



# LEED Buildings

## Benchmarking + Recommendations

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Will LEED certification help the University of Chicago meet its 2030 target to reduce annual carbon emissions by 50%?



## LEED 101



## UChicago LEED Buildings

- **LEED** ➔ Leadership in Energy and Environmental Design
- LEED is the world's most widely used green building rating system with nearly 80,000 projects in 162 countries
- Scores buildings in Energy & Atmosphere, Water Efficiency, Materials and Resources, Sustainable Sites and Indoor Environmental Quality



Average **Source** EUI



Average **Site** EUI



Average **Energy and  
Atmosphere** Points



Average **Total** Points

\*\*Incomplete data for hospital building, Child Development Centers, Harper Court, Logan, and Keller



## Benchmark

- ❑ UChicago and city of Chicago LEED buildings do not perform better than Chicago non-LEED buildings\*
- ❑ LEED Energy & Atmosphere points do not correlate with energy use intensity



## Exploration

- ❑ Most UChicago LEED buildings use more energy than their LEED application projections
- ❑ LEED “Operations + Management” certification does not lead to significant long-term energy use reduction

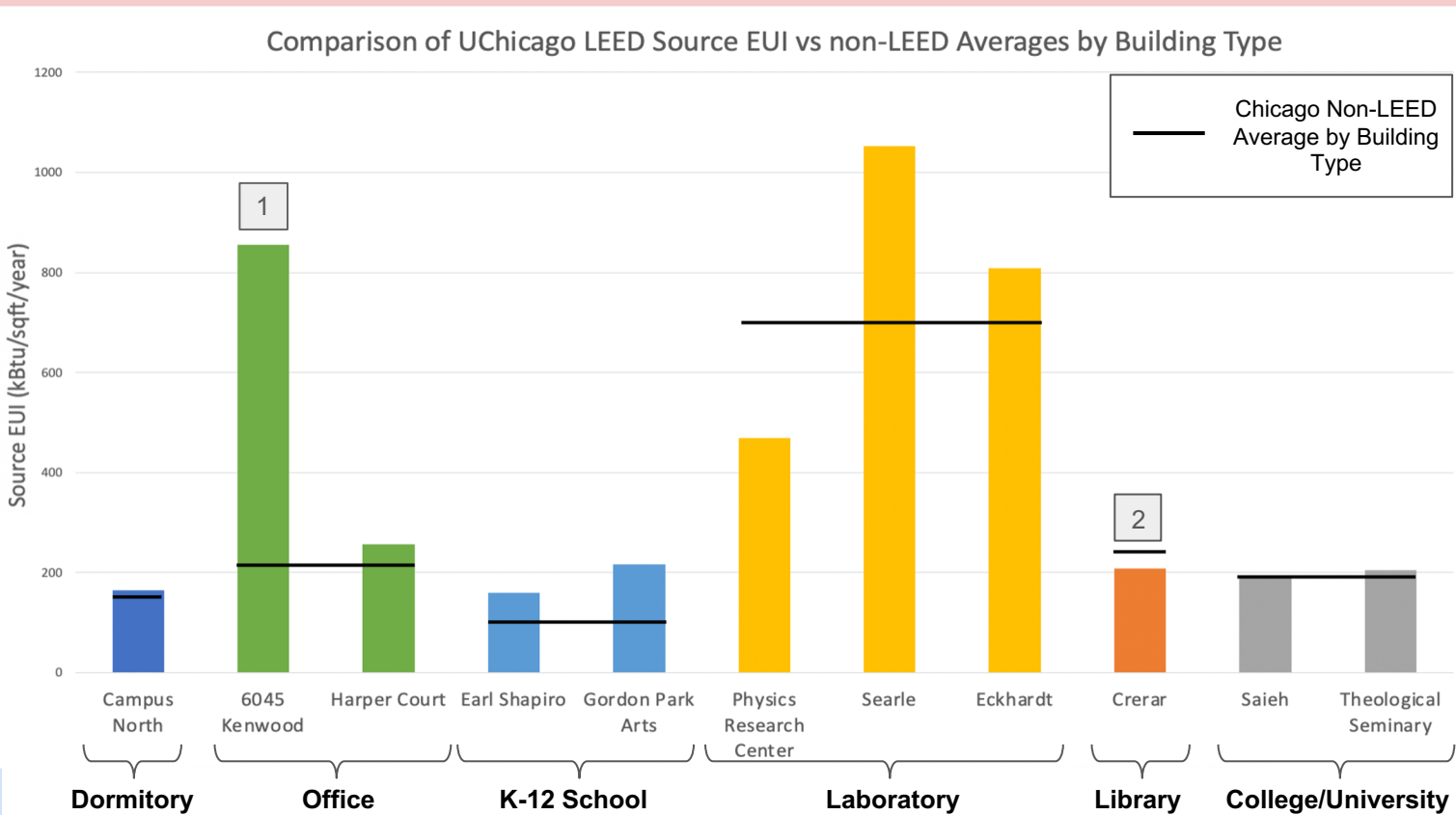


## Insights

- ❑ The Passive House certification ensures cost-effective, improved energy performance for new building construction
- ❑ Regular operations, maintenance, and retrofits are key for improving energy performance in existing UChicago buildings

\*There is no statistical difference between Chicago LEED and non-LEED buildings' energy use intensity

# UChicago LEED does not perform better than non-LEED Chicago buildings



1 6045 Kenwood contains a data center, rare for office buildings.

2 Crerar performs well, given its energy-intensive computer equipment.



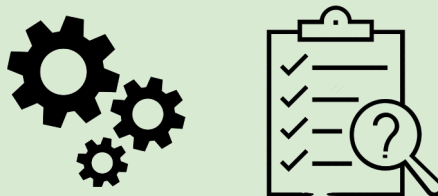
# Recommended Steps

A UChicago checklist to improve energy performance



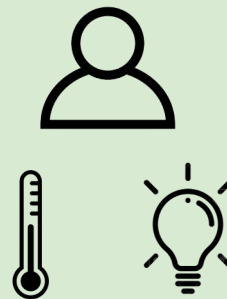
New Building Construction  
**Passive House:**

Build air-tight, highly insulated **passively heated and cooled** buildings



Operations & Maintenance  
**Evaluations and Audits:**

Ensure **systems run as designed** and conduct frequent audits to identify **retrofit** opportunities



Occupant Feedback  
**Comfort and Behavior:**

**Optimize** thermal comfort. Address **inefficiencies** (leaving computers, lights, or equipment on, etc.)

# UChicago Environmental Frontiers Campus

EF Campus is a cross-discipline, student-faculty-staff collaboration focused on creating a more sustainable UChicago and world. Special thanks to faculty leads Prof. Elisabeth Moyer and Prof. Sabina Shaikh, Facilities leads Adam D'Ambrosio and Sara Popenhagen, graduate student mentor Kriti Bhardwaj, and the Mansueto Institute for sponsoring this project.

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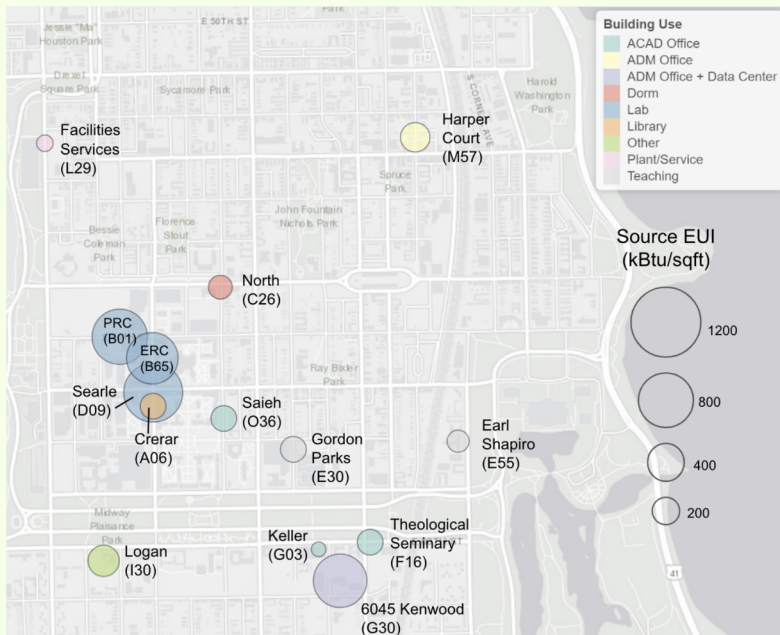


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# Appendix:

# UChicago LEED Building

# Map



### 1 Facilities Services (L29)

83,000 square feet - houses 125 University of Chicago employees working in the trade shops, landscaping and inventory departments

### 3 Campus North Residential Commons (C26)

400,000 square feet - houses 800 undergraduate students plus staff in singles, doubles and apartments

### 2 Harper Court (M57)

152,000 square feet - houses 550 employees working in IT Services, the Commercial Real Estate Office, and Alumni Relations and Development

### 4 Michelson Center for Physics (B01)

64,000 square feet - houses 150 scientists from UChicago physics faculty, Enrico Fermi Institute, Kadanoff Center for Theoretical Physics and Center for Bright Beams

### 5 William Eckhardt Research Center (B65)

277,000 square feet - houses offices, conference rooms and laboratories for the Division of Physical Sciences and the Institute of Molecular Engineering

### 7 John Crerar Library (A06)

160,000 square feet - houses a research library for science, medicine and technology as well as the Department of Computer Science and the Center for Data and Applied Computing

### 9 Gordon Parks Arts Hall (E30)

90,000 square feet - houses classrooms, studios, digital media lab, rehearsal space and theaters for the University's Laboratory Schools

### 11 Logan Center for the Arts (I30)

184,000 square feet - houses theaters, instructional and practice space as the center for the arts on the University of Chicago campus and on the South Side of Chicago

### 13 6045 S. Kenwood (G30)

86,000 square feet - houses the Toyota Technical Institute of Chicago as well as staff offices, a training center and data center for University IT Services

### 6 Searle Chemistry Laboratory (D09)

83,000 square feet - houses 5 principal investigators and approximately 60 graduate students for Department of Chemistry

### 8 Saieh Hall for Economics (O36)

100,000 square feet - houses instructional and research programs for the Department of Economics and the Becker Friedman Institute for Research in Economics

### 10 Earl Shapiro Hall (E55)

130,000 square feet - houses the Laboratory School's nursery, kindergarten and primary grades

### 12 Keller Center (G03)

130,000 square feet - the new home of the University's Harris School of Public Policy

### 14 The Chicago Theological Seminary (F16)

78,000 square feet - home to the Chicago Theological Seminary, graduate school of theology