

MACALESTER COLLEGE Sustainability Update

November 2010



2010 Sustainability Plan Annual Report

Introduction

One year after we adopted our first comprehensive and institutionally supported Sustainability Plan, Macalester College continues its commitment to addressing climate change by taking responsibility for our institution's carbon footprint, rapidly reducing it, and becoming carbon neutral by 2025, and Zero Waste by 2020.

Our Sustainability Plan outlines specific, measurable, and tangible goals for sustainability that will touch every part of the institution and organizes specific tactics under three broad categories:

- **Leadership:** demonstrating and encouraging innovation and action
- **Operations:** designing, implementing and improving processes
- **Education:** changing behavior and raising awareness on campus and in the community.

This annual report describes the progress we have made toward our sustainability goals and provides a summary of actions taken in each goal area, along with supporting metrics. Overall, we have significantly reduced our waste through our food waste to pig feed program. Our greenhouse gas emissions appear not to have changed significantly over last year, but significant progress has occurred in the areas of planning and incorporating sustainability into campus operations and student life. For example, the 2010 Environmental Studies senior seminar researched projects to get us to Zero Waste and developed a new baseline waste audit. Facilities Services contracted with an energy engineer to recommission all of the main campus buildings for energy efficiency.

In the year ahead, we will continue work on an ambitious Landscaping Master Plan that will guide the college in how to include low maintenance, sustainable landscaping on campus. It is our goal to complete this plan by June 2011. In addition, we will explore more ways we can incorporate sustainability into our academics and pedagogy.

The Sustainability Advisory Committee will continue to oversee the progress of implementing the 2009 Sustainability Plan throughout the 2010-2011 school year. Comments on Macalester's Sustainability Plan or this Annual Report may be directed to the Sustainability Office at sustainability@macalester.edu.

Leadership

Guiding Theme: Demonstrating Leadership by Encouraging Innovation and Action to Foster Sustainable Communities

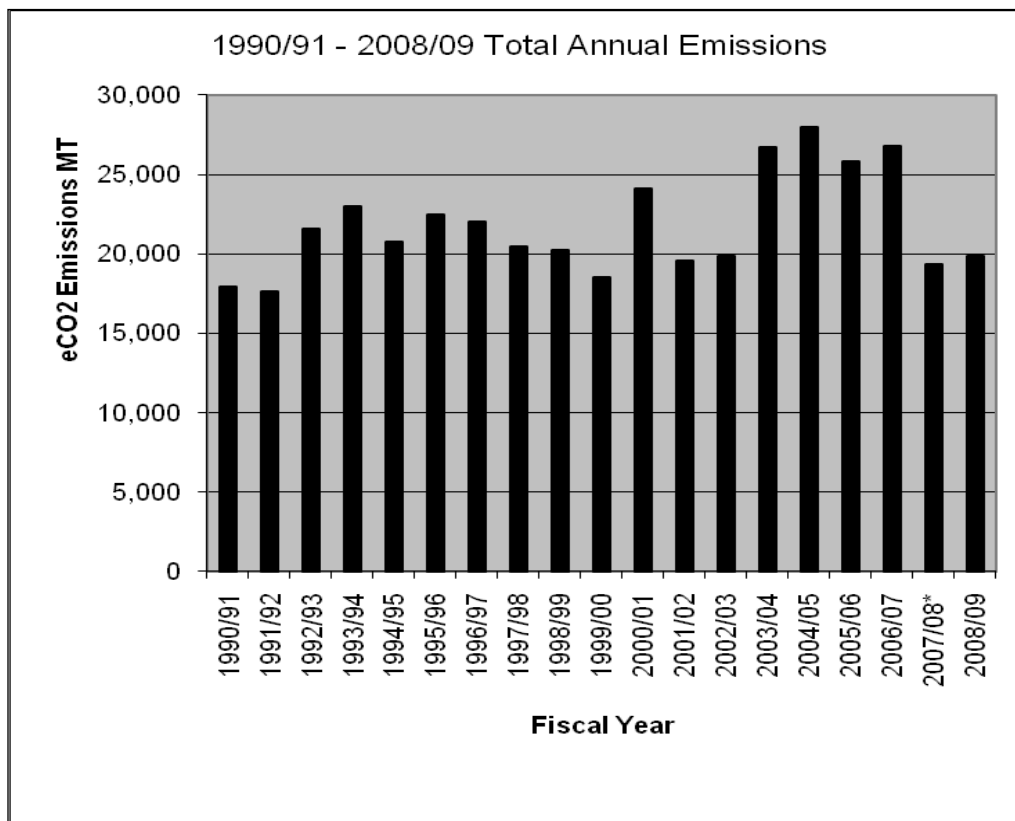
Macalester College is committed to acting as a leader in creating an optimal educational experience, demonstrating sustainable business practices, and fostering sustainable communities. We plan to do this by reducing our greenhouse gas emissions and advancing campus sustainability efforts.

Greenhouse Gas Emission Reduction

As part of this leadership, the college is committed to achieving climate neutrality by 2025. Our strategy is to invest in energy efficiency first, then pursue on-site renewable energy, then pursue off-site renewable energy or purchase renewable energy credits and carbon offsets. In 2009-2010, Macalester expanded upon our strong energy efficiency programs led by Facility Services (see Operations, Energy Efficiency) and is working closely with Xcel Energy toward the recommissioning of the college’s main campus buildings.

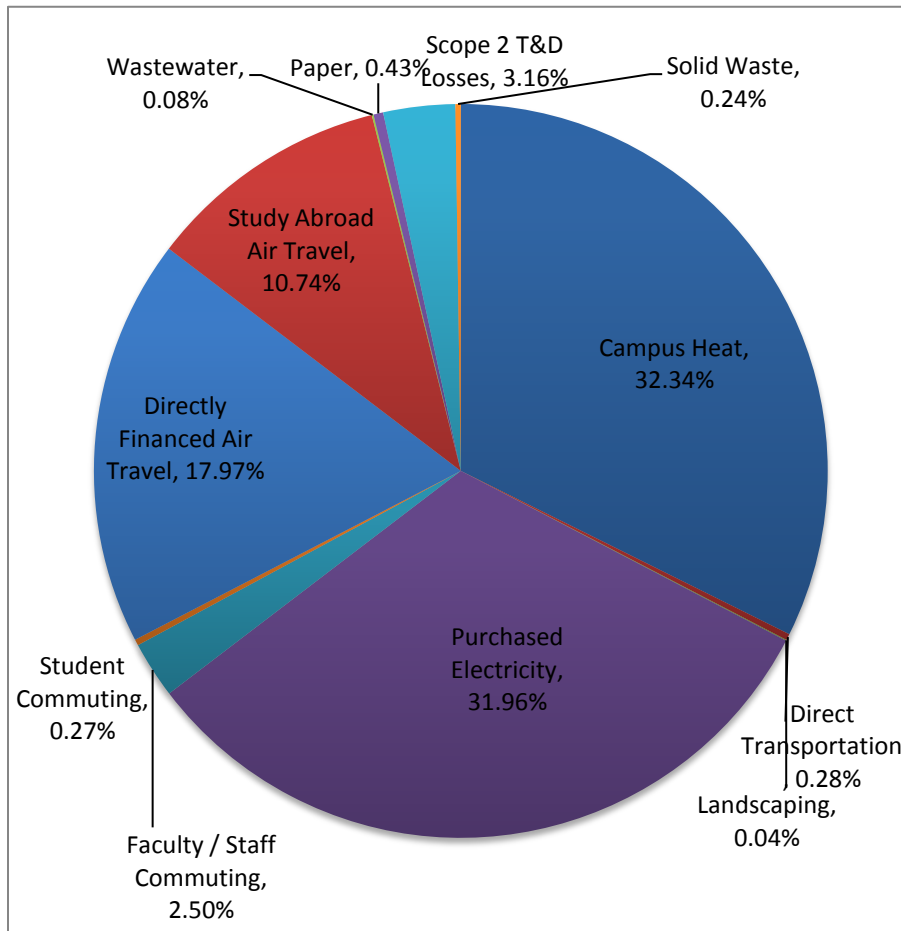
The college’s greenhouse gas (GHG) emissions changed only slightly in 2008-2009 (Fig. 1). This is likely due to data quality and data collection methods, particularly in airline travel. We expect our significant efforts in energy efficiency to result in GHG emission reductions in future years.

Figure 1: Campus Greenhouse Gas Emissions over Time



Breaking Macalester’s 2008-2009 Greenhouse gas emissions down by sector (Fig. 2), campus heat and electricity account for 64 percent of emissions, the largest share. Air travel by faculty and staff as well as study abroad students account for 29 percent, the next largest share. Faculty and staff commuting accounts for 2.5 percent while paper, solid waste, and wastewater account for less than one percent.

Figure 2: 2008-2009 Greenhouse Gas Emissions by Sector.



Other Leadership Activities

Macalester works with other colleges and universities to advance campus sustainability efforts. Macalester’s sustainability manager Suzanne Savanick Hansen, as part of the Upper Midwest Association for Campus Sustainability (UMACS) steering committee, developed and led regional climate action planning workshops and a campus sustainability conference. She also helped organize a “Integrating Sustainability into the Undergraduate Curriculum” workshop held at Luther College for the Associated Colleges of the Midwest (ACM) schools, and traveled to Grinnell College to advise on sustainability strategies. In addition, Macalester’s Sustainability Plan and Sustainability Map have acted as models for numerous other schools and organizations.

Operations

Guiding Theme: Realizing our Mission by Designing, Implementing, and Improving our Processes

Critical to Macalester’s Sustainability Plan is integrating efforts into every aspect of operations including buildings, transportation, landscaping, stormwater, recycling/waste and purchasing. We have made great strides in this area, but more needs to be done.

Buildings

In 2009, Macalester College opened Markim Hall, the first LEED Platinum certified building at a higher education institution in Minnesota. LEED is a green building rating system promoted by the United States Green Building Council and Platinum is the highest rating possible. The design for this building includes native landscaping, daylighting, indoor air quality, and energy efficiency, among other green building attributes. The building’s energy and water is monitored real-time and displayed on a “green touch screen” in the building’s lobby. During the first year of operation, Markim Hall used an average of 50 percent less energy than a similarly sized conventional building built to code (Fig. 3) and used an average of 80 percent less water (Fig. 4). In addition, over 2,000 people toured the building since its opening.

Figure 3: Markim Hall Energy Use, September 2009-September 2010

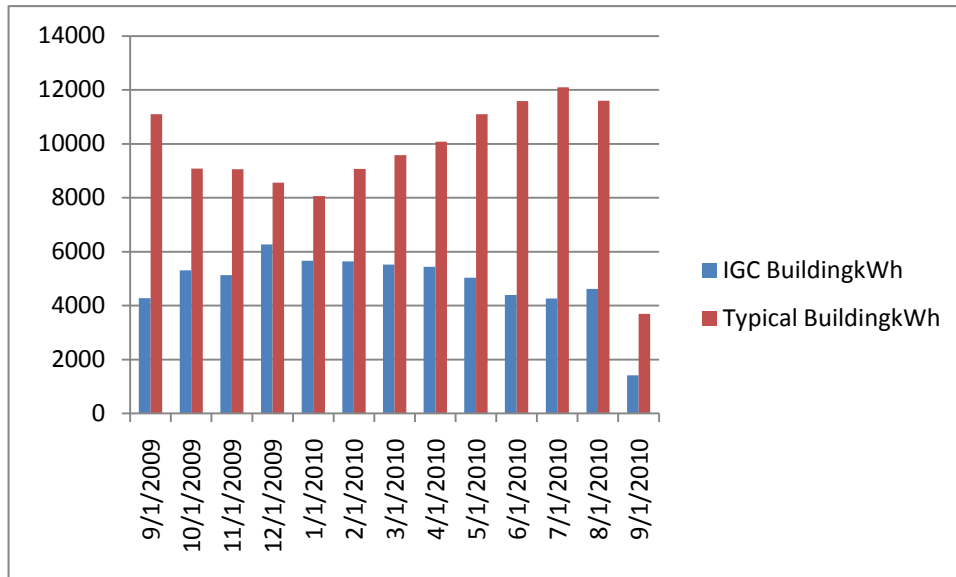
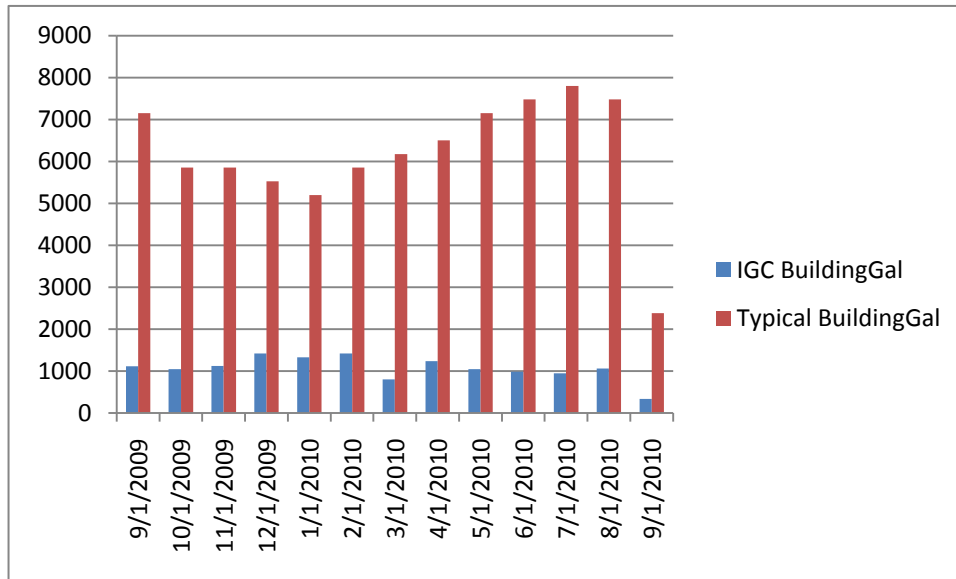


Figure 4: Markim Hall Water Use, September 2009-September 2010



In 2010-2011, a \$39.8 million first phase of the expansion and renovation of Macalester’s Janet Wallace Fine Arts Center is expected to begin. This first phase includes 56,500 square feet of new construction and 95,500 square feet of renovation built to the Buildings, Benchmarks and Beyond (B3) State of Minnesota Sustainable Building Guidelines. The college has committed to investing in energy efficiency in the renovation of the Janet Wallace Fine Arts Center. Other sustainability initiatives for the renovation include energy efficiency and landscape design for storm water runoff reduction.

Energy

Macalester is committed to climate neutrality by 2025. Operationally, we are investing in energy efficiency first, then on-site renewable energy, and then offsets or off-site renewable energy.

Energy Efficiency

In 2009-2010, Macalester expanded on earlier energy efficiency projects by institutionalizing a partnership with Xcel Energy. Staff from the college and Xcel Energy meet monthly to discuss energy efficiency goals and progress. In addition, we hired Edward H. Cook & Associates to recommission our main campus buildings for energy efficiency. The report recommends \$371,500 in improvements and estimates a two-year payback period not including efficiency rebates from Xcel Energy. In addition, Macalester plans to improve the campus boiler’s efficiency by adding Oxygen Control, also known as an O₂ trim, and insulate the steam pipes that deliver heat to campus buildings. Energy efficiency improvements that are part of the planned renovation and expansion of the Janet Wallace Fine Arts Center are also expected to reduce energy consumption.

Macalester’s long-term efforts in energy efficiency have already resulted in use reductions. Reviewing data taken from 1988-89 to 2008-2009, both electricity use (Fig 5) and heating fuel use (Fig. 6) per gross square foot (GSF) have decreased.

Figure 5: Macalester Campus Energy Use, weather normalized, per square foot

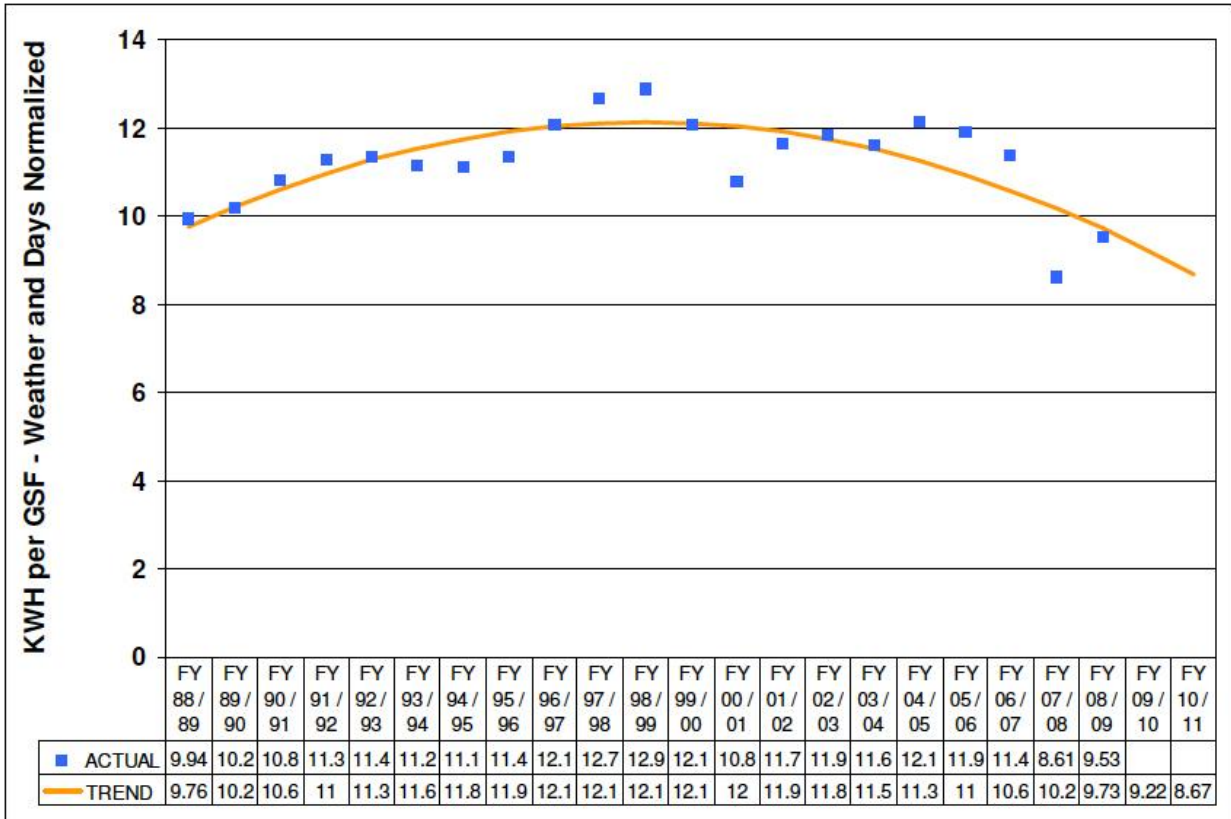


Figure 6: Weather Normalized Fuel BTU Consumption per GSF



Carbon-Neutral Fuel Sources

In 2009-2010, Macalester wrote a grant to fund installation of solar photovoltaic panels on Markim Hall and solar thermal pool heating for the Leonard Center. However, the grant proposal was not selected. Despite this set back, installing solar energy systems on these two campus buildings continue be sustainability goals.

Off-site Renewable Energy/Offsets

As part of Markim Hall’s LEED Platinum certification, Macalester offsets 100 percent of the electricity used by and 100 percent of the on-site carbon emissions from the building. Through a contract with Renewable Choice, these offsets go to wind projects, predominantly in the Upper Midwest and a landfill gas program in Illinois (www.renewablechoice.com/business-projects-REC-VER-Carbon.html).

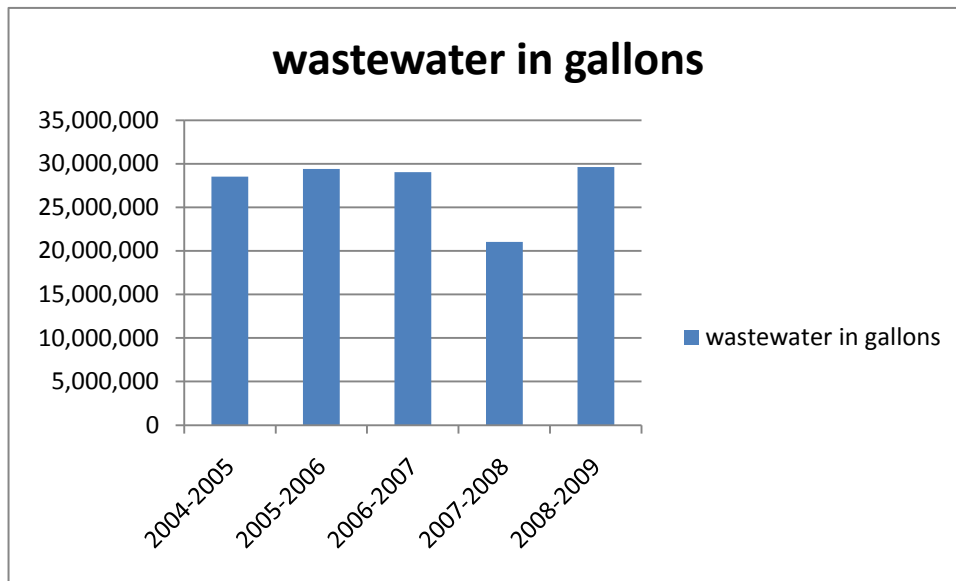
Macalester does not intend to buy offsets for campus-wide energy use until energy efficiency and renewable energy projects are completed.

Water

Macalester's Sustainability Plan calls for installing water efficient fixtures when renovating or replacing existing fixtures. Markim Hall has shown significant water use reduction, much larger than anticipated (Fig. 7). Real-time data is shown on the green touchscreen (<http://igc.macalester.greentouchscreen.com>).

Change in wastewater produced by the college has stayed relatively stable over time, except during 2007-2008, when the Leonard Center was under construction (Fig. 7).

Figure 7: Wastewater produced over time



Transportation

Airline travel

Airline travel accounts for a significant amount of the college's Transportation category of GHG emissions from travel (Fig. 8) and airline travel miles have been increasing over time (Fig. 9).

Figure 8: Transportation Greenhouse Gas Emissions by Sector

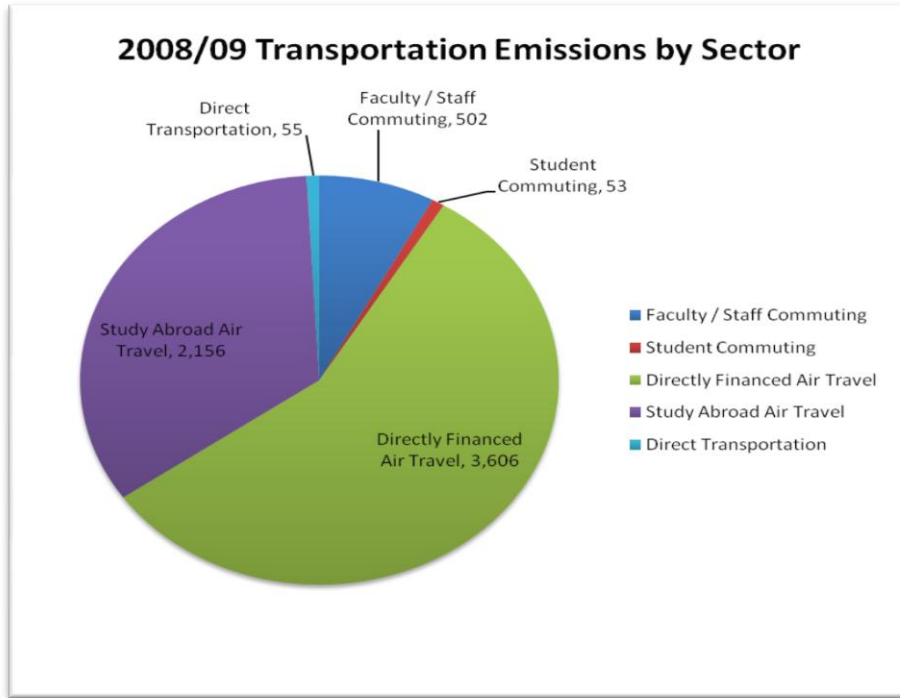
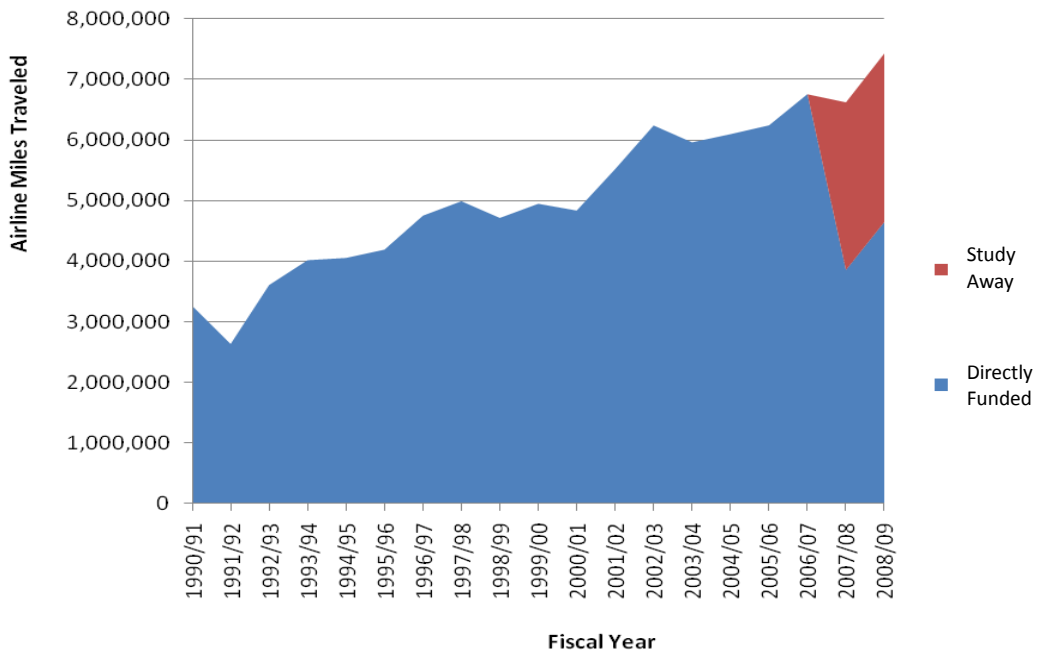


Figure 9: Total Airline Miles Traveled



Reducing travel is a significant challenge considering the international emphasis of the college. Collecting data on airline travel is also challenging given the fact that travel locations are not routinely reported in the accounting system, making the data quality for this part of Macalester's emission inventory problematic. For example, the large drop in airline miles in 2007-2008 is due to better data availability. In addition, Study Away travel data was not included until 2007-2008.

To encourage more sustainable travel options, information about Amtrak train travel is available on Macalester's website in both the Sustainability Office and Procurement Department sections. To provide Macalester staff, faculty, and students the ability to do more from home, Information Technology Services has increased their support remote computer access to college systems. To introduce study away students to the principles of sustainable travel, the Study Away Office provides information about the Green Passport Program through which these students can take the Green Passport pledge and share information. Additional awareness efforts about reducing emissions from travel and commuting will be developed in the coming years.

Commuting

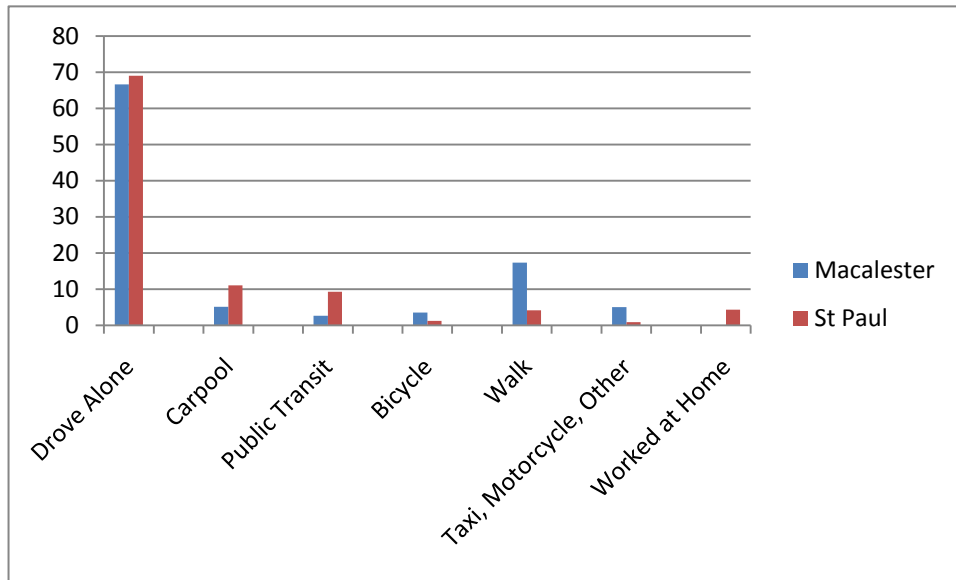
Macalester efforts to reduce single-occupancy vehicle commuting currently include subsidized bus passes, a carpool listing service, a bicycle sharing program, a car-sharing program, a walk-to-work program, and bike/walk commuter coffee breaks. Aiding in these efforts, most students live on campus or within walking or biking distance, and 32 percent of faculty and staff live within 3.2 miles of campus.

The college began offering preferred parking for low emitting vehicles and carpools in 2009-2010 as part of Markim Hall's LEED Platinum certification. Thirty-five low-emitting vehicle permits and four carpool permits have been issued as of July 30, 2010. In addition, the college now offers employees the ability to buy MetroTransit passes on a pre-tax basis.

In May 2010, the Sustainability Office, working with the local nonprofit St. Paul Smart Trips, conducted a faculty staff commuter survey. The survey was emailed to 450 employees and had a response rate of 76 percent. The results show a majority of 66.6 percent of faculty and staff "drive alone" as their main commute mode while the next most popular mode is "walk/run/skate" at 17.3 percent. Significantly more staff "drive alone" (72.4 percent) than faculty (55.4 percent). A greater percentage of faculty also reported "bike, walk, or use public transit" than staff. Those who report "drive alone" as their major commute mode indicated they are "less satisfied" than those who use other modes. In the past three years, 20.5 percent of the employees changed their commute mode with 54 percent changing to "drive alone." Of these employees, 15 percent cited childcare needs, 9 percent cited work schedule changes, and 7 percent cited saving money.

The percent of Macalester's commuters who drive alone is similar to the St Paul average (Fig. 10) while the percent who walk and bicycle to work is higher. Carpool and public transit use is lower than the St. Paul average.

Figure 10: Commute by Transportation Mode for St. Paul and Macalester College Faculty and Staff, by Percentage



Recommendations for reducing Macalester’s emissions from commuting include charging for parking, continuing to offer discounted and pre-tax public transit passes, raising awareness of incentives and alternatives to driving alone, promoting bike/walk commuting, marketing “telecommuting” and flexible scheduling, promoting HOURCAR, and educating about MetroTransit’s “guaranteed ride home” program.

Campus Vehicles

Macalester owns and operates landscaping vehicles, lawn care machines, and a van fleet. To reduce emissions from these vehicles Facilities Services only uses electric landscaping vehicles unless a gasoline-fueled vehicle is specifically needed. Last year, staff searched for more efficient vans for the fleet, which currently is comprised of half-ton models with fuel economies less than 20 miles per gallon. However, no equivalently sized and more efficient vans proved to be available and cost effective.

Departmental memberships have been made available for HOURCAR, a car-sharing program with a hub next to campus, and so far Macalester’s Civic Engagement Center, Sustainability Office, Environmental Studies Department, Hispanic Studies Department, and Advancement Office have signed up.

Landscaping/Storm Water

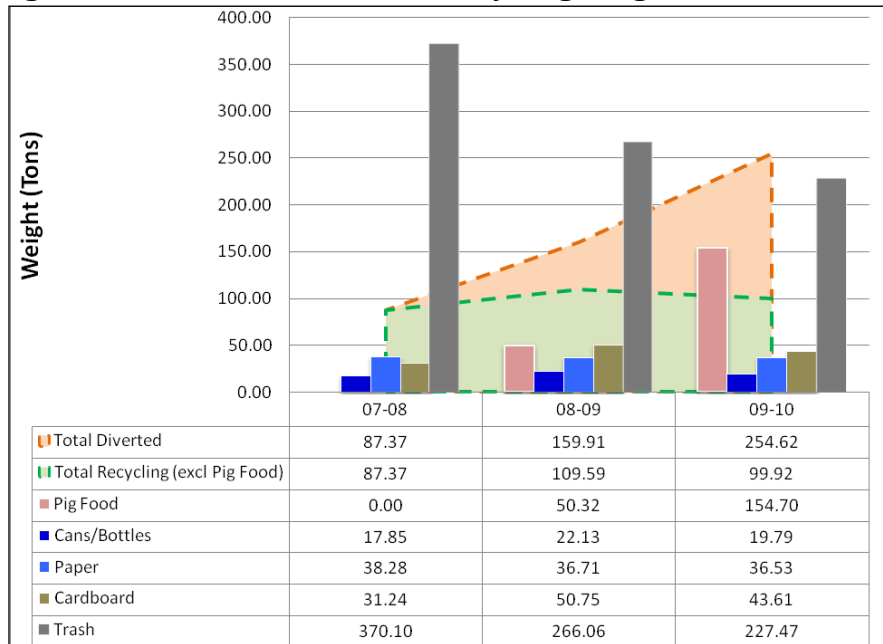
Last year, work began on a comprehensive landscaping plan for Macalester’s campus. The plan will identify ways to increase low-maintenance perennial landscaping and reduce stormwater run-off. A draft of this plan will be released for campus community input in Fall 2010.

In addition, the grounds sustainability student worker investigated alternative de-icing products, but did not find a viable option.

Zero Waste

Macalester is committed to being zero waste by 2020 and significant progress has been made toward this goal. In 2009-2010, the campus generated 227 tons of undiverted waste, nearly 39 fewer tons over the previous academic year and 38.6 percent less than the 2007-2008 measurement (Fig.11). Macalester’s new program to send campus food waste to a local pig farm began in 2008-2009 and was found to have been a significant cause of the reduction of undiverted waste in 2009-2010.

Figure 11: Fiscal Year Trash and Recycling Weights, in Tons

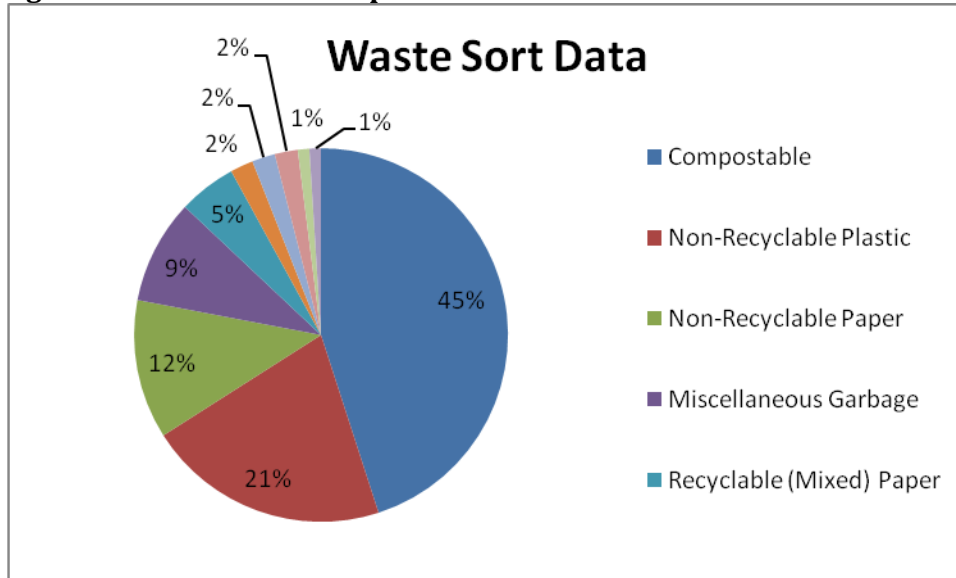


In addition, the 2010 Environmental Studies Senior Seminar focused on zero waste related projects. In February 2010, the class along with MN Wastewise staff, performed a waste assessment and waste sort for the college. To conduct the waste assessment, the Wastewise staff and students walked through campus buildings and visually assessed the state of the waste bins. For the waste sort, sample trash bags were pulled from all campus dumpsters and their contents were sorted and weighed.

The waste sort results (Fig. 12) showed 45 percent of Macalester’s waste stream was commercially compostable, while 41 percent was a mix of non-recyclable plastic (21 percent), non-recyclable paper (12 percent), miscellaneous garbage (9 percent), and garbage bags (2 percent). Recyclable materials made up 10 percent of the waste stream and included recyclable paper (5 percent),

plastic (2 percent), cardboard (2 percent), and recyclable cans (1 percent), potentially recyclable materials with a current market included plastic film (1 percent).

Figure 12: Waste Sort Composition



The 2010 recommendations from the waste assessment and waste sort are to focus on waste prevention, then reuse and recycling; continue focusing on paper reduction; reduce plastic bag usage and implement a plastic bag recycling program; improve bin placement; and implement and enforce an sustainable purchasing policy.

Purchasing

Reducing waste and greenhouse emissions is closely tied to the products and services Macalester chooses to use and consume. In fall 2010, the Sustainable Purchasing Policy drafted last year is expected to be approved, which will greatly aid the college achieve many goals of the Sustainability Plan. Even without the official purchasing policy, Macalester’s Purchasing Department and their sustainability student worker has achieved two large goals. First, the student worker and the department developed options to reduce or eliminate bottled water on the college. Second, the college changed all college general purpose paper purchases to a 100 percent post consumer recycled, Forest Stewardship Council certified, no-chlorine bleach variety.

Education

Guiding Theme: Educating the Campus Community to Build a Coalition

A goal of our Sustainability Plan is to integrate sustainability throughout our curriculum and other programs and activities across the campus. Some of this integration already occurs on campus regularly, but more can be done. As Macalester students graduate, it is our hope is that they will promote sustainability in the careers they pursue and in the communities where they live.

Education In The Classroom

Academics

The Education in the Classroom Task Force of the Sustainability Advisory Committee is currently developing a draft definition of a course that integrates sustainability. In addition, sustainability resource guides by discipline are expected as an outgrowth of the Associated College of the Midwest faculty development workshop, "Integrating Sustainability into the Undergraduate Curriculum," held in June 2010 (http://serc.carleton.edu/acm_face/sustainability/workshop10/index.html).

In 2010-2011, the Sustainability Office will lead a collaborative effort to develop a system for identifying which courses integrate sustainability and tracking the quantity and variety of these courses. The Sustainability Manager will work with the Jan Serie Center for Scholarship and Teaching to host two Talking About Teaching Sessions for faculty and bring two distinguished guests who share ways to integrate sustainability across the curriculum.

Research

In the 2010-2011 academic year, the Sustainability Office will collaborate with the Provost's Office to collect data on how much sustainability research is occurring on campus.

Education Outside The Classroom

Macalester has a history of incorporating sustainability in co-curricular activities. The terms for these activities have gone by many names including civic engagement or residential life activities, student organization activities or outreach campaigns. Learning about sustainability outside the classroom happens in many ways for Macalester students including residence hall programming, student organizations, inter-collegial contests, student employment, internships, and participation in Twin Cities organizations.

In 2009-2010, residence hall outreach activities included sustainability. The halls had sustainability learning goals developed by Campus Life staff. In 2010-2011, sustainability student workers in Residential Life will work to improve residence hall outreach.

Macalester student organizations such as MacCares, MULCH, MacBike, and MPIRG, all focus on environmental aspects of sustainability issues. Cultural organizations and social justice

organizations have focused on the social side of sustainability. The student-led programs and outreach of these groups take the form of everything from offering passersby bicycle-blended smoothies, setting up a bicycle check-out service at the college library, running the college's community garden, and raising awareness of current sustainability issues.

The college participates annually in the nationwide Recyclemania competition and the Minnesota Campus Energy Challenge, the latter contest was started by Macalester students.

A unique program at Macalester is our Sustainability Student Worker network. Through this program, student employees are empowered to identify opportunities for their host department to become more sustainable. In 2009-2010, this network boasted 25 student workers in 13 college departments.

Campus and Community Learning

The Civic Engagement Center of Macalester's Institute for Global Citizenship connects Macalester students with the larger community through academic service learning, volunteer activities, and off-campus work-study positions. Many of these connections help Macalester students gain real-world insight into sustainability concepts and opens opportunities to apply their learning toward positive social change.

Employee outreach has been a focus of the Sustainability Office since 2009. The Sustainability Manager meets with all new staff members during new staff orientation. The campus community is welcome to share new sustainability ideas through an online suggestion box. The Library and Sustainability Office collaborate to offer a sustainability book club open to all students, staff, and community members that discusses one book each semester.

Over the next two years, departments across campus will be asked to write Departmental Sustainability Action Plans. These plans will be shared across departments.

Financing

In 2010, the college established a special fund within the regular capital budget, the Technology, Equipment and Maintenance (TEM) budget for sustainability. This budget merged with the three-year-old Clean Energy Revolving Fund (CERF) that was created by Macalester students. The result is dependable funding source for college-led and student-initiated sustainability projects.

Remaining funds in the CERF were split between the TEM budget and a sustainability office fund for projects with an economic payback.

The Sustainability Office also started a small project fund in 2010 to support innovative sustainability projects. Projects funded in 2009-2010 are:

Recipient	Project
Art Department	Support for travel to Seed Savers Exchange
Environmental Studies Students	Off-Campus Neighborhood Composting Project
MacBike	Acquisition of Bikeshare Bicycles
Environmental Studies Students and Faculty Member	Support for sustainability survey research and outreach to campus
Staff	Purchase of workplace sustainability books for lunch discussion groups
Ecohouse Student	Native and edible plants for Ecohouse backyard

Incentives

The Sustainability Office awarded 14 Green Star awards since the program began in 2008. The award recognizes individuals and groups who have successfully implemented a sustainable idea.

- Reducing Waste Through MacFreeSwap
- Reducing Energy from Vending Machines
- Reducing Waste and Energy in the Classics Department
- Saving Energy in Kagin Commons
- Waste Reduction at Move Out
- Macalester Prairie, Raingardens, and Green Roofs
- Saving Paper through eBilling
- Pig Food Waste Recycling Program
- Reducing Disposable Bottles on Campus
- 100% Recycled Letterhead
- Reusable Take-Out Containers
- Increasing Recycled Content in Printing Projects
- Greening Reunion

- Graduation Gown Donation Program

For 2010-2011, the Sustainability Office plans to create an additional and annual Sustainability Award recognizing one student, staff or faculty member.

Conclusion

Macalester College made significant progress in incorporating sustainability into operations and student life. Significant progress was made in reducing waste as well as energy efficiency and landscaping planning.

The Sustainability Advisory Committee will continue to oversee the progress of implementing the 2009 Sustainability Plan throughout the 2010-2011 school year. The full report is available on the Sustainability Website:

<http://www.macalester.edu/sustainability/MacalesterSustainabilityPlanSept2009.pdf>

Comments on the plan or this annual report should be directed to the Sustainability Office at sustainability@macalester.edu. If you are a student or faculty member, the Potential Student Projects List includes some ways that you or your class can get involved with the Sustainability Plan <http://www.macalester.edu/sustainability/studentprojects/possibleprojects.html>.