

## HYBRID-ELECTRIC VEHICLES

It's no accident the most fuel-efficient vehicles in some classes for the 2005 model year are hybrid-electric vehicles (HEVs). Hybrids can be configured in many different ways to achieve a variety of different objectives. They combine the best features of the internal combustion engine with an electric motor and can significantly improve fuel economy without sacrificing performance or driving range. HEVs may also be configured to provide electrical power to auxiliary loads such as power tools.

HEVs are primarily propelled by an internal combustion engine, just like conventional vehicles. However, they also convert energy normally wasted during coasting and braking into electricity, which is stored in a battery until needed by the electric motor. The electric motor is used to assist the engine when accelerating or hill climbing and in low-speed driving conditions where

internal combustion engines are least efficient. Unlike all-electric vehicles, HEVs now being offered do not need to be plugged into an external source of electricity to be recharged; conventional gasoline and regenerative braking provide all the energy the vehicle needs.

Potential buyers should also be aware that the federal government is currently offering tax incentives for HEVs and other alternative fuel vehicles. Some states also offer incentives.

Additional information on HEVs, including tax incentives, can be found at [www.fueleconomy.gov/feg/hybrid\\_sbs.shtml](http://www.fueleconomy.gov/feg/hybrid_sbs.shtml). Annual fuel cost is estimated assuming 15,000 miles of travel each year (55% city and 45% highway) and a gasoline fuel cost of \$1.80 per gallon (regular unleaded).

	Trans Type / Speeds	Eng Size / Cylinders	MPG City / Hwy	Annual Fuel Cost	Battery Size / Type
--	------------------------	-------------------------	-------------------	---------------------	------------------------

### TWO SEATERS

#### HONDA

Insight .....	AV .....	1.0/3	57/56 .....	\$483 ...	144 V, Ni-MH
.....	M5 .....	1.0/3	61/66 .....	\$429 ...	144 V, Ni-MH

### COMPACT CARS

#### HONDA

Civic Hybrid (LB) .....	AV .....	1.3/4	48/47 .....	\$562 ...	144 V, Ni-MH
Civic Hybrid .....	AV .....	1.3/4	47/48 .....	\$575 ...	144 V, Ni-MH
Civic Hybrid (LB) .....	M5 .....	1.3/4	46/51 .....	\$562 ...	144 V, Ni-MH
Civic Hybrid .....	M5 .....	1.3/4	45/51 .....	\$575 ...	144 V, Ni-MH

### MIDSIZE CARS

#### TOYOTA

Prius .....	AV .....	1.5/4	60/51 .....	\$491 ...	202 V, Ni-MH
-------------	----------	-------	-------------	-----------	--------------

### STANDARD PICKUP TRUCKS 2WD

#### CHEVROLET

C15 Silverado Hybrid 2WD	A4 .....	5.3/8	18/21 ....	\$1,420 ...	Lead Acid
--------------------------	----------	-------	------------	-------------	-----------

#### GMC

C15 Sierra Hybrid 2WD	A4 .....	5.3/8	18/21 ....	\$1,420 ...	Lead Acid
-----------------------	----------	-------	------------	-------------	-----------

	Trans Type / Speeds	Eng Size / Cylinders	MPG City / Hwy	Annual Fuel Cost	Battery Size / Type
--	------------------------	-------------------------	-------------------	---------------------	------------------------

### STANDARD PICKUP TRUCKS 4WD

#### CHEVROLET

K15 Silverado Hybrid 4WD	A4 .....	5.3/8	17/19 ....	\$1,501 ...	Lead Acid
--------------------------	----------	-------	------------	-------------	-----------

#### GMC

K15 Sierra Hybrid 4WD	A4 .....	5.3/8	17/19 ....	\$1,501 ...	Lead Acid
-----------------------	----------	-------	------------	-------------	-----------

### SPORT UTILITY VEHICLES 2WD

#### FORD

Escape HEV 2WD .....	AV .....	2.3/4	36/31 .....	\$818 ...	330 V, Ni-MH
----------------------	----------	-------	-------------	-----------	--------------

### SPORT UTILITY VEHICLES 4WD

#### FORD

Escape HEV 4WD .....	AV .....	2.3/4	33/29 .....	\$872 ...	330 V, Ni-MH
----------------------	----------	-------	-------------	-----------	--------------

#### ABBREVIATIONS:

A ..... Automatic Transmission  
 A-S ..... Automatic Transmission-Select Shift  
 AV ..... Continuously Variable Transmission  
 City ..... MPG on City Test Procedure  
 CNG ..... Compressed Natural Gas

Conv ..... Convertible  
 E85 ..... 85% Ethanol/15% Gasoline  
 Eng Size .. Engine Volume in Liters  
 FFV ..... Flexible Fuel Vehicle  
 Hwy ..... MPG on Highway Test Procedure  
 LB ..... Lean Burn Fuel System

M ..... Manual Transmission  
 NA ..... Not Available at Press Time  
 Ni-MH ..... Nickel-metal hydride  
 T ..... Turbocharger  
 Trans ..... Transmission  
 V ..... Volts

## ETHANOL FLEXIBLE-FUEL VEHICLES

This section contains the driving range and fuel economy values for ethanol flexible-fuel passenger cars and light trucks. Ethanol flexible-fuel vehicles are designed to operate on gasoline, E85 (a mixture of 85% ethanol and 15% gasoline), or any mixture of the two fuels. Annual fuel cost is estimated assuming 15,000 miles of travel each year (55% city and 45% highway) and an average fuel cost of \$1.65 per gallon of E85, \$1.80 per gallon of regular unleaded gasoline, and \$1.95 per gallon of premium unleaded gasoline.

The driving range and fuel economy values are shown for both gasoline and E85. When operating your FFV on mixtures of gasoline and E85, such as when alternating between using these fuels, your driving range and fuel economy values will be somewhere between those listed for the two fuels, depending on the actual percentage of gasoline and E85 in the tank.

	Trans Type / Speeds	Eng Size / Cylinders	MPG City / Hwy	Annual Fuel Cost	Fuel	Range (miles)
<b>COMPACT CARS</b>						
<b>CHRYSLER</b>						
Sebring Conv	A-4	2.7/6	15/20	\$1,455	E85	270
			21/28	\$1,174	Gas	390
Sebring Conv (2-Mode)	A-4	2.7/6	15/20	\$1,455	E85	270
			21/28	\$1,174	Gas	390
<b>MERCEDES-BENZ</b>						
C240 FFV	A-5	2.6/6	14/19	\$1,547	E85	310
			20/25	\$1,331	P	420
C320 FFV	A-5	3.2/6	14/19	\$1,547	E85	310
			20/26	\$1,331	P	430
C320 Sports Coupe FFV	A-5	3.2/6	14/18	\$1,651	E85	300
			19/24	\$1,392	P	400
<b>MIDSIZE CARS</b>						
<b>CHRYSLER</b>						
Sebring 4-dr	A-4	2.7/6	15/20	\$1,455	E85	270
			21/28	\$1,174	Gas	390
Sebring 4-dr (2-Mode)	A-4	2.7/6	15/20	\$1,455	E85	270
			21/28	\$1,174	Gas	390
<b>DODGE</b>						
Stratus 4-dr	A-4	2.7/6	15/20	\$1,455	E85	270
			21/28	\$1,174	Gas	390
Stratus 4-dr (2-Mode)	A-4	2.7/6	15/20	\$1,455	E85	270
			21/28	\$1,174	Gas	390
<b>MERCURY</b>						
Sable	A-4	3.0/6	15/20	\$1,455	E85	310
			19/27	\$1,228	Gas	390
<b>LARGE CARS</b>						
<b>FORD</b>						
Taurus	A-4	3.0/6	15/20	\$1,455	E85	310
			19/27	\$1,228	Gas	390
<b>MIDSIZE STATION WAGONS</b>						
<b>FORD</b>						
Taurus Wagon	A-4	3.0/6	14/19	\$1,547	E85	290
			19/26	\$1,285	Gas	380
<b>MERCURY</b>						
Sable Wagon	A-4	3.0/6	14/19	\$1,547	E85	290
			19/26	\$1,285	Gas	380
<b>SMALL STATION WAGONS</b>						
<b>MERCEDES-BENZ</b>						
C240 Wagon FFV	A-5	2.6/6	14/19	\$1,547	E85	310
			20/25	\$1,331	P	420
<b>SPORT UTILITY VEHICLES 2WD</b>						
<b>CHEVROLET</b>						
C1500 Avalanche 2WD	A-4	5.3/8	11/14	\$2,062	E85	310/540*
			14/19	\$1,688	Gas	410/690*
C1500 Suburban 2WD	A-4	5.3/8	11/15	\$1,903	E85	310/540*
			15/19	\$1,588	Gas	410/690*
C1500 Tahoe 2WD	A-4	5.3/8	11/15	\$1,903	E85	310/540*
			15/19	\$1,588	Gas	410/690*

	Trans Type / Speeds	Eng Size / Cylinders	MPG City / Hwy	Annual Fuel Cost	Fuel	Range (miles)
<b>FORD</b>						
Explorer 2WD FFV	A-5	4.0/6	11/15	\$1,903	E85	290
			16/21	\$1,588	Gas	380
<b>GMC</b>						
C1500 Yukon 2WD	A-4	5.3/8	11/15	\$1,903	E85	310/540*
			15/19	\$1,588	Gas	410/690*
C1500 Yukon XL 2WD	A-4	5.3/8	11/14	\$2,062	E85	310/540*
			14/19	\$1,688	Gas	410/690*
<b>MERCURY</b>						
Mountaineer 2WD FFV	A-5	4.0/6	11/15	\$1,903	E85	290
			16/21	\$1,588	Gas	380
<b>SPORT UTILITY VEHICLES 4WD</b>						
<b>CHEVROLET</b>						
K1500 Avalanche 4WD	A-4	5.3/8	11/14	\$2,062	E85	310/460*
			14/18	\$1,688	Gas	410/620*
K1500 Suburban 4WD	A-4	5.3/8	11/14	\$2,062	E85	310/460*
			14/18	\$1,688	Gas	410/620*
K1500 Suburban AWD	A-4	5.3/8	11/14	\$2,062	E85	310/460*
			14/18	\$1,688	Gas	410/620*
K1500 Tahoe 4WD	A-4	5.3/8	11/14	\$2,062	E85	310/460*
			14/18	\$1,688	Gas	410/620*
K1500 Tahoe AWD	A-4	5.3/8	11/14	\$2,062	E85	310/460*
			14/18	\$1,688	Gas	410/620*
<b>FORD</b>						
Explorer 4WD FFV	A-5	4.0/6	11/15	\$1,903	E85	290
			15/20	\$1,588	Gas	380
<b>GMC</b>						
K1500 Yukon 4WD	A-4	5.3/8	11/14	\$2,062	E85	310/460*
			14/18	\$1,688	Gas	410/620*
K1500 Yukon AWD	A-4	5.3/8	11/14	\$2,062	E85	310/460*
			14/18	\$1,688	Gas	410/620*
K1500 Yukon XL 4WD	A-4	5.3/8	11/14	\$2,062	E85	310/460*
			14/18	\$1,688	Gas	410/620*
K1500 Yukon XL AWD	A-4	5.3/8	11/14	\$2,062	E85	310/460*
			14/18	\$1,688	Gas	410/620*
<b>MERCURY</b>						
Mountaineer 4WD FFV	A-5	4.0/6	11/14	\$2,062	E85	270
			15/19	\$1,688	Gas	360
<b>STANDARD PICKUP TRUCKS 2WD</b>						
<b>CHEVROLET</b>						
C1500 Silverado 2WD	A-4	5.3/8	12/16	\$1,767	E85	310/540*
			16/20	\$1,501	Gas	410/690*
<b>FORD</b>						
Explorer Sport Trac 2WD FFV	A-5	4.0/6	11/15	\$1,903	E85	290
			16/21	\$1,588	Gas	380
<b>STANDARD PICKUP TRUCKS 4WD</b>						
<b>CHEVROLET</b>						
K1500 Silverado 4WD	A-4	5.3/8	11/14	\$2,062	E85	310/460*
			15/18	\$1,688	Gas	410/620*
<b>FORD</b>						
Explorer Sport Trac 4WD FFV	A-5	4.0/6	11/15	\$1,903	E85	290
			15/20	\$1,588	Gas	380

\* Vehicle is available with various tank sizes. Driving ranges are shown for the smallest and largest available fuel tanks.

## DIESEL VEHICLES

This section contains fuel economy values for diesel-fueled vehicles. Diesel fuel contains approximately 10% more energy per gallon than gasoline. In addition, diesel engines have higher compression ratios, run “lean,” and are unthrottled, giving them a substantial fuel economy advantage over gasoline engines. Annual fuel cost is estimated assuming 15,000 miles of travel each year (55% city and 45% highway) and a diesel fuel cost of \$1.55 per gallon.

	Trans Type / Speeds	Eng Size Cylinders	MPG City / Hwy	Annual Fuel Cost	Notes / Abbreviations
<b>SUBCOMPACT CARS</b>					
<b>VOLKSWAGEN</b>					
New Beetle .....	M-5	1.9/4	38/46	\$567	T
.....	A-S6	1.9/4	36/42	\$611	T
<b>COMPACT CARS</b>					
<b>VOLKSWAGEN</b>					
Golf .....	M-5	1.9/4	38/46	\$567	T
.....	A-S5	1.9/4	32/43	\$646	T
Jetta .....	M-5	1.9/4	38/46	\$567	T
.....	A-S5	1.9/4	32/43	\$646	T
<b>MIDSIZE CARS</b>					
<b>MERCEDES-BENZ</b>					
E320 CDI .....	A-5	3.2/6	27/37	\$774	T

	Trans Type / Speeds	Eng Size / Cylinders	MPG City / Hwy	Annual Fuel Cost	Notes / Abbreviations
<b>VOLKSWAGEN</b>					
Passat .....	A-S5	2.0/4	27/38	\$751	T
<b>SMALL STATION WAGONS</b>					
<b>VOLKSWAGEN</b>					
Jetta Wagon .....	M-5	1.9/4	36/47	\$567	T
.....	A-S5	1.9/4	32/43	\$646	T
<b>MIDSIZE STATION WAGONS</b>					
<b>VOLKSWAGEN</b>					
Passat Wagon .....	A-S5	2.0/4	27/38	\$751	T
<b>SPORT UTILITY VEHICLES 4WD</b>					
<b>JEEP</b>					
Liberty .....	A-4	2.8/4	NA	NA	T

## COMPRESSED NATURAL GAS VEHICLES

This section supplies the driving range and fuel economy values for vehicles that operate on compressed natural gas (CNG). CNG fuel is normally dispensed in “equivalent gallons,” where one equivalent gallon is equal to 121.5 cubic feet of CNG. Therefore, the fuel economy values are shown in miles per gallon-equivalent. Annual fuel cost estimates are based on an average fuel price of \$1.05 per gasoline equivalent gallon of CNG.

The driving range is shown in miles and represents the distance the vehicle can travel on a full tank (or tanks) of fuel during combined city and highway driving (55% city and 45% highway).

	Trans Type / Speeds	Engine Size / Cylinders	MPG City/Hwy	Annual Fuel Cost	Fuel	Range
<b>COMPACT CARS</b>						
<b>HONDA</b>						
Civic .....	A V	1.7/4	30/34	\$491	CNG	200
<b>STANDARD PICKUP TRUCKS 2WD</b>						
<b>CHEVROLET</b>						
C2500 HD Silverado 2WD ..	A-4	6.0/8	9/12	\$1,575	CNG	180
<b>GMC</b>						
C2500 HD Sierra 2WD .....	A-4	6.0/8	9/12	\$1,575	CNG	180

	Trans Type / Speeds	Engine Size / Cylinders	MPG City/Hwy	Annual Fuel Cost	Fuel	Range
<b>STANDARD PICKUP TRUCKS 4WD</b>						
<b>CHEVROLET</b>						
K2500 HD Silverado 4WD ..	A-4	6.0/8	9/12	\$1,575	CNG	180
<b>GMC</b>						
K2500 HD Sierra 4WD .....	A-4	6.0/8	9/12	\$1,575	CNG	180

**ABBREVIATIONS:**

A ..... Automatic Transmission  
 A-S ..... Automatic Transmission-Select Shift  
 AV ..... Continuously Variable Transmission  
 City ..... MPG on City Test Procedure  
 CNG ..... Compressed Natural Gas

Conv ..... Convertible  
 E85 ..... 85% Ethanol/15% Gasoline  
 Eng Size .. Engine Volume in Liters  
 FFV ..... Flexible Fuel Vehicle  
 Hwy ..... MPG on Highway Test Procedure  
 LB ..... Lean Burn Fuel System

M ..... Manual Transmission  
 NA ..... Not Available at Press Time  
 Ni-MH ..... Nickel-metal hydride  
 T ..... Turbocharger  
 Trans ..... Transmission  
 V ..... Volts

# FUEL CELL VEHICLES

## Advanced Transportation Technology

## The Challenges Ahead

Although fuel cell vehicles (FCVs) are not expected to reach the mass market for at least a decade, a limited number will be available for sale or lease in 2004-2005 to demonstration fleets in parts of the country with a readily accessible hydrogen supply.

FCVs represent a radical departure from conventional vehicles with internal combustion engines. They use emerging technology with the potential to reduce harmful emissions substantially, as well as energy use and our dependence on foreign oil.

FCVs are propelled by electric motors powered by fuel cells, which produce electricity from the chemical energy of hydrogen. They are more efficient than conventional vehicles, and the only by-product of a hydrogen fuel cell is water. FCVs may also incorporate other advanced automotive technologies to increase efficiency.

Much work remains before FCVs can be mass-marketed and sold at local dealerships. Significant research and development is required to reduce costs and improve performance in areas such as driving range, cold-weather operation, and durability. A new refueling infrastructure may also be required to make hydrogen fuel widely available to consumers.

Automakers, fuel cell and component developers, government agencies, and others are working hard to accelerate the introduction of FCVs. In fact, partnerships such as the DOE-led FreedomCAR Initiative and the California Fuel Cell Partnership have been formed to encourage private companies and government agencies to work together to prove this technology's viability and move FCVs toward widespread commercialization. For more information about FCVs and links to fuel cell websites, please visit [www.fueleconomy.gov/feg/fuelcell.shtml](http://www.fueleconomy.gov/feg/fuelcell.shtml).

Motor	Energy Storage Device	Fuel	Miles per kilogram (City/Hwy)	Range (mi)
<b>SUBCOMPACT</b>				
<b>HONDA</b>				
FCX	80 kW DC* Brushless	9.2 Farad Ultra Capacitor	Hydrogen	62/51 190
<b>COMPACT</b>				
<b>FORD</b>				
Focus, 2WD	65 kW AC*	Ni-MH Battery*	Hydrogen	NA** NA**

\* kw = kilowatts; DC = direct current; AC = alternating current; Ni-MH = nickel metal hydride  
 \*\* The fuel economy values and driving range were not available at press time. See [www.fueleconomy.gov](http://www.fueleconomy.gov) for updated information.

## SAMPLE FUEL ECONOMY LABEL


(Attached to New Vehicle Window)

Use these two estimates to compare to other models.

Compare this vehicle to others by using the FREE FUEL ECONOMY GUIDE available in the dealer showroom

This is the average estimate for city driving.

These numbers represent a range of fuel economy that most drivers achieve with this particular model.



**CITY MPG**  
**24**

**HIGHWAY MPG**  
**31**

This is the average estimate for highway driving.

These numbers represent the range of fuel economy for other models of this size class.

**Actual Mileage** will vary with options, driving conditions, driving habits and vehicle's condition. Results reported to EPA indicate that the majority of vehicles with these estimates will achieve between

20 and 28 mpg in the city  
and between  
26 and 36 mpg on the highway.

**2005 GREEN CAR 2WD, 4 CYL., 2.0 LITER, MULTIPOINT FUEL INJECTION, 4-SPEED AUTO TRANS, CATALYST.**

**Estimated Annual Fuel Cost: \$999**

**For Comparison Shopping**  
All vehicles classified as COMPACT CARS have been issued mileage ratings ranging from

13 to 48 mpg city  
and  
19 to 51 mpg highway.

This fuel cost is based on 15,000 miles/yr at \$1.80 per gallon for regular unleaded and \$1.95 for premium.

See [www.fueleconomy.gov](http://www.fueleconomy.gov)

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