

2020

TOYOTA

North American
Environmental Report

Let's Make a Better Planet.



TABLE OF CONTENTS

Welcome 3

Dear Reader 4

Highlights..... 5

Strategy 6

Carbon 12

Water 28

Materials..... 33

Biodiversity 39

Outreach 44

Performance..... 52

Features..... 71



WELCOME

Welcome to Toyota's **2020 North American Environmental Report**, where we feature information about our environmental strategy and performance across four key focus areas — **Carbon, Water, Materials and Biodiversity** — plus related **Outreach** activities. We believe concentrating our efforts within these core focus areas will have the greatest positive impact on society, the planet and our business.

Here in North America, we are innovating, continuously improving, and thinking big and boldly, all to go beyond minimizing negative impacts and bring us closer to creating a net positive impact on the planet and society. In this report, you'll learn about how the Toyota Environmental Challenge 2050 (Challenge 2050) is informing our regional strategy and leading us to build a better, smarter, more sustainable future.

Challenge 2050 was issued by Toyota Motor Corporation as a set of six goals that are part of the company's global, long-term commitment to supporting the creation of a more inclusive and sustainable society. Challenge 2050 is inspiring Toyota team members, partners and customers and connecting them with the company's core commitment to sustainable mobility.

ABOUT THIS REPORT

Toyota Motor North America, Inc. (TMNA) is headquartered in Plano, Texas, and is a wholly owned subsidiary of Toyota Motor Corporation (TMC). TMC is headquartered in Japan and produces an annual environmental report, which covers TMC initiatives as well as activities of consolidated subsidiaries and affiliates around the world. TMNA data is rolled up into this report.

TMNA has been producing an annual regional environmental report covering activities in the United States, Canada and Mexico since 2002. This 2020 report covers TMNA activities under the Toyota and Lexus brands during fiscal year 2020 (April 1, 2019 through March 31, 2020) and product model years 2019 to 2021. Data presented with different dates are clearly indicated.

In 2018, TMNA discontinued operations at the Bodine Aluminum plant in St. Louis, Missouri. Data for this plant was included in the 2019 report, but is not included this year. Production at Toyota's new assembly plant in Apaseo el Grande, Guanajuato, Mexico, began in late 2019. We will include this plant in TMNA's consolidated environmental data (energy, GHG, water, waste, VOCs and compliance) starting next year, after it has had a full year of operation.

We listened to your comments and suggestions about last year's report and considered them in improving this report. We appreciate your feedback. You may participate in a survey found [here](#).

© December 2020

CONTACT

Environmental Report Manager

Toyota Motor North America, Inc. | 6565 Headquarters Drive, Plano, Texas 75024

Toyota Canada Inc. | One Toyota Place, Toronto, Ontario M1H1H9

DEAR READER

At Toyota, the health and wellbeing of the environment, our team members, dealer partners and customers is a top priority. It's a commitment that has shaped how we approach environmental sustainability, and this year, it has driven how we do business during the worldwide pandemic.

Rest assured, that even as we worked to reduce the impacts of COVID-19, we never wavered in our commitment to sustainability. The goals laid out in the Toyota Environmental Challenge 2050 remain aligned with the relevant Sustainable Development Goals (SDGs) outlined in the United Nations 2030 Agenda.

We remain committed to the following:

- **REDUCE CO₂ EMISSIONS FROM NEW VEHICLES BY 90 PERCENT FROM 2010 LEVELS**
- **ELIMINATE CO₂ EMISSIONS IN OUR SUPPLY CHAIN AND AT OUR DEALERS**
- **ELIMINATE CO₂ EMISSIONS FROM OUR OPERATIONS**
- **PROTECT WATER RESOURCES**
- **SUPPORT A RECYCLING-BASED SOCIETY**
- **OPERATE IN HARMONY WITH NATURE.**

Meeting these goals requires consistent and meaningful improvements in nearly every aspect of our business. Whether it's our headquarters and research facilities, or assembly plants and dealers, we strive to reduce negative impacts on the planet by using innovative strategies that produce tangible results.

This report offers the latest updates on our environmental sustainability efforts throughout our North American organization. From our continued push into electrified vehicles like the all-new Sienna and Venza hybrids, to a green bond issued by Toyota Financial Services to help finance environmentally friendly vehicles, every initiative is a small, but important, step toward achieving our goals.

As we continue this journey, we are constantly amazed at the perseverance, ingenuity and passion of our team members, dealers and local communities who contribute to our continued success in achieving our environmental goals. We are grateful for the continued commitment and look forward to a healthier, more sustainable environment in the future



A stylized signature of Tetsuo "Ted" Ogawa in black ink.

Tetsuo "Ted" Ogawa
President and Chief Executive Officer
Toyota Motor North America, Inc.



A signature of Kevin Butt in black ink.

Kevin Butt
Senior Director, Environmental Sustainability
Toyota Motor North America, Inc.

Highlights



Toyota's 2020 North American Environmental Report focuses on Carbon, Water, Materials and Biodiversity, plus Outreach. To give you a quick overview of some of our most noteworthy accomplishments in each of these areas, we provide highlights below. We hope some of these information tidbits inspire you to learn more about our efforts to minimize environmental impacts across our business and maximize positive outcomes.



CARBON

- Toyota is committed to offering an electrified version of each Toyota and Lexus model by 2025. Globally, Toyota estimates that it will have sold 5.5 million electrified vehicles by 2025.
- Toyota and Kenworth have rolled out new zero-emissions hydrogen-powered fuel cell electric heavy-duty vehicles (FCEVs) in Southern California, increasing zero-emission trucking capacity and reducing the environmental impact of drayage operations at the Ports of Los Angeles and Long Beach.
- In the last four years, Toyota has reduced absolute GHG emissions by 14 percent. These emissions will be reduced by as much as 40 percent as we continue entering into virtual power purchase agreements (VPPAs).



WATER

- Toyota's North American manufacturing plants recycled or reused 623 million gallons of water last year. That's equivalent to the annual water use of 5,689 average American families (based on U.S. EPA estimates that the average American family uses 300 gallons of water per day at home).



MATERIALS

- Between 2017 and 2019, Toyota's returnable shipping containers replaced the use of 54.1 million pounds of cardboard boxes and 144.3 million pounds of wooden crates.
- Toyota's North American facilities recycled, reused or composted 92.4 percent of all waste in 2019. That's more than 689 million pounds of waste kept out of landfills and incinerators.



BIODIVERSITY

- Toyota has 17 sites with pollinator gardens supporting monarch butterflies along their migration path. When factoring in other automakers and suppliers across North America, the number of sites increases to nearly 200, thanks to the Pollinator Project Challenge issued by the Biodiversity Work Group – co-chaired by Toyota Motor North America – of the Suppliers Partnership for the Environment.
- Toyota has 13 sites engaged in conservation programs certified by Wildlife Habitat Council®.



OUTREACH

- In the U.S., Canada and Mexico, we have supported 70 Toyota and Lexus dealerships in becoming LEED®-certified. Achieving LEED certification illustrates the dealerships' commitment to sustainable construction and remodeling.
- The National Environmental Education Foundation, with sole funding support from Toyota Motor North America, awarded \$275,000 to grantees in the U.S. and Puerto Rico to support activities that will restore public lands and find new ways to make them more resilient to extreme weather events.

Strategy

- Environmental Sustainability Strategy
- Priority Issues
- 2021 Targets
- Governance



Toyota's global vision of **Respect for the Planet** is a core value of the company and a driving force behind our environmental initiatives. Respect for the planet is also the foundation for Toyota Motor North America's environmental sustainability strategy.

TOYOTA MOTOR
NORTH AMERICA

2050 Environmental Sustainability Strategy



RESPECT FOR THE PLANET is one of Toyota's core values.

To demonstrate the company's commitment to this value, Toyota issued the Environmental Challenge 2050, a set of six global challenges to move our company beyond zero environmental impact to achieving a net positive impact on society. Here in North America, we have developed a strategy to align with these six challenges and achieve a net positive impact in our region.

Environmental Challenge 2050

To go beyond zero environmental impact and achieve a net positive impact:

1. Eliminate almost all CO₂ emissions from new Toyota vehicles
2. Partner with suppliers and dealers to help them eliminate CO₂ from their operations
3. Eliminate all CO₂ emissions from Toyota facilities and processes
4. Ensure all Toyota facilities and processes conserve and protect water resources
5. Ensure all Toyota facilities and processes support a recycling-based society
6. Ensure all Toyota facilities and processes operate in harmony with nature

TMNA Environmental Mission

TMNA will demonstrate Respect for the Planet and achieve a net positive impact on society and the environment by:

1. Supporting Toyota's global Environmental Challenge 2050 through our five-year Environmental Action Plans and regional strategy
2. Managing priority issues specific to the North American region
3. Engaging in outreach by promoting awareness, developing strategic partnerships and sharing know-how with business partners and other stakeholders to create positive change

TMNA 5-Year Environmental Action Plans

Five-year targets in the following areas ensure incremental progress toward our 2050 goals:

- Four Focus Areas
- Outreach

TMNA Focus Areas

TMNA has organized its priority issues into four focus areas:



Carbon Water Materials Biodiversity



The Toyota Environmental Challenge 2050 (Challenge 2050), unveiled in September 2015, consists of six goals that seek to make a game-changing contribution to some of the critical environmental issues facing the world today, including climate change, water scarcity, resource depletion, and species and habitat loss. Challenge 2050 was developed by Toyota Motor Corporation and applies to all Toyota affiliates globally.

Challenge 2050 is how team members across the company, in every region of the world, put Toyota's global vision of respect for the planet into action. Challenge 2050 unites us all with a common purpose – to be more than just good stewards of the environment and to create positive changes beyond our facility boundaries.

Within Toyota Motor North America (TMNA), we developed a regional environmental sustainability strategy to align Toyota's global vision and Challenge 2050 with our regional four focus areas – Carbon, Water, Materials and Biodiversity. These focus areas in turn provide the framework for our five-year environmental action plans.

In each focus area, we are working towards minimizing environmental impacts and, through outreach activities, towards a net positive impact on society and the planet. To further elaborate on our strategy for achieving Challenge 2050, we issued position statements in 2018. These statements were updated in December 2019 and represent our regional roadmap for attaining sustainable development by 2050.

- [CARBON Position Statement](#)
- [WATER Position Statement](#)
- [MATERIALS Position Statement](#)
- [BIODIVERSITY Position Statement](#)

Achieving Challenge 2050 will require innovation, creativity and new ideas. For more on what it will take to achieve Challenge 2050, see the feature story "[The Real Challenge in Challenge 2050.](#)"

PRIORITY ISSUES

A global environmental materiality assessment was conducted by our parent company, Toyota Motor Corporation (TMC), as part of developing the Toyota Environmental Challenge 2050. TMC evaluated global trends, risks and opportunities, including the United Nations (UN) 2030 Agenda and the 17 Sustainable Development Goals (SDGs), and identified the following serious environmental issues facing society and the planet:

- **Extreme weather phenomena attributed to greenhouse gas emissions**
- **Aggravated air pollution in cities**
- **Water shortages due to population growth**
- **Resource depletion**
- **Ecosystem fragmentation and biodiversity loss**

TMC then evaluated the importance of these issues to Toyota and external stakeholders. As a result of this process, TMC identified six material issues:

1. **CO₂ emissions from new vehicles**
2. **CO₂ emissions from upstream activities and end-of-life treatment of vehicles**
3. **CO₂ emissions from vehicle manufacturing**
4. **Water stewardship**
5. **Materials management**
6. **Biodiversity protection**

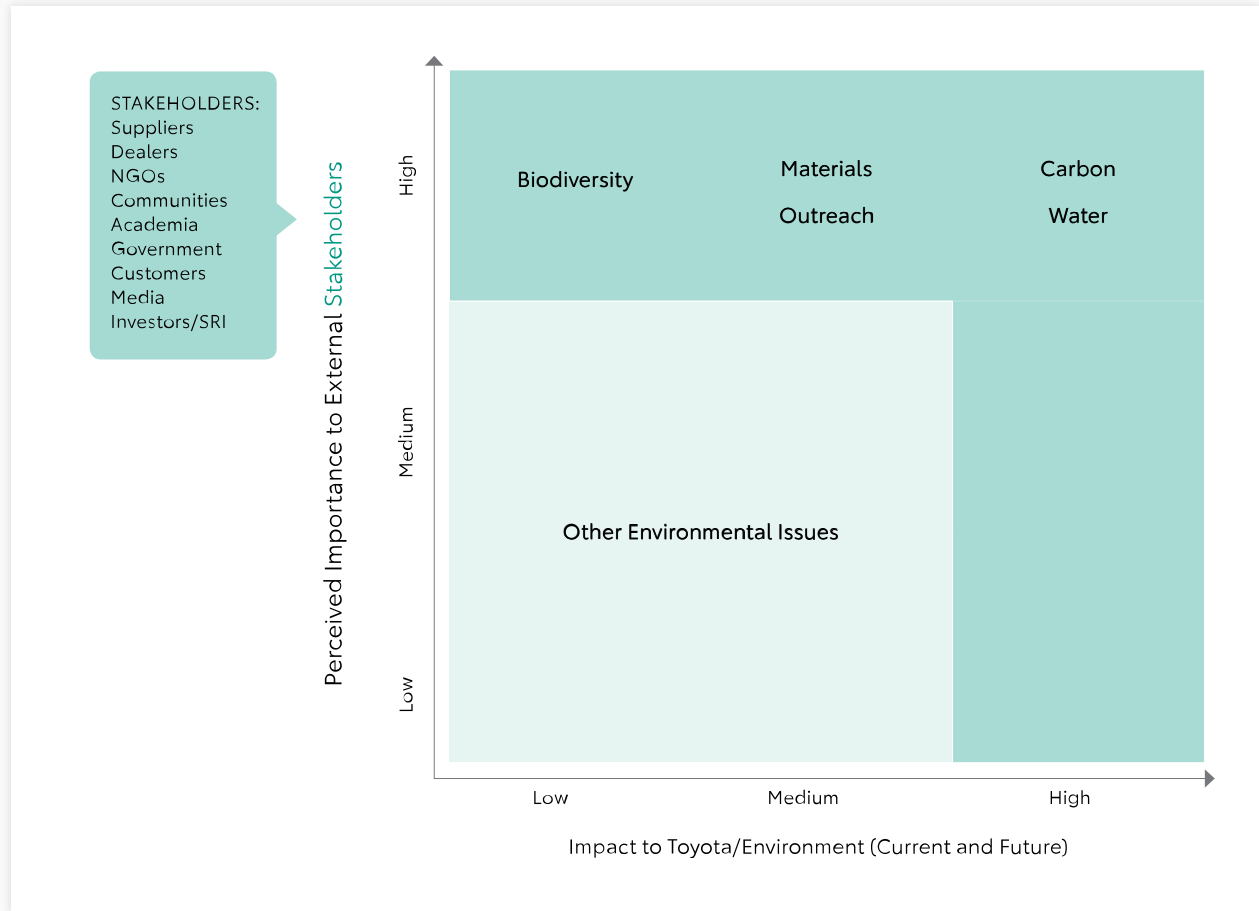
TMC addresses these six issues in the Toyota Environmental Challenge 2050, which was introduced in September 2015.

TMNA's process in North America followed a similar path. Our identification of environmental priority issues aligns with TMC's but consolidates the three CO₂ emissions challenges into a single issue we call "Carbon." We also call out the importance of outreach: sharing our know-how to achieve a net positive impact by 2050. Our priority issues in North America are our four focus areas – Carbon, Water, Materials and Biodiversity – as well as Outreach.

We continue to manage other environmental issues, including air quality and green building, and we are as dedicated as ever to compliance with all applicable environmental laws and regulations. See "[Performance](#)" for information on our activities and progress in these areas.

See the feature story "[Contributing to the UN Sustainable Development Goals](#)" for information on how Toyota's environmental sustainability activities are supporting the UN's 2030 Agenda and SDGs.

PRIORITY ENVIRONMENTAL ISSUES FOR TMNA (MATERIALITY)



2021 TARGETS

TMNA’s Environmental Action Plan (EAP) for fiscal years 2017 to 2021 puts us on a path to achieving all six of the Toyota Environmental Challenge 2050 (Challenge 2050) goals. We know there is much to do and a long way to go, but we are putting the building blocks in place to set us up for success by 2050.

TMNA ENVIRONMENTAL ACTION PLAN, FY2017-2021

NORTH AMERICAN FOCUS AREA	CHALLENGE 2050	FY2021 TARGET	STATUS	FY2020 PROGRESS
CARBON	Challenge 1	Foster accelerated adoption of electrified vehicles	▲	<ul style="list-style-type: none"> Supported global corporate commitment to offer an electrified version of each Toyota and Lexus vehicle by 2025 with introduction of Toyota Sienna and Venza hybrids, RAV4 Prime and next-generation Mirai. Continued to support education initiatives, including funding the ECS Young Investigator Fellowship. Issued a 5th Green Bond to fund the acquisition of new retail installment contracts and operating lease contracts financing certain Toyota and Lexus hybrid electric vehicles. Continued partnerships with Shell, FirstElement Fuels and Air Liquide on hydrogen fueling infrastructure.
	Challenge 2	Improve GHG emissions intensity from all logistics 5% from a baseline of FY2016	▲	<ul style="list-style-type: none"> Improved GHG intensity from owned and third-party U.S. parts and vehicle logistics by 4.7% compared to FY2016. Began operating zero-emissions Kenworth/Toyota fuel cell electric heavy-duty vehicles at the Ports of Los Angeles and Long Beach
	Challenge 3	Improve absolute GHG emissions from North American operations 15% from a baseline of FY2016	▲	<ul style="list-style-type: none"> Reduced absolute GHG emissions by 14% compared to FY2016. Announced virtual power purchase agreements that will reduce GHG emissions from North American operations by up to 40%.
WATER	Challenge 4	Prioritize and implement water stewardship plans for facilities in water-stressed areas	▲	<ul style="list-style-type: none"> Mapped North American sites with updated version of Aqueduct and prioritized 2 sites for developing water stewardship plans. Continued to implement water reduction projects at various sites.
MATERIALS	Challenge 5	Reduce the use of packaging materials	▲	<ul style="list-style-type: none"> Continued to expand the use of returnable shipping containers for service parts and accessories. Between 2017-2019, this program has saved 54.1 millionpounds of cardboard and 144.3 million pounds of wood.
BIODIVERSITY	Challenge 6	Participate in regional biodiversity activities that support wildlife corridor(s)	▲	<ul style="list-style-type: none"> Toyota has 17 sites with gardens that support monarch butterflies and other pollinators. These gardens are located along the monarch butterfly’s migration path and provide food and shelter to the butterflies at various stages of their life cycle as they make their way south for the winter, then return in the spring.

● Target Exceeded ○ Target Achieved ▲ On Track ✕ Target Missed

GOVERNANCE

TMNA's Sustainability and Regulatory Affairs (SRA) group handles Product Environmental and Safety Regulation, Energy and Climate Research, Environmental Sustainability, Enterprise Chemical Management, and Engine Certification and Compliance. The Environmental Sustainability (ES) division of SRA is responsible for developing short-, medium- and long-term sustainability strategies for TMNA, including planning and target setting in alignment with the Toyota Environmental Challenge 2050, which includes developing consolidated five-year environmental action plan goals and targets. ES is also responsible for developing the annual North American Environmental Report. ES reports progress on these activities to the North American Executive Environmental Committee (NAEEC).

ES facilitates an Advisory Board and Working Group as coordinating mechanisms for TMNA. Both are comprised of environmental experts and representatives from various divisions:

- **Manufacturing**
- **Research and Development**
- **Logistics**
- **Product Support**
- **Corporate Resources (includes Regulatory Affairs and Legal)**
- **Social Innovation**
- **Toyota Canada Inc. (TCI)**

This report contains information from these divisions. Representatives from these divisions also participate in focus groups that concentrate on specific environmental issues, such as water or biodiversity. These focus groups report to the Environmental Sustainability Working Group and help implement environmental action plan targets, perform benchmarking and data gathering activities, and raise awareness among team members and external stakeholders.

ENVIRONMENTAL SUSTAINABILITY GOVERNANCE IN NORTH AMERICA



Carbon

- Carbon Targets
- CO₂ From New Vehicles
- CO₂ From Dealers & Suppliers
- CO₂ From Operations



“CARBON” is one of Toyota’s four focus areas in North America. Our carbon strategy addresses Challenges 1, 2 and 3 of the Toyota Environmental Challenge 2050 through **reducing CO₂ emissions from new vehicles, helping suppliers and dealers eliminate their CO₂ emissions, and eliminating CO₂ emissions from our operations.** Climate change affects people in all parts of the global community. We are working at every stage of the vehicle life cycle to help the world build a low carbon future.

CARBON TARGETS

Toyota Motor North America (TMNA) has the following targets for fiscal years 2017 to 2021 for Carbon:



Challenge 1 (Reduce New Vehicle CO₂ Emissions): Foster Accelerated Adoption of Electrified Vehicles (On Track)

Globally, the company has committed to offer an electrified version of each Toyota and Lexus vehicle by 2025 and estimates that by then, it will have sold 5.5 million electrified vehicles. For information on our approach to electrification, see our feature story [“Electric Avenue.”](#)

In North America, we seek to accelerate the adoption of electrified vehicles by continuously supporting education initiatives, issuing green bonds to fund the acquisition of new purchase and lease contracts, and funding hydrogen infrastructure development.

EDUCATION

We engage in a variety of activities to educate consumers and the public about our advanced technology vehicles. For example, we host ride and drive events, participate in demonstration programs with universities and government agencies, and support influential opinion leader forums, such as the Environmental Media Awards. We also partner with the Electrochemical Society (ECS) to encourage young professors and scholars to pursue research in green energy technology that may promote the development of next-generation vehicles capable of utilizing alternative fuels (see [“ECS Young Investigator Fellowship”](#) for more information).

Toyota is also a Steering Committee member of the Hydrogen Council, a global initiative of leading energy, transport and industry companies with a united vision and long-term ambition for hydrogen to foster the transition to a low carbon society. The Hydrogen Council works with and provides recommendations to several key stakeholders, including policy makers, investors, international agencies and civil society to achieve these goals. Launched at the 2017 World Economic Forum in Davos, the Council is led by two co-chairs from different geographies and sectors.

GREEN BONDS

Toyota Financial Services (TFS) issued its latest unsecured green bond, reinforcing the company’s industry-leading commitment to the sale of electrified vehicles. Proceeds from the \$750 million bond will be used to fund the acquisition of new retail installment contracts and operating lease contracts financing Toyota and Lexus vehicles that meet each of the three eligibility criteria:

- **Possess a gasoline–electric hybrid or alternative fuel powertrain.**
- **Achieve a minimum of 40 highway and city miles per gallon (MPG or MPG equivalent).**
- **Receive a Smog Rating of 7 or better (where 10 is the cleanest), as determined by the U.S. Environmental Protection Agency for the purchase of a vehicle in California.**

There are currently seven vehicle models in the Toyota and Lexus lineup that qualify: Toyota Avalon Hybrid, Toyota Camry Hybrid, Toyota Corolla Hybrid, Toyota Mirai, Toyota Prius, Toyota Prius Prime and Lexus ES 300h.

TFS revolutionized the Green Bond market by introducing the auto industry’s first-ever asset-backed green bond in 2014. This issuance marks the fifth green bond the company has issued, and its first ever unsecured green bond offered in U.S. dollars. With this latest iteration of its green bond program, Toyota increased the vehicle eligibility requirements from 35 miles per gallon to 40 miles per gallon.

The TFS green bond program was reviewed by Sustainalytics, a leading global provider of environmental, social and corporate governance research, ratings and analytics.

Citigroup and Credit Agricole CIB advised TFS on the green structuring considerations for the offering. BNP, JP Morgan and Mizuho served as additional joint lead managers for the transaction.

See [“Advancing Conventional Technologies”](#) for information about Toyota’s latest advanced technology vehicles.

HYDROGEN FUELING INFRASTRUCTURE

Hydrogen fueling infrastructure is key for commercialization of fuel cell electric vehicles (FCEVs) like Toyota's Mirai. The University of California Irvine estimates only 68 stations are needed to support 10,000 FCEVs state-wide, and more than 40 are already operating. The California Energy Commission (CEC) has earmarked funding for about 100 total hydrogen stations to be built over the next several years.

As an example of recent progress, **Shell**, in partnership with Toyota, has opened five new stations in the San Francisco and Sacramento areas, with more to come. Similarly, **Iwatani** has worked with Toyota to further expand the network and now operates four hydrogen stations as part of Iwatani's growing California operations.

Overall, Toyota has foundationally helped fund the development of a hydrogen infrastructure that is already supporting a growing community of more than 7,000 FCEV drivers in the United States:

- With support from Toyota, **FirstElement Fuels** has been a primary player in developing an integrated and reliable network of fueling stations across California in target market locations consistent with the California Fuel Cell Partnership Road Map. As of August 2020, FirstElement has successfully opened 21 hydrogen stations – including a new, high capacity, four-fueling position, liquid hydrogen-supplied station in Fountain Valley, California – and is currently developing many more of these larger liquid-hydrogen stations to further expand hydrogen fuel availability while simultaneously reducing fuel costs to FCEV customers.
- In the northeastern United States, **Air Liquide** is working to develop and supply a fully integrated hydrogen fueling infrastructure network of strategically located stations to support the introduction of Mirai on the East Coast.

Additionally, Toyota Canada has been working closely with partners to ensure the introduction of an appropriate fueling infrastructure in Canada. In June 2018, Canada's first public retail hydrogen refueling station opened in Vancouver. In 2019, other stations opened in Québec City and in Burnaby, and more in Canada are in the works. Toyota Mirai became available for fleet purchase in Québec during the winter of 2019 and in British Columbia during the summer of 2019.

To further accelerate hydrogen infrastructure and FCEV adoption, Toyota is also actively involved in collaborations towards even bigger, heavy-duty-truck-focused hydrogen stations in order to enable much needed zero-emissions freight transport while amplifying light-duty hydrogen station efforts, leveraging network supply synergies, and speeding economies of scale.

For more on heavy-duty hydrogen fuel cell vehicles, see ["Zero-Emissions Freight Project."](#)



Challenge 2 (Reduce Dealer & Supplier CO₂ Emissions): Reduce GHG emissions intensity from logistics by 5 percent, from a baseline of fiscal year 2016 (On Track)

This target measures GHG emissions intensity from owned and third-party U.S. service parts/ accessories and vehicle logistics from all transport modes (trucking, marine, air and rail). Logistics GHG intensity increased 14 percent in fiscal year 2020 compared to the previous year, mainly due to an increase in container miles from our owned parts logistics trucks. However, **since the target baseline of fiscal year 2016, GHG intensity has decreased 4.7 percent**, putting us on track to achieving the target.

Production control logistics are currently not included in the scope of this target. They will be included in the GHG logistics target when our new environmental action plan starts in fiscal year 2022.

Total emissions from all logistics sources – including owned and third-party service parts/accessories, vehicle, and production control – were estimated to be 759,000 metric tons CO₂e in fiscal year 2020, a reduction of 1 percent from the previous year.

Toyota Transport (truck carrier) and Toyota Logistics Services (shipper) continue to participate in U.S. EPA's SmartWay® Transport Partnership, a market-driven partnership aimed at helping businesses move goods in the cleanest, most efficient way possible. One of the main purposes of SmartWay is to improve fuel efficiency and reduce GHG emissions from the movement of goods.

See [“Logistics GHG Intensity”](#) in Performance for GHG intensity performance from U.S. service parts/ accessories and vehicle logistics.

See [“Suppliers”](#) for more information on activities to reduce GHG emissions from third-party logistics.



Challenge 3 (Eliminate CO₂ Emissions from Facilities): Reduce absolute GHG emissions from North American operations 15 percent (On Track)

The target covers total Scope 1 and Scope 2 GHG emissions from stationary and mobile sources at both manufacturing and non-production sites. The baseline year is fiscal year 2016. **Total Scope 1 and 2 emissions have decreased 14 percent between the baseline year and fiscal year 2020.** The decrease is due to energy efficiency improvements, investments in renewable energy and changes in production volumes and model mix.

See [“CO₂ From Operations”](#) for information on our activities to reduce energy use and GHG emissions.

See [“Greenhouse Gas Emissions”](#) in Performance for GHG emissions performance data.

CO₂ FROM NEW VEHICLES

Challenge 1 of the Toyota Environmental Challenge 2050 calls on all Toyota regions globally to reduce CO₂ emissions from new vehicles 90 percent by 2050, from a 2010 baseline.

To achieve this challenge, Toyota is pursuing multiple pathways to reduce vehicle fuel consumption and GHG emissions and is committed to utilizing various forms of electrification, including hybrid, battery electric and fuel cell technology. We try to match technologies to customer needs and government policies in each specific region. We evaluate vehicle powertrains, weight, aerodynamics and other design factors to boost vehicle efficiency while preserving the vehicle size, power, driving range and affordability that our customers demand — without sacrificing world-class vehicle quality, durability, reliability, safety features and performance.

There are several factors that must be weighed when considering the appropriate match. That's why we research driving trends, sociological behaviors, the changing energy and transportation landscape, the synergies between vehicle fuels and technologies, and the evolution of cities. Government initiatives can also influence the adoption of advanced technologies where the market and supporting infrastructure are still developing. Researching these factors helps us understand which technologies are best suited for the circumstances in a given market.

Going forward, hybrid technology will continue to be at the foundation of Toyota's approach to minimizing the environmental impacts of gasoline-powered vehicles. Knowledge gained from hybrid development and deployment is helping Toyota accelerate the introduction of future powertrains that can utilize a wide variety of energy sources and fuels, including hydrogen and electricity. **Toyota believes that we will utilize not only hybrid technology going forward, but also various additional electrified technologies, and has committed to offering an electrified version of each vehicle by 2025.**

Toyota and Lexus currently have 18 electrified vehicle models on the market in North America. This includes 15 hybrid gasoline-electric vehicles, two plug-in hybrid electric vehicles and one hydrogen-powered fuel cell electric hybrid vehicle. Cumulative Toyota and Lexus electrified vehicle sales in the region are more than 4.1 million vehicles (as of August 2020). These numbers mean that Toyota will continue to use our portfolio of technologically advanced powertrains to develop and build our vehicles to readily adapt to future consumer needs while minimizing environmental impacts.

Looking further into the future, Toyota is collaborating with research entities, universities and companies on materials science research, investing in artificial intelligence to help accelerate the design and discovery of advanced materials. The research is helping to identify new advanced battery materials and fuel cell catalysts that can power future zero-emission and carbon-neutral vehicles. These efforts are helping to lay the groundwork for the future of clean energy to bring us even closer to achieving Toyota's goal of reducing global average new vehicle CO₂ emissions 90 percent by 2050.

For additional information related to vehicle CO₂ emissions, please see the following:

- Toyota's approach to electrification feature story "[Electric Avenue.](#)"
- TMNA's target to foster accelerated adoption of electrified vehicles, see "[Carbon Targets.](#)"
- "[Vehicle CO₂ Emissions](#)" data for the U.S., Canada and Mexico.

TOYOTA'S HYBRID ELECTRIC FLEET

MODEL	TYPE OF HYBRID ELECTRIC VEHICLE
Toyota Mirai	Fuel Cell Electric
Toyota Prius Prime	Plug-in Gasoline-Electric
Toyota RAV4 Prime	Plug-in Gasoline-Electric
Toyota Prius	Gasoline-Electric
Toyota Avalon Hybrid	Gasoline-Electric
Toyota Camry Hybrid	Gasoline-Electric
Toyota Corolla Hybrid	Gasoline-Electric
Toyota Highlander Hybrid	Gasoline-Electric
Toyota RAV4 Hybrid	Gasoline-Electric
Toyota Sienna Hybrid	Gasoline-Electric
Toyota Venza Hybrid	Gasoline-Electric
Lexus ES 300h	Gasoline-Electric
Lexus LC 500h	Gasoline-Electric
Lexus LS 500h	Gasoline-Electric
Lexus NX 300h	Gasoline-Electric
Lexus RX 450h	Gasoline-Electric
Lexus RX 450hLG	Gasoline-Electric
Lexus UX 250h	Gasoline-Electric

All listed models are available as of December 2020.

ADVANCING CONVENTIONAL TECHNOLOGIES

The Toyota New Global Architecture (TNGA) exemplifies key elements of our technology strategy for simultaneously reducing vehicle CO₂ emissions, increasing fuel economy and boosting vehicle performance. Toyota is proud to announce new vehicle models that continue building upon the TNGA technology advancements showcased in previous North American Environmental Reports. The latest additions to our TNGA lineup include the new 2021 Mirai, 2021 RAV4 Prime Plug-in Hybrid, 2021 Sienna and 2021 Venza. Continuing the use of TNGA enables many of the groundbreaking technologies to be shared more easily with future vehicles and is helping Toyota realize our commitment to “making ever-better cars.” TNGA’s integrated development supports the concept of total optimization for a lightweight, streamlined, high-performance platform and powertrain unit. TNGA helps us meet consumers’ needs while continuing to improve the efficiency of our vehicles.

Toyota is excited to announce a completely redesigned **2021 Mirai Fuel Cell Electric Vehicle (FCEV)** based on Toyota’s premium rear-wheel drive TNGA platform. The new Mirai offers improved passenger room, comfort and a new driving experience compared to its pioneering forerunner. A targeted 30 percent increase in range is achieved by improved fuel cell system performance and increased hydrogen storage capacity. At its core, the Mirai is an electric vehicle, but it never needs to be plugged in to recharge. An FCEV generates its own electricity onboard from hydrogen and oxygen, with water as the only tailpipe emission. A fill-up takes just about five minutes at a hydrogen fueling station. The second-generation Mirai, which went on sale in late 2020, delivers a significant evolution of Toyota’s hydrogen FCEV powertrain technology and offers a critical look into the future.



2021 Toyota Mirai

The 2021 Toyota RAV4 Prime Plug-in Hybrid Electric Vehicle (PHEV) utilizes TNGA and offers the most powerful hybrid RAV4 ever. Unlike any other, the new RAV4 plug-in hybrid is celebrated for its all-electric range, spirited acceleration, nimble handling and impeccable style. The 2021 RAV4 PHEV has an EPA-estimated rating of 42 miles of all electric range, where the driver only operates the vehicle on the battery. After the driver exhausts the battery, the RAV4 Prime uses hybrid technology to give the driver excellent fuel economy and a total range of 600 miles. All of this is packaged in a vehicle that is currently Toyota’s second quickest vehicle (behind the Toyota Supra) with a 0 to 60 speed of only 5.7 seconds, giving this RAV4 Prime a fuel-efficient and fun-to-drive attitude.



2021 Toyota RAV4 Prime

The fourth generation **Toyota Sienna** reimagines the minivan to support a wider array of life stages and activities. With a standard hybrid powertrain now across all trims and an array of new tech and amenities, the 2021 Toyota Sienna raises the bar for style, safety, comfort, versatility and fuel efficiency in its segment. To give the Sienna driver confidence, a natural and intuitive connection between the driver and the vehicle is achieved with the optimized geometry of the TNGA-K Platform combined with a trailing-arm multi-link rear suspension and increased body rigidity. The Toyota Hybrid System II delivers 243 total horsepower and a manufacturer-estimated 33 combined MPG fuel economy, the latter setting a benchmark for the segment. Additionally, Sienna has an optional Predictive Efficient Drive (PED), which analyzes driving habits and memorized road and traffic conditions to optimize hybrid battery charging. When the driver activates PED, the system learns repeating routes and can predict when and where the vehicle is likely to slow down or stop. Then, through optimum accelerator pedal release timing guidance, the feature can reduce energy consumption, especially when driving through hilly areas or in traffic congestion.



2021 Toyota Sienna Hybrid

The all-new **2021 Venza** comes equipped exclusively with the Toyota Hybrid System II powertrain and advanced Electronic On-Demand All-Wheel Drive. The new-generation Toyota Hybrid System in the Venza combines a high-efficiency 2.5-liter DOHC four-cylinder engine with three electric motors in a highly compact system. Engine speed is synchronized with vehicle speed, yielding effortless and quiet acceleration. Venza's hybrid system also adopts a newly developed lithium-ion battery to enhance performance, size and weight. Additionally, Venza utilizes the same Predictive Efficient Drive (PED) used in the all-new Sienna. The PED uses the navigation system operation to analyze driving habits and memorize road and traffic conditions, which can help reduce energy consumption and optimize battery charging and discharging. All of this technology provides comfortable urban and highway performance in addition to impressive fuel efficiency. The new Venza has a preliminary manufacturer-estimated 40 MPG combined fuel economy in LE trim.



2021 Toyota Venza Hybrid

CO₂ FROM DEALERS & SUPPLIERS

Challenge 2 of the Toyota Environmental Challenge 2050 calls on us to engage with our dealers and suppliers to support their efforts to eliminate GHG emissions by 2050.

DEALERS

There are approximately 1,850 Toyota and Lexus dealerships in the United States, Canada and Mexico, all independently owned franchises. The Toyota and Lexus brands work with their dealerships on an individual basis, providing vendor support for products and programs that improve energy efficiency and save money. Through efforts like the Toyota Image II facility initiative and Lexus Vision USA, dealerships incorporate the best of sales and retail by including features such as LED lighting and windows that allow for natural light.

Energy is the third highest overhead expenditure for U.S. auto dealerships. On average, auto dealerships use 18 percent more energy than typical office buildings, according to the National Automobile Dealers Association (NADA). That's why Toyota and Lexus provide guidance to dealerships on implementing sustainable strategies to achieve LEED® certification. LEED®, or Leadership in Energy and Environmental Design, emphasizes building energy efficiency and allocates almost one-third of available points to building energy efficiency. For information on Toyota and Lexus dealership LEED® certifications, see "[Dealers](#)" in Performance.

Beyond energy efficiency, we also help our dealers to source renewable energy and have partnered with SunPower® to offer support for navigating through the process of installing solar panel arrays. Solar arrays can drastically reduce a dealership's electric bills, and they generate clean energy onsite. They can also make a powerful statement to customers and the community about a dealership's commitment to the environment.

Shottenkirk Desert Lexus in Cathedral City, California, completed ground-up construction in 2020. The final touch on the new dealership was installing a 252 kW SunPower® solar panel system on the rooftop of the service building – a system that's more than 40 percent larger than the average system installed at an automotive dealership. The solar panels are expected to generate more than 428,000 kWh per year, which is an estimated 65 percent of the dealership's annual electricity needs. The clean electricity generated by the system avoids almost 100 metric tons of GHG emissions per year and is equivalent to the annual average electricity use of 16 homes.



Shottenkirk Desert Lexus installed a 252 kW rooftop solar system that is expected to generate 65 percent of the dealership's annual electricity needs.

SUPPLIERS

Freight transport is a significant — and growing — contributor to greenhouse gas (GHG) emissions. According to the International Transport Forum and the Organization for Economic Cooperation and Development (OECD), GHG emissions from trade-related freight transport are expected to increase by almost a factor of four between 2010 and 2050. Experts project that by 2050, global freight transport emissions will surpass those from passenger vehicles.

In North America, the majority of TMNA's freight transport emissions are generated by third-party logistics partners. Our logistics network consists of trucking, rail and marine carriers, all working in sync to ensure smooth shipping and delivery of vehicles, parts and accessories across North America, from the supplier to the plant, to Toyota's distribution centers, and ultimately to dealerships and customers.

To help mitigate transport-related GHG emissions, TMNA's internal logistics division works with third-party partners to develop GHG reduction strategies. For example, Toyota's production control logistics group — which procures the parts and materials used to manufacture our vehicles — is working on a strategy to reduce GHG emissions from two primary sources: over-the-road transportation (OTR) and cross dock yard operations. The group's focus is converting diesel-powered OTR equipment to alternative fuels, such as renewable compressed natural gas, and to trial alternative power systems at the cross docks, such as electric shunt trucks. In 2019, the cross dock in Louisville, Kentucky, completed the replacement of half of the forklift fleet with electric forklifts and will convert the remaining forklifts as leases expire. Converting eight forklifts from liquid propane to electric results in an annual reduction of 73 metric tons CO₂e.

Toyota's vehicle logistics group (TLS), which handles all finished vehicle shipments to dealerships as well as all U.S. exports to more than 20 countries, has been working with logistics partners to develop a GHG emissions reduction strategy. TLS tracks GHG metrics from each partner and works with them to pilot clean technologies, improve fuel efficiency and reduce emissions.

In 2020, TLS enacted the final phase of the GHG strategy by launching the first annual **Environmental Leadership Awards**. The main goal of the awards is to reward third-party partners for their efforts in supporting the Toyota Environmental Challenge 2050 goal of eliminating CO₂ emissions from supplier activities. The awards were presented in March during the annual TLS Partners Meeting.

Between fiscal years 2018 and 2020, TLS and its partners have reduced total GHG emissions from transport activities by 35,000 metric tons CO₂e. The 2020 winning entries provide exceptional examples of how this was accomplished:

- **Emissions Reduction Project Award – Crowley Maritime Corp.:**

Crowley introduced two of the world's first combination container/roll on-roll off (ConRo) ships powered by liquified natural gas (LNG) and created a reliable LNG supply chain for fueling the ships in Jacksonville, Florida. These vessels are used to deliver Toyota vehicles between Jacksonville and San Juan, Puerto Rico. The ships are designed to consume both diesel and LNG for electrical power and main propulsion. In 2019, the average operation on LNG during more than 100 voyages was 88 percent. Fueling the ships with LNG reduces carbon dioxide (CO₂) by 38 percent per container as well as pollutant emissions, including reductions of nearly 100 percent in sulfur oxide (SOx) emissions and nearly 90 percent in particulate matter (PM) emissions, when the ships are operating on LNG instead of marine diesel oil.



- **Environmental Strategy Award – Southeast Toyota Distributors, LLC:** Southeast partnered with Jackson Electric Membership Corporation, the local power company, to utilize an undeveloped portion of its vehicle processing center property in northeast Georgia to generate solar power. With over 3,600 solar panels and 500 kWh of battery storage, this project annually produces 2.4 million kWh of electricity, avoids 1,777 metric tons of CO₂ and 21,346 pounds of NO_x. Of the power produced, 29 percent is used to operate the vehicle processing center and the remainder powers the local community.



- **Fuel Efficiency Award – CSX Transportation, Inc.:** CSX operates a fleet of more than 3,500 locomotives across its extensive rail network in the eastern United States. Because locomotive fuel use represents more than 90 percent of the company’s total GHG emissions, CSX has successfully implemented several fuel-saving technologies. The railroad has installed automated cruise control devices on approximately 2,100 locomotives, shut down unnecessary backup locomotives and deployed distributed power on certain trains to reduce lateral forces and friction. These initiatives, combined with serving more direct routes, save nearly 11 million gallons of fuel per year. The automated cruise control devices alone increase fuel efficiency by as much as 10 percent. CSX’s commitment to sustainable business practices have reduced GHG emissions intensity by nearly 11 percent between 2014 and 2019.



- **Innovation Award – Hansen & Adkins Auto Transport:** Since 2016, Hansen & Adkins has been installing remote start devices on all new equipment. These devices reduce idling by allowing the driver to start the engine from the hydraulic actuator stations on both the tractor and trailer, and shut off the engine after a short time of inactivity. Idling time on trucks with remote start devices has been reduced by more than 50 percent, and fuel efficiency has improved by 0.1 to 0.2 miles per gallon. This may not seem like much, but for every million miles driven, Hansen & Adkins saves an estimated 5,000 gallons of diesel. Their trucks drive over 80 million miles per year, which equates to annual fuel savings of 400,000 gallons and 4,064 metric tons CO₂ avoided.



These activities are helping Toyota make progress towards our target to reduce the GHG intensity of transport activities by 5 percent by fiscal year 2021. So far, we have reduced GHG intensity by 4.7 percent since the baseline of fiscal year 2016.

ZERO-EMISSIONS FREIGHT PROJECT

Over 16,000 trucks serve the Los Angeles and Long Beach port complexes, North America’s largest trade gateway for containerized cargo. That number is estimated to double by 2030.

Toyota is committed to hydrogen-powered fuel cell electric technology as a powertrain for the future because it’s a clean, scalable platform that can meet a broad range of mobility needs with zero emissions. The Zero-and Near-Zero-Emission Freight Facilities project (ZANZEFF) provides a large-scale “Shore-to-Store” hydrogen fuel cell electric technology framework that allows us to move heavy-duty truck fuel cell electric technology towards commercialization. The initiative is expected to help reduce emissions by over 453 metric tons of CO₂e and NO_x, ROG and PM₁₀ by 0.72 weighted tons.

The Port of Los Angeles, a global maritime leader with respect to zero-emission and near-zero-emission technology testing and adoption, rolled out the first phase of ZANZEFF in the fall of 2020. **New zero-emissions hydrogen-powered fuel cell electric heavy-duty vehicles (FCEVs) are now operating at the ports**, utilizing the Kenworth T680 Class 8 model combined with Toyota’s fuel cell electric technology. Four of the ZANZEFF trucks are currently operated by Toyota Logistics Services and in the future, three will be operated by United Parcel Services, two by Total Transportation Services Inc., and one by Southern Counties Express. This phase is designed to kick-start the leap to a new class of goods movement vehicles.

The new generation zero-emission truck expands on the capabilities of Toyota’s first two Project Portal Proof of Concept trucks through enhanced capability, packaging and performance, with an estimated range of more than 300 miles per fill, twice that of a typical drayage trucks’ average daily duty cycle. Since operations began in April 2017, the Project Portal “Alpha” and “Beta” Proof of Concept Class 8 trucks have logged more than 14,000 miles of testing and real-world drayage operations in and around the Ports of Los Angeles and Long Beach while emitting nothing but water vapor.

CARB awarded \$41 million dollars to the Port of Los Angeles for the ZANZEFF project as part of California Climate Investments, a California initiative that puts billions of cap-and-trade dollars to work reducing greenhouse gas emissions, strengthening the economy and improving public health and the environment, particularly in disadvantaged communities.



Kenworth/Toyota FCEVs under the ZANZEFF project have been rolled out in Southern California, increasing the ports’ zero-emission trucking capacity and further reducing the environmental impact of drayage operations.

CO₂ FROM OPERATIONS

Challenge 3 of the Toyota Environmental Challenge 2050 calls on us to eliminate all CO₂ emissions from the use of energy at our facilities.

In fiscal year 2020, TMNA's use of electricity, natural gas and other fuels resulted in emissions of 1.1 million metric tons CO₂e, which is a 9 percent decrease compared to the previous year and a 14 percent decrease compared to fiscal year 2016 (the baseline year of our carbon target). For energy and GHG data, see ["Carbon"](#) in Performance.

We track GHG reduction capital projects through our corporate production engineering group. Of the projects we tracked in fiscal year 2020, we counted emissions reductions from manufacturing plant activities of more than 57,000 metric tons CO₂e. Our plants and other facilities continuously implement measures that impact daily operations and reduce energy consumption and GHG emissions. For example:

- **Improving Compressed Air System Efficiency:** Toyota's powertrain facility in West Virginia implemented measures to increase the efficiency of the compressed air system. The improved system utilizes a high pressure storage tank to reduce peak pressure demand on the central air compressors. This allows for reduction of the overall system pressure and load on the central compressors. This improvement is estimated to increase the efficiency of the compressed air system by 12 percent, leading to an annual decrease of 2,600 metric tons of CO₂e emissions.
- **Reducing Equipment Operation During Non-Production Times:** Toyota's aluminum casting plant in Missouri identified an opportunity to reduce equipment operation when not needed. Previously, the metal heat treating furnace circulation fan and heat element operated continuously. Temperature monitoring and controls were added to reduce operation during weekends and other non-production times, which saves 2,747 MWh and avoids 2,000 metric tons CO₂e annually.
- **Converting to LED Lighting:** Toyota's assembly plant in Kentucky completed an LED lighting conversion that reduces annual power consumption by 1,316 MWh and avoids 729 metric tons CO₂e. The low-level fluorescent lighting in the plastics, stamping and paint shop areas was replaced with brighter, more efficient LEDs. Additional benefits are: 1) the lighting lifespan increases from three years for fluorescent lamps to 10 years for LED, and 2) usage per four-foot section decreases from 64 watts to 32 watts.
- **Reducing Natural Gas Consumption:** Toyota's assembly plant in Tijuana, Baja California (Mexico), is utilizing exhaust waste heat from a regenerative thermal oxidizer (RTO) to preheat incoming water. Adding this preheating from the RTO exhaust waste heat has reduced the boiler's annual natural gas consumption by 80 percent and the plant's overall natural gas consumption by nearly 6 percent, avoiding 686 metric tons CO₂e.
- **Installing VFDs on Equipment:** Toyota's assembly plant in San Antonio, Texas, installed 21 variable frequency drives (VFDs) on equipment in the paint shop. VFDs save energy by varying the frequency and voltage of electric motors driving circulation pumps and fans. Additional controls can match pump and fan operation to process requirements. Combined with an "energy setback" standby mode, fans and circulation pumps in the paint booths can reduce output when no vehicles are present. These improvements are saving the plant an estimated 1,161 MWh in annual power consumption and avoiding 602 metric tons CO₂e.
- **Optimizing Building Performance:** Toyota's autoparts facility in Delta, British Columbia, added variable frequency drives (VFDs) to eight rooftop building HVAC units along with a new controller that provides the ability to optimize building energy performance. This project is expected to achieve annual savings of 1,278 MWh of electricity and 3,500 MMBtus of natural gas, and avoid 198 metric tons CO₂e.

RENEWABLE POWER

According to the [U.S. Energy Information Administration](#), renewable energy is defined as “energy from sources that are naturally replenishing but flow-limited; renewable resources are virtually inexhaustible in duration but limited in the amount of energy that is available per unit of time.” Sunlight, wind, biomass and geothermal are common examples. The transition from fossil-fuel based energy sources to renewable energy sources is key to addressing climate change and to achieving the Toyota Environmental Challenge 2050.

Ramping up renewable energy generation requires a huge capital investment. Companies that might want to pursue this business opportunity need more than a vague promise of a stable market for their output. They need the ironclad assurance that only a firm commitment from a buyer can give.

Virtual power purchase agreements (VPPAs) are helping accelerate the company’s shift to renewable energy sources. Currently, just over 3 percent of TMNA’s power consumption is from renewable sources. Once VPPAs are in place, that percentage is expected to increase to about 40.

“Nearly all the power that’s consumed in this country is currently purchased an hour or a day in advance,” explained Kevin Butt, senior director of Environmental Sustainability at TMNA. “What we’re doing with a VPPA is making a commitment to buy power from the system owner to offset electricity Toyota will need for several years. That gives the renewable energy producers the backing they need to get the financing to expand their operations. In return, the power is put on the grid that we get our power from, and we receive the Renewable Energy Credits that accompany the electricity we need to offset our carbon footprint.”

THE POWER OF VPPAs VIRTUAL POWER PURCHASE AGREEMENT

LET'S MAKE A BETTER PLANET **TOYOTA ENVIRONMENTAL CHALLENGE 2050**

BY DRIVING A CLEAN MOBILITY FUTURE TOGETHER
 Toyota is committed to reducing emissions from the energy we use. We are taking action, through power purchase agreements, to supply emissions free renewable energy to the same grid we get our power from. This is one step in converting our energy demand to emissions free energy.

TARGET RENEWABLE ENERGY SOURCES = ZERO EMISSIONS
 WIND SOLAR

VISION FOR TOYOTA'S VPPAs

- ONE** Toyota contracts renewable source electricity generators to put electricity on the grid.
- TWO** Renewable provider supplies the grid with energy secured by Toyota.
- THREE** Local grid receives regular renewable input, decreasing fossil fuel demand.
- FOUR** Toyota balances energy use with renewable energy generated for the grid.

CLEANER MOBILITY

VPPAs = New Renewable Generation = Reduced Carbon Emissions = Environmental Sustainability

NEW RENEWABLE POWER GENERATORS
UP TO 40 PERCENT REDUCTION IN TOYOTA'S NORTH AMERICAN GHG EMISSIONS

In February 2020, Toyota signed an agreement and is waiting on approval from the Kentucky Public Service Commission that would ensure that — by early 2022, if not sooner — 22 percent of Kentucky Utilities' power provided to our Georgetown operations will be renewable.

A VPPA signed in December 2019 calls for Toyota to guarantee the purchase of enough power going forward to help Clearway Energy Group secure the funding it needs to begin constructing a 110-megawatt Black Rock wind park in West Virginia in late 2020.

On a smaller scale, in California, Toyota has entered into a Hydrogen and Power Purchase Agreement for a system to be built at the Port of Long Beach that will generate hydrogen and electricity from biomass and provide onsite-generated renewable power for our vehicle logistics operation at the port. Doing so will make this project environmentally beneficial and provide onsite-generated renewable power for our vehicle logistics operation at the port. Doing so will make this project environmentally beneficial and economically viable, while it fuels a pilot fleet of hydrogen fuel cell commercial trucks.

"We're starting to embrace this strategy in a big way," says Kevin Butt. "The West Virginia project, alone, will offset 8 percent of our carbon footprint in North America. The Port of Long Beach project is much smaller. But it's very innovative and important as it will operate in one of the worst air quality districts in the country."

VPPAs are beginning to have a tangible impact on our efforts to eliminate the carbon footprint of our North American operations in keeping with the Toyota Environmental Challenge 2050. These actions, and others like them, will help to usher in a new era in energy production that is carbon-free and renewable.

RENEWABLE POWER PARTNERSHIPS

TMNA belongs to two organizations seeking to promote the transition to zero-carbon power:

- TMNA's headquarters campus in Plano, Texas, and the vehicle distribution center in Portland, Oregon, are members of **U.S.**

EPA's Green Power Partnership. The EPA Green Power Partnership is helping to build the American green power industry. Current Partners' green power use represents nearly 40 percent of the U.S. voluntary green power market.

The program provides a framework that includes credible usage benchmarks, market information, technical assistance and public recognition to companies and other organizations that use green power. In return for technical assistance and recognition, Partners commit to use green power for all, or a portion, of their annual electricity consumption. Toyota's headquarters campus uses 100 percent green power, from an onsite solar array coupled with renewable energy credits. The Portland site uses 42 percent green power, from purchasing wind power from the local utility.



- TMNA became a member of the **Renewable Energy Buyers Alliance (REBA)** in 2020. REBA is a membership association for large-scale energy buyers seeking to procure renewable energy across the U.S. The organization's goal is to catalyze 60 gigawatts of new renewable energy projects by 2025 and to unlock the energy market for all large-scale energy buyers by creating viable pathways to procurement.



Water

- Water Target
- Conserving Water
- Protecting Water Resources
- Raising Community Awareness



“WATER” is one of Toyota’s four focus areas in North America. Our approach to water stewardship addresses Challenge 4 of the Toyota Environmental Challenge 2050 and emphasizes **conserving water, protecting water resources** and **raising awareness in our communities** about water issues. Every living thing needs water to survive. Our actions today to protect this precious resource create lasting value and build a better tomorrow for us and the planet.

WATER TARGET

Toyota Motor North America (TMNA) has the following target for fiscal years 2017 to 2021 for Water:



Challenge 4 (Conserve Water): Prioritize and implement water stewardship plans for facilities in water-stressed areas (On Track)

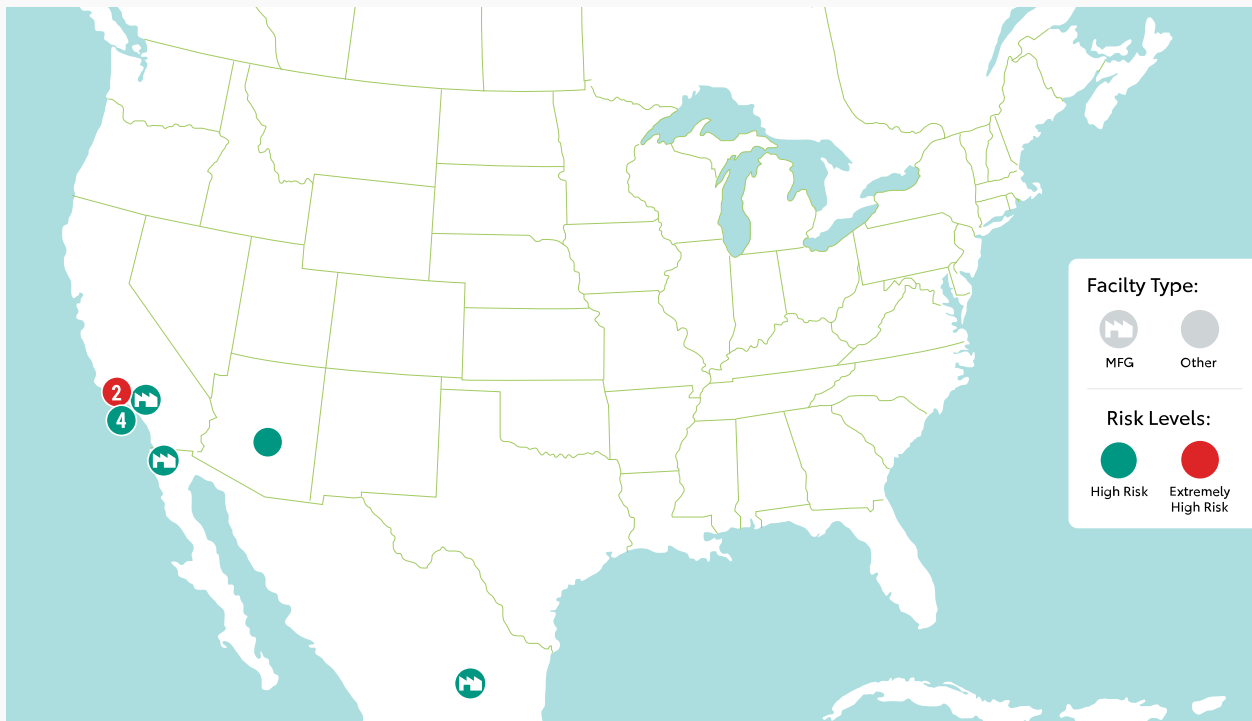
TMNA’s water stewardship strategy focuses on facilities located in areas of high water stress. We use the World Resources Institute (WRI) Aqueduct™ tool to evaluate water stress. The centerpiece of Aqueduct is the Water Risk Atlas, which combines 13 indicators covering aspects of quantity, quality and reputational risk into a composite overall risk score.

In August 2019, WRI released updated baseline maps for Aqueduct’s water risk framework. The current tool (Version 3.0 of the Water Risk Atlas) includes improvements such as higher temporal and spatial resolution, new indicators, and a more holistic hydrological model.

We re-mapped all our North American locations using the updated tool (102 manufacturing plants, R&D centers, vehicle and parts distribution centers, service training centers and offices) and ranked them based on their overall risk score. According to the Atlas, eight of Toyota’s North American locations scored in the “high” risk level and two in the “extremely high” risk level.

In fiscal year 2020, these 10 sites represented 6 percent of the water Toyota withdrew in North America. **We have prioritized two sites – one of our assembly plants in Mexico and a region office on the West Coast – for piloting water stewardship plans. We will be working with an outside expert over the next year to develop these plans,** which will address water conservation (including potentially absolute water reduction targets), water quality, and outreach activities with suppliers and local communities.

TMNA SITES IN WATER-STRESSED AREAS



This map was generated using data from WRI’s Aqueduct™ Water Risk Atlas 3.0. We mapped 102 of Toyota’s North American locations, including manufacturing plants, R&D centers, vehicle and parts distribution centers, service training centers and offices. Only the sites in areas of “high” and “extremely high” risk of overall water stress are shown here. Circles with numbers inside indicate multiple facilities of that type; the map is too small to show each site in that area.

CONSERVING WATER

During fiscal year 2020:

- **Withdrawal:** Toyota withdrew almost 1.77 billion gallons of water at 102 North American facilities, including manufacturing plants, R&D centers, vehicle and parts distribution centers, service training centers and offices. This is a 2.3 percent reduction from fiscal year 2019 levels.
- **Withdrawal in Water-Stressed Areas:** Only 6 percent of water withdrawal – about 110.8 million gallons – occurred in an area of “high” or “extremely high” water stress, as identified by the Water Risk Atlas.
- **Sources of Withdrawal:** More than 95 percent of total water withdrawal came from municipal sources (both fresh and recycled water from utilities); the remaining withdrawals came from surface water bodies, groundwater and rainwater.
- **Discharge:** We estimate 1.17 billion gallons were discharged, either to surface waters or to municipal utilities.
- **Consumption:** Defined as withdrawal minus discharge, or the water that was not returned to either a municipal utility or surface or ground water. Consumption was 592.36 million gallons.
- **Water Recycled/Reused:** Our North American manufacturing plants **recycled or reused 623 million gallons, which is 35 percent of our total withdrawal.** Recycled and reused water includes recycled wastewater and water recycled (instead of rejected) through a reverse osmosis system.
- **Water Intensity:** Defined as gallons of water withdrawn per vehicle produced. Water intensity was 982 gallons. Water withdrawn includes water used at both production and non-production sites. Despite a 2.3 decrease in production volume, we were able to maintain water intensity at the same level as fiscal year 2019.

Water data for fiscal years 2019 and 2020 can be found in [“Water”](#) in Performance.

Examples of water conservation activities included the following:

- **Reducing Water Use in the Cooling Tower:** Toyota's assembly plant in Mississippi installed an ElectroCell system on the cooling tower water loop. The ElectroCell system uses low voltage electricity to produce electrocoagulation in the cooling tower water. Electrocoagulation is a water treatment technology that causes particles as small as 1 micron to cluster together, improving the effectiveness of the system filters. Combined with electrocoagulation, the filters can remove up to 98 percent of total suspended solids from the cooling tower water. This filtration improvement extends the life of the cooling tower water, resulting in a 25 percent reduction in the use of makeup water. The cleaner water also increases the ability of the water to absorb more heat, which improves the efficiency of chillers and air compressors. This system is expected to reduce the plant's annual water use by 4.5 million gallons, equivalent to the amount needed to fill 6.8 Olympic-sized swimming pools. Thanks to projects like this one, Toyota Mississippi has the lowest per vehicle water use rate of Toyota's North American assembly plants.
- **Installing Smart Metering Irrigation:** At our headquarters campus in Plano, Texas, we are piloting a smart metering irrigation system that uses sensors placed in soil in 200 separate zones. The sensors monitor moisture levels and salinity to determine the optimal duration and frequency of watering in each zone. By the end of fiscal year 2021, the system is expected to achieve an annual reduction in the amount of water used for irrigation by up to 35 percent, or nearly 4.8 million gallons. During the summer of 2020, we were already seeing another benefit, which is that plants appear to be healthier. We are expecting to need fewer plant replacements in the fall.
- **Reducing Potable Water Use:** Toyota's new Eastern Canada Parts Distribution Center in Clarington, Ontario, is applying for LEED® certification. The warehouse has a rainwater cistern that collects runoff from the roof for use in toilets and urinals, and is targeting a 50 percent reduction in potable water use compared to a non-LEED building of a similar size. Low-flow plumbing fixtures are expected to save almost 86,600 gallons (327,800 liters) of water per year.

PROTECTING WATER RESOURCES

Water quality is another key component of Toyota's approach to water stewardship. Some of our sites discharge wastewater, which we monitor and treat to meet local, state and federal regulations and to ensure we don't negatively impact water bodies. In fact, Toyota, as part of our enhanced environmental management system, requires all manufacturing sites to operate below wastewater discharge permit limits by an average of 20 percent. There were no unplanned discharges of wastewater that adversely affected water bodies during fiscal year 2020, and no water bodies were adversely affected by Toyota's wastewater discharges.

RAISING COMMUNITY AWARENESS

Toyota supports community efforts to educate individuals and families about water conservation and the importance of protecting water resources. These activities help scale up conservation efforts and make positive outcomes more impactful.

For the ninth consecutive year, the Wyland Foundation and Toyota presented the **National Mayor's Challenge for Water Conservation**. The campaign, held in August 2020, encouraged residents across America to make small changes in their lives to better manage our water resources and improve the health of our oceans, lakes, rivers, streams and wetlands. For more information on this event, see ["National Mayor's Challenge for Water Conservation."](#)

Through its inaugural Drive4Five Campaign, Toyota awarded an impact grant to the **Huron River Watershed Council (HRWC)** to offer environmental science, technology, engineering and math (STEM) programming through place-based, hands-on learning.

During the 2019-2020 school year, over 1,000 students in grades 4 through 12 from a dozen different schools, mostly in the Ann Arbor and Ypsilanti school districts in Michigan, participated in HRWC's Streamside Education Program, a series of stream ecology lessons customized by grade level and teacher input. Students studied the physical characteristics of the streambed and banks, taking precise measurements such as water flow, temperature, conductivity and turbidity. Students also learned how to collect and identify aquatic benthic macroinvertebrates, identified what the organisms reveal about stream health, and studied how their physical adaptations allow them to live in dynamic water systems.

Field trips to the watershed were combined with cleanup events to reinforce the importance of volunteering in protecting the Huron River watershed. For National Public Lands Day in 2019, 50 Toyota team members and family members collected more than 80 pounds of trash from the Huron River near the Gallup Park Livery.

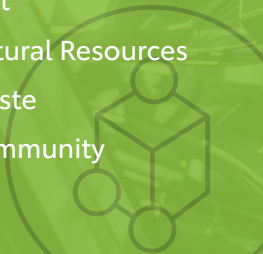
We hope to continue this program in the 2020-2021 school year, but will be flexible as the situation related to the COVID-19 pandemic continues to evolve.



Students from Huron High School in Ann Arbor, Michigan, participated in a Huron River watershed cleanup event as part of HRWC's Streamside Education Program.

Materials

- Materials Target
- Conserving Natural Resources
- Eliminating Waste
- Supporting Community Recycling



“MATERIALS” is one of Toyota’s four focus areas in North America. Materials include everything we use, from the raw materials that become vehicles, to the office furniture and cafeteria supplies we rely on every day, to the waste we recycle or dispose. Our materials strategy addresses Challenge 5 of the Toyota Environmental Challenge 2050, which calls on us to support a recycling-based society. We do that by **conserving natural resources, eliminating waste and supporting community recycling**. Everything we do today to better manage materials builds a cleaner, healthier future.

MATERIALS TARGET

Toyota Motor North America (TMNA) has the following target for fiscal years 2017 to 2021 for Materials:



Challenge 5 (Support a Recycling-Based Society): Reduce the use of packaging material (On Track)

When shipping vehicle parts, automotive companies and their suppliers use a variety of packaging types to prevent damage and maximize warehouse space.

One way Toyota has reduced packaging is through the use of returnable shipping containers. Across North America, Toyota uses returnable packaging modules and racks for shipping parts between suppliers, distribution centers, plants and dealerships. These returnable containers take the place of thousands of wooden pallets and corrugated cardboard boxes.

About 60,000 reusable containers travel through the service parts and accessories network and between 2017 and 2019², these containers made more than 5 million inbound and outbound trips to and from our two part centers. **Between 2017 and 2019, Toyota’s returnable shipping containers replaced the use of 54.1 million pounds of cardboard boxes and 144.3 million pounds of wooden crates, and avoided \$229.1 million in cost.**

Thanks to the Environmental Paper Network Calculator³, we are able to estimate avoided environmental impacts, which take into account all stages in the paper life cycle, such as pulpwood harvesting and pulp and paper manufacturing. Not using this cardboard avoids:

- Using **wood from 327,000 trees**.
- Generating **10.5 million pounds of solid waste**, equivalent to the amount of waste generated by 2.4 million people in a day.
- Consuming **398 million gallons of water**, equivalent to 287,000 clothes washers operated per year.
- Emitting **130,181 metric tons of CO₂e**, equivalent to the annual GHG emissions from 26,100 cars.
- Emitting **3,050 pounds of volatile organic compounds (VOCs)**, equivalent to the emissions from driving 12.8 million miles per year.

² While TMNA's action plan is based on fiscal years, we track waste and packaging metrics on a calendar year basis. This target is measured against progress made each calendar year.

³ Environmental impact estimates were made using the Environmental Paper Network Paper Calculator Version 4.0. For more information, visit www.papercalculator.org. Estimates for cardboard savings assume an average 50 percent recycled content.

CONSERVING NATURAL RESOURCES

We strive to conserve natural resources by increasing our use of sustainable materials and extending the life of vehicle parts such as batteries.

SUSTAINABLE MATERIALS

Using sustainable materials means using materials in the most productive way with emphasis on using less and reducing toxic chemicals and environmental impacts across the whole life cycle. Over the course of a vehicle's life cycle, sustainable materials – especially those that are renewable, recyclable or are made of recycled content – have a smaller greenhouse gas footprint and generate less waste than their alternatives. We continue to develop and commercialize technologies that enable the use of sustainable materials in a range of components and applications. For example:

- **Bio-based plastics** — plastics derived either wholly or in part from plant materials — are used in the seat cushions in Toyota Prius, Corolla and RAV4, and in Lexus RX 350.
- **Post-industrial garment clippings** made of cotton and synthetic fibers are used in door panel insulation, floor silencer and floor mats.

We also apply the principles of sustainable materials to manufacturing. At Toyota Motor Manufacturing Canada (TMMC) in Cambridge, Ontario, team members manufacture front and rear bumpers. The raw

material used to mold the bumpers is a plastic resin known as TSOP-7. This resin can be melted and returned to its original form without any degradation in quality. Team members have developed a process to ensure 100 percent of the scrap bumper material that leaves TMMC, comes back to TMMC. This process, which is regenerative by design, demonstrates a circular economy, where production is decoupled from the consumption of increasing amounts of virgin material.

With the help of the University of Waterloo, team members at the plant were able to develop a way to recycle the scrap bumper material in regrind form. By studying the mechanical properties of both virgin resins and regrind resins, team members discovered the optimal virgin/regrind resin ratio for use in bumper molds is 80/20. But the regrind resin at the plant had different sizes and shapes, and the surface area was very irregular, making it difficult to recycle. The plant's waste vendor, Green Metals Canada, helped develop a uniform particle size by converting the bumper regrind into uniform pellets. Together with the right virgin pellet/regrind pellet ratio, 100 percent of scrap bumper material (in regrind form) is now recyclable.

Green Metals Canada collects the bumper scrap, mechanically converts it to a regrind material, then forms it into uniform pellets and returns it to the plant, where it's used on new vehicle bumpers as well as on service parts, such as replacement bumpers sold at dealerships. The goal at TMMC is to use between 8 and 20 percent of recycled regrind on new vehicles. Once we reach this goal, waste will be reduced by up to 1 kilogram per vehicle – or 142,000 pounds per year. Additionally, using recycled regrind eliminates several TSOP-7 deliveries, which avoids 51 metric tons of CO₂ emissions per year. TMMC plans to implement this practice at its sister plant in Woodstock in the near future.

See also [“Materials Target”](#) for information on how we conserve natural resources and reduce packaging by using returnable shipping containers.

RARE EARTH METALS

We look for alternatives to materials not found in abundance in nature. These include rare earth metals, which are necessary components in hundreds of products across a wide range of applications, especially high-tech consumer products like electric vehicles. The mining of rare earth metals can have negative environmental and social consequences. Our parent company, Toyota Motor Corporation, has developed a magnet used in electric vehicle motors that replaces up to 50 percent of the neodymium, a rare earth metal, with more abundant and cheaper lanthanum and cerium. Toyota expects the magnets to be used in electric vehicles and other applications in the first half of the 2020s.

HYBRID BATTERY RECYCLING

Since 2000, the Toyota and Lexus brands have sold more than 3.9 million hybrid electric vehicles in the U.S. Until 2012, all of these hybrid vehicles used nickel-metal-hydride (NiMH) batteries. Beginning in 2012, Toyota began using lithium-ion (Li-ion) batteries in certain hybrid and plug-in hybrid vehicles. Both types of batteries are extremely robust – they are covered by an 8-year/100,000 mile warranty⁴.

In 2010, Toyota established a comprehensive NiMH battery recycling program with Toyota and Lexus dealerships in the U.S. and Puerto Rico. Our goal was to keep these batteries out of landfills and recycle the components. We designed custom reusable containers to secure and protect the batteries from damage and

leakage during shipping. We cover the cost to ship used batteries from dealerships to our recycling partner, Kinsbursky Brothers INTL (KBI), in Southern California.

In 2019, TMNA expanded the recycling program to include Li-ion batteries. We worked with a certified materials handler to assure the batteries are properly inspected and packaged for shipping, and designed custom shipping containers to meet or exceed U.S. Department of Transportation requirements.

KBI recycles 100 percent of the NiMH and Li-ion batteries they receive, including the battery cells, the casing, the wiring and plastic components. **Since 2010, we have recovered and recycled over 140,000 hybrid vehicle batteries, totaling over 9.2 million pounds.**

We continue to enhance our battery collection process to promote proper end-of-life management. We seek to go beyond recycling and aim to repair, remanufacture or repurpose battery cells to maximize the useful life of the batteries before finally recycling the components:

- **Repair:** Battery packs that meet certain criteria can be repaired by replacing individual cells as needed. This can be done at a dealership and eliminates the need to transport heavy batteries.
- **Remanufacture:** Battery packs that can't be repaired must be shipped to a third-party facility, where they are fully disassembled to test and grade the individual cells. A group of cells with like characteristics are then reassembled into a remanufactured battery to be put into vehicle service again.
- **Repurpose:** Hybrid vehicles require a high level of battery performance. Cells that do not meet the strict Toyota requirements for vehicle use may still have useful life in non-automotive applications, such as stationary batteries or material-handling equipment.

Our parent company, Toyota Motor Corporation (TMC), has developed advanced recycling methods to recover key materials from NiMH batteries and reuse them as raw material for new battery production. TMC is working with the recycling industry and researchers to develop similar techniques for Li-ion batteries. We are exploring how we can bring these methods to North America to facilitate battery-to-battery recycling.

⁴ Beginning with 2020 model year vehicles, this warranty is extended to 10 years/150,000 miles.

ELIMINATING WASTE

Waste (both hazardous and non-hazardous) generated by our North American facilities totaled 745.8 million pounds in calendar year 2019. **We recycled, reused or composted 92.4 percent of all waste in 2019.** Only 1.9 percent was sent to landfills for disposal (for certain waste streams, landfill disposal is required by law), and 5.7 percent was incinerated or used for fuels blending or waste-to-energy.

See ["Waste"](#) in Performance for more detailed waste data.

Examples of projects that reduce waste and maximize recycling include the following:

- **Reducing Paint Shop Waste:** At the assembly plant in Woodstock, Ontario (Canada), small improvements in the paint shop have led to a big reduction in waste. Previously, waste generated from painting operations was collected in a large tank, weighed and disposed offsite. This included deionized water used to clean the painting robots, which was disposed after only one purge of the color changer valves. Now, this water is treated and recirculated back into the paint booth water system. Combined with reducing the pressure in primer robots, which further reduces the amount of waste generated from purging, the plant is reducing annual waste generation by an estimated 672,400 pounds (305,000 kilograms).
- **Reducing Paper Consumption:** At the assembly plant in Mississippi, team members are using an electronic hand-held device to inspect vehicles for defects. This replaces paper spec sheets and eliminates 22,740 pounds of paper waste per year. This is the equivalent of saving 273 trees from being cut down.
- **Separating Waste for Compost:** At our R&D centers in Ann Arbor and York Township, Michigan, team members began separating compostable waste at the end of 2019. Food waste, non-bleached paper towels and napkins, and BPI-certified to-go containers and utensils are collected from cafeterias and office areas and sent to Hammond Farms, where the material is composted, then blended and sold as landscaping material. In the first seven months of the program, 12,134 pounds of waste were sent for composting instead of disposal.
- **Updating Recycling Signage:** We continue to emphasize recycling in office settings. For example, we have updated the recycling signage at our corporate headquarters in Plano, Texas, the R&D center in Ann Arbor, Michigan, and in the office areas at our plants in Princeton, Indiana, and Georgetown, Kentucky. The new signage makes it easier for team members to know what can be recycled and which bin to use.



Updated recycling signage system makes it easier for team members to know what can be recycled and which bin to use.



Toyota encourages team members to practice recycling not just at work, but at home, too. Team member Wayne Keeso, from Toyota's Cambridge, Ontario, assembly plant, responded to an Earth Day challenge to find a material at home that would have been thrown away, and make something new out of it. He chose to build a wall made from a wooden fence.

SUPPORTING COMMUNITY RECYCLING

One of the best ways for us to help create a net positive impact on the environment is to share our expertise with others. That's why team members participate in community events that help spread the word about the environmental and cost benefits of reducing, reusing and recycling.

Since 1994, Toyota has helped team members and communities recycle and properly dispose of household waste. During designated collection days, team members and residents from surrounding communities are invited to drop off electronic waste, appliances, paint and other household items that are difficult to recycle or dispose. Team members also collect items such as clothing and eyeglasses that can be donated to those in need.

Several sites in the U.S. and Canada have been hosting these events for years and together, they have ensured more than 2.2 million pounds of material have been recycled or properly disposed. Events that were scheduled for April 2020 to commemorate Earth Day were either cancelled or postponed due to the COVID-19 pandemic and state-mandated stay-at-home orders. We plan to resume these activities once they can be completed in a safe manner for all involved.

Biodiversity

- Biodiversity Target
- Protecting Species
- Conserving Habitats
- Expanding Our Reach



“BIODIVERSITY” is one of Toyota’s four focus areas in North America. Biodiversity refers to the variety and interdependence of species and ecosystems and the natural patterns they form. Our biodiversity strategy addresses Challenge 6 of the Toyota Environmental Challenge 2050 by **partnering with experts to protect species and conserve habitats** and **expanding our reach to achieve broader positive conservation results**. We are committed to operating in harmony with the environment and building healthy ecosystems so that future generations may continue to enjoy the natural wonders of our world.

BIODIVERSITY TARGET

Toyota Motor North America (TMNA) has the following target for fiscal years 2017 to 2021 for Biodiversity:



Challenge 6 (Operate in Harmony with Nature): Participate in regional biodiversity activities that support wildlife corridors (On Track)

The monarch is the only butterfly known to make a two-way migration. Monarchs from the eastern part of North America migrate to the Sierra Madre Mountains in Mexico, while those from west of the Rocky Mountain range overwinter in California. Some migration routes are as long as 3,000 miles. It can take as long as two months for a monarch to complete the journey south.

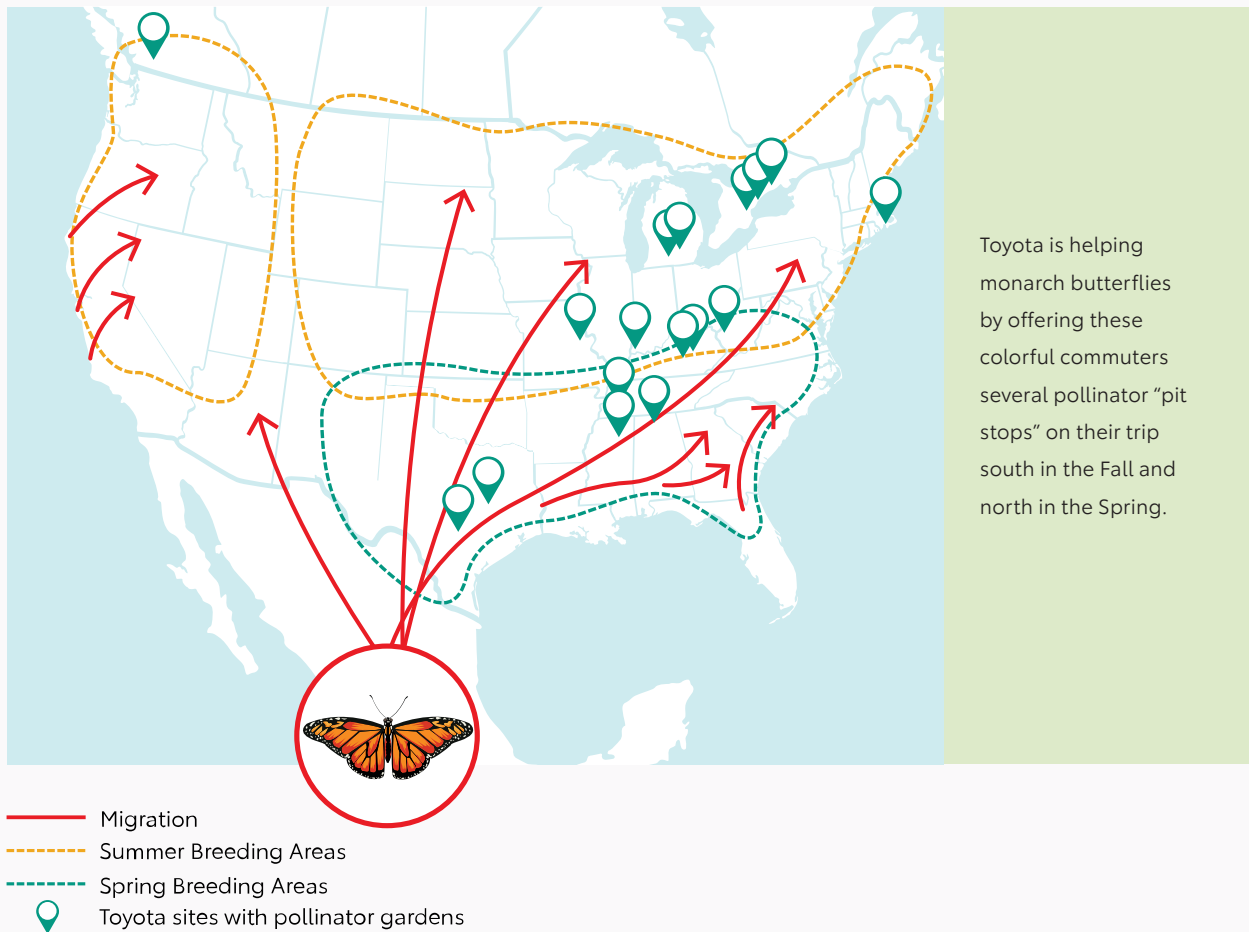
Seventeen Toyota sites across North America have planted pollinator gardens to nurture monarch butterflies and other pollinator species. All 17 gardens are along the monarch migration path. The gardens provide food and shelter to the butterflies at various stages of their life cycle as they make their way south for the winter, then return in the spring.

Toyota sites along the monarch's migration path:

- Princeton, Indiana vehicle assembly plant
- Georgetown, Kentucky vehicle assembly plant
- Blue Springs, Mississippi vehicle assembly plant
- San Antonio, Texas vehicle assembly plant
- Cambridge, Ontario vehicle assembly plant
- Woodstock, Ontario vehicle assembly plant
- Huntsville, Alabama powertrain plant
- Buffalo, West Virginia powertrain plant
- Troy, Missouri aluminum casting plant
- Jackson, Tennessee aluminum casting plant
- Delta, British Columbia aluminum casting plant
- Boston, Massachusetts parts distribution center
- York Township, Michigan Supplier Center
- Ann Arbor, Michigan R&D center
- Georgetown, Kentucky Production & Engineering Manufacturing Center
- Plano, Texas TMNA headquarters campus
- Toronto, Ontario Toyota Canada head office

When factoring in other automakers and suppliers across North America, the number of sites with pollinator gardens increases to nearly 200, thanks to the Pollinator Project Challenge issued by the Biodiversity Work Group – co-chaired by Toyota Motor North America – of the Suppliers Partnership for the Environment. For more information on this challenge, see ["Expanding Our Reach."](#)

TOYOTA & THE MONARCH MIGRATION



PROTECTING SPECIES

Wildlife Habitat Council® (WHC) partners with corporations, fellow conservation organizations, government agencies and community members to empower and recognize meaningful wildlife habitat and conservation education programs. WHC's voluntary certification standard, Conservation Certification, is designed for broad-based biodiversity enhancement and conservation education activities on corporate landholdings.

Our partnership with WHC began in 1999 when Toyota joined WHC's membership. In 2008, the nature trail and environmental education programs at our Kentucky assembly plant became Toyota's first WHC certification. **Today, programs at 13 Toyota sites have achieved Conservation Certifications.**



See "[WHC Conservation Certifications](#)" in Performance for a list of TMNA sites with programs certified by Wildlife Habitat Council.

INDICATOR SPECIES PROJECT

WHC helps us evaluate animal species on our sites and identify appropriate habitat development projects. Our protected areas include grassland, wildflower meadows, pollinator gardens and forests. Historically, we have focused our species protection efforts on birds such as tree swallows, red-tailed hawks and wood ducks, and on pollinators, namely monarch butterflies, bees and bats.

In 2019, we decided to expand our focus to indicator species. An indicator species serves as a measure of the environmental conditions in a given location. The presence of an indicator species can signal either a healthy ecosystem or an unhealthy one. Indicators can reveal information about various factors, including pollution levels and nutrient or food availability.

Toyota partnered with WHC to develop a tool to help us select indicator species appropriate for individual locations. The selection tool provides evaluation criteria, such as conservation status, food sources and technical expertise required to develop and maintain habitat. The tool is available to sites with programs already certified by WHC as well as those interested in future Conservation Certification.



Toyota Motor Manufacturing Kentucky, with the help of WHC selected the Great Blue Heron as its indicator species.

Sites that have selected their species are now developing roadmaps to define habitat planning and construction. All sites are scheduled to have at least one activity started by 2021 and completion of their habitats by 2030. Once the habitats are developed, each site will monitor and track its indicator species impact.

Thirteen sites have selected an indicator species. The selection process at the remaining sites has been delayed due to the COVID-19 pandemic.

SPECIES PROTECTION

TOYOTA SITE	INDICATOR SPECIES
Aluminum casting plant in Troy, Missouri	Grey Treefrog
Aluminum casting plant in Jackson, Tennessee	Tri-colored Bat
Powertrain plant in Huntsville, Alabama	Green Heron
Powertrain plant in Buffalo, West Virginia	Eastern Bluebird
Autobody parts plant in Long Beach, California	Anna Hummingbird
Assembly plant in Princeton, Indiana	Big Brown Bat
Assembly plant in Georgetown, Kentucky	Great Blue Heron
Assembly plant in Blue Springs, Mississippi	Wood Duck
Assembly plant in San Antonio, Texas	Loggerhead Shrike
Assembly plants in Cambridge and Woodstock, Ontario (Canada)	Tree Swallow
Assembly plant in Tijuana, Baja California (Mexico)	Red-tailed Hawk
Assembly plant in Apaseo el Grande, Guanajuato (Mexico)	Crested Caracara

See [“Endangered & Protected Species”](#) in Performance.

CONSERVING HABITATS

Extreme weather events have been grabbing headlines with increasing frequency. Whether a hurricane, tornado or flood, communities face the challenge of recovering from the damage and preparing for potential repeats. Nonprofit organizations are taking a larger role in helping communities rebound, and restoring their access and enjoyment of local public lands is an important component. To support these efforts, the National Environmental Education Foundation (NEEF), with sole funding support from Toyota Motor North America, awarded \$275,000 in grants to organizations in the U.S. and Puerto Rico. See [“National Environmental Education Foundation”](#) in Outreach for information on these grants as well as our other projects with NEEF to protect and restore public lands.

See [“Protected Areas/ Critical Habitat”](#) in Performance.

EXPANDING OUR REACH

TMNA is a member of **Suppliers Partnership for the Environment (SP)**, an innovative partnership between automobile original equipment manufacturers, their suppliers and U.S. EPA. SP provides a forum for small, mid-sized and large automotive manufacturers and suppliers to work together, learn from each other and share environmental best practices. Kevin Butt, senior director of Environmental Sustainability at TMNA, is currently serving as SP Chair.

SP members share a common vision of working together to improve environmental sustainability and competitiveness of the global automotive supply chain. While environmental sustainability encompasses many important issues, advancing biodiversity conservation is one component of this vision and the focus of SP's Biodiversity Work Group.

In 2019, SP Biodiversity Work Group co-chairs Kevin Butt and Sam Qureshi (Waste Management Sustainability Services) issued the **SP Pollinator Project Challenge** to member companies, asking them to make a commitment to implement or expand a pollinator project at one or more sites. Corporate conservation projects are individually meaningful, but they have the potential to be collectively groundbreaking.

"As automakers and suppliers come together to promote voluntary conservation programs across our respective lands, we have a unique opportunity to create a connected corridor of wildlife habitat spanning our individual operations and provide meaningful new habitat for pollinators and other migratory species, particularly considering the position and scale of our industry's manufacturing footprint in North America," explained Kevin Butt.

A variety of large and small SP member companies accepted the challenge, including DENSO International America, ES Group, ERA Environmental Management Solutions, FCA, FIC America Corp, Ford Motor Company, GHD, General Motors, Heritage Interactive Services, Honda of America Manufacturing, Lear Corp, Mobile Fluid Recovery, MPS Group, Robert Bosch LLC, Sustainable Materials Solutions LLC, Tetra Tech, Toyota Motor North America and Waste Management.

Through a memorandum of understanding with Wildlife Habitat Council (WHC), participating SP members received access to complimentary conservation resources to help guide them through a pollinator project design and implementation process, along with one-on-one technical support from WHC conservation specialists where needed. SP also engaged with the [Pollinator Partnership](#) to provide its members with additional educational resources and ideas to support pollinator conservation on their sites and within their communities.

Experts at WHC and ERA Environmental Management Solutions collected data and found that **participating SP member companies are collectively managing nearly 200 pollinator projects** across their respective sites, including both pollinator habitat projects and pollinator-focused employee and community education programs. Taken together, **those projects represent over 2,400 acres of corporate lands that are currently being managed by SP member companies as wildlife habitat for pollinators.**

"We look forward to building on our successes and lessons learned over this past year to further support current SP members, and other stakeholders along the automotive supply chain, in designing and implementing corporate conservation projects that can create meaningful new habitat for migratory species of concern in North America like the monarch butterfly," said Sam Qureshi, national business development manager, Waste Management Sustainability Services.

Outreach

- Net Positive Impact
- Communities & Nonprofits



“Outreach” is a core element of Toyota’s approach to our four main focus areas in North America. We conduct outreach activities related to Carbon, Water, Materials and Biodiversity as a way of **creating a net positive impact**. By **collaborating with various stakeholders**, our actions harness the power of partnerships to advance us beyond building better cars – we are building connections that are helping to shape a more sustainable future.

NET POSITIVE IMPACT

Outreach with our stakeholders, including [“Dealers”](#), [“Suppliers”](#), and [“Communities & Nonprofits”](#), is a crucial component of our environmental sustainability strategy. Through outreach, we create mechanisms for building on the successes of our environmental programs and scaling up the outcomes. We can act locally and make a difference globally.

We acknowledge that a stronger commitment to partnership and collaboration is needed to address the world’s environmental challenges successfully. Across our diverse set of partnerships, we are taking steps to build a path to achieving the Toyota Environmental Challenge 2050 and a net positive impact. Through the power of collaboration, we hope to create lasting positive outcomes on a macro scale that will help us build a more sustainable future.

COMMUNITIES & NONPROFITS

TMNA supports local and national community projects that align with our core focus areas of Carbon, Water, Materials and Biodiversity. By concentrating our support on organizations that address challenges in these four areas, we are building on our environmental commitment beyond minimizing negative impacts and helping to promote positive environmental change across the North American region. We share our know-how and collaborate so that we can build more than great cars – we are building a better tomorrow by harnessing the power of collective action.

TMNA team members participate on the Boards of Directors or Executive Committees of several nonprofit organizations, such as Yellowstone Forever, Kentucky Fish & Wildlife Foundation, [“National Environmental Education Foundation”](#), [Wildlife Habitat Council](#) and Environmental Media Association. TMNA is also a member of the National Council of World Wildlife Fund (WWF), an advisory group to WWF’s Board of Directors in the U.S.

ECS YOUNG INVESTIGATOR FELLOWSHIP

The ECS Toyota Young Investigator Fellowship is a partnership between the Electrochemical Society (ECS) and Toyota Research Institute of North America (TRINA), a division of Toyota Motor North America R&D. Now in its sixth year, the fellowship encourages young professors and scholars to pursue research in green energy technology that promotes the development of next-generation vehicles capable of utilizing alternative fuels.

Electrochemical research has already informed the development and improvement of innovative batteries, electrocatalysts, photovoltaics and fuel cells. Through this fellowship, ECS and Toyota hope to see further innovative and unconventional technologies borne from electrochemical research.

Fellowship recipients receive a \$50,000 grant to conduct the research outlined in their proposals and a one-year complimentary ECS membership. After one year of funding, recipients submit a midway progress report and a final written report. Recipients are invited semiannually to present their research progress at TRINA.

In addition, recipients publish their findings in a relevant ECS journal using the open access option and/or present at an ECS meeting within 24 months of the end of the research period. At the end of the fellowship period, depending on the progress of their research and the results obtained, Toyota may elect to enter into a research agreement with the recipient so their research can continue.

The ECS Toyota Young Investigator Fellowship Selection Committee chose three recipients to receive the 2020–2021 fellowship awards for projects in green energy technology:

- **Prof. Dr. Shoji Hall, Johns Hopkins University**
- **Prof. Dr. Piran Ravichandran Kidambi, Vanderbilt University**
- **Dr. Haegyeom Kim, Lawrence Berkeley National Laboratory**

LEXUS ECO CHALLENGE

The globe's young students are becoming increasingly aware of our planet's environmental challenges, and their collective commitment to helping alleviate humans' negative impact is nothing less than stunning. For the 13th year, the efforts of these students have been supported and rewarded through their participation in the Lexus Eco Challenge, a program, in partnership with Scholastic, that invites more than 2,000 U.S.-based students in grades 6–12 to tackle environmental issues in their communities, create and submit their action plans and results, and compete nationally for a total of \$500,000 in grants and scholarships.

Lexus and Scholastic, the global children's publishing, education and media company, reviewed the finalists' innovative submissions and selected one middle and one high school team as the 2020 Lexus Eco Challenge Grand Prize winners. The Grand Prize-winning teams each receive \$30,000, divided into a \$7,000 grant for the school, a \$3,000 grant for the team's teacher advisor, and \$20,000 in scholarships for the students to share.

Eight First Place-winning teams are awarded \$15,000 in grants each.

For the first two phases of the Lexus Eco Challenge, 32 middle and high school teams were selected as finalists. Each finalist earned a \$10,000 prize to be shared among the team, teacher and school, and was invited to embark on the final challenge to reach beyond their local community to inspire environmental action. The teams communicated their innovative ideas to a wide audience in the last round, broadening the reach of their work to people outside their communities.

This year's high school Grand Prize-winning team is The Turtle Trackers from Arlington High School in Lagrangeville, New York. The Grand Prize-winning middle school team is R.E.M. Remote Environmental Monitoring from P.S. 28 Christa McAuliffe School in Jersey City, New Jersey.

- **High School Grand Prize Winner The Turtle Trackers** and teacher advisors Tricia Muraco and Maribel Pregnall decided to address the decline of the local Blanding's turtle population, a federally endangered species. Over seven months, the Turtle Trackers reached out to turtle researchers and centers across the country to gain more knowledge, and conducted their own field research in the local wetlands to monitor the turtle's nesting patterns and track hatchlings. They created educational videos and interactive lesson plans for local K-2 classrooms, presented to hundreds of local community members, partnered with the New York State Department of Environmental Conservation and their local representatives in Congress, and conducted an extensive public relations campaign, securing features in local media outlets and an extensive social media following.



The 2020 Lexus Eco Challenge Grand Prize-winning high school team: The Turtle Trackers from Arlington High School in Lagrangeville, New York

- **Middle School Grand Prize Winner R.E.M. Remote Environmental Monitoring**, aided by teacher advisors Joel Naatus and Mahvish Haq, helped their Jersey City community identify harmful environmental problems by developing and implementing remote environmental monitoring systems across their community. The students set up one system to detect temperature and humidity, another to check hydrogen sulfide and air quality levels, and a third to detect potentially harmful algal blooms in a local lake. All of the systems will help ensure the public will be able to check readings and know if the areas are safe to visit in the future. The students broadcasted by creating a website with podcasts and blog posts and using Twitter and Instagram, and taught a fourth-grade class about their work.



The 2020 Lexus Eco Challenge Grand Prize-winning middle school team: R.E.M. Remote Environmental Monitoring from P.S. 28 Christa McAuliffe School in Jersey City, New Jersey

NATIONAL ENVIRONMENTAL EDUCATION FOUNDATION

Toyota has been partnering with the National Environmental Education Foundation (NEEF) for more than 25 years. NEEF partners with local organizations across the nation to connect people of all ages and abilities with public lands for recreation, hands-on learning and community building.

BIODIVERSITY CONSERVATION GRANT

With major support from Toyota Motor North America, NEEF launched the Biodiversity Conversation Grant program, which is designed to support biodiversity conservation projects on America's public lands. The first round of grant projects focuses on large-scale eradication of invasive species and restoration with native plant and animal species.

In 2019, NEEF and Toyota selected the National Capital Partnership for Regional Invasive Species Management (NCR-PRISM) as the recipient of the first Biodiversity Conservation Grant. The partnership is composed of local and federal government agencies, conservation organizations and academic institutions working together to combat invasive plant species in the National Capital Region. Together, PRISM members are responsible for the management of roughly 1,500 square miles of forested lands in Washington, D.C., Maryland and Virginia.

PRISM will restore native biodiversity and protect critical habitats by managing invasive species across the National Capital Region. The partnership will accomplish this by coordinating and implementing on-the-ground invasive species management and habitat restoration efforts. Three agencies are leading this work on behalf of PRISM: D.C. Department of Energy and Environment (DOEE), Rock Creek Conservancy (RCC), and Fairfax County Park Authority (FCPA).

In November 2019, the DOEE collaborated with several other PRISM members to host a "Weed Warriors" training event for community members. This was a half-day event attended by 22 people that included two hours of lectures and two hours of field identification and invasive plant removal.

RCC has continued to build plans for the restoration of the Melvin Hazen mini-oasis in Rock Creek Park. Working closely with the park botanist, RCC identified a scope of work that has been shared with prospective invasive plant management contractors. Since November, nine invasive species removal events have been hosted, engaging a total of 168 volunteers.

RCC also hosted a convening of the staff from Montgomery Parks (MNCPPC) and the National Park Service at Rock Creek Park to discuss ways to coordinate work. This project is starting to build a professional and collegial relationship between two adjacent land managers to foster inter-agency discussion and implementation of invasive plant management. The plants spread across borders, so coordinated management will provide greater impact for both agencies.

During much of 2020, the COVID-19 pandemic has made it difficult to host community engagement events and perform projects on public lands. Pre-coronavirus, FCPA was preparing to launch a massive community engagement event "Take Back the Forest." It was recruiting local community groups and environmental organizations to serve as event partners. Proposed activities have been postponed until later in 2020 or 2021. In the wake of COVID-19, RCC has also been encouraging socially distant stewardship through online training and virtual volunteer workshops designed to teach community members how to properly remove invasive plants.

For more on our grant to PRISM, watch this [video](#).

NATIONAL PUBLIC LANDS DAY

For the 22nd consecutive year, Toyota was the national corporate sponsor of National Public Lands Day (NPLD), hosted by NEEF. Held every September, NPLD is the largest single-day volunteer effort for public lands in the U.S.

NEEF made several changes to NPLD in 2020 in light of the continuing COVID-19 pandemic.

“Due to social distancing requirements remaining in place for the foreseeable future, many public lands sites were unable to host large, in-person NPLD events,” said Meri-Margaret Deoudes, president and CEO of NEEF. “As always, our primary concern remains the health and safety of all those involved in NPLD events, including site managers and volunteers. With this in mind, we are excited that NEEF has embraced our ‘new normal’ by expanding the available options for volunteers during this year’s NPLD on September 26, 2020.”

NPLD 2020 included virtual events designed to connect the public to iconic parks, national forests, marine estuaries and other public lands sites. These online events served as an alternative for NPLD site managers who were uncomfortable with or were not allowed to host in-person events due to local regulations. This also provided an avenue for volunteer engagement to those who may not normally have been able to participate.

The virtual events were tied to specific public lands sites at the federal, state and local levels, and were hosted by a qualified guide—such as park or forest rangers or local conservation group member—who helped lead participants through the event and answered any questions. NEEF collaborated with its federal and established NPLD partners to cultivate virtual events, including live discussions with rangers and conservationists, educational projects for children of all ages, and virtual tours of national parks, marine sanctuaries and other awe-inspiring outdoor spaces.



Toyota team members from the assembly plant and the production and engineering center in Georgetown, Kentucky, participated in NPLD at Salato Wildlife Center in Frankfort in September 2019. They were among the 156,000 volunteers – up 38 percent from 2018 – that participated in NPLD at 2,117 sites across the U.S. They joined in trail building, coastal and park cleanups, interpretive classes and guided hikes.

RESTORATION & RESILIENCE FUND

The COVID-19 pandemic has fundamentally changed the way Americans go about their lives. With social distancing regulations in place and recreation centers closed, people are turning to the outdoors more than ever for exercise and rejuvenation.

NEEF's Restoration & Resilience Fund is aimed at supporting the agencies and organizations—both locally and nationally—that maintain America's public lands. Due to the COVID-19 pandemic, these outdoor spaces have seen a surge in usage—two to three times as many visitors in some areas—as well as a sharp reduction in staff and volunteer projects that keep them open and available for all Americans to enjoy.

With help from Toyota Motor North America and International Paper, NEEF established the Restoration & Resilience Fund to aid the public lands that need it most. NEEF plans to work with its federal, state and nonprofit partners to identify critical volunteer projects at public lands sites across the U.S. and provide them with additional funding once it is safe for those projects to resume.

RESTORATION & RESILIENCE GRANTS

Extreme weather events have been grabbing headlines with increasing frequency. Whether a hurricane, tornado or flood, communities face the challenge of recovering from the damage and preparing for potential repeats. Nonprofit organizations are taking a larger role in helping communities rebound, and restoring their access and enjoyment of local public lands is an important component. To support these efforts, **NEEF, with sole funding support from Toyota Motor North America, awarded \$275,000 in grants to organizations in the U.S. and Puerto Rico.**

The first round of grants, worth \$200,000, was awarded to 10 organizations that worked on projects designed to help restore public lands and/or implemented new ways to make those lands more resilient to future disasters. Grantees were required to mobilize community volunteers and educate community members about the importance of their actions and their relationship to long-term sustainability of the lands. In October 2019, at the completion of the first one-year grant period, the grantees reported the following progress:

- **377 acres of land restored**
- **733,408 square feet of invasive species removed**
- **2,770 native species planted**
- **10,682 pounds of trash removed**
- **1,987 volunteers engaged**
- **7,948 volunteer hours**
- **\$202,117.64 in value of volunteer hours**



Thanks to a Restoration & Resilience Grant, the Arizona Trail Association installed a remote rainwater collector to provide much-needed drinking water along a segment of the Arizona National Scenic Trail. This project could be a game-changer for long-distance trails like the Continental Divide Trail, Pacific Crest Trail, and others that feature long, dry segments of trail without natural water sources.

In 2020, three grantees were awarded a second round of funding totaling \$75,000:

- **Land Trust of North Alabama: Monte Sano Nature Preserve, Huntsville, Alabama**

Established in 1987, the Land Trust of North Alabama works to preserve the region's scenic, historic and ecological resources through conservation, advocacy, recreation and education. The Land Trust currently manages more than 7,000 acres in five counties, including over 70 miles of public trails maintained with the help of committed volunteers.

The purpose of the initial Trail Reconstruction Project was to return a vital Land Trust trail—damaged by drought and erosion—to a usable and sustainable condition, and then use this renovation as an example and educational tool for sustainable trail building and improvements to be used on Land Trust and other preservation properties. For the second round of Restoration & Resilience Grant funding, the Bluff Line Trail Reconstruction Project – High Trail Connection project will serve a similar purpose, but on a trail that connects the Land Trust's Monte Sano Nature Preserve to the Monte Sano State Park via City of Huntsville Lands.

- **Mountain Studies Institute: San Juan National Forest, Durango, Colorado**

The Mountain Studies Institute (MSI) was established in 2002 in Silverton, Colorado, as an independent, not-for-profit center of knowledge dedicated to collaboration between researchers, educators, policy makers and the wider community surrounding the San Juan Mountains. In the wake of the area's devastating 416 Fire in June 2018, MSI stepped in to develop the 416 Fire Recovery and Response Plan for the town of Durango, which was severely impacted by the wildfire and subsequent debris flows into the nearby Animas River.

With the second round of grant funding, MSI plans to implement this community response plan as well as further develop outreach events and educational activities for adults and youth, such as the San Juan Resilience Youth Summit and Hermosa Resilience community event. They will also build on successful stewardship events like National Trails Day and National Public Lands Day, and increase fire-adapted community resilience to help prevent future disasters.

- **Timucuan Parks Foundation: Timucuan Trail State and National Parks, Jacksonville, Florida**

Timucuan Parks Foundation (TPF) supports the Timucuan Trail State and National Parks, a unique partnership between the National Park Service, Florida State Parks and city preservation parks in Jacksonville—the nation's largest urban park system. Established in 1999, TPF's mission is to preserve, promote and enhance Jacksonville's natural areas through community engagement, education and enjoyment.

In year two of their "Restoration and Resilience: Service Learning Lessons from the Timucuan Preserve" project, TPF will continue to collaborate with their national, state, city and community partners to address hurricane impacts and the value of healthy salt marshes and coastal ecosystems to mitigating those impacts. They will continue to provide hands-on learning opportunities and educational programming for all citizens, including engaging Jacksonville's military veterans and their families. TPF will also build on the successful water quality and salt marsh monitoring projects with local middle and high school students that was established in the first year of grant funding.

Due to the ongoing COVID-19 pandemic, some of the planned activities have been delayed or adjusted to follow social distancing requirements and other safety measures. The grantees are finding creative ways to engage volunteers virtually and remain committed to restoring these public lands and making them more resilient to future disasters.

NATIONAL MAYOR'S CHALLENGE FOR WATER CONSERVATION

In August 2020, residents from cities across the United States took part in the ninth annual Wyland National Mayor's Challenge for Water Conservation as part of National Water Quality Month. The program encourages residents across America to make small changes in their lives to better manage our water resources and improve the health of our ocean, lakes, rivers, streams and wetlands.

In the wake of the current pandemic, the campaign is providing residents with more opportunities to get involved safely from home, including making water-friendly lifestyle changes on behalf of their city, undertaking home-based environmental projects that add up to cleaner, safer communities, and sharing tips and strategies with friends and neighbors. Last year, mayors from 39 states encouraged residents to make more than 740,000 pledges to promote drought resiliency, protect watersheds, and reduce stress on aging water infrastructure.

"It's more important than ever to maintain smart habits that support the health of the world around us -- especially when it comes to our water and air," said marine life artist and conservationist Wyland. "If Covid has taught us anything, it's that we can change behaviors for the benefit of everybody."

Despite school closures, teachers working remotely were also encouraged to engage their students to take part by accessing a special section of the website to make a series of water-saving commitments with their classes and win classroom supplies and gift cards for their school.

The nonprofit campaign, which has included numerous live events, educational tours and hundreds of city-led activities over the past decade, is presented in association with The Toro Company, EPA WaterSense, National League of Cities, Conserva Irrigation, and Earth Friendly Products (makers of ECOS). The Challenge encourages residents to follow their city's progress throughout the month and to use that information to encourage friends, neighbors, businesses and civic groups to get involved.

Due to the postponement of this event from April to August, we were not able to include final results in this report. Check the program's website at <https://wylandfoundation.org/programs/mayors/> for updates on pledge statistics.

Performance

- Air Quality
- Biodiversity
- Carbon
- Compliance
- Dealers
- Environmental Management Systems
- Green Building
- Materials
- Water



In this section, we provide data related to TMNA's environmental performance.

AIR QUALITY

CRITERIA POLLUTANT TAILPIPE EMISSIONS

Hydrocarbons, nitrogen oxides (NO_x) and carbon monoxide — all byproducts of fuel combustion — are linked to various air quality issues such as smog formation as well as various health effects. Limiting criteria pollutant tailpipe emissions from our vehicles helps to reduce some of the environmental impacts of driving.

The U.S. Environmental Protection Agency (EPA) and the state of California have certification programs to categorize vehicles in terms of their level of tailpipe emissions (the Canadian program is aligned with the U.S. federal program).

While the EPA Tier 3 and California Low Emission Vehicle III (LEV III) regulations have different nomenclature for categorizing vehicle emissions, the bins include the same vehicle emission groupings. For the 2017 model year, EPA Tier 3 and California LEV III regulations required an auto manufacturer's fleet average to meet an emission standard for non-methane organic gas with nitrogen oxides (NMOG + NO_x) of 0.086 g/mi for passenger cars and light-duty trucks up to 3,750 pounds, and 0.101 for other light-duty trucks. The standard decreases until 2025, when the NMOG + NO_x average for both sets of vehicles will become 0.030 g/mi.

The EPA Tier 3 vehicle standards were intended to be harmonized with California's Low Emission Vehicle program and create a federal vehicle emissions program that allows automakers to sell the same vehicles in all 50 states.

Environment and Climate Change Canada has issued Tier 3 regulations aligned with the final U.S. Tier 3 rule.

Toyota's goal is to maintain flexibility to build vehicles based on customer preferences. In setting tailpipe emission regulations, we believe standards should be performance-based and consider the interaction

with other vehicle rules — such as fuel economy/greenhouse gas standards — to ensure the total package of requirements is effective and acceptable to the consumer. Fuels must be considered with vehicle technologies as a holistic system. Reduced sulfur levels in gasoline, required by the federal Tier 3 and California LEV III programs, are enabling the after-treatment systems being designed for compliance.

Toyota annually complies with the state of California, U.S. and Canadian federal vehicle emissions programs, and we have met the requirements for each model year.

The American Council for an Energy Efficient Economy (ACEEE) “Greenest Vehicles of 2020” list names the Toyota Prius Prime as the greenest vehicle. Prius Prime’s number one ranking comes after several years of all-electric cars dominating the list. Three other Toyota vehicles made the list: Toyota Prius Eco⁵, Toyota Corolla Hybrid and Toyota Camry Hybrid LE. The list is notable in that it considers a variety of criteria when determining the greenest cars, including the car’s emissions, emissions from the electric grid on which the vehicle is charged, and energy necessary to build and dispose of the car.

⁵ The Prius Eco is an available trim level within the Prius model line. This trim option offers customers even better fuel efficiency thanks to lighter weight and further optimized aerodynamics.

VOLATILE ORGANIC COMPOUNDS



ABOUT THIS CHART: The primary concern with non-greenhouse gas air emissions is smog. Smog is formed as particulate matter, nitrogen oxides and volatile organic compounds (VOCs) react with sunlight. Smog has been linked to several health issues and is particularly prevalent in dense urban areas with heavy traffic, industrial activity and sunny, warm climates.

Vehicle body painting operations generate most of Toyota’s VOC emissions. Toyota’s North American manufacturing plants measure grams of VOCs emitted per square meter of vehicle surface area coated (g/m²). **VOC emissions from vehicle body painting decreased 5.4 percent between fiscal years 2019 and 2020.** We expect VOC emissions to continue to decrease as we further improve transfer efficiency and launch additional water-borne paint systems.

BIODIVERSITY

ENDANGERED & PROTECTED SPECIES

P02 / ENDANGERED, THREATENED OR PROTECTED SPECIES ON OR NEAR TOYOTA SITES

TOYOTA SITE	ENDANGERED, THREATENED, OR PROTECTED SPECIES	LAW/REGULATION	ACTIVITIES
All TMNA sites in North America	Monarch butterfly	The U.S. Fish & Wildlife Service is legally bound to determine whether to protect monarchs under the Endangered Species Act. A decision will be made by December 2020.	See BIODIVERSITY/Biodiversity Targets
Manufacturing plant in Baja California, Tecate (Mexico)	<ul style="list-style-type: none"> <i>Ceanothus verrucosus</i> (a medicinal shrub) <i>Crotalus ruber</i> (a native rattlesnake) <i>Linx rufus</i> (bobcat) <i>Lepus californicus</i> (black-tailed jackrabbit) <i>Ferocactus gracilis</i> (fire barrel cactus) 	Protected by Mexico's Ministry of Environment and Natural Resources (SEMARNAT) under NOM-059-SEMARNAT-2010	These species are found on 143 acres of the site's property that are protected as a wildlife preserve.
Manufacturing plants in Cambridge and Woodstock, Ontario (Canada)	Tree Swallow	Protected by the Migratory Birds Convention Act	Installed 71 bird boxes at Toyota's assembly plants in Cambridge and Woodstock, Ontario.
Engine plant in Huntsville, Alabama	Alabama cave shrimp	Protected by the U.S. Endangered Species Act	Cave shrimp are found in an area of the site that is not disturbed by site operations or activities.
Assembly and unit plant in Georgetown, Kentucky	Short's Goldenrod, Indiana Bat	Protected by the U.S. Endangered Species Act	Planted Short's Goldenrod along a one-mile nature trail onsite
Vehicle logistics site at the Port of Portland, Oregon	Coho Salmon	Protected by the U.S. Endangered Species Act	Salmon Safe certified; site maintains a bioswale and storm water pollution prevention program; team members participate in annual cleanup of the Willamette River

Includes Toyota-owned sites in operation as of September 2020

ABOUT THIS CHART: As sites apply for certification of their conservation programs with Wildlife Habitat Council, they work with a WHC biologist to take an inventory of species onsite. This inventory includes any species listed by federal law as endangered or threatened. In addition to the 13 sites with WHC-certified programs, we assess new sites for the presence of endangered and protected species. To our knowledge, there are no endangered, threatened or protected species on or near the site of the new manufacturing plant in Apaseo el Grande, Guanajuato (Mexico).

"Protecting Species"

PROTECTED AREAS/CRITICAL HABITAT

P03 / TOYOTA SITES IN OR ADJACENT TO A PROTECTED AREA, CRITICAL HABITAT OR BIODIVERSITY HOTSPOT

SITE NAME	LOCATION	TYPE OF OPERATION	PROTECTED AREA, CRITICAL HABITAT AND/OR BIODIVERSITY HOTSPOT
TMMBC	Baja California, Tecate, Mexico	Manufacturing	Hotspot: California Floristic Province; Protected area: Wildlife Preserve
TMMC	Woodstock, Ontario, Canada	Manufacturing	Protected Area: Vansittart Woods wetlands
TABC	Long Beach, California	Manufacturing	Hotspot: California Floristic Province
Gardena Technical Center	Gardena, California	R&D	Hotspot: California Floristic Province
LA Parts Distribution Center	Los Angeles, California	Parts logistics	Hotspot: California Floristic Province
TLS Long Beach	Port of Long Beach, California	Vehicle logistics	Hotspot: California Floristic Province
San Ramon Regional Office and Parts Distribution Center	San Ramon, California	Parts logistics	Hotspot: California Floristic Province
North American Parts Center California	Ontario, California	Parts logistics	Hotspot: California Floristic Province
TLS Portland	Port of Portland, Oregon	Vehicle logistics	Critical Habitat for Soho Salmon
TAPG	Phoenix, Arizona	Proving ground	Critical Habitat for Yellow-billed Cuckoo

Includes Toyota-owned sites in operation as of September 2020

ABOUT THIS CHART: TMNA has begun an analysis to determine whether sites are in a protected area, critical habitat or biodiversity hotspot (see below for definitions of these terms). We started with our largest facilities, those that have Conservation Certification from Wildlife Habitat Council, and those undergoing major renovations. In the table above, we only include the sites located in these areas. We will be analyzing additional sites going forward, and the information will be used to inform our biodiversity strategy and project selection.

Our newest assembly plant in Apaseo el Grande, Guanajuato (Mexico), which started production in December 2019, is not in or adjacent to a protected area, critical habitat or biodiversity hotspot.

A **Protected Area** is defined as a geographic area that is designated, regulated or managed to achieve specific conservation objectives. (GRI Standards Glossary 2016)

Critical Habitat is a term defined and used in the U.S. Endangered Species Act. It is a specific geographic area(s) containing physical or biological features that are essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an unoccupied area(s) if it is determined to be essential for the conservation of the species.

A **Biodiversity Hotspot** is defined as an area that meets two criteria:

- It must have at least 1,500 vascular plants as endemics — which is to say, it must have a high percentage of plant life found nowhere else on the planet. A hotspot, in other words, is irreplaceable.
- It must have 30 percent or less of its original natural vegetation. In other words, it must be threatened.

Around the world, 36 areas qualify as biodiversity hotspots. They represent just 2.3 percent of Earth's land surface, but they support more than half of the world's endemic plant species and nearly 43 percent of endemic bird, mammal, reptile and amphibian species.

Critical Ecosystem Partnership Fund (CEPF) maintains a list of hotspots by region. CEPF is a joint initiative of l'Agence Française de Développement, Conservation International, the European Union, the Global Environment Facility, the Government of Japan, the MacArthur Foundation and the World Bank.

"Conserving Habitats"

WHC CONSERVATION CERTIFICATIONS

P04 / WILDLIFE HABITAT COUNCIL CONSERVATION CERTIFICATIONS

TOYOTA SITE NAME	CERTIFICATION LEVEL
Toyota Motor Manufacturing Canada, Cambridge	Gold
Toyota Motor Manufacturing Canada, Woodstock	Gold
Toyota Motor Manufacturing, Texas	Gold
Toyota Motor Manufacturing, West Virginia	Gold
Toyota Motor Manufacturing, Alabama	Silver
Toyota Motor Manufacturing, Indiana	Silver
Toyota Motor Manufacturing, Kentucky	Silver
Toyota Technical Center, Ann Arbor, Michigan	Silver
Toyota Technical Center, York Township, Michigan	Silver
Toyota Motor Manufacturing, Mississippi	Certified
Toyota Motor Manufacturing, Missouri	Certified
Toyota Motor Manufacturing, Tennessee	Certified
Toyota Arizona Proving Grounds	Certified

Certifications as of July 2020.

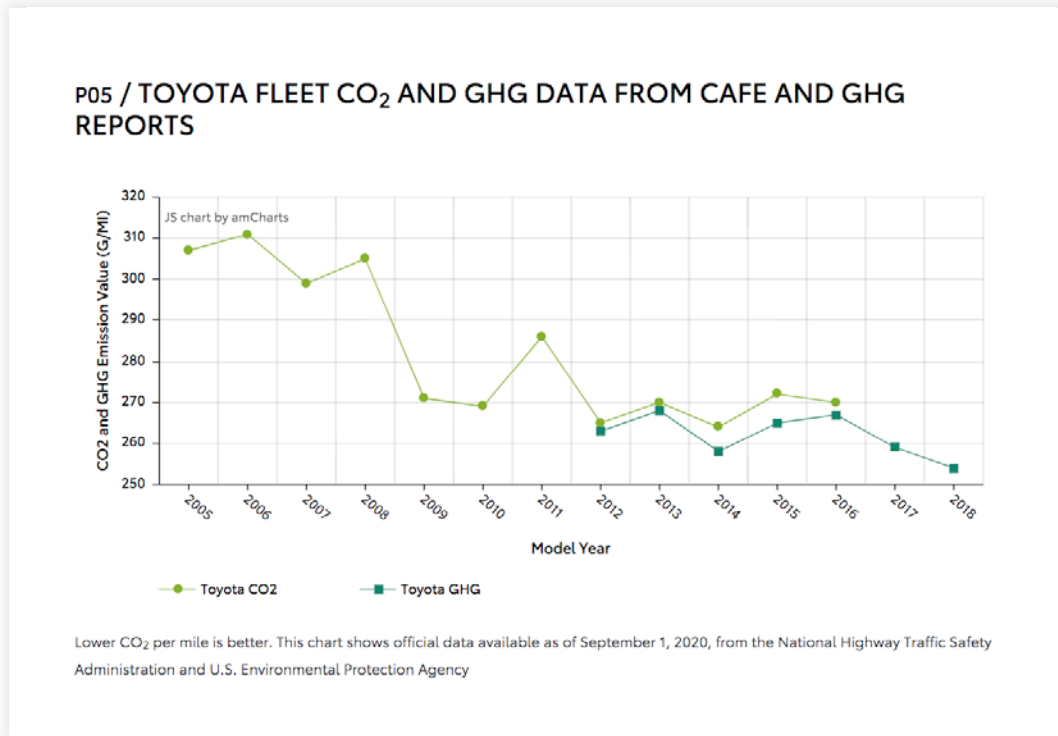
ABOUT THIS CHART: Wildlife Habitat Council (WHC) partners with corporations, fellow conservation organizations, government agencies and community members to empower and recognize wildlife habitat and conservation education programs. WHC’s certification standard, Conservation Certification, recognizes meaningful wildlife habitat management and conservation education programs.

Our partnership with WHC began in 1999 when Toyota joined WHC’s membership. In 2008, the conservation program at our Kentucky assembly plant became Toyota’s first WHC certification. **We now have programs certified at 13 sites in North America.** WHC helps us inventory plant and animal species on our sites and identify appropriate projects. Our protected areas include grassland, wildflower meadows, pollinator gardens and forests.

[“Protecting Species”](#)

CARBON

VEHICLE CO₂ EMISSIONS: UNITED STATES



ABOUT THIS CHART: Our efforts to improve fuel economy and reduce GHG emissions have become more aggressive with the adoption in the United States of new fuel economy and GHG emissions standards for passenger cars and light-duty trucks through the 2025 model year. While overall compliance is based on a fleet average, each vehicle has a fuel economy/GHG target based on its footprint.

One significant challenge to meeting these standards is having technology options available in vehicles that consumers are willing to purchase in sufficient quantities needed for compliance with the standards. Low fuel prices have added to this challenge. In 2012, when the standards were set through the 2025 model year, it was impossible to predict market outcomes so far into the future, since preferences are largely determined by factors such as fuel price and economic conditions, which are beyond an auto manufacturer’s control. As such, the regulations called for a feasibility evaluation of the 2022-2025 standards. Toyota is collaborating with the relevant government agencies to ensure that future regulations are aligned with technology and market realities while achieving the program’s environmental goals.

In the chart above, the performance of the U.S. vehicle fleet is being shown in two ways. The **green** line shows Toyota’s fleet-wide fuel economy (CAFE) presented in terms of grams of CO₂ per mile. This measure of performance, shown in previous Toyota North American Environmental Reports, only reflects GHG emissions reductions measured at the tailpipe during the official government test procedure.

The shorter, **teal** line depicts a broader view of GHG performance that entails provisions in the U.S. EPA GHG program (starting with the 2012 model year). The annual GHG compliance values account for real-world GHG benefits from off-cycle technologies such as air conditioning and aerodynamic improvements not

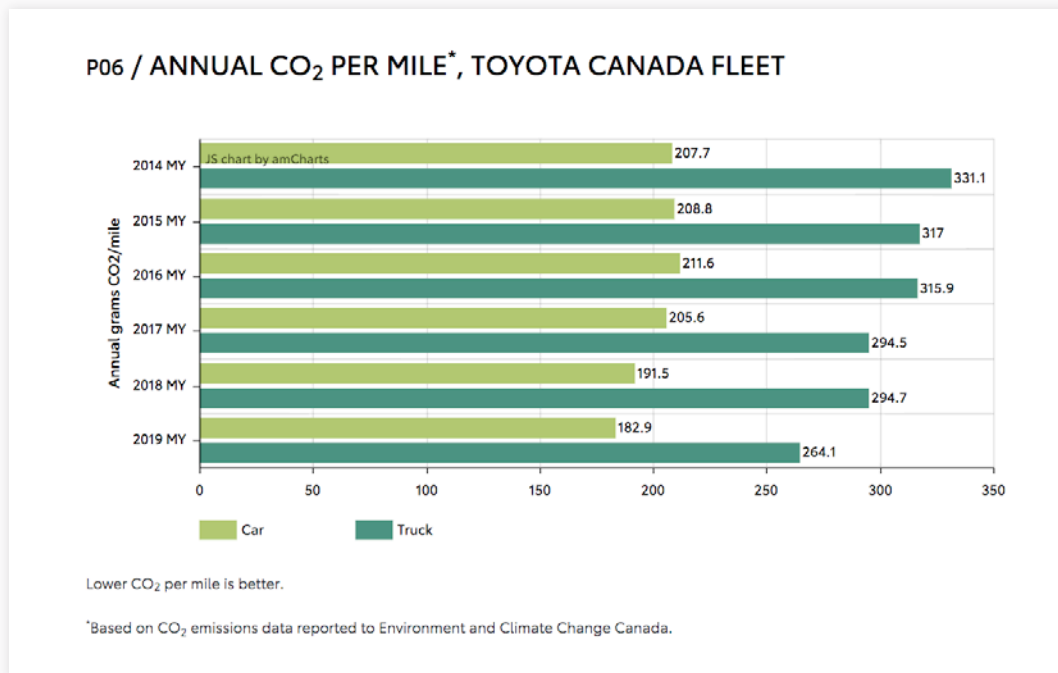
observed over the official testing conditions. Beginning with the 2017 model year, Toyota is only showing the fleetwide GHG values for our light-duty fleet under EPA's GHG program. In the 2017 model year evaluation, NHTSA's CAFE program started to incorporate certain off-cycle technology reductions similar to those that are accounted for in EPA's GHG program. This results in very similar CAFE and GHG values. Those interested can still find the 2017 model year and beyond CAFE data using NHTSA's PIC tool, linked below.

Showing both values provides a transparent way of looking at Toyota's historical fleet performance as we continue to pursue both GHG reductions and fuel economy improvements under both the GHG and CAFE programs.

[Follow this link for more information about the U.S. National Highway Traffic Safety Administration \(NHTSA\) Corporate Average Fuel Economy \(CAFE\) program.](#)

[Follow this link for more information about the U.S. EPA GHG program.](#)

VEHICLE CO₂ EMISSIONS: CANADA



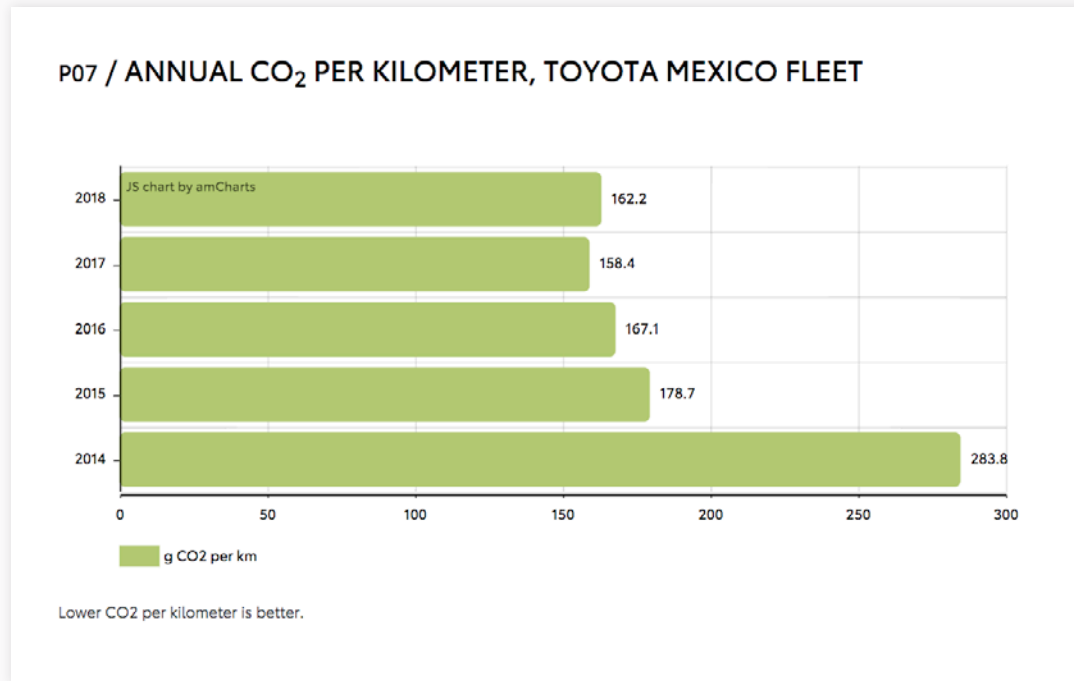
ABOUT THIS CHART: The Canadian federal government introduced a GHG emissions regulation under the Canadian Environmental Protection Act for the 2011–2016 model years, and in October of 2014 issued final GHG emissions regulations for the 2017–2025 model years. **Toyota has met the regulatory obligations regarding vehicle CO₂ emissions in Canada for each model year.**

Natural Resources Canada (NRCan) named three Toyota vehicles as best-in-class for fuel efficiency for the 2020 model year:

- **Toyota Corolla Hybrid (Compact car)**
- **Toyota Prius (Mid-size car)**
- **Toyota Highlander Hybrid AWD (Standard Sport Utility Vehicle)**

Best-in-class vehicles have the lowest combined fuel consumption rating, based on 55 percent city and 45 percent highway driving.

VEHICLE CO₂ EMISSIONS: MEXICO



ABOUT THIS CHART: In Mexico, the government has modeled vehicle GHG standards after U.S. requirements. The standards require automakers to meet a single sales-weighted fleet average over the period 2014 through 2016, and allow credits generated in 2012 and 2013 to be used towards compliance. These standards have been appropriately tailored to the unique driving conditions and product mix associated with the Mexican market and contain similar compliance flexibilities and lead time as those offered in the United States. **Toyota continues to be in compliance with these standards.**

ENERGY

During fiscal year 2020, Toyota's North American operations used **3.8 million megawatt-hours (MWh) of energy** to power both stationary and mobile activities. Of this:

- 1.67 million MWh were from **non-renewable sources of electricity**.
- 59,718 MWh were from **renewable electricity sources** – either onsite solar, landfill gas, geothermal or renewable energy credit purchases. This represents 3.4 percent of Toyota's total electricity consumption in North America.
- 2.05 million MWh were from using **natural gas** as a fuel.
- 78,700 MWh were from **fuels used in mobile sources**, such as gasoline and diesel.

Energy reduction activities resulted in electricity and natural gas savings of 195,000 MWh.

Energy intensity, measured in MWh of energy consumed per vehicle produced, was 2.11 in fiscal year 2020, down from 2.15 in 2019.

["CO₂ from Operations"](#)

GREENHOUSE GAS EMISSIONS

TOTAL GHG EMISSIONS

P08 / GHG EMISSIONS FROM TOYOTA'S NORTH AMERICAN OPERATIONS

	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021 TARGET
Scope 1	395,000	391,000	434,000	434,000	409,000	n/a
Scope 2	897,000	911,000	895,000	783,000	697,000	n/a
TOTAL	1,292,000	1,302,000	1,329,000	1,217,000	1,106,000	1,098,200

Scope: Manufacturing, R&D, owned logistics, offices

ABOUT THIS CHART: Total Scope 1 and 2 GHG emissions have decreased 9 percent between fiscal years 2019 and 2020. The decrease is a result of implementing energy and GHG efficiency measures and changes in production volumes and model mix.

TMNA uses *The GHG Protocol: A Corporate Accounting and Reporting Standard, Revised Edition* (published by WBCSD and WRI) to develop the emissions inventory. TMNA follows the financial control approach.

Scope 1 sources include stationary combustion (such as burning natural gas for energy) as well as owned mobile sources (such as Toyota-owned fleet vehicles and owned logistics trucks).

Scope 2 emissions include consumption of purchased electricity from 102 Toyota sites in North America. Scope 2 emissions are calculated using the location-based approach. Indirect emissions from electricity used at Toyota's U.S. locations are calculated using EPA eGRID emission factors. For sites in Canada, provincial emission factors are sourced from Canada's National Inventory Report, and for Mexico, a country-specific emission factor is sourced from Climate Transparency's *G20 Brown to Green Report 2019*. Where renewable electricity is purchased, an emission factor of zero is assumed.

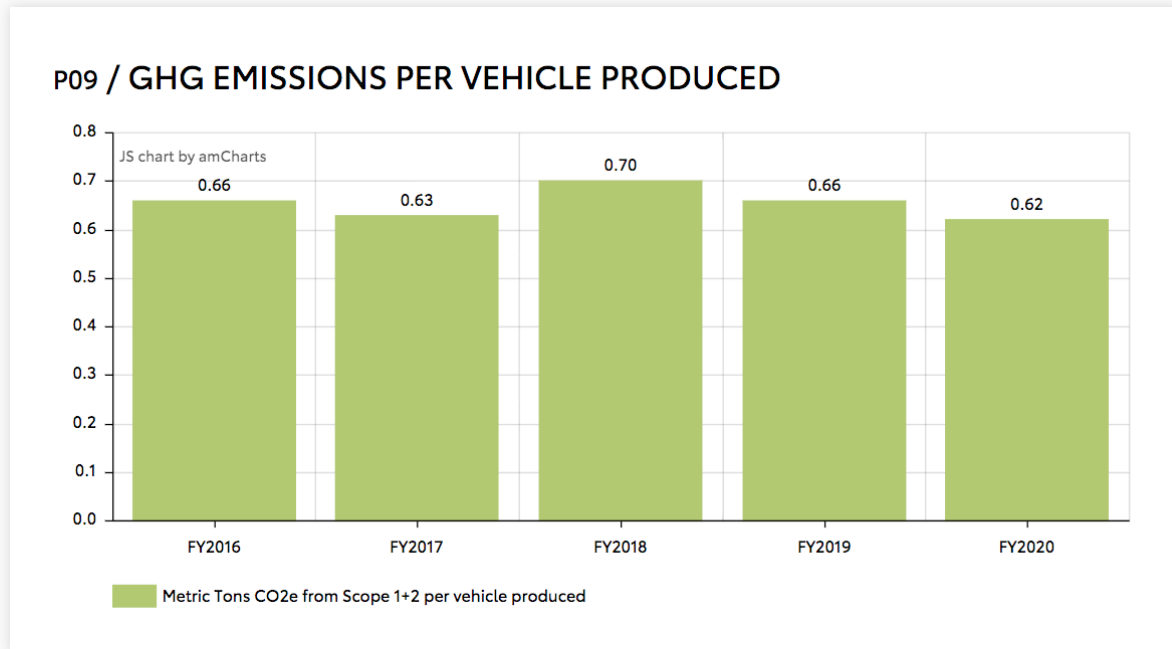
Toyota does not purchase steam.

Three of Toyota's U.S. manufacturing plants are required to report GHG emissions data under U.S. EPA's Greenhouse Gas Reporting Program. Individual plant data for our plants in Kentucky, Texas and Indiana are available on EPA's website through its online data publication tool.

In Canada, Toyota Motor Manufacturing Canada (TMMC) and Canadian Autoparts Toyota, Inc. (CAPTIN) are required to report GHG emissions data. TMMC's Cambridge plant is required to report under Environment Canada's Greenhouse Gas Emissions Reporting Program; both the Cambridge and Woodstock plants are required to report GHG emissions to the province of Ontario under its Environmental Protection Act. CAPTIN is required to report GHG emissions to the province of British Columbia under its Greenhouse Gas Reduction Act.

["Carbon Targets"](#)

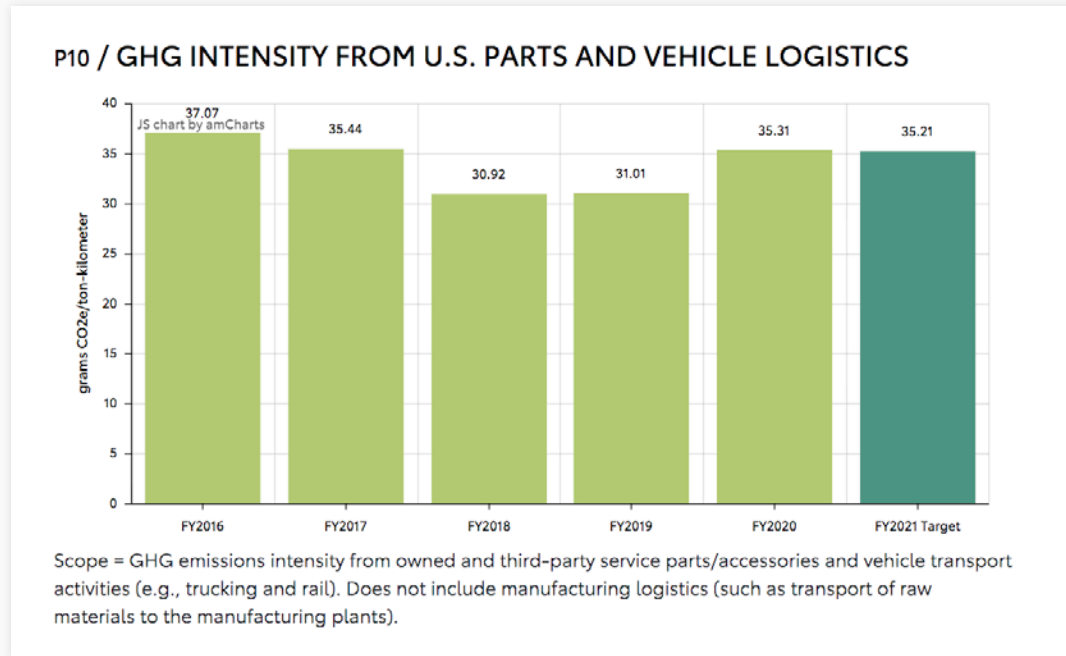
SCOPE 1+2 GHG INTENSITY (PER VEHICLE)



ABOUT THIS CHART: This chart shows total Scope 1 and Scope 2 GHG emissions in metric tons CO₂e divided by North American production. **GHG intensity per vehicle produced decreased by 6.1 percent in fiscal year 2020 compared to the previous year due to improvements in energy and GHG efficiency and changes in production volumes and model mix.**

[“CO₂ From Operations”](#)

LOGISTICS GHG INTENSITY (PER TON-KM)



ABOUT THIS CHART: We track GHG emissions intensity for owned and third-party U.S. service parts/accessories and vehicle logistics from all transport modes (trucking, marine, air and rail). Intensity is measured in grams of CO₂e per ton-kilometer.

Logistics GHG intensity increased 14 percent in fiscal year 2020 compared to the previous year, mainly due to an increase in container miles from our owned parts logistics trucks. However, **since the target baseline of fiscal year 2016, GHG intensity has decreased almost 5 percent, putting us on track to achieving the target.**

["Carbon Targets"](#)

["Suppliers"](#)

COMPLIANCE

P11 / ENVIRONMENTAL COMPLIANCE

	SIGNIFICANT ENVIRONMENTAL VIOLATIONS
FY16	0
FY17	0
FY18	0
FY19	0
FY20	0

ABOUT THIS CHART: Many of Toyota’s activities in vehicle development, manufacturing and logistics are subject to local, state, provincial and federal laws that regulate chemical management, air emissions, water discharges, storm water management, greenhouse gas emissions, and waste treatment and disposal. These regulations vary by facility based on the type of equipment operated and the functions performed.

In Figure P11, Toyota reports those environmental violations resulting in fines of \$5,000 or more and in an impact to the environment (we do not report administrative violations). **In fiscal year 2020, our North American manufacturing plants and logistics sites had zero significant environmental regulatory violations.**

DEALERS

P12 / TOYOTA / LEXUS LEED® DEALERSHIPS

	TOYOTA	LEXUS
Platinum	5	0
Gold	22	4
Silver	16	3
Certified	16	4
Total	59	11

*As of July 2020, 70 Toyota and Lexus dealerships - 62 in the U.S., 7 in Canada and 1 in Mexico - have earned LEED® certification.

ABOUT THIS CHART: The Toyota and Lexus brands provide guidance to dealerships on sustainable strategies to achieve LEED® certification. LEED®, or Leadership in Energy and Environmental Design, is a point-based system administered by the U.S. and Canadian Green Building Councils promoting a whole-building approach to sustainable construction and remodeling. LEED® certification is based on meeting stringent requirements in sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

Toyota and Lexus brands have achieved various levels of LEED certification for the construction and renovation of their sales and service areas. **As of July 2020, 70 Toyota and Lexus dealers in the U.S., Canada and Mexico have achieved LEED certification, and more are registered with the U.S. Green Building Council.**

Toyota and Lexus recognize the hard work that goes into the LEED certification process. The continued efforts not only are attractive to environmentally conscious consumers, they also can provide dealerships an edge in recruiting and retaining team members.

"Dealers"

ENVIRONMENTAL MANAGEMENT SYSTEMS

P13 / ISO 14001 CERTIFICATIONS OF TOYOTA'S NORTH AMERICAN FACILITIES

	LOCATION	ORIGINAL CERTIFICATION DATE
Manufacturing Plants	Huntsville, Alabama	2005
	Long Beach, California	1998
	Princeton, Indiana	1999
	Georgetown, Kentucky	1998
	Troy, Missouri	1998
	Blue Springs, Mississippi	2012
	Jackson, Tennessee	2007
	San Antonio, Texas	2008
	Buffalo, West Virginia	2000
	Woodstock, Ontario	2009
	Cambridge, Ontario	1998
	Delta, British Columbia	1997
	Baja California, Mexico	2006
Vehicle Distribution Centers	Toronto, Ontario	2002
	Montreal, Quebec	2003
Parts Distribution Center	Toronto, Ontario	2001
	Vancouver, British Columbia	2002
Sales and Regional Offices	Canadian Sales Headquarters in Toronto, Ontario	2001
	Pacific Regional Office and TFS	2002
	Quebec Regional Office and TFS	2005
	Prairie Regional Office and TFS	2008
	Atlantic Regional Office and TFS	2006

*List of certified sites in North America as of July 2020.

ABOUT THIS CHART: Environmental management systems are an essential part of Toyota's overall effort to minimize risks and achieve leading levels of environmental performance. Each major Toyota location has an environmental management system (EMS) that identifies the significant environmental aspects and impacts of its operations and sets corresponding controls, goals and targets to manage and reduce these impacts over time.

The facilities listed in the chart have been third-party certified to ISO 14001, the International Organization for Standardization's standard for designing and implementing an effective environmental management system.

GREEN BUILDING

P14 / TOYOTA'S NORTH AMERICAN FACILITIES WITH LEED® CERTIFICATIONS

TOYOTA FACILITY	LOCATION	YEAR	CERTIFICATION LEVEL
Production Engineering & Manufacturing Center	Georgetown, Kentucky	2019	BD+C Platinum
Toyota Supplier Center	York Township, Michigan	2019	BD+C Platinum
Toyota Motor North America Headquarters (Office Towers, High Bay Evaluation Building, Vehicle Delivery Center)	Plano, Texas	2017	BD+C Platinum
Chicago Service Training Center	Aurora, Illinois	2015	NC Gold
Lexus Eastern Area Office	Parsippany, New Jersey	2014	CI Platinum
Toyota Kansas City Training Center	Kansas City, Missouri	2012	NC Gold
Toyota Inland Empire Training Center	Rancho Cucamonga, California	2010	CI Gold
Toyota Technical Center	York Township, Michigan	2010	NC Gold
Toyota Racing Development North Carolina	Salisbury, North Carolina	2010	NC Certified
Lexus Florida Training Center	Miramar, Florida	2009	CI Gold
Toyota Phoenix Training Center	Phoenix, Arizona	2009	CI Silver
North America Production Support Center	Georgetown, Kentucky	2006	CI Silver
Toyota Motor North America, Inc.	Washington, D.C.	2016	CI Silver
Portland Vehicle Distribution Center	Portland, Oregon	2004	NC Gold

BD+C = Building Design + Construction
 NC = New Construction
 CI = Commercial Interiors

ABOUT THIS CHART: Fourteen Toyota and Lexus facilities have achieved Leadership in Energy and Environmental Design (LEED®) certification. LEED® is a point-based system administered by the U.S. and Canadian Green Building Councils promoting a whole-building approach to sustainable construction and remodeling. LEED certification is based on meeting stringent requirements in sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality. Ranging from office space to vehicle distribution centers, these facilities represent Toyota's continued efforts to improve the design and efficiency of all operations. Toyota Motor North America is a platinum member of the U.S. Green Building Council.

Toyota has three projects that are pursuing LEED certification: the renovation of the vehicle logistics facility at the Port of Long Beach in California, the newly constructed visitor center at the assembly plant in Mississippi, and the new parts distribution center in Clarington, Ontario.

["Building for the Future"](#)

MATERIALS: WASTE

P15 / TOTAL WASTE (POUNDS)

	2016	2017	2018	2019
Regulated Waste*				
Recycled/Reused Regulated Waste	4,570,000	4,879,000	4,499,000	5,763,000
Incineration, WTE**, Fuels Blending	7,247,000	11,599,000	11,843,000	11,070,000
Landfill	692,000	33,000	0	0
Non-Regulated Waste				
Composted	831,000	1,080,000	908,000	999,000
Recycled Scrap Steel from Mfg Plants	678,953,000	656,129,000	696,759,000	599,387,000
Other Recycled/Reused	87,805,000	79,940,000	79,800,000	82,864,000
Incineration, WTE**, Fuels Blending	33,933,000	29,314,000	32,081,000	31,888,000
Landfill	8,081,000	16,995,000	13,363,000	13,835,000
TOTAL WASTE (Pounds) GENERATED	822,112,000	799,969,000	839,253,000	745,806,000

*Regulated waste includes hazardous, universal and special wastes regulated at the federal, state, provincial or local level. Non-regulated waste is all other waste.

**WTE = waste to energy

Scope = Toyota's North American headquarters, manufacturing, R&D, sales and logistics sites in the U.S., Canada and Puerto Rico. Also includes data from manufacturing in Mexico. Data from non-manufacturing sites in Mexico will be included in future years. Data excludes construction and demolition waste from new construction and expansion projects.

ABOUT THIS CHART: Waste data is collected on a calendar year basis. **In 2019, Toyota's North American manufacturing plants, R&D centers, logistics sites and offices generated 745.8 million pounds of waste. This is an 11 percent decrease from 2018, due mainly to a decrease in the amount of recycled scrap steel.** The amount of steel used in vehicle production varies depending on production volumes as well as the mix of models being produced. In 2019, overall production volume decreased, and the mix of models changed at a number of the North American assembly plants.

When looking at the waste data without scrap steel, the amount of the remaining waste streams has been fairly constant over the last four years, increasing only 2 percent between 2016 and 2019.

In 2019, only 1.9 percent of all waste was sent to landfills for disposal (for certain waste streams, landfill disposal is required by law), and 5.7 percent was incinerated, used for fuels blending or sent to a waste-to-energy facility. We recycled, reused or composted 92.4 percent of all waste in 2019.

["Eliminating Waste"](#)

WATER

P16 / WATER (GALLONS)

	FY2019	FY2020	FY2020 WATER-STRESSED AREAS*
Water Withdrawal	1,806,964,000	1,765,401,000	110,754,000
Water Discharge	1,136,206,000	1,173,040,000	42,015,000
Water Consumption	670,758,000	592,361,000	68,739,000

Scope: Manufacturing, R&D, owned logistics, offices

*Water-stressed areas have been identified with WRI's Aqeduct™ Water Risk Atlas 3.0 and include sites with overall risk scores of "high" and "extremely high."

ABOUT THIS CHART: Toyota withdrew 1.77 billion gallons of water at 102 North American facilities, including manufacturing plants, R&D centers, parts and vehicle distribution centers, service training centers and offices. This represents a 2.3 percent decrease from the previous year.

Only 6 percent of water withdrawal occurred in an area of “high” or “extremely high” water stress.

More than 95 percent of total water withdrawal came from municipal sources (both fresh and recycled water from utilities); the remaining withdrawals came from surface water bodies, groundwater and rainwater.

We estimate 1.17 billion gallons were discharged, either to surface waters or to municipal utilities.

Consumption (defined as withdrawal minus discharge, or the water that was not returned to either a municipal utility or surface or ground water) was 592.36 million gallons.

[“Conserving Water”](#)



FEATURE STORY:

Contributing to the United Nations Sustainable Development Goals

So much needs to be done to solve the critical environmental issues facing the global community – climate change, water scarcity, resource depletion and habitat loss, to name the big ones.

That’s why, in September of 2015, the United Nations adopted the 2030 Agenda and Sustainable Development Goals (SDGs). The 17 SDGs and their corresponding 169 targets run from 2016 through 2030 and in that time, seek to “free the human race from the tyranny of poverty and want and to heal and secure our planet.”¹ This may sound like an unrealistic mission, but the UN goals are actually achievable – if governments, businesses, nonprofits, other organizations and even individuals all do their part.

At Toyota, we are committed to doing our part. The Toyota Environmental Challenge 2050 supports many of the SDGs and shares their fundamental mission – to make the world better, safer and healthier. But we can’t achieve these goals in isolation – no single entity can. These are shared problems that require a shared response. Here in North America, we believe environmental sustainability activities undertaken within our four focus areas can make significant contributions to six of the UN’s Sustainable Development Goals:

FOCUS AREA	UN SDG
Water	Goal 6 – Clean Water and Sanitation
Carbon	Goal 7 – Affordable and Clean Energy
	Goal 11 – Sustainable Cities and Communities
	Goal 13 – Climate Action
Materials	Goal 12 – Responsible Consumption and Production Patterns
Biodiversity	Goal 15 – Life on Land

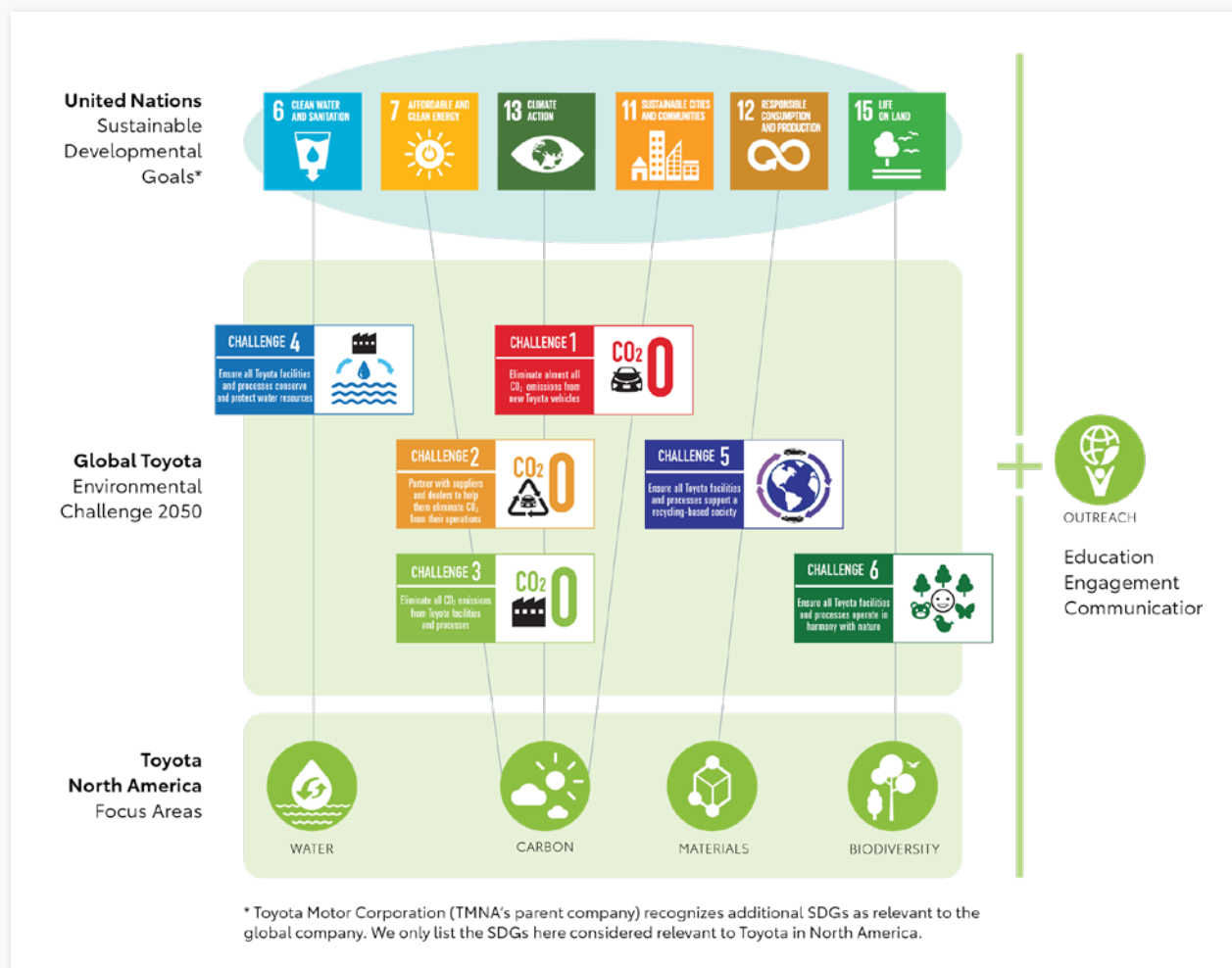
¹ Transforming our World: the 2030 Agenda for Sustainable Development, Preamble, A/RES/70/1, adopted by the United Nations General Assembly on 25 September 2015 <https://sustainabledevelopment.un.org/post2015/transformingourworld>.

This journey is only beginning. Achieving the SDGs and the Toyota Environmental Challenge 2050 will take careful planning. And time: We won't see progress on this massive scale overnight. Our environmental activities are about evolution – incremental, steady steps forward. They're also about innovation – finding new and creative ways to make change. They're about sharing our expertise to help others and maximize positive outcomes. And most of all, they're about doing. Our 36,000 North American team members are on board as well as suppliers, dealers and other partners. Together, we are ready to make great things happen and start our impossible toward a more sustainable future.

To find out more about the 17 UN SDGs, visit the UN's Sustainable Development Knowledge Platform.

CONTRIBUTING TO THE UN SUSTAINABLE DEVELOPMENT GOALS

Toyota's response to the UN SDGs, particularly those addressing environmental issues, is centered around the six far-reaching goals within the Toyota Environmental Challenge 2050 (Challenge 2050). Each major region is developing strategies and targets to help the company achieve these goals. Here in North America, our activities supporting both Challenge 2050 and the SDGs are organized by our core focus areas of Water, Carbon, Materials and Biodiversity. Our long-term strategies in each of these focus areas, supported by our outreach activities, show the steps we're taking to address the world's pressing environmental problems and become part of the solution.



TMNA FOCUS AREA: WATER



6 CLEAN WATER AND SANITATION



ENSURE AVAILABILITY AND SUSTAINABLE MANAGEMENT OF WATER AND SANITATION FOR ALL

Water is a precious and finite resource that is critical to the survival of people and the planet, yet it is often undervalued. Through the Toyota Environmental Challenge 2050, Toyota recognizes water as a global issue that requires a local response (Challenge 4).

Some of Toyota's North American sites are in water-stressed areas, and our larger assembly plants use significant volumes of water during vehicle production, particularly in the painting process. To conserve water and improve water quality, we are developing water stewardship plans for our sites located in areas of high water stress and limiting the levels of pollutants in our wastewater discharge to below permit requirements.

Find out more about how our activities contribute to meeting Sustainable Development Goal 6 on Clean Water and Sanitation in the Water chapter of this report.

TMNA FOCUS AREA: CARBON



7 AFFORDABLE AND CLEAN ENERGY



ENSURE ACCESS TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY FOR ALL

Access to energy is a key driver of economic growth. Given the world's growing population, clean energy is even more crucial. Energy storage, whether in second-life batteries or through stationary hydrogen storage, can help set the stage for increasing the share of renewable electricity on the grid. Through the Toyota Environmental Challenge 2050, Toyota recognizes the connection between using clean energy and limiting greenhouse gas emissions (Challenges 2 and 3).

Toyota uses energy to power our manufacturing plants, distribution centers and offices. Our suppliers also use energy to power their facilities. Ensuring energy is used efficiently and comes from renewable sources is a key component of our Carbon strategy.

Find out more about how our activities contribute to meeting Sustainable Development Goal 7 on Affordable and Clean Energy in the Carbon chapter of this report.

TMNA FOCUS AREA: CARBON



11 SUSTAINABLE CITIES AND COMMUNITIES



MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE

More than half the world's population lives in cities. Air pollution is a major concern in cities, and many people living in cities breathe air that does not meet the air quality standards set by the World Health Organization. Through the Toyota Environmental Challenge 2050, we recognize our role in the development of sustainable transport and in reducing the environmental impacts of driving, especially in urban communities (Challenge 1).

Here in North America, we are supporting infrastructure development for hydrogen fuel cell electric vehicles, which emit no pollutants – only water. Toyota Mirai is our first hydrogen fuel cell electric vehicle, on the market in California, Quebec and British Columbia. We also announced the delivery of 10 hydrogen fuel cell electric Class 8 trucks for operation at the Ports of Los Angeles. The promise of zero-emission vehicles is fulfilled only when the fuel these vehicles use is created in a way that doesn't create emissions. That's why we will be using 100 percent renewable hydrogen fuel produced from biogas.

Find out more about how our activities contribute to meeting Sustainable Development Goal 11 on Sustainable Cities and Communities in the Carbon chapter of this report.

TMNA FOCUS AREA: CARBON



13 CLIMATE ACTION



TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS

The global nature of climate change calls for broad cooperation in developing sustainable, low carbon pathways to the future. Toyota recognizes climate change as a global priority issue and has established three aggressive carbon goals to eliminate CO₂ emissions from our new vehicle fleet, facilities and logistics operations, and supply chain, all by 2050 (Challenges 1, 2 and 3).

Here in North America, we are working toward improving fuel economy and reducing CO₂ emissions from new vehicles by offering electrified versions of each Toyota and Lexus model by around 2025. We are also reducing absolute CO₂ emissions from our facilities and transportation activities, and increasing our use of renewable energy. We are partnering with various stakeholders to advance infrastructure for alternative fuel vehicles, reduce congestion and develop low carbon fuels. And, we are working with suppliers to communicate our goals and help them find ways to reduce their carbon footprint.

Find out more about how our activities contribute to meeting Goal 13 on Climate Action in the Carbon chapter of this report.

TMNA FOCUS AREA: MATERIALS



ENSURE SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS

Economic growth and development require the production of goods and services that improve the quality of life. But the rapid increase in global consumption of materials has come at a cost to the environment. Sustainable production and consumption patterns are required to minimize the natural resources and toxic materials used as well as the waste and pollutants generated. Through the Toyota Environmental Challenge 2050, Toyota acknowledges the need to move away from a throw-away society to a recycling-based society (Challenge 5).

Here in North America, to promote a circular economy and avoid both depletion of natural resources and environmental pollution from increasing amounts of waste, we focus on increasing reuse and recycling, reducing waste, and enhancing our use of sustainable raw materials.

Find out more about how our activities contribute to meeting Sustainable Development Goal 12 on Responsible Consumption and Production in the Materials chapter of this report.

TMNA FOCUS AREA: BIODIVERSITY



PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEMS, SUSTAINABLY MANAGE FORESTS, COMBAT DESERTIFICATION, AND HALT AND REVERSE LAND DEGRADATION AND HALT BIODIVERSITY LOSS

Halting biodiversity loss has become a critical endeavor as many species slide toward extinction. To safeguard these species and their habitats, protected areas have been designated around the world. Through the Toyota Environmental Challenge 2050, Toyota recognizes the need to protect species and conserve habitat (Challenge 6).

Toyota owns more than 21,000 acres of land in North America and has facilities in or near crucial habitats. Our company believes strongly in working in harmony with nature. To that end, we partner with others to protect critical habitat and threatened species, certify projects with the Wildlife Habitat Council, and educate both our team members and communities about the importance of biodiversity.

Find out more about how our activities contribute to meeting Sustainable Development Goal 15 on Life on Land in the Biodiversity chapter of this report.



Kevin Butt
Senior Director, Environmental Sustainability
Toyota Motor North America, Inc.



FEATURE STORY:

The Real Challenge in Challenge 2050

In 2015, the Toyota Environmental Challenge 2050 (Challenge 2050) was announced. Challenge 2050 has six goals – three on reducing the CO₂ emissions that cause climate change, one on conserving water, one on improving material flows, and one on protecting biodiversity – that seek to go beyond eliminating environmental impacts to creating net positive impacts on the planet and society. These six goals are the most demanding and most inspiring environmental commitments Toyota has ever made.

On the surface, the goals sound simple enough. But when you look at the challenges more closely, you'll see how complicated they really are. Our success depends on our team members and partners, and working together to address the complexities of how we will actually achieve these goals. We look forward to working with all of these stakeholders, learning from them and sharing what we learn with society.

We started by organizing the six global goals into our four North American focus areas of Carbon, Water, Materials and Biodiversity – you can see that alignment throughout our North American Environmental Report. Then we started digging into what these goals actually mean for the way we operate.

Take Challenge 2, which calls for eliminating CO₂ emissions from supplier and dealer activities. A large segment of our supply chain is logistics, where we need to replace diesel as the fuel of choice. Our Project Portal hydrogen fuel cell electric heavy-duty truck is a step in that direction, but so far, there are only 10 of these trucks operating in the Los Angeles area. Some of our third-party logistics carriers have begun the transition away from diesel, but we still have a lot of trucks and a long way to go. Moving away from diesel is a transformation that can't happen overnight.

Then there's the task of eliminating CO₂ emissions from our facilities. These emissions are the result of using about 4 million megawatt-hours per year of natural gas and electricity at our sites. To meet this challenge, we have to find ways to stop burning natural gas to heat our buildings. We need to come up with unique and creative ways of generating and using thermal energy. There are a few small-scale options out there, but we need options that will work at all our manufacturing facilities and at every other location.

We also need to find ways to generate or purchase 100 percent of our electricity from renewable sources. Here, I'm happy to share some good news. By entering into virtual power purchase agreements, we are contracting with renewable energy providers to generate wind and solar power and put it on the grid. By funding the generation of renewable electricity, Toyota expects to offset CO₂ emissions from our facilities in North America by as much as 40 percent. By the time these projects start coming online in 2021, we will have found a way to scale up our efforts to the point where we're making positive change.

Then we have Challenges 4, 5 and 6. These three are still being refined because the issues they address – water, materials and biodiversity – are more dependent on regional circumstances. Take Challenge 4 as an example. Water availability and quality issues differ in each region of the world, so we must come up with a water stewardship strategy that suits the North American region. For example, some of our sites in California, Texas and Mexico are in areas where the overall water risk is considered high. We are looking at ways not only to use less water but also to protect water resources to help ensure a sustainable water supply.

Nothing about Challenge 2050 is simple, except the reasoning behind it. Toyota considers sustainable development to be a key driver of the company's global strategy. We know that our future – our health and well-being – depends on clean air, clean water and diversity in nature to provide us with food security, medicines and other ecosystem services.

Challenge 2050 will not be achieved through continuous improvement alone. It will take new ideas and new technology. It will take creativity and thinking outside the box. It will take working with partners who will help us find success along the way.

Step by step, we'll keep making progress towards achieving our goals. We have been reducing environmental impacts for years, and we are starting to see how we can turn that into net positive. We're doing it in Plano by selling renewable energy generated on weekends back to the grid and when we help our communities recycle household waste like old television sets.

I look forward to sharing more examples of creating net positive impacts in future reports. In the meantime, we'll continue doing our part to make a better planet.



Kevin Butt
Senior Director, Environmental Sustainability
Toyota Motor North America, Inc.



FEATURE STORY:

Electric Avenue

One of the questions I'm most frequently asked is, "When will electric vehicles become mainstream?" to which I invariably reply, "They already are."

The electrification of the automobile is arguably the greatest force transforming our industry. Appearing as early as the 1800's, electricity has served us increasingly well across the automotive spectrum, giving rise to continuous advances in lighting, ignition, communications, processing, propelling, regenerating, all manner of efficiencies, and more. Today, electricity—along with the connectivity and autonomy that it enables—is powering the industry's transformation towards a new paradigm of sustainable mobility for all.

So, electrification is with us, it's pervasive, and it's transformative. And it's also a core strength of what we do at Toyota. Three exciting examples help illustrate this. The first is Toyota's dynamic and holistic "mobility for all" electric lineup set to transform the upcoming Tokyo Olympics into the greenest global games in history. The second is Toyota's development of market-shaping, transformational-transport-enabling electrification initiatives with worldwide collaborators like Uber, Shell, Panasonic, BMW, SoftBank, Subaru, BYD and Mazda. The third is Toyota's commitment and, crucially, capability to offer an electrified version of every vehicle model we make by 2025.

And we're not stopping there. In fact, as revealed earlier this year, Toyota is teaming up with Japan's national aerospace and space agency to develop what many might call the ultimate, out-of-this-world, electric SUV—a pressurized manned lunar expedition rover—to take our advanced, versatile and durable Toyota fuel cell electric technology to the moon.

Our electrification roots themselves are grounded in another history-making launch—that of our very first hybrid-electric, the Toyota Prius, 20 years ago. With revolutionary vehicles like the Prius, and equally transformative descendants like our zero-emissions fuel cell electric Mirai, Toyota has long helped pioneer the path to electrification, providing a range of products intelligently engineered to meet our customers' diverse needs via varying levels of electric generation, regeneration and propulsion.

This layering, or stratification, of electrification is perhaps best illustrated by its efficiency and emissions benefits. If we begin with a vehicle powered by a conventional gasoline-fueled internal combustion engine, adding an initial layer of electrification via a regenerative braking, battery and motor system enables virtuous reductions in fuel consumption, engine size and harmful emissions. An example of this hybrid-electric approach is the versatile new 2020 Toyota Highlander Hybrid SUV, with its best-in-class EPA-estimated 35 combined mpg fuel economy rating, Super-Ultra-Low-Emissions output, and advanced AWD.

Adding a second level of electrification—in the form of expanded battery, electric motor, power control and operating capabilities—enables even greater performance, efficiency and emissions gains. An example of a vehicle incorporating such advantages is the powerful new 2021 Toyota RAV4 Prime hybrid–electric plug–in, which allows customers to have their cake and eat it, too. Simultaneously possessing both electric and conventional fueling capability, the RAV4 Prime provides exceptional range, rapid acceleration and the commute–changing ability to serenely operate on battery power alone for up to 42 miles of zero–emissions driving. Overall, the RAV4 Prime offers owners a persuasive package of over 300 horsepower, EPA–estimated 94 MPGe efficiency and 600 miles of total driving range.

Highest on our efficiency scale is the third stratum of electrification—pure electric vehicles. These completely replace carbon–emitting internal combustion engines with electric motors to provide silent, smooth, clean propulsion. Traditional pure electric vehicles are powered by batteries upsized to provide sufficient performance, range and longevity. An example of such a battery–electric vehicle is the Accessible People Mover, or APM, that Toyota will introduce to help transform transport at the Tokyo Olympic and Paralympic Games.

An even more promising form of pure electric mobility is the fuel cell electric vehicle, such as the trailblazing Toyota Mirai. Like the original Prius, the Mirai has pioneered a new era of electrification for Toyota, and in its initial generation has now sold over 10,000 global units. The second–generation Toyota Mirai stands poised to launch within the year, with dramatic advancements in style, volume, versatility, features and performance—including a leap to over 400 miles of pure, clean, zero–emissions driving range.

Vehicles like the Mirai utilize hydrogen to generate their own electricity onboard, while emitting nothing but water vapor from the tailpipe. Fuel cell electrics overcome many issues associated with battery electrics — lengthy recharging times, reduced range, diminished performance and lower infrastructure throughput. Fuel cell electric vehicles do require hydrogen fueling stations, but over 40 such retail stations and counting already exist in California to serve a growing population of thousands of vehicles. Many more hydrogen fueling stations are under development with the prioritized support of the state, and station development in the Northeast is also underway. For fundamental reasons such as these, our fuel cell electric vehicle program — based on our core, layered, hybrid–technology strength — is a central thread woven into Toyota’s global electrification strategy (see Figure 1)

FIGURE 1 / TOYOTA’S GLOBAL ELECTRIFICATION STRATEGY



Perhaps the most exciting aspect of fuel-cell-driven electrification, however, is its scalability. The need to reduce emissions across the transportation, commercial and community sectors is dramatic, increasing and global. And where these sectors converge, such as in the teeming goods-movement and power-distribution confluences of port communities and their surrounding regions all over the world, this emissions issue has become critical.

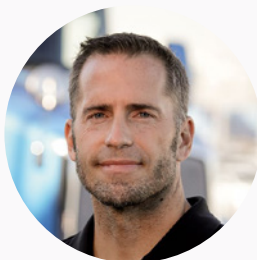
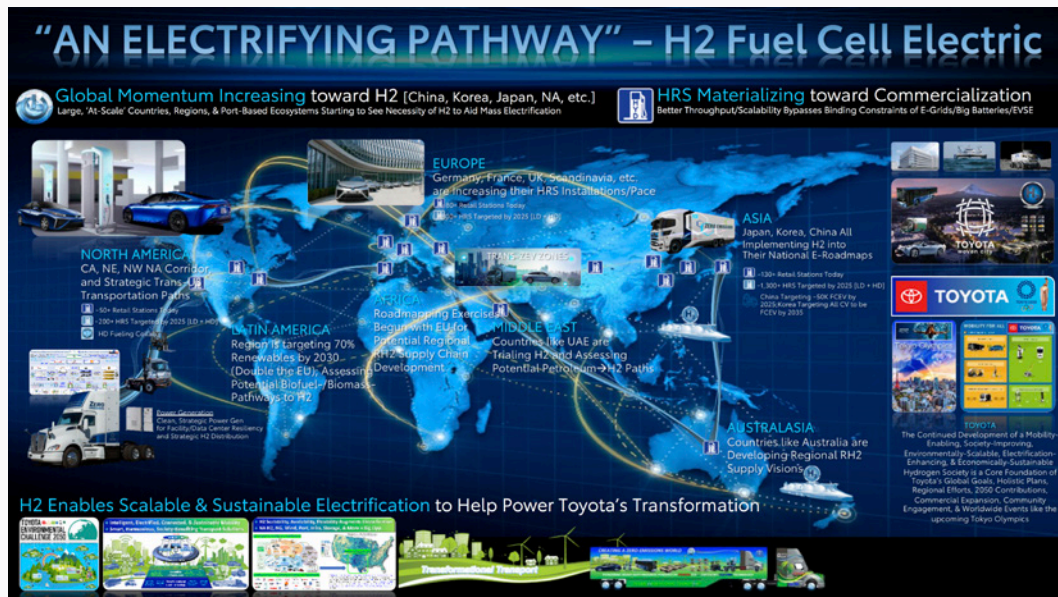
A key means of addressing this problem is to electrify commerce, converting aging and polluting diesel facilities and fleets to pure, zero-emissions, electric generation and propulsion. And Toyota is helping directly architect this transformation through groundbreaking efforts like our holistic Woven City for a greener future and through our pioneering Project Portal Class 8 fuel cell electric truck initiative.

Established as a feasibility study to explore the potential application of our light-duty Toyota Mirai fuel cell electric technology to the high-emission heavy-duty truck sector, Project Portal has progressed rapidly from concept phase, to a pair of advanced demonstration prototypes, and to the development of a large-scale, \$82 million pilot program featuring 10 in-service trial trucks in conjunction with the State of California, the Los Angeles ports, Kenworth, Shell, UPS and many more. Through this transformative “Shore to Store” pilot and additional synergistic collaborations such as with Hino Trucks, Toyota’s Project Portal is opening green gateways and helping prove that heavy-duty hydrogen fuel cell electrics—with their range, weight, performance, refueling time, cargo capacity and infrastructure scalability advantages beyond battery electrics—have the potential to be the optimal solution for electrifying — and revolutionizing — global transport.

This transformational potential of hydrogen fuel cell electric power, and the gathering global momentum behind it, is visually summarized in Figure 2 below. Overall, fuel cell electric vehicles offer a compelling combination of market and societal benefits, particularly at scale, and, therefore, are an emerging core of Toyota’s layered, global, customer-needs-based portfolio approach to electrification.

So, in summary, when someone asks you, “When will electric cars become mainstream? And how is Toyota participating?” you’ll be able to smile and reply, “They already are, and we’re helping lead the way.”

FIGURE 2 / ELECTRIFICATION VIA HYDROGEN FUEL CELL IS A COMPELLING COMBINATION



Ash Corson
Corporate Strategy & Planning
Toyota Motor North America, Inc.



FEATURE STORY:

Building for the Future

Toyota team members have always been directed by the company's guiding principles of continuous improvement, known to us as **KAIZEN**, and elimination of **MUDA**, or elimination of any waste from the process of manufacturing our vehicles. But did you know that our relentless focus on **KAIZEN** and eliminating **MUDA** extends well beyond our manufacturing operations? We recognize that our building footprint is significant, and our work to minimize and optimize its environmental impact is, therefore, directed by these same Toyota guiding principles.

As our physical building footprint started increasing in the late 1990's, we made a concerted effort to apply environmental guidelines and our guiding principles to the way we design, construct and operate our facilities. The goal was to ensure the application of sustainable practices in our projects. This approach was used in 2000 as design began for the former Torrance, California, headquarters campus expansion known as South Campus. This 643,000 square-foot project increased the size of the headquarters campus by 47 percent and, when completed in 2003, was the largest commercial LEED Gold® building in the world. South Campus was also home to what at the time was the largest commercial rooftop solar photovoltaic system as well as many other sustainable features.

Since then, our North American real estate holdings have grown, and several facilities have undergone expansions. During this time, we have continually refined our approach to green building and construction.

So, in 2014, when it was announced that Toyota would be reorganizing and relocating, we were ready to scale up our approach to green building.

REFINING OUR GREEN BUILDING APPROACH

We aimed to incorporate the highest levels of sustainable features in all aspects of three campuses: the new North American headquarters campus in Plano, Texas; the new Production and Engineering Manufacturing Center in Georgetown, Kentucky; and the new Supplier Center in York Township, Michigan. These are the key steps we took as we progressed through designing, constructing and commissioning our new campus:

- Set project-specific sustainability **vision and aspirational goals**.
- Addressed Toyota Motor North America's four environmental focus areas of **Carbon, Water, Materials** and **Biodiversity**.
- Took an **integrated and holistic design and delivery approach** to ensure participation from designers, engineers, contractors and user stakeholders at project conception and continually through completion and commissioning.
- Challenged the project team to be innovative and aspire for leadership in environmental sustainability.
- Reviewed various third-party certification programs for their best practices and guidance.
- Used a **deductive approach** rather than an additive approach to sustainability.
- Evaluated possibilities and implemented options based on long-term environmental performance and financial value as well as initial cost.



Toyota's North American headquarters campus was recognized by the U.S. Green Building Council with the award of three LEED Platinum® certifications.

For all three campuses, the **vision and goals** were set at the very beginning. These included visions of being net positive for renewable energy and net positive for water. Net positive means we would generate more electricity than we use and collect more rainwater than the total amount of water we use. In fact, as part of the Request for Proposal process, candidate architectural firms had to describe how their company and their design would address and respond to these visions of net positive. They had to show how closely they could design a campus that moved beyond just minimizing environmental impacts to one that actually would have a positive impact on the local community.

Integrated sustainability was incorporated into the very early stages of conceptual design using a **deductive approach**. This meant that we aimed to leave “no stone unturned” in looking at incorporating sustainable design and systems opportunities. All options were discussed and evaluated from the beginning.

While every option was discussed, not everything made sense for the project. For instance, using a geothermal system to assist the Plano buildings’ cooling system seemed like a good idea to reduce electricity consumption. A good idea, that is, until analysis showed, due to the heavy cooling load imposed by the hot northern Texas summer, the ground temperature would be raised by two degrees!

Wind power in Texas seemed to make sense until we realized the wind turbine blades would be more than 300 feet in diameter and their noise level would not be so neighborly.

EARNING LEED PLATINUM®

Our efforts have been recognized by the U.S. Green Building Council with the award of three LEED Platinum® certifications for the Plano campus, plus LEED Platinum certifications for PEMC and the Supplier Center in York Township.

Examples of features that earned LEED Platinum certifications include:

- **CARBON** — All three locations installed solar photovoltaic panels to generate renewable energy that supports their electrical needs and reduces their carbon footprint. At PEMC, we installed a 436 kilowatt solar photovoltaic system. Additionally, the mega-trellis design of the façade minimizes heat gain in the summer and maximizes it in the winter for energy efficiency.
- **WATER** — At the Plano headquarters campus, we installed a rainwater harvesting system that at the time of installation was the largest commercial system in the U.S. The collected rainwater provides water for landscaping irrigation.
- **MATERIALS** — During construction of the Plano campus, we recycled 99 percent of the construction and demolition waste and were the first customer at the first construction and demolition recycling processing facility in northern Texas.
- **BIODIVERSITY** — The Supplier Center’s biodiversity program earned a Conservation Certification from the Wildlife Habitat Council in 2017. The site has a large storm water retention pond supporting migratory birds and other species, and a grasslands and wildflower habitat area covers 76 acres.

And, many of our dealers have followed our lead. In fact, we have more Toyota/Lexus LEED-certified dealerships than our competitors combined.

LOOKING AHEAD

We've learned a great deal from these experiences, and we are applying our learning to other projects. We continue to refine our approach to green building, looking for ways to minimize the environmental footprint of our buildings and maximize our positive impacts. Not all projects will pursue LEED certification, but all will aim to incorporate sustainable features to the greatest practical extent.

These actions support the Toyota Environmental Challenge 2050, which aims to go beyond merely minimizing environmental impact to creating net positive change. We look forward to sharing additional green building successes in the future, including the renovation of our vehicle logistics facility at the Port of Long Beach in California, the construction of a new visitor center at the assembly plant in Mississippi, and the construction of a new parts distribution center in Clarington, Ontario. All three projects are submitting for LEED® certification.



The Toyota Supplier Center in York Township, Michigan, was awarded Platinum LEED® in April 2019.



The Toyota Production Engineering and Manufacturing Center in Georgetown, Kentucky, was awarded Platinum LEED® in April 2019.



Mark Yamauchi
LEED AP®
Manager, Environmental Sustainability
Toyota Motor North America, Inc.