

Sustainability at Notre Dame 2008-2009

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The Office of Sustainability tracks University-wide sustainability performance in seven areas: power generation, design and construction, waste reduction, food services, procurement, transportation, and water. The following pages detail the efforts made in each of these areas during 2008–09.

Letter from the President

Global climate change and dwindling natural resources present an unprecedented challenge to our society. The University of Notre Dame has a responsibility to address this challenge by educating new generations of leaders, conducting innovative research, and reducing the University's footprint on the environment.

This report marks the first year we have presented data that documents the University's energy use, carbon emissions, solid waste, water use, food services impact, and transportation impact. This information helps us plan carefully and balance with other University needs to ensure a sustainable future for generations of students to come.

Notre Dame achieved significant accomplishments over the past academic year. We opened the year with the Notre Dame Forum on Sustainable Energy, led by trailblazers in the field, to engage the University community in sustainability discussions. The University also formally established an Office of Sustainability, providing an institutional focus on reducing the University's carbon footprint. We continued to advance our sustainability curriculum across all of our colleges, and we are conducting groundbreaking research in critical areas such as alternative energy, air emissions, water quality, and transportation.

The University of Notre Dame takes its responsibility to protect and preserve resources seriously. Every contribution can make a difference. As you read through this report, I ask everyone in our community to think about how even the smallest efforts can make our great institution even greener.

In Notre Dame,



Rev. John I. Jenkins, C.S.C.

Executive Summary

2008–2009 was a year of many sustainability accomplishments for Notre Dame. Among them was the first full year of operation for the University’s Office of Sustainability. The mandate of the Office of Sustainability is to integrate sustainability principles across all operational areas of the University and to collaborate with academic programs to enhance teaching and research in sustainability. The office employs three full-time professionals and seven student interns pursuing initiatives to create and promote conservation measures that reduce the University’s environmental impact.

While the Office of Sustainability has been a catalyst for change in its first year, sustainability successes have stemmed from the hard work and collaborative efforts of many individuals and departments. Sustainability leaders in campus operations include the Utilities Department, the Office of the University Architect, Food Services, Procurement Services, Transportation Services, and Warehouse and Delivery Services.

The following accomplishments highlight some of the collaborative efforts of the University community, in which the Office of Sustainability contributed research and analysis, educational programs, and/or logistical support:

- + University carbon dioxide emissions from energy use declined 7.5%, equivalent to taking 3,400 cars off the road. This reduction resulted from a combination of efficiency renovations directed by the Utilities Department, conservation efforts, and fuel switching.
- + Food Services became the first major U.S. university dining program to earn chain-of-custody certification from the Marine Stewardship Council, the world’s leading environmental standard for sustainable and well-managed wild capture fisheries.
- + In the first phase of the Energy Conservation Measures program, the University administration invested \$4 million to install energy efficient equipment in 25 buildings.
- + Procurement Services negotiated a new paper pricing agreement with Office Depot, making 30% recycled paper less expensive than non-recycled paper. In the subsequent months, recycled-content paper rose from 10% to 79% of total paper purchases across the campus.
- + Campus electricity demand declined 2.5%, even as new construction added 280,000 square feet to the built campus. It was the first year that campus electricity demand declined since the late 1970s.
- + The Office of the University Architect oversaw ongoing construction of five campus buildings, all of which are expected to receive LEED certification.
- + Transportation Services purchased an additional five hybrid cars for the university motor pool.
- + Landscape Services replaced the 15-year-old campus irrigation control system with a new, high-efficiency system which is expected to result in a 25-35% water savings.
- + During 2008–09, the percentage of the campus waste stream that was recycled increased from 35% to 44%. Warehouse and Delivery Services supported this improvement by expanding availability of recycling bins, contributing to the development of campus-wide recycling standards, and initiating the replacement of trash dumpsters with recycling compactors.
- + Notre Dame’s grade on the College Sustainability Report Card rose for the second year in a row to a B-, placing the University in the top half of sustainability performers among over 300 participating universities.



► **Green Summit Educates and Inspires:** On February 9, 2009, Notre Dame held its second annual Green Summit. This event gave 200 students, staff, and faculty the opportunity to participate in a campus-wide sustainability planning session. The tables were organized by academic or administrative department, allowing for people with similar backgrounds to discuss ways to make their discipline more sustainable. Senior Erin Murphy left the Summit inspired to discuss changes she and her housemates could make to their everyday routine. These included turning out the lights, recycling, and buying Brita water filters in place of bottled water. "Our conversations at the table reinvigorated my fervor for the green cause," she said. "We discussed how small changes really do add up, and how acting in an environmentally friendly way should be the social norm at Notre Dame."

Power Generation

University carbon dioxide emissions from energy use declined 7.5% compared to last year. This reflected reductions in campus energy demand and fuel switching to a higher percentage of natural gas versus coal.

Campus electricity demand declined by 2.5%, even as new construction added 280,000 square feet to the built campus.

+ In the first phase of the Energy Conservation Measures program, the University invested \$4 million to install lighting, heating, and air conditioning upgrades in 25 buildings. These upgrades are expected to reduce electricity use by over 5.2 million kilowatt hours, and steam and chilled water by over 30,000 MMBTU¹, equating to a 4,000 MTCO₂e² annual reduction.

+ Beginning in Spring 2009, the Utilities Department began utilizing the digital controls in new and newly renovated buildings to reduce energy use by maintaining each room's temperature between 70 and 75 degrees during occupied time.

+ The carbon intensity³ of campus energy use declined 6% due to fuel switching to a higher percentage of natural gas versus coal.

+ The Utilities Department successfully piloted ultra-efficient LED lighting in Hesburgh Library, an 81% decrease in energy usage, and six outdoor lamp posts, a 50% decrease.

+ The Office of Sustainability sponsored Notre Dame's first Dorm Energy Competition in the Fall of 2008. The winner, Walsh Hall, reduced its electricity consumption by 30%. In total, the residence halls saved over \$4,000 in electricity over the month-long competition.

+ During Fall 2008, student volunteers went door-to-door in the residence halls, exchanging over 4,000 incandescent light bulbs for efficient compact fluorescents. This project was funded by the Green Loan Fund with a payback of approximately six months.

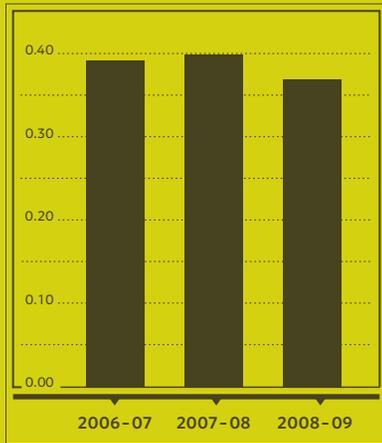
¹ **MMbtu (Millions of British Thermal Units):** Standard measure of energy output. One BTU is approximately 1,055 Joules. One standard cubic foot of natural gas yields ≈ 1030 BTU.

² **MTCO₂e (Metric Tons of Carbon Dioxide Equivalent):** Some greenhouse gases are more potent than others; emissions of gases other than CO₂ are translated into CO₂ equivalents so that their impacts can be directly compared.

³ **Carbon Intensity:** A measure of the amount of carbon emitted per energy unit produced from a particular fuel. Among fossil fuels, natural gas is the least carbon-intensive fuel and coal is the most carbon intensive.

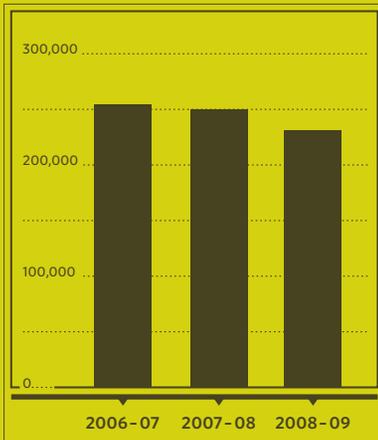
Energy Metrics

Energy Intensity (MMBTU/GSF)



Energy consumption per gross square foot declined 4% in 2008-09. By building more efficient buildings going forward and retrofitting our older buildings, we can continue to reduce campus energy intensity.

Carbon Emissions from Energy Usage (MTCO₂e)

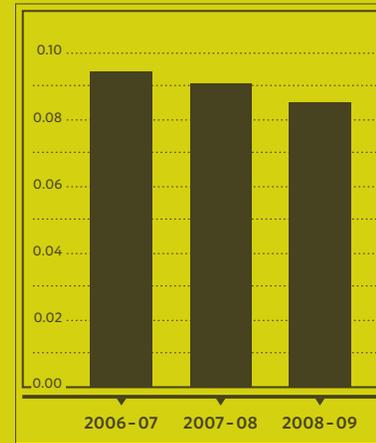


Total carbon emitted as a result of all electricity, heating, and cooling on campus declined 7.5% last year.

It is measured using the standard unit of carbon dioxide equivalents. This is the most direct way to measure the impact of our campus on global warming.

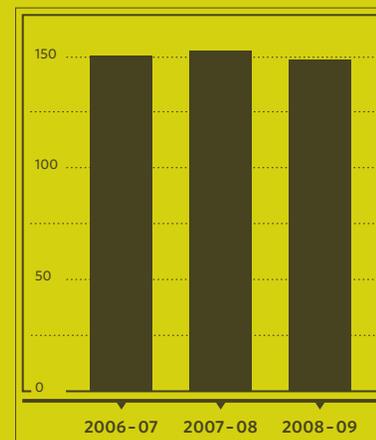
2008-09 was the first year that campus electricity demand declined since the late 1970s.

Carbon Intensity (MTCO₂e / MMBTU)



While all fossil fuels emit carbon, some fuels are less carbon-intensive than others. Fuel-switching to a higher percentage of natural gas decreased the carbon intensity of our energy production last year.

Electricity Usage (Millions of kWh)



Electricity use is one of the easiest aspects of energy use for the campus community to impact by adopting conservation behaviors.

We plan to continue to reduce our electricity usage through a combination of efficiency retrofits and behavior change.

Design and Construction

From the use of long-lasting materials such as masonry and slate to the establishment of the campus as an arboretum, today's campus builders have inherited a lasting legacy of building for the long term while avoiding wasteful practices.

+ Fiscal 2008–09 saw the construction of Geddes Hall, home of the Center for Social Concerns, the Institute for Church Life, and several other programs, and Ryan Hall, a new women's residence hall. Construction continued on Stinson-Remick Hall, Purcell Pavilion, and the first building in Innovation Park. All of these buildings are expected to receive LEED¹ certification.

+ In Fall 2008, 11 administrators—members of the Office of the University Architect, the Maintenance Department, the Utilities Department, and the Office of Sustainability—became accredited as LEED professionals.

+ Future buildings planned for the University will continue to incorporate sustainable measures and likely also pursue LEED certification.

¹**LEED:** The national standard for green design is LEED, Leadership in Energy and Environmental Design, a voluntary, consensus-based program run by the U.S. Green Building Council for developing high-performance, sustainable buildings and interiors.



► **Green Building Conference:** In February 2009, Notre Dame's School of Architecture hosted a conference devoted to sustainable architecture and design. The conference opened in Bond Hall with a keynote address from Tom Low, a LEED-accredited architect, and concluded with a talk from Washington Post columnist Neal Peirce. The conference addressed cutting-edge methods of sustainable building while drawing on the wisdom of the past. It focused on how traditional principles can address issues such as regional land use and resource management, development of healthy communities and lifestyles, and durable, energy-efficient buildings.

Waste Reduction

Waste reduction involves both reducing our use of natural resources and recycling the materials we do use.

- + In Spring 2009, the Office of Sustainability launched the Sustainable Office Practices workshop series. Over 100 participating administrative assistants and office managers acquired tools to reduce waste, conserve paper, purchase responsibly, and improve energy efficiency.
- + Beginning in Fall 2008, thousands of students participated in the Grab 'n Go Raffle, a program to incentivize the use of reusable bags in the dining hall take-out locations.
- + The campus recycling rate was 35% for the first half of 2008-09 and increased to 44% for the second half of the year.
- + Warehouse and Delivery Services supported this improvement in recycling performance by expanding availability of recycling bins and initiating the replacement of trash dumpsters with recycling compactors.
- + The Office of Sustainability, in collaboration with Warehouse and Delivery Services, developed a campus-wide recycling standard to enhance access to both single stream and specialized recycling receptacles. This standard mandated a 2:1 ratio of recycling to trash volume for all indoor and outdoor containers.
- + The Office of Sustainability developed recycling education programs for custodial staff, designed and distributed single-stream signage, and conducted recycling bin audits.
- + In Spring 2009, Notre Dame participated fully in the national RecycleMania competition for the first time and finished in the top 5% based on amount of recyclables per person.
- + In May 2009, Old 2 Gold, Notre Dame's end-of-year salvage sale, raised \$70,355 for 38 participating local charities and diverted 76.3 tons of items from landfills.

► **Sustainable Fashion:** Trash to Class, the first ever campus green fashion show, was held on December 3, 2008, in the LaFortune Ballroom. Forty models, both male and female, sported almost 100 eco-conscious outfits. No new resources were used to produce the clothing: most outfits came from second-hand stores while others were costumes made out of recyclable material and borrowed from past campus theatre productions or were created out of recyclables by a talented group of design students. "The green fashion show proved to a lot of people there that it is still possible to be fashion forward while continuing to live a life based on sustainable practices," said senior Maris Braun. Salon Nouveau and Origins, two businesses committed to environmental awareness, provided professional hair and makeup styling. The proceeds, which totaled over \$900, were donated to Majora Carter's Sustainable South Bronx Fund.



Food Services

Notre Dame Food Services strives to address a wide variety of sustainability considerations: these include the type of food purchased, the distance it travels, and the manner in which food waste is disposed.



Campus retail units expanded promotion of their \$0.25 discount for customers who bring their own coffee mugs.

+ On November 25, 2008, Food Services became the first major U.S. university dining program to earn chain-of-custody certification from the Marine Stewardship Council, the world's leading environmental standard for certifying sustainable and well-managed wild capture fisheries.



+ 44% of total food purchased by Food Services in 2008-09 was locally sourced, a 12% improvement over 2007-08 and a 72% improvement over 2006-07.

+ In 2008-09, Food Services expanded its offerings of organic and fair trade ingredients as well as vegetarian and vegan dining options.

+ The Food Services Support Facility continues to send approximately 30 tons of pre-consumer vegetable trim annually to a local farm to be used as animal feed.

+ Campus retail units expanded promotion of their \$0.25 discount for customers who bring their own coffee mugs.

+ In Spring 2009, food waste from campus dining halls began being processed through garbage disposals and the University's waste water conveyance system rather than being sent to landfills. At the municipal wastewater treatment plant, solid waste is removed and used as agricultural fertilizer.

Transportation

In order to develop a sustainable transportation program, we must first understand the needs of the campus and continue to research best practices at other universities.

- + During 2008–09, Transportation Services purchased an additional five hybrid cars for the university motor pool.
- + In Spring 2009, the Energy and Environmental Issues committee recommended that the University administration institute a preferred parking program for Low Emissions Vehicles, to be implemented in Fall 2009.
- + In Fall 2008, the Office of Sustainability conducted a transportation survey to assess commuting patterns in order to develop future programs that will support more sustainable commuting choices.



Water

The University plans to continue renovating older buildings with water conservation technologies and to include these technologies in new construction.

- + In 2008–09, the University updated three student residence halls with water conservation technologies including low-flow faucets and showerheads, and dual-flush toilets. New buildings constructed during 2008–09 also incorporated these water conservation technologies.
- + In late Fall 2008, Notre Dame replaced its 15-year-old irrigation control system with a new centrally controlled, high-efficiency system. The new system has technologies that monitor the weather and automatically defer irrigation when it is raining. This system will be fully implemented during 2010.
- + Per capita tap water use remained the same compared to the previous year, while water use for irrigation rose 8% in 2008–09 due to the addition of irrigation zones around new buildings and existing structures. Continuing efficiency investments are expected to yield water savings in the future with the implementation of the irrigation system technologies.

Procurement

Notre Dame's Procurement Services has placed an increasing emphasis on sustainability in negotiating recent supplier contracts.

- + In 2008–09, Notre Dame was the first university to partner with Office Depot to fund student internships focused on sustainable procurement. Two student interns worked jointly with the Office of Sustainability, Procurement Services, and Office Depot to research and promote environmentally responsible purchasing on campus.
- + The Office of Sustainability's innovative Sustainable Office Practices workshops focused in large part on skills that administrative assistants and office managers can use to make more fiscally and environmentally responsible purchasing decisions.
- + In May 2009, Procurement Services negotiated a new paper pricing agreement with Office Depot, making 30% recycled paper less expensive than non-recycled paper. In the subsequent months, recycled-content paper rose from 10% to 79% of total paper purchases across the campus.



- **Successful Kickoff for Game Day Recycling:** In 2008–09, Notre Dame built on a pilot program from the 2007 football season to create a comprehensive Game Day Recycling program. Students passed out recycling bags in each of the tailgating lots at every game and recycling bins were available across campus and in the stadium. "Our first weekend out in the parking lot, we were wary of how the tailgaters would react," said Lourdes Long '09, remembering last year's program. "But each and every Saturday the ND alumni and visiting fans were enthusiastic and supportive." Over 73 tons (146,000 pounds) of recyclables were collected over six games, compared to 3.1 tons (6,200 pounds) during the previous season. The success was due to the collaboration of many campus departments, including Athletics, Security, and Warehouse and Delivery Services.

"We must recognize our grave duty to hand the earth on to future generations in such a condition that they too can worthily inhabit it and continue to cultivate it."

— BENEDICT XVI, CARITAS IN VERITATE





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