



M planet blue
the sustainable difference

S U S T A I N A B I L I T Y
2011 ANNUAL REPORT

Contents

Climate Action	2
Waste Prevention	6
Healthy Environments	8
Community Awareness	10
Looking Forward	12

COVER STORY: U-M'S FALCONS

An adult pair of Peregrine Falcons was first spotted at U-M on the Burton Memorial Tower in 2006. University officials ordered the bells and chimes to be silenced in an effort to prevent them from disturbing the falcons' nesting season. Every year since, the falcons have returned to campus, where they have been spotted at Burton Tower, University Hospital and other tall buildings.

After nesting attempts at the tower continued to fail, two nesting boxes were installed for the falcons at University Hospital and at North Quad buildings in an effort to relocate them to a more suitable area. The UH nesting box was initially built and donated by a local Eagle Scout. Hospital staff modified the box to withstand higher wind speeds and other weather damage.

Three baby Peregrines were first spotted by the DNR in the UH nesting box on May 23, 2011. The DNR estimated they were nine days old at the time.

Tom Peterson, the U-M Hospitals and Health Centers (UMHHC) operations director, credited the contributions of many staff members from UMHHC, Hospital Facilities & Maintenance, Occupational Safety and Environmental Health (OSEH), North Quad, Burton Tower, Architecture Engineering & Construction, Grounds, and the Museum of Zoology to the success of the nest boxes and the good health of the falcons and their chicks.

U-M plans to build an access hatch that will allow DNR staff to band future chicks to better track their movements and monitor the falcon population.

In 2010, U-M officials sought guidance from the Michigan Department of Natural Resources (DNR) and the U-M Museum of Zoology staff to help protect the state endangered falcons while Burton Memorial Tower underwent exterior repairs. Following recommendations from DNR, the university decided to delay repair work on the exterior of the tower until after the nesting season.

“This is a great example of U-M’s commitment to environmental stewardship and sustainability. It really shows how the campus can function as a living and learning laboratory.”

Steve Benedict, Director of U-M’s OSEH Department

2011 SUSTAINABILITY UPDATE

Last year the 2010 Annual Sustainability Report (ASR) introduced “Planet Blue: the Sustainable Difference” as the theme for sustainability for the University of Michigan. Bringing together education, research, and operations efforts under a single campus wide sustainability brand. Today Planet Blue logos, T-shirts, posters, and e-newsletters can be found throughout Ann Arbor, a daily reminder of the university’s commitment to the stewardship of our planet.

The Campus Sustainability Integrated Assessment (IA), a partnership between the Graham Environmental Sustainability Institute and the Office of Campus Sustainability, completed the Phase II analysis and the IA Integration Team prepared a set of stretch goals interwoven around four operational related conservation themes: Climate Action, Waste Prevention, Healthy Environments, and Community Awareness. The Environmental Sustainability

Executive Council approved the goals and they were announced by President Coleman on September 27, 2011 during the annual campus EarthFest celebration.

The 2011 Annual Sustainability Report provides data collected for the July 1 through June 30 fiscal years 2004–2011, for the University of Michigan Ann Arbor Campus. In an effort to embody the cross campus example set by the Planet Blue initiative the 2011 ASR follows the IA themes, and future ASRs will report on progress toward the goals.

We hope this report will provide you, the reader, with not only the information necessary to assess U-M’s current level of sustainability, but to provide examples of ways that you may become involved in helping the university community become a place we can be proud to share with future generations.

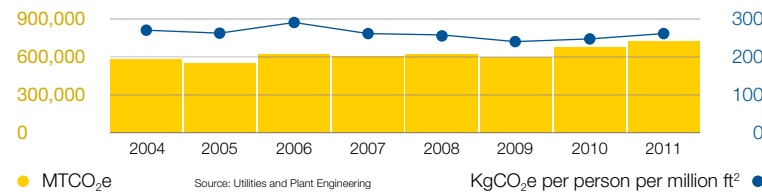


President Mary Sue Coleman answers questions about U-M’s new sustainability goals after delivering an address on the topic at the Hatcher Graduate Library. With her are Terry Alexander (left), executive director of the Office of Campus Sustainability, and Donald Scavia (right), director of the Graham Environmental Sustainability Institute and special counsel to the president on sustainability.

Climate Action

The Climate Action theme seeks to address the potential consequences of global climate change through energy conservation programs, the use of low carbon and renewable energy technologies, and by providing alternative transportation options to the campus community. By developing a practical approach to achieve responsible carbon reduction U-M can sustainably fulfill its operational responsibilities while living up to its academic and research reputation as a world-class institution of higher education.

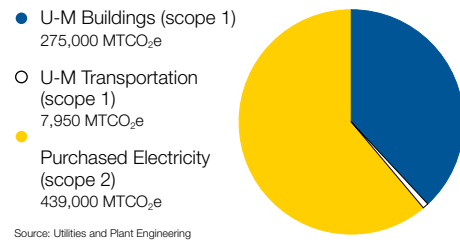
University of Michigan Green House Gas Emissions



EMISSIONS

Climate action and energy conservation are directly linked given that the majority of the university's green house gas (GHG) emissions are attributable to burning fossil fuels to create usable energy. Historically, the University of Michigan has been able to keep GHG emissions stable despite campus growth and

University of Michigan FY2011 Green House Gas Emissions



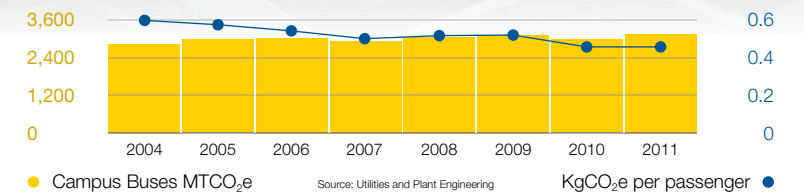
Source: Utilities and Plant Engineering



North Campus Research Complex

increased reliance on technology. FY2011 data shows a fourth straight year of energy demand increase, and a second straight year of emission increase. Not unexpected due to the recent acquisition of the North Campus Research Complex (NCRC) which accounts for approximately half of the energy and emission increases seen since FY2009, but still an indication that the university will need to include additional action items in order to achieve its GHG goals.

University of Michigan Transportation Green House Gas Emissions



in FY2011. When looked at on a per passenger basis, transportation emissions for the bus system are down 24% when compared to FY2004.

ENERGY USE

The University of Michigan is currently in the midst of an unprecedented period of growth. Researchers have been steadily occupying the newly acquired NCRC, and several construction projects including the 360,000 ft² North Quad Residential and Academic Complex were completed in FY2011. When normalized for population and building area increases, energy use remained relatively stable increasing 1.3% from 2.5 BTU/person/ft² in FY2010 to 2.6. When compared to FY2004 BTU/person/ft² levels, energy use has decreased by 21%.

Building energy demand is met by on-campus production from the Central Power Plant and



A Plant Operations staff member discusses U-M's electric vehicle fleet with a student at a campus event.



The Angell Hall complex—one of Central Campus' most recognized facilities—energy use was decreased by 18% in FY2011 with the help of Planet Blue Operations Teams.

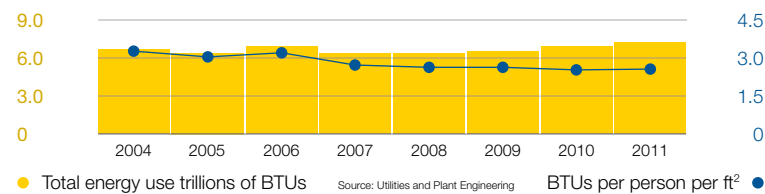
outlying boilers, and through purchased electricity. Operations in the 387 buildings surveyed for this report consumed 7.1 trillion BTUs of energy during FY2011, a 3.8% increase from FY2010 and an 8.2% increase from FY2004. The University of Michigan is addressing the growth in building energy demand through building recommissioning as part of the Planet Blue Operations Teams program, and by incorporating energy reduction strategies in building design.

use of 8%. Highlights include the Alumni Center, which after only 7 months in the program, achieved a 16% reduction in energy. The Chrysler Center reduced energy use by 30%, the Angell Hall complex—one of Central Campus' most recognized facilities—saw a decrease in energy use of 18%, and the Institute for Social Research-Thompson Building had a 30% energy reduction.

U-M has adopted Leadership in Energy and Environmental Design (LEED) Silver certification as mandatory for all new non-clinical buildings and additions (new construction) with a construction budget greater than \$10,000,000. In addition, U-M has adopted the goal of exceeding ASHRAE 90.1-2007 energy code requirements by 30% for all projects with a construction budget greater than \$10,000,000. U-M currently requires the incorporation of numerous mandatory energy and water conservation measures, comprehensive evaluation of additional energy efficiency measures, and comprehensive modeling of energy usage for proposed projects and development of energy impact statements at each phase of design.

At the conclusion of FY2011, Planet Blue Operations Teams were actively engaged in 71 buildings. Energy conservation measures and support from our Planet Blue citizens resulted in a decrease in overall energy

University of Michigan Total Energy Use



Source: Utilities and Plant Engineering

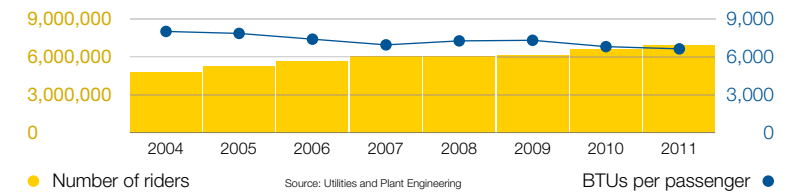
TRANSPORTATION

Transportation Energy demand increased nearly 10% from FY2010 to 110 billion BTUs in FY2011. This also represents a 9.3% increase from FY2004. The University of Michigan owns a very diverse fleet of 1,057 vehicles including 96 B-20 biodiesel buses and trucks, 27 hybrid sedans, 524 E-85 ethanol vehicles, and 15 low speed electric vehicles. Near the end of FY2011 Parking & Transportation Services finalized a requisition for 7 biodiesel electric hybrid buses, expected to reduce fuel consumption by 30% over existing buses, as well as 30 more hybrid sedans.

Demand for the campus bus fleet continues to grow; transporting over 6.9 million passengers this past year. The combined ridership on the campus bus fleet and through M-Ride—the University-Ann Arbor Transportation Authority (AATA) partnership

program—has increased annually and this year surpassed 9 million riders. The M-Ride program has been so successful that a 5 year extension has been agreed upon. In FY2011 a new transit center was opened on central campus; designed to improve integration between the U-M and AATA bus services.

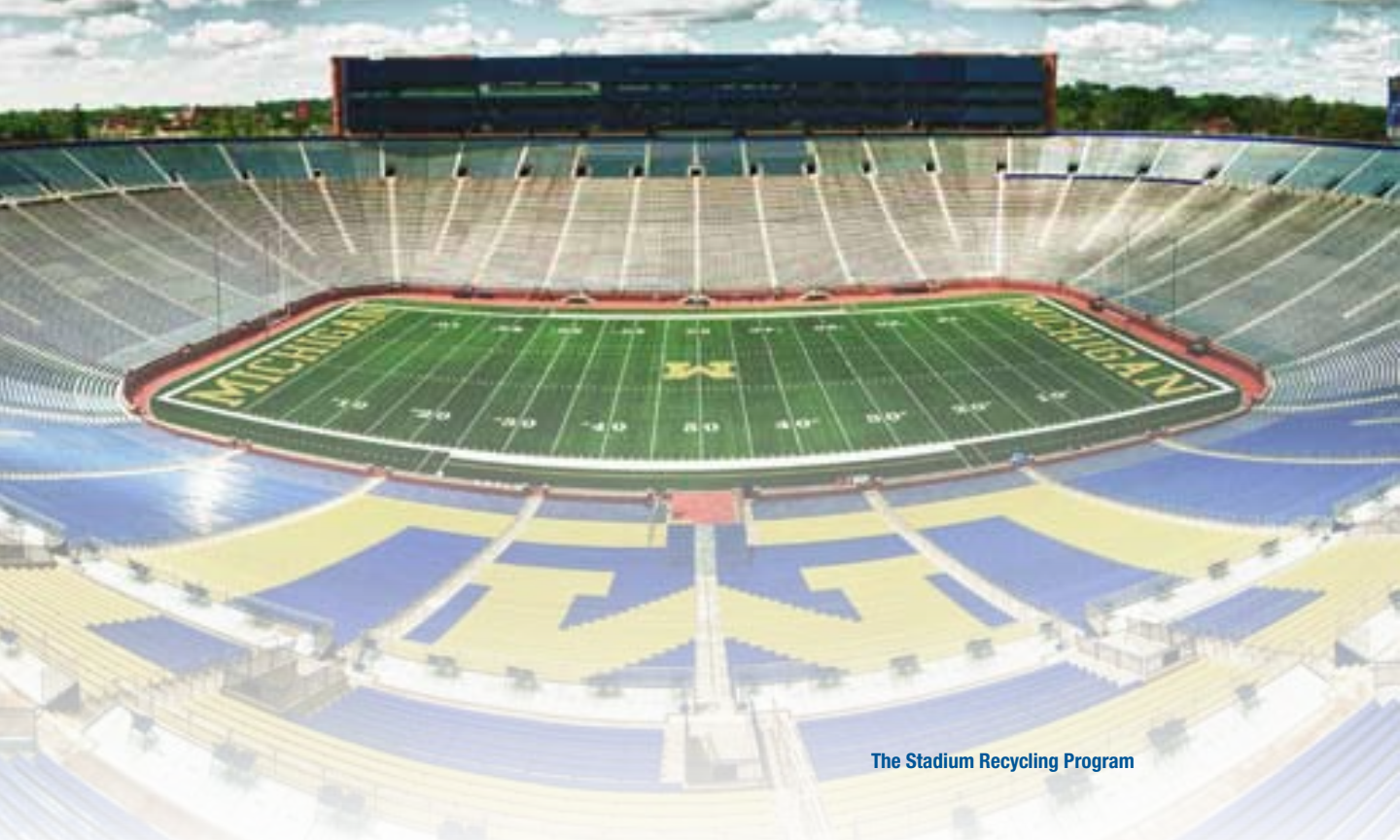
University of Michigan Bus Ridership



Source: Utilities and Plant Engineering

The new Central Campus Transit Center on North University Avenue.





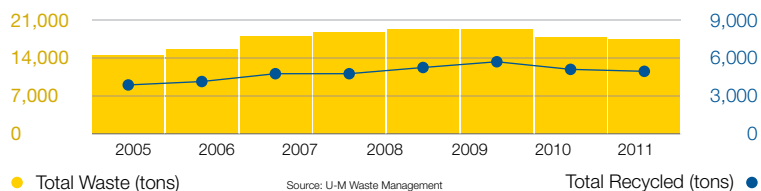
The Stadium Recycling Program

Waste Prevention

The University of Michigan has managed a formal recycling program for more than 20 years, and for most people, recycling is now a part of everyday life. Examples of successful recycling programs on campus include the Student Move Out program, an annual event that has generated more than 140 tons of donations for local charities; the Stadium Recycling Program, which collects 30 tons of cardboard and plastics annually, and the popular public E-Waste event held each spring in partnership with the Ann Arbor Public Schools.



University of Michigan Waste Disposal



Many people do not realize that sustainable waste management involves more than just recycling. U-M sponsors a number of innovative programs designed to promote waste reduction and product reuse. Since 1998, residence halls have been collecting

pre-consumer food waste for composting. In FY2011, \$1.8 million worth of used equipment was resold through the Property Disposition Office, and the Office of Campus Sustainability manages a Chemical Redistribution program which reduces the amount of chemical waste generated.

In FY2011, the Office of Campus Sustainability launched the Sustainable Office Program which provides staff, faculty and students easy and practical actions that will reduce the environmental impact of our buildings and daily operations. This program encourages people to purchase Energy Star rated office equipment, to use stairs instead of elevators, and to follow Green IT initiatives when printing or

copying. The Sustainable Office Program also promotes holding more responsible meetings by encouraging attendees to bring reusable mugs, asking meeting coordinators to provide information through electronic format, and to hold meetings in a central location accessible via mass transit.

One key to waste reduction is public education. This past December, the Student Sustainability Initiative coordinated the university's first ever zero-waste basketball game. 577 pounds of waste was collected at the event, 248 pounds of which was sent out for recycling and 192 pounds went to a nearby composting facility. Students were given a visual (and olfactory) reminder of their waste stream during EarthFest, U-M's annual "Party for the Planet", when a day's worth of trash from Angell Hall was unceremoniously dumped into the middle of Central Campus. Sporting personal protection equipment, students and staff members picked through the bags of trash to discover that 40 percent of the waste could be diverted from landfills and recycled.

The university generated 17,000 tons of waste in FY2011, a 2.7% decrease from FY2010, but a 19% increase over FY2004. This represents an annual disposal rate of 430 pounds per person, or 1.2 pounds/person/day, a 3.9% improvement over FY2010, but is still a 6.2% increase over FY2004.

Despite these efforts, U-M still sends more than 10,000 tons of waste to disposal facilities annually, and has a campus recycling rate of approximately 30%. Opportunities to decrease this amount of waste include the recent implementation of single stream recycling, expansion of the current composting program, and improvements to the purchasing process. By providing education opportunities, clear direction, and readily available recycling opportunities the University of Michigan can help ensure that the campus community becomes involved in the efforts to reduce our overall waste production.

An EarthFest trash sorting event where 40% of the waste was diverted from a landfill and recycled.



Healthy Environments

The Healthy Environments theme recognizes the importance of our local environment and works toward providing the campus community with the opportunity to enjoy natural areas while protecting habitat and water resources. The University of Michigan has been rewarded for its efforts to plant trees and improve landscape by earning recognition as a Tree Campus USA institution by the Arbor Day Foundation for the past three years.

BABY FALCONS

This past year the University of Michigan proudly welcomed three new members to our "flock." A pair of endangered Peregrine Falcons who have been seen on campus since 2006 gave birth for the first time after taking up residence in a nesting box built by a local Eagle Scout that U-M Staff located on the roof of the University Hospital. One of the chicks attempted to test its wings early and became separated from its parents after it was unable to return to the nest. The wayward hatchling was cared for by the Michigan Department of Natural Resources and recently returned to the nest.

A pair of endangered Peregrine Falcons welcomed three new members to their family after taking up residence in a nesting box on the roof of University Hospital.



SUSTAINABLE FOOD SOURCING

The Healthy Environments theme addresses the popular subject of sustainable food sourcing. By purchasing locally produced food, U-M can support Michigan's economy while preserving prime agricultural land. Local produce tends to minimize transportation and processing, and is sold sooner after harvest maximizing freshness, flavor and nutrient value. In past years, dining halls on campus have featured a day of locally produced and organic foods to highlight our student-supported program "Go Blue, Eat Local." Entrees include fresh fruits and produce, meats, dairy products, pasta, cider and honey from regional family farms, orchards, and food processors. Dining hall table napkins are 100% recycled fiber, and raw food waste from meal preparation is collected for composting.



It is estimated that the Maxicom computerized irrigation system is reducing water use by 22 million gallons a year on Central and North campuses.

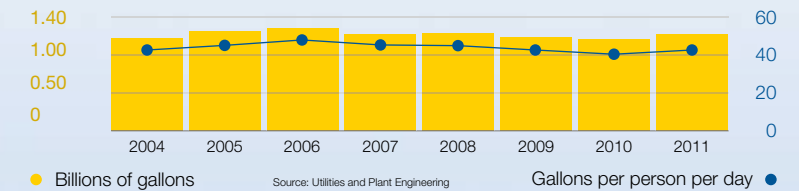
PROTECTING THE GREAT LAKES

The state of Michigan is surrounded by one of the greatest reservoirs of fresh water in the world, the Great Lakes. The protection of this resource is a centerpiece of the Healthy Environments theme. For many years U-M has protected the Huron River basin through best management practices designed to reduce the impact of storm water runoff. During the construction of the Life Sciences Institute, a 1-million-gallon detention basin was installed beneath the parking structure. The North Campus Wetland Basin manages runoff from 90 acres of campus property. A parking lot near the West Quadrangle dormitory is made from porous pavement, and there are green roofs located on buildings such as the Ross Business School, Kresge Library, and the Cardiovascular Center parking structure.

WATER SAVING MEASURES

The University used 1.3 billion gallons of water in FY2011, a 6.2% increase over FY2010. When normalized for population growth, the FY2011 use was less than 16,000 gallons/person. This represents a 4.9% increase from FY2010, but is still a 7.1%

University of Michigan Total Water Use



reduction from FY2004. One of the ways U-M is working to reduce water consumption is through advanced irrigation technology. A computerized system, called Maxicom, receives information from a campus weather station and control points at the irrigation zone that monitors wind speed, rain, temperature, and humidity allowing for optimal irrigation schedules. It is estimated that the Maxicom system is reducing water use by 22 million gallons a year on Central and North campuses.

Community Awareness

The University of Michigan is special in that it affects the lives of so many people. Faculty, staff, and students come from across the globe for an opportunity to experience the learning and research facilities available here. Sporting events, libraries, museums, and the Health System bring in millions of visitors annually providing a unique opportunity to introduce a large and diverse audience to our sustainability activities.

Engagement of this extended community has always been a founding principle of Planet Blue. This past year saw the introduction of a new program designed to connect students, faculty, and staff in order to create a culture of sustainability across campus. The Planet Blue Ambassador Program, a new 2-credit seminar-based program, will bring students and staff into the classroom together in order to explore similarities and differences between sustainability experiences. Planet Blue Ambassadors will model and teach sustainability practices and serve as “eco-reps” to the U-M community.

EarthFest: Party for the Planet is an opportunity for U-M sustainability programs to educate attendees on how to make campus more environmentally sound.

Exposure to the university’s sustainability initiative comes early for U-M students. This past year The Office of Campus Sustainability worked with the Office of Undergraduate Admissions to provide tour guides with examples of sustainability efforts on campus that could be pointed out to potential students and their families during campus visits. The Graham Institute published a “Student Sustainability Guide: How to Be a Green Wolverine” providing tips that allow students to become a part of the overall sustainability movement at U-M. The annual EarthFest event held the first month of every school year provides an opportunity for University organizations representing sustainability programs to educate attendees on what U-M is doing to make the campus more environmentally sound.

While on campus, students can choose from more than 600 environmentally themed courses to enroll in. After graduation, many students opt to pursue sustainability based post-graduate curricula such as energy system engineering, landscape architecture,



Sustainability Without Borders built a playground that includes a merry-go-round connected to a generator that produces electricity as it turns.

or environmental law. More than 30 sustainability themed student run organizations are available for those who wish to become more involved. The Student Sustainability Initiative, whose goal is to connect the student voice to administration, coordinates and provides a voice for a range of related student groups on campus.

University of Michigan students are also getting the opportunity to practice what they learn. In May, a group of students from the U-M student group—Sustainability Without Borders—took a 10-day trip to Konia, Liberia. They built a playground that includes a merry-go-round capable of generating electricity as the children play.

The three-credit Sustainability & the Campus course (ENV391), explores sustainability in higher education while using U-M as a “living laboratory.” This interactive course requires students to conduct a substantial, hands-on group project in conjunction with an operations-focused sponsor. Examples of projects conducted during the FY2011 school year include construction of a garden for use by

“This (Planet Blue Ambassador Program) is an opportunity to connect students from diverse academic backgrounds with members of the U-M faculty and staff by providing an action-based learning experience.”

Mike Shriberg, Education Director for the Graham Institute and Lecturer in the College of Literature, Science, and the Arts (LSA)

the university’s Outdoor Adventures group, and a set of recommendations designed to reduce the environmental impact of Commencement ceremonies.

Promoting the type of societal change required to instill sustainability related values is an extremely challenging task. The university population is transient by nature and often overwhelmed by responsibilities associated with college studies. By providing education and opportunity, we can initiate a culture shift where sustainable choices become a way of life and are no longer looked upon as additional responsibility or burden.





The indoor portion of the new Weisfeld Golf Center, which opened in the fall of 2011 off of S. Main Street, is the first campus facility to use geothermal technology. It uses the earth's temperature for heating and cooling and is expected to run 30% more efficiently than a standard system.

Looking Forward

In FY2010, U-M President Mary Sue Coleman expanded the university's commitment to sustainability when she formally announced the creation of the Environmental Sustainability Executive Council, appointed a special counsel to the president for sustainability, and established the Office of Campus Sustainability (OCS). During FY2011 these three entities collaborated in completing the Campus Sustainability Integrated Assessment (CSIA). This assessment resulted in the recommendation of five major stretch goals designed to reduce the university's environmental impact through the areas of Climate Action, Waste Prevention, Healthy Environments, and Community Awareness.

Early in FY2012, these goals were accepted and introduced to the university during the annual EarthFest celebration. OCS is in the process of developing an action plan providing direction towards meeting these goals and is tasked with monitoring the university's progress. The action plan should be available in 2012.

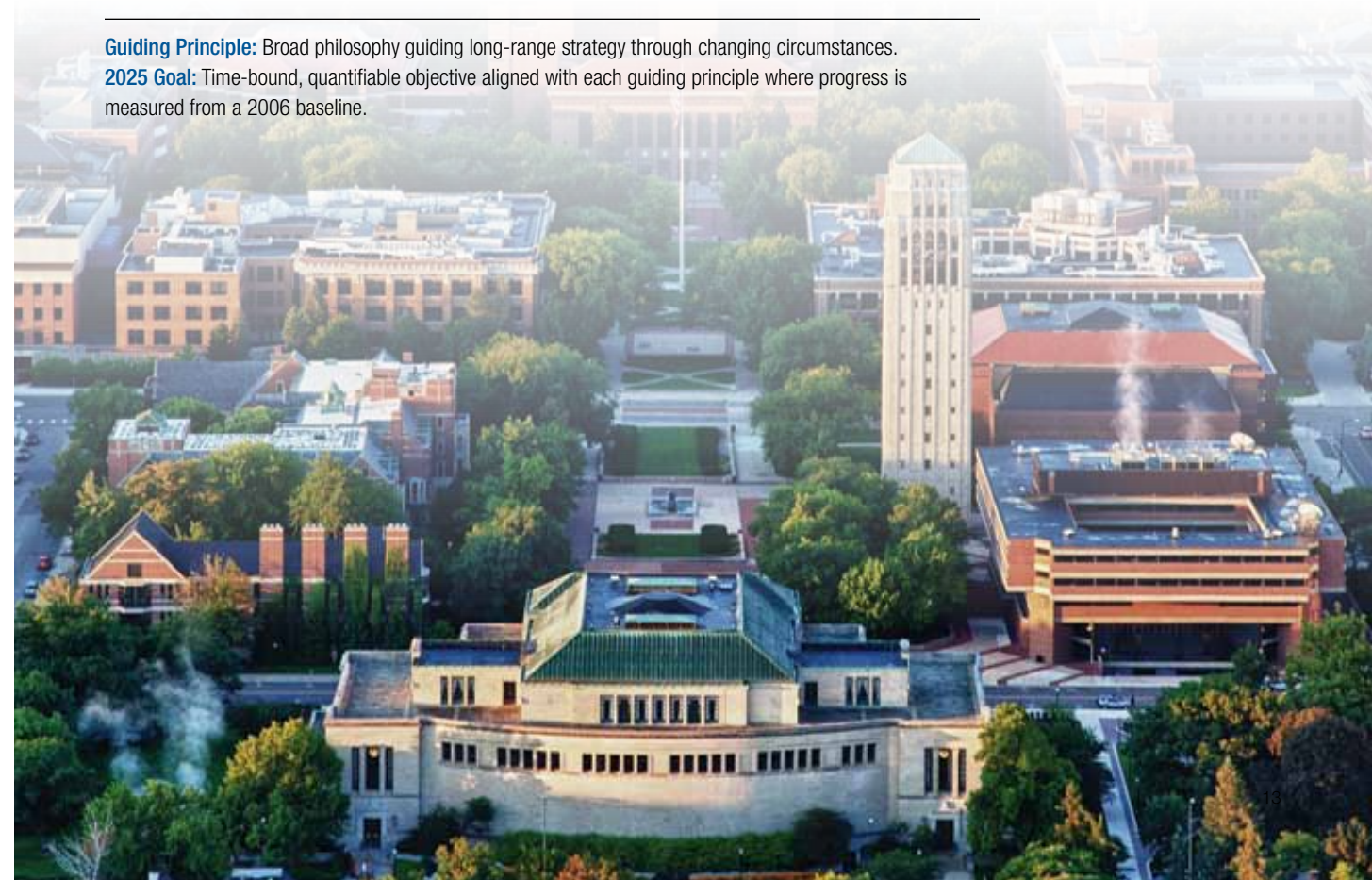
Open communication of the university's progress towards sustainability is an ongoing priority. This Annual Sustainability Report provides a great opportunity to document environmental metrics and highlight efforts across campus. Moving forward, it will be used to discuss the university's progress toward the goals.

OCS staff would like to thank you for joining us on this journey as we work together to make the University of Michigan a more environmentally sustainable institution we can proudly stand behind.

THEME	GUIDING PRINCIPLE	2025 GOALS
Climate Action	We will pursue energy efficiency and fiscally-responsible energy sourcing strategies to reduce greenhouse gas emissions toward long-term carbon neutrality.	Reduce scope 1 & 2 greenhouse gas emissions by 25%. Decrease carbon intensity of passenger trips on U-M transportation options by 30%.
Waste Prevention	We will pursue purchasing, reuse, recycling, and composting strategies toward long-term waste eradication.	Reduce waste tonnage diverted to disposal facilities by 40%.
Healthy Environments	We will pursue land and water management, built environment, and product sourcing strategies toward improving the health of ecosystems and communities.	Purchase 20% of U-M food in accordance with U-M Sustainable Food Purchasing Guidelines. Protect Huron River water quality by reducing runoff from impervious surfaces and reducing the volume of land management chemicals used on campus by 40%.
Community Awareness	We will pursue stakeholder engagement, education, and evaluation strategies toward a campus-wide ethic of sustainability.	No formal goal adopted, but U-M will invest in programs to educate our community, track behavior, and report progress over time.

Guiding Principle: Broad philosophy guiding long-range strategy through changing circumstances.
2025 Goal: Time-bound, quantifiable objective aligned with each guiding principle where progress is measured from a 2006 baseline.

Campus Sustainability Integrated Assessment Goals





sustainability.umich.edu

The Regents of the University of Michigan Julia Donovan Darlow, Ann Arbor; Laurence B. Deitch, Bingham Farms; Denise Iltch, Bingham Farms; Olivia P. Maynard, Goodrich; Andrea Fischer Newman, Ann Arbor; Andrew C. Richner, Grosse Pointe Park; S. Martin Taylor, Grosse Pointe Farms; Katherine E. White, Ann Arbor; Mary Sue Coleman, *ex officio*

The University of Michigan, as an equal opportunity/affirmative action employer, complies with all applicable federal and state laws regarding nondiscrimination and affirmative action. The University of Michigan is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, national origin, age, marital status, sex, sexual orientation, gender identity, gender expression, disability, religion, height, weight, or veteran status in employment, educational programs and activities, and admissions. Inquiries or complaints may be addressed to the Senior Director for Institutional Equity, and Title IX/Section 504/ADA Coordinator, Office of Institutional Equity, 2072 Administrative Services Building, Ann Arbor, Michigan 48109-1432, 734-763-0235, TTY 734-647-1388. For other University of Michigan information call 734-764-1817.

Copyright © 2011 The Regents of the University of Michigan, Ann Arbor, Michigan, 48109

MMD 110261