



DUTHIE CENTER FOR ENGINEERING UNIVERSITY OF LOUISVILLE LOUISVILLE, KENTUCKY

31.9% reduction in annual energy costs

97.4% of existing building shell and structure were reused

water usage **cut in half** annually

LEED® Facts

Duthie Center for Engineering, U of L
Louisville, Kentucky

LEED for New Construction v2.2
Certification awarded July 15, 2010

Gold 45 points*

Sustainable Sites	9/14
Water Efficiency	2/5
Energy & Atmosphere	10/17
Materials & Resources	9/13
Indoor Environmental Quality	10/15
Innovation & Design	5/5

*Out of a possible 69 points

The information provided is based on that stated in the LEED® project certification submittals. USGBC and Chapters do not warrant or represent the accuracy of this information. Each building's actual performance is based on its unique design, construction, operation, and maintenance. Energy efficiency and sustainable results will vary.

UNIVERSITY OF LOUISVILLE, DUTHIE CENTER FOR ENGINEERING

A Strategic Green Renovation

The Greenest Building is One That Isn't Built

PROJECT BACKGROUND

The University of Louisville (UofL) is committed to creating a sustainable and environmentally friendly campus. When a 60-year-old building no longer met the Speed School of Engineering's needs, the university opted to recycle the outdated facility into a new green facility, today known as the Duthie Center for Engineering. The university challenged the design team to pursue the school's first LEED-NC certification for a renovation project, setting a target of Silver level certification.

RECYCLING A LEGACY BUILDING

Energy use by existing campus buildings represents the single-largest portion of the campus's carbon footprint. Recycling outdated, inefficient campus buildings into efficient green buildings offers an effective strategy for both reducing operational costs and reducing greenhouse gas emissions.

Originally built in 1947, the Duthie Center's mechanical and electrical systems and finishes had outlived their useful life. The design team was tasked with preserving the building envelope while completely reconfiguring the instructional, research and support spaces and upgrading mechanical, electrical, plumbing and information technology systems to meet new building standards.

STRATEGIES AND RESULTS

New carbon dioxide monitoring units control ventilation rates, reducing the amount of energy to heat or cool the outdoor air. The chilled water system was sized for a 16-degree temperature rise and a variable speed chilled water pumping system reduces the chilled water pumping energy. Energy-efficient light fixtures with electronic ballasts achieve a lighting power density of 1.1 watts per SF in the classrooms and research labs, exceeding ASHRAE by 8.3 percent, and 0.75 watts per SF in the offices, exceeding ASHRAE by 37.5 percent. The lighting features dual-level switching, zoned lighting and automatic lighting shut-off in classrooms. The building management system utilizes occupancy schedules to control the light fixtures via relays, and the air handling units are turned off during unoccupied times to minimize energy consumption. Existing windows were upgraded to enhance the building's energy performance. These energy efficiency measures were projected to reduce energy costs by 31.9 percent, earning an impressive 9 of 10 possible points for LEED Optimized Energy Performance and exceeding ASHRAE 90.1 Appendix G standards as required by the State of Kentucky's energy efficiency requirements for new buildings.

New ultra-efficient plumbing fixtures were installed, including 1.28 gallons per flush (gpf) water closets, 0.125 gpf urinals and solar-powered automatic lavatory faucets with low-flow aerators. These fixtures were projected to reduce water use by over 50 percent, earning both LEED Water Efficiency credits and also qualifying for an Innovation in Design point for exemplary water efficiency.

The renovation reused nearly 100 percent of the structure, including exterior walls, roof decking and structural floor, and during demolition, 77 percent of the materials that weren't reused were recycled. The completed Duthie Center exceeded its LEED Silver certification target by 12 points, earning LEED Gold certification. Perhaps more importantly, the project demonstrates that existing campus legacy buildings can be successfully recycled into new green buildings.

ABOUT THE DUTHIE CENTER FOR ENGINEERING

The Duthie Center for Engineering houses the Speed School's career development center, the Hagerty student commons area with food court, freshman engineering teaching laboratories and classrooms. It also houses offices and laboratories for the computer engineering and computer science department.

"Duthie Center for Engineering, the University's first LEED-certified renovation project, is a wonderful example where education theory becomes a reality for our students."

Ken Dietz, University Architect and Director of Planning, Design and Construction



Architect of Record: Lord, Aeck & Sargent
Associate Architect: Voelker Blackburn Niehoff Architects
Civil Engineer: Jacobs Engineering
Commissioning Agent: Facilities Commissioning Group
Contractor: Bornstein Building Company, Inc.
Landscape Architect: Jacobs Engineering
LEED Consultant: Lord, Aeck & Sargent
MEP Engineer: Staggs and Fisher
Structural Engineer: Senler, Campbell & Associates
Project Size: 35,000 sf
Total Project Cost: \$4.1 million
Cost Per Square Foot: \$117

Photographs Courtesy of: Thomas Watkins Photography

ABOUT KENTUCKY USGBC

Our goal is to improve the health and welfare of all Kentucky citizens through a sustainable and responsible built environment. Through education and awareness we encourage the use of sustainable practices that provide our residents with a healthy environment in which to live, work and learn.



KENTUCKY CHAPTER
Greening the Bluegrass

www.usgbkentucky.org
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