



29 GARDEN STREET STUDENT COMMONS 29 GARDEN STREET, CAMBRIDGE, MA 02138 PROJECT CASE STUDY

LEED CI v 2009
LEED SILVER
2016

Originally built in the 1920s and renovated in 2003, 29 Garden Street is a part of the Graduate Commons project and was designed to support graduate student needs. The Graduate Commons project is part of the University's Common Spaces initiative which seeks to foster a stronger sense of community across Harvard by providing students, faculty, and staff with opportunities to share spaces and experiences.

Harvard University Housing, tasked the project team with updating HVAC systems, maximizing daylighting, reducing utility dependency, and incorporating sustainable materials, while maintaining the integrity of the original 1920s exterior design, the open air courtyard, spacious common areas and the character of the interior aesthetic.



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Throughout each phase, the project team embraced the challenges of implementing sustainability measures within a limited scope of work. The project's design and construction teams worked together to ensure that sustainability goals set forth at the beginning of the project were carried through to completion. The 29 Garden Street project is an excellent example how a small project scope can still be a model of sustainability by achieving LEED Silver certification in 2016.

LEED® Facts

Harvard University
29 Garden Graduate Commons



Location.....	Cambridge, MA
Rating System.....	LEED-CI v2009
Certification Anticipated.....	Silver
Total Points Submitted.....	56/110
Sustainable Sites.....	19/21
Water Efficiency.....	0/11
Energy and Atmosphere.....	14/37
Materials and Resources.....	5/14
Indoor Environmental Quality.....	12/17
Innovation and Design.....	4/6
Regional Priority.....	2/4

PROJECT METRICS

- 18%** reduction in **lighting power density** (watts/square foot) compared to the baseline standard (ASHRAE 90.1-2007)
- 20%** reduction in **water use** compared to the EPAct 1992 baseline
- 22%** **regional manufactured** materials as a percentage of total materials cost
- 19%** **recycled** content as a percentage of total materials cost
- 85%** of construction waste **diverted** from landfill



ENERGY EFFICIENCY

Harvard University Housing (HUh) has committed, along with Harvard University as a whole, to reduce greenhouse gas emissions 30% below 2006 levels by 2016, inclusive of growth. Therefore, the following energy conservation measures (ECMs) were implemented as part of the 29 Garden Street Student Commons project.

HEATING/COOLING SYSTEMS

- ECM 1: Variable Air Volume Control (VAV)** - VAV terminals control the amount of air delivered to common room. The ability for VAV terminals to adjust fan speed reduces the energy consumed by the fans. In addition, VAV systems provide a greater level of dehumidification than a conventional constant volume system, which enhances building occupants' overall thermal comfort.
- ECM 2: ECM Motors** - All fan coil units (FCU) located throughout the project are installed with ECM motors. These motors use less energy than standard fan motors.
- ECM 3: Occupancy Sensors** - Occupancy sensors control the operation of the variable air volume terminal units for the first floor Commons room and the surrounding rooms.
- ECM 4: Operable Windows** - Operable windows provide residents with natural ventilation and control over the thermal conditions of their space. In some cases, this alleviates the need to cool spaces and, in turn, reduces energy usage associated with cooling loads.
- ECM 5: Thermostats** - Thermostats provide a high level of thermal comfort system control by building occupants.



Photo: Copyright David Kurtis 2012



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ELECTRICAL SYSTEMS

- ECM 1: Occupancy Sensors** - Occupancy sensors are installed in all spaces to turn the lights on, or off, based on actual occupancy. A combination of wall-mounted infrared occupancy sensors and dual technology ceiling sensors were installed throughout. These occupancy sensors combine the benefits of passive infrared (PIR) and ultrasonic technologies to detect occupancy.
- ECM 2: Energy Star Equipment** - Energy Star equipment was selected for 85% of Energy Star-eligible equipment in this project. This includes refrigerators, dishwashers, washing machines, and dryers.



PRODUCTS AND MATERIALS

LIGHTING AND CONTROLS

- **18% reduction** in lighting power density (watts/square foot)



Edge EV3WW
Pinnacle

- ✓ Total fixture wattage = 7.6 Watts/ft.
- ✓ Wall wash fixture which can be installed in hard lid ceiling or acoustical ceiling tiles



LED Pendant Fixture
Lightolier

- ✓ Total fixture wattage = 16 Watts
- ✓ LED Fixture



Dual Technology Ceiling Sensors
DT-300 Series
WattStopper

- ✓ Walk-through mode turns lights off after 3 minutes if occupancy not detected.
- ✓ Passive infrared and ultrasonic sensors.
- ✓ Integrated daylight sensor

ENERGY EFFICIENT APPLIANCES

85% of the equipment purchased for the project is **ENERGY STAR RATED** (by rated power).



Side by Side Refrigerator
Model #LFX33975ST

LG

- ✓ ENERGY STAR®
- ✓ Smart Cooling Plus technology is designed to maintain superior conditions within the refrigerator



High Efficiency Dishwasher
Model #JDB800

Jennair

- ✓ ENERGY STAR®
- ✓ Sensor Wash Cycle with ClearScan Sensor—an advanced and versatile cycle that calibrates the dishwasher to use the optimal wash cycle to clean dishes based on load size and soil level



Frontload Washer
Model #WF40

Samsung

- ✓ ENERGY STAR®
- ✓ eWash™ option - Energy-saving option uses a cold water wash on select cycles without sacrificing performance

WATER EFFICIENCY

20% reduction in annual water use (26,880 gallons/year projected savings) when compared to EPAct 1992 baseline standard



Toto Dual Flush Toilet
Model #CST4994

Toto

- ✓ **0.9/1.28 gallons per flush (gpf)** vs. EPAct baseline of 1.6 gpf.



Lavatory Faucet
Model #SLS-3512

Symmons

- ✓ **1.5 gallons per minute (gpm)** vs. EPAct baseline of 2.2 gpm.

Please note that while many products are described in this project profile, these are provided for informational purposes only, to show a representative sample of what was included in this project. Harvard University and its affiliates do not specifically endorse nor recommend any of the products listed in this project profile and this profile may not be used in commercial or political materials, advertisements, emails, products, promotions that in any way suggests approval or endorsement of Harvard University.



PRODUCTS AND MATERIALS

REGIONAL, RECYCLED, Low VOC

19% recycled content as a percentage of total materials cost

22% regionally manufactured materials as a percentage of total materials cost

Only low-VOC, or no-VOC adhesives, sealants, paints and coatings were used.



Laminate Product

WilsonArt

- ✓ Recycled Content
 - 31% Post-consumer
- ✓ 100% FSC certified wood



Backsplash Tile

Roxul

- ✓ Recycled Content
 - 21% Pre-consumer



Wood Insulation

Roxul

- ✓ Recycled Content
 - 40% Pre-consumer
- ✓ 100% regional sourced

PROJECT TEAM

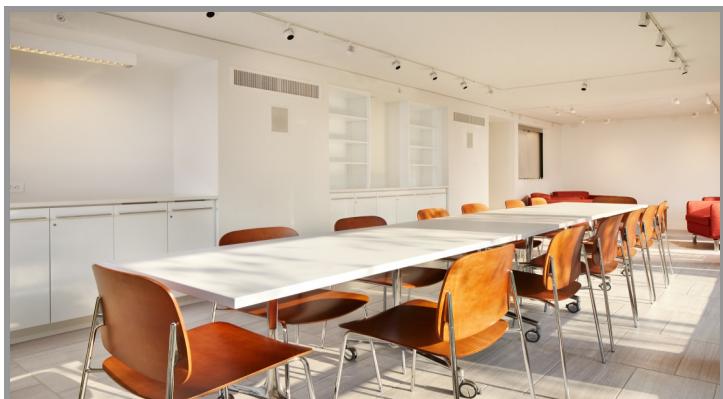


Photo: copyright David Kurtis, 2012

Owner	Harvard University Housing
Project Manager	Northstar Project & Real Estate Services
Architect	Boyes & Watson Architects
Lighting Designer	Sladen Feinstein
MEP Engineer	Environmental Solutions Inc.
Construction Manager	Shawmut Design and Construction
Sustainability Consultant & Commissioning Authority	Harvard Green Building Services

MORE INFORMATION

- Harvard University Housing: <http://huhousing.harvard.edu/>
- 29 Garden Street: <http://www.huhousing.harvard.edu/our-properties/29-garden-street>
- Harvard—Green Building Resource: <http://www.energyandfacilities.harvard.edu/green-building-resource>
- Harvard—Green Building Services: <http://www.energyandfacilities.harvard.edu/project-technical-support/capital-projects/sustainable-design-support-services>
- Sustainability at Harvard: <http://green.harvard.edu/>

