slalom Handling:	7.82
Ride Quality:	6.31
Fuel Economy:	5.66
Interior Noise:	3.27
Acceleration:	4.86
Ease of Entry and Exit:	5.40
Interior Size:	3.55
Turning Circle:	5.85
Luggage Capacity:	2.11

Infiniti M35h

GREEN CAR SCORES

Score For This Vehicle	79.23
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$53,700
Price as Tested:	\$65,395
Cost per Point for this Vehicle	\$825
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Premium
Fuel Capacity (gal):	17.8
EPA Urban MPG:	27
EPA Highway MPG:	32
Auto Club Highest MPG:	27.2
Auto Club Average MPG:	25.1
Auto Club Lowest MPG:	21.0

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- Good MPG for a sport sedan
- Ride quality
- Comfortable front seats
- Loaded with many advanced safety features
- Adaptive cruise control
- Easy entry & exit for front seats
- Powerful with excellent acceleration

WEAK POINTS

- Small trunk and rear seat does not fold down
- Requires expensive premium fuel
- Powertrain blending can be jerky
- Possible distraction of too much electronics
- High purchase price as equipped (\$65K)

OVERALL OBSERVATIONS

Infiniti, like other high-line Japanese manufacturers, wants to dispel the myth that all hybrids are high mpg, low performing "green-mobiles". Their new entry, the M35h is a world-class luxury/performance sedan that is powerful, quiet, comfortable, and our test vehicle was loaded with just about every convenience and safety feature you can imagine. In fact, it takes some time to become accustomed to all of the electronic activity and signals without being distracted. The M35h gets a surprising 29 mpg. Unfortunately, it only meets mid-level ULEV emission standards. Over all, the M35h is a good performing; stylish sedan that proves hybrids can be exciting!

AFTERMARKET PARTS

Tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	4400
Exterior Length (in):	194.7
Exterior Width (in):	72.6
Exterior Height (in):	59.1
Wheelbase (in):	114.2
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	48/60,000
Tire Manufacturer:	Michelin P245/50R18
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 7 Speed
Drivetrain Type:	Rear Wheel
Engine Size:	3.5L DOHC 24V V6 Hybrid
Horsepower @ RPM:	360 @ 6500
Electric Motor Horsepower:	50 kW

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	6.00
Braking:	7.63
Crashworthiness:	7.58
Visibility:	7.70
Slalom Handling:	7.77
Ride Quality:	7.63
Fuel Economy:	2.82
Interior Noise:	4.78
Acceleration:	9.13
Ease of Entry and Exit:	7.25
Interior Size:	4.94
Turning Circle:	4.69
Luggage Capacity:	1.32

Kia Optima Hybrid

GREEN CAR SCORES

Score For This Vehicle	75.69
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$25,700
Price as Tested:	\$32,500
Cost per Point for this Vehicle	\$429
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	17.2
EPA Urban MPG:	35
EPA Highway MPG:	40
Auto Club Highest MPG:	36.9
Auto Club Average MPG:	34.3
Auto Club Lowest MPG:	32.3

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- MPG
- Lots of content for the price
- Excellent rear view video camera
- Well appointed interior
- Excellent warranty
- Meets PZEV tailpipe emission standards

WEAK POINTS

- Small trunk and rear seat does not fold down (only a small pass through)
- Low roof line impedes entry/exit
- Tires slide too easily
- Inconsistent acceleration in "eco" mode
- Park brake (push on/push off)

OVERALL OBSERVATIONS

The Kia Optima is a loaded "near-luxury" mid-sized car. We tested a Hybrid version rated at an excellent 37 mpg. Our Hybrid (with the \$6000 "Premium and Convenience" packages) had a reasonable (for a hybrid) MSRP of under \$33K. Like so many other hybrid sedans we have tested, the Optima has a small trunk and fixed rear seat backs. Many rate the Optima as one of the most stylish entries in this category, but just be careful you don't hit your head on that good-looking roofline as you get in! If you want a mid-sized sedan with good mpg, an excellent warranty, and full-tilt modern electronics, then the Optima Hybrid should be on your radar.

AFTERMARKET PARTS

Tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3900
Exterior Length (in):	190.7
Exterior Width (in):	72.1
Exterior Height (in):	57.1
Wheelbase (in):	110.0
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	60/60,000
Tire Manufacturer:	Kumho P215/55R17
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 6 Speed
Drivetrain Type:	Front Wheel
Engine Size:	2.4L DOHC 16V I4
Horsepower @ RPM:	166 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	5.43
Crashworthiness:	6.98
Visibility:	7.10
Slalom Handling:	5.00
Ride Quality:	6.75
Fuel Economy:	6.85
Interior Noise:	5.15
Acceleration:	6.33
Ease of Entry and Exit:	6.72
Interior Size:	4.24
Turning Circle:	5.01
Luggage Capacity:	1.13

Kia Rio5 EX Eco

GREEN CAR SCORES

Score For This Vehicle	71.93
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$16,500
Price as Tested:	\$18,745
Cost per Point for this Vehicle	\$261
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	11.4
EPA Urban MPG:	30
EPA Highway MPG:	40
Auto Club Highest MPG:	37.6
Auto Club Average MPG:	34.0
Auto Club Lowest MPG:	31.4

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Compact 5-door Hatchback

STRONG POINTS

- Affordable purchase price
- Good fuel economy
- Start-stop technology
- Rear view camera on low-priced car
- Sliding sunvisors
- Rear windows open fully

WEAK POINTS

- Lacks rear center armrest and cupholders
- Body roll and bumpy ride
- Cramped & uncomfortable rear seat
- Small rear window limits rear visibility
- No spare tire even though there is room for one
- Small trunk - but individually-folding rear seats provide more room

OVERALL OBSERVATIONS

The Rio is Kia's entry-level car. We tested the Rio5 EX Eco, the top of the line 5-door hatchback (with added Eco and Convenience packages) and it was still priced under \$19,000. On top of that we saw 34 mpg, nimble handling, and some even called it "fun-to-drive". Like all Kias, it has an excellent warranty. It is still a compact, so the rear seat is cramped, the trunk is small, and it has a bumpy ride. The ABS brakes were a dramatic improvement over previous Rios we have tested. All in all, the Rio5 provides good value in the compact field.

AFTERMARKET PARTS

Front-end bra, seat covers

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2600
Exterior Length (in):	159.3
Exterior Width (in):	67.7
Exterior Height (in):	57.3
Wheelbase (in):	101.2
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	60/60,000
Tire Manufacturer:	Kumho P185/65R15
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 6 Speed
Drivetrain Type:	Front Wheel
Engine Size:	1.6L DOHC GDI I4
Horsepower @ RPM:	138 @ 6300

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	7.37
Crashworthiness:	5.43
Visibility:	6.90
Slalom Handling:	7.82
Ride Quality:	6.17
Fuel Economy:	6.02
Interior Noise:	2.52
Acceleration:	4.97
Ease of Entry and Exit:	5.76
Interior Size:	4.57
Turning Circle:	5.38
Luggage Capacity:	2.02

Kia Sorento EX FWD

GREEN CAR SCORES

Score For This Vehicle	76.80
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$25,590
Price as Tested:	\$29,340
Cost per Point for this Vehicle	\$382
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	18.0
EPA Urban MPG:	21
EPA Highway MPG:	29
Auto Club Highest MPG:	23.5
Auto Club Average MPG:	20.8
Auto Club Lowest MPG:	17.9

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

4-door SUV

STRONG POINTS

- Roomy and comfortable interior
- Good MPG for an SUV
- Lots of content for the price
- Rear seat head rests automatically fold out of the way when folding down the rear seats
- Controls are easy to identify and use

WEAK POINTS

- High step-in height impedes entry
- Reflections from instrument cluster chrome trim rings can be distracting
- Rear seat back releases difficult to operate
- Large vehicle may be difficult to park in small spots
- When using the remote to unlock, if a door isn't opened in 30 seconds, the doors relock

AFTERMARKET PARTS

Hood deflector, roof rack

OVERALL OBSERVATIONS

The Kia Sorento applies their increasingly successful strategy of producing affordably priced vehicles with more content than the competition to the SUV market. Our test vehicle was equipped with dual zone auto HVAC, power everything, fog lights, Sirius radio, Bluetooth, rear view monitor, "Smart" key, & optional navigation, heated leather seats, & premium sound for just over \$29K. EPA rates the Sorento at 24 mpg (good for an SUV) but our testers averaged below 21 mpg. Being a tall large vehicle brings pluses & minuses. The Sorento is easy to see out of (the rear view monitor helps), but is hard to park in tight spots. With Kia's high content & excellent warranty, if you want an SUV, check out the Sorento.

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	6.01
Crashworthiness:	6.98
Visibility:	7.30
Slalom Handling:	5.03
Ride Quality:	6.67
Fuel Economy:	3.54
Interior Noise:	5.52
Acceleration:	4.96
Ease of Entry and Exit:	6.75
Interior Size:	5.91
Turning Circle:	5.23
Luggage Capacity:	5.90

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3900
Exterior Length (in):	183.9
Exterior Width (in):	74.2
Exterior Height (in):	67.3
Wheelbase (in):	106.3
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	60/60,000
Tire Manufacturer:	Kumho 235/60R18
Towing Cap. (lbs) W/WO Brakes:	1650/1650
Transmission Type:	Auto 6 Speed
Drivetrain Type:	Front Wheel
Engine Size:	2.4L DOHC 16V I4
Horsepower @ RPM:	175 @ 6000

Kia Soul !

GREEN CAR SCORES

Score For This Vehicle

76.51

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

Base Price: **\$19,600**

Price as Tested: **\$22,950**

Cost per Point for this Vehicle

\$300

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **12.7**

EPA Urban MPG: **26**

EPA Highway MPG: **34**

Auto Club Highest MPG: **26.0**

Auto Club Average MPG: **24.7**

Auto Club Lowest MPG: **22.2**

MODEL YEAR TESTED - 2012



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
- Visibility to the front
- The box shape is "cute" and provides a roomy interior
- Excellent warranty

WEAK POINTS

- Over-assisted "twitchy" steering
- No rear cupholders
- 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 \$23K. 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 steering feels over-boasted, the youth-oriented styling allows a roomy interior, and you still get 29 mpg. This cube is sweet!

AFTERMARKET PARTS

Tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2940
Exterior Length (in):	162.2
Exterior Width (in):	70.3
Exterior Height (in):	63.4
Wheelbase (in):	100.4
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	60/60,000
Tire Manufacturer:	Hankook P235/45R18
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 6 Speed
Drivetrain Type:	Front Wheel
Engine Size:	2.0L DOHC 16V I4
Horsepower @ RPM:	164 @ 6500

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	7.94
Crashworthiness:	5.84
Visibility:	7.30
Slalom Handling:	7.21
Ride Quality:	6.56
Fuel Economy:	4.83
Interior Noise:	3.98
Acceleration:	6.25
Ease of Entry and Exit:	6.60
Interior Size:	4.76
Turning Circle:	5.46
Luggage Capacity:	2.78

Lexus CT 200h Hybrid

GREEN CAR SCORES

Score For This Vehicle

84.62

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

Base Price: **\$32,650**

Price as Tested: **\$33,200**

Cost per Point for this Vehicle

\$392

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **11.9**

EPA Urban MPG: **43**

EPA Highway MPG: **40**

Auto Club Highest MPG: **44.2**

Auto Club Average MPG: **38.5**

Auto Club Lowest MPG: **20.7**

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Compact 4-door Hatchback

STRONG POINTS

- Excellent fuel economy
- Extremely low emissions (SULEV II)
- Sporty handling but still easy to drive
- ABS brakes
- Sporty styling but retains that "green" image

WEAK POINTS

- Lacks rear seat cupholders & center armrest
- Rear seat cramped & hard to get in or out
- Small trunk
- Sound system controls not well illuminated

OVERALL OBSERVATIONS

A few years ago you would have never even thought of a 42 mpg Lexus sporty compact. The CT 200h is billed as the "highest mpg luxury car" and it may well be. This is a car that can be many things, with a controller that lets you set the mode (EV, Eco, Normal, or Sport) that suits you and/or the driving conditions of the day. The styling is sporty, handling is nimble, and the brakes provide short and straight stops. Like many Lexus models the interior is quiet, but it is a compact, with the usual smallish rear seat and trunk. It is also interesting that a modern luxury car has no cupholders for the rear seat. Lexus/42mpg/ sport compact – if these terms spark your interest, check it out.

AFTERMARKET PARTS

Body kits

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3220
Exterior Length (in):	170.1
Exterior Width (in):	69.5
Exterior Height (in):	56.7
Wheelbase (in):	102.4
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags or more
Warranty (Months/Miles):	48/50,000
Tire Manufacturer:	Michelin P215/45R17
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size:	1.8L DOHC 16V I4
Horsepower @ RPM:	98 @ 5200
Electric Motor Horsepower:	80

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	7.95
Crashworthiness:	6.67
Visibility:	6.90
Slalom Handling:	8.53
Ride Quality:	6.83
Fuel Economy:	7.98
Interior Noise:	7.76
Acceleration:	5.35
Ease of Entry and Exit:	6.29
Interior Size:	3.56
Turning Circle:	5.90
Luggage Capacity:	1.90

Lexus GS 450h

GREEN CAR SCORES

Score For This Vehicle

89.30

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

Base Price: **\$58,950**

Price as Tested: **\$62,060**

Cost per Point for this Vehicle

\$695

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

FUEL ECONOMY

Fuel Type **Unleaded Premium**

Fuel Capacity (gal): **17.4**

EPA Urban MPG: **29**

EPA Highway MPG: **34**

Auto Club Highest MPG: **31.9**

Auto Club Average MPG: **28.9**

Auto Club Lowest MPG: **26.0**

MODEL YEAR TESTED - 2013



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- Powerful with excellent acceleration
- High fidelity sound system
- Quiet interior
- Good MPG for a sport sedan
- Comfortable seats
- Excellent rear view camera

WEAK POINTS

- High purchase price (\$62K)
- Requires expensive premium fuel
- Small trunk and rear seat does not fold down
- Poor visibility to the rear
- Cramped rear seat is also difficult to enter

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 35% better mpg than the comparable non-hybrid GS 350 with equivalent or even better performance. Our test car was loaded with safety & convenience features including LED headlights, Bluetooth, voice activated navigation, satellite radio, 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 \$62K, then check it out!

AFTERMARKET PARTS

Body kits, wheels, low profile tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	4380
Exterior Length (in):	190.7
Exterior Width (in):	72.4
Exterior Height (in):	57.3
Wheelbase (in):	112.2
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags or more
Warranty (Months/Miles):	48/50,000
Tire Manufacturer:	Dunlop 235/45R18
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	CVT
Drivetrain Type:	Rear Wheel
Engine Size:	3.5L DOHC V6 Hybrid
Horsepower @ RPM:	286 @ 6000
Electric Motor Horsepower:	200 HP Max

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	8.07
Crashworthiness:	8.05
Visibility:	7.50
Slalom Handling:	8.85
Ride Quality:	8.00
Fuel Economy:	3.33
Interior Noise:	7.91
Acceleration:	9.44
Ease of Entry and Exit:	7.05
Interior Size:	4.63
Turning Circle:	5.75
Luggage Capacity:	1.71

Lexus HS 250h

GREEN CAR SCORES

Score For This Vehicle

78.67

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

Base Price: **\$35,075**

Price as Tested: **\$39,150**

Cost per Point for this Vehicle

\$498

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **14.5**

EPA Urban MPG: **35**

EPA Highway MPG: **34**

Auto Club Highest MPG: **32.4**

Auto Club Average MPG: **29.1**

Auto Club Lowest MPG: **26.2**

MODEL YEAR TESTED - 2010



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Compact 4-door Sedan

STRONG POINTS

- SULEV emissions
- Excellent fuel economy
- Navigation system with "real-time" traffic information
- Sound system with XM satellite radio
- Easy to use power window controls

WEAK POINTS

- Rear seat cramped for taller occupants, with inadequate foot room for all
- Small trunk and the rear seats don't fold down
- Too many buttons and controls, and many must be accessed through the screen
- The brake pedal feels "touchy"

OVERALL OBSERVATIONS

The Toyota Prius is seen by many as the state of the art vehicle of today, but maybe it isn't. The Lexus HS 250h borrows much of the technology from the Prius (only with a larger & more powerful engine/electric motor) & adds the comfort & convenience of a Lexus. It uses a central navigation screen operated by a joystick & an "enter" button that closely emulates operating your PC. The HS 250h scores 5 stars in all NHTSA crash tests (4 on rollover) & is equipped with 10 air bags & many other advanced safety technologies. Like every other hybrid sedan we have tested, the rear seat does not fold down, but this is a practical car loaded with features that should get 35 mpg too.

AFTERMARKET PARTS

Chrome trim, Wood dash kits, Custom wheels

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3690
Exterior Length (in):	184.8
Exterior Width (in):	70.3
Exterior Height (in):	59.3
Wheelbase (in):	106.3
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags or more
Warranty (Months/Miles):	48/50,000
Tire Manufacturer:	Toyo P225/45R18
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size:	2.4L DOHC 16V VVT-i I4
Horsepower @ RPM:	187 @ 6000
Electric Motor Horsepower:	105 kW

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	6.35
Crashworthiness:	7.23
Visibility:	7.00
Slalom Handling:	6.49
Ride Quality:	7.13
Fuel Economy:	6.21
Interior Noise:	5.45
Acceleration:	7.08
Ease of Entry and Exit:	6.97
Interior Size:	3.56
Turning Circle:	4.69
Luggage Capacity:	1.51

Lexus LS 600h L

GREEN CAR SCORES

Score For This Vehicle	85.80
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$110,000
Price as Tested:	\$121,869
Cost per Point for this Vehicle	\$1,420
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Premium
Fuel Capacity (gal):	22.2
EPA Urban MPG:	19
EPA Highway MPG:	23
Auto Club Highest MPG:	23.5
Auto Club Average MPG:	21.4
Auto Club Lowest MPG:	20.2

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- Powerful & seamless hybrid powertrain
- Ride quality
- 20 mpg and SULEV7 emissions from a 5600 pound car
- Quiet, comfortable, and roomy interior with a long list of "comfort/convenience" features
- High fidelity "loaded" sound system

WEAK POINTS

- Small trunk and rear seat doesn't fold
- High purchase price (we can't all afford luxury!)
- Requires expensive premium fuel
- Only seats 4 people
- Long rear doors cause entry/exit problems in "compact parking spaces"

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 20 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!

AFTERMARKET PARTS

Chrome wheels, body kits, low-profile tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/2
Curb Weight (lbs):	5560
Exterior Length (in):	203.9
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 or more
Warranty (Months/Miles):	48/50,000
Tire Manufacturer:	Dunlop P235/50R18
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	CVT
Drivetrain Type:	All Wheel - Full Time
Engine Size:	5.0L 32V DOHC VVT-i V8
Horsepower @ RPM:	438 @ 6400
Electric Motor Horsepower:	165 Kw

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	6.26
Crashworthiness:	9.46
Visibility:	7.50
Slalom Handling:	6.89
Ride Quality:	8.21
Fuel Economy:	0.70
Interior Noise:	9.70
Acceleration:	9.52
Ease of Entry and Exit:	7.96
Interior Size:	5.86
Turning Circle:	3.60
Luggage Capacity:	1.14

Lexus RX 450h

GREEN CAR SCORES

Score For This Vehicle

84.08

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

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

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

Cost per Point for this Vehicle

\$563

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

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 a SULEV II
- 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 2010 RX 450h scored 5 stars on all NHTSA crash tests. If you want to be "Green" with performance, safety, 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:	9 Air Bags or more
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

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	4.92
Crashworthiness:	8.33
Visibility:	7.80
Slalom Handling:	5.39
Ride Quality:	7.79
Fuel Economy:	2.44
Interior Noise:	6.74
Acceleration:	8.18
Ease of Entry and Exit:	7.45
Interior Size:	5.24
Turning Circle:	4.36
Luggage Capacity:	6.43

Mazda 2 Touring

GREEN CAR SCORES

Score For This Vehicle

71.10

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

Base Price: **\$16,985**

Price as Tested: **\$16,985**

Cost per Point for this Vehicle

\$239

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **11.3**

EPA Urban MPG: **27**

EPA Highway MPG: **33**

Auto Club Highest MPG: **34.5**

Auto Club Average MPG: **31.2**

Auto Club Lowest MPG: **29.0**

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Compact 4-door Sedan

STRONG POINTS

- Good MPG (29)
- Sporty handling and highly maneuverable
- Affordable purchase price
- Small exterior size makes it easy to park
- Good ergonomics

WEAK POINTS

- Rear headrests inhibit rearward visibility
- Cramped rear seat
- Lacks center armrests
- Small trunk (folding seats seat help)
- Rough ride on all but the smoothest roads
- Weak engine is buzzy during heavy accelerations

OVERALL OBSERVATIONS

Mazda calls their "2" model a sub-compact, EPA calls it a compact. Either way, it is a small car. Our test car was the Mazda 2 Touring edition. It combines nimble handling, a tiny turning radius, & a thrifty 29 mpg EPA rating. The interior however, belies the sub-compact rating Mazda gives it. The rear seat is only suitable for small children, the interior includes a lot of cheap looking plastic, & there are no center armrests for the front or rear seats. The 100-hp engine & auto transmission mate up well under most conditions, but freeway passing maneuvers can be white-knuckle affairs. We should point out though, that the MSRP was under \$17K, & is quite a bargain at that price.

AFTERMARKET PARTS

MP3 player, roof rack

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2340
Exterior Length (in):	156.1
Exterior Width (in):	66.7
Exterior Height (in):	58.1
Wheelbase (in):	98.0
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Yokohama 185/55R15
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 4 Speed
Drivetrain Type:	Front Wheel
Engine Size:	1.5L DOHC 16V VVT I4
Horsepower @ RPM:	100 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	6.00
Braking:	6.88
Crashworthiness:	5.12
Visibility:	7.00
Slalom Handling:	8.16
Ride Quality:	6.06
Fuel Economy:	4.91
Interior Noise:	4.21
Acceleration:	4.59
Ease of Entry and Exit:	6.15
Interior Size:	3.73
Turning Circle:	6.55
Luggage Capacity:	1.73

Mazda MX-5 Retractable Hardtop

GREEN CAR SCORES

Score For This Vehicle	67.75
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$29,150
Price as Tested:	\$31,300
Cost per Point for this Vehicle	\$462
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Premium
Fuel Capacity (gal):	12.7
EPA Urban MPG:	21
EPA Highway MPG:	28
Auto Club Highest MPG:	31.8
Auto Club Average MPG:	28.3
Auto Club Lowest MPG:	24.6

MODEL YEAR TESTED - 2010



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

2-Seat Convertible

STRONG POINTS

- Excellent handling
- Fun to drive
- Good fuel economy for a sporty car (but uses expensive premium fuel)
- ABS brakes provide short straight stops
- Retractable hardtop rather than cloth
- Styling

WEAK POINTS

- Noisy interior
- Small and virtually useless trunk
- Small and flimsy plastic sunvisors
- Interior cramped for tall or heavy occupants
- Hard ride

OVERALL OBSERVATIONS

Mazda (a Japanese automaker) produces the best British-type sport car in the US. The Mazda MX-5 (previously called the Miata) is their latest in a long line of 2-seat convertible sports cars. It is cute, red (at least ours was), handles well, stops on a dime, is fun-to-drive, and gets 24 mpg. It is also cramped, noisy, and stiff riding. Again, like a classic British sports car! This iteration on the theme has a neat retractable hardtop rather than a cloth top that should be longer lasting and require less maintenance. In these days of high gas prices, some fear the end of cars that are just plain fun. The MX-5 is proof that this is unfounded fear!

AFTERMARKET PARTS

Lowering kit, body kit

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2
Curb Weight (lbs):	2740
Exterior Length (in):	157.3
Exterior Width (in):	67.7
Exterior Height (in):	49.4
Wheelbase (in):	91.7
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	6 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Bridgestone 205/45R17
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Manual 6 Speed
Drivetrain Type:	Rear Wheel
Engine Size:	2.0L DOHC 16V I4
Horsepower @ RPM:	167 @ 7000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	9.20
Crashworthiness:	4.60
Visibility:	6.70
Slalom Handling:	8.96
Ride Quality:	6.17
Fuel Economy:	1.46
Interior Noise:	1.53
Acceleration:	8.20
Ease of Entry and Exit:	5.56
Interior Size:	1.03
Turning Circle:	7.02
Luggage Capacity:	0.32

Mercedes-Benz S400 Hybrid

GREEN CAR SCORES

Score For This Vehicle	82.04
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$91,850
Price as Tested:	\$106,615
Cost per Point for this Vehicle	\$1,300
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Premium
Fuel Capacity (gal):	23.8
EPA Urban MPG:	19
EPA Highway MPG:	25
Auto Club Highest MPG:	34.0
Auto Club Average MPG:	23.0
Auto Club Lowest MPG:	15.3

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

Mild Hybrid

DESCRIPTION/COMMENTS

Full-Sized 4-door Sedan

STRONG POINTS

- Smooth ride
- Quiet, comfortable, & roomy interior with lots of "comfort, convenience & safety" features
- Certified as ATPZEV
- Luxury
- Adaptive cruise control will bring car to a stop

WEAK POINTS

- Mushy brake pedal feel
- High purchase price (we can't all afford luxury!)
- Requires expensive premium fuel
- Rear seats don't fold
- Confusing controls
- Sluggish throttle response from a stop

OVERALL OBSERVATIONS

Most of the time when you hear "hybrid" you think of a high mpg, low performing "green-mobile". This is not always the case. Mercedes-Benz chose to "hybridize" their iconic "S-class". The "S-class" is a luxurious full-sized sedan. We tested the S400 Hybrid that meets California's stringent ATPZEV emission standards (as clean as a Prius). This is a marvelous luxury/performance sedan that is powerful, quiet, comfortable & loaded with just about every convenience & safety feature you can imagine. All this & we averaged a surprising 23 mpg. Our test vehicle's price was over \$106K so this is a car for the lucky few, but it can compete with comparable offerings (hybrid or not) from any manufacturer.

AFTERMARKET PARTS

Tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	4880
Exterior Length (in):	206.7
Exterior Width (in):	83.5
Exterior Height (in):	58.2
Wheelbase (in):	124.6
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags or more
Warranty (Months/Miles):	48/50,000
Tire Manufacturer:	Continental 275/40R19
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 7 Speed
Drivetrain Type:	Rear Wheel
Engine Size:	3.5L DOHC 24V V6
Horsepower @ RPM:	275 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	5.17
Crashworthiness:	8.65
Visibility:	7.60
Slalom Handling:	6.45
Ride Quality:	8.25
Fuel Economy:	0.87
Interior Noise:	7.51
Acceleration:	7.14
Ease of Entry and Exit:	7.67
Interior Size:	7.44
Turning Circle:	4.03
Luggage Capacity:	2.27

Mini Cooper Camden Hardtop

GREEN CAR SCORES

Score For This Vehicle	71.99
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$19,500
Price as Tested:	\$25,000
Cost per Point for this Vehicle	\$347
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Premium
Fuel Capacity (gal):	13.2
EPA Urban MPG:	28
EPA Highway MPG:	37
Auto Club Highest MPG:	34.1
Auto Club Average MPG:	30.6
Auto Club Lowest MPG:	23.0

MODEL YEAR TESTED - 2010



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Mini-Compact 2-door Coupe

STRONG POINTS

- Rated at 32 MPG but uses expensive premium fuel
- Nimble handling and powerful ABS brakes
- Fun to drive
- "Bi-Xenon" headlights provide excellent illumination
- Cute styling

WEAK POINTS

- Useless rear seat
- Small trunk
- Noisy interior
- Lacks center armrests

OVERALL OBSERVATIONS

An "econobox" that is not an "econobox"? That is the Mini Cooper from BMW. Based on the enduring British mini sports car, the Mini is tiny but cute and immensely fun-to-drive. The "econobox" part is the stingy 32 mpg EPA rating. Handling and brakes are fantastic, and acceleration, while not a "sink you in the seat" beast, is still "zippy". However, this is a really small car and even though it has 4 seats, the rear seats are for show only. Even children are too cramped back there. The trunk is also very small, so do your grocery shopping a little at a time. Want good mpg and fun-to-drive too? The Mini is worth a good look.

AFTERMARKET PARTS

Custom mesh grille, cold air intake

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/2
Curb Weight (lbs):	2430
Exterior Length (in):	145.6
Exterior Width (in):	66.3
Exterior Height (in):	55.4
Wheelbase (in):	97.1
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	48/50,000
Tire Manufacturer:	Continental 205/45R17
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Manual 6 Speed
Drivetrain Type:	Front Wheel
Engine Size:	1.6L DOHC 16V I4
Horsepower @ RPM:	118 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	10.00
Crashworthiness:	5.23
Visibility:	6.60
Slalom Handling:	9.65
Ride Quality:	6.58
Fuel Economy:	3.42
Interior Noise:	1.85
Acceleration:	6.38
Ease of Entry and Exit:	5.60
Interior Size:	3.79
Turning Circle:	5.50
Luggage Capacity:	0.39

Mitsubishi i SE

GREEN CAR SCORES

Score For This Vehicle	77.71
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$31,125
Price as Tested:	\$34,765
Cost per Point for this Vehicle	\$447
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Electricity
Battery Capacity (KWH):	16.0
Equivalent EPA Urban MPG:	126
Equivalent EPA Highway MPG:	99
Charger Input (VAC) :	110
Charger Charge Time (Hours) :	22
Charger #2 Input (VAC) :	240
Charger #2 Charge Time (Hours) :	7

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

Electric

DESCRIPTION/COMMENTS

Mini-Compact 4-door Hatchback

STRONG POINTS

- Useable acceleration
- Good head room
- Zero emissions
- Equipped with navigation & Bluetooth
- Rear seat backs fold flat
- Low cost of "fuel"
- Brakes

WEAK POINTS

- Follows rain grooves on freeway
- Cramped interior
- Limited range between recharges & long recharge time
- Lacks center armrests & outer armrests too hard
- Bouncy ride

OVERALL OBSERVATIONS

President Obama has an aggressive goal of 1 million EVs on the roads by 2015. Mitsubishi wants to be part of that growth. Even though the i (like many EVs) has low acceleration scores, the electric drivetrain provides adequate acceleration for most conditions experienced on the road, especially in congestion. EPA equivalent mpg ratings are an impressive 126 city/99 highway. Unfortunately, the range of the i is the shortest (62 miles) of any of the mainstream EVs on the market. Our test vehicle, with SE trim and the Premium Package, had an MSRP of \$34,765 before any federal or state incentives, pricing it at or near the lowest price of any mainstream EV currently available.

AFTERMARKET PARTS

Tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/2
Curb Weight (lbs):	2620
Exterior Length (in):	144.8
Exterior Width (in):	62.4
Exterior Height (in):	63.6
Wheelbase (in):	100.4
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Dunlop 145/55R15
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 1 Speed
Drivetrain Type:	Rear Wheel
Engine Size:	49kW Electric Motor
Horsepower @ RPM:	N/A
Electric Motor Horsepower:	66 @ 3000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	10.00
Braking:	7.25
Crashworthiness:	5.45
Visibility:	6.60
Slalom Handling:	5.35
Ride Quality:	6.54
Fuel Economy:	10.00
Interior Noise:	5.90
Acceleration:	1.17
Ease of Entry and Exit:	5.91
Interior Size:	4.36
Turning Circle:	7.51
Luggage Capacity:	1.67

Nissan Leaf SL

GREEN CAR SCORES

Score For This Vehicle

84.75

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

Base Price: **\$34,540**

Price as Tested: **\$35,695**

Cost per Point for this Vehicle

\$421

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

FUEL ECONOMY

Fuel Type	Electricity
Battery Capacity (KWH):	24.0
Equivalent EPA Urban MPG:	106
Equivalent EPA Highway MPG:	92
Charger Input (VAC) :	110
Charger Charge Time (Hours) :	21
Charger #2 Input (VAC) :	240
Charger #2 Charge Time (Hours) :	7

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

Electric

DESCRIPTION/COMMENTS

Mid-Sized 4-door Hatchback

STRONG POINTS

- Energy efficiency (100 mpg equivalent)
- Zero emissions
- Quiet
- Front headroom
- Well equipped with Bluetooth, navigation, and XM radio

WEAK POINTS

- Limited range can cause "range anxiety" until you get accustomed
- Long recharge time (especially @ 110 volts)
- Small trunk
- High purchase price (especially when tax credits expire)
- Lacks rear center armrest

OVERALL OBSERVATIONS

The Nissan Leaf represents "Take one – Version two" of electric vehicles. It is the first modern EV to be available for sale from an established OEM. How well does it work? Surprisingly well. When you drive the Leaf, it seems like you are in a well-equipped, strangely quiet, conventional car. You step on the accelerator & it goes (with reasonably good power), you turn the steering wheel & it turns, & when you step on the brake it stops, etc. But you are getting the equivalent of 100 mpg & producing no emissions (from the vehicle). The downside is the usual for an EV. Range anxiety: "will I make it there & if so, can I get back?" If we plan our trips & usage, range anxiety fades & the Leaf becomes just "our around town" car.

AFTERMARKET PARTS

Body panel kit

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3462
Exterior Length (in):	175.0
Exterior Width (in):	69.7
Exterior Height (in):	61.0
Wheelbase (in):	106.3
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Bridgestone P205/55R16
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 1 Speed
Drivetrain Type:	Front Wheel
Engine Size:	80 kW AC Motor
Horsepower @ RPM:	107

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	10.00
Braking:	5.76
Crashworthiness:	6.46
Visibility:	7.00
Slalom Handling:	5.51
Ride Quality:	6.83
Fuel Economy:	10.00
Interior Noise:	7.80
Acceleration:	5.95
Ease of Entry and Exit:	7.16
Interior Size:	4.90
Turning Circle:	5.46
Luggage Capacity:	1.94

Nissan Sentra 2.0 SL

GREEN CAR SCORES

Score For This Vehicle	74.84
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$19,600
Price as Tested:	\$21,390
Cost per Point for this Vehicle	\$286
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	14.5
EPA Urban MPG:	27
EPA Highway MPG:	34
Auto Club Highest MPG:	38.5
Auto Club Average MPG:	27.5
Auto Club Lowest MPG:	19.7

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

PZEV available

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- PZEV available
- Well equipped for the price
- Handling
- High-fidelity Rockford Fosgate sound system with XM radio

WEAK POINTS

- Underpowered
- Body roll
- Bumpy ride on rough roads
- Uncomfortable seats
- Difficult rear seat entry/exit and limited rear headroom for taller passengers

OVERALL OBSERVATIONS

The 2000 Nissan Sentra CA was the first car to meet California's new (at the time) PZEV emission standards and we marveled at the successful use of technology for clean air. Today, PZEVs are common and Nissan has a new and improved Sentra (still a PZEV). Our 2.0 SL test car was very well equipped (Bluetooth, "smart key", navigation, XM radio, rear-view camera, and a power moonroof), all for \$21K. The interior is attractive, but unfortunately is not too comfortable (although much better than the older model). The engine could use more horsepower, but handling is good, and our CVT equipped test car is rated at 30 mpg.

AFTERMARKET PARTS

Body kits, rear spoiler

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3040
Exterior Length (in):	179.6
Exterior Width (in):	70.5
Exterior Height (in):	59.7
Wheelbase (in):	105.7
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Bridgestone P205/55R16
Towing Cap. (lbs) W/WO Brakes:	1000/1000
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size:	2.0L DOHC I4
Horsepower @ RPM:	140 @ 5100

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	6.00
Braking:	6.90
Crashworthiness:	5.96
Visibility:	6.70
Slalom Handling:	8.38
Ride Quality:	6.63
Fuel Economy:	5.00
Interior Noise:	5.08
Acceleration:	6.16
Ease of Entry and Exit:	6.76
Interior Size:	4.30
Turning Circle:	5.28
Luggage Capacity:	1.69

Nissan Versa 1.6S

GREEN CAR SCORES

Score For This Vehicle

68.97

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

Base Price: **\$12,760**

Price as Tested: **\$13,690**

Cost per Point for this Vehicle

\$198

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **11.3**

EPA Urban MPG: **30**

EPA Highway MPG: **38**

Auto Club Highest MPG: **46.7**

Auto Club Average MPG: **35.4**

Auto Club Lowest MPG: **23.9**

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Compact 4-door Sedan

STRONG POINTS

- Good fuel economy
- Affordable purchase price
- Reasonable performance
- Roomy for a compact
- Value
- Trunk security

WEAK POINTS

- Lack of instrumentation
- Lacks convenience features, especially power door locks since there is no keyhole in passenger door
- Lacks center armrests front and rear
- Rear seats don't fold down
- Seat controls hard to reach and operate

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 compact car that provides an excellent 33 mpg on average. Our test car featured excellent ABS brakes with brake assist. The 1.6 liter engine makes only 109 hp but the CVT transmission makes good use of the limited "grunt". Our test car was the basic "S" sedan that lacked many of the amenities we are used to in today's cars. However with a purchase price under \$14K, the Versa is an excellent value.

AFTERMARKET PARTS

Body kits, performance shocks, custom graphics

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2420
Exterior Length (in):	175.4
Exterior Width (in):	66.7
Exterior Height (in):	59.6
Wheelbase (in):	102.4
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 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:	1.6L DOHC 16V I4
Horsepower @ RPM:	109 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	6.00
Braking:	7.89
Crashworthiness:	5.22
Visibility:	5.50
Slalom Handling:	6.81
Ride Quality:	5.94
Fuel Economy:	5.85
Interior Noise:	3.57
Acceleration:	4.26
Ease of Entry and Exit:	6.78
Interior Size:	3.91
Turning Circle:	5.26
Luggage Capacity:	1.99

Scion iQ

GREEN CAR SCORES

Score For This Vehicle	70.62
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$16,000
Price as Tested:	\$16,000
Cost per Point for this Vehicle	\$227
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	8.5
EPA Urban MPG:	36
EPA Highway MPG:	37
Auto Club Highest MPG:	36.1
Auto Club Average MPG:	33.1
Auto Club Lowest MPG:	30.1

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Mini-Compact 2-door Hatchback

STRONG POINTS

- Good MPG
- Amazingly tight turning circle
- Easy to drive in town
- Reasonable purchase price
- Small footprint makes parking easy

WEAK POINTS

- Small or almost non-existent trunk
- Cramped rear seat
- Lack of interior storage compartments (not even a glove box)
- Dim interior lighting
- Sun visors too small

OVERALL OBSERVATIONS

Mini-compacts are popular in Europe (they are used to small cars and mpg is a major factor), but the jury is still out about how well they fit in the US market-place. The latest attempt is the Scion iQ. A small car should get good mpg and the iQ does, averaging 37 mpg. Our tester was only \$16K so small car = small price. The small size of the iQ has benefits: it handles nimbly, has the smallest turning radius of any car we've ever tested (26'), and can fit in any parking spot. On the other hand, the rear seats are basically useless, the trunk only holds 3.5 cu-ft. and there is not even a glove box. If you live in a congested city like San Francisco, NY, or Chicago, the iQ makes sense, otherwise, maybe not so much.

AFTERMARKET PARTS

Tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/2
Curb Weight (lbs):	2180
Exterior Length (in):	120.1
Exterior Width (in):	66.1
Exterior Height (in):	59.1
Wheelbase (in):	78.7
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags or more
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Goodyear 175/60R16
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size:	1.3L DOHC 16V VVT-i I4
Horsepower @ RPM:	94 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	5.32
Crashworthiness:	5.43
Visibility:	6.60
Slalom Handling:	7.49
Ride Quality:	6.04
Fuel Economy:	6.68
Interior Noise:	3.66
Acceleration:	3.99
Ease of Entry and Exit:	5.87
Interior Size:	2.54
Turning Circle:	10.00
Luggage Capacity:	0.00

Scion xD

GREEN CAR SCORES

Score For This Vehicle	69.48
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$15,765
Price as Tested:	\$15,765
Cost per Point for this Vehicle	\$227
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	11.1
EPA Urban MPG:	27
EPA Highway MPG:	33
Auto Club Highest MPG:	34.7
Auto Club Average MPG:	31.3
Auto Club Lowest MPG:	25.9

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Subcompact 4-door Hatchback

STRONG POINTS

- Good MPG
- Affordable purchase price
- Easy to drive
- Adjustable (fore/aft and recline) rear seat

WEAK POINTS

- Cramped interior (especially the rear seat)
- Lacks center armrests front and rear
- Lacks compete instrumentation
- Front seats adjustable for fore/aft and recline only
- Rear headrests impede visibility to the rear
- Difficult entry/exit to the rear seat
- Road noise, can't hear radio on freeway

OVERALL OBSERVATIONS

Is it a mini CUV, a compact wagon, a 4-door hatchback, or just a miniature box? The Scion xD defies categorization. EPA calls it a subcompact car so we will call it one too. It is a stylish box, & gets an EPA rated 29 mpg. Our testers got an excellent average of over 31 mpg, including a day of aggressive testing at the Auto Club Speedway, (which generally hurts mpg). MSRP is under \$16K & the xD is well equipped for that price. But it is a subcompact car & has the cramped interior & small trunk that goes with that category. Scion's reputation for quality appears to have not been hurt by parent company Toyota's recall issues, so if an affordable high mpg "box" is what you want, then check out the xD.

AFTERMARKET PARTS

Rear camber kit, custom gauges

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2620
Exterior Length (in):	154.7
Exterior Width (in):	67.9
Exterior Height (in):	60.0
Wheelbase (in):	96.9
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Dunlop P195/60R16
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Manual 5 Speed
Drivetrain Type:	Front Wheel
Engine Size:	1.8L DOHC 16V I4
Horsepower @ RPM:	128 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	6.39
Crashworthiness:	5.45
Visibility:	6.70
Slalom Handling:	7.10
Ride Quality:	6.21
Fuel Economy:	4.91
Interior Noise:	3.30
Acceleration:	6.80
Ease of Entry and Exit:	6.08
Interior Size:	3.56
Turning Circle:	4.74
Luggage Capacity:	1.23

smart fortwo passion EV

GREEN CAR SCORES

Score For This Vehicle	70.67
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$45,587
Price as Tested:	\$45,952
Cost per Point for this Vehicle	\$650
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Electricity
Battery Capacity (KWH):	16.5
Equivalent EPA Urban MPG:	94
Equivalent EPA Highway MPG:	79
Charger Input (VAC) :	110
Charger Charge Time (Hours) :	12
Charger #2 Input (VAC) :	240
Charger #2 Charge Time (Hours) :	8

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

Electric

DESCRIPTION/COMMENTS

Mini-Compact 2-Seat Coupe

STRONG POINTS

- Zero emissions from the vehicle
- Small turning radius
- Low operating costs (fuel vs. electricity)
- Makes people look, conversation starter
- Easy to park
- Surprising head and leg room

WEAK POINTS

- Underpowered and limited to 65 mph
- Battery range and associated "range anxiety"
- Long 110 volt recharge time
- Ride
- High purchase price (\$46K)
- Tracks rain grooves on road and sensitive to side winds

OVERALL OBSERVATIONS

For 2011, smart rolled out a lease program of a limited fleet of fortwo electric vehicles in the US. The Automobile Club of Southern California has leased 20 of them for evaluation and the ARC has one, a "passion coupe". We had some trepidation, since our experience with the gas version of the fortwo was somewhat negative. However, it seems that the fortwo platform was meant to be an EV. It scores quite a bit higher than the gas version, and despite the lack of power and range anxiety (for drivers with long commutes), the electric drivetrain was much smoother in operation, the cost of electricity makes operation more affordable, and you can't drive much more "green" than an electric smart!

AFTERMARKET PARTS

Custom upholstery

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2
Curb Weight (lbs):	1860
Exterior Length (in):	106.1
Exterior Width (in):	69.0
Exterior Height (in):	61.6
Wheelbase (in):	73.5
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	7 Air Bags
Warranty (Months/Miles):	48/40,000
Tire Manufacturer:	Kumho 175/55R15
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 1 Speed
Drivetrain Type:	Rear Wheel
Engine Size:	20kW Constant/30kW Peak
Horsepower @ RPM:	N/A
Electric Motor Horsepower:	N/A

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	10.00
Braking:	5.37
Crashworthiness:	4.05
Visibility:	6.60
Slalom Handling:	6.20
Ride Quality:	5.67
Fuel Economy:	10.00
Interior Noise:	4.73
Acceleration:	0.00
Ease of Entry and Exit:	6.56
Interior Size:	2.14
Turning Circle:	8.61
Luggage Capacity:	0.76

Subaru Forester 2.5X Premium

GREEN CAR SCORES

Score For This Vehicle	81.68
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$25,220
Price as Tested:	\$26,315
Cost per Point for this Vehicle	\$322
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	16.9
EPA Urban MPG:	21
EPA Highway MPG:	27
Auto Club Highest MPG:	25.1
Auto Club Average MPG:	22.8
Auto Club Lowest MPG:	21.5

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

PZEV

DESCRIPTION/COMMENTS

4-door SUV

STRONG POINTS

- Meets stringent PZEV emission standards
- Roomy and flexible interior
- Easy to see out of
- AWD traction

WEAK POINTS

- Small, awkward and non-intuitive radio controls
- Noisy under hard acceleration and at startup
- Automatic transmission only has 4 speeds
- Small navigation screen

OVERALL OBSERVATIONS

This guide contains data on vehicles that cost over \$100K, but one that costs only \$26K comes out near the top. How about the Subaru Forester? This compact SUV does about everything well, combining clean PZEV emissions with a respectable 23 mpg (for an AWD SUV), along with ABS brakes, a flexible interior that can carry a surprising amount of cargo, and excellent sight lines. It even scores 4 stars on NHTSA's new more stringent overall rating. On the down side, this is a \$26K vehicle and the interior materials and controls (especially the optional Tom-Tom navigation unit) 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

Roof rack

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3540
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:	8 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Yokohama P225/55R17
Towing Cap. (lbs) W/WO Brakes:	2400/1000
Transmission Type:	Auto 4 Speed
Drivetrain Type:	All Wheel - Full Time
Engine Size:	2.5L DOHC HO4
Horsepower @ RPM:	170 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	6.89
Crashworthiness:	6.55
Visibility:	7.30
Slalom Handling:	6.30
Ride Quality:	6.75
Fuel Economy:	3.38
Interior Noise:	5.79
Acceleration:	5.69
Ease of Entry and Exit:	7.26
Interior Size:	5.56
Turning Circle:	5.83
Luggage Capacity:	5.37

Subaru Impreza 2.0i Sport Limited

GREEN CAR SCORES

Score For This Vehicle

76.38

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

Base Price: **\$22,595**

Price as Tested: **\$25,345**

Cost per Point for this Vehicle

\$332

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **14.5**

EPA Urban MPG: **27**

EPA Highway MPG: **36**

Auto Club Highest MPG: **32.4**

Auto Club Average MPG: **28.4**

Auto Club Lowest MPG: **25.1**

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

PZEV available

DESCRIPTION/COMMENTS

AWD 5-door Hatchback

STRONG POINTS

- Available as a PZEV
- Good traction, handling, and braking
- Good mpg for an AWD vehicle
- Utility & versatility
- Well equipped (Bluetooth, Navigation, satellite radio, and voice recognition)

WEAK POINTS

- Noisy interior
- Touch screen controls small and crowded together
- Instrumentation is limited and hard to read at night
- Cramped rear seat for tall passengers

OVERALL OBSERVATIONS

Subaru claims that the Impreza 2.0i equipped with their new 2.0 liter "boxer" engine and second generation CVT transmission is "the most fuel efficient AWD passenger vehicle in America". During our testing we averaged an impressive 28.4 mpg. The Impreza has nimble handling, powerful ABS brakes, and the AWD traction that makes Subarus popular in snowy areas. Unfortunately engine, tire, and road noise all intrude into the cabin, making conversation difficult. The hatchback design with individual folding rear seats gives it almost the versatility of a small SUV. Now, the Impreza can even be ordered as a clean PZEV, so you can have all this ruggedness without guilt!

AFTERMARKET PARTS

Tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3100
Exterior Length (in):	173.8
Exterior Width (in):	68.5
Exterior Height (in):	59.5
Wheelbase (in):	104.1
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags or more
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Yokohama P205/50R17
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	CVT
Drivetrain Type:	All Wheel - Full Time
Engine Size:	2.0L DOHC HO4
Horsepower @ RPM:	148 @ 6200

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	6.00
Braking:	8.29
Crashworthiness:	6.53
Visibility:	7.40
Slalom Handling:	8.30
Ride Quality:	6.75
Fuel Economy:	5.17
Interior Noise:	2.59
Acceleration:	5.11
Ease of Entry and Exit:	6.68
Interior Size:	4.62
Turning Circle:	5.59
Luggage Capacity:	3.35

Subaru Legacy 2.5i Limited PZEV

GREEN CAR SCORES

Score For This Vehicle	78.80
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$26,320
Price as Tested:	\$29,380
Cost per Point for this Vehicle	\$373
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	18.5
EPA Urban MPG:	23
EPA Highway MPG:	31
Auto Club Highest MPG:	27.3
Auto Club Average MPG:	25.3
Auto Club Lowest MPG:	22.0

MODEL YEAR TESTED - 2010



REASON THIS VEHICLE WAS TESTED

PZEV

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- Meets stringent PZEV emission standards
- All-wheel-drive traction
- Well equipped with navigation, Bluetooth, rear-view camera, and Sirius radio
- Well laid out and useful interior

WEAK POINTS

- Non-intuitive radio controls
- Unusual exhaust note "like a jet winding up for takeoff"
- Screen hard to see in bright light
- Poor fit of plastic trim inside and out

OVERALL OBSERVATIONS

Toyota (Camry) and Honda (Accord) have been doing battle for the title of best selling mid-size sedan for years. It is doubtful Subaru's entry in this category, the Legacy, will steal the title anytime soon, but in snowy states, the Legacy has made inroads into the competition's dominance. The Legacy is a nice 4-door sedan with superior traction due to "Symmetrical AWD with Vehicle Dynamics Control". Add to that 5-star crash test ratings, PZEV emissions, 26 mpg, good handling and braking, and a reasonable price (our loaded "Limited" edition had an MSRP under \$30K) and you have a winner.

AFTERMARKET PARTS

Body kits, exhaust

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3460
Exterior Length (in):	186.4
Exterior Width (in):	71.7
Exterior Height (in):	59.3
Wheelbase (in):	108.3
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Bridgestone P215/50R17
Towing Cap. (lbs) W/WO Brakes:	2700/1000
Transmission Type:	CVT
Drivetrain Type:	All Wheel - Full Time
Engine Size:	2.5L HO4
Horsepower @ RPM:	170 @ 5600

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	7.68
Crashworthiness:	6.46
Visibility:	6.90
Slalom Handling:	7.96
Ride Quality:	7.08
Fuel Economy:	4.06
Interior Noise:	5.02
Acceleration:	5.37
Ease of Entry and Exit:	7.37
Interior Size:	5.41
Turning Circle:	4.54
Luggage Capacity:	1.97

Subaru Outback 2.5i Limited PZEV

GREEN CAR SCORES

Score For This Vehicle

80.30

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

Base Price: **\$28,495**

Price as Tested: **\$33,035**

Cost per Point for this Vehicle

\$411

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **18.5**

EPA Urban MPG: **22**

EPA Highway MPG: **29**

Auto Club Highest MPG: **29.4**

Auto Club Average MPG: **24.5**

Auto Club Lowest MPG: **14.8**

MODEL YEAR TESTED - 2010



REASON THIS VEHICLE WAS TESTED

PZEV

DESCRIPTION/COMMENTS

4-door AWD SUV

STRONG POINTS

- Roomy and flexible interior
- Meets PZEV emission standards
- AWD Traction
- Well equipped
- Rear seats fold flat and are easy to fold

WEAK POINTS

- On-screen radio/navigation controls confusing
- Underpowered
- Engine noisy when accelerating

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!

AFTERMARKET PARTS

Cargo net, floor mats

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3620
Exterior Length (in):	188.2
Exterior Width (in):	71.7
Exterior Height (in):	65.7
Wheelbase (in):	107.9
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Continental P225/60R17
Towing Cap. (lbs) W/WO Brakes:	2700/1000
Transmission Type:	CVT
Drivetrain Type:	All Wheel - Full Time
Engine Size:	2.5L SOHC HO4
Horsepower @ RPM:	170 @ 5600

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	6.87
Crashworthiness:	6.65
Visibility:	7.00
Slalom Handling:	6.16
Ride Quality:	7.00
Fuel Economy:	3.72
Interior Noise:	4.86
Acceleration:	5.28
Ease of Entry and Exit:	6.99
Interior Size:	6.23
Turning Circle:	5.17
Luggage Capacity:	5.37

Toyota Camry Hybrid LE

GREEN CAR SCORES

Score For This Vehicle	86.94
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$26,750
Price as Tested:	\$26,750
Cost per Point for this Vehicle	\$308
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	17.0
EPA Urban MPG:	43
EPA Highway MPG:	39
Auto Club Highest MPG:	28.1
Auto Club Average MPG:	28.1
Auto Club Lowest MPG:	28.1

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- Excellent MPG
- Certified as an AT-PZEV
- Tilt/telescopic steering wheel can be positioned for virtually all drivers
- Roomy rear seat
- 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
- Smallish trunk
- When using the remote to unlock, if a door isn't opened in 30 seconds, the doors relock
- Poor visibility below rear window

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 46% better mpg (41 vs. 28). With an MSRP of \$27K, fuel savings (based on 15,000 mi/yr and \$4/gal) covers the \$3400 extra cost of the hybrid in about 5 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):	3640
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 or more
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Michelin P205/65R16
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size:	2.5L I4 Hybrid
Horsepower @ RPM:	156 @ 5700
Electric Motor Horsepower:	105 kW @ 4500 RPM

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	6.73
Crashworthiness:	7.17
Visibility:	7.00
Slalom Handling:	8.01
Ride Quality:	6.92
Fuel Economy:	7.86
Interior Noise:	7.76
Acceleration:	7.74
Ease of Entry and Exit:	7.02
Interior Size:	5.41
Turning Circle:	4.63
Luggage Capacity:	1.69

Toyota Camry XLE

GREEN CAR SCORES

Score For This Vehicle

77.89

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

Base Price: \$29,510

Price as Tested: \$29,510

Cost per Point for this Vehicle

\$379

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

FUEL ECONOMY

Fuel Type Unleaded Regular

Fuel Capacity (gal): 17.0

EPA Urban MPG: 25

EPA Highway MPG: 35

Auto Club Highest MPG: 31.5

Auto Club Average MPG: 29.0

Auto Club Lowest MPG: 24.5

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

PZEV available

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- Good MPG (28) for a midsize non-hybrid sedan
- Comfortable, roomy, and well-laid out interior
- Test vehicle was well equipped. However, that resulted in an MSRP near \$30K
- PZEV available

WEAK POINTS

- Engine is buzzy when pushed hard
- Push on/push off parking brake
- Bland styling

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 EV. Nothing suffers & you still have a Camry. The comfort, value, performance, & reputation for reliability remain, only you can rest assured that you are doing your part to eliminate smog. Our test car was a Camry XLE equipped with the optional sound system with NAV, and the Convenience & Leather packages. Equipped this way, it seemed loaded, but we still averaged 29 mpg during our testing. The Camry may epitomize the mid-sized sedan, a category often thought of as boring, but this latest version is a nice car.

AFTERMARKET PARTS

Body side moldings, rear spoiler

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3240
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 or more
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Bridgestone P215/55R17
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Auto 6 Speed
Drivetrain Type:	Front Wheel
Engine Size:	2.5L I4 DOHC 16V VVT-i
Horsepower @ RPM:	178 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	7.14
Crashworthiness:	6.69
Visibility:	7.10
Slalom Handling:	7.67
Ride Quality:	6.88
Fuel Economy:	4.73
Interior Noise:	4.67
Acceleration:	6.85
Ease of Entry and Exit:	6.87
Interior Size:	5.54
Turning Circle:	4.65
Luggage Capacity:	2.10

Toyota Corolla Sport

GREEN CAR SCORES

Score For This Vehicle

72.35

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

Base Price: **\$17,470**

Price as Tested: **\$20,199**

Cost per Point for this Vehicle

\$279

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **13.2**

EPA Urban MPG: **28**

EPA Highway MPG: **35**

Auto Club Highest MPG: **35.1**

Auto Club Average MPG: **32.0**

Auto Club Lowest MPG: **28.3**

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Compact 4-door Sedan

STRONG POINTS

- Fuel economy
- Hi-Fi optional sound system includes XM
- Well equipped for a compact car including Bluetooth and tilt/telescopic steering wheel
- Nimble handling

WEAK POINTS

- Could use more power
- No rear center armrest
- Tends to wander in the lane
- Cramped rear seat
- Not enough adjustment for front seats to fit all drivers

OVERALL OBSERVATIONS

The Corolla has been a stalwart for Toyota for many years. It has been seen as the standard for quality in a compact car. The 2011 model we tested generally lives up to this reputation. It gets excellent mileage (we averaged 32 mpg, including a day of testing at the Auto Club Speedway), & 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, unless perhaps if you or your passengers are taller than the norm.

AFTERMARKET PARTS

Seat covers, dash kits

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2800
Exterior Length (in):	179.0
Exterior Width (in):	69.3
Exterior Height (in):	57.7
Wheelbase (in):	102.4
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Bridgestone P205/55R16
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	Manual 5 Speed
Drivetrain Type:	Front Wheel
Engine Size:	1.8L DOHC Dual VVT-i I4
Horsepower @ RPM:	132 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	5.98
Crashworthiness:	5.67
Visibility:	6.50
Slalom Handling:	7.12
Ride Quality:	6.38
Fuel Economy:	5.26
Interior Noise:	5.53
Acceleration:	6.29
Ease of Entry and Exit:	5.90
Interior Size:	3.30
Turning Circle:	5.93
Luggage Capacity:	1.50

Toyota Highlander LTD Hybrid 4WD

GREEN CAR SCORES

Score For This Vehicle

88.30

Highest Scoring Green Car

89.30

Lowest Scoring Green Car

66.26

VEHICLE PRICE

Base Price: **\$43,755**

Price as Tested: **\$44,720**

Cost per Point for this Vehicle

\$506

Highest Green Car Cost/Point

\$1,420

Lowest Green Car Cost/Point

\$198

FUEL ECONOMY

Fuel Type **Unleaded Regular**

Fuel Capacity (gal): **17.2**

EPA Urban MPG: **28**

EPA Highway MPG: **28**

Auto Club Highest MPG: **31.0**

Auto Club Average MPG: **24.0**

Auto Club Lowest MPG: **13.0**

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

4-door SUV

STRONG POINTS

- Roomy and adaptable interior
- Good mpg for an SUV
- Powerful
- Easy to see out of
- California versions meet SULEV emissions
- 4 wheel drive traction

WEAK POINTS

- High purchase price
- Jolt when the engine starts at low speed
- Third row seats cramped and hard to access
- Somewhat vague steering feel with some torque steer

OVERALL OBSERVATIONS

Why do we love SUVs? Because they have room & the capability to perform many tasks, & because they are perceived as "tough" & "safe". Why do we hate SUVs? Because they are seen as egregious resource wasters or gas hogs! The Toyota Highlander Hybrid can silence these critics. It performs like the SUVs we love, but still gets better mpg (28) 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 front, side, driver's knee, & 3-row side-curtain airbags, ABS, & ESC. This is another example where "you can have your cake & eat it too".

AFTERMARKET PARTS

Cargo cross bars, running boards

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3/2
Curb Weight (lbs):	4920
Exterior Length (in):	188.8
Exterior Width (in):	75.2
Exterior Height (in):	69.3
Wheelbase (in):	109.8
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags or more
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Toyo P245/55R19
Towing Cap. (lbs) W/WO Brakes:	3500 Max/1000
Transmission Type:	CVT
Drivetrain Type:	All Wheel - Full Time
Engine Size:	3.5L DOHC Dual VVT-i V6
Horsepower @ RPM:	280 @ 5800
Electric Motor Horsepower:	MG2 167; MGR 68

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	8.00
Braking:	7.40
Crashworthiness:	8.70
Visibility:	7.20
Slalom Handling:	5.35
Ride Quality:	7.00
Fuel Economy:	4.56
Interior Noise:	7.98
Acceleration:	8.22
Ease of Entry and Exit:	7.36
Interior Size:	5.92
Turning Circle:	3.79
Luggage Capacity:	6.83

Toyota Prius C Three

GREEN CAR SCORES

Score For This Vehicle	78.96
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$21,635
Price as Tested:	\$23,245
Cost per Point for this Vehicle	\$294
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	9.5
EPA Urban MPG:	46
EPA Highway MPG:	53
Auto Club Highest MPG:	67.6
Auto Club Average MPG:	47.7
Auto Club Lowest MPG:	32.6

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Compact 4-door Hatchback

STRONG POINTS

- Excellent fuel economy
- Nicely laid out dash uses real knobs!
- Hybrid image
- Satellite radio and Bluetooth
- Easy to drive
- Low emissions (SULEV II)

WEAK POINTS

- Underpowered
- Entry and exit difficult due to limited headroom
- Lack of traditional engine gauges
- Small trunk
- Poor visibility to the rear
- Cramped rear seat

OVERALL OBSERVATIONS

The 2012 Toyota Prius C is a compact 4-door hatchback variant on the Prius theme. It has a smaller 1.5 liter engine & a slightly lower output (73 vs. 80 hp) electric motor that mesh together in a similar fashion to the standard Prius. The results are that both models average 50 mpg, but the "C" does better in the city & worse on the highway. The "C" has a lower price, so overall costs should be less. The futuristic styling is still recognizable as a Prius, so the "cool image" that comes with driving one should apply to the "C" too. So if environmentalism & low fuel expenses are your thing & you can live with the drawbacks of a compact car, the Prius C should be on your list.

AFTERMARKET PARTS

Tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2580
Exterior Length (in):	157.3
Exterior Width (in):	66.7
Exterior Height (in):	57.7
Wheelbase (in):	100.4
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags or more
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Goodyear P175/65R15
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size:	1.5L DOHC I4
Horsepower @ RPM:	73 @ 4800
Electric Motor Horsepower:	45 kW

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	6.92
Crashworthiness:	5.91
Visibility:	6.70
Slalom Handling:	7.86
Ride Quality:	6.56
Fuel Economy:	9.83
Interior Noise:	3.70
Acceleration:	3.82
Ease of Entry and Exit:	5.88
Interior Size:	3.54
Turning Circle:	6.87
Luggage Capacity:	2.39

Toyota Prius IV

GREEN CAR SCORES

Score For This Vehicle	83.66
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$26,500
Price as Tested:	\$30,709
Cost per Point for this Vehicle	\$367
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

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

AFTERMARKET PARTS

Seat covers, floor mats, tailight covers

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!

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	6.36
Crashworthiness:	6.63
Visibility:	6.90
Slalom Handling:	6.25
Ride Quality:	7.08
Fuel Economy:	10.00
Interior Noise:	6.43
Acceleration:	5.33
Ease of Entry and Exit:	6.78
Interior Size:	3.95
Turning Circle:	5.76
Luggage Capacity:	3.19

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:	9 Air Bags or more
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

Toyota Prius PHEV

GREEN CAR SCORES

Score For This Vehicle	83.41
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$32,000
Price as Tested:	\$33,063
Cost per Point for this Vehicle	\$396
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	10.6
EPA Urban/Highway Electric/Gas:	95
EPA Urban/Highway Gas:	51/49
Auto Club Highest MPG:	53.2
Auto Club Average MPG:	50.3
Auto Club Lowest MPG:	48.5

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- Meets PZEV emission standards
- Excellent fuel efficiency
- Uses inexpensive electricity for short trips
- Quiet in EV mode
- Rear windows open fully
- Fully automatic power window controls

WEAK POINTS

- Small trunk
- Underpowered, especially in EV mode
- Visibility especially to the rear
- Follows rain grooves on the freeway

OVERALL OBSERVATIONS

Toyota's Prius has become an icon, especially in California. For 2012, Toyota has rolled out a new version that can be plugged in to recharge a larger battery pack allowing for 10-to-15 miles of zero-emission electric only operation (at a much lower per mile cost than on gasoline). We tested a prototype of this car, so some data were estimated or not provided. EPA shows a combined gasoline electric mpg rating of an astounding 95 mpg equivalent. This is an interesting car that looks like a Prius with better mpg, operates as a zero emission pure EV part of the time & just like a traditional Prius the rest of the time. This may be just what a hybrid should be.

AFTERMARKET PARTS

Cargo mat, cargo net

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3500
Exterior Length (in):	175.6
Exterior Width (in):	68.7
Exterior Height (in):	58.7
Wheelbase (in):	106.3
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags or more
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 I4
Horsepower @ RPM:	98 @ 5200
Electric Motor Horsepower:	80

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	6.61
Crashworthiness:	7.00
Visibility:	6.70
Slalom Handling:	6.76
Ride Quality:	6.58
Fuel Economy:	10.00
Interior Noise:	6.20
Acceleration:	5.28
Ease of Entry and Exit:	6.67
Interior Size:	4.59
Turning Circle:	4.93
Luggage Capacity:	3.08

Toyota Prius V

GREEN CAR SCORES

Score For This Vehicle	83.31
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$27,925
Price as Tested:	\$27,925
Cost per Point for this Vehicle	\$335
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	11.9
EPA Urban MPG:	44
EPA Highway MPG:	40
Auto Club Highest MPG:	42.8
Auto Club Average MPG:	38.9
Auto Club Lowest MPG:	36.0

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

Mid-Sized Station Wagon

STRONG POINTS

- Excellent fuel economy
- Low emissions (SULEV II)
- Roomy and flexible interior
- Stereo sound, rear view camera and voice operated navigation
- Hybrid technology/appeal
- Ride

WEAK POINTS

- Underpowered
- Small sun visors
- Numb driving dynamics
- Engine buzzy when pushed hard
- Torque steer

OVERALL OBSERVATIONS

For 2012, Toyota decided to expand its popular Prius brand with the introduction of several variants on the theme. They literally "raised the roof" to turn the Prius sedan into the Prius V, a mid-sized station wagon that can compete with small CUVs too. Remaining is the sophisticated hybrid powertrain that mates a 1.8 liter 4-cylinder engine with an 80 hp electric motor & meshes the operation of both to extract the maximum efficiency each is capable of, yielding 42 mpg. The Prius V is equipped with many advanced safety & convenience technologies, & is certified as a SULEV II. With the extra space & interior flexibility, we expect the Prius V to be quite popular.

AFTERMARKET PARTS

Seat covers, floor mats, tailight covers

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3320
Exterior Length (in):	181.7
Exterior Width (in):	69.9
Exterior Height (in):	62.0
Wheelbase (in):	109.4
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags or more
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Yokohama P205/60R16
Towing Cap. (lbs) W/WO Brakes:	Not Recommended
Transmission Type:	CVT
Drivetrain Type:	Front Wheel
Engine Size:	1.8L I4 DOHC 16V VVT-i
Horsepower @ RPM:	98 @ 5200
Electric Motor Horsepower:	80 HP

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	9.00
Braking:	6.35
Crashworthiness:	6.79
Visibility:	7.10
Slalom Handling:	6.90
Ride Quality:	6.96
Fuel Economy:	8.11
Interior Noise:	4.72
Acceleration:	4.78
Ease of Entry and Exit:	7.02
Interior Size:	5.37
Turning Circle:	4.83
Luggage Capacity:	5.37

Toyota Yaris SE Liftback

GREEN CAR SCORES

Score For This Vehicle	72.29
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$16,400
Price as Tested:	\$17,340
Cost per Point for this Vehicle	\$240
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	11.1
EPA Urban MPG:	30
EPA Highway MPG:	38
Auto Club Highest MPG:	39.0
Auto Club Average MPG:	34.6
Auto Club Lowest MPG:	28.5

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

Non-Hybrid High MPG

DESCRIPTION/COMMENTS

Subcompact 5-door Liftback

STRONG POINTS

- Good fuel economy
- Easy to use manual transmission and clutch
- Economical purchase price
- Easy to park due to small exterior size
- Nimble handling

WEAK POINTS

- Cramped rear seat
- No center armrests in front or rear
- Road noise
- Small trunk but rear seats fold down
- Headrests obstruct rear visibility

OVERALL OBSERVATIONS

Toyota's entry in the current crop of sub-compacts for the US market is the Yaris. We tested an "SE" 5-door liftback with a 1.5 liter 4 cylinder engine and a 5-speed manual transmission. This combination provided almost 35 mpg, handled well in our slalom test, and has excellent ABS brakes. It is a sub-compact, so it suffers some of the weaknesses typical of the genre: small trunk, excessive road noise, and cramped rear seats. Still at \$17,340 (fairly loaded) with Toyota's reputation for reliability, the Yaris should be a quality commuter car and a good value.

AFTERMARKET PARTS

Wheels, low-profile tires, audio systems

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	2380
Exterior Length (in):	154.7
Exterior Width (in):	66.7
Exterior Height (in):	59.4
Wheelbase (in):	98.8
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	9 Air Bags or more
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Bridgestone P195/50R16
Towing Cap. (lbs) W/WO Brakes:	700/700
Transmission Type:	Manual 5 Speed
Drivetrain Type:	Front Wheel
Engine Size:	1.5L DOHC 16V I4 VVT-i
Horsepower @ RPM:	106 @ 6000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	7.20
Crashworthiness:	5.67
Visibility:	6.80
Slalom Handling:	7.98
Ride Quality:	6.46
Fuel Economy:	5.85
Interior Noise:	3.65
Acceleration:	5.53
Ease of Entry and Exit:	5.94
Interior Size:	3.66
Turning Circle:	4.42
Luggage Capacity:	2.13

Volkswagen Jetta SEL

GREEN CAR SCORES

Score For This Vehicle	72.41
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$24,165
Price as Tested:	\$24,165
Cost per Point for this Vehicle	\$334
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Regular
Fuel Capacity (gal):	14.5
EPA Urban MPG:	24
EPA Highway MPG:	31
Auto Club Highest MPG:	29.5
Auto Club Average MPG:	24.6
Auto Club Lowest MPG:	22.9

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

PZEV available

DESCRIPTION/COMMENTS

Compact 4-door Sedan

STRONG POINTS

- High fidelity sound system with Bluetooth, satellite radio, and navigation
- PZEV available
- Sliding sunvisors
- Good fit and finish
- Comfortable ride

WEAK POINTS

- Awkward side mirror controls
- Narrow front seats are uncomfortable
- Lacks instrumentation and those that are on the dash are too small to read easily
- Handling not as brisk as previous versions
- Cramped rear seat for taller passengers

OVERALL OBSERVATIONS

Volkswagen introduced a new version of their popular Jetta for 2011. It appears to be more "mainstream" in style and performance. They may trade-off the passion some owners have for the previous version for a larger possible market. This is a car that excels at little, but on the other hand has no obvious weaknesses (witness all the yellow bars below). We tested a Jetta SEL with 6-speed automatic transmission and the standard 2.5-liter, 5-cylinder engine (with federal emissions, a PZEV version is available for purchase but was not available to test). This is a well-equipped car that gets 27 mpg and scores 4 stars overall on NHTSA's new crash test ratings.

AFTERMARKET PARTS

Body kits, spoilers

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3047
Exterior Length (in):	182.2
Exterior Width (in):	70.0
Exterior Height (in):	57.2
Wheelbase (in):	104.4
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Michelin P225/45R17
Towing Cap. (lbs) W/WO Brakes:	1500/1500
Transmission Type:	Auto 6 Speed
Drivetrain Type:	Front Wheel
Engine Size:	2.5L DOHC I5
Horsepower @ RPM:	170 @ 5700

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	6.00
Braking:	6.03
Crashworthiness:	5.96
Visibility:	6.60
Slalom Handling:	6.63
Ride Quality:	6.94
Fuel Economy:	4.23
Interior Noise:	4.46
Acceleration:	6.01
Ease of Entry and Exit:	6.71
Interior Size:	4.92
Turning Circle:	5.81
Luggage Capacity:	2.11

Volkswagen Passat TDI SE

GREEN CAR SCORES

Score For This Vehicle	79.41
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$27,895
Price as Tested:	\$28,665
Cost per Point for this Vehicle	\$361
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Diesel #2
Fuel Capacity (gal):	18.5
EPA Urban MPG:	30
EPA Highway MPG:	40
Auto Club Highest MPG:	40.8
Auto Club Average MPG:	39.8
Auto Club Lowest MPG:	38.0

MODEL YEAR TESTED - 2012



REASON THIS VEHICLE WAS TESTED

Clean Diesel

DESCRIPTION/COMMENTS

Mid-Sized 4-door Sedan

STRONG POINTS

- Good MPG (34) with reasonable performance
- Roomy and comfortable interior
- Good handling while maintaining decent ride quality
- Excellent ABS brakes

WEAK POINTS

- Price and availability of diesel fuel
- Only meets ULEV emissions
- Rear window only opens 50%
- Poor visibility to the rear
- Sluggish throttle response from a start

OVERALL OBSERVATIONS

Volkswagen supplied us a well-equipped Passat TDI SE. This is a very nice & roomy 4-door mid-sized sedan. Diesel is running more expensive than gasoline these days, but the excellent fuel economy (we averaged almost 40 mpg) makes the Passat TDI inexpensive to operate anyway. The TDI engine is smooth & provides good power, but displays lag from a standing start. The Passat was very quick through our slalom course, which normally requires stiff suspension settings, but the ride quality was not at all harsh. Instead, we found the interior to be quite comfortable, under any driving conditions. VW is trying to expand their US presence, & the Passat should do well in the very competitive mid-sized segment.

AFTERMARKET PARTS

Tires

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	3480
Exterior Length (in):	191.6
Exterior Width (in):	72.2
Exterior Height (in):	58.5
Wheelbase (in):	110.4
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Hankook 235/45R18
Towing Cap. (lbs) W/WO Brakes:	1000/1000
Transmission Type:	Auto 6 Speed
Drivetrain Type:	Front Wheel
Engine Size:	2.0L DOHC Turbo Diesel I4
Horsepower @ RPM:	140 @ 4000

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	7.25
Crashworthiness:	6.48
Visibility:	6.90
Slalom Handling:	8.73
Ride Quality:	7.42
Fuel Economy:	6.02
Interior Noise:	3.93
Acceleration:	5.96
Ease of Entry and Exit:	7.20
Interior Size:	5.44
Turning Circle:	4.91
Luggage Capacity:	2.18

Volkswagen Touareg Supercharged Hybrid

GREEN CAR SCORES

Score For This Vehicle	85.61
Highest Scoring Green Car	89.30
Lowest Scoring Green Car	66.26

VEHICLE PRICE

Base Price:	\$61,385
Price as Tested:	\$61,385
Cost per Point for this Vehicle	\$717
Highest Green Car Cost/Point	\$1,420
Lowest Green Car Cost/Point	\$198

FUEL ECONOMY

Fuel Type	Unleaded Premium
Fuel Capacity (gal):	26.4
EPA Urban MPG:	20
EPA Highway MPG:	24
Auto Club Highest MPG:	20.3
Auto Club Average MPG:	18.9
Auto Club Lowest MPG:	18.6

MODEL YEAR TESTED - 2011



REASON THIS VEHICLE WAS TESTED

Hybrid

DESCRIPTION/COMMENTS

4-door SUV

STRONG POINTS

- Roomy, comfortable, and flexible interior
- 380 HP (combined) plus AWD = excellent acceleration
- Improved MPG for a large SUV
- Luxury appointments

WEAK POINTS

- High Purchase Price (\$61K)
- Requires expensive premium fuel
- Rear windows don't open fully
- High vehicle is hard to get into
- Too many controls on steering wheel and column mounted stalks may be confusing

OVERALL OBSERVATIONS

Volkswagens were Beetles, Rabbits, Golfs, and Jettas. They were small, economical, sometimes underpowered, and sometimes quirky, mass market cars. That has changed. VW introduced the "ultra-luxo" Phaeton (with little success) and now we have a \$61K Supercharged Touareg Hybrid AWD SUV. This is a very luxurious, high performing, rugged SUV. And this SUV is big too, weighing 5200 pounds, but the hybrid powertrain and 8-speed automatic transmission boost MPG to 21 mpg on average. Acceleration is excellent and handling is good for this sized vehicle. Visibility is also very good. In all, this is one of the top scoring vehicles in this evaluation. The down side is none of the evaluators can afford one!

AFTERMARKET PARTS

Lowering springs, cold air intake

VEHICLE SPECIFICATIONS

Number of Passengers (F/R):	2/3
Curb Weight (lbs):	5200
Exterior Length (in):	188.8
Exterior Width (in):	76.4
Exterior Height (in):	68.2
Wheelbase (in):	113.9
Anti-lock Braking System:	4 Wheel ABS
Restraint Type:	8 Air Bags
Warranty (Months/Miles):	36/36,000
Tire Manufacturer:	Michelin 265/50R19
Towing Cap. (lbs) W/WO Brakes:	7700/1650
Transmission Type:	Auto 8 Speed
Drivetrain Type:	All Wheel - Full Time
Engine Size:	3.0L V6 TSI Hybrid
Horsepower @ RPM:	333 @ 5500
Electric Motor Horsepower:	40

TEST DATA

Test Vehicle Scores (0 to 10 Points)

EPA Emissions Score:	7.00
Braking:	6.38
Crashworthiness:	8.53
Visibility:	7.70
Slalom Handling:	7.39
Ride Quality:	7.63
Fuel Economy:	0.95
Interior Noise:	7.35
Acceleration:	9.24
Ease of Entry and Exit:	7.02
Interior Size:	6.53
Turning Circle:	4.85
Luggage Capacity:	5.04

APPENDIX

Some common automotive 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 of 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 (smog-forming) 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, for example) 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.