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Project Eco-House

Macalester College Sustainability Office

A live-in ***laboratory*** *for* ***sustainable*** *living and* ***affordable*** *green home* ***renovation***

Macalester College's Project EcoHouse

Community Outreach

"Homes often require renovation as they get older. We hope we can inspire people who need renovations to use some of these energy-saving approaches."

–Chris Wells,
Environmental Studies faculty member, adviser to Project EcoHouse

U.S. home renovations

Home owners in the U.S. spend roughly $200 billion a year on home renovations. Doing these renovations in an energy-efficient way can be affordable and can save money in the longer term.

The effect on the environment could be dramatic, since buildings in the United States account for 70 percent of energy consumption and 30 percent of all greenhouse gases.

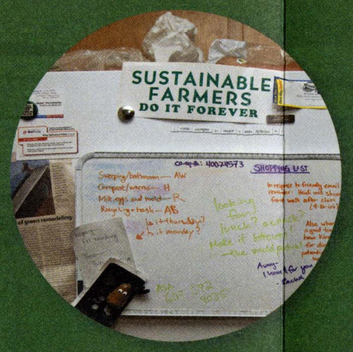
About Project EcoHouse

On the edge of Macalester's campus at 200 Vernon Street in St. Paul, EcoHouse is a modest 1,200-square-foot 1950s ranch-style home, which the college purchased from its original owners. In summer 2007, the home was outfitted with a variety of energy-saving features.

Four students live in the house, demonstrating earth-friendly practices. A larger team, including Environmental Studies students and faculty and a campus advisory committee, participate in Project EcoHouse, gathering and analyzing data and sharing it with the public in a variety of ways.

Macalester's student-driven Project EcoHouse is

- a **residence** where students demonstrate best practices in sustainable living
- a **laboratory** for testing affordable, green home renovations and generating data on performance, cost, and energy savings
- a **clearinghouse** for information on products, services, and resources for green home renovation and sustainable living



MACALESTER COLLEGE

Project EcoHouse *will host special events to* ***share information*** *with the campus and* ***the college's neighbors*** *as well as groups interested in* ***reducing home energy use****. In addition, students are developing a* ***content-rich web site,*** **http://www.macalester.edu/ecohouse/** *For information:* **ecohouse@macalester.edu**

Features of the House

A $50,000 renovation project focused on making the house more functional and attractive as well as energy-efficient.

Major features

The largest expenses will also yield the greatest long-term savings in materials usage and energy consumption. The single biggest item in the renovation: a $14,200 steel roof. This cost nearly twice as much as the neighboring shingle roofs it resembles, but it will last more than twice as long as traditional shingles—and can be recycled when it is ready for replacement.

Blown-in insulation helps the walls retain heat; an energy audit showed that existing windows did not need replacement. Two solar panels installed on the garage heat water for bathing, leaving the house's traditional gas water heater as an emergency backup.

Daily choices

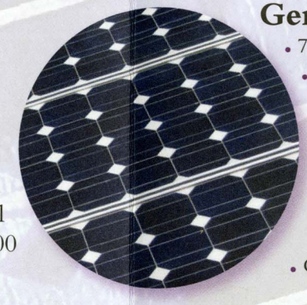
Residents do their part to live in an earth-friendly style. They choose, for example, to cook locally grown foods, keep an indoor herb garden, and compost kitchen waste in a "worm farm" in the basement of the house. Each group of residents will document at least some of their practices for the benefit of future residents.

Appliances, etc.

The house features new Energy Star-rated appliances including refrigerator, dishwasher, stove, vent hood, and front-loading washing machine. Countertops are made of recycled paper and cashew resin, and a kitchen cabinet removed for space reasons was converted into a kitchen island.

The bathroom features a low-flow showerhead and sink faucets, a dual-flush toilet (push down for 1.1 gallons, up for 1.6 gallons), a mirror found at a secondhand shop, and a solar tube that brings natural light down through the attic. All lighting in the home was converted to compact fluorescent bulbs.

Financing the Project



Macalester provided use of the house, which it purchased a few years ago from the original owner. Facilities Management provided $50,000 to fund the remodeling.

A $5,000 grant from the **Xcel Energy Foundation** is being used for community outreach.

Students also are seeking grants for further aspects of Project EcoHouse, including a sophisticated energy monitoring system intended to provide detailed data that can be used to compare actual performance with manufacturers' claims and shared with the public on a web site.

The project is intended to grow and change over time, in order to explore and evaluate newly developing technologies and practices.

EcoHouse Renovations

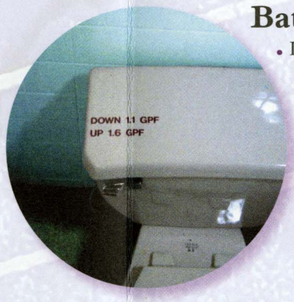
General

- 70-year steel roof
- New gutters, attic ventilation, aluminum-wrapped fascia and soffits
- Two solar-thermal panels on garage for domestic hot water
- Cellulose insulation blown into outside walls
- Interior repainted with low-volatile-organic-compound paint
- Compact fluorescent bulbs throughout

Kitchen

- Energy Star-rated refrigerator, dishwasher, stove, and vent hood
- Sink made from recycled aluminum
- Paperstone counters (recycled paper and cashew resin)

Bathroom



- Low-flow aerators in faucets, low-flow showerhead
- Dual-flush toilet (1.1 gallons per flush down, 1.6 up)
- Bathroom mirror found at ReUse Center
- Solar tube light fixture in ceiling
- Energy-efficient vent fan

Basement

- Energy Star-rated front-loading washing machine
- Tank, gauges, other equipment for solar-thermal domestic hot water system
- Clotheslines for dry months
- "Worm farm" composting bin

RECYCLED PAPER 30% Post Consumer Waste