

## **Standard Eight: Physical and Technological Resources**

### **Overview**

Over the past ten years, Brandeis has made considerable progress in understanding and managing its physical and technological resources, and in addressing environmental, safety, and compliance issues. Since the 1996 NEASC re-accreditation, annual capital expenditures for new facilities and deferred maintenance have increased significantly, from \$3 million in FY1995 to \$35 million in FY2005, and the University's physical plant has grown by nearly ten percent. Brandeis's capital priorities over the next six years include new science and residence hall projects, and renovations to existing academic and student facilities, with full and sustainable funding including annual costs for all new initiatives. The most pressing deferred maintenance needs have been addressed, but deferred maintenance, along with student and academic facility needs, remains significant.<sup>84</sup>

For purposes of clarity, the discussion of Standard Eight has been divided into two sections, each with its own description, appraisal and projection:

- Physical and capital resources<sup>85</sup>
- Safety, compliance, and the environment

### *Physical and Capital Resources*

#### **Description**

Situated on 235 acres, Brandeis has 2.5 million square feet within 104 academic, student, and administrative facilities. These buildings range in age from three to 55 years. Campus academic facilities include the University libraries, the science complex, the humanities quad, and an interdisciplinary research and teaching building that houses computer science, neuroscience, experimental psychology, linguistics, and cognitive science. Brandeis has 101 classrooms of various sizes. Most of these teaching spaces have been recently upgraded to meet University technology standards and to improve their physical attributes. Fourteen of the University's buildings with over 500,000 square feet of space contain research and teaching laboratories. Student facilities include nine residence halls, a campus center, a student center, an athletics complex, three chapels, an intercultural center, a health center, and a student communications center. Facilities that support the creative arts include the Rose Art Museum, the Spingold Theater, and the Slosberg Music Center.

In recent years, the University's efforts for the physical plant have focused on reducing the backlog of deferred maintenance, instituting energy savings, and improving residence halls, classrooms, and laboratories.

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<sup>84</sup> See [www.brandeis.edu/evpcoo/](http://www.brandeis.edu/evpcoo/) for more details.

<sup>85</sup> Discussion of the resources related to information technology can be found in Standard 7.

### *Deferred Maintenance*

The \$25 million Infrastructure Renewal Project was started in 2004 and substantially completed in FY2006. The project included residence hall fire safety programs, steam, electric and water system improvements, roof repairs and replacements, pedestrian safety and signage improvements, and classroom improvement and technology enhancements. The Infrastructure Renewal Project reduced the deferred maintenance backlog, as evidenced by an improvement in the Facilities Condition Index (FCI) from an estimated 16 to an anticipated 15 percent.<sup>86</sup>

The *Integrated Plan* projects \$7 million available for deferred maintenance in FY2007, compared with \$14 million needed to keep pace with annual inflation and depreciation. The Plan projects a gradual increase in deferred maintenance funding and the achievement of a 13 percent (“good”) FCI by FY2012. The introduction of new facilities, the demolition of older facilities with high deferred maintenance costs, and increased annual deferred maintenance funding will enable the University to achieve this goal.

### *Energy Savings*

Energy prices have been unstable during FY2006. While natural gas prices declined after several months of dramatic increases during fall 2005, electricity and oil prices have increased. The University initiated an energy conservation program in FY2005 that has already reduced, and is projected to further reduce, energy consumption in an attempt to lower costs and mitigate price increases. The Office of Energy Conservation estimates that the University will avoid approximately \$1 million in costs in FY2007 as a result of these measures.

The Office of Capital Projects, working with the University’s energy manager and the Office of Facilities Services, is currently developing “green building” guidelines, intended to serve as a framework for more fully incorporating in University capital projects environmentally responsible building methods and elements that are appropriate to the local microclimate, the overall campus, and the University’s mission. In addition, infrastructure bond funds were allocated for FY2005 and FY2006 for energy and water conservation projects. Energy saving projects planned in the coming year include energy efficient lighting and occupancy-sensing controls (currently underway), energy efficient fans and pumps, improved building heating, ventilation and air conditioning control systems, and utilization of water conserving fixtures.

### *Residence Halls*

The University’s long-term strategic plan for undergraduate housing, developed in 1999 with the consulting assistance of Biddison & Hier, Ltd., provides for a

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<sup>86</sup> The Facilities Condition Index (FCI) is one measure of the health of physical resources. The FCI divides an institution’s deferred maintenance backlog by the institution’s facilities replacement value. A rising index indicates that an institution’s facilities, in total, are deteriorating. The Association of Physical Plant Administrators (APPA) uses a scale that is expressed as a percentage, where Excellent is 1-5%, Very Good is 5-10%, Good is 10-15%, Fair is 15-20%, and Poor is above 20%.

new 150-bed residence hall on the South Campus. The University took an important first step in achieving the strategic plan with the completion in 2003 of the Village, a 220-bed residence hall designed by Kyu Sung Woo Architects. Biddison & Hier is now working with the University to assist with programming the new 150-bed residence hall. The new residence hall will allow the University to come close to its goal of providing campus housing for 90 percent of its undergraduates. At the same time, renovations to existing residence facilities are being carried out on a phased basis. Scheffres Hall was renovated in late 2004 (80 beds), Gordon Hall was renovated in 2005 (80 beds), and 100 beds in Renfield Hall in Massel Quad are being renovated during the summer and fall of 2006.

The University's residence halls are all fully fire-code compliant. Moreover, the University's highest priority for the Infrastructure Renewal Project continues to be the acceleration of upgrades to these systems to bring them up to the latest standards for fire safety. By August 2005, 91 percent (2,437 of 2,678 beds) of the University's housing stock met the latest fire protection system standards.

#### *Classrooms and Laboratories*

Based on the recommendations of the study carried out by Rickes Associates, a number of classrooms have been added or are being added in conjunction with new facilities. These include the new seminar room in the Village residence hall, several new seminar rooms in the newly renovated Abraham Shapiro Academic Complex, as well as new, tiered classrooms under construction in the Schneider Building, and new classrooms in the planned Science Complex. Over the past two years, the Classroom Improvement Project has dedicated over \$2 million to improving approximately 60 classrooms, including complete renovations of two tiered classrooms, technology upgrades and standardization, and renewal of finishes, and replacement of furniture. With the most recent major upgrade to classrooms, 90 of the University's 101 classrooms have been improved over the last five years. In addition to the Classroom Improvement Project, \$300,000 has been allocated in FY2007 for additional upgrades and technology enhancements to continue to bring all classrooms up to University standards. This allocation is projected to be included in the budget for years beyond FY2007.

Newer laboratories, such as those located in the Volen Center, are in good condition while older laboratories, such as those in Kalman and Friedland, need to be replaced because they are no longer adequate to support modern science or current instructional requirements. In 2001, the University engaged Goody, Clancy & Associates to carry out a space utilization and functionality study of Brandeis's entire 500,000-square-foot science complex. Currently, with the assistance of Payette Associates, planning and schematic designs for a two-phase project are underway for a renovated and fully-integrated science complex with two new research and instructional buildings at its center.

#### **Appraisal**

Four main elements have contributed to the transformation of the Brandeis campus over the past decade:

- effective planning based on the Campus Master Plan, the *Integrated Plan* and other facilities' studies;
- increased funding for capital needs;
- effective management of renovation and new construction projects' planning, design and construction;
- facilities' operations and maintenance.

The foundation exists to realize the physical facility recommendations of the *Integrated Plan*. In November 2005, the Board of Trustees approved a \$154 million Science Project plan to be funded by \$80 million in debt and \$74 million in gifts.

#### *Effective Planning*

The Master Plan, which was developed with Chan Krieger & Associates between 1999 and 2001, provided the analytic basis for physical plant planning and management. The Master Plan established the outline and structure for an ongoing facility planning process for the University for the first time since the 1960s.

The need to address deficiencies of an aging infrastructure was highlighted as a first priority in the Master Plan. This priority emerged from discussions with the Physical Facilities Committee of the Board of Trustees and from studies carried out for the University by Vanderweil Facility Advisors and Sightlines Facilities Asset Advisors, which assessed the condition of the University's facilities. In addition, in 2002, the University engaged Rickes Associates to carry out a study of existing classrooms with regard to type, quantity, capacity, and character. During 2003 and 2004, new standards were developed for Brandeis classrooms and classroom technology with the consulting and design assistance of Einhorn Yaffee Prescott and Vantage Technology Consulting.

The University has also engaged faculty, staff and students in collaborative processes regarding facilities planning through open forums, capital project committee meetings and informational community memos. Over the last five years, the University constructed two new buildings (Shapiro Campus Center and the Village Residence Hall), renovated an existing structure (the Abraham Shapiro Academic Complex), and constructed additions to two buildings (the Lemberg addition to the Sachar Building and the Lois Foster Wing of the Rose Art Museum). All of these projects were fully gift funded. During the last ten years, the University renovated a portion of the Usdan Student Center, added three new facilities for foundation and federally supported scientific equipment, completed renovations for the Women's Studies Research Center and expended \$25 million in infrastructure renewal projects. These projects were funded from a combination of grants, gifts, annual budget funds, and debt.

#### *Increased Funding*

Guided by the *Integrated Plan* and the Campus Master Plan, the University has identified \$310 million in capital priorities for funding during the planning period (FY2006-FY2012). It is projected that by FY2012, the \$310 million can be funded from \$130 million in gift funding, \$80 million in renewal funds<sup>87</sup> and \$100 million in new debt. As a comparison, during the study period (FY1999-FY2005), the University completed approximately \$146 million in capital projects, which were funded by \$81 million in gifts, \$24 million in new debt and \$41 million from budgeted renewal funds.

The funding plan for the new science project calls for \$80 million in new debt and \$74 million in Extended Campaign gifts. In January 2006, the Board's Executive Committee approved two swap debt contracts totaling \$100 million—\$80 million for the Science Project and \$20 million for a new undergraduate residence hall. The balance of these projects will be funded through gifts. In addition and in accordance with the *Integrated Plan*, planning and design are underway for a new arts facility and Phase II of the Rose Art Museum, which are also gift-funded.

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<sup>87</sup> Facility renewal (depreciation) is funded in the operating budget.

### *Capital Project Management*

In 2000, the University established an Office of Capital Projects, which is headed by a Vice President for Capital Projects. At the same time, the University appointed a Vice President for Campus Operations to lead the Department of Facilities. The University's Office of Capital Projects has adopted a capital project management approach that combines strong in-house staff capabilities with the construction management expertise of an outside firm. Leggatt McCall Properties, a Boston real estate development and management firm, has provided senior project management on several recent projects, including the University's infrastructure renewal program. The Office of Capital Projects has focused primarily on the planning and programming phases of projects and has supervised the project design process.

Typically, project management for major capital projects involves a team relationship in which a Brandeis project manager and a Leggatt McCall senior project manager cooperate closely in dividing (and sharing, as appropriate) the many responsibilities associated with the management of complex capital projects.

### *Operations and Maintenance*

The Department of Facilities Services has approximately 140 staff members who provide custodial services, grounds services, garage and mechanical services, and other trades services, including staff carpenters, locksmiths, painters, electricians, plumbers, HVAC mechanics, firepersons, boiler engineers, and tradespersons' helpers. Local 615, AFL/CIO S.E.I.U represents employees in direct service positions. The union positions total approximately 109, with 63 allocated as custodians, eight as grounds and 38 as trades' positions. The remaining 28 employees are exempt and non-exempt managerial, supervisory, administrative, and production staff.

### **Projection**

An ambitious agenda for the development and improvement of the University's physical plant is embedded within the *Integrated Plan*. That agenda derives from an in-depth understanding of current conditions and capacities of existing facilities and a projection of future needs. The agenda is grounded in a realistic projection of resources that potentially will be available to support the achievement of physical plant goals. Underlying the University's plans for its physical plant is the clear understanding—highlighted in the campus master plan—that the University must not focus only on new facilities but rather must work diligently to protect existing facilities and to rehabilitate and adaptively reuse those, in cases where that would be both effective and efficient, to support the programmatic goals of the *Integrated Plan*.

The *Integrated Plan* recognizes that new science classrooms and laboratories are essential if the University is to maintain its research pre-eminence in the sciences and its competitive position with peer institutions. The new science center will add approximately 50,000 net square feet in research and teaching space. The science complex will include updated and expanded undergraduate teaching facilities and new state-of-the-art and renovated laboratory space for research

groups. It will also provide the ability to easily reconfigure research and teaching space, as dictated by future needs, without costly renovations. Laboratories will be arranged so that research groups with mutual interests are adjoining. The space is also planned to encourage "random collisions" through better physical connectivity of the science complex, the creation of a shared eating and socialization space, and increased use of common facilities and equipment.

In addition to the sciences as a focus for physical plant development, other academic priorities across the curriculum are identified in the *Integrated Plan*. Most immediately, those include completion of the Heller School's Schneider Building and renovation of Heller-Brown. In addition, planning is complete and design is underway for an expansion of the Rose Art Museum, a new undergraduate residence hall, and the Edmond J. Safra Center for the Arts, which will replace and renovate currently inadequate fine arts teaching and studio space and provide modern facilities for the creation and study of the visual arts. Planning is underway for a graduate residence facility for the International Business School, and discussions are underway for academic facility additions and improvements in the social sciences and humanities, as well.

With regard to these academic facilities priorities, the Student Life priorities discussed earlier, and other facilities priorities, the University will continue to evaluate on an ongoing basis the condition of its physical plant and assess its progress in meeting established priorities.

### *Safety, Compliance, and the Environment*

#### **Description and Appraisal**

The three facets of Brandeis's obligation to its students, faculty, and staff to provide a safe environment for teaching, learning, and research are public safety, legal and regulatory compliance, and facilities and environmental management.

#### *Public Safety*

The Department of Public Safety employs a 25-member police force operating around the clock to manage campus-wide security and safety patrols; traffic control; enforcement of University driving and parking regulations; protective custody of University offices, classrooms, and residence halls; and professional inquiry into incidents involving theft, trespass, and related matters. In the past five years, the University has added the Emergency Blue Light Phone System, in addition to an extensive CCTV system, which is monitored 24 hours a day. This past year, the University initiated criminal background checks for new hires in sensitive positions, e.g., housekeeping staff, maintenance staff, locksmiths, quad directors, resident advisors, and those with unmonitored access to minors. In addition, several buildings on campus have card access that is monitored by Public Safety, and such systems are included in all new construction and are added to facilities undergoing major renovations.

The University also employs a University Safety Officer and a Radiation Safety Officer and has several committees, including Laboratory Safety and Biosafety, committed to protecting all members of the University community.

*Legal and Regulatory Compliance*

University facilities are constructed in accordance with all local, state, and federal requirements applicable at the time of construction. The laws of the Commonwealth of Massachusetts confer general responsibility on local building, fire prevention, and electrical and plumbing inspectors to approve plans before construction, to inspect work during construction, and to approve occupancy permits upon the completion of construction.

*Facilities and Environmental Management*

By monitoring buildings regularly and through necessary improvements and upgrades, the University has experienced a substantial decrease in citations from the EPA, the Commonwealth, and the City of Waltham. In February 1998, the Department of Environmental Protection (DEP) conducted a Comprehensive Compliance Inspection at Brandeis in order to determine the University's compliance with state environmental regulations. Eight violations were cited in that inspection. In January 2005, the same inspection was conducted and only one violation was cited. The University took the necessary steps to correct the violation, and, upon follow-up inspection, the University was deemed to be in compliance, and no fines were assessed. In a continuing effort to comply with state and federal regulations, Brandeis also participated in the EPA's Audit Policing Program in 2002. The purpose of the audit, conducted by Triumvirate Environmental, was to identify any areas of non-compliance, disclose such issues to the EPA, and voluntarily correct them. Upon completion of the audit, Brandeis submitted Triumvirate's findings to the EPA and corrected all violations. Because the disclosures fell within an EPA penalty forgiveness provision, no fines were assessed.

## **Projection**

Security policies and issues relating to Brandeis University and its community are reviewed on an ongoing basis by the Director of Public Safety along with other appropriate parties, depending on the type of policy being reviewed. For example, security issues concerning students would also be reviewed by a representative from the Division of Students and Enrollment, while issues related to employees may be reviewed by the Office of Human Resources. Representatives from various campus constituencies are consulted before major security policy changes are implemented. The University Personal Safety Committee, which includes faculty, staff, and students, meets throughout the year to review safety concerns identified by the various committee members.

Many new campus buildings, such as the Schneider Building, and renovation projects, including the Infrastructure Renewal Project, now incorporate sustainable or environmentally friendly design. A new Energy Savings Program has also been implemented, and its success will rely, in part, on the institution of numerous conservation initiatives that will require the support of students, faculty, and staff. The University administration is working closely with the student organization BEST (Brandeis Environmental Sustainability Team) to develop a plan to inform the Brandeis community about ways in which all members of the community can contribute to reducing energy use and improving the University's environmental practices.

Brandeis is currently conducting a review of all buildings constructed prior to 1972 to determine the potential liability for legal obligations associated with the retirement of tangible long-lived assets, in compliance with Financial Accounting Standards Board Interpretation No. 47 (Fin 47).<sup>88</sup>

## **Institutional Effectiveness**

Through evaluation of internal capital projects, accumulated expertise of Facilities Services staff, and various studies by outside consultants (including Biddison Hier and Chan Krieger) the University is effectively addressing aging facilities and planning for new facilities. Investment in these facilities has been and will continue to be guided by the University's *Integrated Plan*, which was developed through careful planning, in-depth analysis of peer institutions, past practices, current resources, and projected future resources. This plan has identified capital priorities for the next seven years as well as the funding necessary to complete the chosen priorities. The University, with the oversight of the trustees will continue to consult outside experts, such as Sightlines and APPA, and internal groups and faculty committees, such as the Science Faculty Planning Committee, on capital priorities, facility renewal and development in order to remain attractive to students and competitive with peers. Guided by

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<sup>88</sup> Fin 47 provides clarification of Financial Accounting Standards Board No 143 "Accounting for Asset Retirement Obligations" and includes guidance about how the University must calculate the liability, including how to estimate the present value of the cost of asbestos removal from those buildings being reviewed, how to capitalize this estimated cost, and how to expense it over the remaining useful lives of these buildings as depreciation expense.

this ongoing consultation and by the *Integrated Plan*, the University will continue to provide reports to all involved committees and implement projects as appropriate and able.