



HYBRID OVERVIEW

Lexus Hybrid Advantages

Better fuel economy with lower emissions. An exceptionally smooth ride. Luxury without sacrifice. That's the Lexus Hybrids.

CLEANER POWER

Reduced Emissions - Lexus Hybrids were designed to provide the long-term benefit of lower smog-forming emissions. In fact, every Lexus Hybrid vehicle has been certified as a Super Ultra-Low Emission Vehicle (SULEV), meaning they release about 70% fewer smog-forming emissions* into the air when compared to similar non-hybrid vehicles offering comparable power.

IMPROVED EFFICIENCY

Better Fuel Efficiency - The electric-drive motors in Lexus Hybrids result in vehicles with better fuel efficiency when compared to their non-hybrid counterparts, since Lexus Hybrids aren't solely dependent on their gasoline engines.

Longer Battery Life - The nickel-metal hydride battery found in Lexus Hybrid vehicles is so advanced that it's designed to last for more than 100,000 miles. And with its regenerative braking technology, when the vehicle is coasting or braking, electric power is captured and stored to help ensure the battery remains charged.

ENHANCED COMFORT

Smoother Ride - The refined ride and smooth acceleration that Lexus is famous for are only enhanced in our hybrid vehicles. Thanks to an Electronically Controlled Continuously Variable Transmission (ECVT), the switch from electric to gasoline power is virtually seamless. And the strategic placement of hybrid components throughout the vehicle creates a solid and luxurious ride.






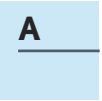
Reduced Noise - Although the Lexus Hybrids are virtually silent when operating on electric power only, we took additional steps to ensure the most serene driving experience—even when the gasoline engine is running. The engine mounts were moved upward to diminish vibrations, and the air intake system was completely redesigned. Finally, we lowered the likelihood of outside disturbances by adding insulation to the body panels, wheel wells and windshield.

* On average, the Lexus Hybrids produce about 70% fewer smog forming emissions versus other similar new vehicles in their class.

For further details, contact your dealership, see the vehicle Owner's Manual and other owner information materials in the vehicle, or log onto www.lexus.com.



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Driving a Lexus Hybrid

Driving a Lexus Hybrid is not very much different from driving a conventional vehicle. As you start driving your vehicle, here are some differences you should know about.

- **Pressing the "POWER" button starts the vehicle, the engine will start when needed.**
To start your vehicle press and hold the brake pedal, then press the "POWER" button. After a few seconds, the "READY" light in the center of the instrument cluster will come on. Once the "READY" light comes on, place the transmission lever into the desired position and start driving. When accelerating slowly, the vehicle can drive at low speeds on electric power alone, so the gasoline engine may not start for a while depending upon the need.
- **The engine will automatically turn on and off as needed.**
At low speeds or when stopped, the engine may or may not be on, depending on the need. At medium or high speeds, it is normal for the engine to be on most of the time.
- **The transmission may feel different.**
Lexus hybrids use an Electronically-controlled Continuously Variable Transmission (ECVT). The transmission does not shift with fixed gear ratios like a conventional transmission, so it delivers power efficiently and smoothly.
- **The brakes may feel different.**
Lexus hybrids feature an advanced, electronically-controlled brake-by-wire system. This system controls both the regenerative braking system and the conventional braking system. As a result, the brakes may feel different from a conventional vehicle.
- **You may notice different sounds while driving.**
The engine sound will be more steady than a conventional vehicle when accelerating due to the smooth operation of the ECVT. It is also normal for the new technology of the Lexus Hybrid Drive to make a "whirring" sound while driving.

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⚠ CAUTION: While driving a hybrid vehicle, pay special attention to the area around the vehicle. Because there is little vehicle noise in electric-only mode, pedestrians, people riding bicycles or other people and vehicles in the area may not be aware of the vehicle starting off or approaching them, so take extra care while driving.

Driving a Lexus Hybrid (continued)

- **Some parking attendants may not be familiar with starting a hybrid.**

To properly operate the vehicle, these basic tips are important:

1. Press and hold the brake pedal, then press the "POWER" button.
2. Begin driving when "READY" light stays on.
3. The engine will automatically turn on and off.

- **When refueling, the fuel door may take a few moments to open.**

As part of emissions system operation, it may take up to 15 seconds for the fuel door to automatically release after the release button is pressed. The Multi-information Display in the instrument cluster will display "Refuel Ready" when the door releases.

- **Lexus hybrid vehicles are not designed to be operated with the fuel tank empty.**

Do not run your vehicle out of fuel or continue to drive with the fuel tank empty. If you run out of fuel, immediately pull over to a safe location and turn off the vehicle. Be sure to add fuel before attempting to restart the vehicle or continuing to drive.

- **Keep the Hybrid Battery cooling vents clear.**

Do not block the hybrid battery cooling vents in the rear area of the interior with any items. Doing so could cause overheating of the hybrid battery.



LS 600h L (2 vents)



GS 450h (1 vent)



RX 450h (3 vents)



HS 250h (1 vent)

- **Maintaining charge for your 12-volt Battery.**

Drive your vehicle at least weekly. Operate accessories with vehicle in "READY" mode. When parking, make sure doors and trunk are closed and lights are turned off.

- **Maintaining charge for your Hybrid Battery.**

For parking longer than about 30 days, charging of the 12-volt battery may be required. Your Lexus dealer has details. To keep the hybrid battery in good condition, drive the vehicle at least once every several months for at least 30 minutes or ten miles. If the hybrid battery becomes fully discharged and the vehicle will not start, even with a jump start to the 12-volt battery, contact your Lexus dealer.

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Driving a Lexus Hybrid (continued)

- **Transmission “D” range**

The “D” transmission range is used for normal driving. Only use the “S*” or “B*” transmission ranges if needed to help maintain vehicle speed when going down steep grades. In “S” mode, the lower the range, the greater the engine braking force.



HS 250h shifter and driving switches.

Additional Hybrid system driving settings:

- **“PWR*” switch**

Set to “PWR” for increased responsiveness. Once set, it will remain in this mode.

- **“ECO*” switch**

Set to “ECO*” for improving fuel economy. Both the vehicle driving force and operation of the air conditioning system are controlled to improve fuel efficiency.

- **“SNOW*” switch**

Set to “SNOW*” for more controlled acceleration on slippery surfaces. It will remain in this mode until the vehicle is turned off.

- **“EV*” switch**

In EV drive mode, the electric motor, powered by the hybrid battery, is used to drive the vehicle. This mode allows you to drive without concern for gas emissions. It may not be possible to select EV drive mode in the following situations:

- The temperature of the hybrid system is low or high, or if the engine is warming up.
- The hybrid battery is low (level 2 or less).
- Vehicle speed is about 19 mph or more.
- The accelerator pedal is depressed firmly or the vehicle is on a hill, etc.
- The windshield defogger is in use.

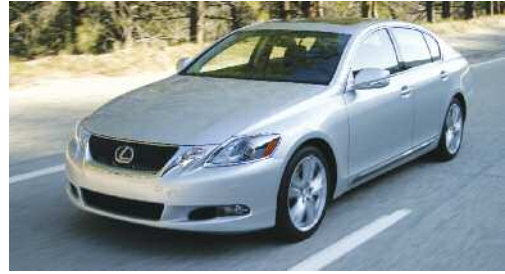
Possible driving distance is up to about several hundred yards at low speeds.

This may also depend on the hybrid battery level and driving conditions.

Notes: If “EV” mode cannot be turned on, a buzzer will sound and a message will be shown on the multi-information display. Operating the vehicle in EV mode will not increase overall fuel economy.

*If equipped.

Ten Tips for Improving Fuel Economy



The following tips can help you achieve the best possible fuel economy:

- 1) Plan ahead to combine short trips in order to minimize cold starts.
- 2) Accelerate slowly.
- 3) Avoid heavy braking. Monitor traffic to minimize braking and coast whenever possible.
- 4) Avoid speeds in excess of 60 mph; fuel economy suffers at speeds higher than 60 mph and drops significantly above 70 mph.
- 5) In stop-and-go traffic, accelerate to the desired level then lift off the accelerator pedal allowing the vehicle to run more on electric power.
- 6) Check tire pressure and maintain it at the recommended pressure.
- 7) Avoid carrying unnecessary loads; extra weight reduces fuel economy.
- 8) Use the air conditioner and defroster only as needed.
- 9) Do not operate the vehicle in "PWR*" mode or "EV*" mode.
- 10) Drive in the "D" transmission position for best fuel economy. Only use the "S*" or "B*" transmission ranges if needed to help maintain vehicle speed when going down steep grades. In "S" mode, the lower the range, the greater the engine braking force.

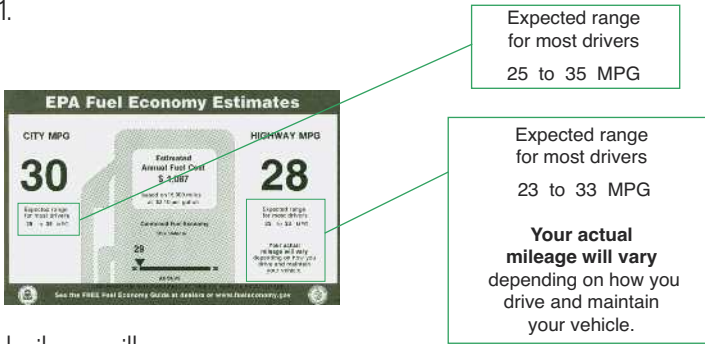
*If equipped.



EPA Mileage Estimates & Fuel Economy

Typical EPA Mileage Estimate* data found on vehicle window sticker
(Mileage figures shown for 2010 RX 450h AWD.)

Figure 1.



* Actual mileage will vary.

Why you may not achieve the EPA estimates:

The EPA fuel economy ratings are derived in uniform laboratory conditions, for the purpose of allowing consumers to readily compare different vehicles. There are many factors which may cause your actual mileage with your Lexus, or other vehicles, to vary from the EPA ratings:

- Quick acceleration and heavy braking may reduce mileage by as much as 33% in highway driving and as much as 5% in city driving.
- Driving at highway speeds above 60 mph.
- Driving on hilly or mountainous terrain and unpaved roads. (EPA tests assume flat roads.)
- Short trips cause the engine to run more as a percentage of driving, as it warms the emissions system.
- Carrying extra weight (Carrying an extra 100 lbs. in the vehicle reduces a typical car's fuel economy by 1-2 percent).
- Cargo on top of your vehicle. EPA tests do not account for this type of cargo.

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EPA Mileage Estimates & Fuel Economy (continued)

- Poor maintenance. (Vehicles tested are in top condition.)
- Some fuels contain less energy than others. Using oxygenated fuels or reformulated gasoline (RFG), for example, can cause a small decrease in fuel economy.

(Source for above information: www.fueleconomy.gov)

Quick Facts - EPA Mileage Estimates:

The EPA estimated fuel economy numbers are derived from vehicle testing conducted at the U.S. Environmental Protection Agency's (EPA's) National Vehicle and Fuel Emissions Laboratory in Ann Arbor, Michigan. Vehicle manufacturers also submit test results based on strict EPA standardized drive patterns. Each year, the EPA provides the data to the Department of Energy, which publishes the results at www.fueleconomy.gov.

Some quick facts about EPA estimated fuel economy tests:

Federal law requires EPA estimated fuel economy to be provided on a fuel economy label affixed to the window of every vehicle (see Figure 1). The EPA estimates serve as a useful guide for comparing the relative fuel efficiency of various vehicles and are intended for comparison only. EPA ratings are determined under uniform laboratory conditions following a standardized test determined by federal law. Each vehicle must complete tests simulating a driving routine for:

- City - Low speeds in stop-and-go urban traffic.
- Highway - Free-flow traffic at highway speeds.
- High Speed - Higher speeds; harder acceleration and braking.
- AC - Air conditioner use under hot ambient conditions.

(See www.fueleconomy.gov for further details.)



Lexus RX 450h.



Hybrid Frequently Asked Questions

Q: Do I have to plug it in?

A: The Lexus hybrid technology automatically recharges the 12-volt and hybrid batteries using regenerative braking or by running the engine to generate electricity. However, if the vehicle has been parked for a long time, the 12-volt and the hybrid battery will discharge gradually. To help maintain charge for the 12-volt battery, drive the vehicle at least weekly, operate accessories with vehicle in "READY" mode, and when parking, make sure doors and trunk are closed and lights are turned off. For parking longer than about 30 days, charging of the 12-volt battery may be required. See your dealership for details. If the hybrid battery becomes fully discharged and the vehicle will not start, even with a jump start to the 12-volt battery, contact your Lexus dealership.

Q: Can I switch the hybrid vehicle to run on electric mode on demand?

A: For models equipped with an EV Mode switch, drivers can select EV mode, which can allow the vehicle to operate solely using the electric motor for short distances and slow speeds, such as in residential areas or parking garages.

Q: Is additional maintenance required for a Lexus hybrid vehicle?

A: In addition to the normal maintenance for a Lexus vehicle, the hybrid inverter coolant should be periodically checked and replaced following the scheduled maintenance recommendations in the Warranty and Services Guide. Also, to keep the hybrid battery in good condition, drive the vehicle at least once every several months for at least 30 minutes. Lexus recommends having hybrid maintenance and repairs performed by an authorized Lexus dealership. To locate your nearest authorized Lexus dealership, contact Lexus at (800) 255-3987 or log onto www.lexus.com. Maintenance and repairs not performed by an authorized Lexus dealership should be performed by a qualified technician following procedures in Lexus service and repair publications.

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Hybrid Frequently Asked Questions (continued)

Q: What safety standards do Lexus hybrids comply with?

A: Lexus engineers ensure all Lexus vehicles meet or exceed all applicable U.S. government safety standards. See the Owner's Manual and other owner information materials in the vehicle for important Safety Precautions.

Q: Is there additional warranty coverage on a Lexus hybrid?

A: Yes, additional warranty coverage for the Hybrid Vehicle System Warranty is 96 months (8 years)/100,000 miles from the vehicle's in-service date, whichever occurs first. It is applicable to certain components of the hybrid electronic control system and the hybrid battery. See the Warranty and Services Guide for details.

Q: Can a Lexus hybrid be driven as a single-occupant vehicle in the high occupancy vehicle (HOV) lane?

A: We do not expect Lexus hybrid vehicles to qualify for single-occupant HOV lane use. Check with your state department of motor vehicles for more information.

Q: Does Lexus have a recycling program for the hybrid battery?

A: Yes. Lexus dealers can remove hybrid batteries for recycling.

Q: Can Lexus hybrids be driven off-road?

A: Lexus hybrid vehicles are not designed to be driven off-road.



Lexus HS 250h



Energy Monitor & Consumption Monitor

Lexus hybrids are equipped with an Energy Monitor within the Multi-information Display (located at the center of the instrument cluster) that shows a simplified representation of the approximate flow of energy within the hybrid system.

To access this display:

For **RX, HS** push “ENTER” switch, located on the steering wheel, up several times.

RX 450h “ENTER” button (left) and display (right) is shown.



For **GS, LS** push “DISP” button, located on the steering wheel, several times.

LS 600h L “DISP” button (left) and display (right) is shown.



Lexus hybrids equipped with Navigation also have a larger **Energy Monitor** that shows a simplified representation of the approximate flow of energy within the hybrid system. To access this display:

For **RX, HS** select “MENU,” select “Info Phone,” select “Fuel Consumption.”

For **GS, LS** select “INFO,” select “Trip Information”

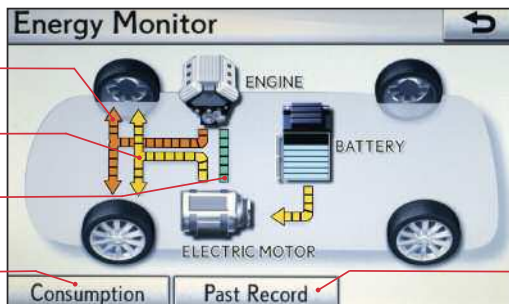
You may need to select “ENERGY.”

Orange = Mechanical Drive Power

Yellow = Electrical Drive Power

Green = Electrical/Regenerative Power

Select to go to Consumption Monitor



Select to go to Past Record

RX 450h Energy Monitor Screen shown, other models similar.

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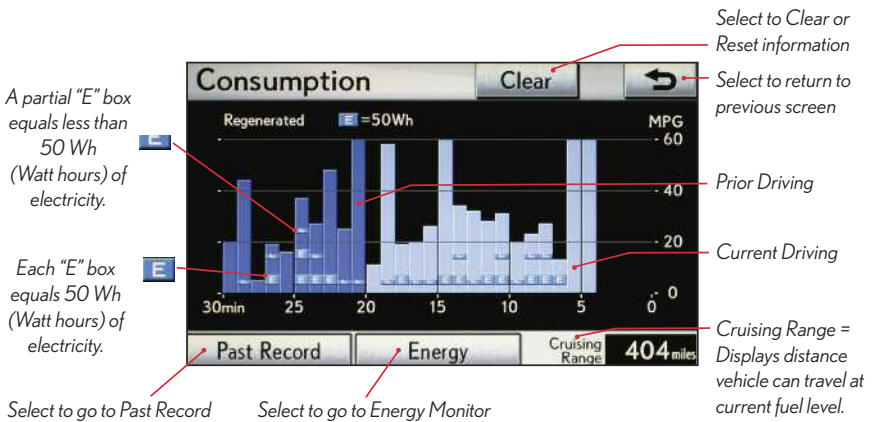
Energy Monitor & Consumption Monitor (continued)

Lexus hybrids equipped with Navigation have a **Consumption Monitor** that shows approximate fuel consumption and regenerated electricity. To access this display:

For **RX, HS** select "MENU," select "Info Phone," select "Fuel Consumption."

For **GS, LS** select "INFO," select "Trip Information."

You may need to select "CONSUMPTION."



RX 450h Consumption Screen shown, other models similar.

The Consumption Monitor displays two charts combined into one:

Average MPG Bar Chart - The bars display the average fuel economy in miles per gallon (MPG). When the vehicle is in "READY" mode but not moving for awhile, the chart will move to the left with no bars(s) for that time period.

Regenerated Energy Box Chart - The small boxes with "E" in the center represent the amount of electricity that has been regenerated in 50Wh (Watt hour units). The more boxes there are, the more regenerative energy is produced and stored in the hybrid battery.



Glossary of Hybrid Terms

12-volt Battery - The low-voltage battery that provides electrical power to accessories and the vehicle's computer, similar to the battery of a conventional vehicle.

Electronically-controlled Continuously Variable Transmission (ECVT) - A type of transmission with an infinite number of gear ratios that change depending on vehicle speed and engine rpm. As a result, the engine and the motors operate at their most efficient points regardless of the vehicle's speed. The ECVT in the transmission provides responsive and smooth performance.



RX 450h ECVT transmission shifter.

The advanced combination of electric motor/generators and planetary gearset are part of the ECVT, which has fewer parts than a conventional automatic transmission.

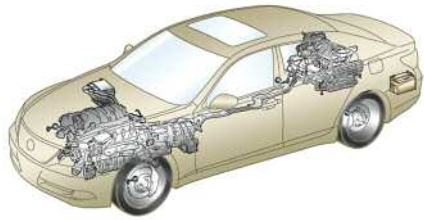
Engine - In a hybrid vehicle, the word "engine" refers to the gasoline engine, not an electric motor. The gasoline-powered engine is the primary power source for Lexus hybrid vehicles.

Hybrid Battery - Composed of sealed Nickel-Metal Hydride (NiMH) modules, the high voltage hybrid battery provides electric motor power during start-up, acceleration, uphill driving, and reverse. It also stores energy captured during regenerative braking. The hybrid battery is covered for 8 years/100,000 miles which ever occurs first. In normal use, we expect the battery to last longer than the length of this warranty.

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Glossary of Hybrid Terms (continued)

Lexus Hybrid Drive - Lexus hybrid technology that combines an advanced gasoline engine, electric motor/generators, a hybrid battery, an Electronically-controlled Continuously Variable Transmission (ECVT) and advanced electronic controls to provide powerful acceleration, responsive and smooth performance, economy in economy driving conditions, and very clean tailpipe emissions.



Lexus LS 600h L hybrid components schematic.

Inverter - The inverter converts the hybrid battery's high voltage DC current into AC current for the electric motors and vice versa, depending on driving demands and the needs of the electrical system. The inverter can also boost the battery's power as needed for maximum power.

Motor/Generator - In a hybrid vehicle, the word "motor" refers to an electric motor which works with the vehicle's engine to efficiently drive the vehicle. Lexus hybrid vehicles use permanent magnet AC motors: an electric starter motor/generator, and an electric drive motor.

Regenerative Braking - Regenerative braking is a feature that allows an electric motor to act as a generator when braking. It converts kinetic energy of the car's motion into electrical energy. Whenever a Lexus hybrid is braking or slowing, electrical energy made during regenerative braking is used to recharge the hybrid battery and is measured in Watt Hours (Wh) on the Consumption Monitor screen.

Volt - The unit of measure for voltage. Voltage is the electrical pressure which causes current to flow in an electrical circuit.

Wh (Watt hours) - Electrical power used, or in the case of regenerated braking, regenerated and measured in terms of time.

Specifications, features, equipment, technical data, performance figures, options, and color and trim are based upon information available at time of printing, are subject to change without notice, are for continental USA vehicles only. Some vehicles may be shown with optional equipment. Optional equipment listed may not be available separately or in all regions. Technical photos and illustrations are from Lexus Technical Training and other photos are from CJE Automotive Marketing under contract with Lexus Product Coordination.



THE PURSUIT OF PERFECTION.