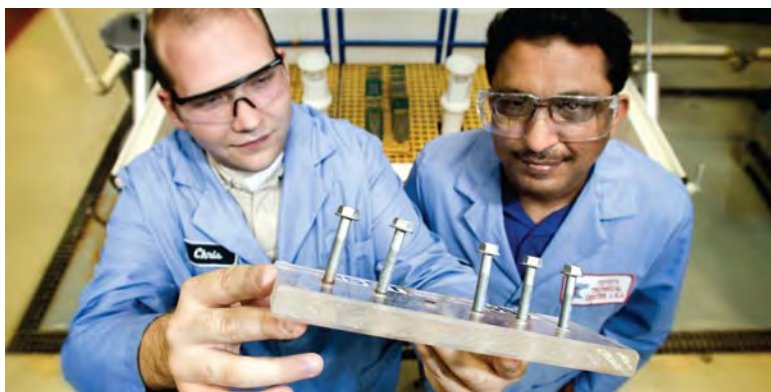


TOYOTA |

2008 North America Environmental Report

Challenge, Commitment, Progress



TOYOTA | table of contents

The Toyota Corolla is assembled at our plant in Cambridge, Ontario. Over two million Corollas have been built in Canada since the plant opened in 1986.



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SCOPE OF THIS REPORT:

The period covered in this North America Environmental Report is fiscal year 2008 (April 1, 2007 through March 31, 2008) and product model year 2008. If data are presented with different dates, this is clearly indicated. This report was published in December 2008.

We report on our progress against our FY2007-2011 Environmental Action Plan. We also provide information on our company's overall economic investment in North America. This report covers activities across the North American region — the United States, Canada and Mexico.

This report is available on the Web, and is also published in hard copy. A French version is provided on the Web only. We listened to your comments and suggestions about last year's report, and used them to improve this report. We would appreciate hearing from you again. There is a comments/feedback link provided on the Web.

CONTACT TOYOTA MOTOR NORTH AMERICA, INC.

Environmental Report Manager | 601 13th Street NW, Suite 910 South, Washington, D.C. 20005 | Email: environmentalreport@tma.toyota.com | © 2008
www.toyota.com | www.toyota.ca | www.toyota.com.mx

TOYOTA | dear reader

WE ARE PLEASED to present our eighth annual Toyota North America Environmental Report. We hope this report conveys our continuing commitment to the environment as a central tenet of our management policy.

Over the past year, we saw a convergence of will from industry, government and society to respond to climate change and to address our collective footprint on the planet. It is clear that the mix of limited resources, rising temperatures and an increasing global population that wants to be mobile demands an innovative and sustainable response. As an auto manufacturer, Toyota believes that “sustainable mobility” can be achieved through advanced technologies, key partnerships and creative people who are willing to take on this most important challenge.

We recognize the need to balance economic growth with the needs of society and the environment. This view is embodied in our management philosophy, The Toyota Way, which guides our actions in designing, building and distributing our products and services. From waste reduction to recycling to resource management and producing cleaner, more efficient technologies, we are striving to reduce the environmental impact of our products and operations.

Early in 2008, global sales of the Prius reached one million units, and we estimate that the effect of these vehicles has been a reduction of some 4.5 million tons of carbon dioxide, the most common greenhouse gas that causes global warming.



The Lexus RX 400h is one of six full hybrids in the Toyota/Lexus lineup. Since it was launched in 2005, over 68,000 have been sold in North America.

Toyota is now working hard to achieve our vision of sustainable mobility that includes sales of one million hybrids per year by the 2010s. At the same time, we are continually improving and expanding our hybrid production to deliver hybrid versions of all Toyota models in the 2020s. Next year alone, we plan to introduce two all-new, dedicated hybrids, including the third-generation Prius. In 2010, we will begin production of the Prius in the United States.

Moving forward, we are accelerating our global plug-in hybrid development program. This program will produce a fleet of plug-in hybrid vehicles that are powered by lithium-ion batteries with higher energy output. As part of this effort, we established a battery research department to develop an innovative next-generation battery that can outperform



Yukitoshi Funo

Yukitoshi Funo
Chairman and Chief Executive Officer
Toyota Motor Sales, U.S.A., Inc.



Jim Lentz

Jim Lentz
President
Toyota Motor Sales, U.S.A., Inc.



S. Hayakawa

Shigeru Hayakawa
President
Toyota Motor North America, Inc.



Dian D. Ogilvie

Dian Ogilvie
Senior Vice President & Secretary
Toyota Motor North America, Inc.

current lithium-ion battery technology. We are also working with a wide range of partners to evaluate the technology and infrastructure needs for today and tomorrow. In addition to plug-in hybrids, we successfully tested a hydrogen fuel-cell hybrid vehicle in a landmark trip from Fairbanks, Alaska, to Vancouver, British Columbia — some 2,300 miles on hydrogen alone — with the only emissions consisting of water vapor.

Toyota spends an average of nearly \$1 million an hour on research and development to develop the cars and technologies of the future. To maintain our global environmental leadership, we will redouble our efforts and substantially increase research and development spending over the next decade.

In addition to our advanced technology vehicles, Toyota is the most fuel-efficient full line manufacturer. For the 2008 model year, we offer six gasoline cars that are rated to better than 30 miles per gallon on highways: Corolla, Camry (four cylinder), Solara, Matrix, Yaris and Scion xD. With better-than-average fuel economy and high sales volumes, these vehicles contribute to greenhouse gas reductions much like our hybrid lineup.

Beyond vehicles, we have made strides in improving the sustainability of our manufacturing plants and minimizing our impact on the ecosystems we rely upon. Our plant in Tupelo, Mississippi, will include an eco-efficient assembly line, and our entire manufacturing division has slashed its energy use by more than 20% since FY2001 — despite an increase

in production, facility expansions and construction of new plants. In March of this year we launched *TogetherGreen*, a National Audubon Society program that funds conservation projects, trains environmental leaders, and offers volunteer opportunities across the nation. Toyota provided a \$20 million grant for this program, the largest donation in the Audubon Society's history.

We realize that the road to sustainable mobility is a long one, but we are ready and willing to go the distance. Our best resource to achieve this is our people — Toyota's creative and dedicated employees who will pave the way to a sustainable future. We have created a long-term plan for where we need to be called *Global Vision 2020*, and are working on achieving the goals and targets in our FY2007 — 2011 Environmental Action Plan (EAP) in the near term. This report describes the progress we have made on our current EAP, across six key areas:

- Energy and Climate Change
- Recycling and Improved Resource Use
- Substances of Concern
- Air Quality
- Environmental Management
- Cooperation With Society

Our hope is that this report illustrates our efforts in both an interesting and informative manner, and we welcome your feedback on its content.



Tetsuo Agata

Tetsuo Agata
President & Chief Operating Officer
Toyota Motor Engineering &
Manufacturing North America, Inc.
Senior Managing Director
Toyota Motor Corporation



Shigeki Terashi

Shigeki Terashi
Managing Officer
Toyota Motor Corporation
President
Toyota Technical Center
Executive Vice President
Toyota Motor Engineering &
Manufacturing North America, Inc.



Ray Tanguay

Ray Tanguay
Executive Vice President
Toyota Motor Engineering &
Manufacturing North America, Inc.



Yoichi Tomihara

Yoichi Tomihara
President and Chief Executive Officer
Toyota Canada Inc.

TOYOTA

environmental vision & action

Toyota's environmental vision includes working with communities to preserve the local environment.

Dr. Akira Miyawaki, a world renowned ecologist, is working with Toyota and a team of local wildlife biologists, foresters, ecologists and environmental professionals to replant native tree and plant species that will lead to the re-creation of natural forest on areas of our new manufacturing plant site in Blue Springs, Mississippi.



“Toyota is pursuing its vision of a mobile society in harmony with the environment through a comprehensive strategy of sustainable mobility.”

– Katsuaki Watanabe, President
Toyota Motor Corporation



The foundation of our success involves a constant spirit of challenge and an unwavering enthusiasm to seek and implement new ideas. Toyota hopes that its values will serve society and nurture the ideal of sustainable mobility.

TOYOTA IN NORTH AMERICA has experienced rapid growth over the last decade, and we expect that growth to continue in the future. This means selling more vehicles, employing more people and operating more manufacturing plants.

Our activities impact the environment, so we develop five-year environmental action plans to guide us in managing these impacts. We set goals and targets that address issues such as energy use, greenhouse gas (GHG) emissions, waste disposal, product design and substances of concern.

Our success in achieving our targets is largely due to the empowerment of individuals and teams throughout the organization. Each Toyota employee is encouraged to be bold and creative, and to work with others in seeking solutions to environmental problems. We take a long-term view, making small incremental changes that, over time, add up to big wins.

Throughout this report, we provide examples of how we continuously improve our processes and products in order to manage our environmental footprint. We also show how we have asked our business partners, namely our suppliers and dealerships, to work with us to lighten our footprint at all stages of the vehicle's life cycle.

Beyond how a vehicle is designed, built and sold, we must also address concerns about congestion, inadequate infrastructure, land use, noise, pollution and reliance on petroleum. To do so, we must strive for sustainable mobility. To Toyota, sustainable mobility means considering the urban environment; partnering with other industry sectors, government and academia to bring new vehicle technologies to market; and looking to solve the energy challenges surrounding the use of advanced technology vehicles. We are pursuing a variety of avenues to achieve this vision of sustainability.

▶ **ENVIRONMENTAL COORDINATION**

Figure A below illustrates environmental coordination and management for Toyota in North America. Our North American Environmental Committee (NAEC) and its associated working groups serve to implement our corporate principles, establish strategy and policy in North America, and generally coordinate Toyota's environmental activities in North America. The committee comprises the Chief Environmental Officer from each North American affiliate (pictured below), as well as key executive coordinators from Toyota Motor Corporation in Japan. The committee's working groups comprise environmental representatives

CHIEF ENVIRONMENTAL OFFICERS



Stephen Beatty
Managing Director
Toyota Canada, Inc.



Kevin M. Butt
General Manager
Toyota Motor Engineering & Manufacturing North America, Inc.



Josephine S. Cooper
Group Vice President, Public Policy and Government/Industry Affairs
Toyota Motor North America, Inc.



Christopher P. Reynolds
Group Vice President and General Counsel
Toyota Motor Sales, U.S.A., Inc.

FIGURE A



FIGURE B

TOYOTA'S GUIDING PRINCIPLES

ADOPTED JANUARY 1992, REVISED APRIL 1997

1. Honor the language and spirit of the law of every nation and undertake open and fair corporate activities to be a good corporate citizen around the world.
2. Respect the culture and customs of every nation and contribute to economic and social development through corporate activities in local communities.
3. Dedicate ourselves to providing clean and safe products and to enhancing the quality of life everywhere through our activities.
4. Create and develop advanced technologies and provide outstanding products and services that fulfill the needs of customers worldwide.
5. Foster a corporate culture that enhances individual creativity and teamwork value, while honoring mutual trust and respect between labor and management.
6. Pursue growth in harmony with the global community through innovative management.
7. Work with business partners in research and creation to achieve stable, long-term growth and mutual benefits, while keeping ourselves open to new partnerships.

TOYOTA'S EARTH CHARTER (APRIL 2000)

The Toyota Earth Charter, published in 1992 and updated in 2000, describes Toyota's Basic Action Policy and Action Guidelines regarding environmental improvements.

I. BASIC POLICY

1. Contribute toward a prosperous 21st century society

Aim for growth that is in harmony with the environment, and set a challenge to achieve zero emissions throughout all areas of business activities.

2. Pursue environmental technologies

Pursue all possible environmental technologies, developing and establishing new technologies to enable the environment and economy to coexist.

3. Take action voluntarily

Develop a voluntary improvement plan based on thorough preventive measures and compliance with laws, that addresses environmental issues on global, national and regional scales, while promoting continuous implementation.

4. Work in cooperation with society

Build close and cooperative relationships with a wide spectrum of individuals and organizations involved in environmental preservation, including governments, local municipalities and related companies and industries.

II. ACTION GUIDELINES

1. Always be concerned about the environment

Work toward achieving zero emissions at all stages, i.e., production, utilization and disposal;

Develop and provide products with top-level environmental performance;

Pursue production activities that do not generate waste;

Implement thorough preventive measures;

Promote businesses that contribute toward environmental improvement.

2. Business partners are partners in creating a better environment

Cooperate with associated companies.

3. As a member of society

Actively participate in social actions;

Participate in creation of a recycling-based society;

Support government environmental policies;

Contribute to nonprofit activities.

4. Toward better understanding

Actively disclose information and promote environmental awareness.

from each North American affiliate. The NAEC oversees development of the consolidated Five-Year North American Environmental Action Plan and the publishing of this report. In addition, each of Toyota's North American affiliates has established an individual environmental governance and management structure.

▶ TOYOTA'S GUIDING PRINCIPLES AND EARTH CHARTER

Seven Guiding Principles serve as the fundamental management policy for Toyota's operations worldwide. The principles reflect Toyota's commitment to providing clean, safe and innovative products, while respecting the environment and culture of the local communities in which we operate. These principles also form a foundation for Toyota's Earth Charter (please see Figure B above). To learn more about how the Guiding Principles and Earth Charter are put into action, please visit www.toyota.co.jp/en/mission/index.html.

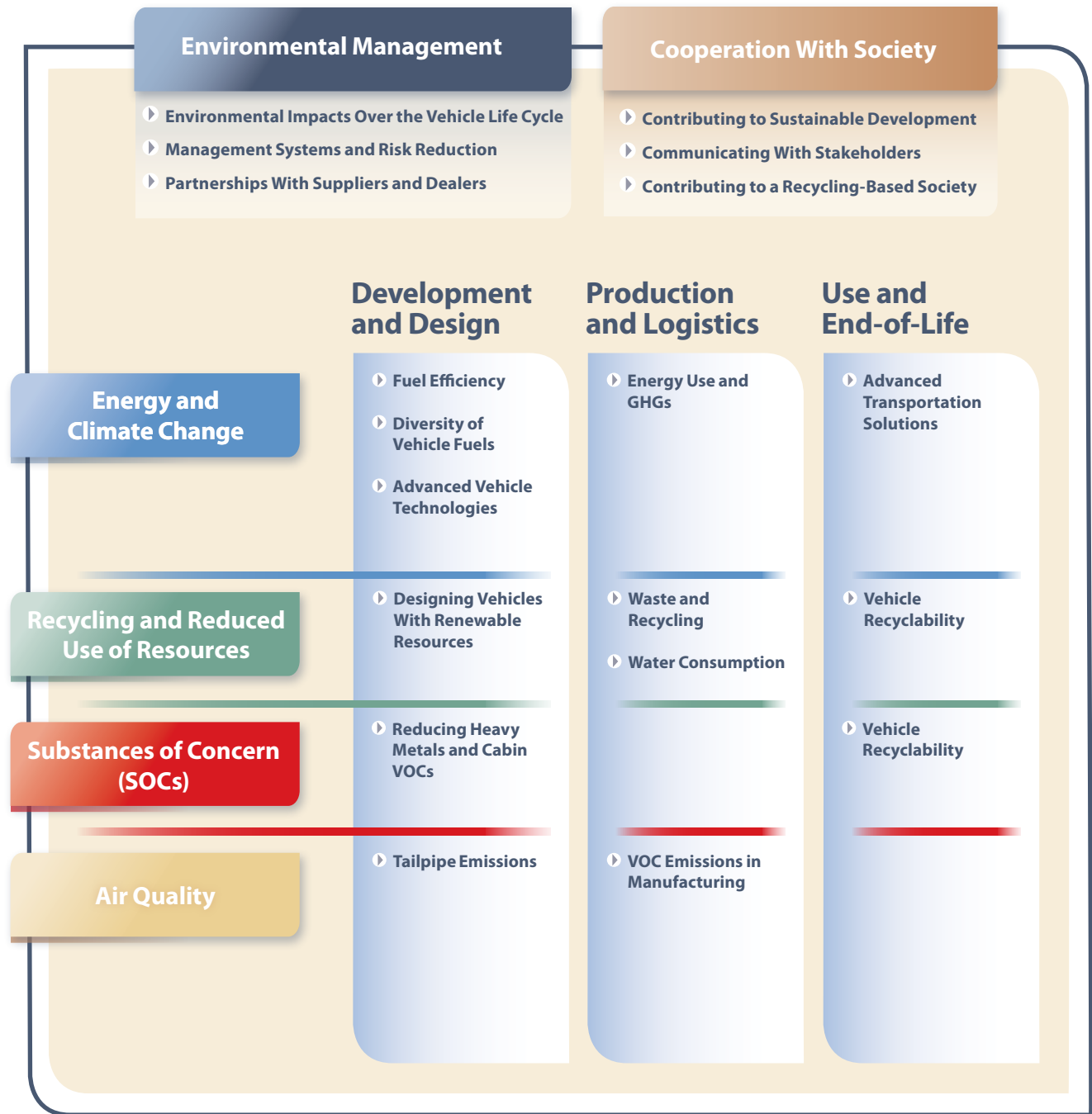
▶ ENVIRONMENTAL IMPACTS AT ALL POINTS OF THE VEHICLE LIFE CYCLE

We think holistically about environmental impacts at each life cycle stage and across all aspects of our business. Automobile environmental impacts can range from climate change and dwindling natural resources to smog, noise and water pollution. If the automobile is to remain beneficial to societies and economies, we need to consider its impacts in development, production and logistics, use, and in disposal and recycling. Based on our understanding of the full vehicle environmental life cycle, and on feedback from experts within and outside Toyota, we have identified six environmental areas that we consider to be most material to our environmental footprint, and these areas structure this report. Figure C to the right illustrates where these six areas are addressed in each vehicle life cycle stage.

FIGURE C

TOYOTA'S COMMITMENT TO THE ENVIRONMENT SPANS THE VEHICLE LIFE CYCLE

Toyota's Environmental Action Plan (EAP) reflects a commitment to addressing our environmental footprint. The EAP includes goals and targets that help us manage key challenges in the areas of Energy and Climate Change, Recycling and Reduced Use of Resources, Substances of Concern and Air Quality. We address these four areas across our business, in each vehicle life cycle stage. Our actions are guided by sound environmental management practices and enhanced by cooperating with stakeholders. Each year, we describe our progress against the EAP goals and targets through this report.



ENVIRONMENTAL ACTION PLAN

Our Five-Year Environmental Action Plan (EAP) is presented in Figure D below. The EAP is structured around six key environmental areas, with several goals that address our impacts. Each goal has one or more targets that were established to ensure progress toward the goal.

This report describes the progress we have made in the first year of this five-year EAP. The status of many of our targets is "In Progress"; we will continue to work toward achieving these targets over the next three years.

FIGURE D

CONSOLIDATED SUMMARY OF SECOND TOYOTA NORTH AMERICAN ENVIRONMENTAL ACTION PLAN (FY2007-FY2011)		
GOALS AND TARGETS	STATUS	PAGE
ENERGY AND CLIMATE CHANGE		
GOAL 1: Promote the development of technologies to achieve best-in-class fuel efficiency performance		
Targets:		
1.1 Annually meet or exceed CAFE and CAFV standards in U.S. and Canada, respectively	●	13, Fig. E
1.2 Continue development and deployment of fuel-efficient technologies through the proactive engagement of stakeholders	○	15
GOAL 2: Introduce vehicle technologies, which support the diversification of energy and fuel sources		
Targets:		
2.1 Promote awareness of the CO ₂ reductions and energy security benefits of bio and synthetic fuels	○	16
2.2 Partner with industry and government to identify and solve challenges toward full-scale commercialization of alternatively fueled vehicles	○	16
GOAL 3: Promote the development of clean-energy vehicles and ensure wider market acceptance		
Target:		
3.1 Demonstrate feasibility, support necessary infrastructure development, and advocate policies that promote progress toward full-scale commercialization of advanced vehicle technologies	○	17
GOAL 4: Promote initiatives to reduce traffic congestion through a variety of networking technologies		
Target:		
4.1 Provide advanced transportation solutions by integrating on-vehicle Intelligent Traffic System (ITS) technologies that allow drivers to communicate with public information systems	○	19
GOAL 5: Understand current CO₂ emissions volumes from North American operations and take action to reduce emissions		
Targets:		
MANUFACTURING		
5.1 Using FY2002 as a base year, reduce total energy usage of manufacturing facilities/operations in North America by 27% per vehicle produced to 6.3MMBTU/vehicle produced	○	19, Fig. I
5.2 Meet or exceed AAM Climate VISION target of a 10% reduction in CO ₂ emissions per vehicle from U.S. assembly operations by CY2012 (CY2002 base year)	●	20, Fig. J
SALES AND LOGISTICS		
5.3a By fiscal year 2011, reduce energy consumption of U.S. facilities by 18% compared to FY2001 baseline	●	21
5.3b By fiscal year 2011, reduce energy consumption of U.S. facilities by 35% compared to FY2001 baseline	○	21, Fig. K
5.4 Achieve 10% reduction in energy consumption from all Toyota Canada facilities by 2010	○	21
5.5 Track greenhouse gas emissions resulting from U.S. vehicle and parts logistics and continue to evaluate logistics-related emissions reduction methods (e.g., modal shifts, new technologies)	○	21
RECYCLING AND REDUCED USE OF RESOURCES		
GOAL 6: Further promote and apply the Design for Recycling (DfR) concept		
Target:		
6.1 Evaluate new materials from renewable resources (Toyota Eco-Plastic, natural fiber, recycled plastics, etc.) toward further introduction of eco-friendly parts	○	23
GOAL 7: Reduce waste and the need to recycle material throughout all operations and processes		
Targets:		
MANUFACTURING FACILITIES		
7.1 Reduce compensated waste (nonhazardous waste plus materials Toyota pays to be recycled) to 30 kg/vehicle	●	24, Fig. L
7.2 Maintain near-zero waste to landfill	●	24
NONPRODUCTION FACILITIES: Vehicle Design Facilities:		
7.3 Achieve zero hazardous landfill and reduce nonhazardous waste toward zero landfill	○	25
SALES AND LOGISTICS FACILITIES		
7.4 Recycle 65% of Toyota Motor Sales Headquarters waste in FY2008	●	25
7.5 Divert 95% waste from Toyota Canada main campus from landfill by FY2010	○	25
7.6 Reduce Toyota Canada facility paper consumption per person by 25% by FY2010	○	25
7.7 Reduce nonhazardous waste to landfill from U.S. North American Parts Operations by 33% from FY2006 baseline by FY2011	●	26
7.8 Achieve a 90% recycling rate at U.S. Toyota Logistics Services by FY2011	●	26
GOAL 8: Reduce water consumption		
Targets:		
MANUFACTURING:		
8.1 Reduce water usage to 0.98 kgal/vehicle	●	26, Fig. M
SALES AND LOGISTICS		
8.2 For U.S. facilities, evaluate baseline in FY2008 and set reduction targets in FY2009, focusing on areas where water is most scarce	○	27
8.3 Achieve 10% water consumption reduction from Toyota Canada facilities by 2010	○	27

At the beginning of each chapter, we restate the relevant targets from this EAP. Throughout the report, we highlight key sentences that indicate whether a target has been achieved, is still being worked on or has been missed. These sentences are in bold and are followed by the target number from the EAP below.

EAP Target Status:

- Achieved
- In Progress
- ⊗ Missed

GOALS AND TARGETS	STATUS	PAGE
SUBSTANCES OF CONCERN		
GOAL 9: Promote management and further reduce the use of substances of concern (SOCs)		
Targets:		
9.1 Reduce the use of mercury, lead, cadmium and hexavalent chrome in OEM and service parts and accessories to the <i>de minimis</i> levels in the EU Directive	●	29
9.2 Identify and solve challenges toward effective management of additional vehicle SOCs	○	29
9.3 Facilitate suppliers' SOC tracking and verification via the International Material Data System (IMDS) and support the development of SOC alternatives	○	29
9.4 Develop and implement alternative materials to reduce vehicle cabin VOC levels	○	29
AIR QUALITY		
GOAL 10: Reduce emissions to improve air quality in urban areas		
Targets:		
10.1 Meet all applicable emissions standards, including Tier 2 and LEV II new vehicle certification standards	●	31
10.2 Maintain leading level in-use vehicle emissions compliance performance	○	32
10.3 Promote the development of ultra low emissions technologies and introduce the lowest emitting vehicles	○	32
GOAL 11: Implement initiatives to reduce and track VOC usage and emissions		
Targets:		
11.1 <i>Vehicle Painting:</i> Reduce body painting VOCs to a corporate average of 14.0 g/m ²	●	33, Fig. O
11.2 <i>Vehicle Plastics:</i> Determine a VOC baseline in FY2006 and set plant targets that begin in FY2007	●	33
ENVIRONMENTAL MANAGEMENT		
GOAL 12: Steadily reduce the environmental impact of Toyota vehicles over their product life cycle		
Target:		
12.1 Introduce implementation of Eco-Vehicle Assessment System (VAS) on all new or redesigned vehicle models beginning in CY2007	○	35
GOAL 13: Strengthen consolidated environmental management by incorporating environmental measures at the planning stages of a product or process		
Targets:		
NA OPERATIONS – ALL		
13.1 Minimize environmental risks and achieve leading levels of environmental performance	○	35, 36
13.2 Zero annual notices of violation and complaints	●	35
13.3 Consider LEED® (Leadership in Energy and Environmental Design) certification for new buildings/remodeling	○	36
MANUFACTURING:		
13.4 Develop eco-plant plans for all new production facilities (designing plants to minimize environmental impacts)	○	36
SALES AND LOGISTICS		
13.5 Maintain ISO 14001 certification at U.S. vehicle and parts logistics facilities	●	35
13.6 Achieve ISO 14001 registration at two remaining (of nine total) Toyota Canada facilities by the end of 2007	●	36
GOAL 14: Enhance and further promote environmental management systems for business partners		
Targets:		
14.1 SUPPLIERS: Update Toyota environmental requirements (Green Supplier Guidelines) for U.S. manufacturing suppliers	●	37
14.2 DEALERS: Implement U.S. Dealer Environmental Training Program (HazMat, environmental, pollution prevention)	○	37
COOPERATION WITH SOCIETY		
GOAL 15: Actively contribute to sustainable development efforts		
Targets:		
15.1 Strengthen Toyota's North American philanthropy efforts toward environmental/sustainable development projects and partnerships that contribute to development of new technologies, education and the preservation of biodiversity	○	39
15.2 Toyota Canada to maintain 25% of total philanthropic contributions directed toward environmentally focused programs	●	39
15.3 Promote basic environmental research aimed at CO ₂ emissions reductions	○	42
GOAL 16: Enrich stakeholder communications		
Target:		
16.1 Increase the transparency of Toyota's environmental plans, activities and performance by strengthening environmental communication with government agencies, eNGOs, business partners and local communities	○	42
GOAL 17: Contribute to the development of a recycling-based society		
Targets:		
17.1 Launch at least 100 additional remanufactured parts applications per year	⊗	43
17.2 Expand the availability of environmentally preferable paper in U.S. sales and marketing operations	●	43
17.3 Encourage the safe and environmentally appropriate disposal of tires by dealers through the TMS Tire Program	○	43

TOYOTA |

energy & climate change

Toyota recently completed a 2,300-mile trek in an advanced prototype of the new Toyota FCHV along the Alaska-Canadian (ALCAN) highway. The vehicle withstood rough road conditions and severe weather, and performed perfectly.



“We at Toyota are keenly aware that without focusing on energy and global warming measures, there can be no future for motor vehicles.”

– Josephine S. Cooper, Group Vice President
Public Policy and Government/Industry Affairs
Toyota Motor North America, Inc.



ENERGY & CLIMATE CHANGE EAP TARGETS

- | | | |
|---|--|---|
| <ul style="list-style-type: none"> 1.1 ● Annually meet or exceed CAFE and CAFC standards 1.2 ○ Continue development and deployment of fuel-efficient technologies 2.1 ○ Promote awareness of bio and synthetic fuels 2.2 ○ Partner with industry and government to identify and solve challenges toward full-scale commercialization of alternatively fueled vehicles | <ul style="list-style-type: none"> 3.1 ○ Demonstrate feasibility of full-scale commercialization of advanced vehicle technologies 4.1 ○ Provide advanced transportation solutions 5.1 ○ Reduce total energy usage in manufacturing in North America by 27% per vehicle produced 5.2 ● As per AAM Climate VISION, reduce CO₂ emissions 10% per vehicle from U.S. assembly operations by CY2012 | <ul style="list-style-type: none"> 5.3a ● Reduce energy consumption of U.S. logistics facilities by 18% by FY2011 5.3b ○ Reduce energy consumption of U.S. logistics facilities by 35% by FY2011 5.4 ○ Reduce energy consumption by 10% from all Toyota Canada facilities by 2010 5.5 ○ Track greenhouse gas emissions from U.S. vehicle and parts logistics and continue to evaluate emissions reduction methods |
|---|--|---|

ENSURING AN ADEQUATE SUPPLY OF ENERGY is rapidly shaping up to be one of the primary societal challenges of the 21st century. Around the world, record-setting petroleum prices and the economic strain they have caused have grabbed news headlines and the public's attention. Everyone is looking for a solution to the increasingly high cost of energy. That high cost has pervaded nearly every aspect of our daily lives — the goods we buy, the food we eat, and the transportation we use.

At Toyota, we believe an important cost of energy is the negative impact it can have on the environment. Not only is petroleum a limited resource that has become increasingly expensive, but consumed as a fuel, it emits CO₂, a primary greenhouse gas and contributor to climate change. The societal threat posed by climate change could eventually be more disrupting than the current high price of fuel. Therefore, a sustainable solution must include not only the pursuit of new energy sources, but sources that are also clean and renewable. Since any source of energy will entail costs, a sustainable solution must also include conservation and more efficient ways to use whatever source is selected.

Toyota strives to lead by example. As the footprint of our operations, the breadth of our product offerings and the volume of our sales in North America have expanded, so, too, has our effort to carefully manage the energy we consume and the greenhouse gases we emit.

For example, since 2003 Toyota's annual vehicle sales have climbed from 1.9 to 2.9 million units. Over that same period, we have been able to improve the estimated fleet average fuel economy of our new cars and trucks by 9% based on Toyota's overall Corporate Average Fuel Economy (CAFE) values for the 2003 and 2007 model years. We have added four new manufacturing plants in North America over the past 10 years as annual production has increased by 700,000 units. Over that same 10 year period, we have been able to reduce the amount of energy required to produce a vehicle by 27%.

These results exemplify our pursuit of sustainable mobility. Our actions are dictated by Toyota's Earth Charter and Five-Year Environmental Action Plan. The goals and targets in our FY2011 Environmental Action Plan challenge us to innovate more efficient ways to design, build, distribute and sell our

products, and to explore using renewable energy sources for these processes. Our Action Plan also calls for us to assist in the research, development and commercialization of vehicles that squeeze more mileage out of a tank of gasoline and operate on a diverse array of energy sources such as biofuels, electricity and hydrogen.

Technology will be a key factor in meeting the world's energy needs in a sustainable manner. Since a single solution is unlikely, we are pursuing a broad portfolio of technical approaches. In sum, we are continuously searching for *kaizens*, small incremental steps of continuous improvement, that lead to new ways to save energy and reduce GHG emissions. Small savings add up. We are conducting GHG emissions inventories and energy audits to monitor our progress. Our business partners such as suppliers and dealers share our commitment. Finally, we are trying to educate consumers on how they can be part of the solution.

Our targets in the areas of fuel efficiency, fuels diversity, advanced vehicle technologies, energy and greenhouse gases are listed above, and described in this chapter.

▶ VEHICLE FUEL EFFICIENCY

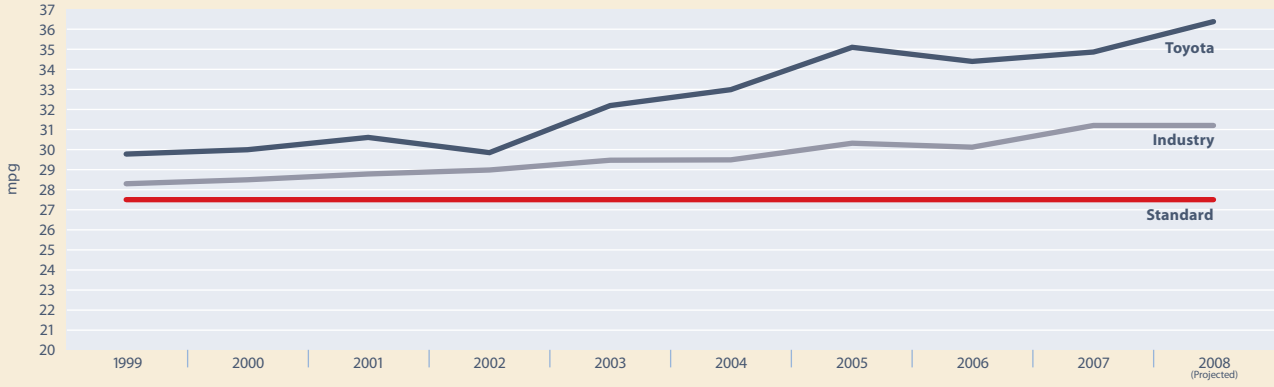
In the U.S., fuel efficiency of new cars and trucks is regulated through the CAFE standards. Today, the CAFE standard is 27.5 miles per gallon (mpg) for cars and 22.2 mpg for trucks. A new law passed in December 2007 will increase the CAFE standard to at least 35 mpg by 2020 for the U.S. new vehicle fleet.

Transport Canada continues to set voluntary Corporate Average Fuel Consumption (CAFC) targets of 8.6 and 10.6 liters of fuel burned per 100 kilometers traveled for cars and trucks, respectively. **As shown in Figure E on the next page, we will exceed CAFE standards and CAFC targets for both passenger cars and light-duty trucks for the 2008 model year. (Target 1.1)**

The CAFE and CAFC programs seek to reduce energy/oil consumption through their respective vehicle fuel efficiency standards or targets. Other regulatory programs on the national, state and provincial levels aim to address climate change by reducing GHG emissions from vehicles and their fuels.

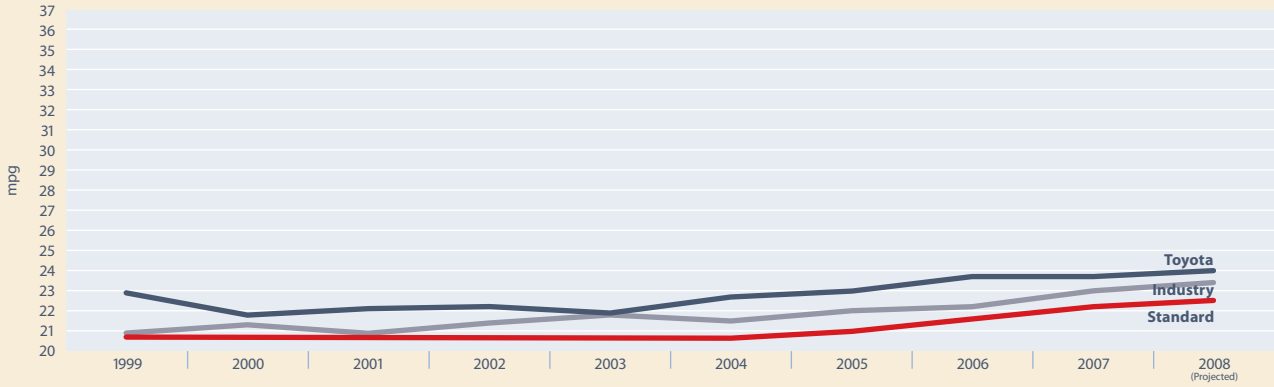
FIGURE E

U.S. Car Corporate Average Fuel Economy, or CAFE



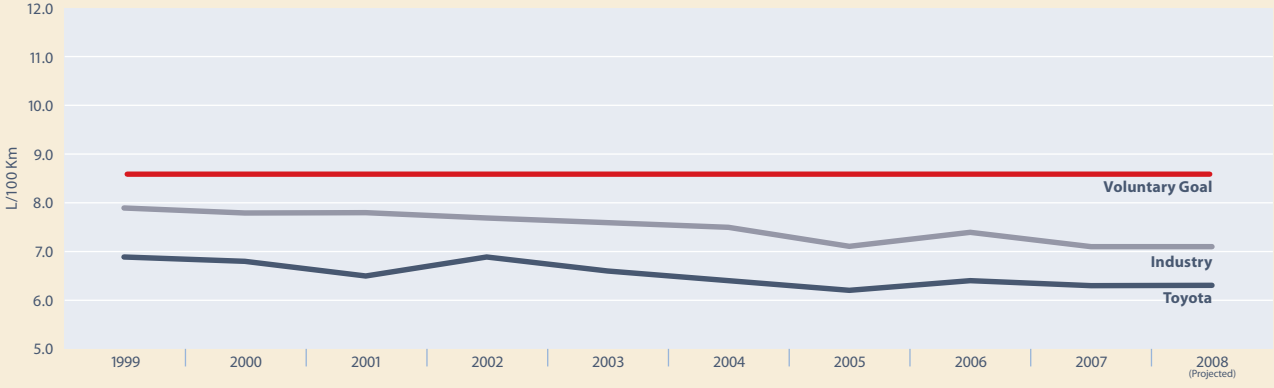
Indicates Better Performance

U.S. Truck Corporate Average Fuel Economy, or CAFE



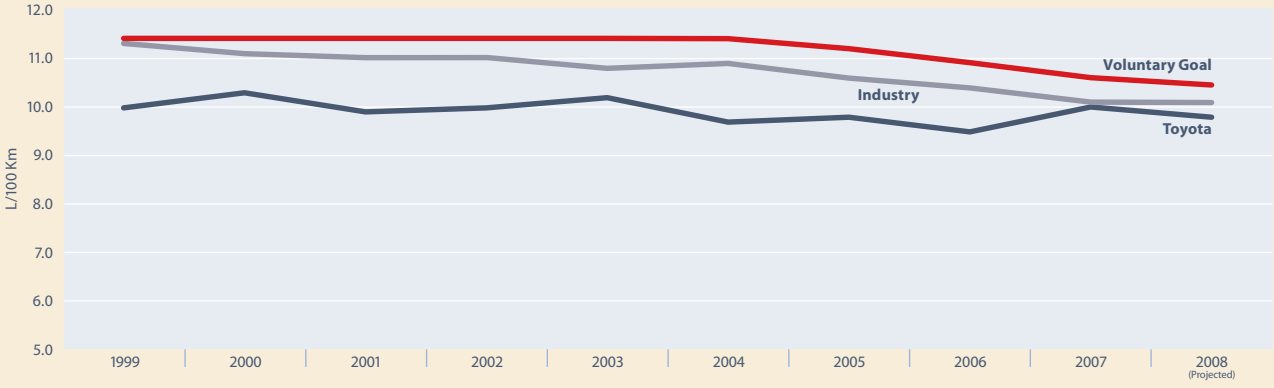
Indicates Better Performance

Canadian Car Company Average Fuel Consumption, or CAFC



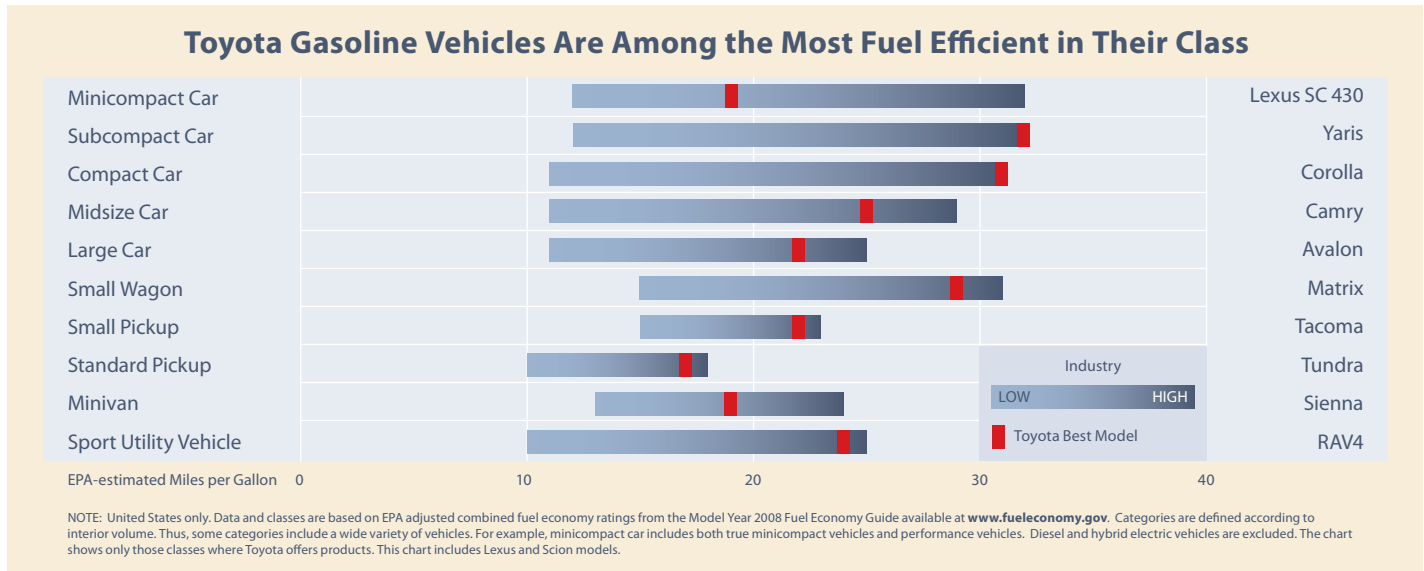
Indicates Better Performance

Canadian Truck Company Average Fuel Consumption, or CAFC



Indicates Better Performance

FIGURE F



Toyota is committed to working with the various regulatory agencies to develop consistent standards that improve vehicle efficiency for the benefit of energy security and climate change. It is most efficient to design, manufacture and sell our vehicles for the North American market as a whole. Approaches based on multiple regulatory requirements at both the federal and state/provincial levels will be challenging for technology and product planning, as well as the vehicle distribution process.

The most direct, immediate measure the auto industry can take to help meet the challenges posed by energy demand and climate change is to offer fuel-efficient products. Toyota offers the most fuel-efficient products of any full line manufacturer. Both the U.S. EPA's 2008 Fuel Economy Guide and the Natural Resources Canada Fuel Consumption Guide list the Toyota Prius as the most fuel-efficient vehicle available for sale in the U.S. and Canada respectively.

The government of Canada recognized the Toyota Yaris and Toyota Prius as recipients of the 2008 ecoENERGY for Vehicles awards as the most fuel-efficient vehicles in their respective classes. Plus, six of our vehicles are eligible for rebates offered by the Canadian government to promote the purchase of fuel-efficient vehicles: Toyota Prius, Toyota Camry Hybrid, Toyota Yaris, Toyota Corolla (manual transmission only), Toyota Highlander Hybrid and Lexus RX 400h.

We also help to meet the challenges posed by energy demand and climate change by developing technologies that improve fuel economy. (Target 1.2) We are revamping all of our conventional engines and transmissions over the next two years to achieve increased fuel economy, improved air quality and reduced CO₂ output. Toyota is considering several technologies for continued or new introduction including direct injection gasoline engines, forced induction systems and diesel engines.

We consider how material choices may impact fuel economy. The use of high strength steels leads to a reduction in the number of parts needed to build a vehicle, because the same properties can be achieved with fewer or lighter parts. The reduced mass leads to improved fuel efficiency. Toyota currently uses 590MPa or higher strength steel grades in all 2008 model year vehicles. In the spirit of continuous improvement, we are also developing other material choices.

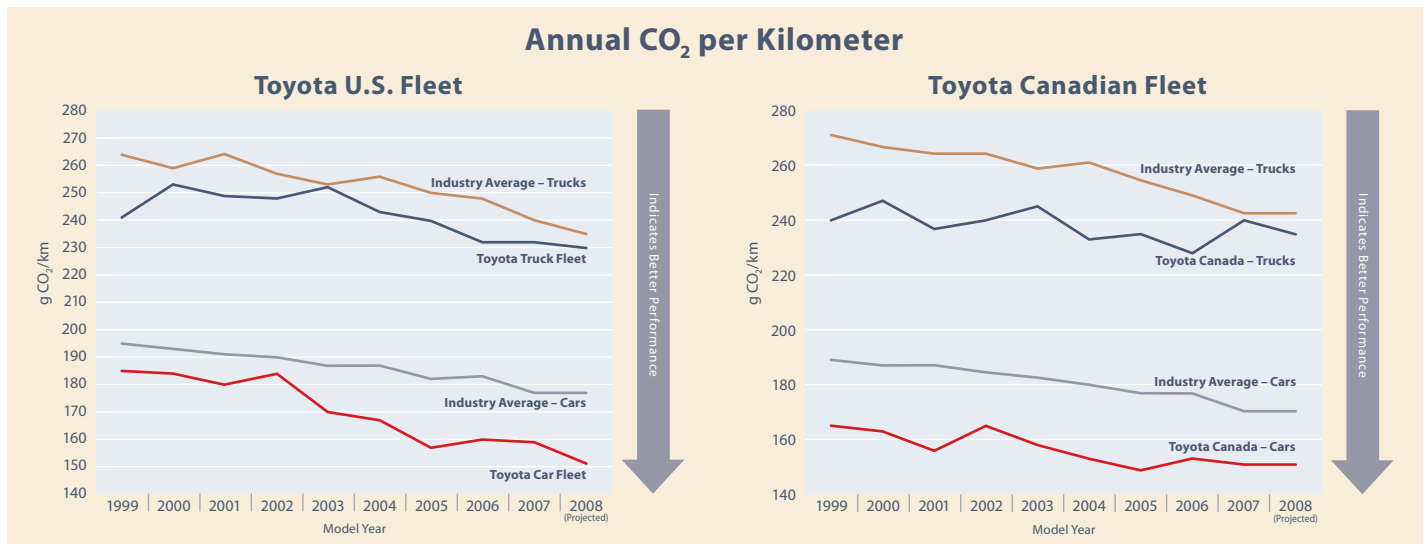
We also consider additional methods to enhance fuel efficiency. For example, low viscosity SAE 0W-20 multigrade gasoline engine oil enables increased fuel economy performance over traditional, higher viscosity oils by reducing friction while maintaining the necessary lubrication in the engine. SAE 0W-20 multigrade gasoline engine oil is now specified (for certain engines) in a number of Toyota, Lexus and Scion vehicles.

Recently, Toyota began using a lower viscosity differential gear oil in the Sequoia, Tacoma and Tundra. This led to a 1.5% improvement in fuel economy in each model. The introduction of lower viscosity transmission fluid in the Corolla and Matrix led to a 1% increase in each vehicle's fuel economy. While these improvements may seem minimal, they are representative of Toyota's philosophy toward continuous improvement.



Low viscosity SAE 0W-20 multigrade gasoline engine oil enables increased fuel economy performance over traditional, higher viscosity oils. SAE 0W-20 multigrade gasoline engine oil is now specified for certain engines in a number of Toyota, Lexus and Scion vehicles.

FIGURE G



CO₂ emissions from Toyota's new vehicles are below that of the industry average in both the U.S. and Canada, for both cars and light-duty trucks.

VEHICLE FUELS DIVERSITY

Toyota is investing in alternative-fuel vehicle technologies that will use a more diversified portfolio of energy and fuel sources. We are excited by the promise these alternative fuels offer to help meet the challenges posed by increasing energy demand and the threat of climate change. However, that excitement is tempered by the knowledge that continued advances are needed before these fuels can be commercialized broadly and reach their full potential. Therefore, we are not focusing on a single path away from conventional fuels; instead, we are exploring many alternatives, including biofuels from cellulose and renewably-generated hydrogen. **In last year's report, we described many of the leading alternative fuels and some of the challenges we are working to overcome. We provide additional information on ethanol below. (Target 2.1)**

Ethanol

Toyota is actively exploring greener alternatives to petroleum. One such option is ethanol, which currently makes up approximately 5% of the U.S. gasoline fuel pool. Presently, most U.S. ethanol is produced from corn in a relatively simple fermentation process. Unfortunately, studies have shown the benefits of corn ethanol are rather modest (~20% reduction in CO₂ emissions and some petroleum displacement), while the potential side effects are more extensive than initially anticipated (increased water use, farming runoff, higher food costs and federal subsidies). Additionally, most experts agree that corn ethanol can only displace about 10% of our gasoline consumption due to yield and cropland limitations.

To avoid corn's limitations, researchers for many years have been exploring ways to convert plant cellulose, the nonedible parts of plants, into ethanol. This can be done by using enzymes and microbes to convert the plant material into sugars that can be fermented into ethanol or by heating the biomass and thermally converting it into biofuels. Many cellulose to ethanol

conversion technologies are being explored in the lab, and some have been demonstrated on a small scale. But high capital costs and difficulties with process scale-up has slowed the development and construction of commercial scale facilities.

In 2007 and 2008, Toyota conducted studies with a pair of leading universities to examine current academic and national laboratory biofuels research. This work will help Toyota better understand the status of biofuel research and select particular fields that have the greatest potential to make biofuels, particularly ethanol, a success.

ADVANCED VEHICLE TECHNOLOGIES

We believe hydrogen fuel cells have the potential to provide practical, reliable and affordable zero-emission propulsion, but we recognize that true commercialization of hydrogen-based transportation is still years away. **Toyota is working with industry and government to solve the challenges surrounding full-scale commercialization of this technology. (Target 2.2)** Some of the programs we are involved with include the U.S. Department of Energy's demonstration program for hydrogen vehicles and infrastructure, the Society of Automotive Engineers' working groups to develop codes and standards for hydrogen infrastructure, and demonstration and evaluation programs with the University of California, Irvine's National Fuel Cell Research Center and Davis' Institute of Transportation Studies.

Toyota is investing in a variety of advanced vehicle technologies so that our future products will be ready to operate on the most promising of alternative fuels as they become available. On the next page, we describe our hybrid vehicles and how we promote wider market acceptance of this technology; plug-in hybrid vehicles and what we are doing to address challenges involving the battery; and fuel-cell hybrid vehicles and the accomplishments made in the past year.

Hybrid Vehicles

Toyota sees hybrid technology as a key component for improving the efficiency and minimizing the environmental impact of gasoline-powered vehicles, as well as an essential and enabling element of future powertrains. Toyota and Lexus combined have six full hybrid vehicles on the market. We will unveil two new dedicated hybrids at the 2009 North American International Auto Show in Detroit.

Worldwide, our goal is to sell one million hybrids a year by mid-next decade and offer a hybrid version of all our vehicles by the early 2020s. Toyota globally has sold more than one million Prius worldwide since it was first introduced. We estimate that the Prius vehicles in operation have helped avoid some 4.5 million tons of CO₂ emissions.

Toyota runs a number of campaigns and sponsors events aimed at building awareness and understanding of our hybrid technology. **These events promote the development of clean-energy vehicles and help ensure wider market acceptance. (Target 3.1)** Some of the events from the past year include:

- Lexus Hybrid Drive, Lexus Owner Events and Taste of Lexus Events have been conducted across the U.S. These events increased awareness of the Lexus Hybrid Drive and highlighted ways to decrease our environmental footprint. Lexus has also created a new Web site to explore ways that consumers can minimize their impact on the environment without sacrificing comfort and luxury. Please visit www.lexus.com/hybridliving for more information.
- Toyota Hybrid Ride and Drive events were conducted across the U.S. and in 13 cities in Canada. These events provided information about Toyota's hybrid vehicles and offered the chance to test drive one of the six Toyota and Lexus hybrids currently on the market.
- Toyota was a contributing sponsor of The Green Living Show, Toronto's first consumer show dedicated to all things green. Visitors were able to test drive hybrid vehicles. We also sponsored the EPIC (Ethical Progressive Intelligent Consumer) Sustainable Living Expo in Vancouver in March 2008.
- Toyota dealers held over 80 hybrid seminars in communities and schools to build awareness of climate change and increase understanding of Toyota hybrid vehicles.

For more information on Toyota hybrids, please visit www.toyota.com/highway and www.hybridsynergydrive.ca.

For more information on Lexus hybrids, please visit www.lexus.com/hybriddrive and www.lexushybriddrive.ca.

Plug-In Hybrid Vehicles

As the global leader in hybrid vehicles, it is vital that Toyota explore evolutionary pathways for our hybrid drive technology. A pathway that shows promise to reduce fuel consumption and emissions (including CO₂) from hybrids is the plug-in hybrid vehicle (PHV). In 2007, Toyota became the first auto manufacturer to begin testing a modest fleet of PHV prototypes on public roads in the U.S., Japan and Europe.

Two PHV prototypes were delivered to the University of California, Berkeley and the University of California, Irvine as part of Toyota's sustainable mobility development program with the two campuses. This multiyear project, partially funded by the California Energy Commission and Air Resources Board, evaluates consumer use and acceptance, infrastructure issues and environmental benefits of three advanced vehicle technologies — hybrid, fuel cell and PHV.

Toyota's president announced at the 2008 North American International Auto Show that Toyota would accelerate our global plug-in hybrid research and development program and deliver hundreds of PHVs powered by lithium-ion (Li-Ion) batteries to a wide variety of global commercial customers in 2010, with many coming to the U.S.

▶ FORMULA HYBRID

For the second year in a row, Toyota sponsored the Formula Hybrid intercollegiate competition hosted by Dartmouth College. In addition to two Toyota employees acting as design judges, we displayed our plug-in Prius prototype for the first time on the East Coast. Many came by to see and discuss Toyota's PHV approach.

The Formula Hybrid competition brings together college teams from around the world who have spent the school year designing and building single-seat, open-wheel hybrid electric racecars.



The students and their vehicles compete in a series of static presentations (design and marketing) and dynamic events (acceleration, autocross and endurance) to establish an overall winner. The vehicles are similar to Formula SAE® cars, but with a hybrid electric drivetrain and greater emphasis on fuel efficiency.

McGill University from Montreal, Quebec, took home the first place trophy on the strength of their endurance performance. Their continued success is due to preparation and testing. While most teams arrived with complex racecars that had never been driven, McGill came with a simple, well-tested vehicle that operated flawlessly the entire event.

Toyota's plug-in hybrid vehicle has the potential to recharge the on-board battery pack from home or any location with an electrical outlet.



Toyota's PHV offers all the advantages and utility of a conventional hybrid vehicle, plus has the potential to recharge the on-board battery pack from home or any location with an electrical outlet. Depending on the driving profile, regular recharging can significantly reduce gasoline consumption and potentially reduce both mobile source GHGs and criteria pollutants. To reach the potential for reduced emissions, clean electricity sources will be required. Additionally, PHVs offer fuel diversity, as the vehicle can use gasoline or electricity (which itself comes from a variety of sources).

Our prototype is based on the current Prius and designed to demonstrate the flexibility of our Hybrid Synergy Drive (HSD). With software modifications and a second nickel-metal hydride (NiMH) battery pack, it can accelerate briskly and is capable of reaching 60 miles per hour on electric propulsion alone. If higher speeds are needed or the battery is depleted, the engine starts and the vehicle operates like a conventional Prius. This intelligent "blending" of the gas and electric power by the HSD system benefits the user and environment, while not requiring costly development of new vehicle powertrains or platforms that could limit mass marketability of the technology.

Li-Ion Battery Progress

As with all electric vehicles, the primary technical challenge for PHVs is the battery. Great strides have been made in increasing battery power and energy density, but life-of-vehicle durability and cost continue to be major challenges for PHV batteries.

Early in 2008, Toyota announced plans to manufacture Li-Ion batteries for automotive applications at our joint venture battery facility with Panasonic. These batteries will be used in our next generation PHV, scheduled to begin commercial fleet operation in 2010.

Though we chose NiMH batteries for our first generation PHV prototypes, Toyota believes the chemistry will not have adequate energy density or life for production PHVs. NiMH batteries perform well under the duty cycle of our current hybrid products because they excel at supplying electricity in short powerful bursts, similar to a sprinter running a 100 meter

dash. However, a PHV adds deep discharge, like running a marathon, on top of our traditional hybrid vehicle duty cycle. For our prototype PHV, we added a second NiMH battery to accommodate the increased battery-only operation.

Li-Ion technology is a leading contender for the PHV application. It has good power and energy density and the potential for lower cost compared to NiMH, but improvements must be demonstrated before commercial introduction. These improvements include high and low temperature operation, durability, cycle life (a measure of the battery's tolerance to repeated deep discharge and charge cycles) and safety under all possible operating conditions. Of these, assuming safety is first and foremost, cycle life will be the most challenging. Consumers have come to expect their HV battery will last the life of the vehicle and are likely unwilling to accept anything less from a PHV.

Fuel-Cell Hybrid Vehicles

Toyota believes that fuel-cell hybrid vehicles (FCHVs) will be an important part of our transportation future, and we have been actively developing this technology for over 15 years. In 2002 we began real world testing of our third generation FCHV in the U.S.

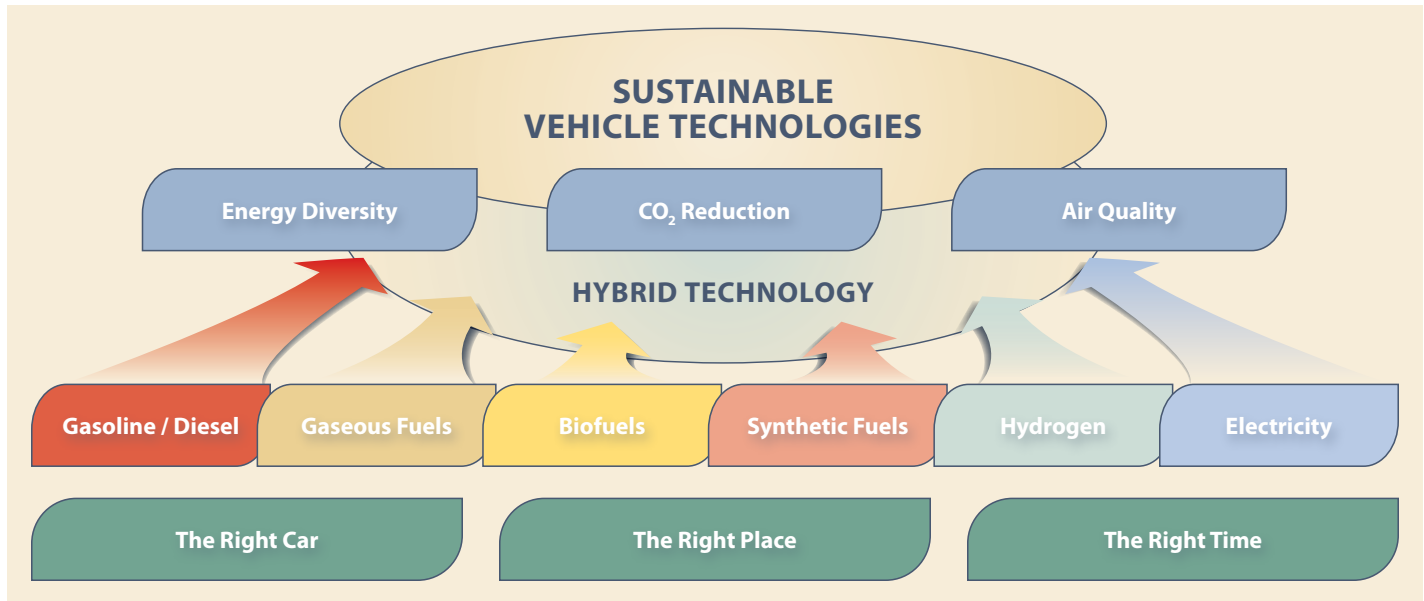
Toyota is now on its fifth generation of this technology, and we have made great strides in overcoming many of the technical challenges. We have increased the on-board hydrogen storage capacity and the vehicle range, increased the durability and reliability of the fuel cell stack, and have succeeded in subzero operation to as low as -34.5° F (-37° C).

Toyota recently completed a seven-day trek in an advanced prototype of the new Toyota FCHV, with 10,000-psi hydrogen fuel tanks, from Fairbanks, Alaska, to Vancouver, British Columbia, along the Alaska-Canadian (ALCAN) highway. The vehicle withstood rough road conditions and severe weather, and performed perfectly. Every mile of the journey was monitored in real time by a dedicated laptop program that measured distance, time, speed, and hydrogen tank temperature and fuel consumption.

The trip along the ALCAN highway highlighted one of the key remaining challenges to bringing fuel-cell vehicles to market — the lack of fueling infrastructure. In fact, one of the key reasons the route was chosen is that Canada allows mobile refueling of high-pressure hydrogen vehicles along its public highways. Without a network of hydrogen fueling stations every 300 miles, mobile refueling was a necessity.

2007 also marked another significant achievement in our fuel cell development program. We tested the increased range of the FCHV by driving from Henderson, Nevada, via state highway routes to Coronado Island in San Diego, California.

FIGURE H



The total journey from full tank to empty was 436.2 miles — a new record for fuel-cell vehicles. Improvements to on-board hydrogen storage and system efficiencies continue to narrow the gap between gasoline and hydrogen fuel-cell vehicles.

We are confident that we can overcome the challenges of reducing the vehicle cost and increasing the durability of the fuel cell system. Fuel-cell hybrid vehicles will be an important part of our technology strategy in the pursuit of sustainable mobility.

▶ ADVANCED TRANSPORTATION SOLUTIONS

Toyota is committed to putting our engineering efforts on what we can do today to create a brighter future. **We have engineers working to develop Intelligent Transportation Systems (ITS) technology that would allow drivers to communicate with public information systems. (Target 4.1)** Our efforts with ITS technology focus on improvements to safety, comfort and environment. The construction of ITS infrastructure aims to ease traffic congestion, improve traffic flow and reduce vehicle CO₂ and NO_x emissions.

Our facility in Delta, British Columbia, saves energy by recovering waste heat to supply heat treatment ovens.



▶ ENERGY AND GREENHOUSE GASES IN OUR OPERATIONS

We work to reduce energy consumption and greenhouse gases throughout all aspects of our business. Below, we describe our targets in these areas.

Manufacturing

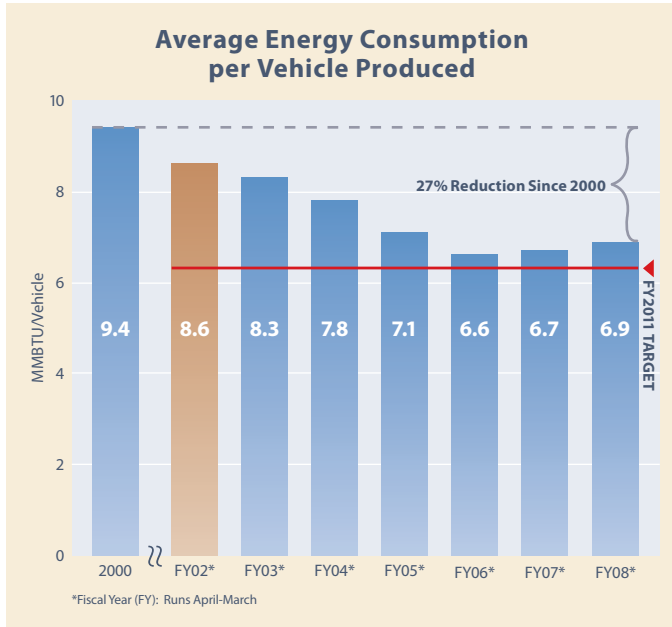
Our manufacturing facilities consume more than \$150 million worth of energy annually, resulting in 1.4 million metric tons of CO₂ emissions per year. It is sound business practice to seek ways to reduce the financial and environmental costs of our energy use.

Energy

Toyota has been an Energy Star partner since 2003. For the fourth year in a row, Toyota Motor Engineering & Manufacturing, North America earned an Energy Star Award. In addition, eight of our U.S. manufacturing plants have earned Energy Star Plant Awards. Energy improvements at Toyota's U.S. manufacturing facilities have saved over \$600,000 annually and reduced CO₂ emissions by almost 12,000 metric tons.

Using FY2002 as a base year, we have a target to reduce total energy use in our manufacturing operations in North America by 27% per vehicle produced by FY2011. Over the past year, our overall energy use per vehicle slightly increased (please see Figure I on the next page). This is due to several factors. We increased production at our nonassembly plants in Alabama and West Virginia, and expanded our nonassembly plants in Delta, British Columbia; Jackson, Tennessee; and Troy, Missouri. In addition, energy reduction projects were cancelled due to model change activities, and production volume decreased at several vehicle plants. **Nevertheless, we are still on track to reach our target by FY2011, and continue to implement pilot projects and kaizens to reduce energy use. (Target 5.1)**

FIGURE I



An example of our efforts to reduce energy use can be seen at our facility in Fremont, California, where a 50,000-foot expansion was recently completed. We integrated light harvesting features into the construction. For example, sensors automatically shut off electric lights when enough natural light is available through the skylights, saving energy and reducing greenhouse gas emissions.

Greenhouse Gas Emissions

Energy use is the main source of greenhouse gases from our manufacturing plants. Worldwide, Toyota is committed to a 20% reduction in GHG emissions per sales unit by 2010, against a 2001 baseline. While energy consumption in North America has increased slightly over the past year, CO₂ emissions have slightly decreased. This is because some of the nonassembly plants experiencing increased energy use are being served by cleaner energy sources.

In the U.S., Toyota, along with other members of the Alliance of Automobile Manufacturers, participates in the U.S. Department of Energy Climate VISION program. Member companies have committed to reducing the level of GHGs emitted from manufacturing operations by 10% per vehicle produced by 2012, compared to a 2002 baseline.

We are exceeding this U.S. commitment (please see Figure J). (Target 5.2)

We began tracking CO₂ emissions from our manufacturing logistics group last year, and have implemented a number of CO₂ reduction activities, such as minimizing route length and maximizing the space used in transport containers. We will evaluate additional reduction opportunities in the future.

Managing Nonproduction Energy Use

While we continue to look for ways to reduce our energy consumption from production activities, our manufacturing facilities also implement programs aimed at reducing the amount of energy we consume during nonproduction — during weekends and between production work shifts. As a result of these programs, we have reduced our total nonproduction energy consumption by 10% from last year.

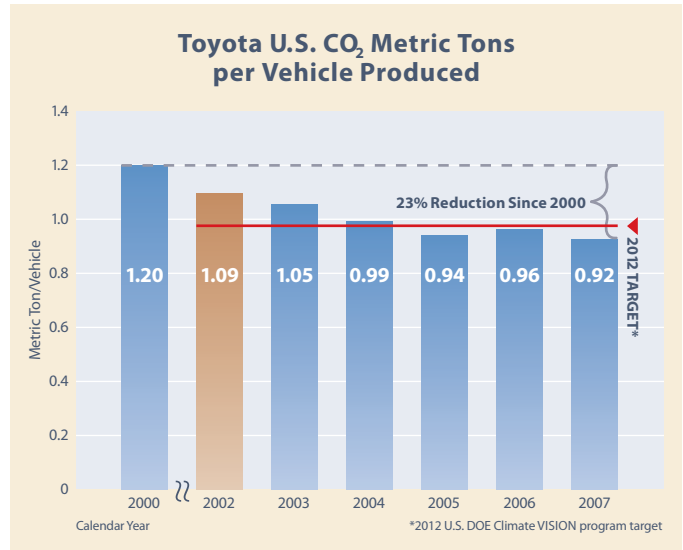
For example, our manufacturing facility in Fremont, California, is now in the fourth year of a program we call “Green Weekends.” During select weekends, the facility turns off virtually all electrical equipment, including the HVAC units and lights, saving electricity consumption and costs.

In St. Louis, we have installed a new, smaller compressor that meets our weekend energy needs more efficiently. It allows us to shut down our larger 150 horsepower compressor on the weekends when it is not needed.

In Tijuana, Mexico, employees have implemented a *kaizen* to reduce natural gas burned during shift changes. Natural gas burners on the paint ovens are turned off after the second shift leaves and before the first shift arrives. The burners remain off for 2.5 - 3 hours each day, saving approximately 40 - 70% of natural gas consumed.

At our manufacturing facility in Kentucky, the Facilities Control Energy Management Group started an internal contest among departments to reduce nonproduction energy consumption. Designed around a horse racing theme, the “Greenland Stakes” is charted using a horse track with each of the participating departments symbolized as a horse running in the race. As a result of the contests, the departments are now consuming an average of 10% less energy than last year and have avoided 1,596 metric tons of CO₂ emissions.

FIGURE J



Our plant in Kentucky held the "Greenland Stakes" competition to see which part of the plant could reduce nonproduction energy use the most. The winners were the employees in Paint Shop #2, who reduced energy use by 10.4%.



facility in Georgetown, Kentucky, increased their energy efficiency by replacing breakroom refrigerators with Energy Star rated units, purchasing an on-demand, tankless water heater, and replacing interior and exterior lights with high-output, high-efficiency bulbs. These simple steps saved an estimated \$38,500 annually and 700,000 kilowatt-hours.

In Canada, we established a five-year target for our logistics facilities and office campus to reduce energy consumption by 10% by 2010, from a baseline of 2004. **A team has been assembled to review and analyze energy reduction opportunities. (Target 5.4)**

Sales and Logistics

Just as we do in manufacturing, we strive to improve energy efficiency and reduce greenhouse gas emissions in our logistics operations and sales offices.

Energy

Across North America, Toyota's logistics operations and sales offices are working to reduce energy consumption. **Last year, we reported that our U.S. sales and logistics sites exceeded our target of reducing energy consumption (per square-foot) by 18% by FY2011, from a FY2001 baseline. (Target 5.3a)** We set a new target to reduce energy consumption (per square foot) by 35% by FY2011, from a FY2001 baseline. **So far, we have reduced total energy consumption per square foot by 22% (please see Figure K). (Target 5.3b)** Data shown in Figure K include updated square footage and new and expanded facilities that have been added since the FY2001 baseline.

Through programs like facility energy treasure hunts, logistics and sales offices are continually audited to identify potential energy efficiency opportunities. For example, our logistics

U.S. Sales and Logistics GHG Inventory

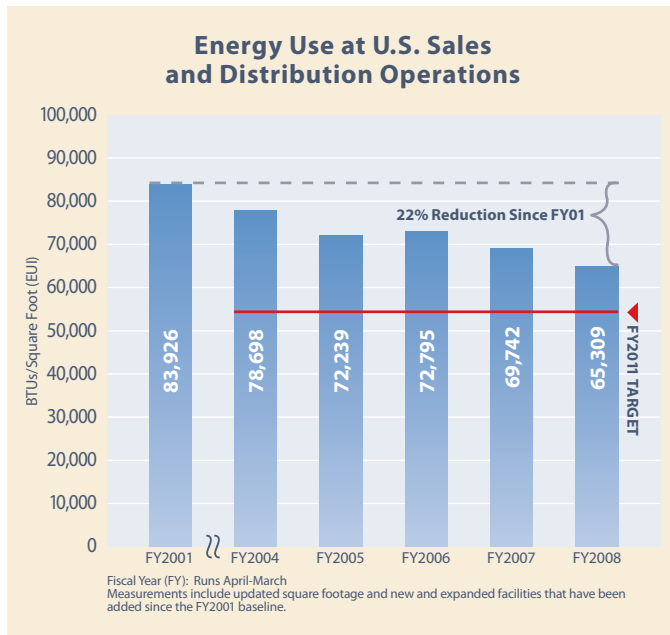
Toyota's U.S. sales and logistics division has been tracking GHG emissions since 2000, using *The GHG Protocol* developed by the World Resources Institute and the World Business Council for Sustainable Development. The scope of the inventory includes GHG emissions from purchased electricity, natural gas use, business travel, employee commuting, and logistics and supply activities (including our third-party logistics providers).

We use the GHG inventory to help us evaluate logistics-related emission reduction methods. (Target 5.5)

Much of our parts and vehicle transport is conducted by third parties. Because our activities influence the emissions of these third parties, we work with them to find ways to reduce GHG emissions. In October 2007, we hosted a conference with our railroad carriers to share best practices.

In an effort to make our fleets and shippers more sustainable, TLS Toyota Transport, one of our in-house carriers, and a number of our third-party carriers are joining the Environmental Protection Agency's (EPA) SmartWaySM program. The SmartWay Transport Partnership is an innovative collaboration between EPA and the freight industry to increase energy efficiency while significantly reducing greenhouse gases and air pollution. Through this partnership, Toyota has committed to measuring the greenhouse gas emissions of these freight activities using EPA's FLEET Performance Shipper/Logistics Model and increasing the percentage of freight shipped by SmartWay carriers.

FIGURE K



LOOKING AHEAD

Over the next three years, one of our biggest challenges to meeting our action plan targets is to find ways to improve the energy efficiency of our operations, even as we produce more vehicles. In addition, we must work closely with government to implement regulations that will improve new vehicle efficiency and reduce CO₂ emissions, while minimizing regulatory duplication and facilitating deployment of advanced technologies.

TOYOTA |

recycling & improved resource use

This 65 gallon roller can is used by the parts distribution center in Portland, Oregon, to collect compostable waste from the lunchroom.



“Environmental efforts across all aspects of our business are part of the Toyota Promise — a commitment to improving life for our customers and neighbors while respecting the earth’s resources.”

– Jim Lentz, President
Toyota Motor Sales, U.S.A., Inc.



RECYCLING AND IMPROVED RESOURCE USE EAP TARGETS

- 6.1 ○ Evaluate new materials from renewable resources
- 7.1 ● Reduce compensated waste to 30kg per vehicle in manufacturing
- 7.2 ● Maintain near-zero waste to landfill in manufacturing
- 7.3 ○ Achieve zero hazardous landfill and reduce nonhazardous waste toward zero landfill at vehicle design facilities
- 7.4 ● Recycle 65% of U.S. sales headquarters waste in FY2008
- 7.5 ○ Divert 95% waste from Canada’s main sales campus by FY2010
- 7.6 ● Reduce paper consumption by 25% per person at Canadian sales offices
- 7.7 ● Reduce nonhazardous waste to landfill from U.S. parts operations by 33%
- 7.8 ● Achieve a 90% recycling rate at U.S. vehicle distribution centers
- 8.1 ● Reduce water usage in manufacturing to 0.98 kgal/vehicle
- 8.2 ○ Evaluate baseline for U.S. sales and logistics sites in FY2008
- 8.3 ○ Achieve 10% water consumption reduction at Canada sales and logistics sites by 2010

AS WE CONTINUE TO GROW, we are guided by our culture and principles that stress sustainable growth. Our Earth Charter requires that we strive for zero emissions in all areas of our business. This means that we build our vehicles with sound environmental standards in mind. In order for our growth to be in harmony with the environment, we look to decrease waste generation and increase recycling throughout the life cycle — in design, manufacturing and distribution.

Improving resource use means more than just recycling. It also means using more renewable resources and using natural resources more efficiently. To be successful in improving our resource use, we implement many *kaizens* to reach our targets for designing vehicles with more renewable resources, reducing waste across our operations and reducing our water use. These *kaizens* are then shared with other employees so that good ideas can be implemented across the company. Our Guiding Principles encourage this type of collaboration by promoting a corporate culture that values teamwork.

Our targets in the areas of vehicle design, waste and recycling, and water consumption are listed above, and described in this chapter.

Soy oil-based polyurethane foam is now used in the passenger seats in the Toyota Matrix. The use of foam reduces the amount of petroleum needed for production, which reduces the vehicle’s carbon footprint.



▶ DESIGNING VEHICLES USING RENEWABLE RESOURCES

When we design a vehicle, we try to increase our use of renewable resources. Using renewable resources makes the vehicle easier to recycle at the end of its life. In North America, we introduced soy oil-based polyurethane foam for passenger seats in both the Corolla and the Lexus RX during 2007. Toyota added the Matrix and RAV4 to the list of vehicles utilizing soy-based seat foams in the summer of 2008. Using soy in polyurethane seat foams lowers the amount of petroleum used for production and reduces the carbon footprint of each vehicle. We worked with suppliers to include 5% of the natural soy material in the seats without impacting performance. We are now working closely with our suppliers to further expand the number of vehicle applications and to increase the level of soy being used in our flexible polyurethanes.

Along with soybeans in seats, Toyota is aggressively developing a North American vision that incorporates all aspects of biorenewable materials in future vehicles. Among other materials, Toyota is investigating expanding the use of PLA, a plastic made entirely from corn, and natural based fabrics for vehicle interiors. PLA is currently being used in very few automotive components, but is used in many disposable goods such as drink cups and food packaging. **Toyota will continue to evaluate materials from renewable resources in order to introduce additional environmentally preferable parts in our vehicles. (Target 6.1)**

▶ WASTE REDUCTION AND RECYCLING IN OUR OPERATIONS

We work to reduce waste and increase recycling across our operations. Below, we describe our progress against targets in these areas.

Manufacturing

The 5Rs — refine, reduce, reuse, recycle and recover energy — have been the key to waste reduction efforts in our manufacturing plants. We have reduced nonsaleable waste (nonhazardous waste plus materials Toyota pays to have

An employee at our plant in Indiana adds a chemical to the wastewater treatment process that helps remove paint overspray particles. The resulting paint sludge is sent to a cement kiln and used as material replacement in the cement.



recycled) to just under 22 kilograms per vehicle. **In the second year of our Five-Year Action Plan, we have already exceeded our target of reducing this waste to 30 kilograms per vehicle. (Target 7.1)** We will continue efforts to further reduce this waste (please see Figure L). **In addition, our plants in North America have maintained near-zero waste to landfill (defined as a 95% or greater reduction in waste to landfill from 1999 levels). (Target 7.2)**

Our plant in Indiana has implemented a number of waste management *kaizens*, including:

- Sending wastewater treatment sludge to a cement kiln in Cape Girardeau, Missouri, to be used as material replacement in the cement. This practice diverts 768 tons per year of waste from incineration.
- Recycling polyester tube wipes from the paint shops that are not heavily used. The tube wipes are used on the sealer line in the plant's paint shops. This practice reduces the plant's nonhazardous waste by 700 pounds per month.

In addition, the cafeteria at our Fremont, California, plant replaced plastic tableware with tableware made from potato starch, a biodegradable material. Many of the plates and bowls are also made of biodegradable bagasse (a fibrous starch from sugar cane).

Canadian Assembly Plant Implements Numerous Waste Reduction *Kaizens*

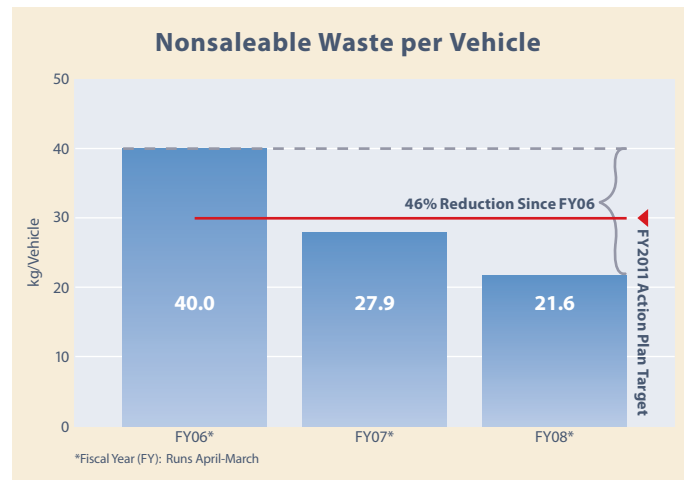
Our assembly plant in Cambridge, Ontario, has reduced waste by re-thinking processes and working with suppliers to use returnable service part packaging. For example, we replaced the type of fuel tank installed in vehicles at the plant, which formerly required painting before installation. With the switch, the fuel tanks no longer need to be painted, eliminating 35,000 kilograms of paint-related waste each year. The plant also installed LED screens to replace printed instructions, eliminating 25,000 kilograms of waste paper each year from the paint shop.

In addition, process waste from the injection mold machines is ground up and reused. The molds are replaced and repaired offline. This reduces the amount of waste scrap generated during repairs. These efforts have reduced plastic waste by more than 15,000 kilograms each year.

The plant has also worked with more than 250 suppliers to expand the amount of returnable packaging used for supplies and parts delivered to the plant. Now 99% of North American-sourced part numbers are delivered in returnable packaging, reducing wood pallet waste by 86% and cardboard waste by 63% from 1999 levels. Bumper service parts were added to the program in January 2008, which will eliminate 104,000 cardboard boxes and 24,500 skids each year at the plant.

Because of these efforts, along with initiatives to reduce energy and air emissions, the assembly plant won a Canadian Council Ministry of Environment Pollution Prevention Award in 2007. The plant was selected for the award by a panel of representatives from government, industry and environmental nongovernment organizations for finding and implementing innovative ways to safeguard the environment. Also, the assembly plant was listed as one of "Canada's Most Earth Friendly Employers" by the editors of "Canada's Top 100 Employers." Toyota is one of the top 100 employers in Canada that has been successful at integrating environmental values as part of its culture.

FIGURE L



Our plant in Delta, British Columbia, has started a packaging reuse program to reduce the amount of drums, totes and pails that are recycled or disposed. The packaging is reused by a local supplier.



Nonproduction Facilities

At our nonproduction facilities, including our design centers and our manufacturing headquarters campus, we are working toward our target of zero waste to landfill. (Target 7.3) At our manufacturing headquarters in Erlanger, Kentucky, employees worked with a vendor to recycle more than 10,000 pounds of electronic waste, including phones, laptops, monitors and printers.

Our powertrain evaluation and tuning facility in Gardena, California, won a Waste Reduction Awards Program (WRAP) award in 2007 from the California Integrated Waste Management Board for their waste reduction efforts. The facility achieved a recycling rate of 82% — a 10% improvement from the previous year, and prevented over 300,000 pounds of materials from going into landfill.

Sales and Logistics

Toyota’s sales and logistics division is responsible for transporting parts and vehicles across North America. In addition to the greenhouse gas impacts of shipping by rail and truck (discussed in the Energy and Climate Change chapter), our logistics operations also generate waste. Two of the largest waste streams from these operations are packaging and cafeteria waste. As we ship increasing numbers of parts and vehicles each year, we manage our environmental impacts by setting targets to reduce the amount of waste we generate, reduce waste that we send to landfills, and increase our recycling rate. In the U.S., our sales and logistics division recycled over 89% of all waste generated in FY2008. Eight of our U.S. locations are zero waste to landfill facilities, diverting 100% of their waste from landfills.

We also look for ways to promote recycling in our communities. For the past few years, several Toyota locations have organized “E-Waste Roundups” on Earth Day for Toyota employees to bring electronic waste from home to be recycled. These roundups give the materials a second useful life, and also keep toxic materials out of landfills.

Recently, these roundups have been combined with efforts to collect clothing and eyeglasses. During this year’s events, almost 6,000 pounds (2,800 kilograms) of clothes, eyeglasses, batteries, cell phones and other electronic equipment were

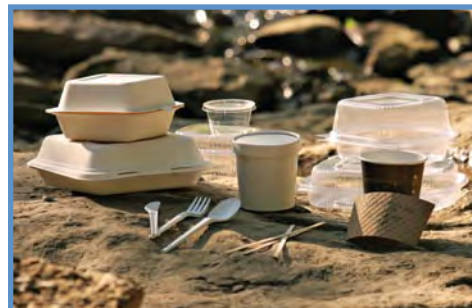
collected at the Canadian headquarters in Toronto, Ontario, while over 45,000 pounds of consumer electronics were rounded up at the Torrance, California, headquarters facility.

Sales Offices

Toyota’s U.S. sales division headquarters focuses on *kaizens* that reduce the overall amount of waste produced and increase the recycling rate of the remaining waste. **In FY2008, the U.S. sales headquarters campus exceeded its target of recycling 65% of its waste, by recycling 75%. (Target 7.4)** The campus was able to maintain zero waste to landfill.

Toyota’s Canadian main sales campus has a target to divert 95% of its waste from landfill by FY2010. **We diverted 91% of our waste in 2007, and anticipate achieving the diversion target by FY2010. (Target 7.5)** In addition, we are expanding our waste diversion efforts to our parts distribution centers. Our Toronto facility, for example, now has a composting program and our Vancouver facility recently began recycling wax paper.

At our Canadian sales headquarters, we also have a target to reduce paper consumption by 25% per person by FY2010 from a baseline year of 2004. **With the help of the Smart Print Solution, as well as increased awareness and training, we have achieved our target ahead of schedule and reduced our paper consumption 28% since 2004. (Target 7.6)** The Smart Print Solution controls excessive paper consumption. Training has also encouraged employees to reduce toner consumption through a variety of software and hardware options. This program has been implemented in all office areas at our Canadian headquarters.



Our parts distribution center in Toronto uses compostable cafeteria items such as those shown here.

Parts Distribution

Our parts logistics operation has been growing as we distribute an increasing number of parts across North America each year. We are managing our impact on the environment from this activity, partly by reducing the amount of waste we send to landfill. In the U.S., we set a target to reduce nonregulated waste sent to landfill by 33% by FY2011, from a FY2006 baseline. **In FY2008, the parts centers exceeded this target. (Target 7.7)**

One of the largest components of nonregulated waste sent to landfills is lunchroom waste. In 2007, the parts distribution center (PDC) in Portland, Oregon, implemented a composting program. The city of Portland provided the facility with signage for compost areas, a list of vendors to purchase supplies from, and information about the Cedar Grove Composting Facility. The parts center now uses four 65 gallon compost roller cans and two 25 gallon compost lunchroom cans. BioBags, which decompose in a controlled composting environment in 10-to-45 days, are used as liners in the lunchroom compost cans. Over 1,000 pounds of lunchroom waste have been diverted from landfill since the program's inception.

Parts Packaging

Toyota's parts operation uses over 30,000 reusable metal shipping containers in place of cardboard and wood pallets. Returnables are used between the centralized parts center and the PDCs, between the PDCs and dealers for dedicated deliveries, between suppliers and the parts center, and between the parts center and vehicle distribution centers. The metal shipping containers are returned to the nearest PDC and reused. These returnables are also used increasingly for shipments between the U.S. and Canada. Recently, Toyota began using returnable containers to ship Sequoia and Corolla floor mats. Material savings from the Corolla alone add up to 22,275 pounds of corrugated cardboard and 31,500 pounds of wood. In FY2008, the returnable container program saved 13.9 million pounds of wood, 4.4 million pounds of cardboard and \$13.5 million.

In addition, Toyota has improved packaging on a number of products to reduce the overall amount of materials needed to ship Toyota parts. For example, we have continued to improve the packaging configuration for the FJ Cruiser roof rack. First, we went from packing one roof rack per container to packing two. Now, we package them disassembled. These efforts combined cut the packaging size in half and save almost 81,000 pounds of corrugated cardboard and 57,000 pounds of wood. In the process, we also avoid shipping 15 inbound trailer loads and six outbound trailer loads to Mexico. In addition to reducing the amount of waste generated, greenhouse gas emissions associated with transporting these parts also decreased by almost 78 metric tons.

Vehicle Distribution

Our vehicle distribution centers (VDCs) in the U.S. have a target of recycling 90% of their waste by FY2011. **In FY2008, we achieved this target. (Target 7.8)** Our target now is to maintain this recycling rate. In addition, our VDCs have a target disposal rate of 0.25 pounds or less per vehicle processed. Our VDC in Fremont, California, built a new production shop and renovated the existing facility. Of the 2,841 tons of material generated during this project, less than 1% was sent to a landfill. The Fremont facility won California's 2007 Waste Reduction Awards Program (WRAP) award for its waste management practices.

▶ WATER CONSUMPTION IN OUR OPERATIONS

Maintaining a clean supply of drinking water is becoming an increasingly difficult challenge. A growing number of experts agree that water shortages are going to be more frequent in the next 10-20 years, especially in the western portion of the U.S., unless we begin to take action now. At Toyota, we are taking steps to conserving water across our operations in North America. Below, we describe our progress against targets in this area.

Manufacturing

We look for opportunities to reduce water usage and reuse water in our manufacturing processes. We conducted a *kaizen* "water blitz" this past year at four of our plants. The blitz focused on finding improvements in system efficiencies of utility systems and identifying other operational *kaizens* that reduce water consumption. We are also piloting water reduction projects at two of our plants.

Our water use per vehicle produced was adversely affected this year because production volumes decreased while the amount of water consumed remained fixed. Water consumption remained fixed partly due to a summer drought that contributed to higher evaporation rates in the cooling towers. **We are still exceeding our target of reducing water use at our North American manufacturing plants to 0.98 kilogallons per vehicle, by FY2011 (please see Figure M to the right). (Target 8.1)** We are evaluating our water target based on production projections at current plants, and at new plants and expansions that will be completed during the FY2011 Action Plan.

Reducing Demand on Local Water Supplies in Texas

Our assembly plant in San Antonio, Texas, was designed with a high-tech water filtration system that allows for 100% utilization of recycled water for its production line and 95% utilization for its overall operations. This utilization reduces the plant's demand for potable water from the local system by almost 292 million gallons each year, reducing the impact of plant operations on the community. Our plant in Texas won a Water Saver Award from the San Antonio Water System.

We diverted over 1,000 pounds of lunchroom waste from landfill by starting a composting program at our logistics site in Portland. We also saved over 22,000 pounds of cardboard by shipping Corolla floor mats in returnable containers.

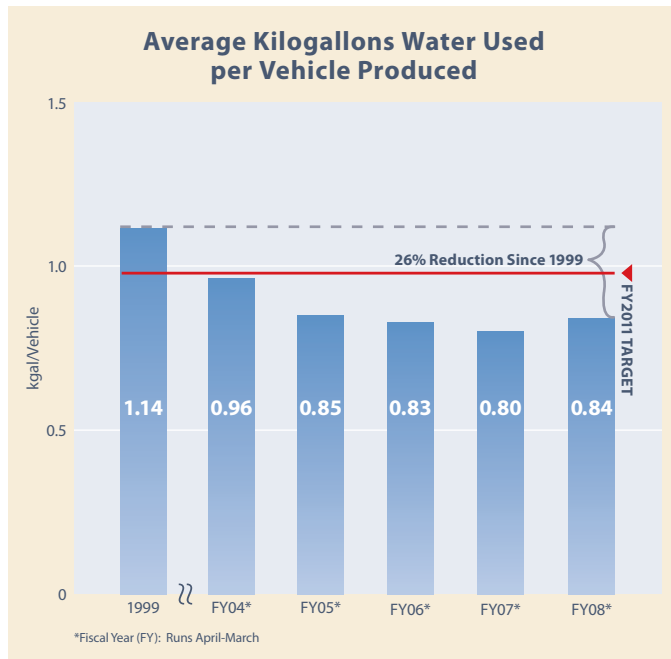
Redesigning Our Processes in West Virginia to Reduce Water Consumption

Periodically, our plant in West Virginia performs stress tests on engines. During these tests, engines are heated and then rapidly cooled by flooding them with cold water. The water is subsequently treated and discharged. The plant is in the process of implementing a *kaizen* to replace this system with a recirculating water cooling system that would allow the water to be reused. Once implemented, the new system will reduce the water used by the tests by more than 99% and save 1.3 million gallons of water each year. Furthermore, this improvement will reduce the volume to the wastewater treatment plant by 8,000 gallons for each day of the engine stress tests.

Sales and Logistics

While water consumption is not our most significant environmental impact, we are starting to measure it and find ways to reduce it. **In FY2008, we completed our evaluation of water consumption at all U.S. sales offices and logistics sites. (Target 8.2)** We will establish a baseline and subsequent water reduction target during FY2009. In the meantime, individual facilities are working to reduce their water consumption and encouraging their employees to do the same. The San Francisco Parts Distribution Center partnered with the East Bay Municipal Water District to install water spout limiters on facility restroom and breakroom faucets. The Water District also donated two low flow filters for each Parts Center employee to install in their homes. Each filter reduces water flow from approximately 2.5 gallons per minute to one-half gallon per minute.

FIGURE M



Our Canadian facilities are on track to meet our target to reduce water consumption by 10% by 2010, from a baseline of 2004. (Target 8.3) Irrigation of the grounds is the most significant contributor to water consumption. In 2006 we installed new moisture sensors, and in 2007 reconfigured all of the watering zones and replaced the sprinkler heads with more efficient units. As a result of the work done on the system in 2006 and 2007, we anticipate a reduction in water consumption in 2008.

LOOKING AHEAD

Over the next three years, one of our biggest challenges to meeting our action plan targets is to find ways to manage our water consumption, even as we expand our facilities.

TOYOTA | substances of concern

As a part of our overall North American efforts to reduce SOCs, Toyota recently completed the elimination of hexavalent chrome from the corrosion prevention coating on our bolts.



“Due to our growing North American production volumes and supply base, Toyota must now manage thousands of parts in our quest to minimize SOC content.”

— Yoshikatsu Nakamura, Chairman, NA SOC Committee
Toyota Motor Engineering & Manufacturing North America, Inc.



SUBSTANCES OF CONCERN EAP TARGETS

- 9.1 ● Reduce the use of mercury, lead, cadmium and hexavalent chrome to *de minimis* levels
- 9.2 ○ Facilitate suppliers' SOC tracking and verification via the IMDS and support the development of SOC alternatives
- 9.3 ○ Identify and solve challenges toward effective management of additional SOCs
- 9.4 ○ Develop and implement alternative materials to reduce vehicle cabin VOC levels

THE AUTOMOBILE IS one of the most durable products on the market today. It is also one of the most recycled. With more vehicles being sold each year, making a vehicle recyclable is crucial in terms of raw materials savings and reduced resource consumption. Toyota is working to make vehicles easier to recycle by phasing out our use of certain substances of concern (SOCs) in parts and accessories. Our SOC policies support Toyota's worldwide commitment to producing easy-to-recycle vehicles and phasing out SOCs, called The Toyota Recycle Vision. For more information on The Toyota Recycle Vision, please visit www.toyota.co.jp/en/environment/recycle.

In North America, our SOC work focuses on the phaseout of four heavy metals — mercury, cadmium, lead and hexavalent chrome. In addition, Toyota is working to reduce VOCs in the automobile cabin that may have health effects. Our SOC strategy requires that we work across functions and across countries. This strategy is being implemented globally and requires constant communication between different regions and countries. Within North America, we share issues and information in a cross-functional working group.

▶ REDUCING SOCS

In 2004, Toyota made a voluntary commitment to minimize SOCs. Our North American SOC strategy involves partnerships with thousands of domestic and foreign suppliers to identify components that contain SOCs and to develop a timetable to phase them out. We have a system in place to ensure that all parts meet the SOC limits in Toyota's global technical standard. **We have successfully reduced SOCs in North America to *de minimis* levels as outlined in the European Union Directive on End-of-Life Vehicles. (Target 9.1)**

Supplier tracking and verification of SOC content is done through the International Material Data System (IMDS), facilitated in North America by the Auto Industry Action Group. (Target 9.2) All suppliers input into this system the percentage of SOCs contained in parts. Toyota has developed a separate interface for its design staff that automatically calculates whether the SOC content is at, above or below the threshold.

We recently eliminated hexavalent chrome from radiator grills and decorative chrome plating on all of Toyota's vehicles, and from the corrosion prevention that coats our bolts. These bolts were imported in the past, but went into production at North American assembly plants at the end of 2007. Lead has also been eliminated from wheel weights, and lead-free wheel weights are now used at all North American manufacturing plants and vehicle distribution centers. **Additional SOCs will be identified in the future. (Target 9.3)**

▶ REDUCING CABIN VOCs

Toyota has been researching methods to reduce volatile organic compounds (VOCs) in vehicle cabin interiors. VOCs such as aldehydes cause the "new car smell" and may have health effects, including nose and throat irritation. There are no regulations or standards in North America; however, our parent company in Japan is meeting voluntary standards set by the Japan Automobile Manufacturers Association (JAMA), and has asked Toyota in North America to be in compliance with these standards by 2011.

Toyota North America is developing low VOC technologies that will ensure our compliance with the JAMA standards by 2011. (Target 9.4) We worked with our material suppliers to reduce aldehydes by developing a grade of polyacetal that reduces formaldehyde emissions by 80%. In addition, Toyota has been developing new tape systems to reduce toluene emissions. Several interior parts use tape as a secondary attachment method for sealing and to reduce unusual interior noise. Examples of these applications are ethylene propylene polymet seals used under the instrument panel and felt tape used for noise vibration and harshness (NVH) purposes. The new technology reduces the level of toluene emitted by more than 90%.

LOOKING AHEAD

Over the next three years, one of the biggest challenges we face in meeting our action plan targets is to identify and manage additional SOCs, particularly as the European Community's REACH (Registration, Evaluation, Authorization and Restriction of Chemical substances) legislation and other chemical regulations come into force.

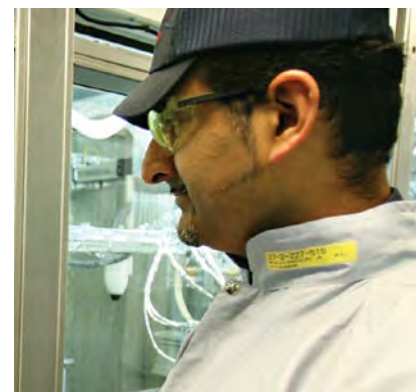
TOYOTA | air quality

Toyota's assembly plant in Delta, British Columbia, installed a biofilter that breaks down VOCs. During the final stage of treatment, the air stream is circulated around spheres containing microorganisms that absorb and digest the VOC emissions.



“Our efforts on improving air quality focus on improving technology in the vehicle design and manufacturing process resulting in reduced tailpipe and manufacturing emissions.”

– Kevin M. Butt, General Manager, Chief Environmental Officer
Toyota Motor Engineering & Manufacturing North America, Inc.



AIR QUALITY EAP TARGETS

- 10.1 ● Meet all applicable vehicle emissions standards
- 10.2 ○ Maintain leading level in-use vehicle emissions compliance
- 10.3 ○ Develop ultra low emissions technologies and introduce low emitting vehicles
- 11.1 ● Reduce body painting VOCs to an average of 14.0 g/m²
- 11.2 ● Determine a VOC baseline and set plant targets for vehicle plastics in FY2007

AS A VEHICLE BURNS FUEL, the engine produces exhaust that contains particulate matter, nitrogen oxides and other pollutants. This contributes to smog, particularly in urban areas where traffic is heaviest. While regulations on engine performance have helped to bring about a decline in the amount of air pollution produced by individual vehicles, the number of vehicles on the road has increased. As Toyota continues to grow and produce more vehicles, we work very hard to make our vehicles run cleaner. We are dedicated to the development of ultra low emissions technologies, not just for our hybrids, but for our gasoline fleet as well.

We also recognize that activities at our manufacturing plants have an impact on air quality. Painting operations at our plants generate emissions of VOCs. VOCs are a category of chemicals that can photochemically react in the atmosphere to form ground level ozone, a primary component of smog. As more vehicles move through our plants, Toyota works to regularly implement and improve practices and technologies that reduce these emissions.

Our targets on vehicle tailpipe emissions and VOC emissions from manufacturing are listed above, and described in this chapter.

▶ REDUCING TAILPIPE EMISSIONS

As the number of vehicles on the road increases, Toyota continues to pursue technology innovations that reduce tailpipe emissions. These technologies are applied to our full vehicle lineup. Our gasoline vehicles meet strict tailpipe emissions standards across North America.

Typically, manufacturers and government officials discuss vehicle emission levels in the context of certification levels. Both California and the U.S. federal government have vehicle emission programs, called LEV II and Tier 2, respectively. These programs are structured similarly, requiring manufacturers to average their entire vehicle fleet emissions to meet a prescribed set of emission standards for Non-Methane Organic Gas (NMOG), Carbon Monoxide (CO), Nitrogen Oxides (NO_x), Particulate Matter (PM), and formaldehyde (HCHO).

For 2008, California requires a manufacturer's fleet average to meet a NMOG standard of 40 grams per mile for cars, and 0.05 for trucks. The federal program requires a manufacturer's fleet average to meet a NO_x standard of 0.07g/mi. A certification level is then assigned to each vehicle, depending on its emission levels. The certification levels in California are referred to as LEV (Low Emissions Vehicle), ULEV (Ultra Low Emissions Vehicle), SULEV (Super Ultra Low Emissions Vehicle), ZEV (Zero Emissions Vehicle), and AT-PZEV (Advanced Technology Partial Zero Emissions Vehicle). The federal program refers to each incremental level as a "Bin" — numbering one through eight. A critical component of these programs is the reduced sulfur levels in gasoline that will be necessary to achieve further reductions in vehicle emissions over time.

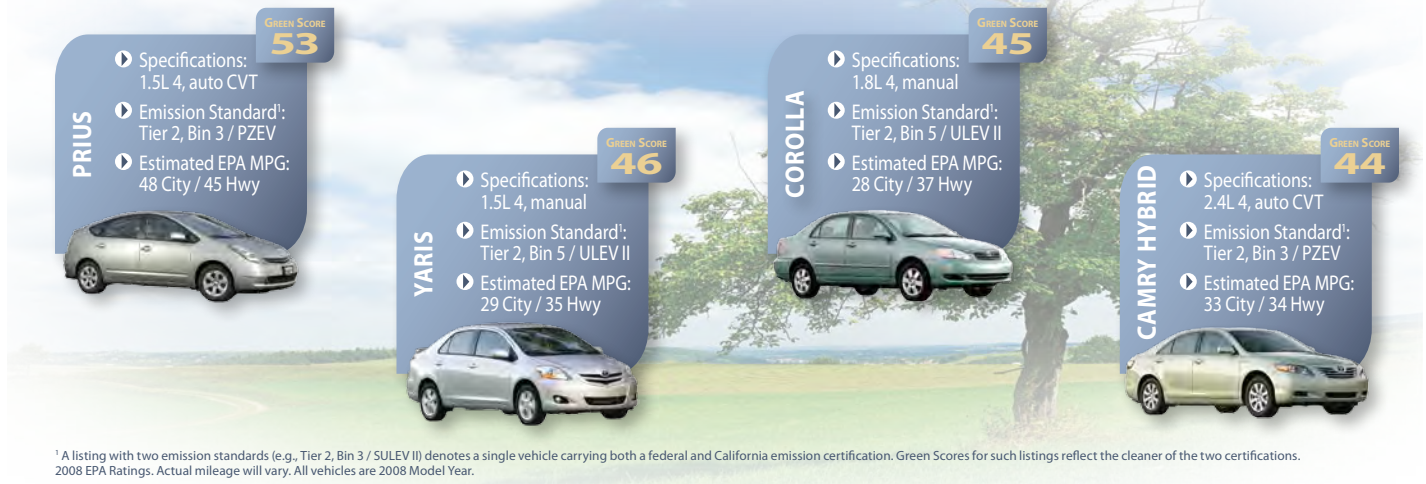
Toyota complies with both the California and federal programs, and our performance in Canada follows a similar track. (Target 10.1)

Environment Canada has implemented a Tier 2 program; the vehicles we sell there have the same emission control technologies. The federal Tier 2 program phase in is 100% completed. We have consistently certified more vehicles than the respective programs require. All Toyota, Lexus and Scion passenger cars sold in North America, except for the Lexus SC 430, are rated ULEV or better. For the 2008 model year, 13% of all Toyota, Lexus and Scion cars are certified to SULEV or better. Our SULEV vehicles include Toyota's Prius, Camry PZEV, Camry Hybrid and Highlander Hybrid, and Lexus' RX 400h, LS 600h and GS 450h.

In addition, Toyota's Industrial Equipment Division 8-series forklift truck, sold in Canada, voluntarily meets the 2010 California Air Resources Board (CARB) standards for tailpipe emissions.

FIGURE N

ACEEE Greener Choices 2008



Toyota cars comprise 4 of the 12 vehicles in the "Greenest Vehicles of 2008" list compiled by the American Council for an Energy-Efficient Economy. The four vehicles are Prius, Yaris, Corolla and Camry Hybrid. Vehicle rankings are based on tailpipe emissions, fuel economy ratings and emissions of gases that cause global warming. Please visit www.greencars.com for more information.

In-Use Compliance

Toyota has a proven track record of continuous in-use compliance. Toyota cars contribute to improving air quality by complying with emission requirements for up to 150,000 miles.

Both EPA and the California Air Resources Board staff have reviewed and approved the conduct of Toyota's government mandated in-use testing programs and have assessed them with very favorable comments. **With over 1,000 vehicles tested in these government programs since 2000, Toyota's emission compliance rate continues to be a leader among major industry manufacturers. (Target 10.2)**

Ultra Low Emissions Technologies

By introducing the latest design technologies and leading edge electronic control technologies, Toyota has achieved high fuel efficiency and cleaner exhaust emissions. (Target 10.3) Toyota engine design shifted strategically with these twin aims as targets. Toyota continues to use the base strategies popularized in the late twentieth century: namely catalytic converters and electronic fuel injection, as well as oxygen and air/fuel sensors and dual-overhead cams. Several newer technologies are routinely used on Toyota vehicles today, often in parallel, to achieve cleaner vehicle emissions.

In the spirit of *kaizen*, Toyota has adopted and continues to adopt other technological strategies for cleaner vehicles. Variable valve timing (VVT) improvements continue. New engines also have reduced mechanical friction. In addition, Toyota employs direct fuel injection in some gasoline engines, a technique that provides both improved efficiency and cleaner exhaust emissions.

▶ REDUCING VOC EMISSIONS IN MANUFACTURING

Activities associated with automobile manufacturing result in VOCs and other emissions released to the atmosphere. VOCs from painting operations are the most significant emissions from our manufacturing facilities. To deal with these emissions, we rely heavily on our employees and on teamwork. Teamwork is emphasized in Toyota's Guiding Principles, and is key to cultivating and developing The Toyota Way. Developing talent and organization encourages employees to think self-reliantly and to be motivated to find new and better solutions to environmental challenges. At our plant in Ontario, Canada, hundreds of employees in the bumper and body paint area are trained annually on how their work may impact the environment. The plant defines and implements best management practices to reduce emissions, and encourages employees to work together to find and implement improvement projects.



The paint booth at our plant in Delta, British Columbia, is equipped with electrostatic bell and high volume low pressure spray technologies, which increase transfer efficiency of the paint to the wheel and reduce waste paint and VOC emissions.

VOCs From Painting Vehicles

We measure VOC emissions from vehicle painting operations in grams of VOCs emitted per square meter of total vehicle surface area. **We exceeded our five-year target to reduce VOCs from our painting operations to a corporate average of 14.0 g/m² by FY2011. (Target 11.1)** We are currently at 13.5 g/m² (please see Figure O below). Examples of our efforts to minimize VOC emissions from vehicle painting include:

- The car paint line at our plant in Fremont, California, posts monthly air abatement efficiency data at equipment control panels. Employees can now see how the unit is performing over time, visualize maintenance trends and improve preventive and predictive maintenance activities. In addition, a monitor in the central control room broadcasts the status of the air emission abatement devices graphically, allowing important real time information on equipment such as the temperature, gas flow, damper positions and alarms to be easily monitored.
- Our plant in Georgetown, Kentucky, has reduced the amount of solvent in the water-based purge in its painting operations. Implemented in the Plant 1 paint booths in November 2007, the plant has realized a reduction in VOC emissions of more than 1 g/m². This *kaizen* was implemented in the Plant 2 paint booths in February 2008, and has seen a reduction of more than 3 g/m².

Microorganisms Reduce VOC Emissions

Toyota's unit plant in Delta, British Columbia, recently added a third paint booth to meet the growing demand for assembled vehicles. As a result of this expansion, VOC emissions were expected to increase 14% from 2005, from 76 tons to 87 tons per year. In order to mitigate the VOC increase, the plant needed to implement new VOC emission reduction technologies to handle the increased activity.



An employee at our plant in Indiana inspects a bumper that has just been painted with a water-based primer.

Traditionally, the plant uses regenerative thermal oxidizers (RTO) to reduce VOC emissions in the air streams. The plant instead opted for a biofilter that biologically breaks down the VOCs into carbon dioxide and water vapor. Plus, CO₂ emissions from the biofilter are over 1,000 tons per year less compared to conventional technologies. The air stream from the paint booth, containing VOCs and odors, enters the biofilter where it goes through the first two stages, water and an inorganic media, before moving onto the final stage of the biofilter. At this stage, the air stream is circulated around spheres that contain microorganisms, which absorb and digest the VOC emissions, converting them to water vapor and carbon dioxide.

The biofilter is expected to reduce VOC emissions by 65% and, combined with newly added high-volume, low-pressure spray technology and electrostatically charged paint, the facility is expected to reduce net VOC emissions to 60 tons per year, even with the addition of the new paint booth.

VOCs From Painting Vehicle Plastics

Our VOC target for exterior plastics fascia, which consists of mostly bumpers, is new to our North American Environmental Action Plan. However, our plants are not new to managing and reducing these emissions.

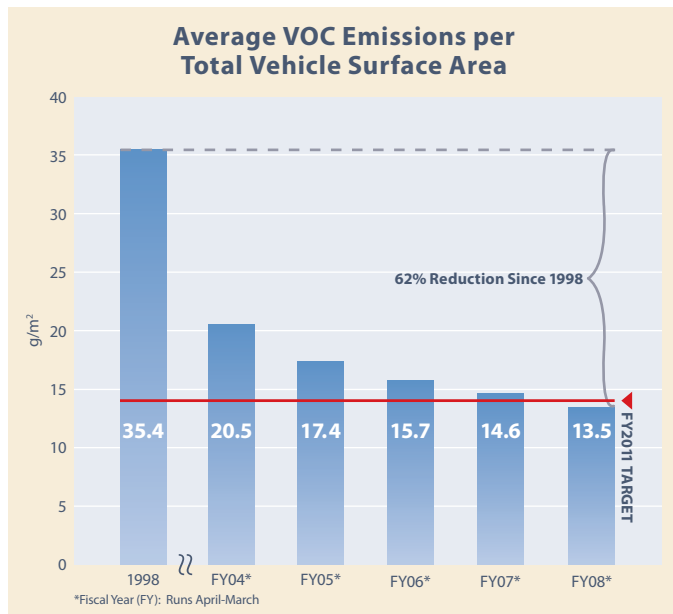
Each of our plastics paint shops has action plans with VOC targets. (Target 11.2) Based on their action plans, we will set a target for North America for overall plastics painting emissions. The target will be measured in grams of VOCs emitted per square meter of total painted surface area of the part.

Our facilities continue to find ways to reduce the VOC emissions from plastic painting operations. At our facility in Indiana, employees replaced solvent-borne primer with water-based primer for painting bumpers in early 2007, and as a result reduced VOC emissions by more than 37 tons.

LOOKING AHEAD

Over the next three years, one of the biggest challenges we face in meeting our action plan targets is to dedicate ample efforts into developing technologies that anticipate the market's expectation for lower tailpipe emissions.

FIGURE O



TOYOTA |

environmental management

Toyota works with suppliers to conduct treasure hunts that identify energy savings opportunities. One supplier to our Kentucky plant found that if they reduce the heating temperature in their facilities from 70 degrees to 66 degrees, they save an estimated \$27,000 per year.



“Toyota seeks to measure and improve a vehicle’s environmental impact across its life cycle — from manufacturing and distribution through recycling and disposal.”

– Dian Ogilvie, Senior Vice President & Secretary
Toyota Motor North America, Inc.



ENVIRONMENTAL MANAGEMENT EAP TARGETS

- | | |
|---|--|
| <ul style="list-style-type: none"> 12.1 ○ Introduce Eco-VAS on all new or redesigned vehicle models 13.1 ○ Minimize environmental risks and achieve leading levels of environmental performance 13.2 ● Receive zero notices of violations and complaints 13.3 ○ Consider LEED® certification for new buildings/remodeling 13.4 ○ Develop eco-plant plans for all new production facilities | <ul style="list-style-type: none"> 13.5 ● Maintain ISO 14001 certification at U.S. logistics facilities 13.6 ● Achieve ISO 14001 registration at two Canadian logistics facilities by the end of 2007 14.1 ● Update Toyota environmental requirements for U.S. manufacturing suppliers 14.2 ○ Implement U.S. Dealer Environmental Training Program |
|---|--|

GLOBAL AND REGIONAL ENVIRONMENTAL ISSUES are at a critical point, and require both governments and businesses to act. As we continue to grow, it becomes more vital for us to have functional, comprehensive systems in place to ensure that we manage our environmental footprint to the best of our abilities.

The environmental management systems (EMSs) in place at our facilities help us do more than comply with regulations. These systems help us address issues that are not covered by regulation, such as energy efficiency and recycling, and provide a means for managing environmental risks, such as groundwater contamination. Our EMSs help us to be proactive about any contamination that we do find. For example, we discovered ground contamination at our vehicle distribution center in Newark, and have been working with the New Jersey Department of Environmental Protection and the New York/New Jersey Port Authority on remediation.

Throughout this report, we describe how we look at all stages of the vehicle life cycle to try to minimize our environmental footprint. But none of this is done alone. We work with our business partners in order to achieve the best results. Our suppliers and our dealers play a large role in the success of our environmental initiatives.

Our targets in the areas of vehicle life cycle, environmental management systems, and environmental management with our business partners are listed above, and described in this chapter.

▶ VEHICLE LIFE CYCLE ASSESSMENT

Eco-VAS is a comprehensive system that Toyota uses to measure and reduce the environmental impact of a vehicle across its entire life cycle — from parts and vehicle manufacturing to driving and maintenance, to the ultimate recycling and disposal of the vehicle. **Since 2007, Eco-VAS has been introduced on all new vehicle models and redesigns. (Target 12.1)**

Toyota applies life cycle assessment to its packaging design. In 2007, we co-developed and began using the Environmental Packaging Impact Calculator (EPIC) to quantify and assess the environmental impacts and financial costs of packaging systems used at our parts logistics sites. Developed with

students of the Donald Bren School of Environmental Science and Management at the University of California in Santa Barbara, EPIC allows packaging engineers to evaluate the life cycle environmental impacts of packaging options in terms of air pollution, global warming, human health and toxicity, substances of concern, and resource depletion.

The students at the Bren School used EPIC to assess a materials change for the Lexus ES spoiler package. The old packaging for the spoiler consisted of cardboard and polyurethane foam, while the new packaging uses less cardboard and coated kraft paper instead of foam. EPIC showed that each spoiler shipped with the new packaging system emits 41% less CO₂ than the old system over its life cycle. There were also lower environmental impacts associated with resource use and substances of concern, and net financial savings. This tool will enable Toyota's logistics sites to predict the environmental impacts of future changes to packaging systems, and help our engineers make early and informed decisions.

▶ ENVIRONMENTAL MANAGEMENT SYSTEMS

Toyota's EMSs help us check that our activities comply with all applicable federal, state, provincial, territorial and local requirements, as well as our own internal requirements. All of Toyota's manufacturing plants and logistics sites, and even some of our office complexes, have an EMS.

The training our employees receive in EMS awareness and in functional areas such as hazardous waste disposal is critical to the continued success of the EMS, and to our ability to achieve leading levels of environmental performance. (Target 13.1) Thanks to a strong EMS that promotes continuous improvement, **Toyota facilities in North America received zero notices of violation and zero complaints in environmental matters in FY2008. (Target 13.2)** In addition, our North American logistics sites achieved their tenth consecutive year with no hazardous materials/dangerous goods violations.

Our new vehicle distribution center in Lafayette, Indiana, successfully completed ISO 14001 certification, and we have maintained ISO 14001 certification/registration at all North American manufacturing and logistics sites. (Target 13.5) With the registration of the Calgary sales

office in 2007, all of Toyota's Canadian sales and distribution sites are registered to ISO 14001. **(Target 13.6)**

Our manufacturing sites have taken their EMSs to the next level — enhanced EMS (eEMS). The enhanced EMS is a global initiative developed by our parent company in Japan. In FY2007, we adopted these requirements and integrated the enhanced EMS with our ISO 14001 system. In FY2008, we rolled out a North America-specific enhanced EMS audit program, and took over the auditing and training from Japan.

Our EMSs help us to continuously seek innovative ways to reduce our environmental footprint while we manage our growth. Our plant in Cambridge, Ontario, used water to capture paint overspray on a Lexus paint line. However, in order to clean the water for recirculation, the paint required a treatment using a petroleum-based chemical to make the paint less tacky. Toyota employees *kaizen*ed this process by switching to a compound called chitosan, a natural substance found in waste seashells from the seafood industry. The use of chitosan has allowed us to replace the petrochemical in our painting operations at the plant.

Our manufacturing plant in Long Beach, California, recently joined our plants in Indiana, Kentucky and West Virginia as members of EPA's National Environmental Performance Track program. Noted as the EPA "gold standard" for facility-based environmental management, membership is determined based upon the facility's history of environmental excellence. Through this program, our plants continue to demonstrate Toyota's commitment to environmental compliance and strong environmental management systems.



Our Long Beach plant has undertaken a number of initiatives that have improved the plant's environmental performance, including eliminating an ammonia scrubber, reusing precious metal recovery wastewater and cooling tower blow down water as makeup water for scrubbers, implementing a light retrofit, and replacing motors and compressors with more energy-efficient models.

Toyota's sales and logistics division held a competition to give facilities the chance to show off their environmental achievements. The competition helps facilities learn about each others' various initiatives, which facilitates best practice sharing. The 2008 winner was the vehicle distribution center in Georgetown, Kentucky, for reducing GHG emissions. The trophy is made of recycled auto parts.



Building Better Plants and Offices

We consider LEED® (Leadership in Energy and Environmental Design) during new construction and remodeling of our facilities. **(Target 13.3)** LEED is a point-based program administered by the U.S. Green Building Council that sets standards for "green" buildings. It promotes a whole-building approach to sustainability by recognizing performance in key areas of human and environmental health. We have a number of sites that have been LEED certified.

Our new engineering design and safety test facility in York Township, Michigan, opened in late summer 2008. The site was a former Brownfield. The facility has registered with the U.S. Green Building Council, and we are applying for LEED certification.

Through our EMSs, we work to reduce the risk of soil, surface water and groundwater contamination. **(Target 13.1)** At our manufacturing sites we develop eco-plant plans, a tool that helps us construct plants to use resources more efficiently and minimize our environmental footprint. Planning ahead allows us to reduce risk. We set performance targets that address energy, waste and water, and consider best practices and local conditions. We audit facilities during and after construction to check that the elements of the plan are implemented. **Eco-plant planning is under way all across Toyota North America. (Target 13.4)**

Operating Sustainable Plants

Our North American manufacturing operations have minimized our impact on the environment through our action plans, enhanced environmental management systems and eco-plant plans. These "Sustainable Plant" activities make efficient use of resources and harmonize our operations with natural surroundings. Toyota aims to create and operate such production sites worldwide with the following three perspectives in mind:

- Achieving groundbreaking environmental performance by introducing innovative technology and *kaizen* activities;
- Reducing CO₂ by using renewable energy (such as biomass) and natural energy sources (such as solar power and wind power); and
- Contributing to the local community and conserving the environment by planting trees at plants and in local communities.

The model plant for this initiative in North America is our plant in Mississippi, which will begin operations in 2010. This cutting edge plant will operate an innovative assembly line. The plant's eco-plant plan has been completed, and includes measures to reduce CO₂ and VOC emissions, reduce water consumption, achieve zero waste to landfill, and manage waste by introducing recyclable products. The site is also actively promoting tree planting activities as part of an effort to live in harmony with the environment and the local community.

► THE GREENING OF TOYOTA AND LEXUS DEALERSHIPS

We work with Toyota and Lexus dealerships to promote green building practices. Toyota's Image USA II program has developed architectural standards for dealerships that include many green design elements. For example, the exterior of a dealership building is to be made of aluminum composite material panels that are made of 90% recycled aluminum. Dealerships that have participated in the Image USA II program are recognizing substantial savings, particularly in energy and water use.

The Image USA II program has been promoting the LEED program to dealerships with some notable successes. Six Toyota dealerships in the U.S. have applied for LEED certification; of these, two have already been certified. Pat Lobb Toyota in McKinney, Texas, was the first LEED-certified dealership in the world for any brand. Toyota of Rockwall in Rockwall, Texas, recently became the first LEED-certified automotive dealership in the world to earn Gold certification. The Rockwall dealership is owned by Steve Jackson, who commented,



"Protecting the environment by building an eco-dealership is not only the right thing to do, but a smart business decision."

Toyota of Rockwall features many elements that save energy, conserve water and enhance the customer buying experience. For example, because of its

location in the drought-stricken north Texas area, the dealership collects rainwater and condensation from the air conditioning system and stores it in cisterns that can hold 63,500 gallons of water. This water is being used to establish native landscaping and eventually will be used to wash vehicles.

We will continue to work with our dealerships to promote green practices and reduce the environmental impact of bringing vehicles to our customers.

► ENVIRONMENTAL MANAGEMENT WITH OUR BUSINESS PARTNERS

Toyota works closely with our business partners, including suppliers and dealers.

Suppliers

Toyota's Green Supplier Guidelines were originally created in 2000, and updated in January 2007. (Target 14.1) The Guidelines emphasize that Toyota expects its suppliers to be in compliance with applicable laws, regulations and social norms. Suppliers are also asked to go beyond legal and social requirements and to undertake activities that support Toyota's environmental goals.

Toyota works with its suppliers to help them improve their environmental performance. For example, we recently began facilitating treasure hunts with our suppliers to promote energy conservation awareness throughout our supply chain. Treasure hunts are energy reduction events that we have been conducting within our manufacturing plants for years. Usually beginning on a Sunday afternoon, Toyota and its suppliers tour a supplier facility, taking inventory of lights and equipment that, for example, are on when they should be off. Teams are taught to use Toyota's energy savings calculation tool that presents the total amount of savings found.

A total of \$1.3 million of savings has been identified during 12 supplier treasure hunts conducted in FY2008. One supplier in California replaced their lighting with high bay fluorescent lighting and reduced electricity demands by 126 kilowatts with an annual savings of approximately \$115,000.

Dealers

There are over 1,800 Toyota, Lexus and Scion dealerships in the U.S., Canada and Mexico. As key business partners, we provide them with resources to help manage service-related waste streams and comply with environmental and safety regulatory requirements. We use the Web to provide a number of tools, including the Web-based Environmental Assistance Network (EAN) and an online HazMat compliance training course, HazMat U. (Target 14.2)

The North American Automotive HazMat Action Committee (NAAHAC) — of which Toyota is a member — and the Department of Transportation (DOT) recently pledged to work together to raise awareness of hazardous material transportation regulations and requirements within the supply chain of the automotive industry in North America. The supply chain includes automobile manufacturing facilities, service part distribution facilities, automotive industry suppliers, dealerships and independent mechanical and body repair facilities. NAAHAC and DOT will develop and distribute educational and outreach materials, coordinate specific events that promote hazardous material transportation awareness and training, and participate in ongoing outreach.

LOOKING AHEAD

Over the next three years, one of the biggest challenges we face in meeting our action plan targets is to minimize our environmental risks, even as our operations, footprint and market share increase.

TOYOTA |

cooperation with society

Bette Midler and Toyota's North American President Mr. Hayakawa cut the ribbon to open the Toyota Children's Learning Garden in Manhattan's Lower East Side neighborhood. The garden will provide K-8 schoolchildren with hands-on, interdisciplinary programs based on a garden science curriculum developed by the New York Restoration Project, a nonprofit founded by Bette Midler.



“Toyota will continue to make things better where we work, live and play by encouraging open dialogue with stakeholders to reduce our environmental impact.”

– Stephen Beatty, Managing Director
Toyota Canada, Inc.



COOPERATION WITH SOCIETY EAP TARGETS

- | | |
|---|--|
| <p>15.1 ○ Strengthen Toyota's North American philanthropy efforts that contribute to development of education and preservation of biodiversity</p> <p>15.2 ● Toyota Canada to maintain 25% of total philanthropic contributions toward environmentally focused programs</p> <p>15.3 ○ Promote environmental research aimed at CO₂ emissions reductions</p> <p>16.1 ○ Increase the transparency of Toyota's environmental plans, activities and performance</p> | <p>17.1 ⊗ Launch at least 100 additional remanufactured parts applications per year</p> <p>17.2 ● Expand the availability of environmentally preferable paper in U.S. sales and marketing operations</p> <p>17.3 ○ Encourage the safe and environmentally appropriate disposal of tires by dealers</p> |
|---|--|

TOYOTA'S GUIDING PRINCIPLES put communities and the environment at the heart of what we do. We aim for growth that is in harmony with the environment throughout all areas of our business. We strive to build close and cooperative relationships with a wide spectrum of individuals and organizations involved in environmental preservation. Wherever we do business, we actively promote and participate in philanthropic activities, both individually and with partners, that help strengthen communities and enrich society. Cooperating with society means contributing to sustainable development efforts through environmental philanthropy and research support, communicating our environmental plans and activities to our stakeholders, and contributing to a recycling-based society by supporting recycling efforts both internally and with our business partners. Our targets in these areas are listed above, and described in this chapter.

▶ CONTRIBUTIONS TO SUSTAINABLE DEVELOPMENT EFFORTS

Our corporate philanthropy focuses our environmental commitment to the community in two principal areas: environmental education and environmental stewardship. **We partner with nonprofit and community organizations, schools, universities and other businesses to support programs that help make our world a better place. (Target 15.1)** We believe in supporting programs with long-term sustainable results. Our contributions take many forms, including vehicle donations, funding, consulting and volunteer time.

In Canada, more than 25% of our philanthropy in 2007 was focused on environmental programs. (Target 15.2)

Environmental Education

We aim to provide greater opportunity for students and teachers at all levels, as well as to further the development of environmental literacy. A number of our environmental education programs are described here.

Support for the Donald Bren School of Environmental Science and Management

Toyota is supporting the Donald Bren School of Environmental Science and Management at the University of California in Santa Barbara with a \$400,000 grant to provide student fellowships and internships, and a professor-in-residence program, all in the interest of forwarding environmental research, teaching and education. The gift reflects Toyota's commitment to providing the best education and training for the environmental leaders and teachers of tomorrow, and its desire to apply cutting edge research performed at leading academic institutions to the environmental issues that face Toyota today. The professor-in-residence component will enable Bren faculty to accompany secondary teachers on study trips as part of the Toyota International Teachers Program (described in more detail on page 40).

Toyota Earth Day Scholarship Program

Toyota and Earth Day Canada established the Toyota Earth Day Scholarship Program in 2003 to help cultivate and nurture environmental leadership among students studying in Canada. Each year, the program awards 15 high school students who have distinguished themselves through environmental community service, extracurricular and volunteer activities, and academic excellence with scholarships.

In 2008, that National Winner was Keleigh Annau. In addition to the scholarship, she also received a notebook computer and a donation to her alma mater. One of Keleigh's most notable environmental contributions is Lights Out, an effort for schools to turn off their lights and spend one day learning about global warming. In the first year of this program, over 50,000 Canadian students participated. In the second year, the program went international, with over 90,000 students participating. Her dedication to this project exemplifies that small changes can add up to make a big difference.

The winning schools of the 2007-2008 Lexus Eco Challenge received a cistern made of recycled plastics to capture rainwater.



The Lexus Eco Challenge

The Lexus Eco Challenge, a partnership with Scholastic, is a nationwide program where middle and high school students participate in three team challenges addressing land, water and climate issues. For each of the challenges, teams define an environmental issue that is important to them, develop an action plan to address the issue, implement the plan and report on the results for a chance to win \$10,000. The winning team from the initial challenges are invited to participate in the Final Challenge, where two grand prize-winning teams are awarded \$50,000, while the 14 first place teams receive \$30,000. In total, more than \$1 million in scholarships and grants will be awarded to students, teachers and schools.

The 2007-2008 grand prize middle school winner was a team from New Jersey called the Climate Academy. They took on the challenge of educating Jersey City about storm drain pollution and its effects on ocean health and marine life. The Dream Team from Hawaii took home the high school grand prize for generating awareness of clean and renewable energy sources.

National 4-H Council's Exploring Your Environment Program

In April 2008, Toyota presented the National 4-H Council with a \$1.48 million grant to help 4-H introduce Exploring Your Environment, a new environmental curriculum specifically focused on promoting the organization's water conservation programs. In addition, 4-H will develop and launch 4-H2Online, an interactive online learning experience that will connect youth to water conservation issues and environmental engagement.

Finally, the award will expand the 4-H2O water conservation program nationally through community grants in California, Kentucky, Michigan, Mississippi and West Virginia. The community programs, launched in June 2008, address local water quality, water conservation and watershed issues. Information gathered during these one-year programs will be used to develop a local action plan and shared with local elected officials, schools and industry partners to educate and inform the public.

Toyota International Teacher Program

Celebrating its 10th anniversary, the Toyota International Teacher Program sends U.S. secondary teachers abroad each year to study global conservation issues. Aligned with Toyota's Global Earth Charter, the program seeks to inspire environmental stewardship through one of our best resources — educators. This competitive, merit-based program is administered by the Institute of International Education in Washington, D.C., a nonprofit international exchange organization.

The two-week study takes teachers to either Costa Rica or the Galapagos Islands. To date, over 500 teachers have taken part in this program. Their activities have touched hundreds of communities and thousands of students across the country through classroom lessons and service projects. A teacher in California who went on a study tour to the Galapagos in 2007 is planning with his students and school to create a solar-heated minigreenhouse to be placed in the Inyo Mountains. A New Jersey teacher who went on the same trip is planning a virtual field trip to the islands that the entire school community is invited to join.

Toyota has worked in the Galapagos Islands since 2001 with the World Wildlife Fund on projects ranging from recycling and waste management to renewable energy workshops for Galapagueño teachers. This past year, Toyota worked with the municipality to create an environmental department.

National Park Environmental Education Grants

In 2008, Toyota announced a \$5 million National Parks grant program (Toyota LEAF) to enhance environmental leadership and educational programs at Everglades National Park, Great Smoky Mountains National Park, Yellowstone National Park, Yosemite National Park, Grand Canyon National Park and multiple national parks through the National Park Foundation. Toyota made its first park announcement at the Everglades National Park, and held an event to highlight its contribution of five vehicles and over \$1 million. The contribution will support educational initiatives in the park over the next three years such as day program field trips and camping trips for grade school students, the K-12 Miccosukee Indian School program, in-park teacher workshops for day and camping programs,



Fourth-grade students from Cypress Elementary were the first to experience a Toyota-funded day program field trip to Everglades National Park.

The Toyota International Teacher Program sends secondary school teachers abroad to study global conservation issues. Teachers in Costa Rica participated in a Scientist for a Day field study at La Selva Biological Research Station.



in-park special programs for other school groups and student organizations, and in-school teacher workshops. Similar programs are being implemented at the other parks.

Environmental Stewardship

We aim to protect, preserve and improve the natural environment, and to establish systems by which people in the community will carry this work forward to coming generations. We partner with the following organizations to contribute to the preservation of biodiversity through funding and volunteering our time.

Arbor Day Foundation

In March 2008, the Arbor Day Foundation and Toyota partnered to create a new Facebook application called Tree Planter. Using Tree Planter, users gift virtual trees to their friends. For every gift sent to a friend, the Arbor Day Foundation plants a tree in one of 11 needy forests, including Custer National Forest, Hoosier National Forest and Huron-Manistee National Forests. Many of these forests have suffered devastating effects from recent forest fires.

The cost of sending a tree to a friend is \$1. The Arbor Day Foundation has a goal of planting one million trees in the first year of the application. Toyota supported the effort by purchasing \$50,000 worth of trees, so the first 50,000 users could send one tree to a friend for free.

Evergreen

In 2000, Toyota partnered with Evergreen Canada, an organization with a mission to bring both nature and communities together, to create the Toyota Evergreen Learning Grounds program. Now in its eighth year, this program is designed to transform Canadian school grounds into inviting play spaces and natural learning environments. Through our partnership with Evergreen, Toyota and its dealerships have contributed over \$5.2 million toward the realization of our shared goals.

In 2007, the program awarded over \$265,000 in grants to 132 schools and day care centers. The funds provide access to an online native plant database and project registry; grants ranging from \$500 to \$2,000 to assist in acquiring native plants, heritage vegetables and berries; and expert assistance through Evergreen and its Learning Ground Associates.

Friends of the Rouge Watershed

For the past eight years Toyota has sponsored the Friends of the Rouge Watershed, a community-based conservation group in Ontario, Canada, which serves to rehabilitate the environmentally sensitive Rouge Valley located within the Greater Toronto area. Since 2001, Friends of the Rouge Watershed, with assistance from Toyota Canada, have planted over 300,000 trees, shrubs and wildflowers on 1.3 million square meters of Rouge Park restoration sites.

National Audubon Society

In March 2008, Toyota donated \$20 million to the National Audubon Society to fund a new program called *TogetherGreen* for five years, enabling Audubon to expand the scope and reach of its internationally-known conservation programs. *TogetherGreen* will include three program components:

- Innovation Grants to fund dozens of on-the-ground projects each year that help achieve measurable land, water and/or energy conservation results;
- Conservation Fellowships to train and foster up to 200 promising environmental leaders who can serve as role models, expert guides and organizers for engaging new and diverse audiences in effective conservation action; and
- Volunteer Days to be offered at Audubon Centers and other locations nationwide, providing hands-on opportunities to address environmental problems and take part in restoration activities.

TogetherGreen will also reach a diverse array of audiences through www.TogetherGreen.org. This site helps visitors discover dozens of individual conservation actions to help them independently “green” their lives. It also provides opportunities to challenge friends to take conservation actions of their own.

In September 2007, Toyota sponsored National Public Lands Day for the ninth consecutive year in partnership with the National Environmental Education Foundation. More than 110,000 volunteers, including thousands of Toyota employees, improved trails, removed invasive plants, built bridges, planted trees and removed trash in natural areas and parks across the country.



Take Pride in America

Building on the success of National Public Lands Day, Toyota partners with Take Pride in America®, a national organization established by the U.S. Department of the Interior that aims to engage, support and recognize volunteers who work to improve public lands. Through this partnership, Toyota supports the Take Pride in America school campaign called Creating a New Generation of Volunteers, which offers K-12 teachers a Take Pride School Kit to enhance service-learning nationwide. In addition, Toyota sponsors the Take Pride “VolunTour Across America,” a nationwide trip promoting volunteerism on public lands.

National Wildlife Refuge Association

The winner of the National Wildlife Refuge Association’s 2008 Refuge Photo Contest is Mack Barham, M.D., for his photo of egrets taking flight in the morning fog at Black Bayou Lake National Wildlife Refuge in Louisiana. The contest showcases America’s national wildlife refuges and the diverse wildlife that depend on them. Toyota donated the top prize, a 2009 Highlander Hybrid.

Environmental Research Partnerships

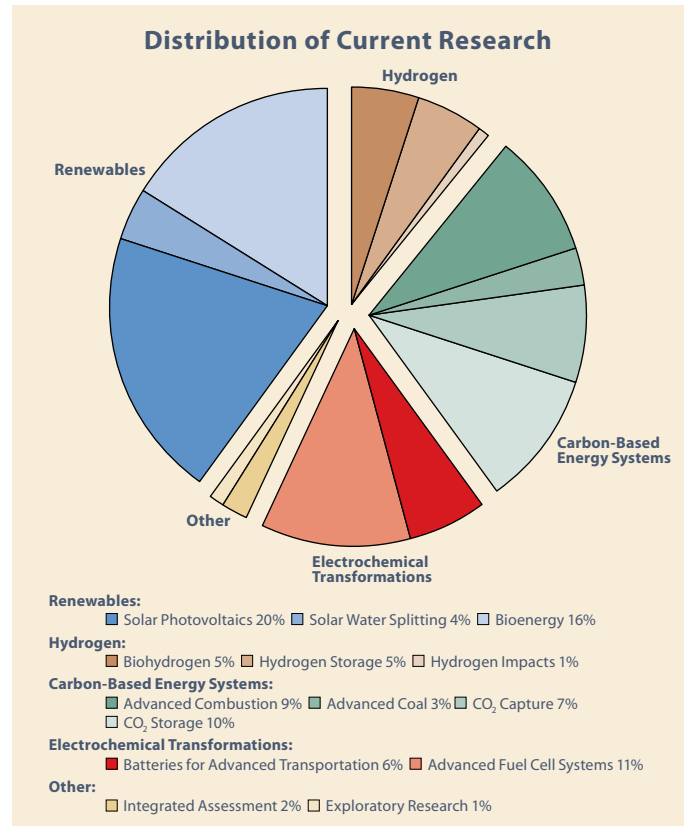
In addition to our philanthropy efforts, Toyota collaborates on research projects that promote sustainable development.

In particular, we work with academia and other companies on technologies that reduce greenhouse gas emissions. (Target 15.3) This research expands beyond automobiles because the car of the future requires a safe and reliable global energy system that supports mobility-friendly roads and cities.

One example of such a research partnership is the Global Climate and Energy Program (GCEP). Toyota is a co-sponsor, along with ExxonMobil, General Electric and Schlumberger, in this \$225 million, 10 year project to fund cutting edge clean-energy research. In its first five years, GCEP has funded 44 projects at 24 institutions around the world involving 70 Principle Investigators and over 300 graduate and postdoctorate students. In addition to six patent applications, researchers have published over 200 papers on GCEP-funded research.

GCEP’s mission is to conduct fundamental research on technologies that will permit the development of global energy systems with significantly lower greenhouse gas emissions. To accomplish this mission, GCEP activities are separated into two areas, research and analysis. In the research area, GCEP is building a diverse portfolio of innovative, step-out technologies that could lead to cleaner, more sustainable energy systems. In the analysis area, GCEP assesses the potential of processes and technologies to deliver useful energy and reduce greenhouse gas emissions. Toyota is proud to be part of the GCEP team and looks forward to continuing this groundbreaking energy research.

FIGURE P



COMMUNICATION WITH STAKEHOLDERS

Toyota communicates its environmental plans, activities and performance through this annual environmental report. (Target 16.1) This report is available as an interactive publication on the Web at www.toyota.com/environment/2008report. The report is distributed to the media, environmental NGOs and dealerships in the U.S. and Canada, in addition to government officials at the federal, provincial and local level. We also provide information about our hybrid vehicles through hybrid tours and green living shows (these are discussed in the Energy and Climate Change chapter on page 17).

In September 2007, employees from our Delta, British Columbia, plant volunteered to help construct a boardwalk to allow visitors to view Burns Bog. The plant also gave the Bog Conservation Society a \$7,000 donation.



▶ CONTRIBUTIONS TO A RECYCLING-BASED SOCIETY

Participating in the creation of a recycling-based society is one of the action guidelines in the Toyota Earth Charter. In North America, we see this participation as a key to being a good neighbor in the communities where we live and work. We use the knowledge we have gained from best practices implemented at our own facilities to teach others how and what to recycle, how to make raw material choices and how to set up recycling programs in their own organizations. To further encourage recycling in our society, we expand our lineup of remanufactured parts, increase the availability of environmentally preferable paper, and encourage the appropriate disposal of tires.

Remanufactured Parts

Toyota continues to support customer needs by expanding our lineup of remanufactured service parts. Remanufactured parts require fewer resources than new parts, decreasing the overall impact on the environment. The number of remanufactured parts launched each year may fluctuate, based on which vehicle applications are still outstanding. In several product lines, we are very close to up-to-date coverage. **In FY2008, we launched 96 remanufactured parts applications. (Target 17.1)**

Remanufactured parts are highlighted on the Toyota Wholesale Parts Web site at www.toyotapartsandservice.com. Part of this Web site is dedicated to remanufactured products — specifically to ordering, benefits and features, core return policies, program launches, promotions, technical information, and available resources.

Environmentally Preferable Paper

Toyota, through its participation in the Paper Working Group, is expanding the availability of environmentally preferable paper in our U.S. sales and marketing operations. The Paper Working Group is a collaboration among 11 leading companies and the nonprofit metaFore with the shared goal of making environmentally preferable paper products more widely available and affordable. The Environmental Paper Assessment Tool® (EPAT), a project of the Paper Working Group, allows for the consideration of major environmental impacts over the life cycle of paper products.

With the help of the EPAT, our U.S. sales headquarters campus, which includes sales, marketing and financial services functions, consolidated paper purchasing into two contracts. **Beginning in the fall of 2007, all fine paper has a minimum postconsumer waste (PCW) content of 10%, and office paper has a minimum of 30%. (Target 17.2)** Certain pieces of Scion collateral are printed on paper containing 30% PCW. Before this improvement, most of the fine and office paper purchased at headquarters contained no postconsumer waste.

Dealers and Tires

In the U.S., Toyota encourages its dealers to dispose of tires in a safe and environmentally appropriate way through the Tire Shark® tire disposal program. (Target 17.3)

The program seeks to improve scrap tire collection service, and promotes the use of only authorized and licensed scrap tire haulers to help ensure compliance with environmental requirements.

A Tire Shark machine from Oakleaf Waste Management compresses a tire and puts four nails into it so that it cannot be resold or reused. “Sharked” tires are then recycled and converted to crumbs for playgrounds and playing fields, as well as tire-derived aggregate and energy sources. The service was extended to an additional six dealers, with plans to shift as many dealers as possible to Tire Shark in the coming year.

LOOKING AHEAD

Over the next three years, one of the biggest challenges we face in meeting our action plan targets is to improve coordination of our efforts and communication with our stakeholders, so that our contributions to society are most effective.

TOYOTA |

north american presence

The Toyota Research Institute of North America (TRI-NA) was established in 2008 to accelerate advanced research on energy and environment, safety and mobility infrastructure here in North America. TRI-NA will be led by Dr. Noboru Kikuchi, shown at the right leading a meeting with researchers at the newly formed institute.



“Throughout North America, we strive to be the most admired company in town. And by working collectively, we can become the most admired company in the world.”

– Ray Tanguay, Executive Vice President
Toyota Motor Engineering & Manufacturing North America, Inc.



Toyota has been adding to the North American economy ever since we opened our first office here in 1957. We employ over 43,000 people, and our procurement of goods and services from North American suppliers has led to the creation of more than 255,000 jobs.

OUR COMPANY HAS BEEN EXPANDING ever since we opened our first office in North America in 1957. But our growth has been measured. Across our business, Toyota employees have worked hard to minimize our impact on the environment and to respect the communities in which we operate. We are no longer just an automobile company. Along with our sister companies in other countries, Toyota is a global citizen.

Our research and development division is using their technological expertise in new areas, triggering a new cycle of industry. The Toyota Research Institute of North America (TRI-NA) was established in 2008 with plans to spend \$100 million during the next four years on advanced research activity in North America. Toyota has been pursuing sustainable mobility, which addresses four key priorities: advanced technologies, urban environment, energy, and partnerships with government and academia. Based on these priorities, TRI-NA will accelerate advanced research on energy and environment, safety, and mobility infrastructure.

The institute will utilize existing facility space at the Toyota Technical Center's Ann Arbor campus. TRI-NA initially will employ 35 researchers and administration staff, and plans to add 10 researchers in 2008 and an additional 20 by 2010. "Toyota's decision to establish the Toyota Research Institute in Ann Arbor to direct advanced research activities for North America is another piece of good news for Michigan," Governor Jennifer M. Granholm said. "Toyota's decision demonstrates that Michigan is a leading state for research and offers an attractive business climate for companies to grow."

Toyota always considers long-term external influences when making major corporate decisions. To facilitate this process, the Energy and Environment Research Group (EERG) was started in January of 2008 in the Washington, D.C. office. The new group's mission is to study and analyze long-term issues, technologies and trends in the areas of energy and environment. The group will consist of both Japanese and American staff with strong backgrounds in energy, environment and climate science and analysis, who work closely with similar groups in Japan and eventually Europe.

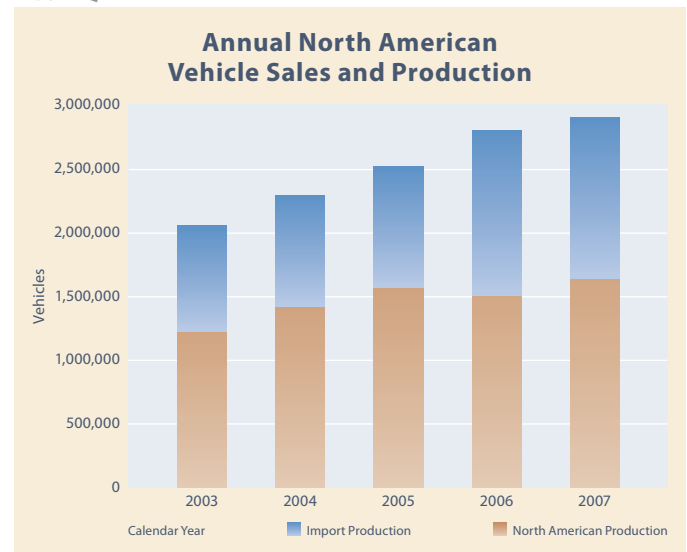
Initial areas being considered for analysis include biofuels, electricity generation, climate change legislation, future fuels and peak oil. The majority of the group's output will consist of thorough analytical studies, but occasionally they will be called on to produce timely, topical reports.

▶ TOYOTA BY THE NUMBERS

Toyota currently has over 175 operating locations in the U.S., Canada and Mexico. There are more than 1,800 Toyota, Lexus and Scion dealerships in North America that sell more than 2.9 million vehicles a year. We operate 13 manufacturing plants (and have another two under construction) that produce over 1.6 million vehicles a year.

Toyota established operations in North America in 1957, and now directly employs over 43,000 people. Our direct investment here is currently valued at more than \$21 billion, including sales and manufacturing operations, research and development, financial services and design. In 2007, Toyota spent more than \$29 billion for parts, materials, goods and services from hundreds of North American suppliers and business partners, creating more than 255,000 local jobs.*

FIGURE Q



*Represents direct, dealer and supplier jobs.

FIGURE R

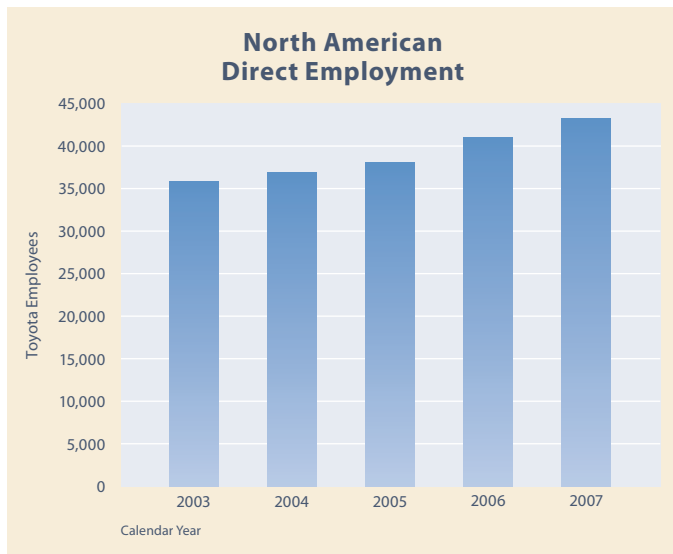


FIGURE S

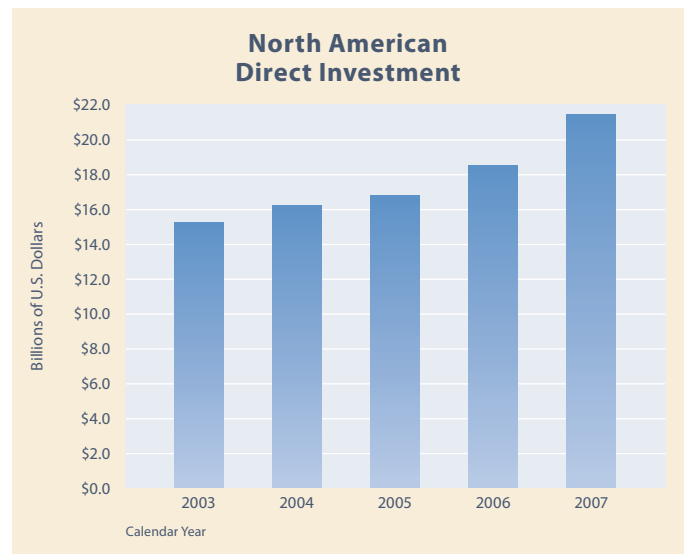
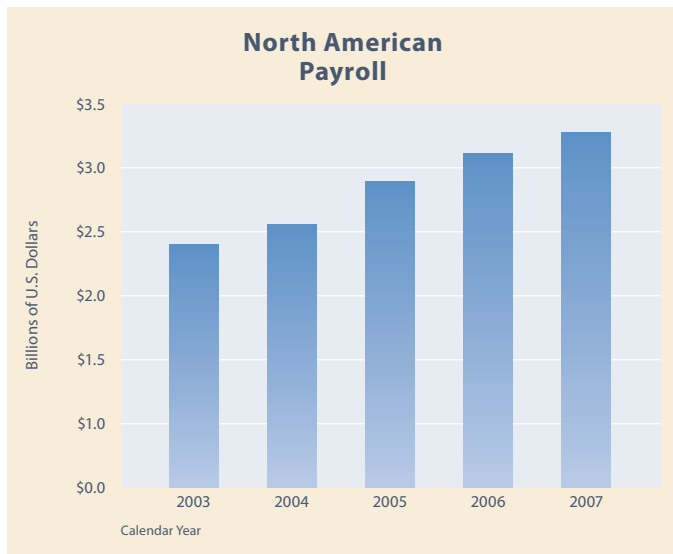


FIGURE T



Our manufacturing facilities are located in:

- Huntsville, Alabama
- Fremont and Long Beach, California
- Princeton, Indiana
- Georgetown, Kentucky
- Blue Springs, Mississippi (opening in 2010)
- St. Louis and Troy, Missouri
- Jackson, Tennessee
- San Antonio, Texas
- Buffalo, West Virginia
- Delta, British Columbia
- Tijuana, Baja California, Mexico
- Cambridge and Woodstock, Ontario

Toyota Motor Sales, U.S.A., Inc., headquartered in Torrance, California, is the marketing, sales, distribution and customer service arm of Toyota, Lexus and Scion in the United States. Through a network of parts and vehicle distribution centers, regional sales offices, and affiliates, TMS markets products and services to more than 1,450 Toyota, Lexus and Scion dealers.

Toyota Canada Inc., headquartered in Toronto, Ontario, is responsible for all of sales, marketing, distribution, parts and service activities for Toyota and Lexus and Toyota's Industrial Equipment Division operations in Canada.

▶ TOYOTA'S NORTH AMERICAN AFFILIATES

Toyota in North America consists of a number of affiliates.

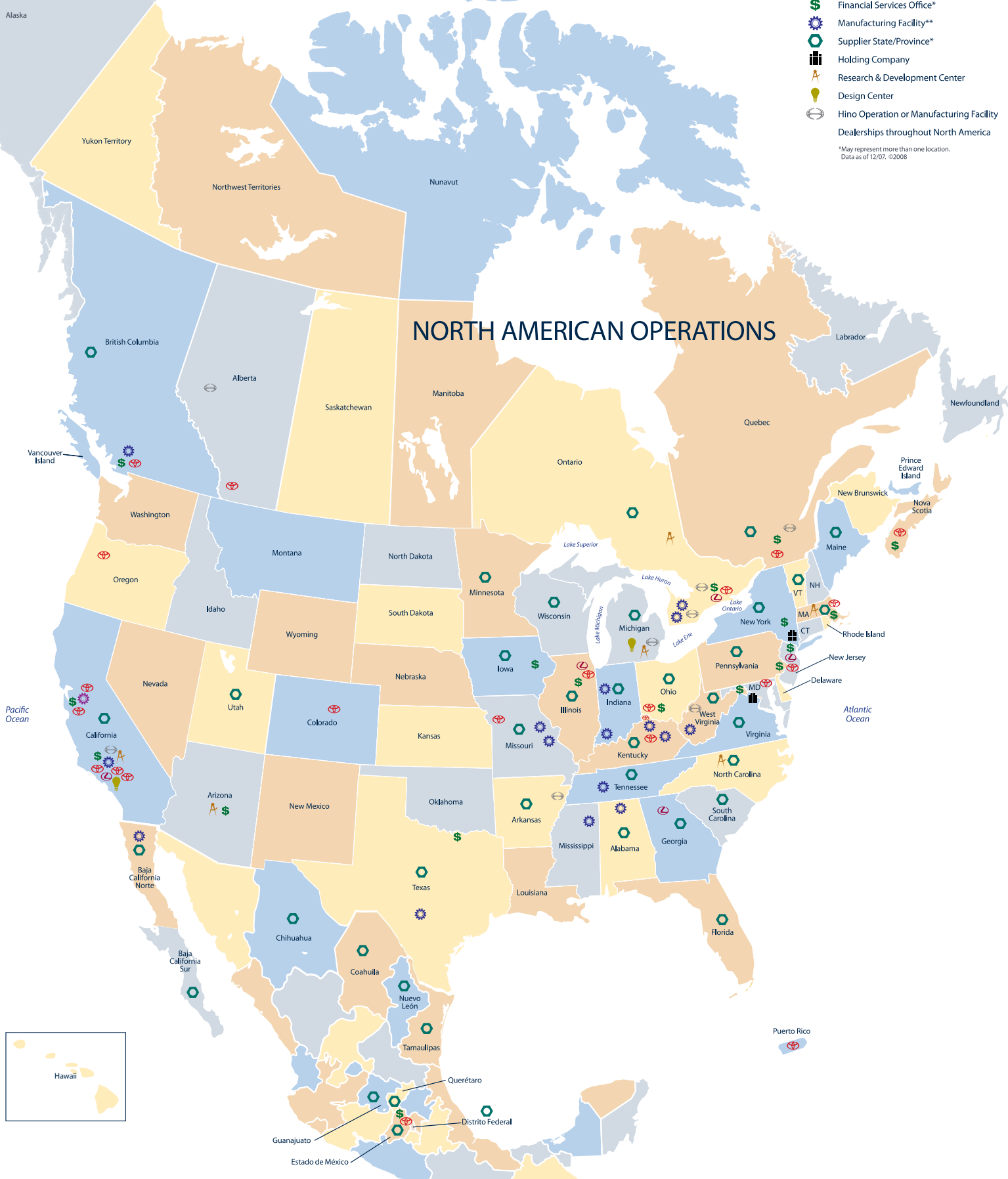
Toyota Motor North America, Inc. is a holding company for Toyota's U.S. sales and manufacturing operating units, with offices in Washington, D.C., New York City and Miami. Functions include government and regulatory affairs, energy, environment, economic research, philanthropy and corporate communications.

Toyota Motor Engineering & Manufacturing North America, Inc. was established in 2006 and is headquartered in Erlanger, Kentucky. The company is responsible for Toyota's North American engineering design and development, R & D, and growing manufacturing activities in the U.S., Canada and Mexico.

NORTH AMERICAN OPERATIONS

-  Toyota Sales or Service Office*
-  Lexus Sales or Service Office*
-  Financial Services Office*
-  Manufacturing Facility**
-  Supplier State/Province*
-  Holding Company
-  Research & Development Center
-  Design Center
-  Hino Operation or Manufacturing Facility

*May represent more than one location.
Data as of 12/07; ©2008



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