

## Choosing the right hybrid depends on driving habits and cost

by Mark\_Maynard

In the early days of the Toyota Prius, it was prized for giving solo drivers access to carpool lanes. Now, with gasoline prices surging and many drivers growing more concerned about their carbon footprint, hybrid vehicles are gaining in popularity.

MODEL CAR - There are 16 hybrid models on sale today and several more will be introduced this year. CNS Photo courtesy of Ford. Hybrids are cleaner burning because their small gasoline engine is integrated with an electric motor and battery pack. They work in various modes together or separately to reduce fuel use and exhaust emissions. But not all hybrids are created equal, nor are they the right answer for all driving conditions. A Prius, for example, is at its least "green" mode when used as a commuter car, because it is burning more gasoline.

There are 16 hybrid models on sale today and several more will be introduced this year. They come in various sizes - from compact and midsize sedans to crossover sport-utility vehicles and even full-size SUVs.

Buyers have a choice of two types of hybrids:

- Mild or one-mode, which assists the engine but does not move the vehicle on battery power alone.
- Full or two-mode, which allows low-speed battery driving and combined engine and battery power at higher speeds. This is the more popular technology, but it's also more expensive.
- A third choice, the two-mode "plug-in," is evolving but won't be in showrooms until after 2010. A plug-in hybrid will have a larger electric range, which likely will come from lithium-ion batteries. These batteries are still being refined for automotive applications, but Ford, Toyota, General Motors and others are testing such vehicles now.

Despite the electronics to integrate a gasoline engine and an electric motor, a hybrid isn't as exotic as it seems.

"A hybrid is really a transmission that can store energy for later use and a method to shut down the engine at idle and restart seamlessly," said Dan Edmunds, director of vehicle testing at the consumer automotive Web site Edmunds.com. "Those functions work pretty well."

The differences in the modes and models come down to price, packaging and cleanliness.

"The payback in saved-gasoline cost isn't by itself going to cover the higher price of a hybrid," said Edmunds, who is no relation to the Web site founder.

"The potential hybrid owner has to be able to justify the cost on other terms, depending on personal or political priorities - reduced dependence on foreign oil or reduced emission of pollutants and greenhouse gases," he said.

Those shopping for hybrids should consider their driving habits.

"Hybrids do the most good (save the most fuel) when they are driven in stop-and-go traffic. Driven in this way they take maximum advantage of the regenerative braking system's ability to capture and store energy for later use," Edmunds said.

When driven on interstates as a daily commuter, the hybrid powertrain isn't contributing as much, so you might as well shop for a fuel-efficient gasoline engine, he said.

## ONE-MODE HYBRIDS

One-mode hybrids boost fuel mileage by about 20 percent. These vehicles are fitted with a small battery pack, regenerative braking to return energy to the battery pack and the engine shuts off at idle. The motors also assist acceleration when needed.

These hybrids are based on standard production models, of which General Motors offers several, including the Saturn Vue and Chevrolet Malibu.

The Malibu hybrid sedan has EPA fuel-mileage ratings of 24 mpg city and 32 highway, which compares with 22/30 for the four-cylinder gasoline-engine model.

One-mode hybrids are also less expensive than two-mode hybrids. And, because the battery pack is small, the trunk and passenger space is unaffected.

## TWO-MODE HYBRIDS

The two-mode hybrid is what most consumers tend to think of as a hybrid - a sometimes electric car, Edmunds said.

The icon of the two-mode is the Toyota Prius, but there also are larger versions in the Camry sedan and Highlander crossover. Nissan's Altima sedan, the Saturn Vue Green Line and the Ford Escape are also two-mode hybrids.

The two-mode system uses battery power at speeds up to about 30 mph. And, as with the one-mode, has regenerative braking and engine stop at idle. The Camry hybrid has EPA fuel economy ratings of 33/34, which compares with 21/31 for the gasoline four-cylinder. The Chevrolet Tahoe hybrid, which weighs more than two tons and is powered by a 332-horsepower V-8, has mileage ratings of 21/22 or 20/20 with four-wheel drive.

Two-mode sedans have compromised trunk space to accommodate the batteries. Because sport-utility vehicles are larger, the space loss is less noticeable.

## HYBRID CHOICES

A gasoline-electric hybrid integrates an internal-combustion engine and one or more electric motors that operate together or separately. Prices are base manufacturer suggested retail and include destination fees. Horsepower ratings are combined engine and electric motor output.

\$20,000s: MSR - POWER - MODE - MPG

- Chevrolet Malibu: \$22,790; 164-hp, four-cylinder one-mode; 24/32 mpg

- Honda Civic: \$23,235; 110-hp, four-cylinder two-mode; 40/45 mpg

- Saturn Aura: \$22,790; 164-hp, four-cylinder one-mode; 24/32 mpg

- Toyota Prius: \$21,760; 110-hp, four-cylinder two-mode; 48/45 mpg

- Saturn Vue: \$24,795; 172-hp, four-cylinder one-mode; 25/32 mpg

\$25,000 and up:

- Ford Escape SUV: \$27,170; 155-hp, four-cylinder two-mode; 34/30 mpg

- Mazda Tribute: \$26,120; 155-hp, four-cylinder two-mode; 34/30 mpg

- Mercury Mariner: \$27,860; 155-hp, four-cylinder two-mode; 34/30 mpg

- Nissan Altima: \$25,795; 158-hp, four-cylinder two-mode; 35/33 mpg

- Toyota Camry: \$25,860; 147-hp, four-cylinder two-mode; 33/34 mpg

\$40,000s:

- Toyota Highlander: \$40,635; 270-hp V-6 two-mode; 33/34 mpg

- Lexus RX 400h: \$42,045; 268-hp, V-6 two-mode; 27/24 mpg

\$50,000 or more:

- Chevrolet Tahoe: \$50,490; 332-hp, V-8 two-mode; 21/22 mpg

- GMC Yukon: \$50,945; 332-hp, V-8 two-mode; 21/22 mpg

- Lexus GS 450h: \$55,665; 340-hp, V-6 two-mode; 22/25 mpg

- Lexus LS 600h: \$104,765; 438-hp, V-8 two-mode; 20/22 mpg

Available later this year:

- Dodge Durango and Chrysler Aspen, two-mode SUVs.

- Chevrolet Silverado and GMC Sierra, full-size, two-mode pickups.

Sources: Edmunds.com, KelleyBlueBook.com and manufacturers.

*Choosing the right hybrid depends on driving habits and cost by Mark\_Maynard*