

And Then There Were Six - Lexus NX 300h Compact Luxury Utility Vehicle Expands Hybrid Lineup

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2016 Lexus NX 300h Product Information

The 2016 Lexus NX 300h hybrid compact luxury utility vehicle, in its sophomore year, continues to impress drivers with its surprising attention to detail, dramatic design and smooth hybrid drive. Inspired by performance vehicles, the NX unites the engineering input of racers with the impeccable touch of Lexus luxury in a design that steals the show with the signature Lexus spindle grille and L-finesse design.

The NX 300h carries over into 2016 model year with few changes. New exterior colors include Autumn Shimmer and Blue Vortex Metallic. Drivers can also now opt in for additional peace of mind and connectivity with Lexus Enform products.

Lexus Enform Service Connect (subscription required) allows customers to remotely view information about certain aspects of their Lexus vehicle via the MyLexusandBeyond mobile application for iOS smartphone users or LexusDrivers.com. Information includes maintenance alerts, warning light notifications and a vehicle health report. Lexus Enform Remote is also available for all NX vehicles.

When the NX 300h was introduced for 2015 model year, it brought the brand's number of hybrid offerings to six, the most among luxury brands. The NX 300h hybrid features a 2.5-liter Atkinson-cycle gasoline engine with an automatic transmission.

The hybrid offers a real driving kick, thanks to a transmission with a kick-down function which helps ensure maximum power is delivered when required. The racers on the team insisted on splitting the hybrid battery into two separate pods for better weight distribution; with the benefit of more efficient use of cabin space.

The NX 300h hybrid, is offered in front-wheel drive (FWD) and all-weather drive (AWD). The hybrid features the Lexus E-Four proactive AWD system with an electric motor to drive the rear axle, while the front axle is propelled by gasoline or electric power, or a mixture of both. The sophisticated E-Four system varies torque distribution to the rear wheels, depending on driving dynamics and road conditions, and provides some rear-wheel torque at start-off to help minimize wheel-spin under acceleration and on slippery road surfaces.

E-Four saves energy and fuel, because the vehicle only uses all-wheel drive when needed. When the system detects loss of traction of the front wheels it reduces the electricity supply to the traction motor in the transaxle and increases supply to the rear-axle motor. The rear motor acts as a generator when the NX is in regenerative braking mode, increasing the amount of kinetic energy recovered.

The Lexus E-Four AWD system has situation-specific control features similar to Dynamic Torque Control proactive AWD in the NX 200t AWD model, including a yaw-rate control system for enhanced driving performance.

A pre-loaded front differential (and yaw rate feedback control on AWD versions) helps ensure optimized grip, control and agility. The differential uses a plate spring between the side gear and side-gear washer to add pre-load, which limits torque split between the front wheels. Under light loads, and when there is a low speed difference between the left and right wheels during cornering, the pre-loaded differential helps ensure straight-line stability and acceleration performance. At higher speeds, it operates as an open differential.

NX 300h: Hybrid With a Kickdown

The NX 300h shares the sporty persona of its turbocharged sibling while offering higher fuel efficiency. Lexus tuned the 2AR-FXE 2.5-liter gasoline engine especially for use in the NX 300h. Enhancements specific to NX hybrid include a water-to-oil cooler for the electric drive motor and a revised front drive reduction ratio,

enhancing fuel economy and hill climbing.

Put your foot down on the highway, and you'll feel the hybrid's performance-tuned attitude. Its P314 transmission provides a kick-down function for greater acceleration performance. The transmission consists of an electric motor generator and an electric drive motor linked by a double set of planetary gears. The planetary gearset simultaneously fulfills three roles: as a power split device between the generator and the front wheels; as a reduction gear for the electric motor and, when both work together, as an electronically controlled continuously variable transmission (CVT).

The transmission offers sequential shift which allows maximum power to be delivered on demand and increases engine braking when decelerating.

The NX 300h employs Lexus' electronically controlled braking system known as ECB-R to help provide cooperative control of stopping power and regenerative braking while saving on vehicle weight.

NX 300h: Driving Dynamics

Lexus did even more to give the NX 300h a more performance-tuned feel. The HV control software minimizes engine flare during acceleration and increases the sensation of linear acceleration. Engine speed is increased relative to the accelerator pedal angle. The NX 300h adjusts to the target engine speed and to the G force applied to the vehicle, providing a more natural acceleration feeling, without excessive adjustment to the engine speed and gear ratio. And, you can shift yourself with the sequential Shiftmatic feature.

Drivers can optimize fuel economy using Eco or Normal modes in Drive Mode Select, or use Shiftmatic in Sport mode to better enjoy a winding road.

The NX Hybrid has sprung weight damping control to help reduce pitching on uneven road surfaces and increase ride comfort and control. The system controls motor torque and adds power to the opposite direction to help minimize body movement. The rear motor (MGR) helps the starting off performance and stability on slippery roads.

The engineering team's racing experience comes through in the way the Lexus NX handles curves and bumps. Engineers benchmarked the current generation Lexus IS to optimize driving dynamics in the NX. The foundation for the vehicle's sublime blend of handling agility and ride comfort is a highly rigid body structure that makes extensive use of hot-stamped high tensile steel along with aluminum.

Construction techniques pioneered in the Lexus IS, particularly body adhesive, laser screw welding and additional spot welds, have been used to strengthen panel joints. A high rigidity urethane sealant introduced in the IS model is used for the NX windshield, effectively making the glass a load-bearing member and increasing resistance to body flex. Aluminum is used on the hood for weight savings.

Hybrid Batteries

The hybrid battery pack is split into two modules, each weighing 44 lbs. and located on each side of the rear seat, improving space efficiency and also center of gravity for enhanced car control. The battery pack is one of the lightest among Lexus hybrids.

Package efficiency improvements include downsizing the Power Control Unit (PCU) with a double-sided inverter cooling system. The PCU inverter boosts direct current (DC) voltage from the HV battery and converts

it to alternating current (AC) to drive the electric traction motor and, where applicable, the rear-drive E-Four electric motor. It also converts AC from the generator to DC for storage in the hybrid battery.

The PCU also includes a DC-DC converter to provide 12-volt power for vehicle ancillaries, including the lights and audio system. The DC-DC converter saves fuel, because the gasoline engine does not have to drive a separate alternator. The entire 2WD PCU is installed in the engine compartment. In the AWD model, the inverter and DC-DC converter are located at the rear of the vehicle.

NVH

NX 300h's engine mounts are tuned to suppress start-up vibration from the gasoline engine, contributing to ride comfort. The mounts allow for only one-tenth of the conventional deviation from the engine's normal axis away from its center of gravity – a cause of vibration.

A continuous sound emitted from the vehicle proximity notification speaker mounted near the front bumper helps alert pedestrians and cyclists of the approaching vehicle.

Suspension: Sport + Luxury

The Lexus NX uses MacPherson strut front suspension with high-rigidity components and low-friction moving parts. A trailing arm double wishbone rear suspension separates the coil springs and dampers to help optimize agility, control and ride comfort while also providing an unusually low floor for an SUV. Specially reinforced suspension components help to minimize the shake and shudder caused by lateral loads that change the tread width of a tire as the wheel reacts to an undulation.

Drive Mode Select

The Drive Mode Select dial on the center console lets the NX driver tailor the vehicle's responses and driving feel to suit driving conditions or just the driver's mood. The system adjusts parameters for multiple systems, including throttle response and the power steering assist curve.

The default setting is Normal. There is also ECO, for even more fuel-efficient driving, and Sport. For EV mode, simply select the EV mode button adjacent to the dial.

Design and Packaging

From its dramatic spindle grille and L-themed headlights to a body that appears carved from a single chunk of metal, there will be no mistaking the Lexus NX for anything else in its class. It's a look that conveys the functionality and performance of a premium, compact performance vehicle. The crouching, muscular stance, in part a result of providing good ramp-over angles for light trail driving, is accentuated by having the highest point set back toward the rear of the roof.

Exterior

The concept of making a vehicle look as if it was styled from a single piece of metal is a long-held image in the auto industry. The NX design team took that image to heart. They used the die of the spindle grille as a base over which molten steel was poured to see how the shape would naturally form. The result inspired the NX's angular, integral shape.

The NX's C-pillar is angled and wide to optimize internal storage width. Four golf club bags can be laid longitudinally across the cargo area instead of being wedged diagonally.

A sharply raked tailgate and integrated spoiler are punctuated by Lexus' signature L-shape light clusters featuring seamless LED (light emitting diode) lighting, while the tailgate detailing echoes the spindle grille design.

The eyes may be drawn to the NX, but the wind gets only a glance thanks to a drag co-efficient (Cd) of 0.34, achieved in part with a roof-mounted spoiler drawn from racing technology.

The NX's 17-inch and optional 18-inch alloy wheels evoke sports cars rather than SUVs.

Lighting

Combining stirring design with pure function, the Lexus NX makes extensive use of low energy consumption LEDs for front and rear lights.

Standard for NX 300h, the LED light source provides the low beam. A two-color (black and clear) molding method gives the thick-walled lens a crystal glass appearance even when not illuminated.

The high-grade daytime running lamps (DRLs) create the distinctive L-shape light, and the LED turn signals illuminate sequentially. Adaptive LED fog lights are standard for NX 300h. When the turn signals are used, two of the fog light bulbs illuminate automatically to enhance illumination in the turn.

For the LED taillights, thick-wall molding technology gives the outer lens the impression of crystal glass. Reflectors provide side illumination, sourced from the rear-facing LEDs, without the need for additional LEDs.

Door Handles

The look and feel of Lexus luxury detail begins before you enter the NX. A single LED elegantly streams a welcoming beam of light along the top of the handle and also to the ground as the driver approaches the vehicle. Simultaneously, the RTI illuminates the interior.

The door handles themselves reflect the kind of luxury detail that has distinguished Lexus since its inception. There is no visible key slot, nor is there a gap between the handle and the cover. (The design allows the key to be inserted behind the handle if necessary.)

Multifunctional Mirrors

The side mirror location enhances forward and side visibility, and a metal garnish reduces sunlight reflection. The mirrors house LED turn signal lights and visual warning lights for the optional Blind Spot Monitor (BSM) with Rear Cross Traffic Alert (RCTA).

Interior: Sports Car Design, Sport-Utility Function

Stepping into the Lexus NX will feel like stepping into a sports car. The cabin design combines structural elements with luxurious yet functional materials and textures. The center console is the undeniable focal point, framed by bold silver-colored architectural elements and featuring kneepads on both sides. Leather-wrapped metal over high contrast metallic colors provides visual depth. The NX dashboard and console continue the Lexus concept of display and operational zones.

The seats, inspired by sports car design, coddle driver and passenger as you'd expect from a Lexus.

All-season comfort and viewing pleasure are a given in a Lexus luxury utility vehicle (LUV). The NX offers available heated or heated and ventilated front seats. Standard dual-zone automatic climate control offers an available fuel-saving S-Flow mode that detects a front passenger and directs airflow only to the occupied front seat or seats.

Interior Trim: Five Choices

What happens when you infuse premium packaging with Lexus luxury? The captivating results define the NX cabin.

The Base model, along with the Comfort and Premium packages feature perforated Crème, Flaxen or Black NuLuxe inserts with smooth bolsters and Dark Umber trim. It's a modern look that respects the brand's renown for elegance.

Genuine leather in Crème or Black distinguishes the Luxury package, which also trims the cabin exclusively with Linear Black Shadow Wood. Smooth bolsters accentuate the perforated main part of the seats.

Packaging

The Lexus NX is smartly packaged luxury vehicle that's got plenty of room to carry your passengers and gear – or anything else. For passenger comfort, the couple distance between the front and rear hip points is 37.9 inches, and the high-roof design provides excellent headroom.

Designers carved out maximum space with the design. For example, a luggage area width of 53 inches can accommodate four golf bags stowed sideways, rather than having to lean them against the side. Storage in four compartments beneath the cargo floor provide space for keeping valuables out of sight.

Instead of the more common pull shade-type cargo area cover, the Lexus NX features a folding tonneau board that eliminates the gaps at each side of the deck trim, leaving a flush surface for an elegant appearance. The removable board can easily be stored under the floor panel.

In the NX, there's a place for everything throughout the cabin, including a large glove box and console box, a console mid-tray, utility box, sunglasses holder, two front and two rear cup holders and front and rear door pockets. The center cup holders are big enough for two large-sized cups and the door pocket bottle holders can each hold a 24-ounce plastic bottle.

Power Liftgate and Folding Rear Seats

Convenience and versatility abound in the Lexus NX, which offers an optional power folding 60:40 split/recline rear seat. You can lower or raise the seats individually using switches on the instrument panel, on the side of each rear seat and within the luggage compartment. The available power liftgate, which includes memory height, likewise can be operated by switches on the instrument panel, door and wireless remote.

Instrument Panel

In the NX 300h, a hybrid system indicator shows power output and regeneration in real time. The hybrid-specific

dial changes to a tachometer when the vehicle is in sport mode.

A 4.2-inch Thin Film Transistor (TFT) LCD in the center of the instrument cluster provides a full-color Multi Information Display (MID). When you change drive modes using the Drive Mode Select switch, illumination in the MID changes color – red for sport mode, for example. The MID can also display phone and audio information.

Switches are grouped for sensible, intuitive use and have a premium tactile feel. Driving-related switches are found on the console, and a panel to the left of the steering wheel contains two rows of switches for other vehicle functions.

Touch Switches and RTI

The NX was the first Lexus to introduce touch switches in the headliner for the front dome lights and map light switches. Make light contact with the light switches, and they illuminate. Footwell lighting adds to the luxury ambience.

If you've used a smartphone or tablet, you'll feel immediately familiar with the Remote Touch Interface (RTI), which replaces the previous joystick with a touchpad in the center console. An ergonomic palm rest makes it comfortable to use. The RTI helps the driver access various functions while staying focused on the road. The front-seat passenger can also easily operate the RTI.

Wireless Charging Tray

The NX offers an available Qi wireless charging tray inside the console box. If you've got a compatible smartphone or other device, just placing it in the tray will recharge its battery. That's one less cable to carry and lose.

Premium Audio

Lexus reset expectations for premium mobile audio decades ago, and the NX melds that tradition with the needs of today's digital audio formats.

The standard Display Audio includes HD Radio™, Bluetooth® audio, automatic phone book transfer, a vehicle information display and complimentary traffic and weather data provided via HD Radio. If a favorite song comes on the radio while you're busy with something else, like waiting at a bank drive-through, use the cache radio feature to pause it for up to 15-minutes and then listen later.

The standard Lexus Premium Audio system uses an eight-channel amplifier with a Digital Signal Processor (DSP) to restore high notes lost through compression. It plays through eight speakers, or an upgrade system that adds a center dash mid/high speaker and a subwoofer mounted in the liftgate.

Multimedia

The multimedia system, accessed through a high-resolution seven-inch screen, provides a multitude of capabilities and also offers the Navigation upgrade.

The optional Navigation system can help guide you to your destination more efficiently with up to date and predictive traffic information, including detour preview, ETA calculation and low-fuel coordination with nearby fuel stations. Navigation also includes the subscription-free Lexus Enform App Suite and features 3D and bird's

eye map views. The available Navigation also adds a second USB outlet.

Siri® Eyes Free Mode is compatible with the iPhone® 4S and iPhone 5 models forward and puts select Apple's Siri technology at your service. Siri lets you call contacts, select and play music from iTunes®, get turn-by-turn navigation through Siri and Apple maps, and much more.

Lexus Enform Helps Keeps You Connected

Lexus Enform Safety Connect is the foundation for all Lexus Enform products and includes an Emergency Assistance Button (SOS), Roadside Assistance, Automatic Collision Notification, and Stolen Vehicle Notification.

Your smartphone gets a whole lot more capable when you step into the Lexus NX. The available Navigation System comes with Lexus Enform service including Lexus Enform Destinations (Destination Assist, eDestination) and Lexus Enform App Suite. Lexus Enform provides access to the subscription-free App Suite. These voice-enabled apps let you search the Internet through Destination Search, make restaurant reservations using OpenTable®, get movie tickets via MovieTickets.com™, listen to Internet radio (including Pandora®, iHeartRadio™ and Slacker), search business reviews on Yelp® and check in on Facebook Places™.

Lexus Enform Remote (subscription required) allows the owner to remotely view and control certain vehicle features using a mobile app for iOS and Android devices. Key features include remote door lock/unlock; remote stop/start for the engine and climate control; vehicle finder, guest driver monitor and more.

Lexus Enform Safety Connect, Lexus Enform Remote, and Lexus Enform Destinations are subscription based and come with one-year trial subscriptions. Lexus Enform Safety Connect is standard on all models, while Lexus Enform Remote is available on all vehicles. Lexus Enform Destinations is available on NX models equipped with the optional Navigation system. The Lexus Enform response center operates 24 hours a day, every day.

Safety

Frontal and side collision protection measures include the use of high tensile steel up to 142,000 psi in key areas, including the center-pillar hinge reinforcement, outer rockers and roof crossmembers. In a collision, energy from a side impact is transmitted to the floor through a structure of cross-members built into the rocker beneath the center B-pillar. The rear impact structure is designed to disperse offset collision energy to the main chassis members on both sides of the vehicle.

A comprehensive roof impact-resistance structure is designed to disperse load when the roof is impacted. The structure includes front pillar reinforcement and high strength steel reinforcements for the center pillar, as well as reinforcement around the seatbelt anchor and front header.

Lexus Whiplash-Injury Lessening front seats are fitted to all models, and the NX has energy-absorbing structures in the pillars and roof headliner. There are impact-absorbing pads in the front and rear door trim adjacent to the occupant's lumbar region.

The Lexus NX models have eight SRS airbags, including a dual stage driver's airbag and knee airbag, dual-stage and dual-chamber front passenger airbag, front side airbags and side curtain airbags, and offer the available Lexus Pre-Collision Safety System (PCS).

Available Lane Departure Alert warns the driver when it determines that the vehicle is about to veer from a traffic lane. A camera mounted to the windshield recognizes lane markings. It sounds a warning and provides a

visual representation on the Multi-Information Display screen if the vehicle is veering from its visibly-marked lane. The system works in rain and on roads where the lane is marked on one side only.

Intelligent High Beam uses the same windshield-mounted camera. When the driver turns the high beam on, it will switch to low beam to help prevent distracting other drivers and restore high beam when there are no vehicles ahead. The system can also dim the high beams when it detects bright streetlights. When conditions permit, the high beams will automatically resume.

Pre Collision System (PCS) uses the all-speed Adaptive Cruise Control system's millimeter-wavelength radar sensor to help detect vehicles and other obstacles. A buzzer and a light help warn the driver of impending collision. The system can increase the driver's braking effort, and activate Pre-Collision Brake if the driver doesn't apply the brake. The system can also bring the NX to a stop under certain conditions. Pre-Collision Brake deceleration works from a maximum speed of 32 mph.

Warranty

- 48-month/50,000-mile basic limited warranty with roadside assistance for 48 months/unlimited miles.
- 72 months/70,000 miles powertrain and restraint system coverage.
- 72 months corrosion perforation protection coverage, regardless of mileage.
- Eight years/100,000 miles hybrid-related components, including the HV battery, battery-control module, hybrid control module and inverter with converter.