The Harvard University Employees Credit Union’s (HUECU) Administrative Office is a 6,826 square foot renovation of the fourth floor at 104 Mount Auburn Street in Cambridge, MA. Construction was completed in October 2008. The building is a 34,526 square foot, five-story office building with retail establishments on the first floor. The project is located in the heart of Harvard Square, within close proximity to the Harvard campus, many public transportation options, services, restaurants, and stores.

Due to the confidential and sensitive nature of their work with personal finances, HUECU employees generally work individually, not in teams. Therefore, the renovation needed to include (10) private offices, one of which shall be shared by (2) collections staff, and (19) furniture cubicles with standing-height panels and sliding doors, to provide visual and some acoustic privacy. Even though the space needs to maintain private offices and cubicles, the architects looked at ways to bring daylight into the central, cubicle area – both directly via exterior windows and indirectly through interior glass walls.

In addition to carrying out a LEED renovation, the HUECU, as part of its ongoing commitment to protect the environment, encourages members to purchase more fuel-efficient vehicles through the Green Auto Loan Program. This Loan Program provides auto loans at a reduced interest rate for HUECU members looking to finance a vehicle that gets at least 30 miles-per-gallon (highway).

**PROJECT HIGHLIGHTS**

<table>
<thead>
<tr>
<th>LEED® Facts</th>
<th>17%</th>
<th>reduction in installed interior lighting power density (watts/square feet) below the code standard.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>79%</td>
<td>of all construction and demolition waste was diverted from landfills.</td>
</tr>
<tr>
<td>Harvard University Employees Credit Union</td>
<td>41%</td>
<td>reduction in water consumption over EPAct 1992 compliant fixtures.</td>
</tr>
<tr>
<td>2008 Renovation</td>
<td>100%</td>
<td>of the equipment and appliances are Energy Star® rated</td>
</tr>
<tr>
<td>Location…………………………..Cambridge, Massachusetts</td>
<td>4/7</td>
<td>Sustainable Sites……………………………………………..</td>
</tr>
<tr>
<td>Rating System………………Commercial Interiors v2.0</td>
<td>2/2</td>
<td>Water Efficiency………………………………………..</td>
</tr>
<tr>
<td>Certification Pending…………………………Silver</td>
<td>6/12</td>
<td>Energy and Atmosphere…………………………….</td>
</tr>
<tr>
<td>Total Points Achieved…………………………30 / 57</td>
<td>5/14</td>
<td>Materials and Resources…………………………………</td>
</tr>
<tr>
<td>Sustainable Sites…………………………………..4/7</td>
<td>8/17</td>
<td>Indoor Environmental Quality………………………</td>
</tr>
<tr>
<td>Water Efficiency……………………………………2/2</td>
<td>5/5</td>
<td>Innovation and Design……………………………………</td>
</tr>
<tr>
<td>Energy and Atmosphere…………………………..6/12</td>
<td></td>
<td>All thermostats are programmed with timers that set back the temperature during un-occupied hours.</td>
</tr>
<tr>
<td>Materials and Resources…………………………..5/14</td>
<td></td>
<td>Only low or zero-VOC materials were used during construction.</td>
</tr>
<tr>
<td>Indoor Environmental Quality…………………………8/17</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**PROJECT OVERVIEW**

**PROJECT TEAM**

**Owner**
Harvard University Employees Credit Union

**Building Management**
Intercontinental Management Corporation

**Architect**
Perry & Radford

**Contractor**
Devonshire Construction Corp.

**Engineer**
Energy Planning, Inc

**Commissioning Agent**
Perry & Radford

**Sustainability Consultant**
Harvard University, Office for Sustainability
Green Building Services
The Credit Union’s fourth floor LEED Boundary includes the renovation of two bathrooms. Per project specifications, only water efficient fixtures were installed, which reduces domestic water consumption by 41% over standard EPAct 1992 fixtures. This is the equivalent of saving over 21,000 gallons per year.

### Site

- To encourage alternatives to driving, all occupants have access to Harvard’s comprehensive CommuterChoice Program, which provides incentives, such as discounts, for all modes of alternative transportation as well as carpooling and fuel efficient vehicles. The Program is promoted through informational kiosks in building common areas and an extensive website. ([www.commuterchoice.harvard.edu](http://www.commuterchoice.harvard.edu))
- The building is located within walking distance to the Harvard Square MBTA stop, several bus lines, and the Harvard University Shuttle.
- A bicycle rack was installed on the sidewalk in front of the building as part of this project, in an effort to promote bicycle commuting. Shower facilities are available to tenants in the nearby Malkin Athletic Center.
- The building is located in a dense urban area with several services, which allows occupants to walk and easily access amenities such as restaurants, banks, churches, and retail stores.

### Water Efficiency

The Credit Union’s fourth floor LEED Boundary includes the renovation of two bathrooms. Per project specifications, only water efficient fixtures were installed, which reduces domestic water consumption by 41% over standard EPAct 1992 fixtures. This is the equivalent of saving over 21,000 gallons per year.

### Fixtures in Credit Union Project Scope

- **SLOAN OPTIMA Plus® ERF-885**
  0.5 GPM Battery Powered Wireless Faucet, Spray Head, Sensor Activated

- **SLOAN ECOS®**
  Electronic Dual Flush (Full Flush 1.6 gpf and Reduced Flush 1.1 gpf)

### Differences in the Flush & Flow Rates for EPAct 1992 Standard Fixtures and the fixtures installed for the Credit Union Fourth Floor Office Project

<table>
<thead>
<tr>
<th>Fixture Type</th>
<th>Credit Union Office Flush &amp; Flow Rates</th>
<th>EPAct 1992 Standard Flush &amp; Flow Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Closet [GPF]</td>
<td>Dual-Flush 1.6 &amp; 1.1</td>
<td>1.6</td>
</tr>
<tr>
<td>Urinal [GPF]</td>
<td>0.5</td>
<td>1.0</td>
</tr>
<tr>
<td>Bathroom Sink [GPM]</td>
<td>0.5</td>
<td>2.5</td>
</tr>
<tr>
<td>Kitchen Sink</td>
<td>1.5</td>
<td>2.5</td>
</tr>
</tbody>
</table>

GPF - Gallons Per Flush  
GPM - Gallons Per Minute
ENERGY EFFICIENCY

The HUECU has committed, along with the larger Harvard University, to focus on ways to reduce greenhouse gas emissions 30% below 2006 levels by 2016, inclusive of growth. To this end, energy efficiency was one of the primary sustainability-related goals in this renovation project.

Mechanical Systems

- **Automatic Temperature Controls:** All thermostats are on timers that are programmed to setback during unoccupied times, which can save a significant amount of energy. For the HUECU, the timers were set-up with the following configuration:
  - **Occupied Hours** (8 AM to 5:30 PM, Monday through Friday):
    - Winter: 70 degrees F
    - Summer: 73 degrees F
  - **Unoccupied Hours:**
    - Winter: 60 degrees F
    - Summer: 78 degrees F

- **System Upgrades:** As part of the project the HUECU replaced the existing heat pumps (which are more than 25-years old and in deteriorating condition) to upgrade their efficiency.

- **Plug Loads:** Energy Star equipment was selected for all Energy Star-eligible equipment in the space. This includes three computers and a commercial refrigerator.

- **Commissioning:** The mechanical and electrical systems were fully commissioned by a third-party Commissioning Authority, which ensured that all energy-related systems were installed as designed, and operating efficiently prior to occupancy.

- **Separate Metering:** The HUECU electricity is separately metered from the other floors in the building, which allows the occupants to be aware of their consumption and encourage conservation.

Electrical Systems

- **Occupancy Sensors** are installed in all rooms within the project scope. These sensors turn the lights in a space off when they have not been activated by motion for set periods of time.

- **Daylight Sensors** were installed in all offices with exterior windows. These sensors reduce electrical lighting demand by dimming lights when natural light is present, maintaining a constant light level within the room.

- **Light Fixtures:** Energy-efficient fluorescent lighting fixtures and lamps were carefully chosen and placed to reduce electricity consumption. As a result, the project has achieved a **17.14%** reduction in installed lighting power density (watts/square feet) below the code standard.

- **Daylight:** Even though the space needs to maintain private offices and cubicles, the architects looked at ways to bring the daylight into the central, cubicle area – either directly via exterior windows or indirectly through interior glass walls.

[Images: Programming the Thermostat, Commissioning: Testing the Daylight Sensors]
INDOOR ENVIRONMENTAL QUALITY

The Harvard University Employee Credit Union is committed to providing a healthy indoor environment for all occupants. The project team was careful to maintain healthy indoor air quality during construction and to also ensure the space is designed to promote healthy indoor air quality during occupancy.

Indoor Air Quality During Construction: The rest of the building maintained occupancy throughout construction. Thus, a comprehensive indoor air quality management plan was implemented to maintain healthy indoor air quality during construction. For example, all grills and vents were sealed and a HEPA Filtration unit maintained negative pressure to keep any construction debris from migrating into occupied spaces.

Only products with Low or No VOC Content were used in the Credit Union project. Volatile Organic Compounds (VOCs) are chemical compounds and known carcinogens found in many construction materials that are considered detrimental to indoor air quality. Reducing the use of VOCs whenever possible improves indoor air quality and consequently occupant health and productivity.

- Composite Wood and Laminate Adhesives used in the renovation do not have any added Urea Formaldehyde
- Adhesives and Sealants and Paints and Coatings: see below for examples of the products used.

<table>
<thead>
<tr>
<th>Product &amp; Manufacturer</th>
<th>VOC Content (g/l)</th>
<th>VOC Limit (g/l)</th>
<th>Classification</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>0223 Eco Spec Flat Latex Interior Paint - Benjamin Moore</td>
<td>0</td>
<td>50</td>
<td>Flat Interior Paint</td>
<td>GS-11</td>
</tr>
<tr>
<td>0528 Auro Semi Gloss - Benjamin Moore</td>
<td>11.4</td>
<td>150</td>
<td>Anti-Corrosive and Anti-Rust Paints</td>
<td>GS-03</td>
</tr>
<tr>
<td>Titebond Acoustical Sealant</td>
<td>42.1</td>
<td>250</td>
<td>Sealant</td>
<td>SCAQMD Rule 1168</td>
</tr>
<tr>
<td>Forbo T940 Adhesive</td>
<td>0.0</td>
<td>50</td>
<td>VCT Tile Adhesive</td>
<td>SCAQMD Rule 1168</td>
</tr>
</tbody>
</table>

Lighting Control: To promote productivity, comfort and wellbeing, lighting controls and task lighting are included such that 100% of the occupants can adjust lighting to suit their individual needs.

Thermal Comfort Survey: To ensure thermal comfort, occupants will be surveyed at least once per season for the first year of the space’s operation. Building management will adjust the heating or cooling in the project space as necessary.
Selecting environmentally preferable materials and minimizing the amount of construction waste sent to landfill was important to the project. When selecting materials, preference was given to low-emitting materials with recycled content.

79% of the construction and demolition waste was diverted from landfills.

29% of the total material value consists of post-consumer or pre-consumer recycled content.

**ENVIROMENTALLY PREFERABLE MATERIALS IN HARVARD UNIVERSITY EMPLOYEES CREDIT UNION**

- **Aluminum Panels (USG Curvatura)** Recycled Content: 90% post-consumer. Regional: 472 Miles (Oakville, ON)
- **Metal Framing Stud (Dietrich)** Recycled Content: 17% post-consumer, 37% pre-consumer. Regional: 355 Miles (Sparrow Point, MD)
- **Toilet Partitions (Bobrick)** Recycled Content: 15% pre-consumer. Regional: 142 Miles (Clifton Park, NY)
- **Particle Board (Uniboard)**: 100% pre-consumer, 3 Miles
- **Formaldehyde-Free Fiber Glass Building Insulation (John Manville)**: 5% post-consumer, 20% pre-consumer, 308 miles
- **Haring Stile and Rail Wood Doors (Hennigar Door)**: 70% pre-consumer, 21 Miles
- **Drywall (USG)**: 95% post-consumer, 5% pre-consumer, 248 Miles

**ADDITIONAL RESOURCES**

**FOR MORE INFORMATION:**

- Harvard University Employees Credit Union (HUECU): [https://www.huecu.org](https://www.huecu.org)
- HUECU - Green Loan: [https://www.huecu.org/auto-loans/go-green-save-green.,1012.html](https://www.huecu.org/auto-loans/go-green-save-green.,1012.html)
- Harvard Green Building Resource: [http://www.green.harvard.edu/theresource](http://www.green.harvard.edu/theresource)