

# West Campus Integrated Science and Technology Center



Yale University renovated the 1st and 3rd floors of the West Campus Integrated Science and Technology Center (w-ISTC) in alignment with the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) rating system, targeting a Gold certification level for Commercial Interiors.

## ENERGY EFFICIENCY

Fossil fuel-based energy generation contributes to 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 w-ISTC renovation addressed this issue by utilizing energy-conserving technologies that in turn lower the annual operating costs. Energy-efficient LED lighting uses 30% less energy than minimum code requirements for the same high-level light requirements of a laboratory. Occupancy sensors in offices, lab support spaces, equipment rooms, and lavatories provide automatic off-switching when these areas are unoccupied. Interior glazing in the corridors provides views and allows daylight to penetrate deep into the building, reducing the need for electric lighting during daytime hours. Occupancy controls and variable frequency drives on ventilation fans reduce motor speed in response to reduced airflow loads, thereby reducing energy loads. Individual thermostats in offices and multipurpose rooms allow a greater control of comfort and energy savings during late-night or weekend use.

## 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

**86% of the wood products** used in construction were certified by the Forest Stewardship Council

**30% of the building materials** were manufactured regionally, and 20% of these was extracted or recovered regionally

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

**Over 90% of demolition and construction debris** was removed for reuse, or recycled, diverting it from landfills

the W-ISTC renovation, interior finishes and furnishings – such as paints, sealants, adhesives, composite woods, flooring, and systems furniture and seating – have low volatile organic compound (VOC) content and meet stringent indoor air quality certifications to reduce toxicity and noxious odors. Carbon dioxide sensors in densely occupied spaces ensure that fresh air is supplied when additional occupants increase CO<sub>2</sub> concentration levels. Prioritizing indoor air quality, ventilation rates as well as temperature and lighting controls were carefully designed to ensure occupant control and overall well-being. Post-construction, and prior to occupancy, the renovated floors were 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 saves natural resources, energy, and disposal space, and reduces construction costs. This project recycled more than 90% of construction waste. Care was taken to specify locally manufactured materials – including steel, concrete, and wood for laboratory casework – with high recycled content, targeting 10% recycled content for items such as gypsum board, metals, ceiling tile, and insulation, and 20% locally manufactured for all construction materials such as millwork, light gauge steel and aluminum framing, and interior glazing. The project also sourced sustainably harvested wood (FSC) for 86% of all new wood materials such as millwork, doors, and laboratory furniture. In addition, Yale actively promotes recycling of daily waste materials such as plastic, metal, paper, corrugated cardboard, electronics, and lab material containers by providing recycling receptacles and regular collection on the floors of W-ISTC.

### WATER EFFICIENCY

It is estimated that more than 340 billion gallons of fresh water are withdrawn daily from rivers, reservoirs, and streams in the United States to support industrial, commercial, residential, and agricultural needs. After use, the water is discharged back into these water bodies. Water conservation measures in the W-ISTC renovation – expected to reduce annual potable water use by 40% below U.S. Energy Policy performance standards, include the installation of ultra-low-flow lavatories with aerators, dual-flush water closets, low-flush urinals, and low-flow kitchen faucets.

### SITE AND TRANSPORTATION

The W-ISTC is regularly served by the Yale Shuttle, and it is close to the West Haven train station, with access to multiple commuter train lines. Bicycle use is accommodated with secure bicycle racks and access to showers and changing rooms, and Yale provides a car-sharing service to all staff at the West Campus.



**Architect**  
Svigals + Partners

**Total floor area**  
35,000 sq ft

**Opening date**  
April 2015



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