

Kresge Centennial Hall Green Building Guide

Originally constructed in 1954, Kresge Centennial Hall was renovated to create a modern, comfortable, healthy, and green work and study environment for students, faculty, and staff. The renovation project completed in the fall of 2016, and the updated space houses many of the humanities departments from the Weinberg College of Arts and Sciences. As part of Northwestern's commitment to sustainable practices, Kresge was designed to meet high standards for energy efficiency, indoor air quality, use of sustainable materials, and other green building practices. In September 2017, Kresge Centennial Hall became the first Leadership in Energy and Environmental Design (LEED) Platinum certified building on campus.



Green Building Highlights

LEED certification is awarded based on a 110-point scale. For Platinum certification, a minimum of 80 points is required. Kresge Centennial Hall was awarded 86 points. Notable features include the following.

- **Sustainable sites:** Those who work and study in the building can easily access public transportation, shuttle stops, and bike parking.
- **Water efficiency:** Efficient fixtures reduce water consumption by 35 percent.
- **Energy and atmosphere:** A 254-solar panel array on the roof is capable of generating 81 kilowatts of electricity, enough to offset 5 percent of the building's electricity needs.
- **Materials and resources:** Roughly 93 percent of waste generated during construction was diverted from landfills through recycling or reuse.
- **Indoor environmental quality:** The project team used 100 percent low-emitting materials, resulting in better indoor air quality.

What is LEED Certification?

Leadership in Energy and Environmental Design (LEED) certification is a U.S. Green Building Council program that recognizes building designs that are resource efficient and cost effective while providing a healthier and greener lifestyle for building occupants. As the highest level of certification, achieving LEED Platinum is an important step in achieving Northwestern's sustainability goals.



Green Building Features

Sustainable Sites

21 out of 26 possible points

The newly renovated Kresge Centennial Hall building includes a white roof design, which will reduce the effects of the urban heat island. A large percentage of the roof is also covered with photovoltaic panels.

The location of the building made it possible to earn a number of sustainable sites credits, including credits for using a site that had already been developed, therefore reducing requirements for new urban infrastructure.

It is also located near many services, allowing building users to walk or ride a bike to make use of those services. Those who work and study in the building can easily access public transportation, and Northwestern Shuttle stops, and the site offers eighty bike parking spaces. This feature encourages the use of alternative transportation to reduce carbon dioxide emissions from automobiles. Showers are provided within the building, making bicycling a feasible commuting option.

To reduce light pollution, Northwestern University's standard exterior luminaires were modified to reduce light spill to the night sky.

Water Efficiency

5 out of 10 possible points

Kresge Centennial Hall was outfitted with low-flow plumbing fixtures, which conserve water. New urinals use an eighth of a gallon per flush, and standard toilets use 1.28 gallons per flush, resulting in a 35 percent reduction in water consumption in the building.

The landscaping design also reduces water consumption thanks to a highly efficient irrigation system and the use of adapted plants that require minimal watering.



Energy and Atmosphere

29 out of 35 possible points

The upgraded heating, ventilation, and air conditioning (HVAC) systems are designed to be highly energy efficient. Radiant ceiling panels, or chilled sails, in all offices and classrooms use chilled water from the Central Utility Plant to reduce the amount of energy needed for air conditioning.

Classrooms were retrofitted with carbon dioxide sensors, which adjust the need to bring in outside air based on room occupancy. This system cut costs associated with ventilating empty or nearly vacant rooms.

The building envelope (the outer shell of the building) was also upgraded for energy efficiency. The exterior wall insulation and new windows both have the highest available grade for insulating value. The building's total annual energy usage was modeled to be more than 40 percent lower than the baseline set by ASHRAE standards.

Upgrades to the electrical system include daylight sensors that automatically dim lights during the brighter times of the day. In addition, highly efficient and extremely durable LED lights were used throughout the building, and occupancy sensors are in place to shut off lights in empty rooms.

Renewable energy was also added to the building. A 254-solar panel array on the roof is capable of generating 81 kilowatts of electricity, enough to offset 5 percent of the building's electricity usage.



Materials and Resources

9 out of 14 possible points

To reduce the environmental impact of the products used in this project, 30 percent of the total materials purchased were produced within 500 miles of the site. In addition, 22 percent of the materials used contain recycled content, and almost 95 percent of the new wood used was harvested from Forest Stewardship Council (FSC) certified forests.

Most significantly, over 75 percent of the existing building envelope and structure was reused. Also, 93 percent of all waste generated during construction was diverted from landfills through recycling or reuse.



Indoor Environmental Quality

12 out of 15 possible points

The Kresge Centennial Hall project team used 100 percent low-emitting materials such as adhesives, sealants, paints, coatings, flooring and composite wood. This minimizes emissions of pollutants such as volatile organic compounds (VOCs) and formaldehyde, resulting in better indoor air quality.

Other measures to enhance indoor environmental quality include the use of carbon dioxide sensors to increase air circulation to densely occupied spaces when necessary, overall increased ventilation based on national ventilation standards, and careful construction techniques to reduce pollution during construction.

Lighting, heating and cooling controls are provided for building users, enhancing user comfort.

Other Credits

10 points

This project received all possible points in the innovation and design process category and regional priority category, contributing a total of 10 points to the final LEED certification score.

Features that earned innovation credits include lighting with very low or no mercury content, exemplary performance for the use of regional materials, provision of open space, and the use of green cleaning protocols and products. In addition, the purchase of Green-e Certified wind energy will offset 70 percent of Kresge's electricity consumption.

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