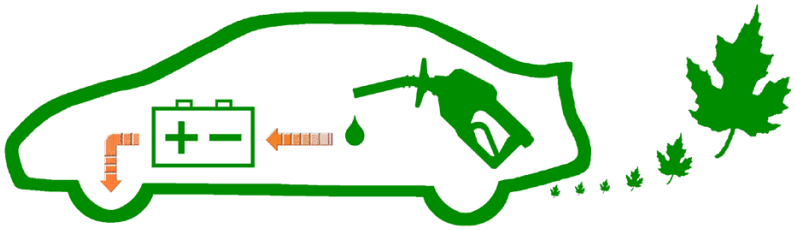
Toyota Prius User-Guide

Second Edition for the **2010-2012** models



DRIVING

Just Drive It !

Vital Info

The "**Just Drive It**" advice still remains good advice. Misconceptions about the technology have been dispelled over the years. Yet, some new owners are compelled to drive differently, assuming that will result in higher efficiency. In reality, there's nothing special you actually need to do. Just drive it as you would any other vehicle. The system is designed to operate in the most efficient manner automatically. Enjoy the smooth & quiet operation.

Modes

Choices

There are actually 4 available. 3 are activated by pressing the button provided for it. The 4th is the "*Normal*" mode; it is automatically active when none of the other 3 modes are selected.

EV comes in handy when you need more power at slow speeds but would like the engine to remain off. **ECO** provides greater play with the accelerator pedal, as well as altering the A/C and Heater thresholds for more efficient operation. **PWR** allows you to take advantage of the power the system offers.

Don't mistake the buttons for traditional low-gear or over-drive options. The selection choice is there for you to optimize efficiency and specify pedal preference. Performance itself is not altered.

Choices (PHV)

Similar to the regular model Prius, the PHV offers 4 operational modes. ECO, PWR, and Normal work the same. The button unique button is for switching between HV and EV modes.

EV allows you to drive up to 62 mph (100 km/h) using only electricity, without the gas engine in motion. HV is the option available to preserve that EV for use later, since you may want to save electricity while on the highway for city driving afterward. EV is available for faster speeds, but the engine will run in conjunction with the electric motor then, delivering very high MPG as a result. This automatic mode is referred to as EV-BOOST.

ECO Mode

This indicator illuminates when the ECO MODE button is pressed.

Vehicle efficiency is directly affected by outside temperature. In both extreme hot and extreme cold driving conditions, you'll benefit from using this mode. It instructs the hybrid system to operate the A/C in a manner which uses less electricity than normal, when it's hot. When it's cold, the window defroster will operate like the A/C and the heater will allow the engine to shut of sooner.

Vehicle efficiency is also affected by how you drive. This mode increases the sensitivity of the accelerator-pedal, allowing easier control for opportunities when you wish to adjust acceleration rate.

PWR Mode

This indicator illuminates when the PWR MODE button is pressed.

When power is needed quickly, using this mode can be beneficial. It prevents the engine from shutting off as soon as it normally would to provide maximum acceleration without delay.

Vehicle efficiency is reduced when using this mode, even if you don't take advantage of the rapid power it can offer. The accelerator-pedal sensitivity is decreased and initial thrust from the electric-motor is noticeably more responsive. So, feel free to indulge at times. The hybrid system will still deliver impressive MPG even in this mode.

EV Mode

This indicator illuminates when the EV button is pressed.

This mode allows the electric-motor to provide additional thrust without the gas-engine starting. On the Eco-Meter, you'll see the energy usage exceed the usual GREEN zone threshold, allowing engine-off (zero RPM) driving in both the WHITE and RED zones.

The catch is the emissions system must be hot (at least 155°F, 68°C) and speed cannot exceed 24 MPH (39 km/h). If either of the criteria is not met, the EV mode will disengage but the engine may still remain motionless (often referred to as "*Stealth*" mode).

EV Mode (PHV)

The PHV model provides a different indicator above the speedometer to inform when EV MODE is engaged. It will illuminate whenever that mode is selected, even if the engine running for warm-up. Use the indicator above the Eco-Meter to inform you when the gas engine is actually off.

The temperature threshold for EV MODE is different in the PHV than the regular model Prius. 130°F (54°C) is what the coolant needed to be warmed to before the engine will shut off, once started for the first time. EV is default, allowing you to run without the engine until it is needed for extra power or for heating the cabin.

EV Boost (PHV)

When the PHV mode Prius is still in EV mode, but speed of travel exceeds 62 mph (100 km/h), the battery-pack will continue to supply electricity at the more ample rate. You'll see dramatically higher MPG as a result. When you only have a short distance to travel, this may be a better use of the electricity than switching to HV mode. The toggle button provides the option to choose.

Normal

When no other indicators lights are illuminated, this is the mode Prius is in.

Use this mode for the most average driving experience. All hybrid features will operate within the regular tolerances, providing a nice balance of power & efficiency.

Eco-Meter

The “Hybrid System Indicator”, commonly referred to as the Eco-Meter, provides an assortment of information for the driver. This is the source of detailed data not available from the classic “Energy Monitor”, making it the preferred choice after becoming accustomed to how the hybrid system operates. The energy-bar displayed in the center points out the amount energy being consumed & captured in addition to indicating the engine-on threshold.

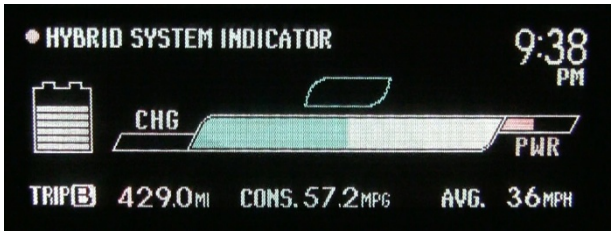
Green

The first zone is that **green** area illuminated in the photo of the energy-bar above. It identifies the most efficient vehicle operation. Up to the center dividing line, the engine will remain off. For the mode referred to as “Stealth”, driving up to 46 MPH using only electricity indicated by that **green**.

White

The second zone is the **white** area which follows the **green**. This indicates when additional power is being consumed. When EV mode is active, this illustrates the amount electricity being drawn. When beyond the EV mode (24 MPH) or “Stealth” mode (46 MPH) thresholds, this illustrates the amount of thrust contributed by the gas engine.

Red



The third zone is the **red** area. It indicates when high power demand is requested. This specific zone should be used only briefly, to avoid inefficient driving. To make status easier to notice, like during hard acceleration, the **ECO** symbol above the energy-bar disappears with **red** is active.

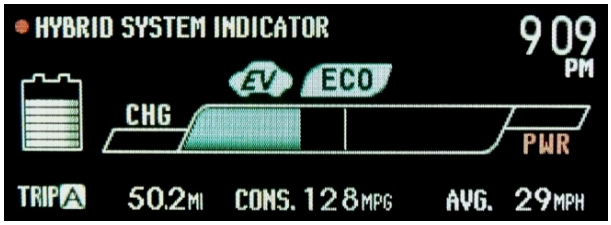
Charge

When electricity is being captured by regenerative braking, the energy-bar will indicate it by illuminating the area with the **CHG** label. Status will move to the left to illustrate an energy gain, rather than to the right to illustrate energy consumption. The most efficient braking is when the indicator is kept within that zone; exceeding it means some energy is lost by the friction brakes.

HV Mode

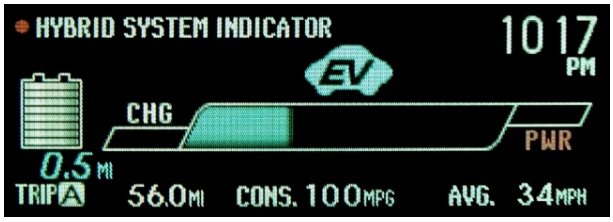
Introduced with the 2012 models of Prius is the "HV" indicator. This is that car-shaped symbol which tells you when in the engine has shut off. When it is only an outline (no EV inside), that means you are driving in HV mode. This stands for "hybrid vehicle", when both engine & motor are contributing to propulsion needs.

EV Indicator



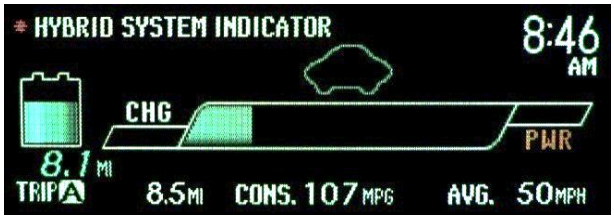
Introduced with the 2012 models of Prius is the "EV" indicator. This is when that car-shaped symbol is filled with "EV" inside. This informs you when the gas engine has stopped. In other words, it tells you when you are driving with the engine at 0 RPM. This is the mode commonly referred to as "*Stealth*", since you are still in HV but propulsion is currently electric-only.

EV Mode (PHV)



Exclusive to the PHV model, there's a new indicator. This is a larger version of the EV symbol. When illuminated, it informs you that driving is in full EV mode and will remain that way until hard acceleration occurs or speed exceeds 62 mph (100 km/h).

EV Boost (PHV)



When traveling at speeds faster than 62 mph (100 km/h) in the PHV while in EV mode, the larger version of the EV symbol will become just an empty outline. This informs you that electricity is being drawn from the battery-pack at a much faster rate than HV mode to provide much higher efficiency. It also tells you that EV will automatically resume when the vehicles slows down.

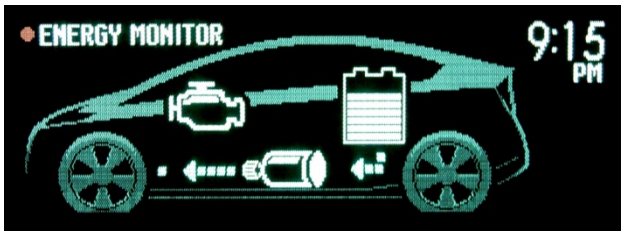
EV Warm-Up (PHV)

At any time while in EV mode, the gas engine may start up. This can happen when accelerating hard, more heat from the coolant is needed to warm the cabin, or simply when warmth is needed for the emission-system. Like with EV-BOOST, electricity continues to be drawn from the battery-pack at the faster rate and the gas engine will shut off as soon as it is no longer needed. The symbol will change from that empty online back to EV when warm-up is complete.

Energy Monitor

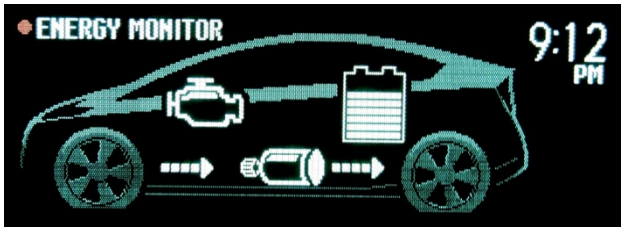
This screen available on the Multi-Information Display is an educational tool for new owners. It provides real-time information about what the hybrid system is doing while you drive. Seeing the variety & frequency of gas engine, electric motor, and battery interactions is a very effective way of understanding how the system achieves such high efficiency.

Stealth Mode



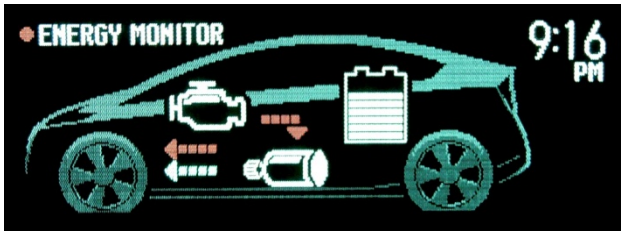
The mode, also known as “Battery Drive”, is when all thrust is provided by the electric motor and all power is provided by the battery-pack.

Regeneration Charge



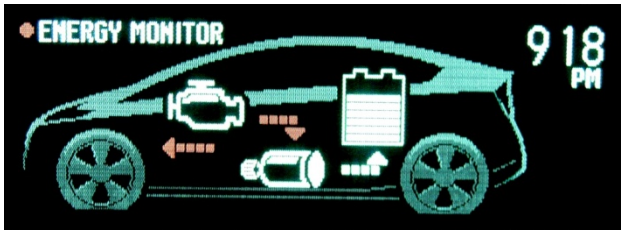
As you approach a stop or just slow down, the excess kinetic energy is used to turn the generator. This creates electricity, which is used to charge the battery-pack.

Engine & Motor Drive



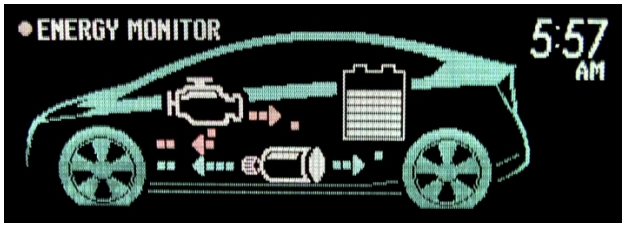
There are times when the battery-pack isn't needed, the engine will directly provide electricity for the motor.

Engine Drive + Charge



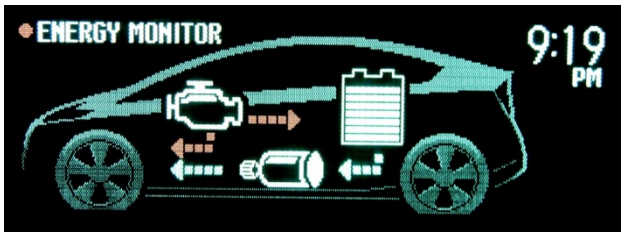
The engine provides thrust for the wheels along with electricity for charging the battery-pack.

Engine & Motor Drive + Charge



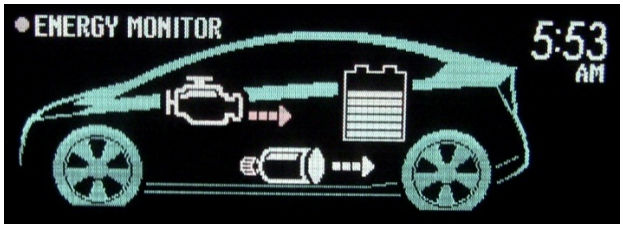
The engine provides thrust to the wheels as well as electricity for both feeding the motor and charging the battery-pack, all at the same time.

Full Power or Gradual Slowing



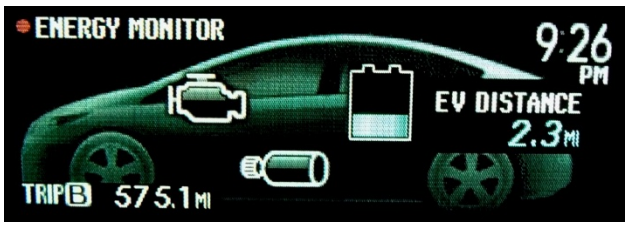
Both rapid acceleration and moderate deceleration take full advantage of the hybrid system to achieve maximum efficiency.

Startup Charge or Engine Heat



When you first startup a Prius, you will typically see this before shifting into drive or reverse. It also occurs when additional heat is needed.

EV Distance (PHV)



The PHV model Prius provides EV distance information on the screen. The contents of the battery appear solid when an ample supply of electricity is still available. That solid will change to bars when electricity drops to the normal level for HV operation.

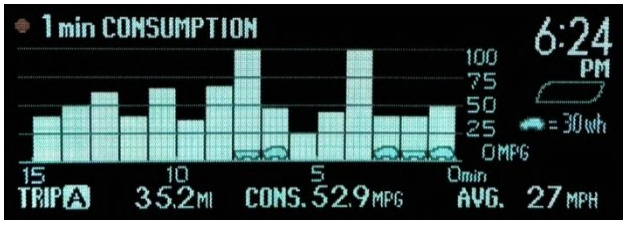
Charging (PHV)

If you press the power button on the PHV model Prius while it is plugged in and charging, this screen will be displayed. It tells you how much time is required to complete and at what rate the power is being drawn from the plug.

Consumption

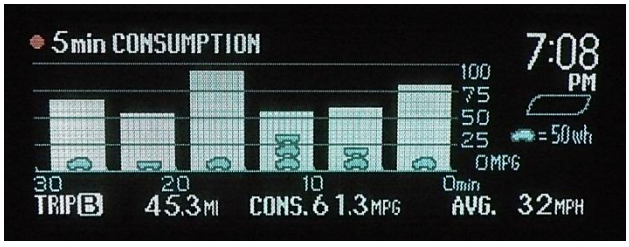
Seeing the effect recent driving had on efficiency during that specific moment can be quite informative. Two different versions of the consumption are provided for this. They both indicate the MPG during the time-span illustrated and how much (if any) regenerative electricity was recaptured by the braking system. (Note that electricity generated directly by the gas engine is not included.)

1 min



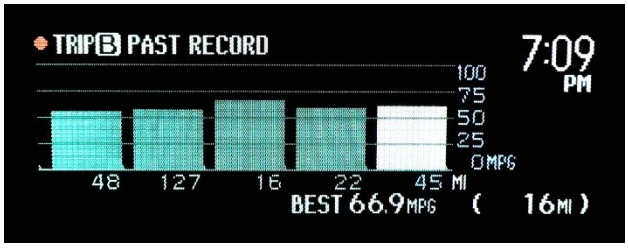
This consumption information screen displays the most recent 15 minutes of travel since the hybrid system was restarted. Each bar indicates a 1-minute span of time.

5 min



This consumption information screen displays the most recent 30 minutes of travel since the hybrid system was restarted. Each bar indicates a 5-minute span of time.

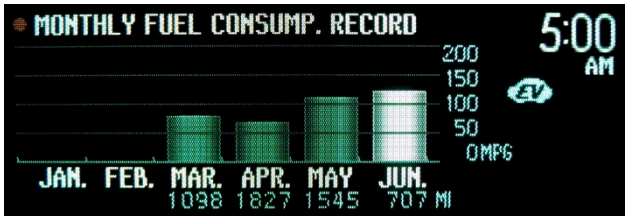
History



Rather than displaying information based upon time, there is an additional consumption screen which provides summaries between resets based upon distance. It also numerically shows the best MPG among individual drives.

Two different sets of data can be stored, using the "**A**" and "**B**" trip-meters. A suggested use for getting the most information from the feature is resetting the start of each morning and each time you refill the tank.

History (PHV)



The passage of time is more pronounced with the PHV model, making the benefit of month rather than an arbitrary reset of a trip meter quite obvious after you've driven one for a while. This is the display screen provide for that purpose.

Driving Ratio (PHV)

An especially new educational display screen for the PHV model is this EV DRIVING RATIO. There are two resettable meters available. But provide EV and HV summaries. The information gives you an idea of how much benefit you are directly getting from the plug, displacing gallons of gas with electricity.

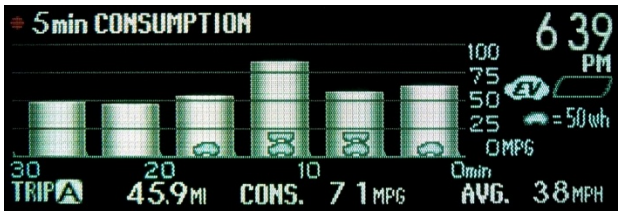
Efficiency

Having immediate feedback about the results of system operation as it happens is quite empowering. You develop an appreciation for how the design responds to the complexities of real-world driving conditions. It influences your choices about driving. The following are examples of what you'll find most informative.

Stealth Mode

Whether or not your Prius has a plug, you'll often drive in "*Stealth*" mode. This is when the gas engine shuts off (stops moving) and travel continues along using only the electric motor, even though you are not driving in EV mode. That "EV" symbol indicates that status. This automatic feature of the hybrid system takes advantage of efficiency opportunities. There's nothing you need to do to optimize it. In fact, prolonging the engine from starting back up again may lower overall MPG. It's there as a reminder of how Prius efficiency is achieved.

Distance (PHV)



Distance of travel has always been an efficiency influence easily overlooked. The introduction of the ability to use plug-supplied electricity makes the topic even more eluding. On the Eco-Meter and Consumption screens, you'll see TRIP-A and TRIP-B values for MILES and MPG. When trips are really short or really long, you'll notice a significant efficiency different from trips medium in length. Don't let that bother you. Remember, you're still getting a benefit from the electricity regardless of how it's used. That MPG value clearly shows it.

Trip Info

At the bottom of many of the Multi-Information Display screens, there are numeric values indicating accumulated status of driving results since the previous reset and last refill. This is also how the vehicle distance odometer value can be seen.

Trip

There are two storage meters available, trip "A" and "B". Each accumulates separate results. Drivers find this handy for tracking a variety of conditions. You can reset whenever you want… each trip, when the tank is refilled, or just leave it to collect up to 10,000 miles of data.

Miles

This indicates how many miles the data represents. It changes back to zero, along with the other values displayed, when the TRIP button on the steering-wheel is reset (holding it continuously for 3 seconds).

MPG

This value indicates the total consumption of gas by the engine since the previous reset. It is an overall average representing MPG (miles-per-gallon).

Average

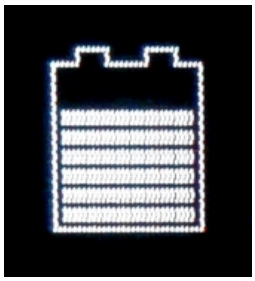
An important aspect of efficiency usually overlooked is the average speed of travel. The hybrid system continues to operate even if the vehicle is not moving. The resulting amount of gas & electricity consumed can be misrepresented by just the distance in miles alone. This value also takes time into account. The MPH (miles-per-hour) value will drop as you sit in daily stop & slow commute traffic or wait for a light to turn green. It is an overall calculation of the entire duration the hybrid system was active, to give you a better idea of how overall driving is influenced.

Empty

Distance to empty information is also available. This is the third option, following "A" and "B". The value shown is an estimate of the miles you can continue to travel, based upon current tank efficiency, before you'll need to refill.

Battery Info

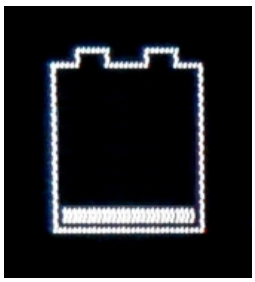
Level



The SOC (state-of-charge) level of the battery-pack is indicated by this illustration on the Multi-Information Display. Only the usable capacity is shown. So even when no bars are visible, there is still electricity available. When all 8 bars are filled, the battery-pack isn't completely full.

6 bars is the most common level. Drivers won't often see the top two filled. Seeing less than the bottom doesn't often happen either. The hybrid system attempts to keep the SOC within those 4 middle bars for maximum longevity of the battery-pack.

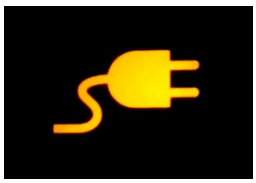
Empty



Empty is no reason to panic, though new owners sometimes do when the SOC level gets down to just 1 bar. The engine will simply start up to replenish the electricity supply. There is no need to alter the way you drive while that occurs.

Remember, that's actually about 40 percent of the battery-pack SOC remaining, even when only 1 bar is showing.

Recharging (PHV)

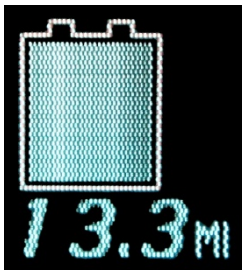


Within the charge-port area on the outside of the Prius is this indicator.

If the timer is set, it will immediately illuminate to confirm connection to the charger is complete then shut off shortly afterward. Later when the timer starts charging, this symbol will illuminate again.

If the timer is not set, this symbol will immediately illuminate to confirm connection to the charger and remain that way until charging has completed.

Full (PHV)

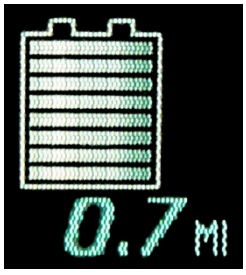


When there is an ample supply of electricity available, the symbol for the battery on the various display screens will appear solid like this. As the supply lowers, this image of the battery will too.

Below the image of the battery is a rotation estimate of the EV distance available stated in terms of miles. Remember, this number will drop faster when acceleration is needed and slower when very little power is needed.

Also, the numeric value is based upon recent travel. If you travel long distances with few opportunities to recharge, the miles represented will be lower. If you travel short distance recharging frequently, the miles represented will be higher. It's only an estimate using observation, which will vary over time, not an indicator of actual battery capacity.

Low (PHV)



As the supply of electricity reaches the depletion point at which EV will switch over to HV driving, the solid interior of the battery image will change to bars. This is done as a visual convenience; otherwise, all you'd ever see following depletion would be an empty battery.

The value will up and down as you continue to drive in HV mode. Sometimes, there will be enough electricity regenerated to change the battery image back to solid. This is normal expected operation.

Brake Assist

Rollback

Preventing vehicle rollback when starting from a start on a hill is very easy with a Prius. It offers a “brake assist” feature.

Press very hard on the brake pedal for about 2 seconds. That symbol to the left will illuminate, informing you that the vehicle will remain in place for a few seconds while you shift your foot from the brake to the accelerator. When acceleration begins, the brake will automatically release.

Tire Pressure

Warning

Low tire pressure is very dangerous, so much so that a federal mandate was issued for all automakers to provide a warning to indicate when the PSI has dropped 25 percent below the recommended minimum.

35 PSI front and 33 PSI rear is the recommended minimum by Toyota.

44 PSI front and 42 PSI rear is what owners wanting higher efficiency and longer treadlife use.

Steering-Wheel

Right Cluster

On the right side of the steering-wheel, there is a cluster of 5 multi-use buttons available. Using each is just a matter of pushing one with your thumb. Note that the orientation of the buttons changed from side-side to up-down with the 2012 models.

Climate-Control adjustments and options for the Multi-Information Display screens are what this cluster offers.

Trip

Use this button to alternate trip information between “A” and “B” and Distance-To-Empty.

Disp

Use this button to choose a screen on the Multi-Information Display next to the speedometer.

Lower

For a lower climate-control temperature, push this button.

Continuing to hold this button will cause the temperature to decrease until you release.

Higher

For a higher climate-control temperature, push this button.

Continuing to hold this button will cause the temperature to increase until you release.

Recirculate

The benefit of this button often misunderstood. When recirculate is active, fresh air from outside is not used. Instead, the interior air is continuously passed through the heating or cooling system. Doing this allows quicker cabin comfort, but will eventually led to a humidity build up since your own breath contributes moisture to the air. So, limit the use of this feature.

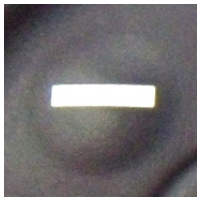
This button makes it convenient to toggle recirculate on & off.

Left Cluster

On the left side of the steering-wheel, there is a cluster of 5 multi-use buttons available. Using each is just a matter of pushing one with your thumb. Note that the orientation of the buttons changed from side-side to up-down with the 2012 models.

Audio-System selections are what this cluster offers.

Reduce



Use this button to reduce the volume of the audio-system.

Increase

Use this button to increase the volume of the audio-system.

Previous

To select the previous audio-track or radio-channel, push this button.

Holding this button down for a moment will cause the multi-CD player to switch to the previous disc.

Next

To select the next audio-track or radio-channel, push this button.

Holding this button down for a moment will cause the multi-CD player to switch to the next disc.

Mode

To change among the audio-system choices (AM, FM, SAT, CD, AUX), use this button.

Pressing this button when the audio-system is off will cause it to turn on.

Holding this button when the audio-system is on will cause it to turn off.

Voice

Navigation

Commands issued verbally to the navigation system start by pressing this button.

Phone

When a cell-phone is connected via bluetooth, the sides of this rocker-switch can be used to answer a call and hang-up afterward.

Pushing the BOTTOM will make the phone dial-pad appear on the Multi-Information Display.

Pushing the TOP will return the Multi-Information Display to the screen it was on prior to the phone call.

Cruise

Radar

For models of Prius equipped with dynamic cruise-control, this is the button to adjust the detection-distance for the radar system.

Pushing it repeatedly will toggle you through the distances available, which will be illustrated on the Multi-Information Display.

Dimmer

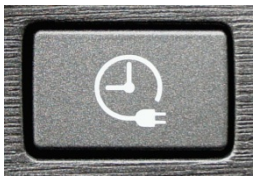
Brightness

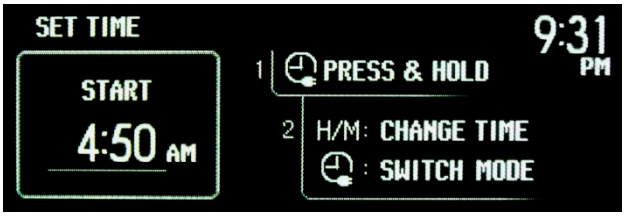
This button (actually an adjustment knob) allows you to dim or brighten the speedometer cluster. Rotating it all the way is how you switch between day & night mode.

It's location is low on the dashboard, to the left of the steering-wheel.

Timer (PHV)

Start





Unique to the PHV model is the timer button. Pressing this displays the screen for scheduling a delayed charge start. You can do this at any time, including after having pressed the power button to shut off the Prius.

Using this button allows you to take advantage of lower electricity rates during off-peak hours. It's also beneficial for battery longevity to wait before charging again. Delaying recharge to let the battery cool down after use is called a "*cold soak*". The timer button makes this easy.

There are 2 timer options available. The photo shown above is the START option; charging will start at the time specified. There is also an END option; charging will start 3 hours prior to that time specified.

Cabin Air

Recirculate

Pressing the LEFT side of this rocker-switch causes the air-conditioning system to circulate inside air throughout the passenger-cabin. This is handy for retaining hot or cold air, but will also retain moisture from your breathing which will eventually cause the windows to fog.

When using the toggle button on the steering-wheel, the indicator light will alter accordingly.

Outside

Pressing the RIGHT side of this rocker-switch causes the air-conditioning system to draw fresh air from outside to circulate throughout the passenger-cabin. Use this mode to avoid window fogging.

When using the toggle button on the steering-wheel, the indicator light will alter accordingly.

Window Defog

Front

When the FRONT window becomes fogged and the regular blower is not enough to clear it, press this button. All air-conditioning blowing will be forced through the window-vents for maximum effectiveness.

This feature is commonly referred to as the “defroster”.

Rear

When the REAR windows become fogged, push this button to activate the electric warmer (those metal wires attached to the glass) to clear them. This will also melt any snow that has accumulated on the outside of the winter.

This feature is commonly referred to as the “rear defroster”.

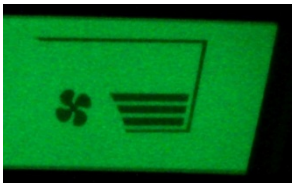
Fan Options

Mode

To adjust the fan speed, use this rocker-switch to make it faster or slower.

Also, pressing either side of this when the blower fan off will turn it on.

Blower



This illuminated display shows what speed the blower fan is set to.

Note that in some circumstances heating can be more effective if the speed isn’t maximum, since slower air passing through the heater-core can transfer more warmth.

Mode

To shift among the 4 fan options available, use this button.

For easy adjusting, keep in mind that there are 4 to choose from. Remembering that allows you toggle without the need to look at the display to confirm the choice. This comes in handy when swapping the “Window + Upper” and “Lower + Upper”, a common need during the winter. Just press MODE twice.

Window + Lower

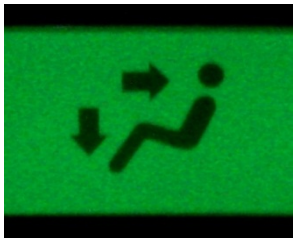
For a normal level of window clearing and air blowing out the vents at your feet, use this mode.

Lower

For air blowing only out the vents at your feet, use this mode.

The vents for this are located at the base of the dashboard for the front seats and underneath the front seats for those sitting in back.

Upper + Lower



For air blowing out both the vents at your feet and the vents at chest level, use this mode.

Upper

For air blowing only out the vents at chest level, use this mode.

Other Buttons

Reminder Reset

To reset this reminder on the Multi-Information Display, do the following *after* you have finished adding the oil and carefully removed the vehicle stand & jack or ramps:

1) With the hybrid system power on, switch to trip-meter to display "TRIP A".
2) Power OFF the hybrid system.
3) Power ON, while holding the SPEED button (shown above) between "km/h" and "MPH"
4) The following will be your confirmation that reset has begun, continue holding.
5) When the reset is complete, release the button.

Speed

Pressing this button toggles the speedometer value between **km/h** and **MPH**.

Holding this button, while the odometer distance is showing, will reset the "**MANT REQ'D**" reminder.

Time

When you need to set the time on the clock, use these buttons.

These same buttons are how you adjust the time for the timer in the PHV model.

Speed (PHV)

Press this to toggle the numeric speed value displayed on the speedometer between km/h and MPH.

The size & location of this button changed for the PHV model. Where it had been is now the location of the TIMER button. This new button is low on the dashboard, to the left of the steering-wheel.

Fuel Door

Lubricate

After long enough duration, it will eventually become difficult to open. Exposure to sand, salt, moisture simply causes the existing lubrication to be less effective. Just a few squirts of WD-40 is all it takes to maintain/restore easy opening.

If you do discover that it is jammed shut, just recruit someone to help (since the distance between is too great for one person). Lifting the lever by the driver's seat and pushing on the back (left side) of the fuel door at the same time will dislodge it. There's no need for any type of tool; very little pressure is required.

Rear Hatch

Slam It!

The hatch door is designed to be slammed shut. So if you find you are not getting it to shut tight, don't feel afraid to use some muscle on it. Holding back isn't necessary. Grab either hand-hole inside then... Slam It!

Unlock

SKS (formally known as SE/SS) won't unlock the hatch while the Prius is running. So to unlock the hatch, you need to press the unlock button on the inside either of the front doors.

Height Reduction

For those of you that don't want to reach so high to close the hatch or have a low-hanging garage door, try this alteration some Iconic Prius owners have found quite helpful:

Above is a photo of the string attached. To the right is a photo of it before installation.

Connect a piece of string with s-hooks on each end the pressure-arm.

Just a simple restrictive device like this is all it takes. Preventing that pressure-arm from extending all the way reduces the height of the hatch when open. And when you shut it, the string simply folds into the slot for drainage.

The string (or light-weight rope) should be about 12 inches when stretched.

The s-hooks must only be 1/8 inch thick to fit properly. They can be any length.

Grille Blocking

Efficiency & Emissions are both dependent upon heat. During winter, colder temperatures require the engine to run more to provide that. By blocking the grille, engine warmth can be retained longer. With less cold air hitting the radiator and passing through to the engine compartment, the overall amount of fuel consumed can be reduced. You'll notice a little bit faster warm-up of the heater too.

Discreet Look

Unless you're specifically looking for it, you may not even notice the *lower*-grille is blocked entirely… especially when the Prius is coated with the usual layer of snow, sand, or salt.

Blocking Method

There are a variety of methods available for grille blocking. They vary in cosmetic appeal. The only tool needed is a knife for cutting notches to allow flat insertion. The tight fit holds it in place. Squeezing **half-inch foam pipe insolation** between each grille slot is a quick and inexpensive method that works surprisingly well. It's the same technique Iconic Prius owners have been using for many years, as illustrated in this photo:

Lower Blocking

Once the daytime high temperature in your area drops below 60°F (15.5°C), it is safe to block the *lower*-grille entirely.

Upper Blocking

For those experiencing harsher climates, such as Minnesota, there can be a benefit from partial blocking of the *upper*-grille in addition to the *lower*-grille. Monitoring coolant temperature is required though, since over-heating is still possible even in extreme cold.

Temperature

Use an aftermarket add-on device, like ScanGaugeII, to monitor the engine coolant temperature. The normal operating temperature is 195°F (90.5°C). The usual maximum is 198°F (92°C), which you may see when climbing hills on the highway.

External Cargo

Tie-Down Eyelets

Prius is equipped with remarkably handy tie-down eyelets. Their original purpose was for ocean transport from Japan, to provide a convenient & reliable method of securing the car to the boat. Owners have found the very opposite to be true as well, securing a boat to the car. Located in each of the 4 corners under the bumpers, you'll find those handy metal eyelets for tying down large roof cargo like a canoe.

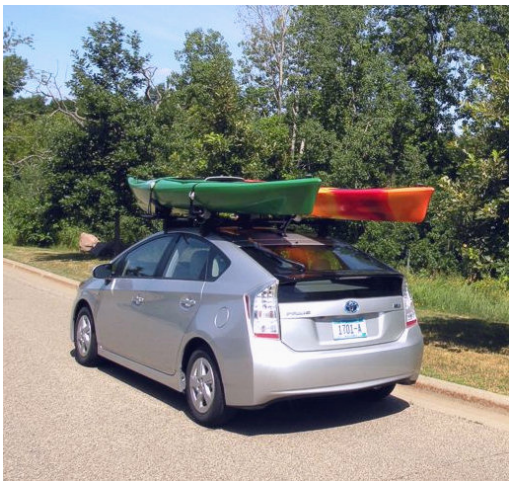
Roof-Rack

Removable & Lockable roof-racks can be used for kayaks, canoes, bikes, and cargo carriers.

Yakima is the brand shown in the photo below. Thule & Saris brands are also available.

The configuration shown in the photos use the following components:

- Q-Towers 4 = $130
- Q-99 Clips 2 = $30
- Q-5 Clips 2 = $30
- 66" Round Bars 1 = $55
- Mako Saddles 2 = $60
- Hully Rollers 2 = $70
- Lock Cores 1 = $35



It's about $375 retail to carry one kayak, and an additional $130 for a second (as shown to the right). The rack can be used without the optional $35 lock cores.

To reduce noise and improve aerodynamics, this shield can be added: 44" Fairing 1 = $55

Notice how the towers only make contact with edges of the Prius, so even the solar package can carry loads on the roof.

Strap-On Rack

Inside is the ideal method of transporting bikes. But if you require that room for carrying people or cargo instead, a strap-on rack can be used.

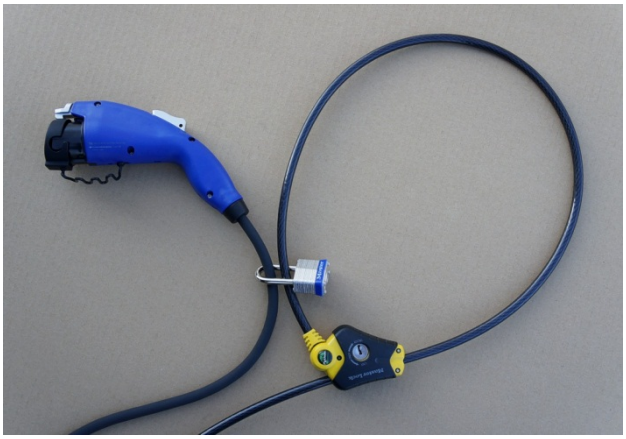
The photo on the above shows the 3 bike model of the Saris Bones rack.

It straps on very securely with only a minimal amount of pressure on the glass. Most of the bike weight is supported legs on the bumper.

Security

Charger (PHV)

Using your portable charger for the PHV in a public area isn't a good idea, unless you can secure it. When plugged into an outlet that doesn't provide a built-in locking mechanism, it's easy to simply use your own. Here's a suggestion:



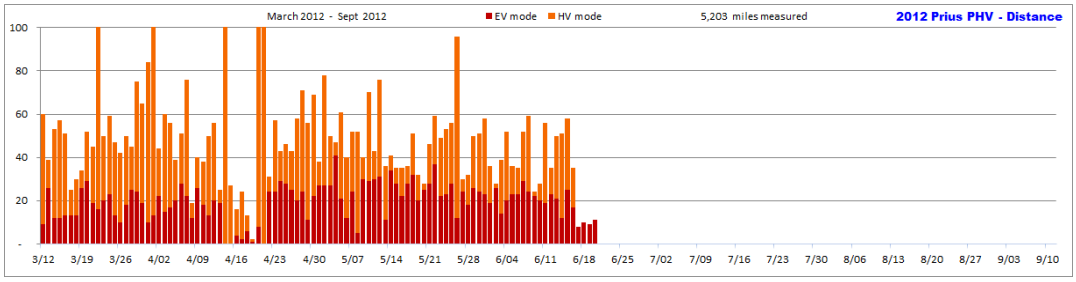
Using an ordinary pad-lock, you can attach a cable-lock to both the charger and the Prius itself.

Notice how easy it is to pass a cable-lock through the tire. The pad-lock provides both a secure attachment as well as the flexbility to slide along the cord for easy placement.

Real-World Data

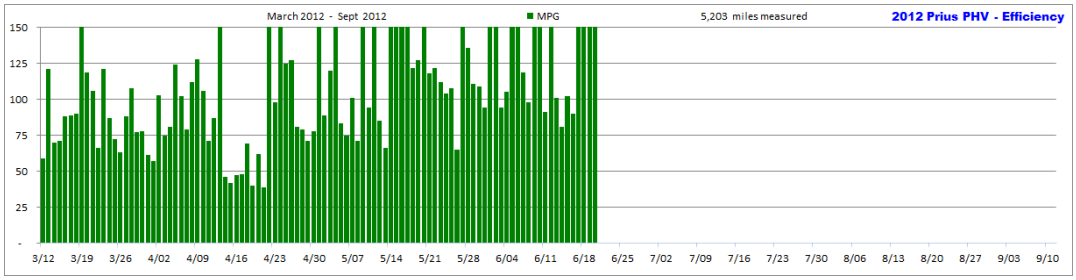
Distance

Generalization about daily-driving is a major problem when comes to the understanding of hybrids. Many people assume they have a routine pattern, with a common distance each day. But in reality, the many demands of life end up causing a wide variety of distances. If you take the time to note your own driving, you'll notice many fluctuations, as this real-world data (from http://john1701a.com) clearly illustrates:



Efficiency

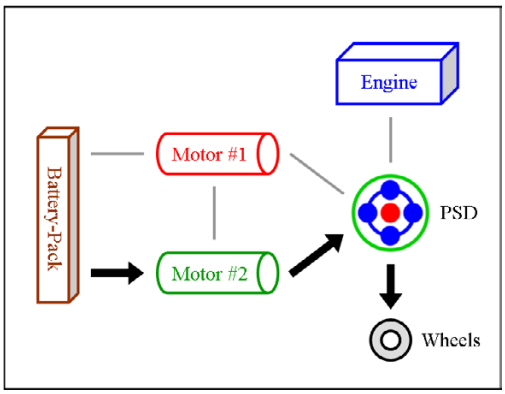
Because there is a wide variety of daily distances, the resulting MPG fluctuates significantly too:



Operational Info

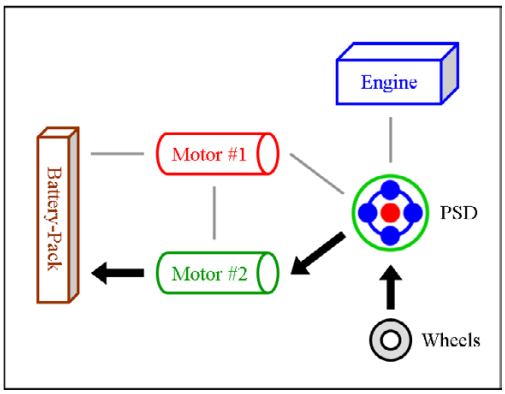
The information provided by the classic "Energy Monitor" is over-simplified for the sake of making observation of hybrid system behavior easier while you drive. There are actually two motors which interact with the engine & battery-pack, rather than just the single one displayed on the screen. The following detail provides a closer look into the flow of power in each of the operational modes.

Note that the Original, Classic, and Iconic models of Prius all used a reduction-gear between the PSD and the wheels. Starting with the 2010 model, it was replaced with a second PSD instead (not illustrated below). This provides a more efficient two-speed system.



Stealth or Electric-Only or Reverse

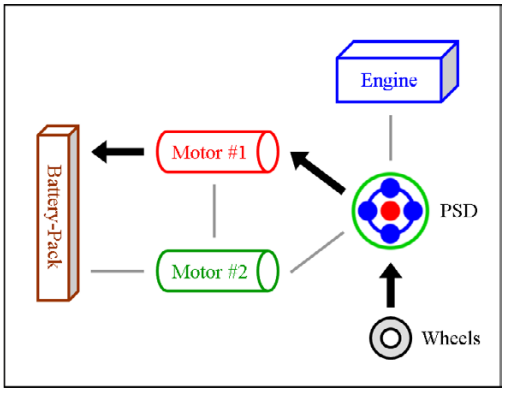
When power to the wheels is supplied entirely by the large motor using only the battery-pack, it is called "Electric-Only". This can occur at any speed. The only requirement is that the use of gas by the engine must cease; however, the motion of the engine may still continue. When engine activity stops entirely, the mode is referred to as "Stealth". This is an ability that is possible due to the PSD, a special device that "assist" hybrids do not have. Lastly, since there is no transmission or even any gears that shift, this is how reverse is provided. The large motor simply rotates backward.



Regeneration (Braking)

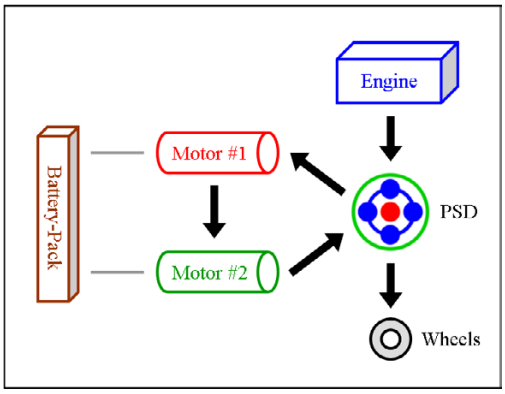
When the driver moderately steps on the brake-pedal, some energy that is normally wasted through friction from brake shoes & pads is instead routed backward through the hybrid system. This causes the large motor to now operate as a generator, which creates electricity to recharge the battery-pack with.

When the driver slams on the brake-pedal to emergency stop, the regeneration cycle is bypassed entirely. All energy is dealt with via the traditional shoe & pad method along with the anti-lock system.



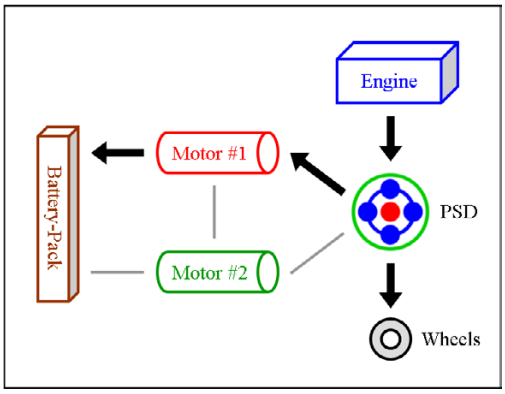
Regeneration (Excess Capture)

Did you know that the “full” hybrid design provides regeneration electricity even when you don’t step on the brake-pedal? Most have no idea this efficiency gain exists. But it does. It works remarkably well too, and happens far more often than you’d expect. Whenever the vehicle slows down a little bit or it encounters a decline in the road, the small motor works as a generator powered by the wheels rather than the engine to capture that excess energy.



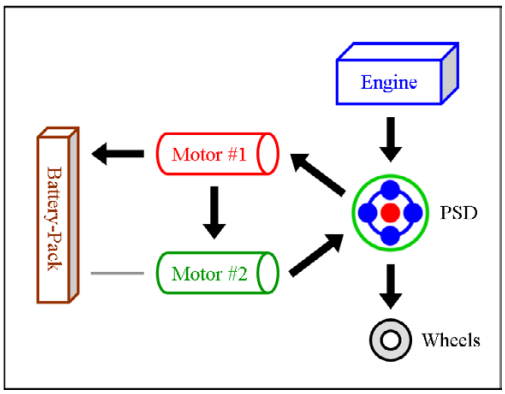
Engine & Motor Drive

This is when all components of the “full” hybrid system except the battery-pack provide power. The engine spins the PSD, which then distributes 72% of that thrust to the wheels and 28% to the small motor. The spinning of the small motor generates electricity, which is immediately used by the large motor to supply additional thrust to the wheels. The benefit of this seemingly cumbersome distribution comes from the engine operating at a very efficient RPM while at the same time allowing the powerful yet efficient motor to contribute thrust. It also ensures longer battery-pack life by simply not using it.



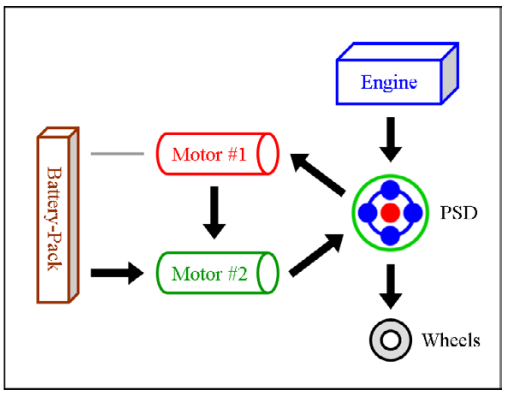
Engine Drive + Charge

Sometimes the electricity being generated by the small motor isn’t needed. In that case, which happens frequently while cruising on a highway, it is sent to the battery-pack for recharging. Additionally, note that the A/C system is powered only by electricity, meaning it can take advantage of this situation… a design benefit that is often overlooked.



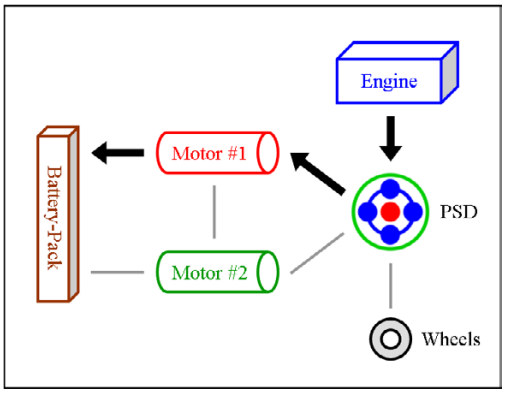
Engine & Motor Drive + Charge

When the small motor is generating more electricity than what is needed by the large motor at that moment, the surplus is sent to the battery-pack. This is a benefit often overlooked, an efficiency gain due to running the engine at an optimal RPM (which also provides an efficiency gain). This is also the most common method in which hills are climbed, resulting in more stored electricity available at the top than when the climb began.



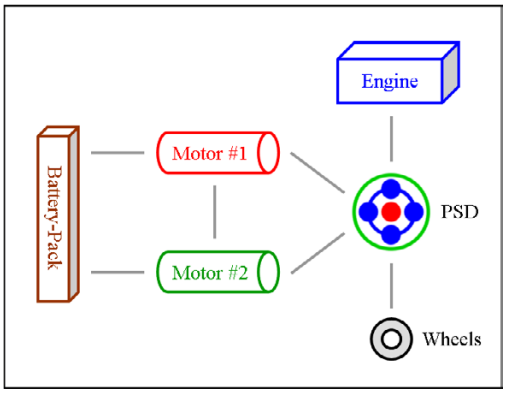
Full Power or Gradual Slowing

At times when maximum thrust is required, like when merging onto a busy highway, the battery-pack will join in. This additional power is used by the large motor to produce even more thrust to the wheels than is normal needed. The same activity also occurs when slowing down gradually, allowing the engine to significantly reduce gas use without the driver noticing a power distribution change.



Engine Heat

When the hybrid system is cold, it will run the engine to create heat for the catalytic-converter. This is required to enable the chemical reaction that cleanses emissions before leaving the tailpipe. Rather than allowing that power from the engine to be wasted while the vehicle is not moving, it is used by the small motor to generate electricity to recharge battery-pack. This same method will also occur when more heat is needed for the heater to keep you warm.



Stand-By or Gliding

This is the state of the system at rest but still on. You'll see it when power to the wheels isn't needed; that's both when the vehicle is stopped and when it is gliding. The engine may be idling or off.

GLOSSARY

ABS	Anti-Lock Braking System, the feature which allows you to retain the ability to directionally control your vehicle during emergency deceleration.
AC	All modes of conditioning air inside the passenger area of the vehicle: Heating, Cooling, Venting
A/C	Condensing of air to cool it and to remove humidity.
Assist	Hybrid system with a small battery-pack and a single small electric-motor that provides peak power for the gasoline-engine during periods of acceleration.
AT-PZEV	Advanced Technology - Partial Zero Emission Vehicle
BAS	Belt-Alternator System – GM's assist hybrid technology
"B" Mode	Engine Braking, (it isn't actually a gear) when you shift the transmission to this setting the engine will be used to slow down the car, it works similar to an exhaust brake used on the large semi-trucks (except the one on Prius is totally silent).
C	Celsius, a measure of temperature, (C * 1.8) + 32 = F, **-25°C** = -13°F, **-15°C** = 5°F, **-5°C** = 23°F, **0°C** = 32°F, **5°C** = 41°F, **20°C** = 68°F, **25°C** = 77°F, **30°C** = 86°F
CAFE	Corporate Average Fuel Economy, the US system used to measure overall fleet efficiency
CARB	California Air Resources Board, an agency dictating emissions requirements for cars sold in California. (These are often more strict than Federal standards.)
CAT	Catalytic Converter, a vital component in the emissions system, typically utilizing a self-renewing metal
CC	Cruise Control
Cd	Coefficient of drag (0.29 for the Original & Classic Prius, 0.26 for the Iconic Prius)
CEL	Check Engine Light
Classic	The term used to identify the 2001 - 2003 model years of Prius.
CNG	Compressed Natural Gas
CO2	Carbon-Dioxide, the type of vehicle emission that contributes to global warming.
Cold Soak	Delaying recharge to let the battery cool down after use.
CVT	Continuously Variable Transmission, Prius uses the "Planetary" design which functions as a power-split device to manage multiple sources of thrust; other CVT vehicles use a "Cone & Belt" design to adjusts power ratios.
Dinosaur	A very large, gas-guzzling, high-emission vehicle based on 20th century technology… doomed to extinction.
DRL	Daytime Running Lights
DVD	Digital Versatile Disc, used for the Navigational system in Prius
E10	Blended engine fuel, 10% ethanol and 90% gasoline
E15	Blended engine fuel, 15% ethanol and 85% gasoline
E85	Blended engine fuel, 85% ethanol and 15% gasoline
Eco-Meter	This is the more common name for the "Hybrid System Indicator".
ECU	Electronics Control Unit, the amazing computer that monitors and controls the two motor-generators, the gas engine, the motion of the planetary gear set, the battery pack power levels etc. to provide the Prius' smooth acceleration and speed control.

Engine	The term used to refer to the device which runs on gasoline, utilizing combustion to push pistons to deliver power.
EPA	Environmental Protection Agency, the group responsible for rating the emissions & efficiency of vehicles sold in the United States.
EV	Electric Vehicle, powered exclusively by a battery-pack charged before use
F	Fahrenheit, a measure of temperature, (F - 32) / 1.8 = C, **-15°F** = -26.11°C, **0°F** = -17.78°C, **15°F** = -9.44°C, **32°F** = 0°C, **40°F** = 4.44°C, **60°F** = 15.56°C, **70°F** = 21.11°C, **80°F** = 26.67°C
FCHV	Fuel Cell Hybrid Vehicle, a fuel-cell vehicle that takes advantage of hybrid technology including the use of a battery-pack
FOB	The device (introduced in 2003) used to unlock doors and start the hybrid system. By default, it works as a wireless remote for unlocking and is inserted into a slot in the dashboard for starting. As an option, it can be upgraded to control the SKS (formally known as SE/SS) feature. And note that there is actually a traditional key within which can be used for unlocking the driver's door manually.
FUD	Fear, Uncertainty, Doubt
Full	Hybrid system with a large battery-pack, a small electric-motor, at least one large electric-motor, and a gasoline-engine that combined provide a wide variety of combustion & electric propulsion abilities.
GPS	Global Positioning System, this is the part of the Prius Navigation System that identifies your exact location on Earth.
Greenwash	To intentionally mislead with respect to environmental benefits.
HEV	Hybrid Electric Vehicle
HID	High Intensity Discharge, bulbs used for headlights; illumination is created using an arch electricity instead of a traditional filament
HSD	Hybrid Synergy Drive - Toyota's modular hybrid design, implemented starting with the 2004 Prius with other vehicles now also using it.
HIS	Hybrid System Indicator - more commonly referred to as the Eco-Meter.
HOV	High Occupancy Vehicle - used to describe the restricted "diamond" lanes on highways
HP	Horsepower, indicating a unit of power, a measurement different from torque
ICE	Internal Combustion Engine
ICE'd	When an Internal Combustion Engine vehicle parks in a spot designated only for plug-in vehicles, preventing the use of the charging-station.
Iconic	The term used to identify the 2004 - 2009 model years of Prius.
IMA	Integrated Motor Assist - Honda's hybrid technology
km	Kilometer, a measure of distance, 1 kilometer is equal to 0.6214 mile
kW	Kilowatt, an electrical measurement unit used when describing Prius power consumption & storage
LEV	Low Emission Vehicle, once the cleanest designation, but no surpassed by several levels of reduced emissions
L/100 km	Liters per 100 kilometers, the more common unit of efficiency measurement outside of the US and UK
LMPG	Lifetime Miles Per Gallon
LRR	Low Rolling Resistant - used to describe minimum friction tires
MD	Multi-Display - the touch-sensitive liquid-crystal screen on the dashboard of Prius
Mi	Mile, a measure of distance, 1 mile = 1.6093 kilometers

MG	Motor Generator, an electric motor which can either provide motive power when electrically driven or generate electricity when mechanically driven.
MG1	The smaller Prius electric motor. It is three-phase AC permanent-magnet synchronous motor/generator starts the ICE, controls the CVT, and generates the electricity (by using thrust from the ICE and deceleration power from slowing before the brake-pedal is pushed) to charge the battery-pack and/or feed the larger motor.
MG2	The larger Prius electric motor. It is three-phase AC permanent-magnet synchronous motor/generator drives the wheels and generates electricity (from regenerative braking) to recharge the battery-pack.
Motor	The common term used to refer to the power device which operates using electricity.
MPG	Miles Per Gallon
MSRP	Manufacturer's Suggested Retail Price
MY2001	Model Year 2001 (which became available in the United States the summer of 2000)
NAV	DVD-based GPS Navigation System, used in Prius
NiMH	Nickel-Metal Hydride, the type of modules used in the Prius battery-pack
NOx	Nitrogen Oxides, that type of vehicle emission that contributes to smog
NVH	Noise, Vibration, Harshness
OEM	Original Equipment Manufacturer, components directly from the automaker
OPEC	Organization of the Petroleum Exporting Countries
Original	The term used to identify the 1998 - 2000 model years of Prius (which were only available in Japan).
Priustoric	All that transpired before the Prius
PHEV	Plug-In Hybrid Electric Vehicle
PHV	The abbreviation used specifically to identify the 2012 plug-in model Prius.
PPM	Parts Per Million, the scale at which emissions are common measured, literally a count of matter within a unit
PSD	Power-Split Device, the planetary gear set which divides power between the ICE and the two electric motor-generators, also functions as the continuously-variable transmission.
PZEV	Partial Zero Emission Vehicle. (A manufacturer must eliminate evaporative emissions and ensure that the vehicle will run cleanly for its entire projected life. Even if the vehicle is just sitting in the driveway, it is still polluting. The source of this pollution is hydrocarbons emitted from the gas tank as gasoline slowly evaporates. To achieve PZEV certification, all evaporative emissions must be eliminated.)
R&D	Research & Development
SE	SKS: Smart-Entry. It is a proximity detection system that automatically senses a wireless transmitter (called a "fob") in your pocket or purse, allowing you to *unlock the doors & hatch* without the need to use a physical key or push a button on a remote.
SKS	Smart-Key-System (formally known as SE/SS: Smart-Entry & Smart-Start). It is the collective term used to describe all features of the wireless system available with some models of Prius.
SOC	State Of Charge, indicating the amount of stored electricity available in the battery-pack
SS	SKS: Smart-Start. It is proximity detection system that automatically senses a wireless transmitter (called a "fob") in your pocket or purse, allowing you to *start the hybrid system* without the need to use a physical key or push a button on a remote.
Stealth	Electric-Only driving (up to 42 MPH for Classic & Iconic Prius, 46 MPH for 2010) without the engine in motion.
SRS	Supplemental Restraint System, better known as Airbags

SULEV	Super Ultra Low Emission Vehicle (only a few vehicles qualify for this clean rating category, Prius is among them)
THS	Toyota Hybrid System - Toyota's hybrid design for the Classic Prius
Torque	Measurement value indicating wheel turning force, a strength value different from horsepower
TRAC	Toyota Rent-A-Car, a program by which some have shortened the waiting time: when the demo/rental units reach a time/mileage it permits the dealer to sell them.
Turtle	Driving a Classic Prius with the battery-pack extremely drained of electricity, in conditions too hot (typically above 105 F degrees), or conditions too cold (typically below -10 F degrees), so that an orange "turtle" icon displays near the speedometer. This warns the driver to avoid forceful acceleration.
Two-Mode	GM's full hybrid technology
ULEV	Ultra Low Emission Vehicle (as of the 2003 model-year there were 90 vehicle models in the United States that met the rating criteria)
V	Volt or Voltage, an electrical measurement unit used when describing attributes of Prius propulsion components.
VIN	Vehicle Identification Number, the worldwide identifier unique to each vehicle ever built
Vaporware	A term from the computer industry used to describe claims made by a company about a product that was never delivered. It sounded great in concept, but for whatever reason was impractical in the end. In other words, don't believe it until you actually see the product available for consumers to purchase.
VSC	Vehicle Stability Control, a safety feature that automatically engages side-specific braking for you when it detects the vehicle wheels slip; stepping on the brake is not necessary for the feature to work
ZEV	Zero Emission Vehicle

Prius Generations:

	Original	*Classic*	*Iconic*	*2010-12*	*PHV*
Engine HP	58	70	76	98	98
Engine kW	43	52	57	73	73
Engine RPM	4000	4500	5000	5200	5200
Engine 0-RPM Max MPH	42	42	42	46	62
Motor/Generator 2 HP	40	44	67	80	80
Motor/Generator 2 kW	30	33	50	60	60
Motor/Generator 2 Torque	225	258	295	153	153
Motor/Generator 2 RPM	2000	5600	6700	13500	13500
Motor/Generator 1 kW (rated)	15	15	30	42	42
Motor/Generator 1 RPM	4800	6500	10000	10000	10000
0-60 MPH (seconds)	14.1	12.5	10.1	9.8	10.7
Tire Width	165	175	185	195	195
Tire Diameter	15	14	15	15	15
Battery-Pack Type	NiMH	NiMH	NiMH	NiMH	Li-Ion
Battery-Pack Energy (W/kg)	600	900	1250	1250	4400
Battery-Pack Voltage	288	273.6	201.6	201.6	207.2
Battery-Pack Weight (lbs)	125	110	99	110	176
Battery-Pack Section (count)	40	38	28	28	?
Battery-Pack Section (type)	D-Cell	Module	Module	Module	Module
Battery-Pack Power (HV kW)	?	?	21	27	27
Battery-Pack Power (EV kW)	-	-	-	-	38
Hybrid-System HP	101	98	110	134	134
Hybrid-System kW	64	73	82	100	100
Hybrid-System Voltage	288	273.6	500	650	650