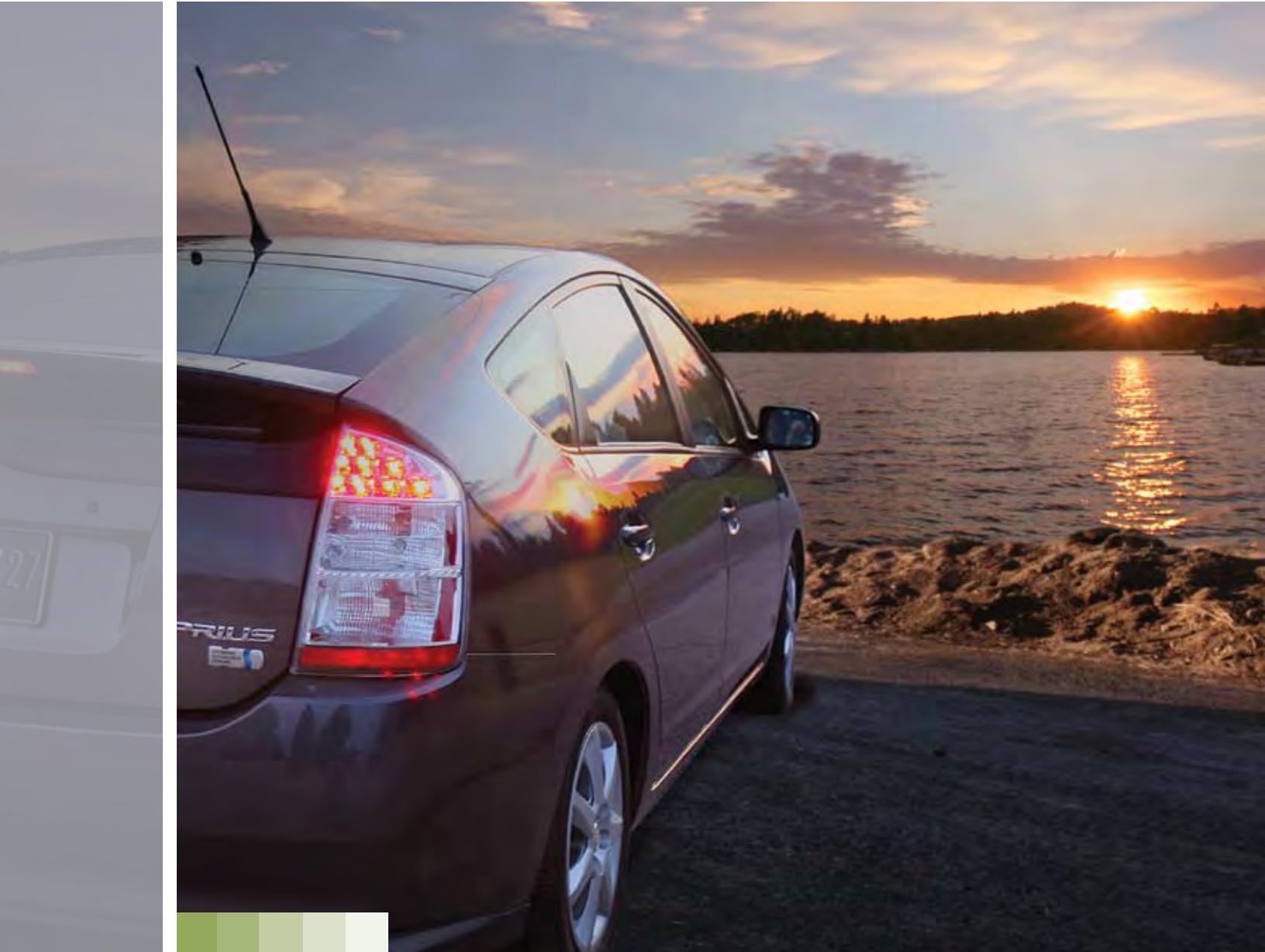


TOYOTA |

2007 North America Environmental Report

Challenge, Commitment, Progress



TOYOTA | dear reader

WE ARE PLEASED TO PRESENT the seventh annual Toyota North America Environmental Report. This report describes our progress toward achieving the goals set forth in our FY2007-2011 Environmental Action Plan.

2007 marks the 50th anniversary of Toyota doing business in North America, and we want to sincerely thank the customers and communities that have supported us over the years. 2007 has been a major year for Toyota globally and in North America, especially in terms of environmental progress. Toyota reached a milestone this year of a million sales of our hybrid vehicles, over half of which were sold here in North America. This is in part a reflection of a changing world — people around the world are increasingly aware of our interdependence as a global community, and our dependence on the planet. From global challenges like climate change and energy diversity, to opportunities for environmental and technology innovation, the public has become far more aware of environmental issues. These challenges push us to continually improve our product design and manufacturing processes.

In the coming years, social and environmental issues will be crucial to the auto sector. Currently, there are about three quarters of a billion cars worldwide. By 2050, there could be over two billion cars on the planet if the industry continues to produce cars at the current rate. Socially and economically, cars and trucks have become an indispensable part of modern North American life. For example, the average U.S. household

has more vehicles than drivers. In the next 10 years, 64 million people will get their drivers' license. As demand for our vehicles continues to grow, we plan to meet these needs with sustainable manufacturing practices and innovative environmental technologies.

Our enduring mission has been to contribute to society and the economy by producing high-quality products and services. This mission is supported by our values and our culture, which we call The Toyota Way. The Toyota Way serves as the foundation for our business activities and is the basis of our approach to environmental issues. Based on our understanding of long-term global environmental issues, on an evaluation of the environmental impacts of the full vehicle life cycle, and on feedback from experts within and outside Toyota, we have identified six areas that we consider to be most material to our environmental footprint. These areas structure our FY2007-2011 Environmental Action Plan and this report:

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

We trust that you will find this report interesting and informative, and we look forward to your feedback.



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



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



S. Hayakawa
Shigeru Hayakawa
 President
 Toyota Motor North America, Inc.



Jo Cooper
Josephine S. Cooper
 Group Vice President
 Chief Environmental Officer
 Toyota Motor North America, Inc.



Seiichi Sudo
Seiichi Sudo
 President and Chief Operating Officer
 Toyota Motor Engineering &
 Manufacturing North America, Inc.



Masuhiko Ichihashi
Masuhiko Ichihashi
 President
 Toyota Technical Center
 Executive Vice President
 Toyota Motor Engineering &
 Manufacturing North America, Inc.



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



Yoichi Tomihara
Yoichi Tomihara
 President and Chief Executive Officer
 Toyota Canada Inc.



Stephen Beatty
Stephen Beatty
 Managing Director
 Toyota Canada Inc.

TABLE OF CONTENTS:

> ENVIRONMENTAL VISION & ACTION	4
The Toyota Way	5
Environmental Coordination	5
Toyota's Guiding Principles and Earth Charter	6
Environmental Impacts at All Points of the Vehicle Life Cycle	6
Environmental Action Plan	8
> ENERGY & CLIMATE CHANGE	10
Toyota's Approach to Energy and Climate Change	11
Vehicle Fuel Efficiency	11
Vehicle Fuels Diversity	14
Advanced Vehicle Technologies	16
Advanced Transportation Solutions	19
Energy and Greenhouse Gases in Our Operations	19
> RECYCLING & IMPROVED RESOURCE USE	22
Reducing Waste — The Toyota Production System	23
Designing Vehicles Using Renewable Resources	23
Waste Reduction and Recycling in Our Operations	24
Water Consumption in Our Operations	27
> SUBSTANCES OF CONCERN	28
Reducing SOCs	29
Reducing Cabin VOCs	29
> AIR QUALITY	30
Reducing Tailpipe Emissions	31
Reducing VOC Emissions in Manufacturing	32
> ENVIRONMENTAL MANAGEMENT	34
Vehicle Life Cycle Assessment	35
Environmental Management Systems	35
Environmental Management with Our Business Partners	37
> COOPERATION WITH SOCIETY	38
Environmental Philanthropy	39
Communication With Stakeholders	43
Contributions to a Recycling-based Society	43
> CORPORATE PROFILE	44
Toyota's North American Affiliates	45
Toyota by the Numbers	46

SCOPE OF THIS REPORT:

The period covered in this North America Environmental Report is fiscal year 2007 (April 1, 2006 through March 31, 2007) and product model year 2007. If data are presented with different dates, this is clearly indicated. This report was published in October 2007.

This report is structured around our FY2007-2011 Environmental Action Plan. Issue-based reporting creates a new structure for this environmental report, which was previously organized around the life cycle process. We also provide information on our company's overall economic investment in North America. The report covers activities across the North American region — the United States, Canada and Mexico.

We launch this year a new Internet-based report. This report is also published in hard copy. French and Spanish versions are 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. A reader feedback form is 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 | © 2007
www.toyota.com | www.toyota.ca | www.toyota.com.mx

TOYOTA

environmental vision & action



The Toyota Prius is one of six Toyota and Lexus hybrid vehicles currently available to consumers.



“Our core principle is to contribute to society and the economy by producing high-quality products and services.”

– Based on *The Toyota Way*



- > THE TOYOTA WAY
- > ENVIRONMENTAL COORDINATION
- > TOYOTA’S GUIDING PRINCIPLES AND EARTH CHARTER
- > ENVIRONMENTAL IMPACTS AT ALL POINTS OF THE VEHICLE LIFE CYCLE
- > ENVIRONMENTAL ACTION PLAN

DURING OUR 50 YEARS IN NORTH AMERICA, Toyota has tried to do more than just sell cars and trucks. We have strived to make a contribution to society through economic growth and job creation, philanthropic activities, and environmental stewardship. And, we have approached these societal initiatives by using The Toyota Way.

The Toyota Way provides us with a means for our mission and vision to be achieved. It provides a way of thinking and acting for employees around the world that can be applied in different societies where we do business. It is also the key to how we understand and act on environmental challenges. Readers will find examples throughout the report that show how our corporate philosophy is implemented at all points in our organization.

> **THE TOYOTA WAY**

We use The Toyota Way to continuously improve our processes and products, to listen and build trust, and to respect and empower the individual and the team. There are two values that act as pillars to The Toyota Way, and five related practices. The two pillars are “continuous improvement” — we always work to improve; and “respect for people” — we value individuals and good teamwork. The five practices are evidenced in different sections of this report. They are:

- **Challenge:** To build a long-term vision and meet challenges with courage and creativity.
- **Kaizen:** To continuously improve our business operations, always striving for innovation and evolution.
- **Genchi Genbutsu:** To always go to the source to find the facts and make correct decisions; to build consensus and expeditiously achieve our goals.
- **Respect:** To respect others and the environment, to build trust, and to take responsibility.
- **Teamwork:** To stimulate personal and professional growth, maximize individual and team performance.

We welcome challenge because it forces us to rethink fundamentals and it prompts innovation and creativity. It also insists that we take a long-term view, do our research, and be bold and creative in seeking solutions. In environmental terms, examples of this can be seen in our development of eco-plant plans for new plants, and in our commitment to the development of hybrid technology.

> **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, as well as key executive coordinators from Toyota Motor Corporation in Japan. The committee’s working groups comprise environmental representatives 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.

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.

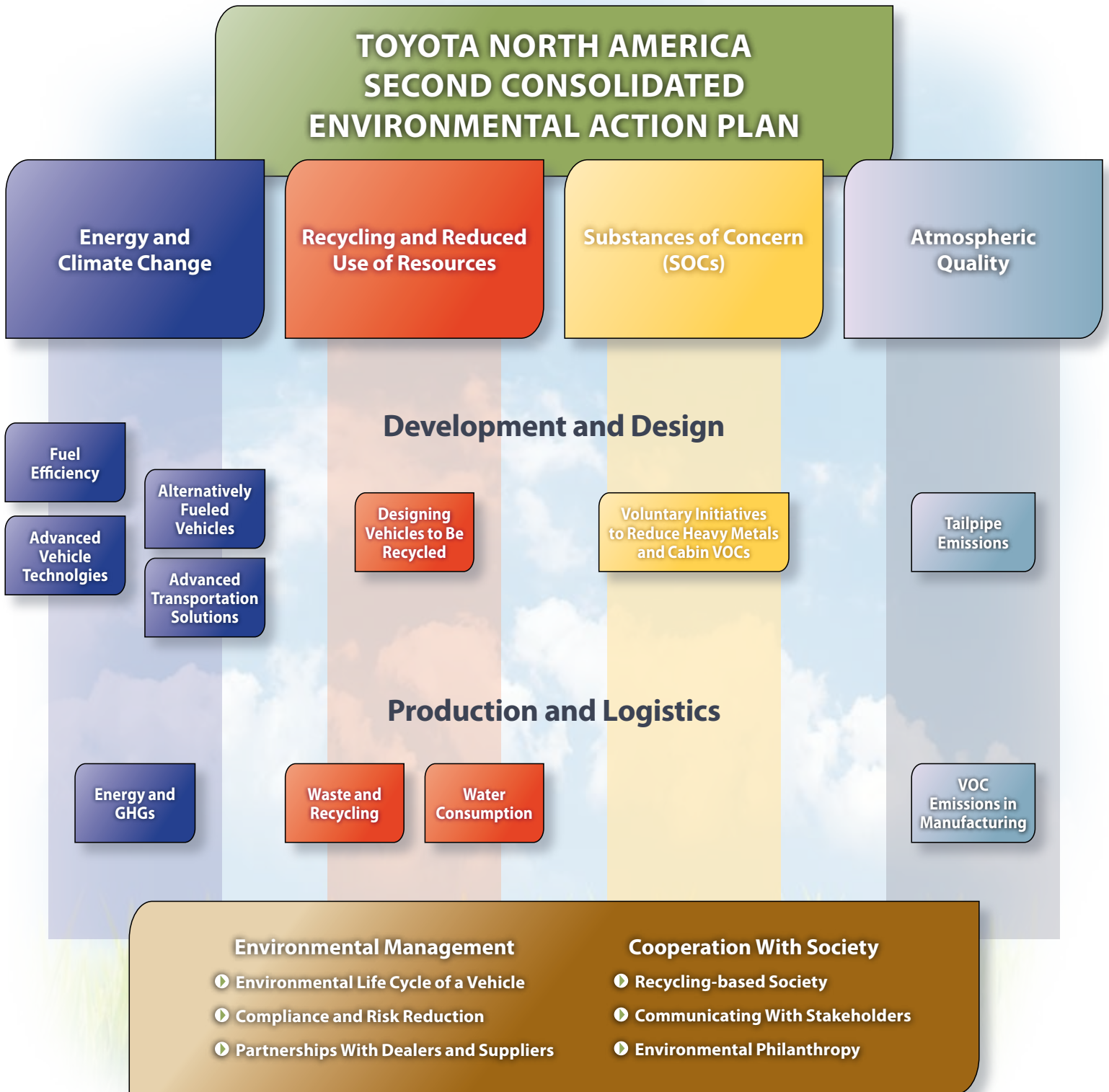
> TOYOTA'S GUIDING PRINCIPLES AND EARTH CHARTER

Toyota's seven Guiding Principles serve as the fundamental management policy for all our operations. 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. The Guiding Principles have been updated to integrate two additional commitments: Our "Global Vision 2010" and our "Contribution to Sustainable Development" — a commitment at the highest level to environment, economy and society. These can be viewed at www.toyota.co.jp/en/vision/sustainability. Our Guiding Principles also form a foundation for Toyota's Earth Charter (please see Figure B above).

> ENVIRONMENTAL IMPACTS AT ALL POINTS OF THE VEHICLE LIFE CYCLE

We think holistically about environmental impacts at each life cycle stage, 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 structure this report (please see Figure C next page).

Figure C



> ENVIRONMENTAL ACTION PLAN

Our five-year Environmental Action Plan is presented in Figure D below. The Action Plan 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 Action Plan. The status of many of our targets is “In Progress”; we will continue to work toward the achievement of these targets over the next four 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: <ul style="list-style-type: none"> Annually meet or exceed CAFE and CAFC standards in U.S. and Canada, respectively Continue development and deployment of fuel-efficient technologies through the proactive engagement of stakeholders 	<ul style="list-style-type: none"> ● ○ 	11, Fig. E 11
GOAL 2: Introduce vehicle technologies, which support the diversification of energy and fuel sources		
Targets: <ul style="list-style-type: none"> Promote awareness of the CO₂ reductions and energy security benefits of bio and synthetic fuels Partner with industry and government to identify and solve challenges toward full-scale commercialization of alternatively fueled vehicles 	<ul style="list-style-type: none"> ○ ○ 	14 14
GOAL 3: Promote the development of clean-energy vehicles and ensure wider market acceptance		
Target: <ul style="list-style-type: none"> Demonstrate feasibility, support necessary infrastructure development, and advocate policies that promote progress toward full-scale commercialization of advanced vehicle technologies 	<ul style="list-style-type: none"> ○ 	16
GOAL 4: Promote initiatives to reduce traffic congestion through a variety of networking technologies		
Target: <ul style="list-style-type: none"> Provide advanced transportation solutions by integrating on-vehicle Intelligent Traffic System (ITS) technologies that allow drivers to communicate with public information systems 	<ul style="list-style-type: none"> ○ 	19
GOAL 5: Reduce CO₂ emitted from North American operations and grasp CO₂ emissions volumes and reduction approaches		
Targets: <p>MANUFACTURING</p> <ul style="list-style-type: none"> 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 Meet or exceed AAM Climate VISION target of a 10% reduction in CO₂ emissions per vehicle from U.S. assembly operations by CY2012 (CY2002 base year) <p>SALES AND LOGISTICS</p> <ul style="list-style-type: none"> By fiscal year 2011, reduce energy consumption of U.S. facilities by 18% compared to FY2001 baseline Achieve 10% reduction in energy consumption from all Toyota Canada facilities by 2010 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) 	<ul style="list-style-type: none"> ○ ● ○ ○ ○ 	19, Fig. J 20, Fig. K 21, Fig. L 21 21
RECYCLING AND REDUCED USE OF RESOURCES		
GOAL 6: Further promote and apply the Design for Recycling (DfR) concept		
Target: <ul style="list-style-type: none"> Evaluate new materials from renewable resources (Toyota Eco-Plastic, natural fiber, recycled plastics, etc.) toward further introduction of eco-friendly parts 	<ul style="list-style-type: none"> ○ 	23
GOAL 7: Reduce waste and the need to recycle material throughout all operations and processes		
Targets: <p>MANUFACTURING FACILITIES</p> <ul style="list-style-type: none"> Reduce compensated waste (nonhazardous waste plus materials Toyota pays to be recycled) to 30 kg/vehicle Maintain zero landfill <p>NONPRODUCTION FACILITIES: Vehicle Design Facilities: Achieve zero hazardous landfill and reduce nonhazardous waste toward zero landfill</p> <p>SALES AND LOGISTICS FACILITIES</p> <ul style="list-style-type: none"> Recycle 60% of Toyota Motor Sales Headquarters waste in FY2007 Divert 95% waste from Toyota Canada main campus from landfill by FY2010 Reduce Toyota Canada facility paper consumption per person by 25% by FY2010 Reduce nonhazardous waste to landfill from U.S. North American Parts Operations by 33% from FY2006 baseline by FY2011 Achieve a 90% recycling rate at U.S. Toyota Logistics Services by FY2011 	<ul style="list-style-type: none"> ○ ○ ○ ● ○ ○ ○ ○ ○ 	24, Fig. M 24 24 25 25 25 26 26
GOAL 8: Reduce water consumption		
Targets: <p>MANUFACTURING: Reduce water usage to 0.98 kgal/vehicle</p> <p>SALES AND LOGISTICS</p> <ul style="list-style-type: none"> For U.S. facilities, evaluate baseline in FY2008 and set reduction targets in FY2009, focusing on areas where water is most scarce Achieve 10% water consumption reduction from Toyota Canada facilities by 2010 	<ul style="list-style-type: none"> ○ ○ ○ 	27, Fig. N 27 27

Status Legend: 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:		
• 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 Directives	●	29
• Identify and solve challenges toward effective management of additional vehicle SOCs	○	29
• Facilitate suppliers' SOC tracking and verification via the International Material Data System (IMDS) and support the development of SOC alternatives	○	29
• 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:		
• Meet all applicable emissions standards, including Tier 2 and LEV II new vehicle certification standards	○	31
• Maintain leading level in-use vehicle emissions compliance performance	○	31
• Promote the development of ultra low emissions technologies and introduce the lowest emitting vehicles	○	32, Fig. O
GOAL 11: Implement initiatives to reduce and track VOC usage and emissions		
Targets:		
• <i>Vehicle Painting:</i> Reduce body painting VOCs to a corporate average of 14.0 g/m ²	○	32, Fig. P
• <i>Vehicle Plastics:</i> Determine a VOC baseline in FY2006 and set plant targets that begin in FY2007	●	33
ENVIRONMENTAL RISK MANAGEMENT		
GOAL 12: Steadily reduce the environmental impact of Toyota vehicles over their product life cycle		
Target:		
• Introduce implementation of Eco-Vehicle Assessment System (VAS) on all new or redesigned vehicle models beginning in CY2007	○	35, Fig. Q
GOAL 13: Strengthen consolidated environmental management by incorporating environmental measures at the planning stages of a product or process		
Targets:		
NA OPERATIONS – ALL		
• Minimize environmental risks and achieve leading levels of environmental performance	○	36
• Zero annual notices of violation and complaints	⊗	36
• Consider LEED® (Leadership in Energy and Environmental Design) certification for new buildings/remodeling	○	36
MANUFACTURING: Develop eco-plant plans for all new production facilities (designing plants to minimize environmental impacts)	○	36
SALES AND LOGISTICS		
• Maintain ISO 14001 certification at U.S. vehicle and parts logistics facilities	○	35
• Achieve ISO 14001 registration at two remaining (of nine total) Toyota Canada facilities by the end of 2007	○	35
GOAL 14: Enhance and further promote environmental management systems for business partners		
Targets:		
SUPPLIERS: Update Toyota environmental requirements (Green Supplier Guidelines) for U.S. manufacturing suppliers	●	37
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:		
• 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
• Toyota Canada to maintain 25% of total philanthropic contributions directed toward environmentally focused programs	○	39
• Promote basic environmental research aimed at CO ₂ emissions reductions	○	42
GOAL 16: Enrich stakeholder communications		
Target:		
• Increase the transparency of Toyota's environmental plans, activities and performance by strengthening environmental communication with government agencies, ENGOs, business partners and local communities	○	43
GOAL 17: Contribute to the development of a recycling-based society		
Targets:		
• Launch at least 100 additional remanufactured parts applications per year	○	43
• Expand the availability of environmentally preferable paper in U.S. sales and marketing operations	○	43
• Encourage the safe and environmentally appropriate disposal of tires by dealers through the TMS Tire Program	○	43

Status Legend: Achieved ● In Progress ○ Missed ⊗

TOYOTA |

energy & climate change



Toyota strives to improve fuel economy through fuel-efficient engine and vehicle design, but also considers additional methods to enhance fuel efficiency. Toyota recommends SAE 0W-20 viscosity grade engine oil for an increasing number of models as one way to improve fuel efficiency.



“Toyota recognizes that climate change is occurring and ... is committed to continued action to address climate change and promote greater energy diversity ...”

– Toyota Testimony Before the U.S. House Subcommittee on Energy and Air Quality



- > TOYOTA'S APPROACH TO ENERGY AND CLIMATE CHANGE
- > VEHICLE FUEL EFFICIENCY
- > VEHICLE FUELS DIVERSITY
- > ADVANCED VEHICLE TECHNOLOGIES
- > ADVANCED TRANSPORTATION SOLUTIONS
- > ENERGY AND GREENHOUSE GASES IN OUR OPERATIONS

TOYOTA IS COMMITTED to continued action to address climate change and promote energy diversity. Action on both issues must, by definition, be broad in scope and involve a wide range of industries and sectors of the economy, including the motor vehicle industry, as well as consumers. Our part in addressing these issues is integral to The Toyota Way: to find the opportunity in challenges and meet them with courage and creativity, to accept responsibility, to understand the facts with thorough research and by involving multiple stakeholders, to form a long-term vision and plan, and, lastly, to take action.

> TOYOTA'S APPROACH TO ENERGY AND CLIMATE CHANGE

Clean energy — and ensuring its abundant supply to meet the world's future needs — will be one of the defining challenges for the 21st century. Society's energy demands continue to rise, particularly here in North America. Right now, our energy is sourced from carbon-based fossil fuels such as petroleum, coal and natural gas. In North America, 41% of our energy comes from petroleum-based fuels; approximately two-thirds of that petroleum is used for the transportation sector. (Based on International Energy Annual 2004 published by the U.S. DOE Energy Information Administration.) Fossil fuels are essentially nonrenewable, becoming harder to extract, and much of it comes from outside North America. For all these reasons, petroleum-based fuel is becoming more expensive, as we have seen as the price of gas has risen at the pump. When we drive a vehicle, it consumes fossil fuels and emits CO₂, a major contributor to climate change. So neither the feedstock of the conventional car — fossil fuels — nor the consequences of its use — climate change — are sustainable models for vehicles in the future. We need to design transportation solutions that overcome our reliance on fossil fuels.

Energy needs and climate change are complex issues. They will require societal action — the combined efforts by governments, policymakers, corporations and individuals — to address them. There is no single “silver bullet” solution — a multi-prong strategy is needed. The auto industry can accelerate the availability of fuel alternatives; we can improve the energy efficiency of our business operations; we can offer more fuel-efficient technologies and products. However, the broad commercialization of these ideas will require commitment from groups outside of the auto industry. Energy providers will need

to provide energy from renewable sources. Fuel providers will need to make new fuels available and provide the necessary distribution infrastructure. Government will need to establish incentives that spur development and the purchase of new technology and low carbon energy. Consumers will need to push market demand. In short, our success will be dependent on change from all sectors.

Toyota recognizes the growing need to take action to promote energy diversity and address climate change. We are not waiting for others to act before we take action ourselves. We are conducting a broad North American Greenhouse Gas inventory to understand the current GHG footprint of our operations and products. We are investing time, funding and our experience in collaborative and policymaking efforts to respond to climate change and help to diversify energy sources. We are developing cars and trucks that can travel farther on a single tank of fuel and operate on a variety of clean energy sources. We are becoming more efficient in how we design, build, distribute and sell our products. Our goal is to develop innovative technologies for the future while continuously improving the mainstream technologies of today in a way that meets customer needs and brings us closer to sustainable mobility.

Toyota has five environmental goals to help mitigate our energy and greenhouse gas (GHG) footprint: improve fuel efficiency; promote fuel diversification; develop advanced vehicle technologies; promote advanced transportation solutions; and reduce our energy and GHG emissions across our operations. This chapter describes activities in these areas.

> VEHICLE FUEL EFFICIENCY

The most direct, immediate measure the auto industry can take to help meet the challenges posed by energy demand and climate change is to improve the fuel economy of its products. In the U.S., fuel efficiency of new cars and trucks is regulated through the Corporate Average Fuel Economy (CAFE) standards. Today, the CAFE standard is 27.5 miles-per-gallon (mpg) for cars and 22.2 mpg for trucks. Toyota has a global goal to promote the development of technologies to achieve the highest fuel efficiency level in each country/region where we market vehicles. We have a strong track record of offering fuel-efficient vehicles in a broad range of vehicle classes throughout North America.

With growing concern over climate change and energy demands, pressure for increasing and reforming U.S. fuel efficiency standards has been rising. Toyota expects CAFE standards to increase over the next few years and supports raising both car and truck fuel economy standards.

In Canada, Toyota has joined with the rest of the auto industry to voluntarily meet a Corporate Average Fuel Consumption (CAFC) goal of 8.6 and 10.6 liters of fuel burned per 100 kilometers traveled for cars and trucks, respectively. **For the 2007 model year, we will exceed CAFE standards and CAFC voluntary goals for both passenger cars and light-duty trucks.**

U.S. EPA's 2007 Fuel Economy Guide lists the Toyota Prius as the most fuel-efficient passenger car sold in the U.S. The Natural Resources Canada's 2007 EnerGuide named the Toyota Yaris the most fuel-efficient subcompact, the Toyota Prius the most fuel-efficient midsize, and the Toyota Sienna the most fuel-efficient minivan. To promote the purchase of fuel-efficient vehicles, the Canadian government instituted a performance-based rebate program. Canadians who buy fuel-efficient vehicles are eligible for a federal rebate of up to CAN\$2,000. Toyota/Lexus have more eligible vehicles than any other manufacturer, six in all: Toyota Prius, Toyota Camry Hybrid, Toyota Yaris, Toyota Corolla (manual transmission only), Toyota Highlander Hybrid and Lexus RX 400h.

The fuel efficiency performance of Toyota's overall fleet is a reflection of our efforts at the model level. For example, the all-new 2007 Toyota Tundra comes with a 6-speed automatic transmission (available standard on the 3UR-FE 5.7L V8 engine). This sixth gear allows for a lower total gear ratio and improved highway fuel economy. Dual independent VVT for both the intake and exhaust camshafts increases efficiency through continuous optimized valve timing. Additionally, the 3UR-FE engine includes a unique cooling system that optimizes temperature and consequently permits enhanced engine control and further fuel efficiency improvement.



The 2007 Toyota Tundra 3UR-FE 5.7L V8 has improved fuel efficiency, thanks to a number of design elements.

With growing energy demand and concern over climate change, pressure is increasing to reform U.S. fuel economy standards. Toyota supports raising both car and truck fuel economy standards and expects CAFE standards to increase over the next few years. We believe that more stringent standards can be attained through continued technological advancements. For the auto industry to remain economically viable, new CAFE requirements must provide appropriate lead time and stability so that technology and product development can occur within existing cycles and produce cost-effective results that meet consumer needs. Toyota looks forward to working with the federal government to raise CAFE standards as a key method of reducing vehicle CO₂ emissions and fuel use.

Lower Viscosity Oil Improves Fuel Economy

Toyota strives to improve fuel economy through fuel-efficient engine and vehicle design, but also considers additional methods to enhance fuel efficiency. Low viscosity SAE 0W-20 multigrade gasoline engine oil, shown in the main photo on page 10, enables increased fuel economy performance over traditional, higher viscosity oils like SAE 5W-20, SAE 5W-30 and SAE 10W-30. Lower viscosity oils reduce friction while maintaining the necessary lubrication in the engine. SAE 0W-20 multigrade gasoline engine oil is now specified (for certain engines) in the following Toyota, Lexus and Scion 2007 model year vehicles:

- Toyota Camry
- Toyota Camry Hybrid
- Toyota Camry PZEV
- Toyota RAV4
- Toyota Tundra
- Toyota Highlander
- Toyota Tacoma
- Scion tC
- Lexus LS 460

Toyota plans to introduce low-viscosity SAE 0W-20 multigrade engine oils to additional vehicle models in the future.

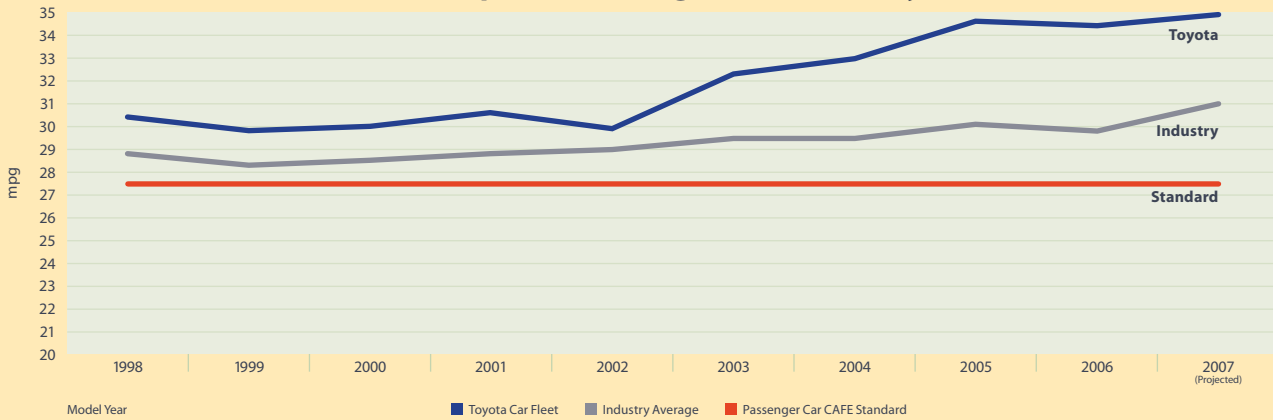
Engine Design and Fuel Efficiency

Toyota's progress in fuel efficiency has come through continued advancements in vehicle and internal combustion engine design; examples include four intake valves per cylinder, variable valve timing, and low friction materials.

Our latest engine design innovation is called "Valvematic." It is a next-generation engine valve mechanism that can improve the fuel efficiency of gasoline-powered vehicles by 5% to 10%, depending on driving conditions. The system is a variable valve

Figure E

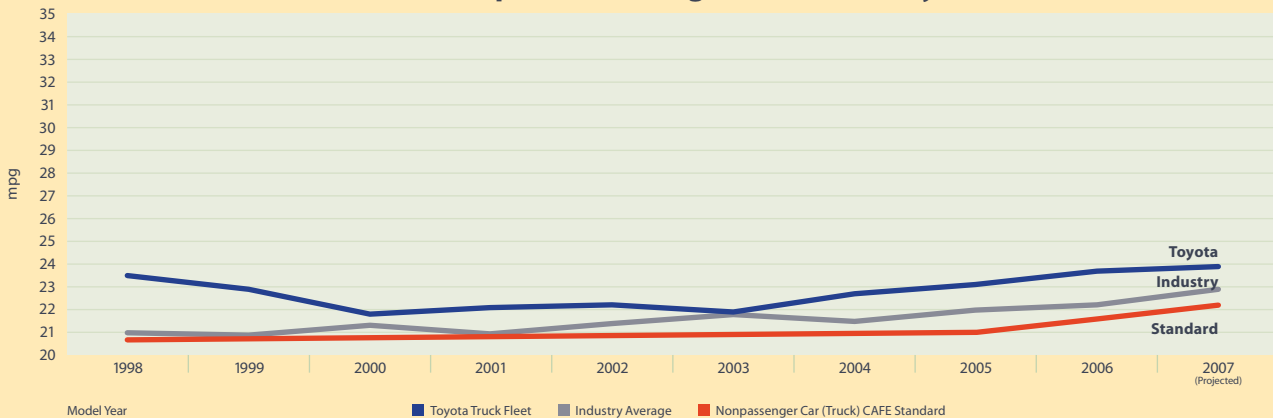
U.S. Car Corporate Average Fuel Economy, or CAFE



Indicates Better Performance

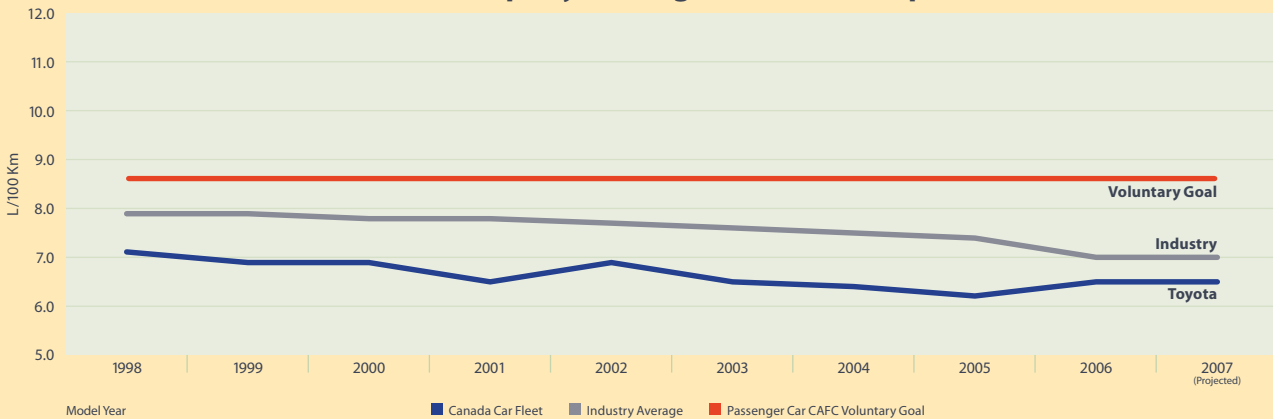
NOTE: 2007/08 Toyota data are projected based on midmodel year CAFE estimates reported to the National Highway Traffic Safety Administration. The 2007/08 industry estimates are projected by the National Highway Traffic Safety Administration.

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



Indicates Better Performance

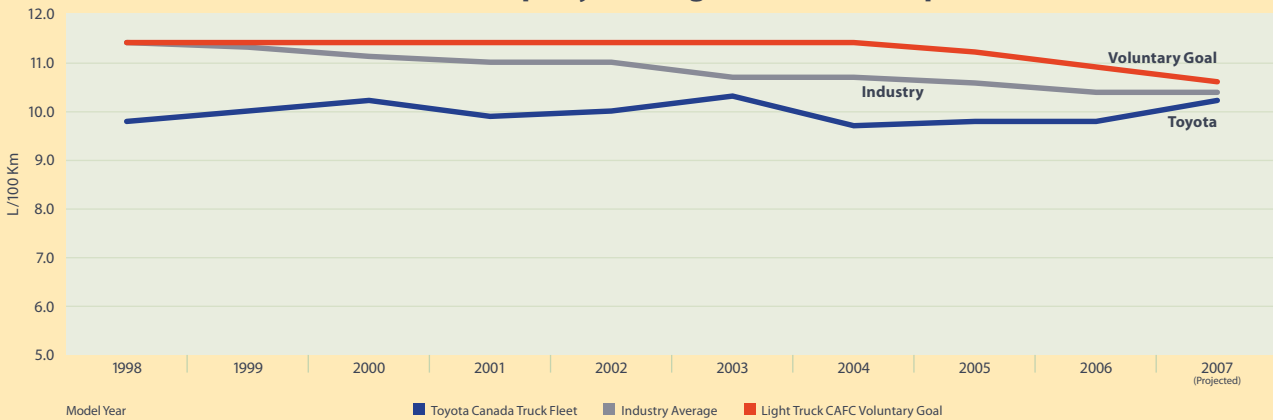
Canadian Car Company Average Fuel Consumption, or CAFC



Indicates Better Performance

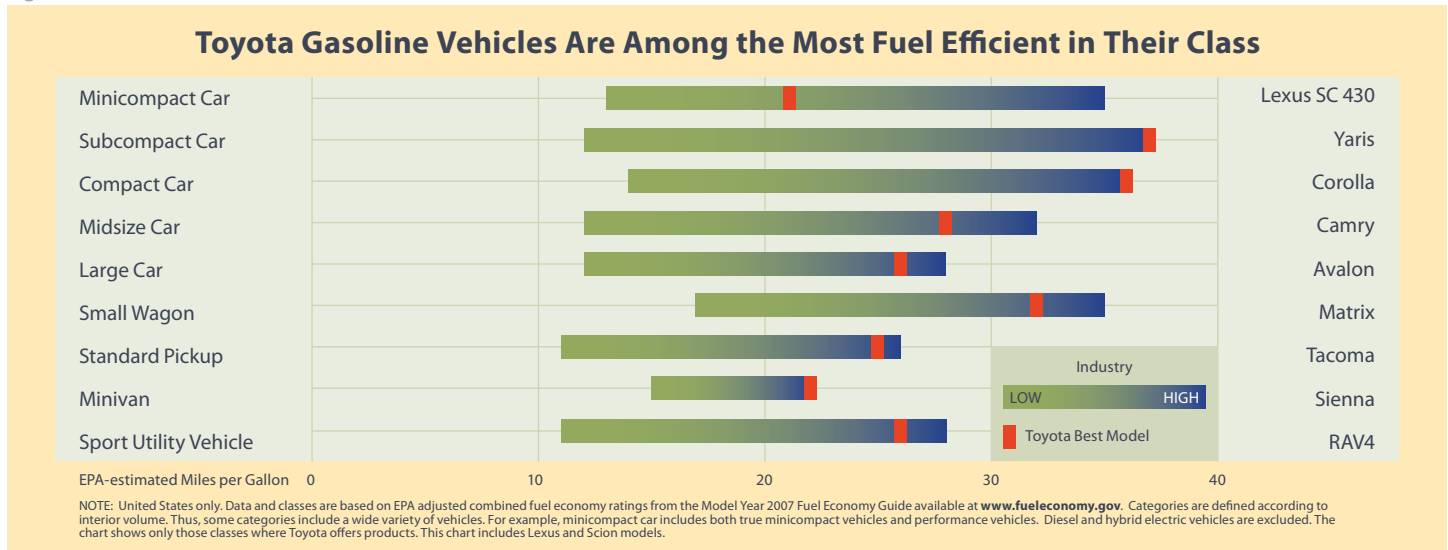
NOTE: 2007/08 Toyota data are projected based on CAFC estimates reported to Transport Canada. The 2007/08 industry estimates are projected by Transport Canada.

Canadian Truck Company Average Fuel Consumption, or CAFC



Indicates Better Performance

Figure F



lift mechanism which combines VVT-i (Variable Valve Timing-intelligent), which continuously controls intake valve opening/closing timing, with a new mechanism that continuously controls the intake valve lift.

While conventional engines control air intake using a throttle valve, Valvematic adjusts the volume of air taken in by continuously controlling the intake valve lift volume and timing of valve opening and closing. This helps ensure optimal performance based on the engine's operational condition, thus helping vehicles achieve both high fuel efficiency and dynamic performance. The system is planned for introduction with a new 2.0 liter engine currently under development.

Fuel Efficiency and CO₂ Emissions

The chemistry of combustion directly links fuel efficiency and CO₂ emissions. More fuel-efficient vehicles generate fewer CO₂ emissions over the same distance traveled. Figure G shows that CO₂ emissions from Toyota's new vehicles are well below that of the industry average in both the U.S. and Canada, for both cars and light-duty trucks.

Based on our estimates, the past 10 model years of Toyota vehicles sold in the U.S. will consume 11 billion fewer gallons of gasoline (nearly 265 million fewer barrels of oil) over their lifetime than if we had merely met fuel economy standards. These same vehicles will emit over 100 million metric tons less of CO₂.

> 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 broadly

commercialized 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. Below we describe some of the leading alternative fuels and some of the challenges we are working to overcome.

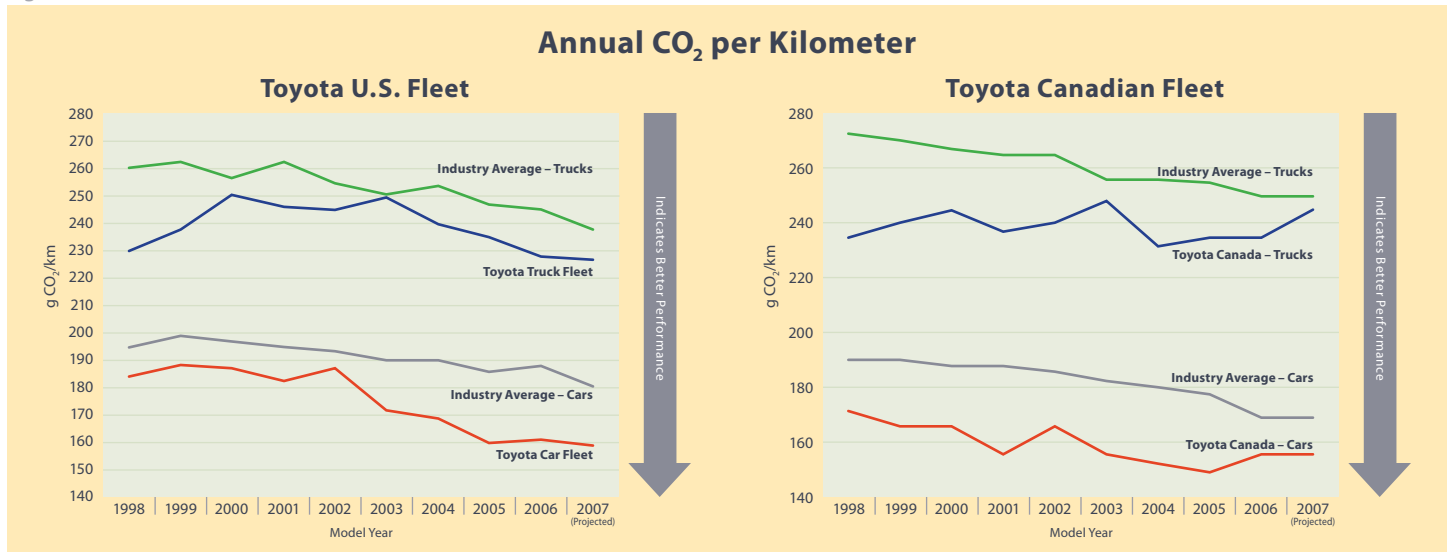
Biofuels

Biofuel is any fuel made from organic matter such as plants, animals or their by-products. The most common biofuels are ethanol and biodiesel. In the U.S., ethanol is typically produced from fermentation of corn and mixed with gasoline. In North America, biodiesel is made primarily from soybeans and blended with diesel fuel.

Toyota believes biofuels have large market potential because they can displace conventional fuels with only minor modifications to the traditional gasoline or diesel engine. For example, all Toyotas since 1970 are capable of operating on E10, a blend of 10% ethanol and 90% gasoline. Next year, select 2009 Tundra models will offer flexible fuel capability on E85. This allows the vehicle to operate on fuels containing up to 85% ethanol. The FFV (flexible fuel vehicle) Tundra will be available primarily in the midwestern U.S., where the majority of E85 stations are located. This is because despite their potential, biofuels are still not readily available.

In the U.S. today, nearly 10 million vehicles are equipped to run on E85; but E85 is sold at less than 1% of fueling stations and accounts for less than 0.2% of fuel sold nationwide. Distribution is a challenge as most of the ethanol is produced in the Midwest and must be shipped via rail, because it is incompatible with oil pipelines. Vehicle range and cost competitiveness are also concerns. Because E85 contains only three-fourths the energy of gasoline, users experience a range reduction — up to 30% fewer miles per tank of fuel — and at current prices, an increase of 10-25% in fuel costs.

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.

While most ethanol produced in the U.S. is made from corn, which can reduce overall CO₂ emissions by up to 20% compared to gasoline on an energy basis, there are concerns that further corn ethanol production increases will drive up the cost of food, lead to over farming of marginal lands and consume massive amounts of water. These issues will likely prevent traditional corn-based ethanol from displacing more than 15% of U.S. gasoline consumption.

As with E85, biodiesel is sold in extremely small volumes and at few retailers. Additionally, biodiesel fuel standards for finished blends do not exist today which presents a challenge for engine design and consistent engine performance. Toyota is working with ASTM International to set appropriate fuel quality standards that will ensure consistent fuel quality.

For biofuels to significantly reduce petroleum consumption, production technologies must be perfected to make fuel from all types of plants and plant materials. In both Japan and the U.S., Toyota is investigating these technologies. We hope that breakthroughs in these areas will lead to low-cost biofuels that can be produced in large quantities with minimal environmental impacts.

Synthetic Fuels

There are two primary types of synthetic fuels, gas-to-liquid (GTL) and coal-to-liquid (CTL). Both are produced by gasifying the base fuel, natural gas or coal and rearranging the hydrogen and carbon atoms in the gasified mixture to form either gasoline or diesel. Since the product fuels are "assembled," it is possible to optimize specific properties — such as eliminating sulfur or increasing the cetane level in diesel fuel. Synthetic-fuel technology has been proven in specialty applications. However, the high cost of production facilities, the large quantity of carbon emissions generated during production, and the high cost of the fuel remain hurdles that must be overcome before synthetic fuels are widely used and displace significant amounts of petroleum.

Hydrogen

Hydrogen is viewed by many as the ultimate fuel. It can fuel both conventional engines and fuel cells, can be produced from many base fuels (energy diversity), and when used in a fuel cell, the only vehicle emission from combustion is water. Depending on how the hydrogen is produced, low GHG production emissions are also possible. These potential benefits have led all major auto manufacturers to develop and field a variety of hydrogen fuel-cell vehicles. Toyota currently has a fleet of nine fuel-cell vehicles on the road today logging real world miles (see page 18 for additional details).

Extensive real world testing of these vehicles has highlighted the challenges of using hydrogen as a fuel. Because hydrogen's energy density is low, storing an adequate amount of fuel on-board a vehicle is difficult. Currently, even with 10,000 psi tanks, manufacturers are struggling to realize a real world driving range of over 300 miles, while a typical gasoline powered vehicle enjoys a range of 400 miles or more.



The Canadian Automobile Association presented the Pyramid Award™ for Environmental Initiatives to Toyota Canada for the 2007 Camry Hybrid. The Automobile Journalists Association of Canada also named the Camry Hybrid its top passenger car for 2007. Since the Camry Hybrid went on sale in May 2006, it has accounted for about 20% of all Camrys sold in Canada.

Driving range is critically important to users, and there are very few hydrogen fueling stations — approximately 20 exist in the U.S. This number is expected to grow to support small fleets of fuel-cell vehicles in California. But beyond California, further growth is uncertain, as costs to upgrade existing fueling stations for hydrogen can exceed \$1,000,000 and a station may struggle to recoup costs with few hydrogen vehicles on the road. Therefore it is critical that energy providers, auto manufacturers and regulators work together to assure hydrogen infrastructure growth is proportional to the number of hydrogen fueled vehicles on the road.

Electricity

Electricity, when used to recharge electric vehicles, is an alternative to gasoline or diesel fuels. Its advantages are: A variety of fuels are used to generate electricity (energy diversification); the “refueling” infrastructure exists (household and garage outlets are a potential source); and it is relatively low cost (assuming off-peak charging). Among its disadvantages are that there is no improvement in CO₂ emissions versus gasoline if coal (without GHG capture and sequestration) is used to generate the electricity, and the cost of charging during peak times is high.

As with hydrogen, on-board storage of electricity is currently problematic. High performance, long-life batteries are extremely costly, heavy, and can be difficult to package on a vehicle in a quantity to support full function electric vehicles. To mitigate these issues, auto manufacturers are studying ways to incorporate off-board charging into today’s hybrid vehicles. These Plug-in Hybrid Vehicles (PHVs) use a larger battery pack than a hybrid (but much smaller than an electric vehicle) and are designed to be charged using grid electricity. During vehicle operation, the energy in the on-board battery is used, reducing the PHV’s fuel consumption. Toyota researchers in North America and around the world are looking for ways to improve battery technology to make PHVs commercially viable (please see page 17, including Figure H, for additional details).

CNG

A number of manufacturers have experimented with compressed natural gas (CNG) as a vehicle fuel. But interest has waned as gasoline vehicles have become cleaner and the price of natural gas has increased. Additionally, for the individual consumer CNG has many of the same issues as hydrogen: limited refueling infrastructure, reduced vehicle range, and higher fuel cost. In contrast, CNG has been very successful in transit fleets. Centralized refueling and long-term fuel contracts minimize the disadvantages, while CNG engines offer significant improvements in emissions over traditional diesel bus engines.

The fuels described above have great potential, but obstacles must be overcome before they can make a large-scale contribution. Toyota will work in collaboration with energy producers and government to overcome the challenges posed by alternatives to conventional petroleum fuels and vehicles, so they can play a meaningful role in our future transportation system.



Highway to the Future: Mobile Hybrid Experience is a state-of-the-art interactive trailer touring the U.S. to educate consumers about alternative fuels, hybrid technology and the environment. It features hands-on displays and exhibits that highlight ways to make a positive impact on the environment. Please visit www.highwaytothefuture.com for more information.

> ADVANCED VEHICLE TECHNOLOGIES

It is likely that a variety of alternative fuels will play a role in addressing the world’s energy and climate change challenges. **In anticipation of the diverse automotive fuels of the future, 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 these fuels as they become available.**

Hybrid Vehicles

Hybrid vehicles are here today. 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 has sold more than one million hybrids worldwide, with more than half of these sales in North America — over 557,276 units through April 2007. We have steadily increased our hybrid product offering since the Prius was first introduced in North America in 2000. We now have three Toyota hybrids (Prius, Highlander Hybrid and Camry Hybrid), and three Lexus hybrids (RX 400h, GS 450h and LS 600h L). We anticipate combined sales of Toyota and Lexus hybrids of a quarter million units in North America during calendar year 2007.

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. 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 has confirmed FCHV startup and operation at temperatures as low as minus 30 degrees centigrade. This was both a thrilling experience and critical milestone for the Toyota FCHV program.



- 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 2007.
- 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 the fifth year, Toyota provided chauffeured hybrid vehicles to celebrities and movie industry professionals who attended the annual Academy Awards®, Independent Spirit Awards and Golden Globe ceremonies. This is another way that Toyota promotes wider market acceptance of hybrid vehicles.

For more information on Toyota hybrids, please visit www.toyota.com/HSD and www.hybridsynerdrive.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 was fitting that in July Toyota became the first vehicle manufacturer to certify a Plug-In Hybrid Vehicle (PHV) for road use in Japan. As previously discussed, a PHV offers all the advantages of a conventional hybrid vehicle, plus has the potential to recharge the on-board battery pack from home or any location providing a PHV outlet. Depending on the driving profile, regular recharging can significantly reduce gasoline consumption and potentially reduce both mobile source GHGs and criteria pollutants. Additionally, PHVs offer fuel diversity, as the vehicle can use gasoline or electricity (which itself comes from a variety of sources).

Toyota's first PHV prototype is based on the current Prius and designed to demonstrate the flexibility of the Hybrid Synergy Drive as compared to a conventional vehicle. With primarily software modifications and a larger nickel-metal hydride (NiMH) battery pack, it can accelerate briskly and is capable of reaching 60 MPH 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.

Two of these first-generation PHV Prius will arrive in the U.S. during fall 2007 and will participate in the Clean Mobility Partnership program at the University of California campuses in Berkeley and Irvine. This multiyear project will evaluate vehicle, infrastructure and marketability issues of different advanced vehicle technologies — hybrid, fuel cell and PHV.

These PHV prototypes will provide data to help Toyota understand the benefits and limitations of the technology and to advance our development of a next-generation vehicle. Real world information such as fuel and electrical consumption, overall vehicle efficiency and consumer acceptance are invaluable to creating a commercially viable vehicle.

As with all electric vehicles, the primary technical challenge for PHVs is the battery. Current battery technology is inadequate for a commercial PHV product. Power and energy density must increase significantly, while cost must decrease and battery life remain similar to current hybrid batteries. These are extremely challenging targets and will likely require scientific breakthroughs to achieve.

Figure H

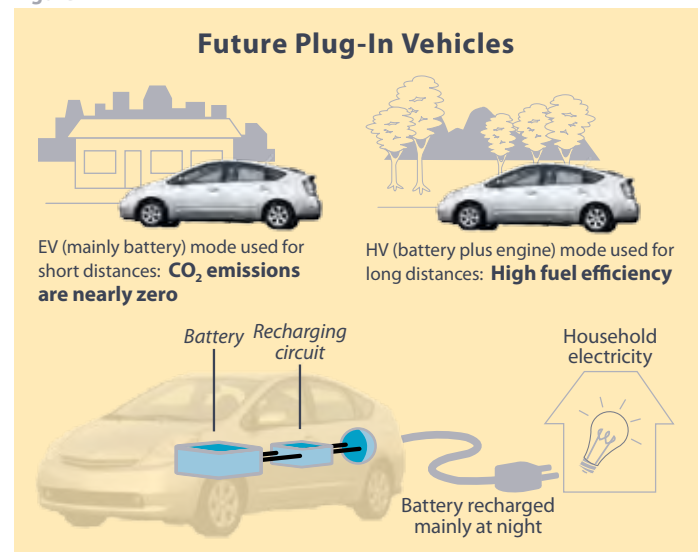
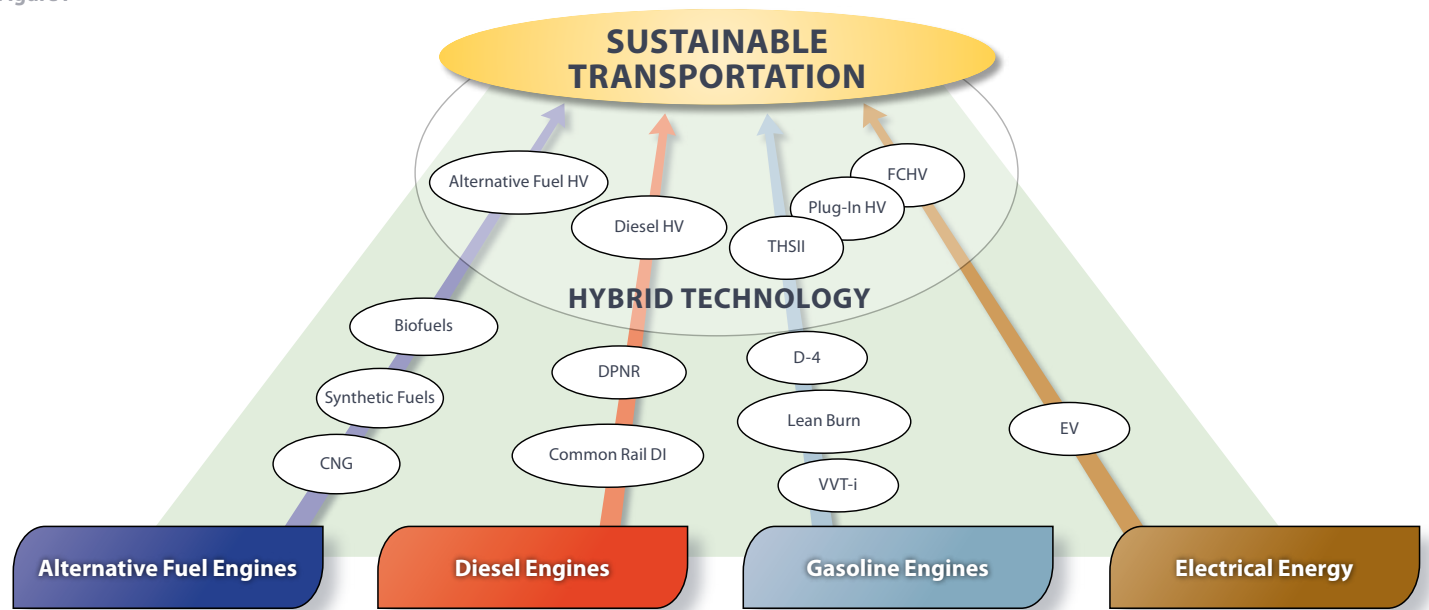


Figure I



Fuel-Cell Vehicles

As part of our previously mentioned fuel-cell technology program, Toyota maintains a group of development vehicles that allows us to continuously refine our fuel-cell hybrid vehicles (FCHVs), including vehicle durability and reliability. In addition, we continue our FCHV lease program, implemented in 2002, with universities and corporate customers. These vehicles and our fleet of development vehicles have accumulated over 140,000 real world driving miles and allowed thousands to experience the thrill of driving a vehicle that only emits water.

At this time, our primary FCHV is based on the Toyota Highlander sport utility vehicle platform. It features four 5,000-psi hydrogen fuel tanks. Hydrogen gas feeds into the Toyota fuel-cell stack where it is combined with oxygen, generating a peak of 90 kw of electricity. The electricity from the fuel cell is used to power the 121-hp (194 lbs-ft of torque) electric motor and to charge the vehicle's NiMH batteries. The battery pack harnesses energy during the braking process, and feeds power on-demand to the electric motor.

The latest generation of FCHV was introduced in 2005. The vehicle features many design improvements over the previous generation, making it more reliable, durable and easier to

maintain. Toyota improved FCHV efficiency, extending its range to over 200 miles on a fill-up of hydrogen.

This past year two exciting and important achievements occurred in our FCHV development. First, the FCHV was tested in cold temperature conditions. Cold temperature operation is challenging for several reasons. Water is present in the system both as a byproduct and also as a humidifying agent for the cells, thus the potential exists for it to freeze. Additionally, the fuel cell itself must reach certain temperatures for optimal operation. Toyota has confirmed FCHV startup and operation at temperatures as low as minus 30 degrees centigrade. The successful operation of the FCHV was both a thrilling experience and critical milestone for the progression of the fuel cell program.

Last year, Toyota also had the opportunity to participate in California Governor Arnold Schwarzenegger's gubernatorial inauguration "Green Dream" event. Celebrities, dignitaries and other inauguration attendees were all transported in fuel-cell vehicles including Toyota's Highlander FCHV. This real world taxi service went off without a hitch.

We utilize each success as motivation to face the remaining challenges for fuel cell commercial introduction. Hydrogen storage is one of the greatest challenges for the commercial introduction of fuel-cell vehicles. The current driving range of fuel-cell vehicles does not meet customer expectations. Toyota is addressing this by developing high pressure hydrogen storage tanks, improving fuel-cell and vehicle efficiency, and researching advanced hydrogen storage materials.

Though not yet ready for commercial introduction, Toyota believes fuel-cell technology is needed to help reduce the automobile's impact on the environment. Therefore, it plays a key role in our technology strategy toward sustainable transportation.



The Toyota FT-HS hybrid sports concept car made its debut at the 2007 North American International Auto Show. The design team for this concept car was tasked with creating a mid-priced sports car that integrates environmental considerations, safety and driving pleasure.

Toyota had natural gas piped to its plant site in Baja California, Mexico. Using natural gas instead of electricity helped reduce CO₂ emissions from our energy use.

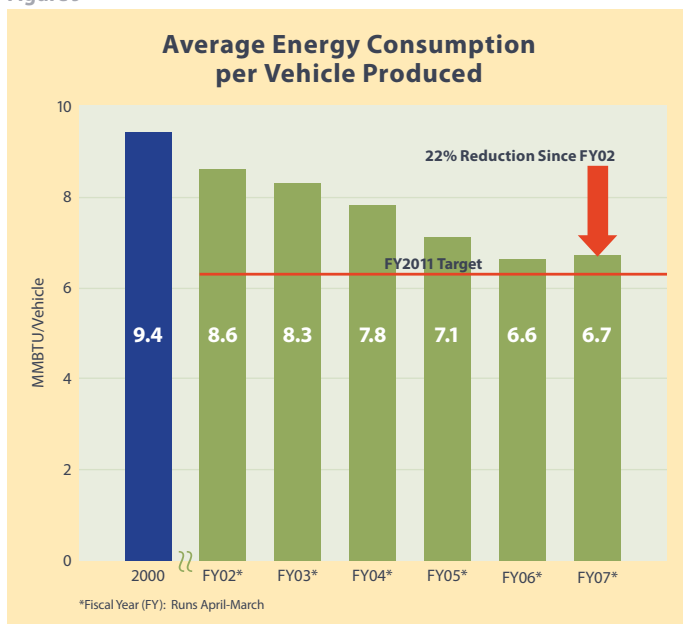


> ADVANCED TRANSPORTATION SOLUTIONS

Toyota worldwide promotes initiatives to reduce traffic congestion. Advanced transportation solutions can ease traffic congestion and help reduce fuel consumption and CO₂ emissions. This is one reason why **Toyota is pursuing on-vehicle Intelligent Traffic System (ITS) technology, which allows drivers to communicate with public information systems, as part of its portfolio to address energy and climate change challenges.**

The Orange County Great Park is a master-planned development in southern California that will include over 1,300 acres of public space, including a 2.5 mile canyon, a 20-acre lake, a 974-acre nature preserve, a botanic garden, a performing arts venue, a museum and a sports park. The surrounding community will consist of residential housing and retail and commercial space, all part of a pedestrian-oriented 378-acre Transit Oriented Development with easy access to public transportation. Toyota is working with the Advanced Power and Energy Program at the University of California, Irvine on smart parking, automated routing, and other ITS solutions to minimize traffic and encourage the use of public transit at the Great Park.

Figure J



> ENERGY AND GREENHOUSE GASES IN OUR OPERATIONS

We work to reduce energy consumption and greenhouse gases throughout all aspects of our business. Described below are our targets in these areas and some of our projects at our manufacturing plants and at our sales and logistics operations.

Manufacturing

The majority of CO₂ emissions associated with our manufacturing facilities is related to our energy usage. Our facilities consume more than \$100 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

Using FY2002 as a base year, our target is to reduce total energy use in our manufacturing operations in North America by 27% per vehicle produced, to 6.3 MMBTU/vehicle produced, by FY2011. In this first year of our new Action Plan, we increased production at our nonassembly plants in Alabama and West Virginia, and expanded our nonassembly plants in Delta, British Columbia, and Troy, Missouri. Due to these production increases and facility expansions, our overall energy use per vehicle slightly increased. **Nevertheless, we are still on track to reach our target, and continue to implement pilot projects and kaizens to reduce energy use.**

Toyota has been an Energy Star partner since 2003. For the third year in a row, Toyota Motor Engineering and Manufacturing, North America, was awarded the 2007 Energy Star Award for Sustained Excellence in their U.S. manufacturing operations. In addition, the U.S. EPA recognized Toyota vehicle assembly plants in Indiana, Kentucky and northern California with Energy Star Plant Awards. To be eligible, a plant's energy performance for the past 12 months must be in the top 25% of its industry, and the information used to calculate the plant's energy performance score must be certified by a professional engineer. Toyota's three plants have installed energy-efficient fluorescent lamps, reduced the operational time of their paint shops by 10%, and reduced energy use by 5%.

“Toyota’s energy management program is a sought-after textbook for many U.S. companies that want to benchmark themselves against the automaker.”

– Kathleen Hogan, Director, Climate Protection Partnerships Division,
U.S. Environmental Protection Agency

Pilot Project Reduces Energy Use at Plant in Cambridge, Ontario

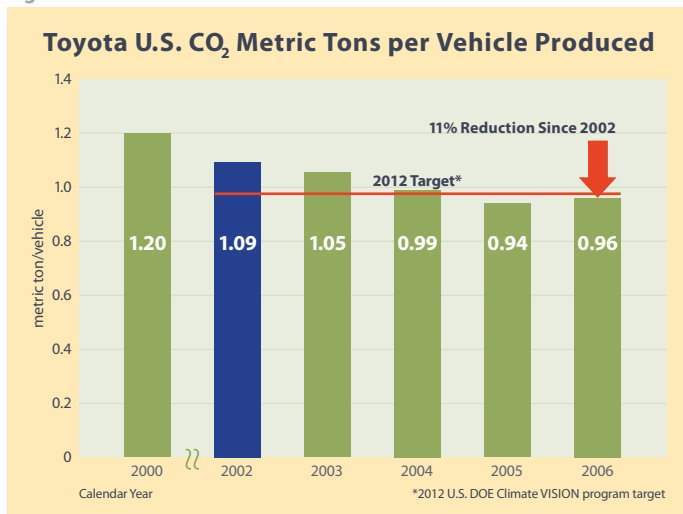
One of the ways we reduce energy use is to pilot energy reduction projects. The projects must have a payback of less than three years, and must be able to *yokoten* (be implemented) at other manufacturing plants. These projects can involve either a new technology, or a new application of an existing technology.

Implementation of a pilot project is almost complete at our plant in Cambridge, Ontario, that will use waste heat from an air compressor unit to preheat the city water before it is processed by reverse osmosis. The project is planned to improve the efficiency of the reverse osmosis system, with an estimated combined electric and natural gas reduction of 5,000 MMBTUs per year and a water reduction of six million gallons per year.

Greenhouse Gas Emissions

Energy use is the main source of greenhouse gases from our manufacturing plants. Figure K shows our GHG emissions from energy use at our U.S. plants. For Toyota’s worldwide production, we are committed to a 20% GHG reduction per sales unit, by 2010, against a 2001 baseline. 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.**

Figure K



Energy Reduction *Kaizens* at our Northern California Plant Add Up

Our assembly plant in northern California has implemented over 250 *kaizens* in the last few years to reduce energy use. While the total savings from each *kaizen* has been small, they contribute to significant overall savings.

Plastics shop converts to waterborne prime paint: This allowed the plant to decommission the carbon desorption unit (an air pollution abatement device) for the prime booth, and to eliminate electric fans supplying the carbon desorption unit and the natural gas-fired heated air loop. Natural gas used by the prime oven was also reduced (waterborne prime requires less cure time and temperature). In addition, this project saved \$40,000 per year in the cost of filters, plus we no longer have to deal with the disposal of these filters. Estimated savings:

- Natural gas usage reduced by 0.1 therms/vehicle.
- Electricity usage reduced by 1.3 kwh/vehicle.

Truck paint shop modifies paint spray equipment by switching to titanium bell applicators: This change reduced the cleaning cycles in the paint spray equipment from six per day to one per day. Estimated savings:

- Natural gas usage reduced by 2.0 therms/vehicle.
- Electricity usage reduced by 2.5 kwh/vehicle.

Passenger paint shop eliminates an air makeup unit for its prime paint booth: This also eliminated several fans and reduced total natural gas used by the prime ovens and incinerators. Estimated savings:

- Natural gas usage reduced by 1.5 therms/vehicle.
- Electricity usage reduced by 5.6 kwh/vehicle.

(For more about *kaizens*, please see the Recycling and Improved Resource Use chapter.)

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. **At our U.S. sales and logistics sites, we exceeded our target of 18% reduction in energy consumption (per square-foot) by FY2011, from a FY2001 baseline.** We have reduced total energy consumption per square foot by 23% (please see Figure L). With the early achievement of this target, we will be setting a new target and look forward to reporting our progress next year. Our energy efficiency investments of over \$6.5 million have led to almost \$11 million in avoided costs. These investments have led to cumulative savings of over 41 million kwh of electricity, 2.4 million therms of natural gas, and the avoidance of 73 million pounds of CO₂ emissions, since 2001.

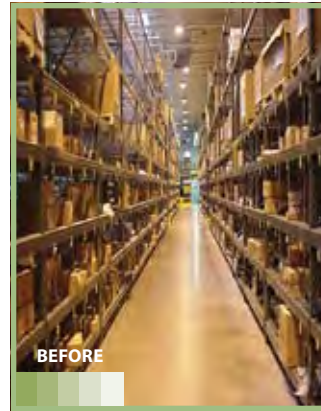
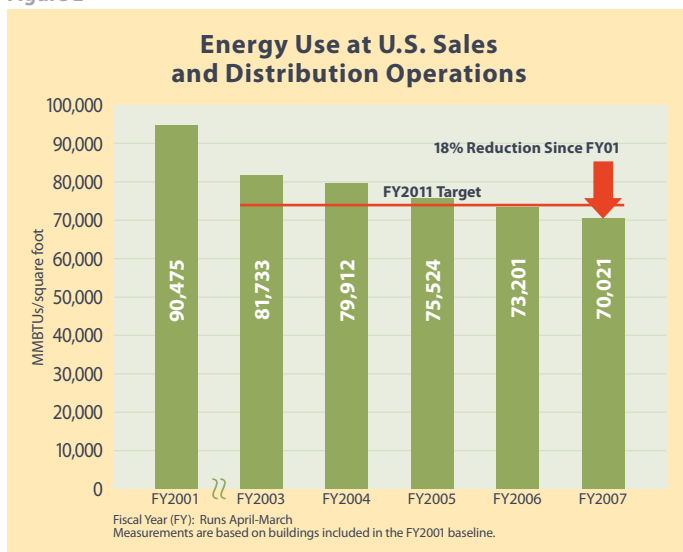
In FY2007, we completed five lighting retrofit projects at our logistics sites in Massachusetts, Illinois, Ohio and Kentucky. We switched from high pressure sodium (HPS) lights to T-8 and T-5 fluorescent lamps and installed motion sensors to automatically switch off lights in unused areas. These projects combined for an annual electricity savings of over three million kwh, and over six million metric tons of CO₂ emissions avoided.

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.**

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

Figure L



These before and after photos of the parts distribution center in Boston reveal better visibility after switching to more efficient fluorescent lights.

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. 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. Some of the emission reduction measures put in place by one of our largest service part logistics partners include:

- Converting truck shipments to rail shipments.
- Reducing empty miles run between each shipment hauled.
- Reducing total miles run by calculating the most direct path from origin to destination.
- Training drivers via simulators to drive in the most fuel-efficient manner.
- Activating automatic engine shutdown technology on 3,100 day cabs.

ENERGY & CLIMATE CHANGE HIGHLIGHTS

- Climate change and energy diversification are two of the most daunting challenges Toyota and our stakeholders will face in the next century.
- We are addressing our current CO₂ footprint by conducting a broad North American Greenhouse Gas inventory of our operations and products.
- For the present, we are continuously improving the fuel efficiency of our full-line vehicle fleet, and we are committed to hybrid technology as a key component for improving fuel efficiency and environmental impact.
- For the future, we are investing in a more diversified portfolio of energy and fuel sources that may reduce our reliance on fossil fuel, and in advanced vehicle technologies that can operate on the most promising of these fuels.

TOYOTA |

recycling & improved resource use



Toyota's vehicle distribution center in Newark, New Jersey, won an award from the state Department of Environmental Protection, recognizing their recycling program.



“Toyota has a relentless commitment to eliminating waste or *muda* — i.e., any expenditure of time, money, material, effort, or other resource that does not generate perceptible value for the customer.”

– The Toyota Way



- > REDUCING WASTE — THE TOYOTA PRODUCTION SYSTEM
- > DESIGNING VEHICLES USING RENEWABLE RESOURCES
- > WASTE REDUCTION AND RECYCLING IN OUR OPERATIONS
- > WATER CONSUMPTION IN OUR OPERATIONS

TOYOTA'S CULTURE AND PRINCIPLES stress the fundamentals of eliminating waste and a commitment to a recycling-based society. Our Global Vision 2010 requires that we work on the transition from the era of large-scale production and large volume consumption toward a recycle-oriented society that promotes action to conserve, reuse and recycle. The same concept is inscribed in our Earth Charter. This requires us to always be concerned about the environment, to take on the challenge of achieving zero emissions at all stages — in production, use and disposal — and to pursue production activities that do not generate waste.

This chapter describes how we design vehicles using renewable resources, how we reduce waste and water consumption in our operations, and how we recycle. The way we achieve our goals in these areas is in small, incremental steps of continuous performance improvement. We call this *kaizen*.

Kaizen means to be relentless in our pursuit of improvement. It emphasizes “the elimination of all kinds of waste and every activity that does not produce added value.” It is how we achieve all our goals and targets. Throughout this report, we provide examples of *kaizen* projects that have brought environmental, and often economic and other advantages to our company, our suppliers and our customers. *Kaizens* are not achieved by chance: We invest in training all our employees in how to implement *kaizen* ideas, which are actively sought and considered at all levels of the organization.



Toyota is using a renewable resource — soybeans — in the foam of passenger seats in the Toyota Corolla and the Lexus RX.

> **REDUCING WASTE — THE TOYOTA PRODUCTION SYSTEM**

We apply Toyota Way practices when we use the Toyota Production System (TPS). TPS, also known as lean manufacturing or just-in-time manufacturing, is the system that organizes manufacturing and logistics at Toyota. The main goals of TPS are to provide the highest quality, lowest cost and shortest lead time to the customer; employee satisfaction; and market flexibility and cost reductions for the company. Elimination of *muda* — factors or elements that increase costs but do not add value — is the philosophy behind our cost reductions. The wastes from our manufacturing processes are *muda*, and we use TPS and The Toyota Way to eliminate, reduce or reuse materials whenever possible. TPS is key to Toyota’s ability to simultaneously improve our vehicle quality, cost and lead time. For more information on TPS, please visit www.toyota.co.jp/en/vision/production_system.

> **DESIGNING VEHICLES USING RENEWABLE RESOURCES**

When we design a vehicle, we try to increase our use of renewable resources. Toyota North America made a significant step forward with the introduction of soy oil-based polyurethane foam for passenger seats in both the Corolla and the Lexus RX. Toyota worked with suppliers to include 5% of the natural soy material without impacting performance. Using soy in polyurethane seat foams lowers the amount of petroleum used for production and reduces the carbon footprint of each vehicle.

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 PLA, a plastic made entirely from corn that is currently being used in many disposable goods such as drink cups and food packaging; and natural based fabrics for vehicle interiors.

Toyota will continue to evaluate materials from renewable resources in order to introduce additional environmentally preferable parts in our vehicles.

> WASTE REDUCTION AND RECYCLING IN OUR OPERATIONS

We work to reduce waste and increase recycling throughout our business. We describe our targets in these areas and some of our projects at our manufacturing plants and at our sales and logistics operations.

Manufacturing

The 5Rs — refine, reduce, reuse, recycle, and recover energy — have been the key to waste reduction efforts in our manufacturing plants. **Using these methods, our plants in North America achieved zero waste to landfill (defined as a 95% or greater reduction in waste to landfill from 1999 levels), and have maintained this status.**

We have reduced nonsaleable waste (nonhazardous waste plus materials Toyota pays to have recycled) to just under 28 kg/vehicle. **In the first year of our new five-year Action Plan, we have already exceeded our target to reduce this waste to 30 kg/vehicle.** We will continue efforts to further reduce this waste (please see Figure M to the right).

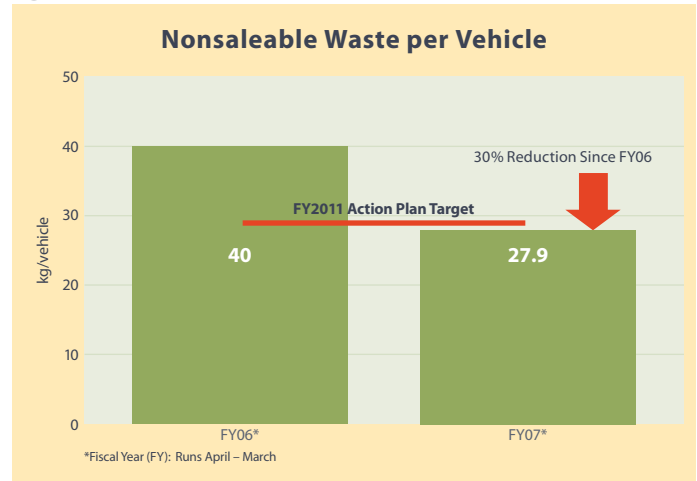
Alabama Plant Reuses Coolant Waste

Our engine plant in Alabama implemented a process to reuse coolant from machining. Purchasing individual cleaning systems for each coolant tank would have been too costly, so we looked into a central system where dirty coolant could be stored and cleaned, and the clean coolant stored for reuse. Similar systems have been successfully implemented at our sister plants in West Virginia and Kentucky. We have been able to increase the frequency of the coolant tank cleaning to eliminate any potential risk to quality, without increasing our waste disposal costs or VOC emissions. During normal coolant tank maintenance, we now clean and reprocess roughly 75% of the coolant that is pulled out of our machining lines. This project was so successful for the existing engine plant, that we implemented this process on the new V8 engine line in March 2007.



At our plant in Alabama, employees from the environmental department worked with production to implement a coolant recycling process.

Figure M



Indiana Plant Uses Toyota Problem Solving Process to Reduce Nonsaleable Waste

Toyota's *respect* for our communities and the environment guides us as we set environmental goals and targets. Employees at our Indiana assembly plant put The Toyota Way into action using Toyota's problem solving process, by *challenging* themselves to reduce nonsaleable waste by 40% by FY2011. Employees first examined all of their wastes in great detail and identified all of the major nonsaleable waste streams. Wastewater pretreatment sludge was identified as one of the largest of these streams.

The problem solving team practiced *genchi genbutsu*. They went to the source and looked at the facts of wastewater pretreatment, including metals removal efficiency and metal effluent levels. The team found that excess ferric sulfate, a chemical used for treatment, resulted in more waste. Their analysis helped them set a target to reduce ferric sulfate in the wastewater pretreatment sludge by 75% by October 2006.

The team developed a plan to *kaizen* the wastewater treatment process that included establishing treatment parameters, standardizing work, conducting trial operations and training. When the project was implemented, the actual reductions were well below the target.

Through *teamwork*, the plant was able to put Toyota Way values into action and implement a successful waste reduction strategy that has moved the plant a third of the way toward its FY2011 target. Employees will begin this process again to evaluate the remaining components of their waste in an effort to meet their challenge and achieve their long-term target.

Nonproduction Facilities

At our design facility in Ann Arbor, Michigan, we began collecting data about our waste streams and are working on a proposal to reduce overall waste-to-landfill. We recycle paper, cardboard, and metals, and are currently investigating alternatives to Styrofoam™ used in the cafeteria.

In the cafeteria at our Canadian sales headquarters, we introduced containers, cutlery and plates made from corn, sugarcane and potatoes. These items are compostable, and do not end up in a landfill.



Sales and Logistics

The Toyota Waste Avoidance and Recycling Program (WARP) is our national waste management program. This provides centralized support for initiatives that both reduce waste and increase the recycling of the waste we produce. Through WARP, environmental coordinators at our vehicle and parts distribution centers, regional offices and our U.S. sales and distribution headquarters can share best practices and coordinate cross-division waste reduction efforts, as well as find recycling vendors for the waste they are unable to prevent.

Our U.S. sales headquarters and the parts distribution center in Los Angeles were joint winners of California's 2006 Waste Reduction Awards Program (WRAP) of the Year award. This award distinguishes Toyota as one of California's top five models for waste management. Together, the two locations were able to divert more than 4.6 million pounds of material from landfills.

Sales Offices

Toyota's U.S. sales division headquarters is using WARP to reduce the overall amount of waste produced and increase the recycling rate of the remaining waste. **In FY2007, the U.S. sales headquarters campus exceeded its target of recycling 60% of its waste by recycling 64%.** In addition, the waste that was not recycled was sent to the Southeast Resource Recovery Facility (SERRF) in Long Beach to generate electricity, and the resulting ash was used as road base. Furniture that has been replaced during remodeling, such as desks and bookshelves, was donated to local schools, churches and other organizations, diverting 104,000 pounds of waste from landfill. As a result of these and other efforts, the campus was able to achieve zero landfill.

Toyota's Canadian main sales campus has a target to divert 95% of its waste from landfill by FY2010. **We diverted 80% of our waste in 2006, and plan to reach 90% by the end of 2007.** We started by introducing china and metal cutlery in our new cafeteria, which reduced the amount of Styrofoam™ and plastic containers in landfill. We then introduced compostable disposable containers, cutlery and plates made from materials such as corn, sugarcane and potatoes. As a result, almost all of the waste from the cafeteria is composted and diverted from landfill. Prior to this initiative, 53% of waste at the Head Office was compostable items that were being sent to landfill.

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. **We are achieving this target with the help of our Smart Print Solution, which provides an improved and confidential printing process.** This program reduces our costs for paper and print consumables, helps us reduce our paper use, and enables us to track printing so that we can identify future *kaizens* by eliminating misprints, lost documents and reprinting. The Smart Print Solution has been implemented in all office areas at our Canadian headquarters.

ELECTRONIC WASTE ROUNDUP

For the past few years, some Toyota locations have organized "E-Waste Roundups" on Earth Day for Toyota employees to bring electronic waste from home to be recycled. This gives these materials a second useful life, and also keeps toxic materials from our landfills.

In FY2007, Toyota employees brought more than 40,000 pounds of equipment to be recycled, including computers, consumer electronics, microwaves, monitors, printers and televisions. The parts distribution center in Ontario, California, brought more than 65 pounds per employee to their event; and in Toronto, where a collection was held for the first time, employees brought in a total of over 5,500 pounds (2,500 kg) of e-waste. In addition to electronic waste, some facilities also collected eyeglasses for donation to the local Lions Club, and had a Goodwill truck on hand to allow employees to donate other types of products. The employee Earth Day E-Waste Roundups complement the "Keep IT Green" program, started in 1999 to recycle all sales and logistics IT electronic equipment throughout the U.S. and Puerto Rico. To date, the Keep IT Green program has diverted over 2.6 million pounds of equipment from landfill.



Parts Distribution

As part of our new five-year Environmental Action Plan, Toyota's parts distribution centers in the U.S. set a target to reduce nonregulated waste sent to landfill by 33% by FY2011, from a FY2006 baseline. **In FY2007, the parts centers reduced nonregulated waste to landfill by 11%, one-third of their five-year target in the first year.**

Parts Packaging

Toyota part distribution centers use over 30,000 reusable metal shipping containers in place of cardboard and wood pallets. Instead of becoming waste, like the wood pallets and corrugated cardboard, the metal shipping containers can be returned to the nearest part distribution center and reused. In FY2007, the returnable container program saved 3.4 million pounds of cardboard and 9.8 million pounds of wood, resulting in a savings of \$5.3 million in packaging costs.

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:

- By changing the packaging configuration for the FJ Cruiser roof rack, we now package two roof racks instead of one in each carton. In the process, we save 180,000 pounds of cardboard, 375,000 pounds of wood, and more than \$500,000 annually.
- We implemented a *kaizen* in August 2006 to switch bumper cover packaging from a cardboard box to a much lighter recyclable plastic bubble bag. Conversion to returnable modules for bumper covers eliminates one million pounds of wood annually and saves more than \$430,000 in annual logistics costs. The new bumper covers also increase overall storage locations in the part centers by 65%. By taking up less volume in trucks, the new bumper covers remove over 600 truck trips from the roads each year, saving diesel fuel and reducing greenhouse gas emissions.



An employee at our Los Angeles, California, parts distribution center was determined to find a recycler for windshield glass, rather than send it to a landfill. Windshield glass is much more difficult to recycle than glass bottles because of the specialized materials that give it shatter resistance. After more than a year of looking for a vendor, Toyota sent almost 22,000 pounds of automotive glass for recycling.



Some of our billboards get a second chance: During a recent Scion xB prelaunch campaign, billboards were recycled into toiletry kit giveaways; and Lexus made wallets out of its billboards and handed these out at the Environmental Media Awards.

Vehicle Distribution

Toyota's vehicle distribution centers in the U.S. have a target of recycling 90% of their waste by FY2011. **In FY2007, we almost achieved this target by recycling 89.9%.** These efforts have not gone unrecognized. The vehicle distribution center at Port Newark, New Jersey, received the large business recycling award from the New Jersey Department of Environmental Protection. Toyota employees there accessorize vehicles and recycle almost every piece of the packaging. Through their efforts, the vehicle distribution center at Port Newark achieved zero waste to landfill and sent less than a pound of waste to a waste-to-energy facility for each vehicle processed.

THREE TOYOTA OPERATIONS ACCEPTED INTO THE KENTUCKY EXCEL PROGRAM

Toyota's manufacturing plant and vehicle distribution center in Georgetown and the parts distribution center in Hebron were accepted as master members of Kentucky EXCEL, the environmental leadership program of the Kentucky Department for Environmental Protection.

Master membership is the highest level of the program. To attain it, the three locations had to demonstrate comprehensive environmental management planning, submit to an independent third-party assessment of compliance, and commit to and report on at least four voluntary projects that benefit Kentucky's environment.

Toyota's environmental projects include replacing petroleum-based oils in equipment with vegetable-based oils, composting, hosting a hazardous waste collection event for employees and residents of Scott County, and implementing an employee battery recycling program.



> **WATER CONSUMPTION IN OUR OPERATIONS**

We work to reduce water consumption throughout our business. Below, we describe water reduction targets and projects at our manufacturing plants and at our sales and logistics operations.

Manufacturing

We look for opportunities to reduce water usage and reuse water in our manufacturing processes. We also pilot water treatment technologies and implement them when feasible.

We are currently exceeding our target of reducing water use at our North American manufacturing plants to 0.98 kgal/ vehicle, by FY2011 (please see Figure N below). 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.

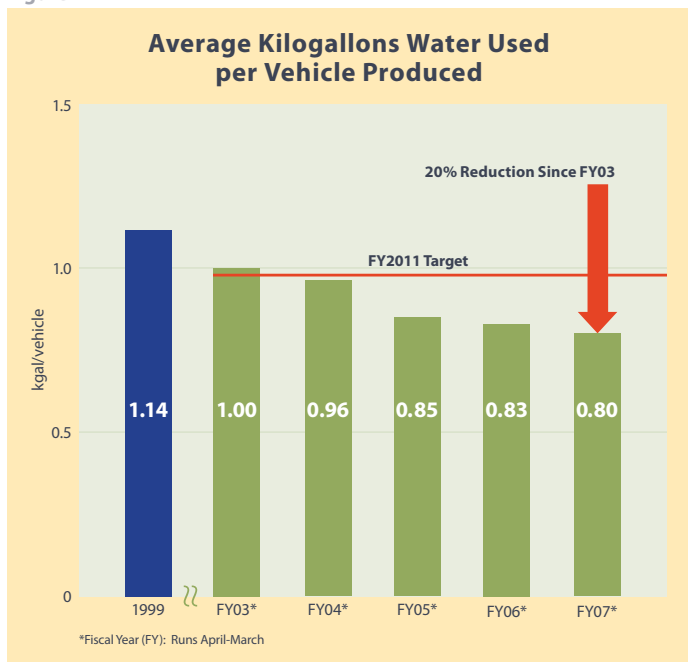
Kentucky Plant Recycles Rainwater and Industrial Wastewater

Our plant in Kentucky reuses rainwater that runs off from parking lots and rooftops. The rainwater is pumped from a retention pond and then treated by ultra filtration and reverse osmosis in the wastewater treatment plant. The water is then used in boilers and chiller systems. The plant recycles about 30 million gallons of rainwater and industrial wastewater every year, reducing the demand for water from their public utility.

West Virginia Plant Improves Water Management

A periodic loss of the city water supply at our plant in West Virginia has been the cause of some production down time. To protect our operations, we installed a 65,000 gallon emergency supply capable of using recycled water to allow the plant to operate in case of an outage.

Figure N



A biological wastewater treatment system was also installed to handle coolants and other oily wastes that were previously shipped off-site for treatment. Enhanced segregation of waste oil has improved its quality, which now allows larger volumes to be recycled. On-site segregation and treatment improvements have also reduced off-site transportation of wastewater by more than 95%, greatly reducing costs and CO₂ emissions from transporting this waste.

Sales and Logistics

We are currently evaluating water consumption at all U.S. sales offices and logistics sites. When the evaluation is complete, we will establish a baseline and subsequent water reduction target. In the meantime, at the Portland, Oregon, vehicle distribution center, rainwater is being harvested to flush toilets and natural rainfall is used for all landscaping, rather than relying on a landscape irrigation system. In water-limited southern California, recycled water is used for landscape irrigation at the Ontario parts center, the Los Angeles regional sales office, and the sales headquarters' South Campus. In addition, the South Campus complex uses recycled water for toilet flushing and building cooling. The West Basin Municipal Water District has described South Campus as the most diverse user of recycled water in Los Angeles County.

Our Canadian facilities are on track to meet our target to reduce water consumption by 10% by 2010, from a baseline of 2004. Our 2006 water consumption decreased 8% from 2004. In 2006, we reconfigured the sprinkler zones and installed state-of-the-art moisture sensors at our headquarters campus. These sensors work like a sponge to mimic water absorption in the soil. When the "sponge" is dry, the sensor goes off and triggers the sprinklers to turn on for a predetermined amount of time. We expect a 20-30% water savings with this installation. Testing the new zones and testing for leaks took place in 2006, causing higher water consumption. We expect 2007 to be a more normal year for water consumption.

RECYCLING & IMPROVED RESOURCE USE HIGHLIGHTS

- Our manufacturing plants have achieved and maintained the status of zero waste to landfill.
- In FY2007, the returnable container program in Toyota parts distribution centers saved 3.4 million pounds of cardboard and 9.8 million pounds of wood, resulting in a savings of \$5.3 million in packaging costs.
- We have reduced water use per vehicle produced by 20% since 2003.

TOYOTA | substances of concern



Inside the heat chamber at Toyota Technical Center, Toyota engineers can simulate the sun's heat load and measure the resulting interior VOC concentrations. This test is conducted here in North America as part of Toyota's global VOC management initiative.

“In line with our commitment to long-term environmental sustainability, Toyota in North America is committed to voluntarily phase out certain Substances of Concern.”

– Yoshikatsu Nakamura, Chairman, NA SOC Committee
Toyota Motor Engineering and Manufacturing N.A., Inc.



> REDUCING SOCS

> REDUCING CABIN VOCS

THE AUTOMOBILE IS one of the most highly recycled, durable products on the market today. Globally, the European Union (EU) Directive on End-of-Life Vehicles (ELVs) and The Law on Recycling of ELVs in Japan set targets for automakers that specify rates for future vehicle recovery and levels for the use of SOCs (substances of concern). Despite the absence of similar laws in North America, Toyota is working here to phase out our use of certain substances of concern. 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 phase-out of four heavy metals — mercury, cadmium, lead and hexavalent chrome; and VOCs in the automobile cabin that cause the “new car smell.” 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 — another instance of The Toyota Way in action. When we have to make decisions on a complex issue, we involve employees from relevant levels and parts of the organization. We depend on employees who are confident and creative and respect each other, regardless of where they sit in the organizational hierarchy. Our experience has shown us that decisions made in this way are better, more long-lasting, and often faster to implement.

> 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 these out. **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.** 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 have successfully reduced SOCs in North America to *de minimis* levels as outlined in the EU Directive. Before

Toyota's sales divisions authorize a supplier to begin mass production on a service part or accessory, the supplier submits technical and quality requirements, including information on the type and quantity of SOCs present. If a reported SOC level is questionable, the part is sent to an approved testing lab for verification. This system ensures that all parts meet the SOC limits in Toyota's global technical standard.

Our most recent accomplishments on original equipment include eliminating hexavalent chrome from radiator grills and decorative chrome plating on all of Toyota's vehicles, and from the rust inhibitor that coats our bolts. These bolts have been imported in the past; they will go into production at North American assembly plants at the end of 2007. **Additional SOCs will be identified in the future.**

> 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.

Based on investigations into Sick House Syndrome, the Japan Ministry of Health, Labor and Welfare set interior concentration levels for 13 substances found in homes and buildings that may cause health effects. JAMA identified that nine of these compounds are potentially found in vehicle cabins, including toluene, xylenes and ethyl benzene.

Toyota in North America conducted a number of tests in FY2007, using JAMA's vehicle cabin VOC testing methods. **Low-VOC technologies are in development for a variety of adhesives and foams for implementation in future vehicles.**

SUBSTANCES OF CONCERN HIGHLIGHTS

- We have successfully reduced SOCs to *de minimis* levels in North America.
- We are developing low-VOC technologies to reduce cabin VOC levels.

TOYOTA | air quality



A VOC task force at our plant in Cambridge, Ontario, introduced hundreds of VOC reduction kaizens.

“In 2007, 90% of all Toyota, Lexus and Scion cars are certified as Ultra Low Emissions Vehicles or better.”

– **Dian Ogilvie**, Senior Vice President, General Counsel, and Chief Environmental Officer, Toyota Motor Sales, U.S.A., Inc.



> REDUCING TAILPIPE EMISSIONS

> REDUCING VOC EMISSIONS IN MANUFACTURING

IT IS VITAL FOR AUTOMOBILES to reduce emissions in order to help improve air quality, especially in urban areas. For years, Toyota has been dedicated to the development of ultra low emissions technologies and has been a leader in low emitting vehicles. We also promote the introduction of waterborne paints and low emission technologies to reduce VOCs (volatile organic compounds) from our manufacturing plants. These are examples of The Toyota Way commitment to Challenge — to create social and economic value through the manufacture and delivery of high-quality products and services. This is not a simple matter. There is an inherent conflict between the demand of consumers for cars on the one hand; and the needs of the earth on the other. Our responsibility is to accept this challenge and to work toward the best possible solutions. As this report shows, we do this in a variety of ways. In this section, we discuss two ways we are improving air quality: by reducing tailpipe emissions from vehicles we design, and by reducing VOC emissions from vehicles we manufacture.

> REDUCING TAILPIPE EMISSIONS

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). California requires a manufacturer's fleet average to meet a NMOG standard of 0.055g/mi. 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); and in the federal program as Bins one through eight. An important 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 is ahead of the required compliance schedule for certification of its vehicles to these emissions standards.

We have consistently certified more vehicles than the respective programs require. Our performance in Canada follows a similar track, as Environment Canada has implemented a Tier 2 program, and the vehicles we sell there have the same emission control technologies. For the 2007 model year, 90% of all Toyota, Lexus and Scion cars are certified to ULEV or better.

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, three years before CARB standards are scheduled to be implemented.

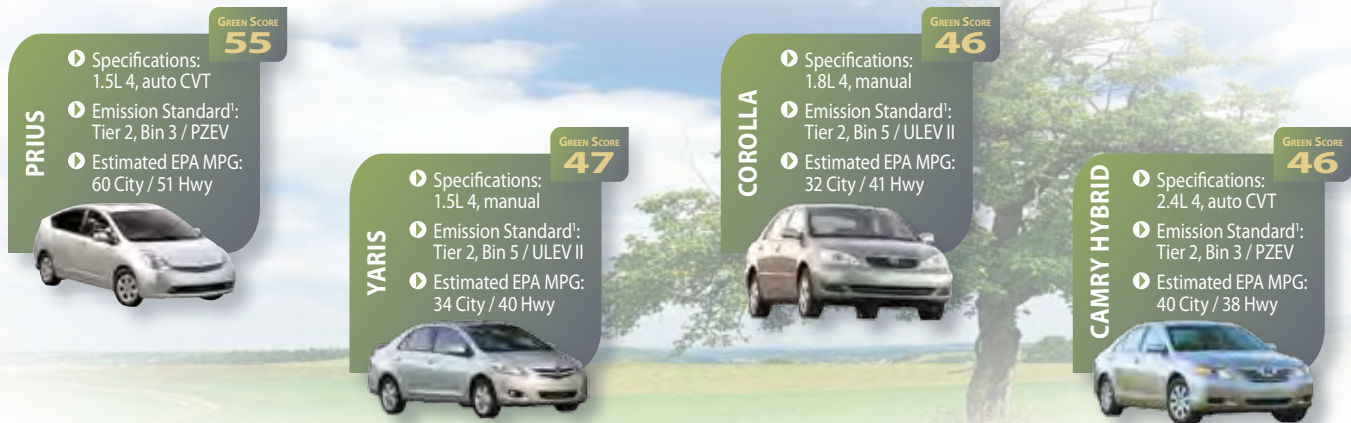
In-Use Compliance

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 over the last several years, Toyota's emission compliance rate continues to be a leader among major industry manufacturers.**

Figure O

ACEEE Greener Choices 2007



¹ A listing with two emission standards (e.g., Tier 2, Bin 3 / SULEV II) denotes a single vehicle carrying both a federal and California emission certification. Green Scores for such listings reflect the cleaner of the two certifications. 2007 EPA Ratings. Actual mileage will vary. All vehicles are 2007 Model Year.

Toyota cars comprise four of the 12 vehicles in the "Greenest Vehicles of 2007" 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.

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.

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. The 2007 model year Lexus LS 460 and 460L include the VVT-iE system which regulates the valve timing with an electric motor. 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.

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 are on track for meeting our five-year target to reduce VOCs from our painting operations to a corporate average of 14.0 g/m² by FY2011.** Examples of our efforts to minimize VOC emissions from vehicle painting include:

- At our new plant in San Antonio, Texas, we implemented a waterborne primer and basecoat process for body painting. After only six months of operation, the plant is performing better than the target set in its eco-plant plan of 15 g/m².
- The truck paint shop at our vehicle assembly plant in Fremont, California, changed to a high-pressure water operation for cleaning its paint booth floors, reducing the use of booth cleaning solvents. VOC emissions from the truck paint operations improved from 17.9 g/m² in FY2006 to 14.6 g/m² in FY2007.

Kaizens at Our Plant in Cambridge, Ontario, Reduce VOCs From Vehicle Painting

Toyota's assembly plant in Cambridge, Ontario, is the first plant in Canada to use state-of-the-art waterborne paint cartridge technology in the production of the Lexus RX 350. Cartridges attached to the end of a robot arm store the paint needed, eliminating the need to flush out the lines when changing colors. VOC emissions from this activity have been reduced by more than 95%.

Our plant in Fremont, California, paints bumpers with a water-based primer. This has contributed to a 50% reduction in VOC emissions from the plastics shop over the last two years.

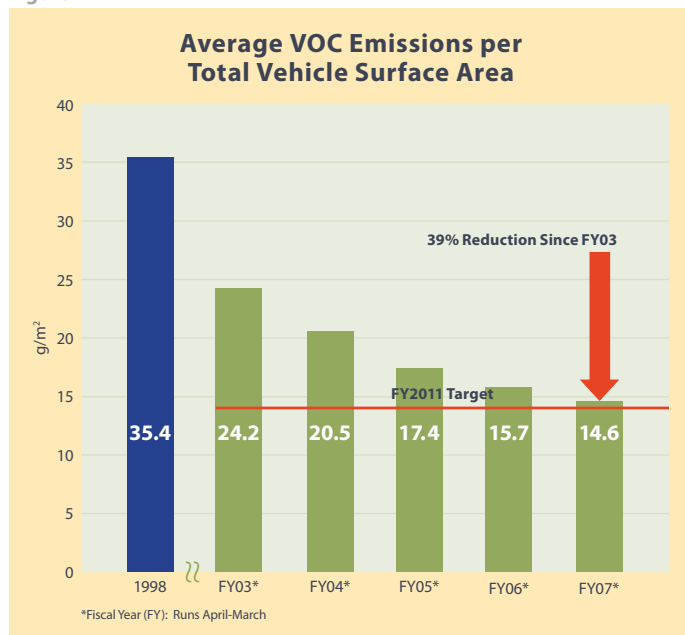


Employees at the plant have been especially focused on VOC emissions since 2005, when a VOC Task Force was established. Since then, the Task Force has implemented hundreds of *kaizens*, including:

- Implementing water-based blackout paint used in the wheelhouse well and radiator support.
- Installing new electrostatic hand spray guns designed for applying water-based paint.
- Improving solvent capture systems to reclaim solvent.
- Installing fail-safe valves to help prevent leaks and overflows.
- Installing covers on primer booth handgun hoses to reduce cleaning frequency. These hoses used to be cleaned once every two hours. The cleaning process uses solvents, resulting in VOC emissions and the generation of waste.
- Reprogramming robots to use paint and solvent more efficiently, so that the robot only purges into the hopper if needed.

Hundreds of employees in our body and bumper painting areas were trained on the environmental impacts of their work and best management practices to reduce air emissions, and encouraged to implement improvement projects.

Figure P



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. 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.

At our vehicle assembly plant in Fremont, California, the plastics paint shop has reduced VOC emissions by over 50% over the last two years, to 56 g/m². A significant portion of this reduction was achieved by switching to a water-based primer. In addition to having lower emissions, the new primer can be cleaned with water-based cleaners instead of solvent cleaners.

The part size, substrate and painting processes for vehicle body and plastic parts are different, and they therefore have different targets. A significant difference is the surface area used to calculate the emissions. For vehicle VOC calculations, we use the body surface area coated during the electrodeposition paint process; this includes the inner surfaces, underneath the vehicle and other areas that after assembly are not visible.

The surface area used in the VOC calculation for plastics is the visible painted surface. The surface area for the plastics VOC calculations is a much higher percentage of the plastic part's surface area than the vehicle's body surface area. This means that the grams of VOC emissions are distributed over a smaller surface, resulting in higher emissions per surface area.

AIR QUALITY HIGHLIGHTS

- In 2007, 90% of all Toyota, Lexus and Scion cars are certified as Ultra Low Emissions Vehicles or better.
- We have reduced our VOC emissions from painting vehicles by 39% since FY2003.

TOYOTA | environmental management

Our plant in Baja California, Mexico, was recognized with an Industrial Environmental Certification from the state, for VOC targets that go above and beyond regulatory requirements.



“We are proud that all of Toyota’s manufacturing plants and logistics sites, and even some of our offices, are certified to the ISO 14001 environmental management systems standard.”

– **Kevin Butt**, General Manager, Production Engineering, Toyota Operations Center, Toyota Motor Engineering & Manufacturing North America, Inc.



- > ENVIRONMENTAL MANAGEMENT SYSTEMS
- > VEHICLE LIFE CYCLE ASSESSMENT
- > ENVIRONMENTAL MANAGEMENT WITH OUR BUSINESS PARTNERS

AS OUR MANAGEMENT PHILOSOPHY, The Toyota Way gives us the means to overcome challenges, to continuously improve our processes and products, to make sound decisions, to listen and build trust, and to respect and empower the individual and the team. The principle of *genchi genbutsu* requires that we understand the challenge and take time to involve all the affected people and their brainpower and creativity. We can then work patiently toward the target we have in sight, systematically eliminate obstacles on the way, and learn from our mistakes.

The Toyota Way is applied to environmental management as well. Recognizing that global and regional environmental issues are at a critical point and require business action, we work to address the challenges and opportunities they present. In this section, we explore the issue of environmental management in three themes: vehicle life cycle, environmental management systems (EMSs), and environmental management with our business partners.

> **VEHICLE LIFE CYCLE ASSESSMENT**

In 2005, building on a long history of using the “Well-to-Wheel” method of evaluating vehicle technologies, Toyota introduced the Eco-Vehicle Assessment System (Eco-VAS). Eco-VAS is a comprehensive system that is used 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.

The first step in the process is to establish an exact baseline for each vehicle model across six categories — fuel efficiency, emissions, noise, disposal recovery rate, SOCs and overall life cycle environmental impact. The chief engineer then sets reduction targets in these various categories. The engineer monitors the status of these targets from the drawing board all

the way to the assembly line and beyond. Beginning in 2007, Eco-VAS is being introduced on all new vehicle models and redesigns.

This holistic, life cycle environmental impact approach is illustrated in Figure Q. While CO₂ is just one of the variables we measure, this figure shows how these variables are considered across the life cycle. In spite of having greater CO₂ emissions during the materials and vehicle production stages, and given that the majority of the CO₂ emissions come from the driving stage, the overall life cycle CO₂ emitted for the Prius is dramatically lower than for a conventional vehicle of the same size and class.

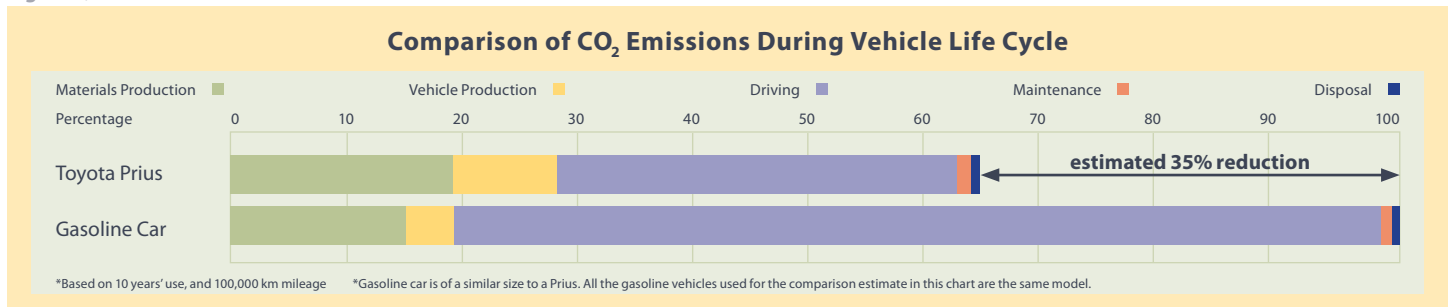
> **ENVIRONMENTAL MANAGEMENT SYSTEMS**

Toyota facilities in North America have EMSs in place to check that our activities comply with all federal, state, provincial, territorial and local requirements, as well as our own internal requirements. These systems also help us to reduce the risk of soil, surface water and groundwater contamination. Our employees receive training in both EMS awareness and in topics such as hazardous waste disposal, hazardous materials handling, stormwater management, and spill and emergency response. This training is critical to our environmental performance and to the continued success of the EMS.

All of Toyota’s manufacturing plants and logistics sites, and even some of our office complexes, have an EMS. **We have maintained ISO 14001 certification/registration at all North American manufacturing and logistics sites. Toyota’s sales office in Halifax received its ISO 14001 registration at the end of 2006, while its Calgary office will be registered by the end of 2007.**

Our manufacturing sites have taken their EMS to the next level — enhanced EMS. The enhanced EMS is a global initiative developed by our parent company in Japan. In FY2007, we adopted these

Figure Q





The four-acre bioswale at Toyota's Portland vehicle distribution center filters stormwater draining into the Willamette River, and serves as a protected wildlife habitat for the eagles shown here, as well as geese, ducks, rabbits and coyotes. It is also

one of many environmental innovations that earned this facility gold certification in the LEED® rating system by the U.S. Green Building Council.

requirements and integrated the enhanced EMS with our ISO 14001 system to further support improved environmental performance, risk reduction, and our goals of zero violations and zero complaints.

Our newest logistics site in San Antonio, Texas, has developed the next generation of an integrated environment, health and safety (EHS) management system called Toyota elements. This new management system streamlines complex concepts found in ISO 14001 and OHSAS 18001 and generates a Toyota approach that is easier to understand and implement. It is a distributable management system that not only gives future logistics sites the ability to install this system easily into their own facility operations, but also offers current locations an option to simplify existing programs.

Compliance

Thanks to a strong EMS that promotes awareness and drives continuous improvement, our North American logistics sites achieved their ninth consecutive year with no hazardous materials/dangerous goods violations.

In May 2006, Toyota received a notice of violation at one of our manufacturing plants for a failure to meet all terms and conditions of their National Pollutant Discharge Elimination System Construction Stormwater Permit. The inspection associated with the violation found no adverse impacts to the receiving waters. While this violation did not result in a negative impact to the environment, Toyota takes any issue of noncompliance seriously, and corrected the problem immediately.

The EHS managers at all of our sites are empowered to go beyond compliance in their daily activities. The evidence of this can be seen throughout this report, in the *kaizens* we highlight and in the voluntary internal and community initiatives that go on throughout our organization.

Auditing

Using The Toyota Way and previous audit results, feedback and experience, we *kaizen*ed many elements of the audit process used at our manufacturing facilities and developed a North America-specific enhanced EMS audit program to be rolled out in FY2008. FY2007 was the first year that our plant representatives participated in the Global Audit Program as auditors. Using plant representatives as auditors enhances information sharing,

yokoten and organizational learning. During the audits of other North American plants, the representatives have the opportunity to observe best practices and then *yokoten* the practices at their own facilities. With careful attention paid to best practice globally and at all of Toyota's North American manufacturing facilities, *yokoten* helps to ensure that all plants "level up" to the best performance in the group.

Risk Reduction

Toyota manufacturing has designed a risk reduction standard that specifies standards for preventing soil, surface water, and groundwater contamination (originally issued in 2004 and revised in 2006). This standard sets design specifications and management requirements for new construction of a manufacturing facility, for new construction at an existing manufacturing facility, and for new supplier constructions on Toyota manufacturing property. It is designed to meet and/or exceed all regulatory requirements and prevent the release of chemicals to soil, surface water and groundwater.

Toyota's sales and logistics division has agreed to implement this standard for their logistics operations at North American manufacturing sites. Our vehicle distribution center in San Antonio, Texas, was the first logistics site to apply this standard. Toyota's suppliers located on-site at the San Antonio manufacturing plant were also required to implement the risk reduction standard.

Eco-Plant Plans

An eco-plant plan is a planning process that helps us construct plants with features that use resources 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. As part of last year's expansion, our assembly plant in Delta, British Columbia, created an eco-plant plan. This plan includes energy and water reductions, soil and groundwater protection and air emission controls for VOC emissions. **We are working on eco-plant plans for new sites in Canada and have already begun a plan for our new facility in Mississippi.** And in San Antonio, Texas, we recently completed an audit that confirmed the plant was constructed in a manner consistent with its eco-plant plan.



Reducing environmental impact was a major goal in selecting and installing a biological wastewater treatment process at our West Virginia plant. The low energy process also significantly decreases operation costs.

WORKING WITH OUR TOYOTA AND LEXUS DEALERS TO BUILD GREENER DEALERSHIPS

Our facilities department began working with dealerships in late 2004 to promote greener building practices at Toyota and Lexus dealerships. Our employees provide assistance in building the business case for applying for LEED certification, research support and consulting during remodeling or new construction.

Our most recent success is the Pat Lobb Toyota dealership in McKinney, Texas: The dealership was the first in the nation to register with the U.S. Green Building Council, and received silver LEED® certification. The dealership has a number of eco-friendly features, such as aluminum composite material panels on the exterior fascia that are made of 95%



recycled aluminum and a closed-loop car wash that uses only recycled water. There are several other LEED projects under development at dealerships across the U.S.

While image, comfort and convenience were important features in the design of the new Lexus of Westminster dealership in California, environmental sustainability was an underlying goal. Tinted insulated glass and solar shading devices reduce the need for air conditioning. The building was designed to utilize natural day light, and additional energy-efficient fluorescent light is controlled by occupancy sensors. Interior materials and finishes were produced from recycled products, and the use of low off-gassing materials and water-based adhesives and paints enhance indoor air quality.



> 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. There were two considerations for this update. First, we realize that as a global company, our ability to resolve these issues will depend on collaboration with many stakeholders, including our business partners and our suppliers. Secondly, as a global company Toyota recognizes that we need to work on and resolve global environmental issues related to energy, climate change and management of chemical substances. We therefore updated the Guidelines, considering the document that relates the Guiding Principles to Sustainable Development ("Contributions Toward Sustainable Development" is available online at www.toyota.co.jp/en/ir/library/annual/pdf/2005/09.pdf).

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 mission. Suppliers are encouraged or required to undertake a range of activities, in themes such as EMS implementation and third party certification, eradication of substances of concern, contribution to Toyota's Eco-VAS program, reduction of CO₂ emissions in logistics, and reduction of packaging. Fundamentally, the Guidelines ask suppliers to support Toyota programs in these areas (some of these activities are reviewed in this report). In some areas, the Guidelines are requirements: For example, current parts and raw materials suppliers are required to have a certified EMS within a specified timeframe. In other cases, particularly with new requirements such as the reduction in packaging, Tier 1 suppliers are required to initiate a waste reduction plan.

Dealers

There are over 1,750 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.** The EAN provides dealers with up-to-the minute information on regulatory requirements, waste stream management best practices, self audit tools, and federal and state regulatory agency contacts.

The HazMat U training course was developed through a partnership of the North American Automotive HazMat Action Committee (NAAHAC) — of which Toyota is a member — and the Coordinating Committee for Automotive Repair®. HazMat U helps dealers comply with federal and state regulatory and training requirements, like California's new regulations specifying best management practices for companies that manufacture or distribute products containing perchlorate. By working with regulatory agencies, a HazMat U training module was developed for airbags, seat belt pretensioners and lithium batteries, auto parts subject to this new regulation.

ENVIRONMENTAL MANAGEMENT HIGHLIGHTS

- All of Toyota's manufacturing plants and logistics sites, and even some of our office complexes, have an EMS.
- Toyota's Green Supplier Guidelines were updated in January 2007.
- We are working with our dealers to promote greener building practices at Toyota and Lexus dealerships.

TOYOTA | cooperation with society



Since 2001, Toyota's Canadian affiliate and Friends of the Rouge Watershed have organized annual planting events, with an average of 150 Toyota employees volunteering their time at each one. Toyota has also provided funds to purchase trees, flowers, shovels and planting supplies, as well as vehicles to facilitate these activities.



“In order to contribute to sustainable development ... we will endeavor to build and maintain sound relationships with our stakeholders through open and fair communication.”

– Stephen Beatty, Managing Director, Toyota Canada Inc.



- > ENVIRONMENTAL PHILANTHROPY
- > COMMUNICATION WITH STAKEHOLDERS
- > CONTRIBUTIONS TO A RECYCLING-BASED SOCIETY

TOYOTA'S BUSINESS PRINCIPLES put communities and the environment at the heart of what we do — we seek to make vehicles that have a positive social and economic contribution. A pillar of The Toyota Way is respect for people, which guides us to respect others, build trust, and take responsibility. In other words, it is not enough to just listen and be polite. We also have to take action. This concept informs how we work with each other within Toyota, and how we work with external partners and stakeholders.

In this section we describe goals and activities in three areas: Environmental Philanthropy, Communication With Stakeholders, and Contributions to a Recycling-Based Society.

> ENVIRONMENTAL PHILANTHROPY

Our corporate philanthropy focuses our environmental commitment to the community in two principal areas: environmental education and environmental conservation.

We partner with nonprofit and community organizations, schools, universities and other businesses to support programs that help make our world a better place. Our contributions take many forms, including vehicle donations, funding, consulting, and volunteer time.



A Highlander Hybrid was donated to the Denver Museum of Nature and Science in November 2006. Museum educators drive the hybrid when visiting local schools to deliver hands-on science education programs.

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 below.

Coast Alive!

Coast Alive! is a bold new science education pilot program designed to bring middle school students and their teachers into southern California state parks and coastal sites to experience and study California's unique marine environments. Coast Alive! moves students out of the classroom and onto the coast to investigate and help restore fragile coastal environments. The program covers the entire southern coast, including San Diego, Orange, Los Angeles, Ventura and Santa Barbara counties.

Coast Alive! is introduced to teachers through a series of professional workshops. The goal of these workshops is to familiarize teachers with both the content and the format of Coast Alive!, so that these teachers are able to use the material in the classroom and lead field study at a nearby state park on their own. Toyota's three-year grant to this program funded these workshops and the production of a Coast Alive! CD ROM. As of the end of 2006, 15 two-day workshops were conducted with 230 primary and secondary school teachers; two complete programmatic CD ROMs were produced on "Fire" and "Water," and over 12,000 students had participated.

TAPESTRY

The Toyota TAPESTRY program, in partnership with the National Science Teachers Association, recently awarded nearly \$580,000 in grants to 82 U.S. K-12 teachers who submitted creative science project proposals. Fifty applicants received up to \$10,000 each and 32 received minigrants of up to \$2,500 each. More than \$7.5 million in grants have been awarded to 908 teams of teachers throughout the program's 17-year history.

Toyota awards grants to innovative kindergarten through 12th-grade teachers annually. Judges select projects that stand out in creativity, risk-taking, and originality in three areas: environmental science, physical science and science applications that promote literacy. This year's projects explore topics in a wide range of disciplines, including ecology, astronomy, chemistry, physics and biology.

“I learned that Galapagueño teachers, as well as teachers all over the U.S., are trying to do what I try to do: teach responsibility for the planet one student at a time.”

– Penny Smeltzer, Galapagos participant, 2006



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 of CAN \$5,000.

This year, the winner of the national award for the Earth Day Scholarship Program was also presented with a spot on the Students on Ice International Polar Year Youth Expedition to the Canadian Arctic in August 2007. This year's individual joins a team of world-leading scientists, experts, educators, international journalists and a television documentary film crew on a two-week expedition of the Canadian Arctic in conjunction with the International Polar Year, a major international science initiative involving interdisciplinary research regarding environmental impacts in the polar regions.



The Earth Day Canada national scholarship winner in 2007 was Bobby Jo Bodnar from Casa Rio, Saskatchewan. He is seen pictured here with Dr. David Suzuki at the Earth Day Gala dinner.

Toyota International Teacher Program

Each year, this program sends 100 U.S. secondary teachers (grades seven through 12) abroad for an international, professional development opportunity. The two-week study strives to expose teachers of all classroom disciplines to the diversity of peoples and ecosystems worldwide and inspire the creative teaching of international, cultural and environmental themes. Teachers experience a dramatic shift in their understanding of international and environmental issues and, upon their return, incorporate their experiences into their classrooms and communities. This competitive, merit-based program is administered by the Institute of International Education in Washington, D.C., the nation's most experienced nonprofit international exchange organization.

Since 1999, educators have traveled to Japan to study key global issues. In 2006, Toyota expanded the program to the Galapagos Islands, where American and Galapagueño teachers participated in a joint professional development forum on innovative approaches to teaching environmental stewardship across all subjects and disciplines. Toyota began working in Galapagos following the 2001 Jessica oil spill, which resulted in 180,000 gallons of oil infiltrating the waters surrounding the Galapagos Archipelago. In collaboration with the World Wildlife Fund, Toyota has worked in the Galapagos Islands since 2001 on projects ranging from recycling and waste management to renewable energy workshops for Galapagueño teachers.

In March 2007, a delegation of teachers studied in Costa Rica for the first time. While traveling in Costa Rica, participants learned how innovative strategies are being implemented in the areas of development, agronomy and conservation from experts at the internationally recognized National Biodiversity Institute (INBio). After a visit to Costa Rica's National Museum, the teachers built on their theoretical knowledge with field visits to important pre-Columbian archeological sites, and at EARTH University, the teachers participated in projects focused on sustainable agriculture in the tropics. Near the city of San Carlos, the teachers also had the opportunity to discuss best practices in environmental education with Costa Rican educators.

Toyota LEAF

In 2007, in honor of Toyota's 50th Anniversary in North America, we announced the Leadership in Environmental Awareness for our Future program, or LEAF. This \$5 million grant program, which will consist of financial grants and/or vehicle donations, enhances specific environmental leadership programs at five national parks across North America: Yosemite, Yellowstone, Grand Canyon, Everglades and Great Smoky Mountains.

These parks have proposed specific programs that focus on enriching and expanding environmental education and creating a legacy of preservation for a new generation. Programs vary from day use and camp scholarships for inner city youth to bi-lingual Junior Ranger programs and University of California intern programs.



Transportation has become more "bearable" at Yellowstone National Park, thanks to Toyota's contribution of this Highlander Hybrid. Toyota recently donated the first U.S.-assembled Camry Hybrid bringing Yellowstone's hybrid fleet to six. Park staff use the vehicles in environmental education programs.

ENVIRONMENTAL EDUCATION CENTER OPENS AT KENTUCKY ASSEMBLY PLANT

To help commemorate the celebration of Earth Day, Toyota's assembly plant in Kentucky officially opened its Environmental Education Center (EEC).

The center features a three-quarter mile walking trail that winds through meadows, woods and wetland habitat with a beautiful two-acre pond along the route. Some trees along the path are more than 100 years old. Over 25 educational markers (kiosks) along the trail educate students on the ecology of our planet and how Toyota is working every day to keep the environment healthy for our current and future generations. Identification markers on the trail are made from a combination of wood and recycled plastic. Plastic caps and grommets from our incoming parts and reclaimed plastic wrap from our pallets are recycled into this plastic/wood lumber.

Located on the plant's campus, the EEC and trail are open to employees and visitors. The Environmental Education Center is also developing a comprehensive environmental education curriculum for grades four through 12. Curriculums for elementary and middle school students are currently available online at www.toyotageorgetown.com.



Environmental Conservation

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. Our employees participate in a number of volunteer events, some of which are described below.

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 seventh year, this program is designed to transform Canadian school grounds into inviting play spaces and natural learning environments. Toyota and its dealerships across Canada have contributed over \$4 million to help support Evergreen in this mission.

In 2006, the program awarded over \$250,000 in grants to 126 schools and day care centers and to date has engaged over 1.2 million children across Canada. 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 seven 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, Toyota's Canadian affiliate and Friends of the Rouge Watershed have organized annual planting events, with an average of 150 Toyota employees volunteering their time at each one. Toyota also provides funding to purchase trees, flowers, shovels and planting supplies, as well as vehicles to facilitate these activities.

Our plant in Baja California is partnering with the state on a reforestation program that provides trees to employees that they can plant at home.



Toyota employees from our Puerto Rico office participated in an NPLD cleanup at La Perla beach.

National Public Lands Day

In September 2006, Toyota sponsored National Public Lands Day (NPLD) for the eighth consecutive year in partnership with the National Environmental Education Foundation. More than 100,000 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. We have also committed to sponsoring NPLD for the next two years.

Take Pride in America

Building on the success of National Public Lands Day, Toyota launched a partnership in the spring of 2006 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 participates in the Take Pride in America School Campaigns Creating a New Generation of Volunteers. In addition, Toyota sponsors the Take Pride in America School Award, which is presented to the school with the most active volunteer participation and community impact.

Environmental Research Partnerships

We promote basic research aimed at CO₂ emissions reductions through partnerships with academia and other companies.

For example, we joined ExxonMobil, General Electric and Schlumberger and began the Global Climate and Energy Project (GCEP) at Stanford University in 2002. The Project seeks new solutions to one of the grand challenges of this century: supplying energy to meet the changing needs of a growing world population in a way that protects the environment.

GCEP conducts fundamental research on technologies that will permit the development of global energy systems with significantly lower greenhouse gas emissions. The Project's research portfolio includes nearly 50 research projects in 10 different theme areas. Over 225 graduate and postdoctorate researchers are funded by the project at Stanford and nine other prestigious institutions around the world. This research is beginning to generate a number of patent applications and multiple scientific papers.



Our plant in Cambridge, Ontario, partnered with the University of Guelph to implement this innovative technology in the paint sludge room: a greenwall that reduces VOCs and odors.

> COMMUNICATION WITH STAKEHOLDERS

Toyota communicates its environmental plans, activities and performance through this annual environmental report. This report is available as an interactive publication on the Web at www.toyota.com/environment/2007report. As we have for the past three years, we also publish a highlights brochure.

We also strive to strengthen communication with external stakeholders, including governments, business partners and nonprofit organizations. For example, our assembly plant in Long Beach, California, joined the Sanitation Districts of Los Angeles County 2007 Industry Advisory Council. This Council is a forum for communication, cooperation and partnership between the Sanitation Districts and industry, to protect the environment, fulfill regulatory mandates, promote environmental stewardship, and foster stakeholder dialogue and partnership. As part of best practice sharing, representatives from the Long Beach facility presented their efforts in eliminating landfill disposal of manufacturing wastes, and their five-year plan for pollution prevention and energy conservation, at the April 2007 meeting.

> 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. We work with our business partners to encourage recycling and expand the availability of environmentally preferable products, and we remanufacture original parts where possible.

Remanufactured Parts

Toyota continues to support customer needs by expanding our lineup of remanufactured service parts. **We set a target to launch at least 100 remanufactured parts applications each year; in FY2007, we exceeded this target by launching 166 remanufactured parts applications.** In addition, remanufactured parts are now highlighted on the Toyota Wholesale Parts Web site at www.toyotapartsandservice.com. This Web site encourages the use of Toyota Genuine Parts at independent repair facilities servicing Toyota vehicles. By visiting the site, repair facilities can browse a complete list of available remanufactured parts and learn about the environmental benefits of their use.

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 (EPATSM), a project of the Paper Working Group, establishes consistent language and metrics to measure the environmental attributes of paper.

EPAT facilitates communication between producers and buyers of paper and paper products. It allows for the consideration of major environmental impacts over the life cycle of paper products and is based on standardized information provided by paper suppliers. The tool consists of three primary stages: 1) Performance Reporting, 2) Evaluation, and 3) Purchasing Decision. The first stage enables the consistent reporting of information by the suppliers of paper products. The second stage provides opportunities for buyers to emphasize the environmental attributes of paper that are most important to their company. At the third and final stage, individual buyers incorporate the results from the EPAT along with other considerations before making a purchasing decision.

Dealers and Tires

In the U.S., Toyota encourages its dealers to dispose of tires in a safe and environmentally appropriate way through a new tire program called "Tire Shark." 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.

As part of a pilot program in FY2007, a Tire Shark machine from Oakleaf Waste Management was provided to the Toyota of Plano and Toyota of Richardson dealerships in the Dallas, Texas, metro region. The Tire Shark 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. We plan to roll out the Tire Shark service to all Toyota Tire Center/Maintenance Care dealers in late 2007.

COOPERATION WITH SOCIETY HIGHLIGHTS

- We partner with a variety of organizations, including nonprofits, schools and universities and other businesses, to support programs that help make our world a better place.
- We communicate our environmental plans, activities and performance through this annual environmental report.
- We work toward the creation of a recycling-based society by purchasing environmentally preferable products and remanufacturing original parts, and we encourage our business partners to recycle.

TOYOTA | corporate profile



Toyota Technical Center is constructing an engineering design facility and a safety test facility in York Township, Michigan, on a former Brownfield site. A number of environmentally sustainable practices were used during demolition of the old site.



“Be a truly global company that is trusted and respected by all people around the world.”

– Toyota Global Vision 2010



> **TOYOTA'S NORTH AMERICAN AFFILIATES**

> **TOYOTA BY THE NUMBERS**

TOYOTA TEAM MEMBERS devote themselves to the customer, from the drawing board to the market. Our respect for our neighbors and the environment is at the heart of everything we do. At Toyota, across every aspect of our business, we are committed to continuous improvement, looking forward to new tomorrows.

Respect for the environment was a high priority for Toyota in York Township, Michigan, where we recently broke ground on a 700-acre site to expand our research and vehicle development operations in North America. An engineering design facility and a safety test facility are being constructed on the former home of the Ypsilanti Psychiatric Hospital. Toyota assumed full responsibility for cleaning up what was a Brownfield site, and received reimbursement assistance in the form of tax credits from the state of Michigan as part of the negotiated agreement.

A complete inventory of the trees on the site was conducted and Toyota was successful in preserving over 500 trees. In addition, site design plans include:

- Recycling existing building masonry into road base for parking lots and interior roadways.
- Diverting 75% of construction waste from landfills.
- Using 10% of recycled and 20% of regionally provided materials in construction to limit environmental impact from transportation and production of goods.

This investment of almost \$200 million will add 400 new jobs to the local economy by 2010.

> **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 major locations in Washington, D.C., and New York City. In addition, it coordinates the business activities for all of Toyota's North American companies.

TOYOTA MOTOR ENGINEERING & MANUFACTURING NORTH AMERICA, INC., was established in 2006 and is headquartered in Erlanger, Kentucky. Toyota Motor Engineering & Manufacturing North America is the consolidation of Toyota Technical Center and Toyota Motor Manufacturing North America. 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. Our facilities include:

- Bodine Aluminum, Inc.
Jackson, Tennessee, and St. Louis and Troy, Missouri
- Canadian Autoparts Toyota, Inc. (CAPTIN)
Delta, British Columbia
- New United Motor Manufacturing, Inc. (NUMMI)
Fremont, California
- TABC, Inc. (TABC)
Long Beach, California
- Toyota Motor Manufacturing, Alabama, Inc. (TMMAL)
Huntsville, Alabama
- Toyota Motor Manufacturing de Baja California (TMMBC)
Tijuana, Baja California, Mexico
- Toyota Motor Manufacturing Canada, Inc. (TMMC)
Cambridge and Woodstock (2008), Ontario
- Toyota Motor Manufacturing, Indiana, Inc. (TMMI)
Princeton, Indiana
- Toyota Motor Manufacturing, Kentucky, Inc. (TMMK)
Georgetown, Kentucky
- Toyota Motor Manufacturing, Mississippi, Inc. (TMMMS)
Blue Springs, Mississippi (2010)
- Toyota Motor Manufacturing, Texas, Inc. (TMMTX)
San Antonio, Texas
- Toyota Motor Manufacturing, West Virginia, Inc. (TMMWV)
Buffalo, West Virginia
- TTC Research and Development Centers
Ann Arbor* and Plymouth, Michigan; Wittman, Arizona;
Gardena and Torrance, California; Boston, Massachusetts

*Also location of Design Center

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 1,400 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 is one of the world's largest automotive manufacturers by sales and is currently ranked as the eighth largest company in the world by revenue.

> TOYOTA BY THE NUMBERS

Toyota currently has over 180 operating locations in the U.S., Canada and Mexico. There are more than 1,750 Toyota, Lexus and Scion dealerships in North America that sell more than 2.5 million vehicles a year. We operate 13 manufacturing plants that produce over 1.5 million vehicles a year.

Toyota established operations in North America in 1957, and now directly employs over 40,000 people. Our direct investment here is currently valued at more than \$18 billion, including sales and manufacturing operations, research and development, financial services and design. In 2006, Toyota spent more than \$29 billion for parts, materials, goods and services from hundreds of North American suppliers and business partners, directly creating more than 41,000 local jobs.

Figure R

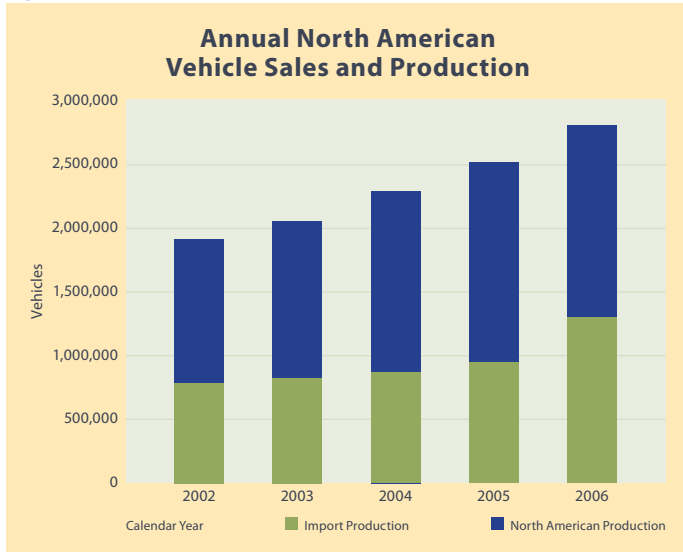


Figure S

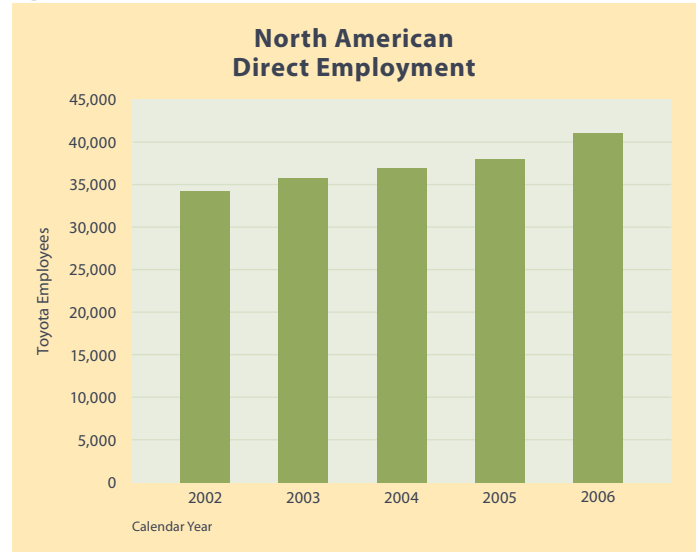


Figure T

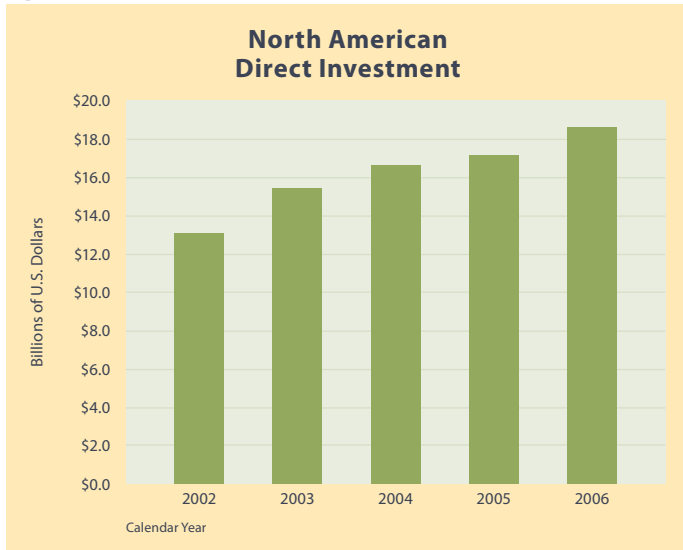
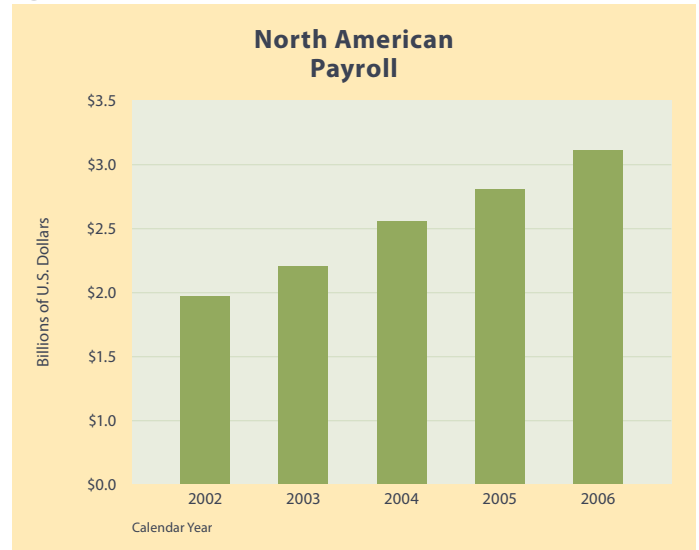


Figure U



TOYOTA |



This report is printed on Mohawk Options, a paper made with 100% postconsumer recycled fiber and manufactured with Green-e certified nonpolluting, wind-generated electricity.

The paper is certified under Green Seal's Environmental Standard for Printing and Writing Paper, and is certified by SmartWood for FSC standards, which promote environmentally appropriate, socially beneficial and economically viable management of the world's forests. Lead, cadmium, mercury and hexavalent chromium are not used in our coating formula. Soy, nonpetroleum based inks were utilized throughout this report.

