Agenda Item 10.

MEMORANDUM

TO: Programs, Projects and Operations Subcommittee

SUBJECT: Hybrid Vehicle Review

DATE: August 30, 2006

FROM: Jean Friends Tait

On Thursday, August 24th, the Papio-Missouri River NRD Equipment Committee (comprised of Martin Cleveland, Jerry Herbster, Bill Warren and the writer) met to discuss Chairperson Thompson's request for NRD staff to research hybrid vehicles for possible use within the District's vehicle fleet. Sources of information used for discussion include article(s) from: consumerresearch.com, Road and Travel Magazine "2006 Green Vehicle Buyer's Guide," ineed2know.org. USA Today, Autoweek.com and various manufactures websites (copies enclosed).

The Committee's discussion began with existing vehicles within our current fleet. The majority of the District's fleet vehicles are mid-heavy duty trucks. The District also has six compact trucks and three SUVs. The committee discussed individual vehicle use and terrain to determine what vehicles would be good candidates for hybrid. The SUVs and compact trucks would appear to be good choices to begin the transfer to "green."

According to splise.com, "the top ranking hybrids in order from 1 being the best ranking to 11 being the lowest ranking are:

1. Toyota Prius
2. Honda Civic Hybrid
3. Honda Accord Hybrid
4. Ford Escape Hybrid
5. Honda Insight
6. Toyota Highlander Hybrid
7. Toyota Camry Hybrid
8. Lexus RX 400 H
9. Mercury Mariner Hybrid
10. Chevrolet Silverado Hybrid
11. Lexus Gs 450H

The reviews of the Toyota Prius (*est. $21,725) at 60 mpg/city and the Honda Civic Hybrid (*est. $23,500) at 49 mpg/city are exceptional and the Toyota Prius won the Motor Trend Car of the Year Award per Consumer Search.com. For SUVs, the Ford Escape Hybrid (*est. $27,000) is ranked the highest at 36 mpg/city in the 4-wheel drive version. "Motor Trend praises the Escape's city fuel economy," says Consumer Search.

The writer contacted Ron Reisner, MUD Fleet Manager, who told me that they had not conducted a study or made any consideration to include hybrid vehicles to their existing fleet. Steve Anderson, OPPD Fleet Manager, informed me that they currently have three

hybrid vehicles in their fleet. They have two Honda Civic automobiles (in fleet for three years) and one Ford Escape SUV (in fleet for one year). OPPD intends to add three more Ford Escape to their fleet in 2008. "at under $3.00 per gallon for gasoline, there is no cost savings," said Steve. The environmental issue of lowering exhaust emissions into the air is among the strongest reasons for purchasing hybrid.

Some important facts about hybrid cars were noted at ineed2know.org website. They state that hybrids get better gas mileage and produce less pollution than a conventional engine. The hybrid cars cost from $3,500 - $6,000 more per car than their conventional engine counterpart. Most hybrids are made from existing makes and models and this is increasing every year. The hybrid may save on gas, but battery replacement can be very expensive. If the battery needs to be replaced and not covered under the warranty period a replacement battery could run between $1,000 - $3,000.

The Staff Equipment Committee all agreed that as a Natural Resources District that it is part of our responsibility to make the best environmental choices whenever possible. Fuel alternatives and active fuel management systems are getting better every year. The Committee would like to begin the process of purchasing a hybrid starting with a replacement vehicle for the GM next fiscal year. We would also review each vehicle due for replacement and look at the work/vehicle requirements to purchase hybrids whenever possible.

Hybrid vehicles available in 2005/2006:

Vehicle	2005	2006
Toyota Prius (automobile)	X	X
Honda Insight (automobile)	X	X
Honda Civic (automobile)	X	X
Honda Accord (automobile)	X	X
Toyota Highlander (SUV)	X	X
Ford Escape (SUV)	X	X
Lexus RX400 (SUV)	X	X
Mercury Mariner (SUV)	X	X
GM Silverado (full size truck)	X	X
GM Sierra (full size truck)	X	X
Dodge Ram (full size truck)		X
Nissan Altima (automobile)		X
Lexus GS (automobile)		X
Saturn VUE (SUV)		X

/pt/com/ppo/2006/December/hybrid_list

ineed2know.org

The Answers You're Looking For - Fast, Friendly and Free.

We Know: 5 Important Facts About Hybrid Cars

1. Definitely a Pollution Solution
Hybrid cars combine a gasoline engine with a battery-powered electric motor. They have been on the market in the US since 1999.

A hybrid engine gets significantly better gas mileage than a conventional gas engine. Hybrids consume less gas and produce less pollution per mile than conventional gasoline engines. The hybrid engine currently sold in the Honda Civic Hybrid gets 10 to 15 miles more per gallon than a regular gas engine in the same car. The hybrid engine of the Prius, made by Toyota, produces 90 percent fewer harmful emissions than a comparable gasoline engine. No doubt about it, these cars are good for the environment!

2. Expect a Higher Price Tag
The hybrid cars currently on the market cost from $3500 to $6000 more per car than comparable cars with conventional gas engines. This means that the amount of money you save, or don't save, by buying a hybrid is very much dependent on gasoline prices. If gas is priced at $1.80 per gallon (we wish), it could take the average driver (15,000 miles per year) between 10 and 15 years to amortize the $3500 increase in the initial price. However, the higher gas prices go, the less time it takes to recoup the higher price tag.

3. Hybrids Come with Tax Breaks from Uncle Sam
The Federal government is offering tax breaks to buyers of hybrid cars through 2006. The amount of the tax break depends on the year you file and the tax bracket you're in. Some states also offer tax breaks for hybrid buyers. This is certainly a case where being an environmentalist has its tax advantages.

4. A Growing Number of Makes and Models
Most hybrids are made from existing car models. For example, the Honda Civic is available as a hybrid, as is the Ford Escape. The Toyota Prius and the Honda Insight are both available as hybrids. GMC and Chevy currently make two hybrid models, both pickup trucks, the C15 Silverado and the C15 Sierra. Both the Honda Accord and the Toyota Camry should also be available with a hybrid engine soon. Lexus, Saturn, Honda and Chevrolet are planning Sports Utility Vehicles (SUVs) with hybrid engines in the next two years. And, the Chevy Malibu will go hybrid in 2007.

5. No Ordinary Battery
Hybrid buyers may be saving on gas, but they are sporting a much more expensive battery. The cost of hybrid batteries ranges from $1,000 to $3,000, although we have gotten reports of some hybrid owners being quoted $4,800 to $8,000! This could be due to the current high demand for hybrid cars. And, although the hybrid battery may be covered under the car's warranty, once the warranty expires, you could find yourself in for more of a 'charge' than you expected.

Remember, car magazines - like Motor Trend - and consumer magazines - like Consumer Reports - are great places to find about more about the environmental, mechanical and financial issues related to hybrid cars.

Hybrid Cars available in the U.S.	2005	2006
Toyota Prius	X	X
Honda Insight	X	X
Honda Civic	X	X
Honda Accord	X	X
Toyota Highlander	X	X
Ford Escape	X	X
Lexus RX400	X	X
Mercury Mariner	X	X
GM Silverado	X	X
GM Sierra	X	X
Dodge Ram		X
Nissan Altima		X
Lexus GS		X
Saturn VUE		X

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      - Luxury Large Car
      - Luxury Large SUV
      - Luxury Mid-Size Car
      - Luxury Mid-Size SUV
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3 **HONDA ACCORD HYBRID**		Hybrid Car Pricing Reviews, Ratings, & Pricing Info. Compare latest prices from dealers. www.edmunds.com **more Accord Hybrid lin**
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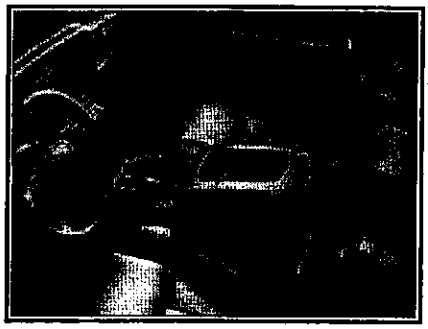
6 **TOYOTA HIGHLANDER HYBRID**		All New 2007 Toyotas Sensational Below Invoice Prices Free MSRP, Invoice & Actual Quotes www.NewCarInsider.com **more Toyota Highlander Hybrid lin**
7 **TOYOTA CAMRY HYBRID**		Toyota Camry at Carmax Actual Prices & Photos of Over 20,000 New & Used Vehicles Online www.carmax.com **more Toyota Camry Hybrid lin**
8 **LEXUS RX 400H**		Lexus at Carmax Actual Prices & Photos of Over 20,000 New & Used Vehicles Online www.carmax.com **more Lexus Rx400h lin**
9 **MERCURY MARINER HYBRID**		Mercury Mariner Hybrid Get free price quotes, read reviews compare models and more - MSN Aut Mercury.Autos.MSN.com **more Mercury Mariner Hybrid lin**
10 **CHEVROLET SILVERADO HYBRID**		5 Facts about Hybrid Cars Things you should know before choosing a hybrid vehicle. www.ineed2know.org **more Silverado Hybrid lin**

11 brands **1**, 2, Next >

by Martha Hindes

Chevrolet Silverado Hybrid



If one plans to make a statement, it's best to do it in a big way, right? That could be GM's philosophy in bringing early hybrid vehicles to market. Among the biggest vehicle guns for the auto maker are full-size pickups, specifically the Silverado half-ton that casts a giant shadow at GM. As its overall best seller, what better way to boost environmental responsibility in the rough and tumble world of pickups, and often times their equally rough and tumble pickup owners.

For 2006, GM has made hybrid extend-cab Chevy Silverados (and companion GMC Sierras) available nationwide. That followed launch two years ago in environmentally sensitive Alaska, California, Florida, Nevada, Oregon and Washington. For those dubious about whether such new technology will stand the test of time, GM includes an eight-year, 100,000-mile warranty on all hybrid components of the system that combines a 14-kilowatt electric motor (that functions as a generator) mated to a 295 horsepower Vortec 5300 V-8 gasoline engine. Compared with more advanced hybrid systems, it seems a good match of insurance policy and reasonable options cost ($1,500) for a basic hybrid system in a high $20K base vehicle GM proclaims will boost fuel economy by 10 percent. EPA fuel economy estimates are 18/21 for two-wheel-drive models and 17/19 for 4X4s. Gains come in part from the engine's stop-restart function when the vehicle is coasting or idling at a light, and from braking that helps recharge a bank of batteries under second row seating.

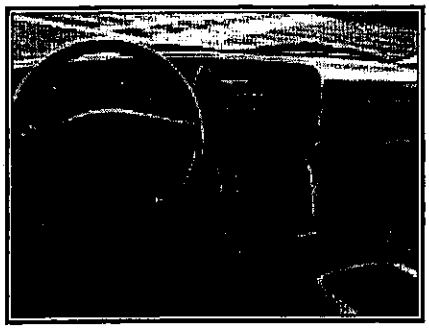
Since a lot of pickup duty can be heavy duty, Chevy's hybrid Silverado had to haul and tow with the best of them. GM offers a heavy-duty suspension package and rates top towing capacity at 7,700 pounds. Those first steps into hybrid land have sometimes been dubbed hybrid-mild by critics. GM's also readying the launch of more sophisticated hybrid vehicles with 2007 models, the upcoming Saturn VUE Greenline Hybrid and Chevy Malibu hybrid. Also in the wings are "two-mode" hybrid versions of the redesigned Chevy Tahoe and GMC Yukon, expected to increase fuel economy by 25 percent, with technology developed in a pre-competitive, cooperative agreement with DaimlerChrysler. That follows the idea that getting the biggest size and biggest selling vehicles into the hybrid fold can benefit both the owner and the environment. And for folks in the field who might need to run some power equipment, there are four AC outlets in the truck bed ready to provide the juice.

RELATED LINKS

Chevrolet Website

by Martha Hindes

GMC Sierra Hybrid



For the past year or so, GMC's slogan has been "professional grade." That tagline gets an extra kick with the 2006 hybrid version of the Sierra half-ton pickup - cousin of Chevy's hybrid Silverado. Case in point. Many Sierras are bought for heavy-duty work such as construction industry jobs or for down and dirty camping trips far from the maddening crowds. Wouldn't it be nice to plug a coffee pot or microwave oven into a standard AC electric outlet in the middle of nowhere and have dinner on schedule instead of trying to fan a campfire into life? That's reality with the hybrid Sierra. With four 120-volt 20 amp underseat or truck bed power outlets, one could operate power equipment or even save a refrigerator full of food for 30 hours during a major power outage.

The gasoline electric hybrid Sierra gives out lots of voltage, but it doesn't need to take it back in through a special heavy duty garage outlet or recharge posting station halfway through a trip. Rather, the motions of driving, braking or coasting alone continuously recharge the 40-volt lead acid battery pack that assists the drive system with starting and acceleration, and helps boost mileage.

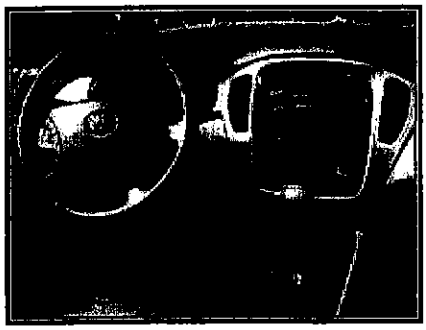
Once past the differences in technology beyond standard internal combustion engine action, Sierra remains a GMC staple workhorse that retains its heavyweight hauler ability to tow as much as 7,700 pounds. It comes in budget-minded two-wheel drive, or four-wheel drive version when demands are tough.

Changes for '06 models -- available throughout the U.S. for the first time -- include revised extendible outside camper mirrors for a greater field of vision. Two new colors, Steely Gray Metallic and Stealth Gray Metallic, are added. On the amenities side, there's available XM Satellite radio with steering wheel controls combined with GM's OnStar safety/communications system. And for the discerning camper, premium Bose sound is available with a passenger-side Panasonic DVD system, combined with next-generation Radio Data System. Gone are multiple antennas. Signal receptors now combine as one unobtrusive module.

Sierra has more than one earth friendly trick. Among non-hybrid versions is an Ultra Low Emissions Vehicle (ULEV) version, and a 6.0-liter, V-8 that can run on gasoline or compressed natural gas. Upmarket amenities include chromed front bumpers, tilt-adjustable power steering, full-size spare, heavy duty battery, "PASSLock II" theft deterrent, and driver information system. For those intent on going hyrid and who don't mind plunking down about a high $20K base, traveling just got a whole lot more interesting.

Toyota Hybrid Highlander

by Martha Hindes



Seems that every auto maker with a penchant for going hybrid has chosen its own niche for the honors. So far, Ford has captured the compact sport utility segment with its Escape and Mercury Mariner, Honda took the subcompact prize with its innovative two-person Insight, GM honed in on hunky, full-duty pickup trucks with a mild hybrid powertrain. And Toyota? Well the Japanese auto maker with experience selling fuel efficient green cars in its own humanity-packed country has decided to go -- everywhere.

In addition to its earliest Prius five-door and later Lexus RX400h, Toyota and company added a hybrid version of its best-selling Highlander sport utility to its fleet, the only available full-size, seven passenger sport utility in 2006 green stables. Bringing out dramatically different models with leading edge, innovative high tech has to be a difficult task. Authoritative handling and hauling seem to belie the kind of finesse one would find in a luxury automobile. But Highlander performs on the amenities side as well as it does with technology, adding a Limited edition equipped with the most in-demand luxury items including touch screen DVD nav system. We appreciated its smooth ride that barely hinted of its "green" roots except for a slight generator whine instead of an exhaust rumble.

Under the Highlander's hood is a 3.3-liter V-6 gasoline-powered engine that gets a performance boost and fuel economy diet when mixed with high-torque electric drive motor-generators. Toyota calls the system "Hybrid Synergy Drive." It doubles the power output of the smaller sibling Prius auto that has a minimal demand for brute force capability. Horsepower of the combined Highlander drive systems is a forceful 268, giving the "intelligent" electric four-wheel-drive version of Highlander enough oomph to go zero-to-60 in a mere 7.3 seconds, or to tow about 3,500 pounds. But wait at a stoplight and, unless it's expected, there's the initially unnerving realization that everything has stopped. Like most hybrids, Highlander simply turns itself off momentarily rather than waste fuel idling. In the "who's counting" category, we are. Impressive numbers fall off the page in succession.

Highlander's 4X2 model gets a 33 city/28 highway miles per gallon EPA rating, at a time most large SUVs can barely live in the mid-to-high teens mileage wise. Highlander's "intelligent" 4X4 system earns 31/27 MPG, but includes extended electric-mode operation for low speed or stop-and-go driving. As with other hybrid systems, the Highlander rebuilds its own electricity supply during such actions as braking. Energy creating friction recharges the onboard battery pack to ease engine use or run the vehicle without it. Balance its $35,553 pricetag as tested (4x4) against expected fuel savings over the long haul.

Green Vehicle Buyer's Guide

by Martha Hindes

Mercury Mariner Hybrid

It's only fitting that a distinctive characteristic of the nautical sounding Mercury Mariner full hybrid is its definitive waterfall grille. Smartly tailored. Eye catching and uncluttered in style. It helps set the tone that this is not just an imitation version of the Ford Escape hybrid, but a clearly classy hybrid of its own. After a year of success with Escape, it was time for Ford, in '06, to move in a more refined direction, capturing import intenders before they could move to offshore brands in their quest to go green. Escape will get you into a sporty hybrid SUV. Mariner will get you there with elegant upmarket style. It's not a surprising entry from an auto company that's been stressing "environment" with its green manufacturing facilities and most recently, its participation in the development of a Midwest alternative fuel "ethanol corridor."

Upscale is clearly the direction earth friendly vehicles have been moving with growing publicity, acceptance, and the stark realization something does need to be done to help the planet on a personal level. But Mercury and its compatriots are more than feel good cars. They really do make gains in fuel economy, and in filtering out polluting emissions as the industry stretches toward its ultimate goal of vehicles powered by fuel cell propulsion systems that leave nothing but water vapor in their wake. Parent Ford's also working on clean diesels, hydrogen IC engines, and fuel cells.

Under the skin of the Mariner, there's the same foundation as the Escape, including a gasoline-electric combo of power sources that, blended, allow it to function at its ultimate level of clean 33/29 MPG efficiency while leaving room for enough performance to tow 1,000 pounds. Base of the system is Ford's 2.3-liter four-cylinder Duratec engine, paired with two electric motors that alternate between expending and generating electricity. Engine and motors work in concert for quick acceleration. But Mariner can run on a blend of both or glide on electric power alone. Electricity regenerates from the functions of driving, coasting and braking that begins the instant the driver's foot moves off the gas pedal. There's no outlet to plug into to fill the "electric fuel tank" nickel-metal-hydride battery pack under a flat cargo floor. Mariner creates its own.

Interior treatments are upscale, with leather and satin aluminum trim among expected luxurious amenities. The suspension is tuned to provide expected high end agile road manners while sipping lightly on fuel. With an expected max battery life of 10-years or 150,000 miles, one can enjoy driving an SUV for five with a clear conscience.

ConsumerSearch SM

Reviewing the Reviews

Hybrid Cars

Full Story - Hybrid Cars Consumer Report

Updated May 2006

This year, we found the most detailed comparison of the Toyota Prius and Honda Civic hybrids at Motor Trend. Both cars have won the prestigious Motor Trend Car of the Year award. We also found a comparison test of the Honda Civic Hybrid and the Toyota Prius at Inside Line.com, an offshoot of the venerable Edmunds.com. A review of the Ford Escape Hybrid at Business Week Online is especially helpful in evaluating hybrid SUVs. Still useful is an earlier article comparing three hybrid cars at Autobytel.com, as well as a roundup by The Car Family, columnists for the National Motorists Association. Although none of these articles specifically cover the newest hybrid Lexus and Toyota SUVs, or the less sophisticated partial hybrids from General Motors, these are the most relevant comparative reviews that we found.

CNet.com is better known for its computer and electronics reviews than its automotive reports, but the site's "Car Technology" section features insightful individual comparison reviews of several hybrid vehicles including the Toyota Prius and Honda Civic Hybrid. CNet also includes lots of technical details about current and upcoming hybrid technology.

Other reviews place hybrid cars in competition with more conventional gasoline or diesel-powered vehicles. Car and Driver magazine, for example, pits the Toyota Prius and Honda Civic Hybrid against the conventional Toyota Echo and the diesel-powered Volkswagen Jetta GLS TDI in a pure economy test. The Car Family compares the Honda Accord Hybrid with its non-hybrid siblings, the four-cylinder Accord DX and V6 Accord LX. We found a similar review at Motor Trend, where the fuel economy of the Ford Escape Hybrid is tested against other small non-hybrid SUVs.

Consumer Reports does not test performance in as much detail as other, more automobile-specific reviews, but we appreciate this review's focus on safety. This year Consumer Reports published an article titled "The dollars & sense of hybrids," which addresses the financial aspects of owning a hybrid car, a topic covered by other reviewers as well. We found helpful, but less comprehensive reviews of hybrid cars at Edmunds.com, Parents magazine, Money Magazine, Kiplinger's Personal Finance, and ForbesAutos.com. We also found value-based vehicle rankings at Motor Trend's IntelliChoice, which seeks to predict long-term cost of ownership.

Nearly every auto maker has introduced (or has plans to introduce) a hybrid car, truck or SUV. Some current Chevrolet Silverado/GMC Sierra 1500 pickup trucks (*est. $28,550 to $33,090) use a 5.3-liter V8 engine assisted by an electric-starter motor. The system is designed to conserve fuel by automatically shutting the engine down when the vehicle is coasting, braking, or at a stop. The starter motor is also

used to spin the gasoline engine up to a higher RPM when starting than in a normal system, which also saves fuel. This system is dubbed a "mild hybrid" in automotive circles, and although it provides a 10% increase in fuel economy, it falls short of other hybrid technologies.

Automotive.com's review praises the Silverado/Sierra's interior, claiming that it is both roomy and comfortable. They point to the cushy seats, although they did not find them comfortable for long trips. Fuel economy is rated at 18 mpg/city and 21 mpg/highway for the 2WD automatic transmission Silverado, not a big improvement over the non-hybrid variant. Editors at Edmunds.com like other pickup trucks better, regardless of potential savings from the hybrid design. They criticize the cheap interior materials and the build quality of this hybrid pickup truck: "We strongly encourage you to try out the competition before you buy," say editors. While adding some hybrid technology to pickup trucks is a step forward for Detroit automakers, reviewers say the Silverado is neither the best pickup truck nor the best hybrid vehicle.

>> Hybrid Cars prices

Since fuel economy is of keen interest to most hybrid-car buyers, we've included EPA mileage estimates for each model as a comparative measure of economy. In real-world mixed driving, however, fuel economy falls short of these estimates. Still, the numbers are revealing when used to compare vehicles. To read more about how the EPA calculates its estimates, visit Fuel Economy.gov (http://www.fueleconomy.gov). This Web site also has reports from real car owners and drivers about their actual mileage, not just the EPA estimates.

The EPA is currently reevaluating how it calculates fuel economy due to recent challenges from the Automobile Association of America (AAA) and other consumer groups. AAA claims that EPA estimates don't accurately reflect what a consumer can expect from regular driving. Still the EPA estimates are a good way to compare vehicles, even if the numbers themselves are somewhat theoretical.

Best Hybrid Cars: The Toyota Prius and Honda Civic Hybrid continue to lead the pack

The Toyota Prius (*est. $21,725) is most often the top pick in reviews as the best hybrid car. The Prius is the best-selling gas-electric hybrid car in world, and it's steadily gaining in popularity. In 2004, Toyota sold more than 50,000 Prius models in the U.S. and was not able to keep up with demand. In 2005, with a production goal of 15,000 per month, sales reached almost 108,000. The next best selling hybrid vehicle is the Honda Civic Hybrid, which sold 26,000 units in 2005.

The Toyota Prius produces very low amounts of exhaust emissions and is considered tops among the ranks of environmentally-friendly vehicles. Compared to the average new car, pollution is cut by almost 90%, according to calculations by Toyota. It meets California SULEV (Super Ultra Low Emission Vehicle) and PZEV (Partial Zero Emission Vehicle) standards.

Power is provided by Toyota's Hybrid Synergy Drive System, which consists of an electric motor assisted by a gasoline engine. The electric motor is used to power the vehicle at low speeds and to help with acceleration at higher speeds. The gasoline engine does not operate at all when the vehicle is stopped or is being driven at lower, city-driving speeds, but it kicks in as the primary power source at highway speeds. Fuel economy for the Prius is excellent; the EPA mileage estimate is 60 mpg/city, 51 mpg/highway, and owners report that they often get 41 to 48 mpg in real-world mixed driving.

The Toyota Prius is considered a midsize hybrid car and has plentiful cargo space. There is comfortable

seating for four adults. Edmunds.com likes the utility of the hatchback and praises the Prius's excellent build quality. It is available only in one trim level, but various option packages include goodies such as an alarm, GPS navigation system, vehicle skid-control system, special lights and more. The Toyota Prius comes with standard four-wheel antilock brakes and traction control. While the 2005 Toyota Prius received five star scores for the driver in frontal impacts and four-star scores for all other passenger positions, tests for 2006 show a decrease to four stars for all positions.

Autobytel.com says it is a great value, and Edmunds.com describes the Toyota Prius as a "full-featured midsize family sedan that just so happens to be the most fuel-efficient and earth-friendly sedan on the market as well." Most members of The Car Family also like the Prius best among hybrid cars. It has a unique, recognizable design, a modern interior and handy hatchback; testers like the fact that the Prius doesn't look like every other car on the road. An interesting but negative point noted by one family member was that the air conditioning had trouble on a hot trip that they took, and they recommended tinting the windows.

The competing Honda Civic Hybrid (*est. $22,150 to $23,650, depending on options) is built on the standard Civic platform. This year the entire Civic lineup has been redesigned,and the Civic wins Motor Trend's Car of the Year award for 2006. The Civic Hybrid is included in the award. The Honda Civic Hybrid also wins an award at IntelliChoice as the Best Overall Value for Compact Cars Over $16,000. Although other Civics are available as coupes or hatchbacks, the hybrid Civic is only available as a four-door sedan.

Honda's hybrid system differs from Toyota's. Whereas Toyota's system is an electric motor assisted by a gasoline engine, Honda uses a gasoline engine assisted by an electric motor when extra power is needed. The Civic's gasoline engine displaces only 1.3 liters, producing 93 horsepower. The electric assist motor is rated at 20 horsepower. Total combined output is 110 horsepower. Honda's hybrid system is called "Integrated Motor Assist" or IMA for short, and this design is also used in other Honda hybrid cars, like the Honda Accord Hybrid.

The 2006 version of the Civic's IMA allows the Civic to be powered by electric power alone under certain driving conditions, such as low speed cruising. However, the Civic Hybrid just about universally fails to impress reviewers with its performance. At Edmunds.com's InsideLine, testers found that the Civic Hybrid was usually in the 13-second range in zero-to-60 speed tests, with a best time of 12.4 seconds, described by editors as "dismal". The Toyota Prius consistently scored in the 11-second range. Reviewers at CNet declare the Civic's acceleration as "decidedly underwhelming".

The 2006 Honda Civic Hybrid car is only available with a constantly variable transmission (CVT). Fuel economy is excellent, with EPA mileage estimates of 49 mpg/city, 51 mpg/highway. Real-world mixed mileage won't be quite as high. These figures are about 30 percent better than other Civic sedans, and it meets the EPA's Partial Zero Emissions standard.

The Honda Civic Hybrid comes standard with front airbags, side-mounted airbags for front-seat passengers and side curtain airbags for both front seat and rear seat passengers from side impacts. It also has standard active head restraints in the two front seats. These devices help to minimize whiplash injuries that occur due to rear impacts. Anti-lock brakes are also standard. The Civic Hybrid car scores well in crash tests, earning praise in reviews. In 2006, Honda Civic Hybrid scores five stars for both the driver and passenger in frontal impacts, four stars for the driver and five stars for the passenger in side impacts. In comparison, the 2006 Toyota Prius scores 4 stars for all positions.

Automotive.com credits the Civic with being among the most refined cars in its class, with generous interior space and comfortable seating for four adults. Parent's Magazine lauds the Civic's safety and reliability record. It also finds the trunk space to be ample for a baby stroller and minor luggage, all while seating four comfortably. However, the Civic Hybrid has less trunk space than the non-hybrid Civic due to battery storage. Also because of the position of the battery, the rear seats do not fold down.

Experts find lots to like about the Honda Civic Hybrid., and last year's model scored first place for value in Car and Driver's "Frugalympics" economy test. Honda Civics are a proven entity with traditionally high resale value, good fuel economy and low maintenance costs, adding to the Civic Hybrid's long-term appeal.

Toyota Prius vs. Honda Civic Hybrid: Test results

In reviews that compare the Toyota Prius and Honda Civic Hybrid, the Prius usually gets the nod. Reviews say the Toyota Prius is more comfortable and more fun to drive than the Civic. One member of The Car Family says that the Civic "looked like every other car," while the hybrid Prius was more distinctive.

In reviews, most experts don't like the Honda Civic's hybrid technology as much as the more sophisticated system in the Toyota Prius.. In a review at CNet, Brian Nadel says, "we think Honda would have done better by starting with a blank slate," referring to the addition of an electric motor to the existing gas engine. Although the Honda Civic Hybrid does get better fuel economy than the standard Civic, it's criticized for being slow and underpowered. Reviewer Nadel feels that "the Civic's gas engine doesn't produce enough torque at low engine speeds, even with the assistance of the electric motor."

Although the 2006 Civic Hybrid's tested zero-to-sixty time of 12.4 seconds does not compare favorably to the Prius (which can accelerate to sixty miles per hour in 10.3 seconds), experts do say that it drives well on the highway at speeds where it gets the best gas mileage. Last year's Civic Hybrid was faster, with an available manual transmission that helped it reach sixty in 12.1 seconds. The 2006 Civic Hybrid is more expensive than last year's model, and a bit pricier than a base-model 2006 Prius.

Most reviews say the Civic Hybrid sedan doesn't quite rise to the level of the Prius, but if you want a sedan instead of a hatchback, the Civic is the best choice right now. Fuel economy isn't quite as good as gas mileage for the Prius. In practical tests, the Prius gets about 35 mpg in city driving (though many owners say the get better than that) and 50 mpg on the highway. The Civic hybrid gets about 26 mpg city/45 mpg highway in practical testing.

Since the Honda Civic Hybrid is a 4-door sedan, with a trunk compromised by storage of the hybrid car's battery pack, cargo capacity is another point where the Civic Hybrid does not compare favorably to the Prius. Trunk capacity of the 2006 Civic Hybrid is about 10.4 cubic-feet, up from 10.0 cubic-feet for 2005 model, but still far short of the 16.1 cubic-foot cargo area of the hatchback Prius. The Toyota Prius also has over four-inches more leg room in the back seat area than the 2006 Honda Civic Hybrid, which actually lost some leg room versus the 2005 model.

Honda Accord Hybrid, Honda Insight, Toyota Camry Hybrid

The Honda Accord Hybrid (*est. $30,990 to $32,990) is built on the regular Accord platform, which was last updated in 2003. It uses the same hybrid system found in the Civic hybrid car. The V6 Accord Hybrid also features Variable Cylinder Management (VCM). This system shuts down the three rear cylinders under a light load to save fuel. Automotive.com claims that the engagement of this feature is hard to detect and that the driver will only know it is operating by noticing the dashboard "ECO" indicator light. VCM is not integrated into the hybrid system, and it is VCM that is responsible for any highway fuel savings, not the hybrid system. VCM is currently not available on non-hybrid cars in the Accord lineup.

In reviews, experts like the Accord's rigid chassis, claiming that the Accord is fun to drive due to its outstanding road manners. Handling is described as nimble, with responsive lane changes. Consumer Guide describes the automatic transmission as smooth, and they like the Accord's steering, handling and build quality. Motor Trend praises the Accord's quiet ride, roomy cabin and cushy seats. Five can be seated comfortably. However, the battery pack does consume some of the trunk space.

Fuel economy for the 2006 model is rated at 25 mpg/city and 34 mpg/highway, down from last year's 29/37, and this brings to light a difference between Honda and Toyota hybrid systems. While the Prius and Camry Hybrid cars get better city mileage than highway, Hondas with IMA get better highway mileage than city. This is a direct consequence of the fact that the Honda system always needs to run the gasoline engine. It cannot run on the electric motor alone. Reviews say it takes a while to pay for the extra cost of the IMA system in fuel savings, and Autobytel editor Brian Chee states, "Amazing as it seems, there is a Honda other than the S2000 that has little practical value – and it's the 2005 Accord Hybrid." After testing the Accord, Prius and Ford Escape Hybrid, he claims that the Accord doesn't go far enough. While it gets a decent 26 mpg, that's less than other hybrid cars, and less than Honda's own non-hybrid Accord DX (starting at *est. $20,500), which costs over $10,000 less.

The Honda Accord costs more than most hybrid cars, but reviews say this has nothing to do with its hybrid technology. Rather, the Accord hybrid car costs more because it includes nearly every Honda option standard. With a zero-to-60 time of about 6.7 seconds, the performance-oriented Accord can reach sixty miles-per-hour nearly three seconds faster than the Prius at 10.3 and two seconds faster than the Toyota Camry Hybrid's 8.9 seconds, making the Accord the fastest hybrid car. Since the Honda Accord Hybrid has a trunk compromised by the storage of the hybrid battery pack, cargo capacity is definitely a point where the Accord Hybrid does not compare favorably to the Toyota Prius. Trunk capacity of the Accord Hybrid is about 11.2 cubic feet vs. the 16.1 cubic feet cargo area of the hatchback Prius.

The 2006 Toyota Camry doesn't include a hybrid vehicle, but Toyota plans an early release for its redesigned 2007 Camry lineup, which includes a hybrid version of the Camry. (*est. $25,900). The Camry Hybrid uses Toyota's Hybrid Synergy Drive system, a system similar to that used in other Toyota hybrid cars, but using an Atkinson-cycle four-cylinder engine, a strategy shared with the Ford Escape Hybrid and Mercury Mariner Hybrid. This particular system uses a 2.4-liter inline four-cylinder engine with 147 horsepower and a 45 horsepower permanent magnet synchronous electric motor, for a total of 192 horsepower. This combination is reported to clock zero-to-60 in 8.9 seconds, quite a bit slower than the performance orientated Honda Accord Hybrid's quick 6.7 seconds but quite acceptable for a design that optimizes fuel economy.

The 2007 Toyota Camry Hybrid will come with an impressive list of standard features, and the only options are a power moonroof, leather interior, heated front seats and a navigation system. The Camry Hybrid comes with standard 16-inch alloy wheels. Safety features include front airbags, front seat side-impact airbags, side curtain air bags for both front and rear seats, driver's knee airbag, a tire pressure monitoring system and antilock brakes (ABS). Also standard is a system that electronically controls braking force, the electronic brake-force distribution (EBD) system.

The Camry hybrid car combines a variety of active driver assist systems called the VDIM. This stands for Vehicle Dynamics Integrated Management system. This system imposes on the ABS and EBD systems a set of stability controls called VSC (Vehicle Stability Control). VSC adjusts car handling to correct oversteer, understeer, loss of traction, braking, etc. to result in better overall vehicle control. The system includes control of throttle-by-wire and brake-by-wire systems.

Government fuel economy estimates are not yet published on official websites, but reviewers in the know claim the figures will be 40 mpg city, 38 highway. The Camry Hybrid has not yet been subjected to government crash testing, but in testing at the independent Insurance Institute for Highway Safety (IIHS), the Camry earned top "Good" scores in front offset crash tests. We'll report back on the 2007 Camry when it becomes available later in the year.

The Honda Insight (*est. $19,330 to $21,530) was first introduced in 2000 and was the first production hybrid car in the U.S. It is available in only one model, a small two-seater with unique aerodynamic bodywork and a flat underbody. Tires are special low rolling-resistance models. It should be considered a commuter car, as cargo capacity and performance are limited. Experts say the Insight is adversely affected by strong crosswinds. The Honda Insight comes standard with dual airbags and ABS. It scores four-star crash-test ratings for all passenger positions.

The Insight uses Honda's "Integrated Motor Assist" or IMA system, combining a 1.0-liter, three-cylinder, gasoline engine and an electric motor. The gasoline engine does most of the work, and the Insight cannot run on the electric motor alone. The Honda Insight can be ordered with two different transmissions – a five-speed manual or a continuously variable automatic transmission (CVT). Fuel economy differs on these models. EPA estimates for the manual transmission Insight is 60 mpg/city, and 66 mpg/highway. With the CVT, estimates are 57 mpg/city, and 56 mpg/highway.

Edmunds.com points out that the fuel economy of the Honda Insight is the highest rated of any vehicle, stating that "Newer hybrid competitors may have eclipsed the Insight in terms of technology and power, but the Insight is still the class leader when it comes to fuel economy and high-tech construction." Automotive.com points out the unique nature of the Honda Insight., "Frugal, yet sporty at the same time, there's nothing else on the road quite like the Honda Insight," and claims that the Insight "makes an ideal commuter car, a great runabout as a second car, and a good car for someone on a budget."

Hybrid SUVs from Ford and Mercury

The Ford Escape Hybrid (*est. $26,900 to $28,535, depending on options) is built on the standard Ford Escape SUV platform. It wins awards at Autobytel and Motor Trend and praise at Business Week Online. The review at Motor Trend praises the Escape's city fuel economy, a hybrid strong point. The Ford Escape also scores high marks at Consumer Guide, where editors praise its maneuverability, cargo room and visibility. It also wins a Best Buy designation at Intellichoice.

The Escape Hybrid uses a system similar to that in the Toyota Prius, a "full" or "parallel" hybrid powertrain. This means it can be driven by its gasoline engine, its electric motor, or both at the same time. The Ford Escape Hybrid SUV meets California SULEV (Super Ultra Low Emission Vehicle) and PZEV (Partial Zero Emission Vehicle) standards. Hydrocarbon emissions are significantly reduced, and there are virtually no evaporative emissions.

- The Escape Hybrid engine is the same 2.3-liter gasoline engine used in other versions of the Ford Escape. However, this engine runs on the "Atkinson cycle," which uses slightly less air and fuel. Fuel economy is excellent for a 4-wheel-drive SUV, at 36 mpg/city (31 mpg for the 2WD version) and 33 mpg/city (29 mpg for the 2WD version). Motor Trend did their own testing, finding that the 4WD Escape Hybrid got 34 mpg in city driving and 25.7 mpg on the highway. Motor Trend calls these numbers "impressive."

Automotive.com praises the Ford Escape Hybrid: "The Escape Hybrid is practical, smooth-driving, stands alongside Toyota near the front of the technological curve, and will amuse its owner for years." Edmunds.com dubs the Escape Hybrid SUV "a very capable small SUV" and notes that the cabin is spacious. This review also praises the Escape's car-like handling. Autobytel says it is "a solid value."

The Ford Escape Hybrid comes with 4-wheel anti-lock brakes standard and scores well in crash testing, with top five-star scores for the driver in frontal impacts, and four stars for the front passenger. It scored five stars for both front- and rear-seat occupants in side impact test. In the frontal offset test, it did not score as well, earning a second-highest "Acceptable" rating. Full-length side curtain airbags are an available option.

The Mercury Mariner Hybrid (*est. $29,225) is a sister vehicle to the Ford Escape Hybrid. Due to the success of the Escape Hybrid, the Mariner Hybrid was introduced a year earlier than planned. In reviews, experts consider it to be an alternative to the Ford Escape Hybrid that offers more style and luxury. Although the Mariner uses the same platform and powertrain as the Escape, it sports distinctive styling and other touches that help make it an upscale vehicle. Some of these touches are found in the interior -- two-tone suede and leather seats, as well as aluminum and chrome color accents. The Mariner is built with more sound insulation than the Escape and is fairly quiet when driven.

Unlike the Escape, the Mariner Hybrid is only available with an all-wheel-drive powertrain, and it uses a Continuously Variable Transmission (CVT). Standard interior features include a premium sound system with a six-disc in-dash CD player, power windows, power door locks, keyless entry with a driver's door keypad, power mirrors and auto dimming rearview mirror. Other interior features include speed control, power driver's seat and an anti-theft system.

The Mariner uses a vertical-bar grille as a distinctive Mercury styling cue. It also has special 16-inch alloy wheels, fog lights, a roof rack, power steering with electric assist and four-wheel anti-lock disc brakes. An upgrade package includes a navigation system, side curtain airbags, front-seat side-impact air bags, a reverse sonar system, heated mirrors and heated seats. At Automotive.com, reviewers say that the Mariner hybrid rides comfortably and that it steers and tracks well. They like the 4WD system, claiming that its operation is smooth and seamless.

Fuel economy for the Mariner Hybrid is excellent (for an SUV). The EPA mileage estimate is 33 mpg/city, 29 mpg/highway, and 31 combined. The Mariner performs well in government crash tests, earning good four-star results in driver's and passenger's front crash tests and excellent five-star scores front and rear side impacts. In the frontal offset test, it did not score as well, earning a second-highest "Acceptable" rating.

Hybrid SUVs from Toyota and Lexus

Hybrid SUVs from Toyota and Lexus were introduced as 2006 models in mid 2005. Thorough reviews that compare and contrast the Toyota and Lexus to the Ford Escape and Mercury Mariner Hybrid have not yet been written. In a review of the Ford Escape Hybrid at Buisness Week Online, reviewer Thane Peterson concludes that the Escape is a bargain when compared to the fancier Toyota Highlander Hybrid and Lexus RX 400h. Both vehicles cost more than the Escape and get poorer fuel economy. The Highlander Hybrid is priced at (*est. $33,030 to $39,290) and the Lexus Hybrid at (*est. $44,660 to $46,060).

The Lexus RX 400h (*est. $44,660 to $46,060, depending on options) is a luxury performance hybrid SUV. It is the most expensive (and luxurious) hybrid vehicle in the marketplace. Based on the conventional Lexus RX 330, the Lexus hybrid SUV is only available in one trim level. Both models are built on a Toyota Camry platform. The list of standard luxury items includes leather upholstery, reclining second-row seats, alloy wheels, stability and traction control, moonroof, navigation system and more. There are only three available options: Heated front seats, a DVD entertainment system and an upgraded audio system.

The Lexus RX 400h Hybrid SUV is rated as a Super Ultra-Low Emission Vehicle (SULEV), which is the cleanest standard attainable. Power is provided by Toyota's "Hybrid Synergy Drive" system, which in the Lexus consists of three electric motors assisted by a 3.3L V6 gasoline engine. The electric motors are used to power the vehicle at low speeds and to help with acceleration at higher speeds. The gasoline engine does not operate at all when the vehicle is stopped or is being driven at lower, city-driving speeds, and it operates as the primary power source at highway speeds. All Lexus RX 400h models are equipped with a continuously variable transmission (CVT). This doesn't slow it down, however. It is fast, capable of accelerating from 0 to 60 miles per hour in 7.2 seconds, and is rated at 268 horsepower.

The Lexus has not yet been subjected to government crash testing, but its sister the RX 330 scored a top five-star rating for the driver and rear passengers, and four stars for the front passenger. In testing at the independent Insurance Institute for Highway Safety (IIHS), the RX 400h earned top "Good" scores in front offset crash tests.

The Lexus RX 400h is well liked in reviews. Edmunds.com calls the RX 400h a "seamless combination of luxury amenities and hybrid technology." Car and Driver praises the performance of the Lexus hybrid SUV: "the Lexus uses hybrid technology to expand both its performance and efficiency parameters, not just to turn it into a model of miserly motoring." And Automobile magazine quips: "Being green has never been so easy." Reviewers at CNet praise the rear seat entertainment system, while criticizing the navigation system's LCD display and the lack of satellite radio. At CNet they also do not like the feel of the power steering, claiming it's sometimes rough. The most frequent criticism of the Lexus hybrid SUV is its high price.

EPA fuel economy estimates for the RX 400h are 31 mpg/city, and 27 mpg/highway. Lexus claims these numbers are 33 percent higher than the non-hybrid RX 330. A review of the Lexus hybrid SUV at Car and Driver points out that city mileage is about twice that of rivals, such as the Jeep Grand Cherokee, which is rated at 15 mpg in the city.

The Toyota Highlander Hybrid SUV (*est. $33,030 to $39,290) was introduced in 2005 as a 2006 model. It is similar to the Lexus RX 400h., but is offered in two trim levels. All models seat seven, a first for a hybrid vehicle. They also all come with anti-lock brakes (ABS) and stability control. The upgraded Limited edition comes with leather upholstery, special interior trim and climate control. There are few options. The Highlander Hybrid is rated as a Super Ultra-Low Emission Vehicle (SULEV). Power is provided by Toyota's "Hybrid Synergy Drive" system, the same hybrid engine used in the Lexus RX 400h.

The Highlander. differs from the Lexus RX 400h. in that both FWD and AWD models are available. The RX only comes as an AWD model. Both versions start with a V6 gasoline engine and two electric motors. One is used to start the V6 engine and charge the batteries. The second motor is used to drive the front wheels. A third motor is used to drive the rear wheels on AWD versions. This motor is standard on the Lexus, but optional on the Toyota. Only the electric motor is used to power the rear wheels; the gasoline engine does not come into play. All Toyota Highlander Hybrid models are equipped with a continuously variable transmission (CVT), and like the Lexus hybrid, the Highlander is quick.

Reviewers like the 2006 Toyota Highlander Hybrid.. Edmunds.com says that the Highlander is "an excellent family SUV that accommodates the needs of most SUV buyers while delivering the benefits of

hybrid technology." And the Highlander Hybrid's performance was noted during Motor Trend's preview tests where a passenger quips, "Geez, this thing's fast."

The Highlander Hybrid comes standard with front-seat side airbags and head curtain airbags for the first and second rows of seats. Stability and traction control systems are standard equipment. The stability and traction controls are designed into the hybrid drivetrain. The Highlander Hybrid has not yet been subjected to government crash testing, but the gasoline-powered Highlander scored a top five-star rating for all passenger positions. In testing at the independent Insurance Institute for Highway Safety (IIHS), the Highlander earned top "Good" scores in front offset crash tests. EPA fuel economy estimates for the Highlander Hybrid models are 33 mpg/city, and 28 mpg/highway for the AWD model and 31 mpg/city, 27 mpg/highway for the FWD model, roughly the same as for the Ford Escape hybrid.

Important Considerations: Hybrid cars

The following is what the experts say you should know when choosing a hybrid vehicle. To decide which hybrid car is right for you, or whether you should buy a hybrid car at all, consider the following:

- **Hybrid cars are priced three to seven thousand dollars more than similar standard versions of the same vehicle.** Depending on your driving habits, it may take a long time to pay back this price premium with fuel savings. At Consumer Reports (as well as in other reviews), editors say you'll probably just barely recoup the extra cost of a hybrid in five or six years.

- **The cost of replacement of batteries in hybrids is not fully understood at this time.** Some day, the battery packs in most hybrids will require replacement. Most hybrid cars are still under warranty.

- **The federal government offers tax credits for the purchase of hybrid cars.** The Energy Policy Act of 2005 (EPACT) states that consumers and businesses can earn federal income tax credits for buying or leasing fuel-efficient hybrid-electric vehicles. Tax credits range from $250 to $3,150 and depend on the fuel economy and the weight of the vehicle. The highest dollar value credit is for the Toyota Prius at $3150 and the lowest is the GMC Sierra/Chevrolet Sliverado at $250. A table of estimated tax credits provided by the American Council for an Energy-Efficient Economy (ACEEE) is available (http://www.aceee.org/transportation/hybtaxcred.htm).

- **Tax credits will be phased out once a manufacturer has sold 60,000 of eligible vehicles.** Toyota sold over 100,000 Prius's in 2005. It appears that tax-credit money for the Prius may be depleted by midyear in 2006. High-income individuals are not eligible for hybrid-car tax credits. Those persons who pay the alternative minimum federal income tax do not qualify for the tax credit. Tax credits may only be applied to standard taxes.

- **Fuel economy of hybrids varies from a low of 14 to 18 mpg/city, 16 to 21 mpg/highway for the GMC Sierra/Chevrolet Sliverado mild hybrid, to a high of 61 mpg/city, 66 mpg/highway for the Honda Insight hybrid car.**

- **A full hybrid car uses two different power sources.** An electric motor and an internal-combustion engine work together to power the vehicle. The engine keeps the batteries charged and assists when more power is needed, such as during quick starts.

- **A strategy called regenerative braking is used in hybrid cars to recharge the batteries.** Conventional vehicles turn all of the kinetic energy of the moving vehicle into heat. In vehicles with regenerative braking systems, much of the kinetic energy is turned into electrical energy by turning the hybrid car's electric motors backwards to generate electricity, which charges the batteries.

- **Mild hybrids such as the GMC Sierra/Chevrolet Silverado Hybrid do not use an electric motor to power the vehicle.** Instead, a special starter motor is used to turn the engine until a certain RPM is reached, while also driving the wheels. The engine starts operating on gasoline at a higher speed than normal, saving fuel. The engine is shut down when the vehicle is coasting, braking, or stopped. Fuel savings is not nearly as dramatic with mild hybrids as it is with full hybrids.

Consensus Report

Our Consensus Report shows how many times products are top-ranked by reviewers included in our All The Reviews Reviewed chart.

# of Picks	Model (With Retailer Links)	Prices from Shopping.com
10	Toyota Prius	(*est. $21,725)
9	Honda Civic Hybrid	(*est. $22,150 to $23,650)
6	Ford Escape Hybrid	(*est. $26,900 to $28,525)
5	Honda Accord Hybrid	(*est. $30,990 to $32,990)
3	Toyota Highlander Hybrid	(*est. $33,030 to $39,290)
2	Toyota Camry Hybrid (2007)	-
1 each	Honda Insight, GMC Sierra/Chevrolet Silverado Hybrid., Lexus RX 400h	-

* Also see our Comparison Chart.

As the above chart indicates, the Toyota Prius and the Honda Civic hybrid cars are the top choices in reviews by a wide margin among sedans, though between the two, reviewers usually prefer the Prius. The Ford Escape Hybrid and Mercury Mariner SUVs also get positive mention, but have not yet been thoroughly compared to new Lexus and Toyota hybrid SUVs.

We found good early reviews for the Toyota Camry hybrid car, which is a 2007 model set for early release.

Alternative Considerations

Many economy cars cost less than hybrids and also achieve impressive fuel economy. Examples include the Toyota Corolla, which when equipped with a manual transmission is rated at 41 mpg/highway. Another option in some parts of the country (California is not one of them) is the Volkswagen Jetta TDI (TurboDiesel). With EPA mileage estimates of 36 mpg city, 41 mpg highway, the TDI approaches hybrid fuel economy. TDI owners claim their mileage is actually better than the EPA estimate. See our report on economy cars for more examples and information. Consumers wishing to reduce environmental impact and use less gasoline may also want to consider natural gas powered vehicles such as the Honda Civic GX. The EPA recently published an insightful a table titled the "Highest and Lowest Overall Fuel Economy: 2006 Model Year" at http://www.epa.gov/fueleconomy/5yearhigh-low.htm.*

The Buzz

Toyota has recently announced that the 2007 Camry Hybrid, scheduled for release in May of 2006, will be priced at $25,900. By comparison, the 2006 price for the non-hybrid V6 Camry XLE with automatic transmission is $25,805, and a manual transmission 4-cylinder Camry SE is $18,445. This means the Camry hybrid car is set to have the lowest markup over non-hybrid versions of the same car. A hybrid Lexus sedan, designated the Lexus GS450h, will follow the introduction of the 2007 Camry Hybrid.

Family car hybrids, luxury hybrids and SUV hybrids are taking longer to sell than conventional versions of the same vehicles, according to industry reports. Recent incentives offered by Ford and Toyota for the Escape Hybrid and Highlander Hybrid cars are an indicator that sales may not be meeting the manufacturers' expectations. The high price differential between conventional and hybrid versions of these vehicles is credited with this phenomenon.

The New York City Taxi and Limousine Commission recently authorized a small number of special medallions (permits) allowing owners to drive and operate a cab in the city. The special permits are expressly for hybrid cabs. As of early 2006 six slightly modified Ford Escape Hybrids have entered taxi service.

Ford Motor Company recently announced that it will assemble hybrid vehicles in Canada, at the Oakville, Ontario, assembly plant. Plans include assembly of Ford Edge/Lincoln MKX Hybrids as early as late 2006. Ford sold almost 20,000 hybrid SUVs in 2005. Dow Jones Newswire reports indicate that the Ford Motor Company plans to increase spending on marketing of hybrid cars and trucks, with both additional advertising campaigns and price incentives. Ford wants to promote a green image and to increase its appeal to younger buyers.

Associated Press reports indicate that Ford Motor Company plans to sell the majority of the 2,000 Mercury Mariner Hybrids produced for the 2006 model year through online sales. A Ford spokesman claims that the progressive target customer will be reached through online advertising. Plans call for advertising on the Web sites of environmental organizations such as the Sierra Club.

The standard version of Honda's Fit subcompact may soon be joined by a hybrid version. Japanese newspaper reports claim the Fit hybrid car would be the least expensive hybrid for sale. Standard Fits are scheduled for the US market in 2006, and hybrid versions may be here as early as 2007, although 2008 seems more likely.

German automakers Audi, BMW, Mercedes, Porsche and Volkswagen promised that they would introduce hybrid models at the 2005 Tokyo and Frankfurt auto shows. Included in the promises are hybrid versions of the Volkswagen Touareg and Porsche Cayenne, which share the same platform. We haven't yet seen these hybrids, however.

According to Associated Press reports, General Motors plans to produce a hybrid version of the Saturn Vue at GM's modern production plant in Spring Hill, Tennessee. Production of the so-called "Green Line" Vue is expected to begin in the summer of 2006. The Green Line VUE should be the lowest priced hybrid SUV in the marketplace.

Toyota expects that it will sell 20% to 30% more hybrid-electric vehicles in 2006 than it did in 2005. Hybrid vehicle sales topped 200,000 in the U.S. in 2005, with the Toyota Prius accounting for over 100,000 of that total.

Nissan will license technology for its hybrid version of the Altima from Toyota. Although initial reports indicated Nissan planned to release this car in 2006 as a 2007 model, a date has yet to be announced.

Other auto makers are playing catch-up, but most plan to expand hybrid offerings. Hyundai may offer hybrid versions of Hyundai Accent and the Kia Rio sometime in 2006. Expect hybrid versions of the new Ford Fusion and Mercury Milan sedans sometime in 2008. A hybrid version of the Dodge Durango should appear in 2008.

Best Research

For those interested in learning more about hybrid cars and their technology, there are a host of Web sites to satisfy your curiosity.

Hybrid Cars.com is a good starting point: http://www.hybridcars.com

The Union of Concerned Scientists has a good page here:
http://www.ucsusa.org/clean_vehicles/advanced_vehicles/page.cfm?pageID=1082

The Fuel Economy.gov Web site contains information and EPA mileage estimates:
http://www.fueleconomy.gov/

Treehugger.com's online resource page at can be found here:
http://www.treehugger.com/files/2005/05/hybrid_cars_som.phpA

Another hybrid car resource page is Green Hybrid: http://www.greenhybrid.com

When it comes to reviews of new hybrid cars, Motor Trend, Car and Driver, Edmunds.com and Consumer Guide Car & Truck Test are the best places to start. You can find links to all of these publications on our All Reviews page.

Automobile Magazine is another useful resource. This Web site offers a buyer's guide authored in conjunction with IntelliChoice. Automobile does not do as many side-by-side comparison tests as some of the top-ranked reviewers, but it is useful nonetheless: http://www.automobilemag.com/

Technology reviewer CNet.com now has a plentiful archive of automotive reviews on their Web site. Some reviews include comparative information: http://reviews.cnet.com/Car_technology/2001-10863_7-0.html?tag=dir

The Society of Automotive Engineers publishes a monthly automotive magazine that provides detailed technical information that is often not available anywhere else. SAE also has an annual Hybrid Technology Symposium, which members and associate members can attend. You can search for and read articles on the SAE web site. Enter the vehicle model or the topic of interest into the search box: http://www.sae.org/automag.

If you're a fan of anything with four wheels and engines, you may want to check out Auto.com, published by Knight Ridder. This site covers the auto industry and is updated frequently: http://www.auto.com

Additional useful sites include Cars.com and CarsDirect.com. Like Auto.com, they are not included in our All The Reviews Reviewed chart because they do not make recommendations. Cars.com offers brief descriptions of most of the cars and trucks sold in the U.S. It also has insurance, safety and recall information (http://www.cars.com). CarsDirect offers quotes from a variety of reviewers for the model of interest and includes direct links to the individual Web sites from which the review came (http://www.carsdirect.com/research/reviews/).

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