

Clean Cities 2011

Vehicle Buyer's Guide



U.S. Department of Energy

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Reducing the amount of petroleum used in light-duty vehicles is easier than ever with the increased availability of hybrid electric vehicles, flexible fuel vehicles, and compressed natural gas and propane vehicles, and the recent introduction of highway capable, all-electric vehicles. By selecting the vehicle and fuel that best fit your needs, your location, and your driving range, you can be part of the energy transformation that will help the United States achieve energy independence while improving your own bottom line.



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Courtesy of ROUSH CleanTech



Courtesy of Ford Motor Company



Introduction

Model year 2011

may be remembered as a year of firsts—the Nissan Leaf, the first all-electric highway sedan; the Chevy Volt, the first commercially available electric vehicle touted for its extended range capability; the Chevrolet Silverado 1500 and GMC Sierra 1500 hybrid pickups; the GMC/Chevrolet 2500 and 3500 Sierra/Silverado pickups, the GMC/Chevrolet 3500 Savana/Express vans, and the Ford F250 and F350 and E150, E250, and E350 vehicles that can operate on propane; and the Chevrolet Silverado 2500 and 3500 pickups approved to operate on B20.

As in past years, fuel availability may be the deciding factor in any vehicle purchase. Fueling stations selling E85 ethanol are proliferating while specialized locations selling natural gas are also growing in number. Electric charging at home is now a viable option and often can be arranged when you purchase an electric vehicle. Public electric charging stations are being planned as cities prepare for a rollout of electric vehicles. The free alternative fueling station locator at www.afdc.energy.gov/stations can help you identify local fueling options for your vehicle.

The 2011 Vehicle Buyer's Guide introduces the exciting lineup of alternative fuel and advanced technology light-duty vehicles that combine reduced petroleum use with new transportation technologies. Take the time to educate yourself about the possibility of getting into a vehicle that reduces your use of petroleum, produces lower air pollution and greenhouse gas emissions, and takes you into the future of transportation.

How to Use This Guide

The 2011 Vehicle Buyer's Guide includes vehicle-specific information about vehicle specifications, fuel economy, price, and air pollution and greenhouse gas (GHG) emission ratings. With this information, you can compare similar vehicles to make an informed buying decision.

Fuel Economy

The 2011 Vehicle Buyer's Guide includes the U.S. Environmental Protection Agency's (EPA) city and highway fuel economy estimates. Fuel economy is measured under controlled conditions in a laboratory, using EPA's standardized tests. The city fuel economy tests simulate urban driving, in which a vehicle is started with the engine cold and driven in stop-and-go traffic. EPA's highway fuel economy tests simulate a mix of rural and interstate highway driving with a warmed-up engine, typical of longer trips in free-flowing traffic. Federal law requires manufacturers of light-duty vehicles sold in the United States to provide customers with the EPA estimates. Fuel economy estimates are also available on www.FuelEconomy.gov.

Starting with model year (MY) 2011, fuel economy estimates are also supplied for medium-duty passenger vehicles weighing up to 10,000 lb. This includes sport utility vehicles (SUVs) and passenger vans but excludes pickup trucks and cargo vans.

Emissions

The Air Pollution Score represents vehicle tailpipe emissions that contribute to local and regional air pollution and create problems such as smog, haze, and health issues. EPA air pollution scores range from 0 to 10, and vehicles that score a 10 are cleanest, meaning they emit none of these types of pollutants.

California Emission Standards, set by the California Air Resources Board (CARB), are similar to but more stringent than federal EPA standards. Several states have adopted CARB standards, including Arizona, Connecticut, Florida, Maine, Maryland, Massachusetts, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Rhode Island, Washington, Vermont, and Washington, D.C., although dates vary as to when the CARB standards will go into effect.

The Greenhouse Gas Score reflects emissions of carbon dioxide (CO₂) and other greenhouse gases, which impact the planet's climate. GHG scores are based on EPA fuel economy estimates and range from 10 (best) to 1 (worst). GHG scores only reflect vehicle tailpipe GHG emissions. More information about GHG scores is available at www.epa.gov/greenvehicles.

Engine Size and Price

In most cases, information about engine size and manufacturer's suggested retail price (MSRP) has been obtained from the vehicle manufacturer and the Kelley Blue Book. MSRP does not include shipping or freight charges. Information about federal and state incentives is available at www.afdc.energy.gov/afdc/laws.

Natural Gas

Honda Civic GX

- 1.8L, 4 cyl engine, CNG
- \$25,490 MSRP
- 24 miles per gasoline-equivalent gallon (mpgg) city, 36 mpgg highway
- Air Pollution Score = 9
- GHG Emissions (CNG) = 8



Courtesy of Honda

Natural gas vehicles save money and emit less pollution.

Compressed natural gas (CNG) vehicles are powered by the same fuel used for cooking and heating in many homes. Domestic natural gas supplies are plentiful, and some locations are even developing renewable natural gas from landfills.

Many consumers are interested in these vehicles because CNG is usually less expensive than gasoline, and CNG vehicles emit lower levels of air pollutants and greenhouse gases than most gasoline-powered vehicles.

New car buyers can choose the 2011 CNG Honda Civic GX for approximately \$10,000 more than the standard Civic. Alternatively, EPA also approves several new and used vehicles for conversion from gasoline to CNG operation for a typical cost of \$8,000 to \$12,000 per vehicle. Conversions are regulated by EPA and must be certified based on vehicle make, model, and model year. Vehicles converted to run on CNG exclusively are considered “dedicated” and may be eligible for a federal tax credit or state incentive. Check with your tax advisor to determine available tax credits and eligibility. Information about federal and state incentives is available at www.afdc.energy.gov/afdc/laws.

Fuel availability may be the deciding factor.

Matching your vehicle choice with a readily available fuel supply is a smart move. If you are considering the purchase of a dedicated CNG vehicle or converting a conventional vehicle to run on CNG, check the online Alternative Fueling Station Locator at www.afdc.energy.gov/afdc/locator/stations/ or www.afdc.energy.gov/stations/m on your mobile device for CNG fueling locations.

Propane

E-250 Roush CleanTech/Ford

- 5.4L 8 cyl engine
- \$35,300 MSRP
- Air Pollution Score = 2
- GHG Score Unavailable



Courtesy of ROUSH CleanTech

Propane powers vehicles with readily available fuel.

Propane is a readily available, clean-burning fuel that has been used in the transportation sector for more than 80 years. It is the most widely used motor fuel in the world and powers roughly 190,000 vehicles in the U.S. The price of propane for use in a motor vehicle is typically two-thirds that of gasoline and is available through a number of fueling stations across the United States. The Alternative Fueling Station Locator, online at www.afdc.energy.gov/afdc/locator/stations, can help you identify fueling locations in your area.

Choose your path to propane.

Dedicated propane fuel systems are available for light- and medium-duty Ford and GMC trucks and vans including the following models:

- Roush/Ford 2010 and 2011 F-250 & F-350 pickups (5.4L V8 engine)
- Roush/Ford 2010 and 2011 E-150, E-250, and E-350 vans (5.4L V8 engine)
- GMC/Chevrolet 2010 and 2011 3500 Savana and Express vans (6.0L V8 engine)
- GMC/Chevrolet 2010 and 2011 2500 and 3500 HD Sierra/Silverado pickups (6.0L V8 engine).

These propane vehicles can be ordered through Ford or General Motors (GM) dealerships. They are also available to federal agencies through General Service Administration's AutoChoice system. In addition, several conversion companies can convert a variety of late-model gasoline vehicles to propane operation. Conversion has no effect on the horsepower, torque, towing capacity, or factory warranty.

A federal tax credit may be available to reduce the differential cost of a propane-powered vehicle. Information about incentives can be found at www.afdc.energy.gov/afdc/laws. Check with your personal tax advisor for specific information about tax credits. Learn more about conversions on page 32 or online at www.afdc.energy.gov/afdc/vehicles/conversions.html.

All-Electric Vehicles

Nissan Leaf

- AC electric motor
- \$32,780 MSRP
- 73 mile all-electric range per charge
- 99 mpg equivalent
- Air Pollution Score = 10
- GHG Score = 10
- Available in CA, OR, WA, AZ, TN



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All-electric vehicles have zero tailpipe emissions.

All-electric vehicles (EVs) are powered by batteries that store electrical energy to run the motor. EV batteries are charged by plugging into an electric power source. Currently available EVs can travel 100 to 200 miles on a single charge, depending on the model. According to the U.S. Department of Transportation Federal Highway Administration, 100 miles is a sufficient range for more than 90% of all household vehicle trips in the United States.

EVs are more expensive than similar conventional and hybrid electric vehicles, but some costs can be recovered through fuel savings, a federal tax credit, or state incentives. Information can be found at www.afdc.energy.gov/afdc/laws. Check with your tax advisor to determine available tax credits and eligibility.

Although electric generation plants can contribute to air pollution and greenhouse gases (depending on their fuel source), EVs are classified as zero emission vehicles by EPA because they produce zero tailpipe emissions.

Nissan introduced the Leaf—a highway-capable EV sedan. The Leaf never uses gasoline and produces zero tailpipe emissions. The Leaf's 80kW AC synchronous motor and lithium battery pack provide a range of 73 miles per charge.

Coda Automotive produced the all-electric 2011 Coda EV, available by custom order. The Coda EV is powered by advanced lithium-ion batteries and has a driving range of 90 to 120 miles.

The Tesla Motors Roadster 2.5 is an all-electric two-seat convertible also available for custom order. It boasts a range of about 235 miles per charge and zero tailpipe emissions.

Extended Range and Plug-In Hybrid Electric Vehicles

Chevrolet Volt

- 1.4L 4 cyl engine, AC electric motor
- \$40,280 MSRP
- 35-mile all-electric range;
- 379-mile gas/electric range
- 93 mpg equivalent
- Air Pollution Score = 6
- GHG Score = 9
- Available in CA, MI, NY, NJ, CT, DC, and Austin, TX



Courtesy of General Motors

Plug-in hybrids provide extended vehicle range.

Extended Range Electric Vehicles (EREVs) operate on electricity and use gasoline to power an engine that supplies additional electrical power to the battery.

The Chevrolet Volt is an EREV with an all-electric range of 35 miles thanks to the lithium-ion battery pack that powers the car's 149-horsepower (111-kilowatt) electric motor. After that, a small gasoline-powered motor kicks in to generate electricity that can drive the vehicle for an additional 344 miles before being plugged in to recharge.

EPA classifies the Volt as a "series plug-in hybrid" because the gasoline engine is primarily used to generate additional electricity while the electric motor turns the wheels.

Other types of plug-in hybrid electric vehicles (PHEVs) are powered by a combination of conventional or alternative fuel as well as electric power stored in a battery. During urban driving, most of a PHEV's power comes from stored electricity. For longer trips or periods of higher acceleration, the internal combustion engine is used, extending the PHEV's range beyond what the battery can provide alone.

PHEV batteries can be charged by plugging into an outside electric power source, by the internal combustion engine, and through regenerative braking. However, PHEVs don't have to be plugged in to be driven. They can be fueled solely with gasoline, like a conventional hybrid, although they will not achieve maximum range or fuel economy without charging.

Hybrid Electric Vehicles

Toyota Prius Hybrid

- 1.8L 4 cyl engine
- \$22,800 MSRP
- 51 mpg city,
48 mpg highway
- Air Pollution Score = 8
- GHG Score (Gasoline) = 10



Courtesy of Toyota

Hybrids save money and cut emissions by boosting fuel efficiency.

Hybrid electric vehicles (HEVs) are powered by an internal combustion engine combined with a battery-powered electric motor. HEVs run on gasoline and don't need to be plugged in to recharge the battery. Because HEVs travel at least part of the time on battery power alone, they require fewer fill-ups and are more economical to run. Some HEVs achieve fuel economy of 40 to 50 miles per gallon. They also produce lower levels of tailpipe and GHG emissions than conventional vehicles.

Light-duty HEVs are parallel hybrids meaning both the engine and electric motor are mechanically connected to the wheels, and either or both can propel the vehicle directly, depending on the power requirements and battery charge.

Hybrid configuration affects performance and price.

HEVs can be either mild or full hybrids. Full hybrids can run on battery power alone at idle or low speeds. When speeds increase, the gasoline engine works with the electric motor to provide power. Full hybrids are 25% to 40% more fuel efficient than comparable conventional vehicles.

Mild hybrids, also called "micro hybrids", use a battery and electric motor to help power the vehicle. This allows the engine to shut off when the vehicle stops at traffic signals and in stop-and-go traffic, thus improving fuel economy. Mild hybrids cannot power the vehicle using electricity alone. These vehicles cost less than full hybrids, but they provide lower fuel economy.

BMW ActiveHybrid 7 **BMW ActiveHybrid 7L**

- 4.4L 8 cyl engine
- \$102,300-106,200 MSRP
- 17 mpg city, 24 mpg highway
- Air Pollution Score = 5
- GHG Score = 4



Courtesy of BMW

BMW ActiveHybrid X6

- 4.4L 8 cyl engine
- \$88,900 MSRP
- 17 mpg city, 19 mpg highway
- Air Pollution Score = 5
- GHG Score = 3



Courtesy of BMW

Cadillac Escalade 4WD Hybrid

- 6.0L 8 cyl engine
- \$76,390 MSRP
- 20 mpg city, 23 mpg highway
- Air Pollution Score = 5
- GHG Score = 4



Courtesy of General Motors

Chevrolet Tahoe 1500 4WD Hybrid

- 6.0L 8 cyl engine
- \$53,540 MSRP
- 20 mpg city, 23 mpg highway
- Air Pollution Score = 5
- GHG Score = 4



Courtesy of General Motors

Chevrolet Silverado 15 4WD Hybrid **GMC Sierra 15 4WD Hybrid**

- 6.0L 8 cyl engine
- \$38,340 MSRP
- 23 mpg city, 20 mpg highway
- Air Pollution Score = 5
- GHG Score = 4



Courtesy of General Motors

Ford Escape 4WD Hybrid

- 2.5L 4 cyl engine
- \$31,615 MSRP
- 30 mpg city, 27 mpg highway
- Air Pollution Score = 7
- GHG Score = 7



Courtesy of Ford Motor Company

Ford Fusion Hybrid

- 2.5L 4 cyl engine
- \$28,100 MSRP
- 41 mpg city, 36 mpg highway
- Air Pollution Score = 7
- GHG Score = 9



Courtesy of Ford Motor Company

GMC Yukon 1500 4WD Hybrid

- 6.0L 8 cyl engine
- \$54,010 MSRP
- 20 mpg city, 23 mpg highway
- Air Pollution Score = 5
- GHG Score = 4



Courtesy of General Motors

Honda Civic Hybrid

- 1.3L 4 cyl engine
- \$23,950 MSRP
- 40 mpg city, 43 mpg highway
- Air Pollution Score = 9
- GHG Score = 9



Courtesy of Honda

Honda CR-Z Hybrid

- 1.5L 4 cyl engine
- \$19,850 MSRP
- 35 mpg city, 39 mpg highway
- Air Pollution Score = 8
- GHG Score = 8



Courtesy of Honda

Honda Insight LX Hybrid

- 1.3L 4 cyl engine
- \$20,600 MSRP
- 40 mpg city, 43 mpg highway
- Air Pollution Score = 9
- GHG Score = 10



Courtesy of Honda

Hyundai Sonata 2.0T Hybrid

- 2.4L 4 cyl engine
- \$26,000 MSRP
- 37 mpg city, 39 mpg highway
- Air Pollution and GHG Scores Unavailable



Courtesy of Hyundai

Lexus GS 450h RWD Hybrid

- 3.5L 6 cyl engine
- \$57,950 MSRP
- 22 mpg city, 25 mpg highway
- Air Pollution Score = 7
- GHG Score = 5



Courtesy of Toyota

Lexus LS 600h L Hybrid

- 5.0L 8 cyl engine
- \$110,000 MSRP
- 19 mpg city, 23 mpg highway
- Air Pollution Score = 7
- GHG Score = 4



Courtesy of Toyota

Lexus RX 450h AWD Hybrid

- 3.5L 6 cyl engine
- \$44,825 MSRP
- 30 mpg city, 28 mpg highway
- Air Pollution Score = 7
- GHG Score = 7



Courtesy of Toyota

Lincoln MKZ Hybrid

- 2.5L 4 cyl engine
- \$34,330 MSRP
- 41 mpg city, 36 mpg highway
- Air Pollution Score = 7
- GHG Score = 9



Courtesy of Ford Motor Company

Mercedes Benz S400 Hybrid

- 3.5L 6 cyl engine
- \$87,950 MSRP
- 19 mpg city, 26 mpg highway
- Air Pollution and GHG Scores Unavailable



Courtesy of Mercedes-Benz

Mercedes-Benz ML450 4Matic Hybrid

- 3.5L 6 cyl engine
- \$55,790 MSRP
- 21 mpg city, 24 mpg highway
- Air Pollution Score = 6
- GHG Score = 5



Courtesy of Mercedes-Benz

Mercury Mariner 4WD Hybrid

- 2.5L 4 cyl engine
- \$31,865 MSRP
- 30 mpg city, 27 mpg highway
- Air Pollution Score = 7
- GHG Score = 7



Courtesy of Ford Motor Company

Mercury Milan FWD Hybrid

- 2.5L 4 cyl engine
- \$28,345 MSRP
- 41 mpg city, 36 mpg highway
- Air Pollution Score = 7
- GHG Score = 9



Courtesy of Ford Motor Company

Nissan Altima Hybrid

- 2.5L 4 cyl engine
- \$27,530 MSRP
- 35 mpg city, 33 mpg highway
- Air Pollution Score = 10
- GHG Score = 9
- Available Only in California



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Toyota Camry Hybrid

- 2.4L 4 cyl engine
- \$26,575 MSRP
- 33 mpg city, 34 mpg highway
- Air Pollution Score = 7
- GHG Score = 8



Courtesy of Toyota

Toyota Highlander AWD Hybrid

- 3.5L 6 cyl engine
- \$37,290 MSRP
- 28 mpg city, 28 mpg highway
- Air Pollution Score = 7
- GHG Score = 7



Courtesy of Toyota

Volkswagen Touareg Hybrid

- 3.0L 6 cyl engine
- \$60,565 MSRP
- 31 mpg city, 27 mpg highway
- Air Pollution and GHG Scores Unavailable



Courtesy of Volkswagen

Ethanol

GMC Terrain FWD FFV

- 3.0L 6 cyl engine
- \$24,250 MSRP
- 12 mpg city, 18 mpg highway (E85)
- 17 mpg city, 24 mpg highway (Gasoline)
- Air Pollution Score:
E85 = 6, Gasoline = 6
- GHG Score: E85 = 4, Gasoline = 3



Courtesy of General Motors

E85 is a renewable fuel choice.

E85 is a mix of 85% ethanol and 15% gasoline and is produced from plant feedstocks. Today most ethanol in the U.S. is made from corn, but in the near future, ethanol may be made from other renewable resources including perennial grasses, crop residues, straw, and fast-growing trees. Ethanol from these materials and corn combined may eventually replace up to 40% of the gasoline we currently use.

Flexible fuel vehicles can operate on gasoline or E85.

Flexible fuel vehicles (FFVs) are able to run on gasoline, E85, or any combination of each. According to EPA estimates, the fuel economy of today's FFVs is 20% to 25% lower when running on E85, because ethanol contains less energy per gallon than gasoline. The price of E85, however, is typically 10% to 30% lower than gasoline, offsetting the loss in fuel economy. Flexible fuel vehicles are distinguished by logos on the back of the vehicle, and they often have yellow fuel caps.

E85 is widely available.

The number of E85 fueling stations continues to increase throughout the country. To find an E85 station near you, check the Alternative Fueling Station Locator at www.afdc.energy.gov/afdc/locator/stations. This tool is also available on your mobile device at www.afdc.energy.gov/stations/m.

Buick Regal CXL Turbo

- 2.0L 4 cyl engine
- \$28,745 MSRP
- No Other Information Available



Courtesy of General Motors

Buick Lucerne CXL

- 3.9L 6 cyl engine
- \$33,130 MSRP
- 13 mpg city, 20 mpg highway (E85)
- 17 mpg city, 27 mpg highway (Gasoline)
- Air Pollution Score: E85 = 6, Gasoline = 6
- GHG Score: E85 = 4, Gasoline = 4



Courtesy of General Motors

Cadillac Escalade AWD

- 6.2L 8 cyl engine
- \$65,710 MSRP
- 10 mpg city, 15 mpg highway (E85)
- 14 mpg city, 18 mpg highway (Gasoline)
- Air Pollution Score: E85 = 5, Gasoline = 5
- GHG Score: E85 = 2, Gasoline = 1



Courtesy of General Motors

Chevrolet Impala LS

- 3.5L 6 cyl engine
- \$24,390 MSRP
- 14 mpg city, 22 mpg highway (E85)
- 19 mpg city, 29 mpg highway (Gasoline)
- Air Pollution Score: E85 = 6, Gasoline = 6
- GHG Score: E85 = 5, Gasoline = 5



Courtesy of General Motors

Chevrolet Malibu LS

- 2.4L 4 cyl engine
- \$22,055 MSRP
- 15 mpg city, 23 mpg highway (E85)
- 22 mpg city, 33 mpg highway (Gasoline)
- Air Pollution Score: E85 = 6, Gasoline = 6
- GHG Score: E85 = 6, Gasoline = 6
- Fleet Availability Only



Courtesy of General Motors

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