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## Campus Sustainability

This chapter presents an overview of the sustainable principles and design goals that have guided development of Boston College's long-term planning. It also reports on the University's current on-campus sustainable practices.

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### Goals for Campus-Wide Sustainability

Several goals are central to Boston College's mission for a sustainable campus.



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### Leadership and Implementation

To successfully implement new policies or processes, sustainability initiatives require a clear stakeholder structure and rigorous methodology. In large institutions, such as a university, it is strategically advantageous to engage stakeholders at different levels and from different campus functions. The University may hire or promote an individual to coordinate all of the University's sustainability efforts. This individual would work in conjunction with representatives from across campus, to ensure appropriate feedback, support, marketing, and outreach for sustainability efforts.

Boston College is a member of the Campus Consortium for Environmental Excellence which works on sustainability in higher education. It is also an integral member of Project XL, a group of three colleges and universities working on promoting sustainable design specific to laboratory facilities.



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### Planning and Land Use

The University intends to pursue policies related to planning and land use that are compatible with the natural resources of the area, the fabric of surrounding neighborhoods, and the campus' historic character for both the buildings and open spaces. Siting of buildings and landscape features will take advantage of site

conditions and context within the parameters of the established organizational framework of the campus.



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## Transportation

The University will continue to manage transportation demand, provide alternative transportation options, and will strive to encourage the use of alternative fuel vehicles while ensuring maximum campus access.



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## Water

Boston College will investigate implementing a comprehensive approach to water management and planning to provide for phasing in alternative water management systems over time as new buildings are constructed and infrastructure demands increase. These long-term efforts would contribute to safeguarding the quality and quantity of water resources available to the larger community.



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## Energy

Energy distribution and conservation provide unique challenges and opportunities for university campuses. Boston College endeavors to successfully manage its energy consumption by focusing on ways to improve the efficiency of its existing buildings and by investigating the ways in which newly constructed buildings can be designed with highly integrated building systems that provide appropriate monitoring and sophisticated controls. The University is also committed to investigating feasible sources of on-site renewable energy and cogeneration using heat and power technology.



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## Buildings

Sustainable building practices go beyond materials, energy, and water conservation to incorporate environmentally sensitive site planning, resource-efficient building materials, and superior environmental quality. The University understands that the orientation, massing, and envelope of a building can impact its energy consumption by as much as 30 percent and will consider multiple criteria when planning projects.

As required by Article 37 of the Boston Zoning Code, Boston College will demonstrate that all buildings subject to Large Project Review will be LEED Certifiable as defined in the Code. Boston College will seek to achieve higher LEED levels as appropriate and feasible for various projects.



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## Metrics

It is impossible to judge success in environmental sustainability without evaluation or measurement. Metrics play two important roles. The first provides an understanding of targets that helps clarify expectations and communicates those expectations to others. The second role is to provide a way to measure and evaluate the value and impact of a particular effort or set of measures. Appropriate metrics provide a means for establishing intentionality, accountability, and monitoring. Boston College is committed to real-time measurement of its environmental impacts for improved education and student formation.



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## Materials

Materials and products used in construction are contributors to global and regional toxicity, resource depletion, pollution, and solid waste production. The University will consider, when available and where feasible, the use of sustainable building materials that possess some of the following characteristics – made from natural, rapidly renewable resources, recyclable or recycled content, harvested or manufactured locally, or non-toxic in use or disposal.



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## Indoor Environmental Quality

Boston College recognizes that indoor environmental quality has a great effect on the health and well being of its students, faculty and staff, and the community-at-large. The University will consider aspects of air quality, acoustics, thermal comfort, composition of building materials, and daylighting, among others, when designing and constructing new or renovated facilities.



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## Waste Management

While campuses generate huge amounts of solid waste, they offer system-wide opportunities for improved management practices. Source reduction, recycling, and reuse represent different solutions for different waste streams. Recycling programs give everyone in the campus community a tangible way to get involved and connected, learn about the systems that support the campus, and understand the ways they can have minimize their impact on the environment. Recycling programs also provide an unparalleled forum for students and others to research and to learn about economics, energy, facilities management, communications, and organizing grassroots initiatives. Boston College sees the environmental, financial and operational benefits to improving waste management practices. Boston College has

established a recycling rate goal of 85 percent for all waste materials generated in construction and renovation projects.



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## Public Awareness, Education, and Outreach

Education and outreach initiatives are only as successful as the awareness of them in the larger community. Students, staff, visitors, volunteers, and local residents are all good candidates for outreach activities related to sustainable development strategies. All parties could be engaged and made aware of sustainability and how their behavior affects it as they contribute and relate to local environments in different ways. Sustainability, education and student formation are all interrelated critical aspects of the mission of Boston College.



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## Operations and Maintenance

Operations and maintenance costs are unnecessarily high and resource intensive in typical building design. Green design intentionally keeps a long-range view and designs building systems to be robust, energy or resource efficient, durable, and easier to maintain and control. Boston College will design new and renovated facilities to reduce life cycle costs.

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## Existing Sustainable Practices

The following section provides a departmental summary of Boston College's current sustainability practices, with data listed by environmental indicators.



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## Facilities Services

There are a number of features of facilities services that offer opportunities to promote sustainability. These include electrical consumption, fuel consumption, cooling, air quality, water use, and recycling.

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## Electricity

Boston College has taken steps to improve energy efficiency. Annually, capital funds have been dedicated to advancement of energy efficient projects. These projects addressed lighting, variable drives, HVAC controls, metering and efficient HVAC equipment. Recently, the commitment has been enhanced with additional funds, the hiring of a Manager of Utilities, and partnership with the student population to establish an energy efficient campus.

Boston College's electrical portfolio included 27 percent renewable energy by January 2007. Prior year's portfolios were about 9 percent in 2006 and 8 percent in 2005.

Boston College engages in a number of practices to reduce its electrical consumption:

- Last year, BC spent about \$550,000, about 2.5% of the utility budget on energy conservation measures, including:
  - Programmed intelligent lighting systems in Higgins Hall (235,000 sf).
  - An ongoing project to install motion sensor lighting in restrooms, trash rooms, laundry rooms, conference rooms, lounges, and classrooms.
- Sub-metering, variable speed drives, and efficient air compressors were installed and lighting retrofits were made in two garages and two classroom buildings.
- The use of an energy management system has been expanded and will continue to provide energy savings.
- The University has engaged in a campus-wide energy savings campaign with student input that has resulted in significant savings over the past two years.

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## Fuel

The following efforts are designed to reduce the impact of energy consumption on energy and natural resources:

- Boston College continues to replace steam traps and existing equipment with new, fuel-efficient equipment.
- All fuel used is either low-sulfur oil or natural gas, as required by operating permits.

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## Air Quality

Boston College maintains good air quality on campus through the following:

- Calculation of CO<sub>2</sub> emissions, carbon footprint, green house gases and other pollutants by tracking fuel usage or by employing other methods used to measure success in meeting benchmarks, targets and goals.
- Boston College will consider implementing the following best practice measures to reduce emissions from diesel construction equipment and vehicles:
  - Install emissions control devices to reduce particulates and other tailpipe pollutants.
  - Burn only ultra-low sulfur diesel fuel.
  - Follow applicable anti-idling laws.
- Boston College utilizes a number of alternative fuelled (propane) vehicles with the intent of improving indoor air quality in key locations such as our warehouse and Conte Forum (fork lifts and Zambonie).

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## Water

Several measures have been undertaken to reduce water consumption.

- The University has created a pilot project to sub-meter electricity in all residence halls.
- Savings have been realized from a utilities rebate program through installing low-flow plumbing fixtures in Edmonds and 66 Commonwealth Avenue,
- Retrofitted autoclaves were installed in Merkert Center, saving approximately 0.4 million gallons per year.
- Installation of waterless systems for Merkert Center's vacuum pumps and air compressors is in progress. Expected savings are approximately 1 million gallons per year.
- Water saving and energy efficient laundry equipment has been installed in 26 residence halls.

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## Recycling and Reuse

Boston College has undertaken a number of measures to reduce waste through recycling and reuse:

- Boston College has increased the number of outdoor recycling containers across campus
- Battery and ink cartridge recycling bins are located in 25 locations in residence halls and at five central locations throughout the campus.
- Since 2003, the University added co-mingled can and glass containers in classrooms and administration buildings and has increased the number of dumpsters for cardboard, carpets, wood, metal and yard waste. Last year 55 percent of waste was recycled.
- Housekeeping has supplied 12 recycling bins to the Bureau of Conferences for use at events.
- Residence room recycling debuted in fall 2007 in all freshmen areas.
- Through the Save That Stuff recycling program, the University has saved the following from 2005 through 2007:
  - 308 tons cardboard
  - 8 tons wood
  - 6 tons metal
  - 163 tons yard waste
  - 146 tons mixed paper
  - 41 tons commingled
- Through the Institution Recycling Network (IRN), the University recycled the following amounts in Fiscal Years 2005 through 2007
  - 62.1 tons mixed electronics
  - 27.9 tons wood
  - 26.4 tons mixed metal

- 15.2 tons mixed metal appliances
- 85.6 tons surplus property
- 5.8 tons universal waste (batteries and fluorescent lamps)
- As part of the computer upgrade program, used office computers are taken back by Dell in a one-for-one exchange.
- As part of Clean Sweep, at the end of the school year volunteers collect reusable furnishings and goods left behind by students during move-out. These goods are donated to local charities.
- Several automotive parts are recycled including, car batteries (CarQuest); tires (Direct Tire), parts cleaning solution (approximately 1,800 pounds per year), and waste oil (approximately 1,600 pounds per year).



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## Capital Projects

During construction of new facilities or renovation of existing facilities, there are opportunities to recycle materials. Boston College has established a recycling rate goal of 85 percent for construction and demolition (C&D) waste generated in construction and renovation projects. To date over 95 percent of C&D waste has been recycled. General Contractors oversee recycling operations and provide a report of recycled materials to project managers.

The design of new buildings incorporates ways to improve management of stormwater. For new construction, the most efficient mechanical equipment and utilities are selected. In the renovation of residence halls, fixtures, windows, and insulation meet standards for resource conservation.



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## Environmental Health and Safety

The University employs several measures to safely manage and reduce hazardous wastes:

- The University recycles waste oil, batteries, and antifreeze.
- Thirty percent of lab solvents waste is re-used to fuel incinerators.
- There has been a major reduction in radioactive waste since 1998 through improvements in management of the approval process and how wastes are generated and stored. Radioactive waste is segregated from regular trash.
- All scintillation fluids currently used by the University are biodegradable, non-flammable and non-toxic.
- All initial waste training and most refresher training includes a segment on chemical purchase and waste minimization.



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## Dining Services

Boston College Dining Services administration places a high priority on sustainability and has made great strides to integrate sustainable efforts of local vendors and manufacturers and sustainable products into the department and University systems. Dining Services fosters a culture in which the interwoven benefits of growing, cooking and sharing food become an integral part of the University's community experience. The University fosters working relationships with local growers, manufacturers and vendors who respect and promote ecologically sensitive agricultural practices, and with food distributors who can trace their products to responsible sources.

Department accomplishments and initiatives include:

- Purchase Certified Fair Trade and Fairly Traded coffee at all restaurants.
- Provide 100 percent rBST-hormone free milk.
- Developed seasonal menus and food procurement guidelines that give priority to seasonal foods and local and regional foods.
- Support student sustainable initiatives through open communication to raise awareness about food waste and advance the reduction of food and solid waste in dining halls.
- Provide recycling of glass, plastic, metal, cardboard and mixed paper, grease, ink and toner cartridges. Sorting is done by employees at each dining location to ensure that only recyclable items are placed in the correct bins.
- Incorporate sustainable criteria in RFBs for vendor analysis and selection.
- Research energy and water efficient technologies when replacing food service equipment and purchase Energy Star or equivalent equipment.
- Added hand can compactors to the three largest operations to increase the recycling of cans used in food production.
- Added two new cardboard compactors to buildings that did not have this option available.
- Instituted more efficient recycling of cooking grease with a switch from drum waste to an enclosed system.
- Reduced dining trash at one location during a trial run of a composting program during the summer of 2007. This program will be rolled out to more units as specific challenges are solved.
- Provide an à la carte meal plan which reduces food waste (people pay for what they eat instead of all-you-can-eat for a single price).
- Offer reusable dinnerware that is strategically placed to be the primary choice for users whenever possible.
- Offer refillable fountain beverage containers as well as hot to-go cups that offer a moderate price reduction for reuse.
- Cardboard packaging from Athletic Department concessions is recycled.





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## Auxiliary Services

The following measures are used by Boston College to minimize the impact of transportation on resources:

- BC has attained compliance with Massachusetts Ride Share regulations by increasing the number of beds on campus, thus reducing the number of daily ride-alone trips by students to and from campus.
- BC operates a free shuttle bus between the Chestnut Hill Campus, Newton Campus, and into Brighton, where it serves two Green Line stops at Cleveland Circle on the C Branch and at the Reservoir stop on the D Branch. The Green Line B Branch ends at the northeast corner of the Chestnut Hill Campus and just west of the Brighton Campus.
- Boston College has purchased one alternative fueled vehicle.
- BC provides a parking space for Zipcar.



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## Procurement Services

### Purchasing

- The department's most recent contract for lamps specifies lower mercury content.
- Certain vendors are required to take their waste, including pallets and packaging.
- Boston College's main office supply vendor offers "earth friendly" products which departments can purchase.
- Twenty-one tons of surplus equipment and furniture has been donated to third world agencies when new equipment and furniture have been purchased.
- Personal computer replacement contract includes removal of old computers by each vendor.



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## Bookstore

The Bookstore reuses a large amount of material:

- An average of approximately 40,000 used text books are bought back to the Bookstore for resale by Boston College or through distributors.
- Cardboard boxes are retained and reused for returning unsold books.