

# PATHWAYS TO A CARBON NEUTRAL FUTURE



ELECTRIFICATION IS AN IMPERATIVE in today's world of heightened environmental awareness and concerns about the wide-ranging effects of carbon emissions. In fact, Toyota acknowledged these concerns long ago, in the most high profile way, with the introduction of the electrified Prius hybrid to our shores some 25 years ago. Before and since, Toyota has shown its longstanding environmental commitment with a multi-path strategy of delivering highly-efficient, low emission, and exciting gas and electrified models that drivers want and need. Let's take a closer look.



**TOYOTA**



# TOYOTA'S POWERTRAIN OF THE FUTURE

## AN INNOVATION 25 YEARS AGO SETS THE PACE TODAY

The Toyota Prius that debuted on American highways 25 years ago was more than a remarkable statement of environmental achievement and efficiency. It was that, of course. But Prius was also a harbinger of the future, a champion of innovative gas-electric hybrid technology that would power a new generation of high efficiency models large and small.

When the Prius emerged here on American shores in 2000, some assumed this compact liftback would remain a niche vehicle for a dedicated but finite cadre of environmentally-inclined consumers. It's true that Prius has always had a strong appeal as an eco champion. Over time, it became clear that Prius would achieve far more than niche vehicle status, with cumulative sales surpassing more than several million in America alone and five million globally.

Today's fifth generation Prius redefines what a hybrid can be. It has evolved from a popular model embodying environmental achievement

to an eye-catching, sporty liftback with aggressive lines, a full complement of cutting-edge electronics, and notable performance. It has done this even as it bolstered its environmental credentials with high levels of fuel efficiency, achieving an EPA estimated 57 mpg with its Toyota Hybrid system.

Importantly, the 2026 Prius features an approachable base price of \$28,550. That makes it within reach of a majority of new car buyers aiming to make a personal commitment to environmental stewardship by reducing their carbon emissions every mile they drive.

### SCALABLE TECHNOLOGY

The change that Prius brought to the automotive world was foundational and illustrated the way ahead. At the same time, Toyota understood the enormous potential the Toyota Hybrid System had for increasing



efficiency and reducing carbon emissions across the entire Toyota lineup. Simply, going "green" needn't be restricted to a single, highly efficient model when the positive attributes of hybrid technology could be amplified on a larger stage.

Toyota recognized early on that its hybrid technology was adaptable and scalable. In real terms, that meant hybrid power could ultimately be applied across Toyota's full spectrum of new car models, including larger, more performance oriented, and premium vehicles.

Strategically, the characteristics of Toyota's hybrid technology meant this could be accomplished without sacrifice. Toyota buyers choosing a passenger car, SUV, or pickup with hybrid drive would continue to enjoy the performance and functionality they desired while also benefiting from significantly improved environmental performance.

This distinction is crucial. A diversity of new car models are on the market because we all need vehicles for different purposes, whether

the new RAV4. Others like the Corolla, Corolla Cross, 4Runner, Grand Highlander, Highlander, Tacoma, and Tundra allow both hybrid and gas engine choices. Many feature Toyota's standard hybrid system while some larger models use Toyota's high-performance i-FORCE MAX hybrid that features up to 437 horsepower.

### ADVENT OF THE PLUG-IN HYBRID

Toyota debuted an evolution of its hybrid technology in 2012 in the form of its Prius plug-in hybrid electric vehicle, or PHEV. An important feature of this Prius variant was the capability of limited zero-emission driving on battery power alone, made possible with the addition of a larger, more energy-dense lithium-ion battery pack and an ability to charge its batteries like a battery electric car.

This model laid the groundwork for today's more advanced Prius PHEV that features an EPA estimated range of up to 44 miles of battery

## PRIUS DEBUTED WITH A REVOLUTIONARY POWERTRAIN THAT SET THE STAGE FOR THE ELECTRIFICATION MOVEMENT.

that's transporting kids across town, carpooling or commuting solo to work, hauling or towing for recreation or business, or simply enjoying a premium or spirited driving experience. Regardless of use, enjoying the advanced features and performance characteristics offered by today's vehicles is expected.

The integration of combustion and electric power inherently speaks to greater horsepower and torque, enabling hybrid technology to create cars that are more powerful, faster, and travel farther, even as they reduce carbon emissions. Simply, delivering improved efficiency and environmental impact while leveraging overall performance is not only possible, but an advantage that hybrid power delivers, without compromise.

While the series-parallel hybrid system in the Prius of 25 years ago delivered breakthrough fuel efficiency, it only produced 97 horsepower and did not speak to performance. Over the years Toyota has evolved its hybrid technology and scaled it with larger gas engines, electric motors with varying power outputs, and differing sizes and types of battery packs to fit the needs of wide-ranging applications.

Now there's an array of hybrid options across the Toyota model lineup. Many models are powered exclusively by hybrid power like the Camry, Crown, Crown Signia, Land Cruiser, Sienna, Sequoia, and

electric driving and 600 miles of range overall. It delivers this electric driving capability with an advanced hybrid powertrain using a 2.0-liter engine, two electric motors, and a larger 13.6 kWh lithium-ion battery. With its substantial all-electric driving range, the Prius PHEV bridges the gap between hybrids and battery electric vehicles for motorists with average daily driving needs, allowing them to drive primarily on zero-emission battery power every day.

Toyota's all-new 2026 RAV4 PHEV presents another high-profile example of Toyota's advanced plug-in hybrid capabilities. Powered by a new PHEV system using a 2.5-liter engine, a pair of electric motors, and a high-capacity lithium-ion battery pack, the RAV4 PHEV offers an estimated 50 miles of electric driving before transitioning to hybrid mode. Along with 20 percent greater electric range than the previous generation, the new RAV4 PHEV is also more powerful and features up to 320 combined system net horsepower for greater performance.

Advancing the use of powerful and efficient hybrid power throughout Toyota's lineup of cars, trucks, and SUVs is an important element in the company's multi-pathway strategy for achieving carbon neutrality, along with the continuing introduction of all-electric models for zero-emission driving.

# AN EXPANDING ELECTRIC VEHICLE PORTFOLIO

## *EVS TRUE TO TOYOTA'S EVER-BETTER CARS PHILOSOPHY*



Life is changing at a rapid pace. While it's easy to identify many trends as examples – from technology and fashion to the way we work and learn – there is no better reflection of this than the nature of the motor vehicles that surround us. Electrification is now clearly embedded in our daily experience.

Need an example? Just listen: In many areas, the morning ritual of neighbors warming up their cars before work or school is no longer a given. A growing number are driving electric and there is no engine to warm up, or a need for any delay before backing out of the driveway. As

### **THE BATTERY ELECTRIC VEHICLE AGE HAS ONLY JUST BEGUN, MARKING A UNIQUE MOMENT IN THE AUTOMOBILE'S LONG HISTORY.**

they head off, there is no signature noise of internal combustion, just the subtle sound of an electric vehicle in motion.

Many people experience near-silent electric drive for the first time when behind the wheel of a hybrid since hybrids usually start out on electric motors alone. That's been the story of millions of Prius drivers over the years along with owners of other Toyota hybrids like the Camry, Sienna, RAV4, or other hybrids or plug-in hybrids from Toyota's extensive electrified lineup.

Even as Toyota's hybrid and plug-in hybrid models are being embraced by car buyers in ever-greater numbers, the importance of zero-emission battery electric vehicles is evident. So is their crucial role in decreasing transportation carbon emissions. Toyota's long-

term vision for electrification reflects this understanding and the importance of an expanded portfolio of BEVs as part of its balanced multi-pathway strategy.

#### **A GROWING EV FOCUS**

It's true that gas cars of all types far outnumber electric vehicles on our highways today. But there is a paradigm shift at work. The EV's market share has continued to rise and an increasing percentage of drivers express an interest in battery electric vehicles.

This represents a unique moment in the motor vehicle's long history. It's also a reflection of a battery electric vehicle age that has only just begun. A strategic multi-pathway approach, a growing lineup of electrified models, and an expansion of EV manufacturing capabilities have made Toyota well equipped to meet these changing consumer needs and successfully navigate the electrification transition.

Toyota has been strategically expanding its electrified models during this transition. Perhaps the most notable example is the Toyota bZ, a battery electric EV that arrived at Toyota showrooms three years ago as the bZ4X. A nameplate paying homage to Toyota's "Beyond Zero" carbon neutrality vision, this compact SUV brought the first mass production BEV to the Toyota lineup in a design-forward, high

tech package featuring an electric driving range up to 252 miles.

The bZ continues to evolve in important ways. For 2026, this electric SUV features a refined look and important tech and battery upgrades that increase driving range up to an estimated 314 miles. Its 338 combined system horsepower also delivers higher performance and quicker 0-60 mph acceleration in just 4.9 seconds.

Among the bZ's many innovations is the integration of a North American Charging System chargeport that enables access to thousands of high-speed NACS charging stations nationwide. A new Plug & Charge capability also allows a simpler charging experience at compatible fast chargers. Once plugged in, a charger can automatically authenticate the bZ and its driver's charging account, then start charging seamlessly without the need to use a charging app or input credentials.

#### **MORE EVS IN THE LINEUP**

Toyota's promise of a growing EV lineup is evidenced with the coming 2026 bZ Woodland. A rugged rendition of the electric bZ, the Woodland features much of the bZ's design language while emphasizing its own nature with a higher rear profile and six additional inches in length. These characteristics lend a distinctive look while also adding increased cargo capacity.

The trailblazing bZ Woodland speaks to the more adventure-minded with higher ground clearance, standard all-wheel drive, and available all-terrain tires. A 3,500 pound tow rating allows bringing along gear to support a variety of outdoor adventures, with standard roof rails

increasing utility with their ability to accommodate bike or luggage racks. In the background, an X-Mode traction and stability system works to optimize this electric model's on- and off-pavement performance.

Expanding Toyota's electric vehicle portfolio further is the Toyota C-HR, a premium SUV arriving at U.S. dealerships in 2026. The coupe-like C-HR is designed with spirited driving dynamics and a performance-oriented driving experience in mind.

This sporty addition to Toyota's battery electric range features a 338 horsepower electric drivetrain that's expected to provide 0-60 mph acceleration in about five seconds and up to 290 miles of zero-emission driving. The C-HR, like the bZ and bZ Woodland, offers a NACS chargeport and Plug & Charge capability to make charging away from home an easy experience.

These battery electric models represent just a start in Toyota's plan to electrify all models in its lineup. While not all will be BEVs, the number of models powered exclusively by batteries will expand substantially to fill consumer needs and meet Toyota's goals of attaining a carbon neutral future.

This electrified pathway is being supported by strategic partnerships and billions of dollars of Toyota investment in U.S. hybrid and BEV production, including at Toyota's vehicle manufacturing plants in Georgetown, Kentucky, and Princeton, Indiana. Toyota has additionally invested \$13.9 billion in its Liberty, North Carolina, plant to bolster battery and cell production as it continues to move its electrified vehicle portfolio forward.

# INVENTING THE PATH FORWARD

## SMART INTEGRATION OF TECHNOLOGY, SOFTWARE, AND ENERGY



The world, like cars, is always in motion. Anticipating the ever-changing imperatives of society and delivering innovative solutions has long been a core mission at Toyota. This defining philosophy speaks to Toyota's ongoing commitment to developing the technologies and processes that lead to making ever-better cars.

"Even as times change, the spirit of invention – a desire to create something better – has been passed down to us through the generations," says Toyota Chairman Akio Toyoda. "I believe these are our true roots. We should all embrace the spirit of invention within us, think of others, hone our skills, and continue to make the right things."

And those right things? From Toyota's perspective, continuing its multipath approach toward carbon neutrality is key, with a focus on decreasing the automobile's impact on the physical world while meeting the unique needs of drivers everywhere. Expanding electrification throughout all Toyota products is essential, as is exploring all environmentally positive fuel alternatives and energy sources that hold potential for displacing petroleum and eliminating carbon emissions.

This effort includes developing innovative technologies to evolve its internal combustion and hybrid powertrains to be more efficient, compact, and powerful. Focus is also devoted toward the development and application of synthetic fuels and biofuels, and the continuing

expansion of Toyota's hydrogen activities on the highway and on the racetrack. As one example, Toyota Gazoo Racing has been fielding a hydrogen-engine Corolla in Japan's Super Taikyu Series since 2021, first running gaseous hydrogen and then liquid hydrogen since 2023.

On a more high-profile stage, Toyota recently exhibited its GR LH2 liquid hydrogen race car concept at the H2 Village during the 24 Hours of Le Mans. This followed the 2023 debut of the GR H2 concept based on Toyota's Hybrid Hypercar race car. A hydrogen category is planned for the famous Le Mans endurance race and these concepts illustrate Toyota's interest in refining its hydrogen vehicle technology through racing.

"Toyota has developed hydrogen fuel cell electric solutions for more than three decades, and we will continue to advance this scalable, zero-emission technology as part of our electrified portfolio," shares Ted Ogawa, President and CEO of Toyota Motor North America.

Beyond the Mirai hydrogen fuel cell electric vehicle that's part of the Toyota lineup in the U.S., Toyota's hydrogen activities include developing fuel cell powertrains for Class 8 semi-trucks and heavy-duty port equipment as well as stationary applications like power generators for data centers and backup power. These operate in the same applications as a diesel engine would without the noise or smell.

In ramping up its hydrogen development operations in the U.S., Toyota recently rechristened its West Coast R&D office as its H2HQ North American hydrogen development headquarters in Southern California. Toyota is working to make this facility energy self-sufficient with its own solar-hydrogen micro grid using a solid oxide fuel cell, a fuel cell generator, and 500 kWh battery storage, essentially allowing it to operate off the grid.

### CREATING A SAFER WORLD

Enhancing driver and pedestrian safety is also fundamental to the future of cars. In fact, an important part of Toyota's mission is developing and implementing safety technologies and systems that not only work toward reducing traffic accidents, but ideally lead society in a direction with zero traffic fatalities.

Already, advanced driver assist systems like Toyota's Safety Sense identify and respond to hazards through actions like automatic emergency braking, when on-board sensors determine a crash may be imminent. Another example is when sensors trigger a Lane Departure Alert and, if necessary, engage Steering Assist to help keep a vehicle in its lane. When activated, Dynamic Radar Cruise Control automatically

adjusts vehicle speed to maintain a safe distance from traffic in the lane ahead.

As networking among connected cars and the infrastructure surrounding them unfolds in future years, this will allow rapidly collecting and analyzing information to predict when unsafe conditions exist, and if needed prompt a vehicle or driver to take corrective action. Effectively, this expands situational awareness and accident avoidance potential well beyond the reach of a single connected vehicle's on-board systems, cameras, and sensors.

Toyota is working to expand and leverage infrastructure-side technologies to complement the increasingly sophisticated on-board technologies and capabilities of connected cars. This work includes developing capabilities for massive amounts of data transfer between cars and infrastructure, along with real-time data from traffic cameras and environmental sensors, processed by artificial intelligence and advanced computing architecture at data centers in real time.

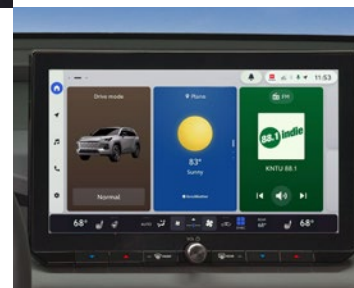
Toyota continues to work internally and with partners to develop next-generation safety technologies and analyze driver behaviors. Through Toyota's Collaborative Safety Research Center in Ann Arbor, Michigan, advanced projects are underway with North American universities and research institutions including MIT's AgeLab, Virginia Tech Transportation Institute, Michigan Transportation Research Institute, Ohio State University Injury Biomechanics Research Center, and others.

### THE SOFTWARE-DEFINED VEHICLE

Enabling ever-greater computing power is fundamental to the future of cars and crucial to improving traffic safety and mitigating carbon emissions. It's also key to enhancing our daily driving experience. Increasingly, this speaks to the dawn of the Software-Defined Vehicle, or SDV.

"The next paradigm shift for the automotive industry is not just physical...but also digital," points out Toyota's Chief Branding Officer Simon Humphries. This digital shift emphasizes the importance of computer-driven connected technology and Toyota's future in building software-defined vehicles.

That future starts to take shape with the arrival of the sixth-generation RAV4, the first model to feature Toyota's Arene software development platform. Developed by Toyota's mobility subsidiary Woven by Toyota and deployed to the new RAV4's latest-generation Toyota Safety Sense and multimedia system, Arene is more than a typical operating system. It provides a unified foundation and the state-of-the-art tooling set engineers need to efficiently build high-quality vehicle software for a wide range of customer use cases. In the new RAV4, Arene paves the way for a continually enhanced vehicle experience.



# ENSURING *MOBILITY FOR ALL*



Toyota is entering a period of significant transformation shaped by innovation and a broadened view of mobility. This evolution reflects more than advances in vehicles and technology. It embodies a mission to create smarter, more connected, and sustainable ways for people to move, marking a decisive step toward becoming a fully realized mobility company.

That mission is playing out across every part of Toyota's business. Building ever-better cars remains a core imperative, yet so does advancing toward a carbon-neutral and connected future. Continuous improvement in design, engineering, and manufacturing drives this progress, alongside development of systems and technologies that link vehicles with their surroundings and society.

Toyota's transition to a mobility company builds on its deep foundation as one of the world's most capable automakers. The company continues to manufacture millions of vehicles globally while expanding beyond traditional transportation to explore how people, infrastructure, and energy intersect. The focus is on electrification, intelligence, and diversification – three pillars guiding Toyota's evolution into a mobility company that provide new ways to move and connect.

## **MOBILITY FOR ALL**

The concept of "Mobility for All" is central to Toyota's global philosophy. Delivering on that vision requires scale and capability. Toyota's 380,000 employees, 69 manufacturing sites, and 22 research and development centers around the world provide the strength and depth for respecting regional needs and delivering the right vehicles for each market.

In North America, this includes a full lineup of SUVs, pickups, passenger cars, and a minivan that champion efficiency and electrification. Many Toyota models today come standard as hybrids, with others offering plug-in hybrid, battery-electric, or efficient internal combustion power. The Toyota Mirai fuel cell electric vehicle, available in California, runs on hydrogen.

With its multi-pathway strategy and Beyond Zero vision, Toyota's

diversity of vehicle choices offers customers more ways to reduce their carbon footprint than any other automaker. As the world's leading auto manufacturer in sales, it does this in truly meaningful numbers with global impact. Notably, Toyota's cumulative vehicle production has surpassed 300 million units since manufacturing its first vehicles 90 years ago as the Automotive Production Division of Toyoda Automatic Loom Works.

An all-direction approach to carbon reduction reflects the company's commitment to lower emissions and greater sustainability. Toyota targets a 33 percent global CO<sub>2</sub> reduction in vehicle emissions for 2030 and more than 50 percent for 2035, progressing toward full carbon neutrality across its products and operations by 2050.

## **CREATING THE FUTURE**

Toyota's mobility leadership is powered by innovation and a willingness to embrace change. Its growing portfolio of connected technologies, mobility services, and advanced manufacturing systems like gigacasting illustrate how the company is preparing for a future where vehicles are increasingly tech-savvy, more efficient, and interact with their environment in real time.

This transformation is guided by Toyota's enduring philosophy of continuous improvement, its respect for people, and honoring the values that built its success. As the future of mobility unfolds, Toyota's journey reflects both ambition and a dedication to define the road ahead.

"The world we live in is undergoing a once-in-a-century transformation, a time when there is no right answer," shares Akio Toyoda. "A path was left for us by those who came before. But as yet, no path lies ahead. It is up to us to create it."

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