

Drexel University

Facilities Management & Planning, Design and Construction

Sustainability Commitment

November 2007

Drexel University is committed to operating its campuses in an environmentally sustainable way through developing and maintaining a healthy, efficient and ecologically sound campus environment through facilities management and construction design that promotes environmental quality and economic responsibility.

Master Plan:

The most important overlying theme for Drexel University's Master Plan is to create a distinct urban environment. This theme focuses on higher density land use, pedestrian access and efficient infrastructure that utilize existing amenities within the City of Philadelphia such as public transportation, utility infrastructures, public recreational areas and street lighting. In doing so, Drexel helps to alleviate system redundancies and environmental impact.

Energy Conservation and Environmental Impact:

Building Automation and Heat Recovery Systems

Drexel became one of the first universities to implement Direct Digital Controls (DDC) in renovations and new building construction. Lights, fans, pumps, air conditioners, boilers, heating valves, exhaust fans, heat recovery systems and some lab equipment are controlled by DDC systems. Today, Drexel incorporates Variable Frequency Drives (VFD) for mechanical equipment in new construction projects. VFDs reduce energy consumption by varying the power required to run electric motors.

Seventy-five percent of Drexel's buildings utilize Building Automation Systems (BAS) to control mechanical equipment, occupancy and lighting schedules, and temperature control.

Renewable Energy

In 2001, Drexel became one of the first universities to purchase wind generated energy. In 2006, Drexel entered into a contract with PECO Wind, to purchase wind energy directly linked to the PECO energy grid, supplying Drexel with 1.5 MW, 4.4 kWh per year. This translates into approximately 10% of Drexel's total annual electric use.

Carbon Footprint Reduction

Through university energy conservation activities more than 1,802,087 pounds of CO² grid-emissions are avoided annually from reducing use of 1,201,391 kWh of electricity on campus via building automation computers and equipment upgrades/replacement.

From Wind Generated Electricity 5,348,305 pounds of CO² grid-emissions are avoided annually by purchasing the output of a single wind turbine or 1.5 Mega Watts.

Combined, 7,150,392 pounds of CO² emissions are avoided annually, with a substantial amount of SO² and NO_x emissions avoided as well.

Annually, Drexel typically saves 3,134,341 kWh of electricity, which equates to 1,136 barrels of oil saved (18 barrels of crude oil for every 10,000 kWh) or 297 tons of coal saved (4.7 tons of coal for every 10,000 kWh).

Energy Saving Light Fixtures

Fluorescent and incandescent lamps make up the bulk of the types of lighting used on Drexel's campus. Since 1996, a considerable effort was undertaken to replace older inefficient lighting fixtures with improved energy rated fixtures. The focus has been largely on interior fluorescent lights and their ballasts in classrooms and residence halls since they represent the majority of the type of lighting on campus.

Old inefficient light fixtures on campus have been replaced as a result of the implementation of an energy savings project. Drexel continues in its commitment to using the most efficient and cost effective lighting available each time an office or building is renovated, such as replacing T-8 fixtures with higher efficiency T-5s and compact fluorescent lighting. The newer light fixtures provide a 30% improvement in efficiency.

In addition to installing efficient lighting fixtures, computer control systems are being installed to turn lighting off after hours or when it is not needed, and stand alone room lighting occupancy sensors are being utilized in newer construction and in renovations to conserve lighting energy. Drexel is currently striving to implement "dimming ballasts" and "daylight harvesting" - lights which automatically dim or turn off in areas where natural light is adequate.

Many exterior lamps on campus have also been replaced with fixtures that use inductive bulbs that use less energy and have longer usage expectancy than comparable conventional lamps.

Recycling

Drexel's Recycling Program has grown tremendously since it was first implemented in 1997. Nearly 25% of the University's waste stream is now being recycled. What began with just the recycling of white paper, the program today includes mixed paper, glass, plastic, aluminum, cardboard, scrap metal and hazardous-type materials such as fluorescent lamps, motor oil, printer toner cartridges, paint, industrial batteries, computers, electrical equipment and tires. The recycling program also operates a composting center to aid in the removal of cut grass, leaves and tree limbs from the waste stream.

Annually, Drexel recycles approximately 300 tons of waste.

In addition to the recycling of refuse, whenever possible Drexel purchases used or refurbished furniture and workstations, which reduces waste entering into the waste stream. In addition to the purchase of recycled office furniture, the University stores surplus furniture, fixtures and equipment and encourages the re-use of this inventory whenever possible.

Hybrid Vehicles and Alternate Transportation Initiatives

Drexel University has six hybrid vehicles as part of the university fleet, and is committed to purchasing more hybrids as vehicles are replaced. In addition, Public Safety uses environmental friendly battery-powered Chariots (4) and Segways (6) and utilizes bikes (25) to patrol the campus rather than traditional fuel-motor vehicles; and Facilities Management operates (4) battery-powered golf carts for transportation purposes.

In 2006, Drexel entered into a partnership with PhillyCarShare, a non-profit car sharing company, to offer an alternative to automobile ownership and dependency for students, faculty and staff living in Philadelphia. With more than 60% of its fleet comprised of hybrids, not only is PhillyCarShare encouraging environmentally friendly automobile use, but reduces automobile emissions and gas consumption.

The University also encourages faculty and staff to utilize public transportation and offers employees the ability to use pre-tax income towards the purchase of transit and rail passes. Beginning in Fall 2007, Drexel will subsidize transit and rail passes for students with a 10% discount through a partnership with the Southeastern Pennsylvania Transportation Authority (SEPTA).

Capital Construction:

All buildings constructed on this campus since 1996 met and/or exceeded building energy efficiency codes available at the time of construction.

Examples of Sustainability Design decisions already implemented:

- Heat recovery systems
- White roofs installed to reduce heat island effect
- Local and regional materials selected
- Occupancy sensor lighting controls in academic buildings
- Building Automation Systems installed in Academic buildings
- Ice storage tanks installed to reduce energy demand during peak hours of operation
- Reuse and refurbishment of existing furniture and materials
- Use of recycled materials for interior finishes
- Construction waste management by salvaging, recycling, and disposing of nonhazardous waste.
- Storm water management, rain water reuse system for flushing toilets

Planning and Design:

All new projects meet the prerequisites established by US Green Building Council in their LEED program and each project will strive to meet the criteria for a Silver rating when financially feasible. A cost benefit analysis will be used to evaluate any green design opportunities that exceed the project budgets. All fiscally responsible opportunities will be presented to the Board of Trustees for approval and implementation.

Implementation of Design and Construction Sustainability Best Practices:

Planning, Design and Construction in conjunction with the Facilities Department is developing standards for construction that will incorporate GreenSpec® architectural and mechanical systems specification guidelines for all new construction projects. This will formalize our existing commitment to sustainable design.

We are internally tracking projects under the LEED program to monitor our commitment to sustainability and to encourage design decisions that are environmentally and fiscally responsible.

Aspiring to do What is Best:

Drexel is committed to pursuing resourceful, cost-efficient ways to reduce energy consumption through conservation, reuse energy, recycling and implementation of new technologies into design and construction. The University recognizes that as an institution of higher education at the forefront of technological advancements, it must also be a model for other institutions of higher education, as well as industry, to embrace environmentally sustainable initiatives, not just because it may be a financially viable, but because it is the ethically responsible.

Awards:

Certificate of Achievement

EPA Green Lights – An Energy Star Program

For completing voluntary light fixture upgrades

October 1998

Certificate of Partnership

EPA Green Lights – An Energy Star Program

For commitment to pollution prevention through Green Lights program

Green College Buyer Award

For commitment to renewable energy

October 2002

Most Improved Recycling Program of the Year

The Greater Philadelphia Commercial Recycling Council

2002