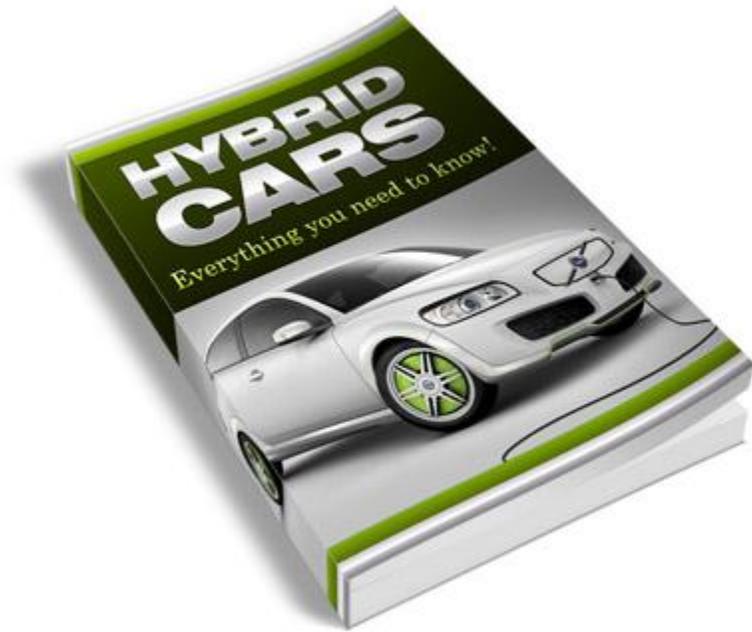


# HYBRID CARS



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## **Introduction**

The main topic of this discussion is HYBRID VEHICLES.

Like many individuals and groups out there in the real world, we ask the really obvious, but sometimes also tough questions to answer that most struggle with when contemplating the addition of a Hybrid vehicle to their driveway, garage and lifestyle.

Some of the questions go to the fundamentals, like: *Why hybrid vehicles? What are they? Are they any good? What do they cost? Where would they be found? Who uses them? How are they best applied?*

Even more intricate and complex questions surface than at first glance and consideration:

- *How do you make up your mind about hybrid cars?*
- *Is a hybrid vehicle even a viable option and alternative?*
- *Are there certain circumstances that a hybrid would be considered better, more efficient?*
- *What are the actual benefits of hybrid vehicles?*
- *What criteria is there to use and pay special attention to when buying a hybrid vehicle?*

All these questions, inquiry and advocacy of sorts, will unfold in the next 60-pages, as we probe, explore and investigate hybrid vehicles. This includes cars, SUV, minivans even

concept and alternative, futuristic transportation vehicles, in more detail, we plan on placing them under even closer scrutiny to figure out exactly if it is worthwhile investing in a hybrid car (or not).

For the most part, in our opinion, it is early days yet to say that the jury is in! There is evidence and trends emerging, that hybrids are here to stay and hold the promise of future transportation vehicles. Others think the technology still has a long way to go. It hangs in the balance and sways between these 'extremes' as its development path continues to evolve.

### **To Buy A Hybrid, Or Not To Buy A Hybrid... That Is The Question!**

It is true that a very diverse set of drivers, owners and enthusiasts, (even most people), consider hybrid cars for a variety of different reasons (your own musings and reasons will probably just add to the list here) ...

- As a concept and environmentally sound alternative it shows good global citizenship
- It is a trend that they want to be part of and be associated with
- Conservation and sustainability of our world, the legacy we leave for our children
- Leading by example and being a pioneer

- Weird-looking and a cool idea to have one, gadget, newest 'toy' to add to the list
- Fuel-economy and saving money, gas
- Less emissions and pollutants into the atmosphere
- Less gasoline/fossil fuel reliant
- Potential investment
- Keeping up with the Joneses!

Whatever YOUR particular incentive, motivation or rationale for getting one, hybrid car sales are soaring. According to recent news-reports in the USA over the last 12 months an increase of 139% was cited. It is a definite trend and here to stay. The wave of the future...undeniably here!

### **The Questions And Rationale Behind Hybrid Vehicles**

The best way to start off writing this book, I thought, was to ask several people (proud new owners, prospective buyers and just the general public at large, across gender, age group and preferences, randomly selected) the same two questions: (i) What are the TOP FIVE reasons to buy/invest in a hybrid as well as (ii) the TOP THREE reasons they would not consider buying a hybrid. (TIP # 1: *You can ask and answer these yourself to, it helps to provide some perspective*)

#### Most frequent responses regarding reasons to buy:

- Easy to drive, handling and ease of parking

- Fuel efficiency
- Doing my part/good for protecting the environment
- Reduction in fuel emissions
- Reduced engine maintenance costs
- Value, Economical, Purchase price
- Costs to operate
- Cutting edge technology
- Proclaimed longevity

Most frequent responses regarding reasons NOT to buy:

- Added cost to purchase a hybrid vehicle
- Do not like the selection of hybrid vehicles currently available
- A follower, not a leader when it comes to new trends
- Preferences for larger automobiles (for safety reasons)
- Larger vehicles are not yet available in hybrid versions
- Insufficient track record
- Driver and passenger safety concerns
- Lack of storage

The range, scope and depth of the answers received surprised me in some cases, not in others. What are your reasons? (TIP # 2: *write them down, sort and prioritize them, it helps later, when you get to the point where you might be stuck between two or more choices, or are trying to compare selection criteria*).

Here is a another example of a typical response received on the question of to buy or not to buy...

1. IN YOUR OPINION OR FOR YOU PERSONALLY, WHAT WOULD THE TOP FIVE REASONS, CRITERIA, INCENTIVES OR MOTIVATORS BE FOR YOU TO INVEST/BUY A HYBRID VEHICLE?

- Is no more expensive to purchase.
- Is no more expensive to operate (fuel).
- Is no more expensive to maintain.

2. WHAT ARE THE TOP THREE DETERRENTS, ISSUES AND CONCERNS THAT WILL CAUSE YOU NOT TO INVEST/BUY A HYBRID VEHICLE?

- None of the vehicles existing today are attractive.
- None of the vehicles are spacious enough.
- None of the vehicles has enough power for a full load in mountain roads.

3. IF YOU WERE TO BUY A HYBRID TOMORROW, WHAT WOULD BE THE KEY ELEMENTS THAT YOU WOULD BE LOOKING FOR - LIST AS MANY AS YOU WANT...

Style, first, everything else is secondary.

Reliability is second, everything else after.

Also talking with owners of Hybrid vehicles to get the 'facts' and inside scoop, going for a test drive yourself and comparing features and performance according to some pre-set criteria can all help you to make up your mind on what to buy.

If you are considering a hybrid, maybe getting this book, was your way of figuring out if the value-proposition held anything for you specifically. We wish you well on your

selection endeavor and musing on purchasing a hybrid (or not!)

As gas prices keep soaring, with not relief for consumers on the horizon any time soon and fossil fuels not a sustainable, renewable energy source, the sale of hybrids seem to be in a positive correlation. The higher the gas prices goes, the higher the sales tend to be for hybrid vehicles as people try every which way to break free and save a couple of bucks!

### **So what is or what makes a 'hybrid' vehicle?**

A typical hybrid electric vehicle or HEV as the automotive industry aptly quipped and dubbed its newest brain-child and ingenious concepts, is a popular option to consider if you are in the market for a new or replacement vehicle.

But what makes a hybrid a HIBRID vehicle? In simple terms. As the word implies it is a combination, mix or cross between two things. The 'hybrid' actually in effect has TWO engines. One is electric and the other is internal combustion (which we all know, love and are used to). These work on their own, independently, as well as together or collectively/collaboratively to make your car go and perform consistently.

The hybrid cars generally run on a either or basis UNTIL the driver would require MORE POWER, or wanted to go much

faster, say passing, changing lanes or flooring it. Then the combination of the two engines together deliver the power and performance on-demand that you want and desire.

They can work individually quite well and self-sufficiently, BUT YET, they also collaborate and pool their resources under certain circumstances to give you that extra horse under-hood, willing, capable and able.

They are like flip-sides of a coin, working separately, but combined is their best currency and purpose. They operate almost in tandem.

If you are opting for , or looking particularly for a low emission, fuel efficient and downright wonderfully aerodynamic, automotive style and design, then the Hybrids are for you!

### **Fundamental Steps To Consider When Buying A Hybrid**

1. There is a wide variety and choice of hybrid vehicles already on the market, with lots of newly launched, concept and alternative innovative hybrids making their way onto the market. Supply and demand fuels and drives this fire further. Do not assume that your choices are limited just because the technology is relatively new. DO NOT GET OR BE CONFUSED OR MISLED BY INDUSTRY VERBIAGE: Learn the

terminology, language and culture behind these vehicles. (Tip # 3: Take the time to study the differences, classes and types of hybrid vehicles – it will help you narrow the field and tell the real hybrids from the ‘impostors’)

- (i) Super Ultra Low-Emission Vehicle (90% cleaner than the average new 2002 model year car, according to the California Air Resources Board Standard); and
- (ii) An Ultra Low-Emission Vehicle (about 50% cleaner than the average new 2001 model year car).  
NOTE:
- (iii) There are also furthermore zero-emission cars on the road at present, but they are electric vehicles, plug-ins, not HEVs.

2. Self-assess your current situation, commute, driving habits, preferences and needs. How and where you drive your vehicle (most) is a definite valid question to be asking. This reflection and consideration will help you decide whether an HEV is right for you.

- Typically thought, as a general rule of thumb, hybrid vehicles are reliable and greatly suited for urban and suburban driving:

- The short trips and stop-and-go traffic make for impressive fuel savings, if your car runs on an electric engine at low RPMs.
- Highway and interstate commuters who drive these cars will have lower fuel economy.
- Combination/hybrid engines (combustion/electrical assist) less to no difference on the fuel economy.

3. They say that variety is the spice of life. Choices and options are limited still with Hybrid vehicles and sometimes for the more popular models you might have to wait a while for delivery of yours as well. Lots of hybrids are being introduced in the market and it will be expanding annually. *(Tip # 4: Keep a watchful eye on the car-shows, expos and industry announcements on Hybrids. The market is highly competitive and some automakers are even collaborating to get products to market quicker)*

4. SLIGHTLY HIGHER COST will still be an issue. They are high in demand, short in supply, complex technology to manufacture and will become cheaper as the market grows. Some aftermarket offerings are already making its way into the marketplace.

5. Availability and maintenance might be an issues in certain areas (outside or urban centers for example). Repair and auto-body shops that work on hybrid cars have to be researched closely as well to ensure smooth operating and regular service as required, done by someone who is familiar and certified to work on these cars.

Take advantage of numerous tax deductions and even free parking for the purchase of a hybrid car.

If you are considering a serious purchase of a Hybrid vehicle

- Consider all the pros and cons, benefits and costs of a Super Ultra Low- and Ultra Low-Emission vehicles
- Keep in mind that the availability and choice for HEVs are limited
- Local repair shops, maintenance and cost of ownership might be a little more expensive than your normal run of the mill car, SUV, truck or Minivan.

### **An eclectic list of current Hybrid vehicles, Different Types, choices and price-points**

Here is a line-up of the newest 2006 Hybrid Cars:

- Ford Escape Hybrid is a hybrid SUV first, with V6 power and a four cylinder fuel economy to boot. According to

online sources, it is a popular choice and winner in/for BOTH functionality and environmental awareness categories.

- Honda Accord Hybrid is faster than a conventional model and a V6 hybrid.
- Honda Civic Hybrid is a slightly modified and converted vehicle. Its features are pretty much the same, but it offers greater fuel economy and less emissions.
- Lexus RX400h Hybrid is the top-line entry in the hybrid SUV class, it is a popular selection for the upper class budget and environmentally conscious.
- Mercury Mariner Hybrid is Ford's first hybrid attempt at the market.
- The all-time favorite Toyota Prius Hybrid for a breath of fresh air and affordable, yet responsible automotive excellence.
- Toyota Highlander Hybrid SUV is a popular choice as well generating a lot of buzz and interest lately.

**Taken from online sources, here is a summary of SOME MORE HYBRID EXAMPLES FOR YOU TO CHOOSE FROM TO MAKE YOUR MOUTH WATER AND WHET YOUR APPETITE:**

### **Hybrid Sports Utility Vehicles**

#### **Acura RD-X**

- The RD-X is a concept model
- projected release year of 2007
- Acura is dedicate to make a difference
- They illustrate their will and ability to build an impressive hybrid SUV

#### **BMW X5 Hybrid**

- BMW developed a concept hybrid
- It is based on the current X5 model
- Powerful V8 gasoline engine assisted by an electric motor with an astonishing 479ft-lb of torque

#### **Chevrolet Tahoe / GMC Yukon**

- combination of Chevrolet's hybrid technology
- gasoline-electric upgrades
- increase economy by 30% in the large hybrid SUV's, and similarly efficient trucks
- expected to appear in 2008

## Chevrolet Equinox

- Available for the 2006 model year
- Similar to Tahoe Hybrid,
- 30% boost in fuel economy from Chevrolet's Hybrid Technology

## Dodge Durango

Not yet...

## Ford Escape

- world's first production hybrid SUV
- balance of practicality, environmentally friendly emissions and fuel economy.

## Lexus RX 400h

- LUXURY DEFINED!
- hybrid version of their popular RX model
- smoother, quieter operation, increased performance
- host of high technology accessories
- delivering class topping fuel economy and emissions ratings.

## Saturn VUE

- mid-sized SUV
- GM's hybrid system
- better gas mileage, performance and practicality main features

## Toyota Highlander

- Practical and environmentally conscious
- world's first 7 person hybrid SUV

## **How to Buy a Hybrid**

After weighing your options and letting your curiosity get the better of you and start researching the Hybrid's potential to increase fuel economy and reduce emissions... you start to hunt and shop around. Yet, the internet and printed dealer brochures, car reviews and owner opinions only tell you part of the story.

ALSO NOTE: It is a fact that there are a wide range of what is put under the umbrella or identifier 'hybrid' that simply is not! NOT ALL are created equal.

If  
fo

HYBRID CAR FACT: HYBRID vehicles being marketed as hybrids, do not all utilize and leverage the full spectrum of hybrid technologies that are available.

really is under-hood, past the hype and marketing lingo.

According to online sourcing and research regarding Hybrid vehicles, there are currently FIVE TYPES of hybrid technology available to automakers:

- Idle-off capability. The engine turns off when the vehicle is stopped in traffic or at a light, and turns back on when you move your foot from the brake to the gas pedal.
- Regenerative braking. The electric motor helps slow the car, and functions as a generator to convert some of the energy typically lost during braking into electricity (thereby recharging the vehicle's battery).
- Power assist and engine downsizing. The electric motor helps propel the car, in particular during acceleration. Because the motor and engine share the power load, the engine's size can be reduced, saving even more fuel.
- Electric-only drive. The electric motor can power the vehicle by itself at low speeds and when first starting the car.
- Extended battery-electric range. The car runs solely on electric power for 20 to 60 miles before engaging the gasoline engine. You have to recharge the car's battery by plugging it into an external electricity source.

There are numerous types and classifications making their way into this automotive category and hot seller:

- “mild” hybrids (Honda’s Insight and Civic Hybrid) employ the first three technologies above
- “Full” hybrids, (Toyota Prius and Ford Escape Hybrid)also sport electric-only drive.
- “Plug-in” hybrids that utilize all five technologies are not currently available as passenger vehicles.
- “muscle” hybrids, such as the Toyota Highlander Hybrid and Lexus RX 400h, provide only a fraction of the potential fuel economy and environmental benefits.
- In-between hybrids (Honda Accord Hybrid) fall somewhere midway between mild and muscle hybrids.
- Also "Hollow" Hybrids which is not more than a marketing gimmick to sell conventional cars and simply calling them hybrids

Visit the Union of Concerned Scientists’ website at [www.hybridcenter.org](http://www.hybridcenter.org) to learn more about hybrid cars and even view some side-by-side comparisons. These are extremely useful when you compare and test drive hybrids for yourself. (yes, we do recommend you drive as many of the models you are considering, YOURSELF!)

Hybrid cars have many environmental and economical incentives and benefits. You can cut down on pollutants and emissions and get tax breaks, rebates and benefit in the long run from saving on gas for example and low maintenance costs.

We have in all probability not seen the last of tax rebates and incentives. There will be more to come to encourage consumers that it is a wiser choice.

Fuel economy is a big selling factor of these hybrid cars and vehicles. Some say they will have slower depreciation too pretty soon as more and more of them make their way onto the road.

With battery efficiencies and related technology developments fueling continued interest in hybrid and fuel cell vehicles, futuristic transportation and even humanly powered 'machines', more and more of us will be looking to alternative market offerings to get around.

Contribute and do your part to help the environment by purchasing a hybrid car. The main impetus and momentum for hybrid cars came in the early 1990s. Donated funds and research and increasing interest in new hybrid technologies are on the rise.

### **But How Exactly Do Hybrid Cars Work?**

It is a passenger, commuter vehicle, powered by a 'hybrid'

engine. What that means is, an engine that combines two or more sources of power. In most cases, they will be gasoline and electricity.

There are two types of gasoline-electric hybrid cars:

- (i) the parallel hybrid, and
- (ii) the series hybrid.

Both use gasoline-electric hybrid technology, but in radically different ways.

Our scientists from Hybrid center online, quotes and summarized the differences as follows:

- *In a parallel hybrid car, a gasoline engine and an electric motor work together to move the car forward,*
- *In a series hybrid, the gasoline engine directly powers an electric motor that either powers the vehicle, or charges batteries that will power the motor.*

### **Different Types of Hybrid Cars**

#### MORE ON parallel hybrids

- uses both a fuel tank with gasoline and a set of batteries. Both the engine and the electric motor can turn the transmission at the same time.

- fuel tank and the gas engine connect to the transmission and the batteries and electric motor connect to the transmission separately.

### MORE ON series hybrids

- gasoline engine turns a generator
- generator either charges the batteries or powers the electric motor that is used to turn the transmission.
- gasoline engine is not used to power the vehicle directly.
- all of the components eventually connect with the transmission

Hybrid cars typically produce less power. They are however very light weight and well designed to compensate for that. Typically, carbon fiber or aluminum is used.

Aerodynamic characteristics are more prevalent than on most other cars, cutting down on drag and wind resistance, noise etc. Excellent fuel economy and helping the environment by cutting down on pollution are definite bonuses from driving these vehicles.

**What Motivates You To Buy/Not Buy A Hybrid Car  
What To Look For And How To Make Up Your Mind**

Pay close attention to its appeal and promise, potential and possibilities – these are all factors that draw in the masses and the diverse crowd of interested consumers in these new automotive genius on our roads. Here just some of the 'perks' and bonuses:

- Eco-smart and environmentally conscious we can all certainly appreciate the qualities and benefits that these vehicles bring with them.
- Fuel economy
- Reduced emissions, less pollution,
- slower depreciation
- great savings for the pocketbook,
- less reliance on fossil fuels in the future
- Lower fuel emissions help to curb the infamous "Greenhouse Effect" and saves the ozone and atmosphere, the air that we and children are left to breathe and live off of
- High-demand for Hybrid cars let them hold their value much longer as supply and demand still fuels these fires!

- Burning of fossil fuels are reduced effectively,

supplemented and complemented by alternative power

sources Annual savings on gas, better fuel economy,

needing less. Alternative solutions to gasoline, internal

combustion engines that are no more or less effective,

just worse pollutants or our air and world!

### **Hybrid Car Facts: QUICK CHEATSHEET SUMMARY**

- Hybrid cars produce substantially (up to 90%) less pollutants than comparable non-hybrid cars.
- POLLUTION CAN BE STOPPED! Hybrid cars help us do that by putting less of them there in the first place! Maybe we will even be in a position to do something positive about the air we live and breathe in.
- Tax incentives and write-offs, rebates and other forms of encouragement for consumers to invest in hybrid vehicles will become more prevalent.
- What is the gold standard today, quickly becomes the prerequisite or entry-requirement for tomorrow.
- Parts, maintenance and repair for hybrid cars can be somewhat expensive. Warrantees and parts that never have to be replaced, can be recycled are used a type of SMART manufacturing to be really environmentally friendlier.
- Hybrid vehicles offer great investment opportunity due to their slow and low depreciation. They are still very much in high demand
- Market entry in Japan started as early as 1997, a little later in Europe and in the USA.
- They will last a little longer and will not be just another passing craze. They are here to stay and people want to buy them, learn about them, drive and enjoy them!
- Automakers are investing heavily in all types of vehicle development and specifically hybrid technology, to enable them to offer faster, larger engines in the rest of their line, (due to federal government regulations that apply to them across the board that they have to adhere to).
- Anyone and everyone can consider, enjoy and capitalize on hybrid technologies for the cars that we choose to drive!

Hybrid Vehicles and technology is the wave of the future we have now stated twice already. It has numerous applications and context outside of passenger and commuter cars and SUV's or personal, family transportation. Space eludes to elaborate about buses, trains and other work vehicles that are hybrids. One example often quotes is the GMability sponsored hybrid bus program, where GM's Allison Electric Drives System powers environmentally-friendly buses as part of the public transit systems and networks in many cities around the globe.

HERE IS HOW THE HYBRID TECHNOLOGY MAKES A DIFFERENCE:

- delivers up to 60 percent better fuel economy than the conventional diesel systems used in city buses.
- much lower hydrocarbon and carbon monoxide emissions than normal diesel buses
- It effectively lowers 'particle emissions' (tiny pieces of soot and dust) by 90 percent
- Reduces nitrogen oxide emissions by up to 50 percent
- deliver 50 percent better acceleration than a bus equipped with a normal diesel power-train.

**HYBRID CAR FACTS REVIEW:** Here's how hybrid technology works again : *(From an online source – see reference listing at the back of this text for more details).*

**Hybrid systems** use two sources of power to move a vehicle — the engine and the battery. In the parallel hybrid system, the diesel engine acts as a generator, producing the electrical power needed to keep the battery charged. The engine is attached to a drive unit that provides an infinitely variable power ratio to the wheels. This allows the engine in a hybrid system to run more efficiently, quietly and cleanly.

Numerous other commercial applications are stepping up to plate, rental car companies, commercial fleets, construction, and extended distance search and rescue teams, work equipment a transit. Hybrid technology is making its way into every aspect and area of our daily lives, slowly but surely.

Electric cars (or battery powered cars), electric and hybrid electric vehicles, as well as fuel-cell and other innovative automotive technologies, are very much a part of our near future.

Be sure to check out the Center for Electric Car and Energy Conversion if you have a specific interest in these niche specialty hybrid vehicles.

This brings us to the question as to how you would make up your mind as to which hybrid to buy? This guide was set up to help you determine which model hybrid car of which model year, is best for you're your needs and budget. Educate, inform and empower yourself, by providing relevant information you need to make the right choice.

Please opt for ONE of the following statements. Choose the one that suites you best:

**ASK AND ANSWER: Which statement best describes you?**

1. The hybrid I am looking for has to be a **Two Seater**.
2. I prefer a **Compact Car**.
3. For me, a **Midsize Car** will do.
4. I'm looking for an **SUV**.

## **Two-Seater Hybrid Vehicles**

- YOUR CHOICE IS EASY = THERE IS ONLY ONE!
- **Honda Insight**
- most affordable hybrid cars available for sale,
- priced under \$20,000 US
- eco-friendly car, with high fuel economy
- **DISTINCTIVE FEATURE:** highest EPA rated fuel economy

of any passenger automobile available on the market, since its introduction.

- There are new and used models available

## **Compact Hybrid Cars**

### **TWO CHOICES HERE TO HIGHLIGHT:**

#### **Honda Civic Hybrid** and first generation **Toyota Prius**

- Civic is the pioneer into the mainstream auto-market and the top-selling vehicle
- first hybrid vehicle to achieve Advanced Technology Partial Zero Emission Vehicle status under California's Zero Emission Vehicle program. The Civic is a mild hybrid
- The Toyota Prius is a full hybrid
- Can drive solely on its electric motor – gained a lot of competitive ground lately and a crowd pleasing favorite pick.
- Also used and new versions and models available.

## **Midsized Cars**

AGAIN ONLY TWO TO CHOOSE FROM:

- (i) The new **Honda Accord IMA**
- (ii) the second generation **Toyota Prius**

NOTE: only hybrids available in this class

- The Accord add both power and fuel efficiency
- Prius fuel economy and reduction in greenhouse gases
- New and used models available

## **Sports Utility Vehicles**

The only hybrid SUV currently on the market is the **Ford Escape**

**Up and coming: TWO MODELS - Lexus RX 400h** and the **Toyota Highlander Hybrid.**

(see listings elsewhere for more details)

**What would motivate us to buy Hybrid cars – the more we know... Spread the word.** By linking to this page, you can help spread the word about the CLEAR ACT. For your convenience, sample code is provided below.

<http://www.hybrid-car.org/clear-act-2005.html>

We include it here to show how government and business, as well as automakers and consumers, are ALL working together to cement hybrid cars and vehicle technologies into our options and choices:

The CLEAR ACT (Clean Efficient Automobiles Resulting from Advanced Car Technologies Act) is an effort to accelerate the development of eco-friendly automotive technologies and their assimilation into the automotive market by providing strategic tax breaks and incentives to consumers and infrastructure developers.

**The purpose of the CLEAR ACT is to "promote cleaner air by reducing the consumption of petroleum and advancing alternate fuels."**

The automotive technologies promoted by the CLEAR ACT are those used in **fuel cell vehicles**, which use compressed hydrogen gas to generate electricity to power an electric motor; **hybrid electric vehicles**, which use an electric motor to assist a gasoline powered engine; **dedicated alternative fuel vehicles**, which use alternative fuels such as natural gas, LPG, and LNG to power a combustion engine; and **battery electric vehicles**, which rely on an onboard rechargeable battery to power an electric motor.

Through the use of the tax incentives detailed below, the CLEAR ACT would lower the major barriers associated with acceptance of alternative fuel technologies; the higher cost of the vehicles, the lack of fueling stations providing alternative fuels, (also known as infrastructure) and the higher cost of alternative fuels.

- A \$4,000 base tax credit awarded for the purchase of a

- fuel cell vehicle**, and an additional credit of up to \$4,000; depending on the fuel economy performance.
- A \$1,000 base tax credit awarded for the purchase **hybrid electric fuel vehicle**, and an additional credit of up to \$3,000; depending on fuel economy.
  - A \$2,500 base tax credit awarded for the purchase of a dedicated **alternative fuel vehicle**, and an additional credit of up to \$1,500 for AFV's that achieve a Super Ultra Low Emissions rating.
  - A \$4,000 base tax credit awarded for the purchase of a **battery electric vehicle**, and an additional credit of up to \$2,000 for vehicles with extended range or payload capabilities.
  - The CLEAR ACT offers a range of credits for **medium and heavy duty vehicles**. Fuel cell or battery electric medium or heavy duty vehicles earn a tax credit of up to \$40,000; medium or heavy alternative fuel vehicles earn a tax credit of up to \$32,000; and medium or heavy hybrid electric vehicles earn a tax credit of up to \$24,000.
  - A credit of 50 cents for every gallon of gas equivalent is provided to retail distributors will be provided for 6 years as an incentive.
  - In addition to the fuel credit, the CLEAR ACT provides a credit of up to \$30,000 to assist with the actual costs of installing an alternative fuel site that is available to the public.

### **Why focus on automobiles?**

The CLEAR ACT focuses primarily on promoting a responsible and secure energy policy through vehicles because alternate and advanced fuel technologies are more economical and effective than industrial or domestic options. Additionally, "transportation accounts for nearly 2/3 of all oil consumption." Use of these technologies can help reduce our overwhelming dependence on foreign oil.

### **Why give tax breaks?**

Alternative fuel vehicles cost more than their traditional gasoline powered brethren, and tax breaks help to fill that gap. In his Senate press conference, Orrin Hatch (Republican-Utah) attributed the localized high demand for hybrids:

"I have heard one or two people question the need for incentives for hybrid vehicles... it may be true that demand for these vehicles is high in a few areas... [that] tend to have local or state incentives in place for the purchase of these vehicles. Where incentives are not in place, hybrid sales are minimal... incentives can indeed provide a market breakthrough to consumer acceptance of alternative vehicles."

**You can help support cleaner air and a more responsible energy policy BY BUYING A HYBRID VEHICLE!**

The following groups support the CLEAR ACT:

- Ford Motor Company
- Honda
- Toyota
- Union of Concerned Scientists
- Natural Resources Defense Council
- Environmental Defense
- American Council for an Energy Efficient Economy
- Natural Gas Vehicle Coalition

There are numerous online tools that will show you what the most fuel efficient alternative is/can be to your current automobile.

It basically takes the class and general specifications of your car and shows you a set of practical alternatives that are actually better for the environment.

Here is one such sample:

<http://www.hybrid-car.org/alternative/aston%20martin/>

## **Step 1: Select the make of your current vehicle.**

ACURA  
ASTON MARTIN  
AUDI  
BENTLEY  
BMW  
BUICK  
CADILLAC  
CHEVROLET  
CHRYSLER  
DODGE  
FERRARI  
FORD  
GMC  
HONDA  
HYUNDAI  
INFINITI  
ISUZU  
JAGUAR  
JEEP  
KIA  
LAMBORGHINI  
LAND ROVER  
LEXUS  
LINCOLN  
LINCOLN-MERCURY  
LOTUS  
MASERATI  
MAZDA  
MERCEDES-BENZ  
MERCURY  
MINI  
MITSUBISHI  
NISSAN  
PONTIAC  
PORSCHE  
ROLLS-ROYCE  
SAAB  
SATURN  
SUBARU  
SUZUKI  
TOYOTA  
VOLKSWAGEN  
VOLVO

This program will output a selection of alternative vehicles based on engine size, vehicle class, and fuel economy.

### ***TRY IT OUT!***

***ALSO, keep a keen eye on the new product launches and innovations making their way onto the market.***

In surveying and weighing your options for a hybrid vehicle, you will want to consider:

- Size
- Price
- Gas Mileage
- Appearance

SOME MORE QUICK FACTS AND HISTORY ABOUT HYBRIDS TO HELP YOU CHOOSE THE RIGHT ONE, MOST SUITED TO YOUR NEEDS, BUDGET AND REQUIREMENTS

The [Honda Insight](#), [Honda Civic Hybrid](#), Honda Accord Hybrid, and [Toyota Prius](#) are the four hybrid cars available to purchase from dealers today. The [Ford Escape Hybrid](#) was the first hybrid SUV available, but additional choices now available are the [Lexus RX 400h](#), [Toyota Highlander](#) and [Mariner Hybrid](#).

NOTE # 1: Future 2007 models not discussed here are the [Lexus GS 450h](#) hybrid sedan, Toyota Camry Hybrid, and Nissan Altima Hybrid.

NOTE # 2 : some cars like the Toyota Prius, due to their popularity and high-demand, may have a waiting period of two to nine months, as order-filling and delivery takes time.

**Size** (always start with what you know/think you are/will be comfortable with)

- Space-saving, trunk space, driver/passenger comfort, dimensions
- Getting in and out of the car
- Sometimes the trunk is smaller for storage of the battery
- How many passengers can it take?

Here are some examples from online offerings and specifications:

- The Honda Civic Hybrid is a **compact** sedan that seats five
- Prius 2<sup>nd</sup> generation much more roomier and even comes in a hatchback version (mid-size).
- Accord also has a mid-size offering
- Lexus will add a sporty **GS 450h hybrid sedan**
- 5- passenger **Sports Utility Vehicle (SUV)** Ford Escape, or Mariner Hybrid. They are available in two and four wheel-drive models.
- NO MINIVANS
- Toyota's Highlander Hybrid is the only hybrid that seats seven passengers.

## Price

- Ranges in US \$ from **\$19,000 to over \$49,000** (base models).
- Typically MORE expensive, as much as \$3,000 – 5,000 + MORE than their non-hybrids
- Insight and Lexus at the low and high point of the pricing scale.
- Price List:
  - 2006 Honda Insight, \$19,330 manual transmission (\$21,530 for automatic)
  - 2006 Toyota Prius, \$21,2745,
  - 2006 Honda Civic Hybrid, \$21,850
  - 2006 Honda Accord Hybrid, \$30,140.
  - 2006 Ford Escape hybrid begins at \$27,515 for the two-wheel drive version and \$28,595 for four-wheel drive.
  - 2006 Mariner Hybrid \$29,840 (four wheel drive is standard.)
  - 2006 Toyota Highlander Hybrid begins at \$33,030 for the two-wheel drive version and \$34,430 for four-wheel drive.
  - 2006 Lexus RX400h \$49,060.

HYBRID CAR FACT: Don't forget, THESE PRICES QUOTED HERE ARE PRICED, MSRP for the base model. Any additional features will increase the cost!

## **Fuel Economy and Gas Mileage**

EPA estimates are higher than for internal combustion engine vehicles

designed to get the best mileage

MANUAL TRANSMISSION: As much as 60 mpg in the city and 66 mpg on the highway

AUTOMATIC TRANSMISSIONS: 57 city/56 highway

Prius and Honda Civic comes close too!

Here are some more quoted online facts and statistics on fuel economy:

- Up until model year 2006 the Honda Civic Hybrid was available with a manual transmission that was rated at 46 city/51 highway; the automatic at 48 city/47 highway. The 2006 the Civic Hybrid has been redesigned and is only available with an automatic transmission with epa mpg estimates of 50 hwy/50 city.
- The Honda Accord Hybrid is rated at 29 city/37 highway.
- The Ford Escape is rated at 36 city/31 highway. That is much better than a non-hybrid Escape that is only rated at 22 city/25 highway.
- The Mariner is rated at 33 city/ 29 highway.
- The Lexus RX 400h is rated at a still-respectable 31 city/27 mpg highway.
- The Toyota Highlander, being the largest of the hybrid SUVs gets the lowest mpg and is at 22 city/27 highway.

## **Appearance**

When it comes to what the car looks like, you are dealing with personal preferences. Ask yourself some tough questions:

- What do you want for the look of your car?
- Similar or different, unconventional style, daring?
- Unique and futuristic appeal to you?
- Aerodynamic?
- When you look at it for the first time, do you love or hate it? Do you want them looking just like their non-hybrid counterparts?

**Test drives are recommended and advisable PLUS IT IS FUN!)**

### ***Ask about City MPG , Highway MPG and MSRP***

Here is a quick comparison of hybrid cars and hybrid SUVs. The comparison of the hybrids includes:

- the hybrid's name
- EPA gas mileage estimate for city
- EPA gas mileage estimate for highway
- the hybrid's Manufacturer's Suggested Retail Price (MSRP).

The hybrid with the highest fuel economy is on the top of the chart, the hybrid with the lowest fuel economy is at the bottom.

As you might expect, the two-seat Honda Insight tops the list again, as it has since its inception. As you might also expect, hybrid SUVs are at the bottom of the list; the 4 wheel drive version of the Toyota Highlander Hybrid and the Lexus RX 400h. But remember, these SUV are still getting 31 city and 27 hwy, that's pretty darn good for an SUV.

Hybrid	City mpg	Hwy mpg	MSRP
Honda Insight -Manual	60	66	\$19,530
Honda Insight -CVT	57	56	\$21,530
Toyota Prius	60	51	\$21,725
Honda Civic Hybrid	49	51	\$21,850
Honda Accord Hybrid	29	37	\$30,140
Ford Escape Hybrid 2WD	36	31	\$27,515
Ford Escape Hybrid 4WD	33	29	\$29,140
Mercury Mariner Hybrid	33	29	\$29,225
Toyota Highlander Hybrid 2WD	33	28	\$33,030
Toyota Highlander Hybrid 4WD	31	27	\$34,430
Lexus RX 400h	31	27	\$49,060

### Hybrid Car Comparison

## **Benefits And Advantages Of Owning A Hybrid Car**

If you are still not convinced that a hybrid is right for you, that is perfectly fine.

### **JUST NOTE AND REMEMBER:**

There are definite differences between a gasoline-engine car and a hybrid car. Look around you. Ask yourself. Have you seen a hybrid vehicle in the last week? It is true, more and more they are making their way onto our roads, driveways, parking lots and garages.

HYBRID CAR FACT: Honda and Toyota lead the way and they plan to keep experimenting with these two sources of power. A hybrid car is a cross between a gasoline-powered car and an electric car.

Just to illustrate a point 'hybrid machines' like these have been in use in other equipment long before personal commute vehicles and transportation we see today. Diesel-electric trains and locomotives, buses, submarines and cruise-ships (nuclear-electric).

**HYBRID CAR FACT:** For a gasoline-powered car a fuel tank supplies gasoline to the engine of that car. The engine turns the transmission, which causes the wheels to turn and the car to move.

A hybrid car differs from the gasoline-powered car because a set of batteries provides electricity to an electric motor. This turns the transmission, and the transmission turns the wheels.

### **Why do we want to Use Hybrid Cars?**

- It is designed specifically for a purpose and intent – clean running and efficient.
- Increasing the mileage
- Reducing the emissions of a gas-powered car
- Having more power than the electric car.
- Cut down on unnecessary pollution
- Avoid rising gasoline pricing and costly fill-ups at the pump
- Enough horsepower to deliver the power and performance that you need.
- Engine is much lighter so that the car will not have to use extra energy in order to accelerate.
- Components are smaller requiring less fuel using less fuel when starting up, getting better gas mileage, using less all-round!

- Fuel-efficient, eco-friendly and conscious, stylish

There are many great reasons to invest in hybrids. Some individuals or interest groups will argue that the pricing is still too high, technology too expensive. Fact is the market is growing and expanding with more models launching every year and automakers jumping at the chance to infuse their market. Stay tuned... this is NOT just another fad!

Here are quick examples for your review of TWO GREAT cars that are available right now! They are also amongst the top sellers, high in demand and most frequently purchased.

### **Honda Insight**

- Honda's version of the hybrid car is called the Insight,
- Pricing starts at around \$19,000 for the base model.
- Introduced in 2000
- Sold and marketed as getting the best possible mileage and being good for the environment
- It is a two-door coupe, small and very lightweight.
- 1.0L engine that weighs only 124 pounds and is the primary source of power.
- Additional power is provided by an electric motor which is powered by a 120 cell rechargeable battery.
- The gas engine provides power when the car is in motion It shuts off at stop lights and stop signs and automatically restarts itself when you press the gas pedal again.

- The Insight can reach speeds of 100 mph and averages around 60 overall.
- Aerodynamic shape allows it to have the low coefficient drag (Cd) of 0.25.
- The Honda Civic Hatchback in comparison has a Cd of 0.36 and requires more than 32% more power to reach the same speed.
- According to the U.S. Department of Energy, a set of Insights were tested and had an overall average of 46.8 miles per gallon.



Honda Insight

(Source: © <http://sayhenry.com/future.htm>)

## **Toyota Prius**

- Toyota's top-seller hybrid and mass favorite the Prius.
- Launched in 1997 in Japan
- Designed originally to reduce emissions in cities.
- Pricing starts at about \$20,000 for the base model.
- Four door sedan seating up to five people.
- Gas engine turns off and on while driving.
- The gas engine doesn't start until the car reaches the speed of 12 mph.

- Provides extremely low emissions when traveling in crowded areas.
- Travels 50 miles per gallon, which helps with fuel costs.
- According to the U.S. Department of Energy, a set of Prius' were tested and had an overall average of 41.9 miles per gallon.



Toyota Prius

(Source: © <http://sayhenry.com/future.htm>)

This table, taken from <http://sayhenry.com/future.htm> compares the two most popular hybrid cars now available.

<b>Feature</b>	<b>Prius</b>	<b>Insight</b>
Gas Engine Always Used	No	Yes (except when stopped)
Gas Engine Charges Battery	Yes	No
Aluminum Chassis	No	Yes
Emissions Rating	SULEV	ULEV
Apprx Hwy Mileage	50 mpg	70 mpg
Apprx Top Speed	100 mph	100 mph

Buying your hybrid vehicle (or not) is also not the end of the story. They why and how of hybrid vehicles, the best deal and ensuring you get the optimal, ultimate benefits from your car is also at stake.

If you understand how the hybrid technology works, the argument is that you will also be able to get the most from the vehicle by optimizing drivability, fuel economy and gas

mileage.

## **Getting Better Mileage From A Hybrid Car**

**Increasing mileage and taking advantage of fuel economy is a major motivator for many who opt to invest in these vehicles**

1. Driving Slower – It is a known fact that the drag on your car will increase the faster you drive. The drive force at 70 mph is double that at 50 mph (How Stuff Works). Slowing down can increase your mileage.
2. Try to maintain a constant speed – remember that each time you speed up your car has to use more energy.
3. Avoid abrupt stops – the electric motor in the hybrid cars take energy out of the car when it has to stop. If you give the motor more time to slow the car then it will be able to recover more of the energy.

## **How do I get Maximum Fuel Efficiency?**

I found this interesting question from HowStuffWorks.com, as it tried to explain how to figure this part of owning a Hybrid out. It forms part of the motivation and value-proposition of hybrid vehicles and might help you make up your mind if it is for you or not.

One of the tips to increase gas mileage is to travel at a constant speed. The question is, what is that magical speed that will give you the most out of your fuel.

To explain this we must know how much power it takes to push a car down the road. The power required is explained by the following equation:

$$\text{road load power} = \mathbf{av} + \mathbf{bv}^2 + \mathbf{cv}^3$$

The letter **v** represents the velocity of the car, and the letters **a**, **b** and **c** represent three different constants:

- \* The **a** component comes mostly from the rolling resistance of the tires, and friction in the car's components, like drag from the brake pads, or friction in the wheel bearings.

- \* The **b** component also comes from friction in components, and from the rolling resistance in the tires. But it also comes from the power used by the various pumps in the car.

- \* The **c** component comes mostly from things that affect aerodynamic drag like the frontal area, drag coefficient and density of the air.

This equation says that if you double your speed, you will increase the power required by much more than double. A hypothetical medium sized SUV that requires 20 at 50 mph might require 100 horsepower at 100 mph.

By plugging some speeds into the equation we can see how a 1 mph increase from 2 to 3 mph compares with a 1 mph increase from 50 to 51 mph. To make things easy we'll assume **a**, **b** and **c** are all equal to 1

<b>Speed</b>	<b>Equation</b>	<b>Result</b>
3 mph	$3+3^2+3^3$	39
2 mph	$2+2^2+2^3$	14
<b>Power Increase</b>		<b>25</b>
51 mph	$51+51^2+51^3$	135,303
50 mph	$50+50^2+50^3$	127,550
<b>Power Increase</b>		<b>7,753</b>

(Source: © <http://auto.howstuffworks.com/question477.htm>)

If this is a major concern of yours when selecting or opting to buy a Hybrid, bear in mind that purchasing is only half the equation. Using and maintaining the vehicle and on-going responsibility. Driving it as such to get the maximum benefit from the hybrid technology also important.

### **Is the Hybrid Car for You?**

Again, buying a car has a complex set of very personally motivated aspects and selection criteria that varies for different people and groups.

In general terms, Hybrids are...

- All-round better for the environment
- provides you with all the essentials of a gasoline-engine car
- saves you money on fuel costs.
- Hybrids tend to be between \$1,500 and \$2,000 more expensive upfront
- tax refunds and rebates are available for the purchase of hybrid for that money
- A viable, affordable alternative

If you are looking to buy a new car, consider a hybrid vehicle that will help BOTH the environment and your wallet, The most popular being the Prius and Insight as well as the new Civic Hybrid. Good luck with your hybrid purchase.

### **What To Avoid When Buying A Hybrid**

- \$\$ MATTER AND ARE STILL MORE EXPENSIVE.
- Limited variety and choice for consumers, but the base is growing with more and more models making their way onto the market and even more in development.
- Concept cars, Hybrids, diesel-electric, fuel-cell, and bio-fuel/alternative renewable fuel-sources, cleaner with less emissions are also on offer.
- Hybrid and or HEVs are no silver bullet and ONE-answer solution, or only alternative

- Maintenance, running and repair costs might still be slightly higher.
- Understanding the hybrid technology and having realistic expectations of it will also serve you well. Do as much upfront research as you possibly can
- Be objective in your decision-making and compare/contrast the current hybrid offerings on the market and pick the one most suited to your needs and requirements as well as custom selection criteria which you prioritized earlier.
- Ask yourself about your driving and commuting, distance, location and whether it is an economical decision to invest in a hybrid or not.
- You always have the option to wait for some more models to make their way onto the market as well.
- Take advantage of any monetary, tax incentives or rebates on offer.
- The true 'hybrid' nature and environmental performance of specific models can vary greatly. Pick the one that resonates best with your personal motivations, goals and rewards.

## **Unleashing The Future...**

Hybrids are here to stay. There is no denying it. Many are happy with theirs once it graces their lives. The decision is personal and will take time. For each of us the reasons for investing (or not) in a hybrid vehicle will vary. Investing in the environment and future has always served us well as a human

populace. This is no different and time will tell. Auto-consumers are notoriously slow to adapt to changes and new offerings. There are skeptics about hybrids, HEV, fuel-cells, diesel-electric hybrids etc. Japanese, European (German) and North American automakers are all working feverishly to move this market forward. Some are collaborating and even sharing technology in the interest of moving this market forward with some faster momentum.

Call us cheap, lazy, ignorant or power-hungry, comfortable and stuck in our habits...because we do not know or have not had exposure to better, all keep us from trying out new or alternative technologies. Automotive options are no different. We have our bias, prejudices and preferences. It will take time to gain more ground and be mainstream, but hybrids are here to stay. For many, we act like opportunistic environmentalists that will jump at the chance to make a difference and do something special (like cut down on pollution) and vehicle emissions.

For many Hybrids are not as visually appealing and the trend seems to be to make them look more 'ordinary' and similar to their gas-guzzling counterparts in an attempt to raise interest and address these 'uncertainties' and close-mindedness to odd and weird looking, futuristic designs.

Expensive to some, novelty have-to-have for others, it does still cost more and sometimes you have to wait a long time to

take possession, due to automakers NOT being able to keep up with the demand.

We can speculate what the cars of the future would look like.

If they will even be traditional 'cars' per se or some other form of personal transportation, like a human-enabled getting around device of some sorts, sky-cars, alternatives?

The human imagination and ability to dream will keep us coming up with innovative new designs and solutions. With the fact that fossil fuels are not a renewable energy resource and stocks depleting around the world, alternatives will certainly keep surfacing that are more efficient, revolutionary and setting a new tone and pace. It is up to us to make the decisions where to invest our money and development.

Green house effects, degrading ozone, devastating impact of noxious fumes and particles in our atmosphere and living environment and more, all motivate and inspire us to do something different. Consider green alternatives in and around your set of wheels, home and lifestyle calls for some different, counter-intuitive thinking and actions, possibly including the choice of buying a hybrid or not.

Saving money, saving the environment, driving something really cool and futuristic, doing the right thing... whatever our personal motivation, hybrid cars will dot our roads and driveways for years to come and more and more are seen

everyday as people try to avoid skyrocketing gas prices. Diesel, hydrogen, fuel-cells, plug-in electric cars, zero-emission vehicles and so on will be in our future in some way, shape or form.

Research into why people actually buy hybrids have shown that it is primarily NOT TO SAVE MONEY. The motivation and reward seem to be much deeper and personal (varied) than that.

It offers a new alternative, we did not have before.  
It is developing and growing, refining and exploring options.  
It is reflective of the human capabilities, innovation and potential.

The hybrid does what your old car does not/can not  
It is a viable alternative and worth investigating, even investing in

The hybrid gives you the opportunity of looking beyond yourself and your choices, awareness of bigger issues outside or ourselves and our selfish needs and wants.

There really is something else at work for people that buy hybrids

When looking at the popularity of SUV's for example, the symbolic meaning of a vehicle has to be added to the list of reasons why people buy them, and to explain the explosion in their growth. Hybrids are predicted to be no different. At some point buyers and prospective hybrid car owners will simply not compromise on what they want or perceive to need

and desire. They will not settle for a conventional car, because there are alternatives worth exploring.

For most, safety is still a big issue. Crash test ratings and crumple zones are major concerns on these vehicles. They do not look 'robust' enough to withstand a collision and somewhere at the back of most individual's minds human error and potential accidents still figure into this equation. Hybrid cars are just one of the ways we explore and leverage imaginative alternatives to our dependency upon oil.

Whether your vehicle of choice offers hybrid power assistance from an Integrated Motor Assist hybrid system and concept styling or you pit yourself to be one of the many new hybrid enthusiasts who are searching for a gasoline-electric automobile practical for family use, there are options and choices available today with more to come in the near future.

The investment decision is personal, the ramifications and impact wider and global.

Something else to also keep a close eye on are hydrogen, alternative fuels, electric cars etc.

For example, one online source is quoted as saying that automaker BMW is actively involved, dedicated and spending much time and money researching practical hydrogen power.

Some say their launch of a hybrid 7 series, is as close as 2010.

It might seem a little too futuristic for some, but it is a real possibility. One online writer phrases it as follows and we happen to agree...

*Though it may seem strange to think that hydrogen power may be only a few years away, consider this: many states have already seen and or approved legislation to allow the beginning phases of hydrogen refill station planning and construction.*

Things are changing and winds are shifting. The age-old automotive industry is redefining itself and hybrids are just one of the options and channels through which this is happening.

There is a clear trend, commitment and dedication to the development and implementation of hybrid technology.

Most if not all automakers have hybrids lined up for launch and production. Experiments with public transit and low emission buses are on-going.

Hybrid trucks and work equipment is next in line and not far behind, with increasingly commercial options becoming available. It is the choice to be making and supply and demand will fuel this market for years to come.

Whether under development or scheduled to roll of the production line Hybrids are here to stay. Combination hybrid technologies will soon invade most new releases.

You do not have to be a fierce environmentalist or tree-hugger to see the value and potential of a hybrid vehicle.

Like with anything else that is new and innovative skeptics and critics will have their say, automakers are getting ready for what they anticipate consumers will be wanting in the years to come. Future generation drivers, students and researchers are working tirelessly to come up with alternatives to fossil-fuel dependent, gas guzzlers.

Governments and interest groups are working together to create the right type of environment for these hybrids to thrive in.

Educate yourself on the different options, pricing and hybrids available

Learn from numerous sources everything and as much as you can about the hybrids you are interested in or considering  
Get some hands-on driving experiences and test-drives under your belt to help you make up your mind – put theory into practice and to the test for yourself.

Keep a keen eye on the new technologies and models that are making their way onto and into the market.

Not all hybrids are created equal – ensure that you understand exactly what the term means for the vehicle that you are buying

If it makes sense, compare it with conventional vehicles (cost, fuel economy, drag etc.)

Do not compromise your main considerations and wants. Pick the hybrid that is most suitable for you and your budget, commute and driving challenges.

We each have our very own personal bias, prejudices, preferences and motivations for buying a hybrid vehicle - make your list of top three things you definitely want, must have, need to have and 'pleasers' BEFORE going shopping for your hybrid.

Financial, monetary and economic reasons for buying a hybrid are REAL! It makes economic sense, with tax incentives and rebates coming your way as a reward for the choice that you have made.

Figure out for yourself, WHY exactly you want and are buying a hybrid vehicle. Is it the technology, the gas-savings, fuel economy, eco-friendly aspects etc. This will help you talk to dealers and sales representatives better, communicating exactly what you want, not settling for anything less.

Know which hybrids are available and what they cost (remember base model pricing is common, added features and other fees have to be added onto this price).

Expect to pay more for your hybrid vehicle, new technology tends to be priced higher.

Low to zero emission vehicles, alternative transportations eco-friendly machines will keep making their way into our lives and a set of wheels to reflect this orientation is just another piece of the overall puzzle.

Understanding the technology better will help you drive, maintain and get the most fuel economy from your vehicle.

Optimizing your gas mileage and driving at an optimal speed for maximum efficiency become possible with a little better grasp of the fundamentals, the nuts and bolts of how your hybrid engine actually works.

The FIVE types of hybrid technologies out there and asking about what exactly is going on under-hood to make it a 'hybrid' makes you an informed and empowered consumer and decision-maker.

## **Closing Remarks**

Openly share with others what you have learned and discovered regarding hybrid vehicles. Pass on the good word.

Hybrid technologies work hard for you to

- Increase the mileage.
- Reduce emissions and pollutants
- And offers a viable alternative to conventional gas-powered vehicles and automobiles
- It also has more power than the electric car and lots of potential for development and longevity, low operating costs, depreciation and longevity – even resale value will not disappoint!

Hybrids offer an all-rounder good deal, even if the sticker price is still slightly higher than conventional counterparts.

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### **2004 Toyota Prius power-train**

(Source: © 2006 Motor Trend, a PRIMEDIA publication. All rights reserved)

### **HAVING A FINAL SAY OR WORD....**

ENVISION WHAT TOMORROW WILL LOOK LIKE ON OUR ROADS...

Ideally what would we all like to see? Dare to dream a little...

Here is one online opinion as a sample: (Source: Motor-trend 2004 Hybrid Guide)

*Within the next decade or two, there's a good chance you'll be driving a vehicle powered by an advanced powerplant that's far removed from the familiar internal combustion engine now residing beneath your hood.*

*Government regulation, environmental pressures, and market competition have spurred accelerated research and development into alternative fuels and the vehicles that run on them, creating a new twist in the motor vehicle's evolution.*

ARE YOU PART OF THE NEW **HYBRID** REVOLUTION YET?

READY TO CAST YOUR VOTE?

