

Laboratory of Epidemiology and Public Health 5



Yale University renovated the 5th floor of the Laboratory of Epidemiology and Public Health (LEPH) in alignment with the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) rating system at the Gold certification level for Commercial Interiors.

ENERGY EFFICIENCY

Fossil fuel-based energy generation contributes toward global climate change. According to the Department of Energy, buildings consume about 37% of the energy and 68% of the electricity produced in the United States. The LEPH 5th-floor renovation addresses this issue by utilizing energy-conserving technologies that in turn lower the annual operating cost. Energy-efficient lighting has been installed, using 32% less energy than minimum code requirements. Occupancy sensors in offices, lab support spaces, equipment rooms, and lavatories provide automatic off-switching when these areas are unoccupied. Ventilation fans have variable frequency drives that allow fan motors to reduce speed in response to reduced airflow requirements, thereby reducing energy loads. The 5th-floor renovation also added perimeter wall insulation to improve the building's thermal performance. All building systems have been commissioned to ensure they perform as efficiently as intended.

INDOOR ENVIRONMENTAL QUALITY

On average, Americans spend 90% of their time indoors, and it is estimated that indoor pollutant levels can exceed outdoor levels by two to five times. In the LEPH 5 renovation, finishes—such as interior paints, sealants, and

85% of the wood products used in construction and furniture were certified by the Forest Stewardship Council

40% of the building materials were manufactured regionally, and 12% were extracted, recovered, or harvested and manufactured regionally

40% reduction in annual potable water use is anticipated with the water-saving measures provided

98% of demolition and construction debris was recycled, diverting it from landfills

adhesives — have low volatile organic compound (VOC) content to reduce toxicity and noxious odors. Interior materials such as flooring, carpet, and wood doors and furniture meet strict standards for chemical emissions. Carbon dioxide sensors in densely occupied spaces ensure that fresh air is supplied when CO₂ concentration levels are elevated. To prioritize indoor air quality, ventilation rates as well as temperature and lighting controls were designed to ensure occupant control and overall well-being. Prior to occupancy, the renovated floor was air-tested to ensure that VOC, particulate, and carbon monoxide levels were well below acceptable thresholds.

MATERIALS

In addition to reducing pollution risks, waste reduction contributes toward saving natural resources, energy, disposal space, and construction costs. This renovation project recycled 98% of construction waste. To reduce the environmental impact created from the processing and distribution of virgin materials, care was taken to specify locally manufactured materials with high recycled content. Such materials include steel, concrete, and the wood used for laboratory casework. The project team targeted 20% recycled content and 30% locally manufactured for all construction materials, and it sourced sustainably harvested wood (FSC) for greater than 85% of all wood materials. In addition, Yale University actively promotes recycling of daily waste materials such as plastic, metal, office paper, corrugated cardboard, electronics, and lab material containers by providing recycling receptacles and regular collection on the 5th floor of LEPH.

WATER EFFICIENCY

In the United States, it is estimated that more than 340 billion gallons of fresh water are withdrawn daily from rivers, reservoirs, and streams to support industrial, commercial, residential, and agricultural needs. After use, this water is discharged back into these water bodies. Moving and treating potable water resources uses energy and chemicals, and it can overburden municipal supply and treatment systems. Water-conservation measures in the LEPH 5 renovation include the installation of ultra-low-flow lavatories with aerators, dual-flush water closets, low-flush urinals, and low-flow kitchen faucets. As a result of these measures, the LEPH 5th floor is expected to reduce its annual potable water use by 40% below performance standards established by the U.S. Energy Policy Act of 2005.

SITE AND TRANSPORTATION

Yale University strives to reduce automobile use by providing alternative solutions such as easy access to public transportation, a car-sharing program, and car/van-pooling throughout the campus. The LEPH building is regularly serviced by both the Yale Shuttle and CT Transit bus lines, and it is close to New Haven’s Union Station, with access to multiple commuter train lines. Occupants may also take advantage of the University’s partnership with the Zipcar sharing service, with four Zipcars parked in a lot just down the street, and its partnership with the bike-sharing service Zagster, with a pod of five bikes at LEPH. In addition, the building is within walking distance of many local amenities and services.



Architect
TLB Architecture, LLC

Total floor area
8,125 gross sq ft

Opening date
April 30, 2015



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