

Department of Facilities

As showcased in the second annual Facilities Forum, the Operations and Campus Planning, Engineering, and Construction (CPEC) areas of the [Department of Facilities](#) continue their focus on collaboration and integration, both with each other and with the community. The development of the new Accelerated Capital Renewal program and the creation of the Comprehensive Stewardship Group highlight these partnerships.

Facilities Operations continues to sharpen its performance edge to meet fiscal goals and a growing portfolio. This year, the group embarked on developing a bold strategic plan to lead the organization into the future.

Administration

Communications

The Communications team completed work on a new branding for the Parking and Transportation Office to promote the office's many commuting programs. This new Commuter Connections program was launched at the parking coordinators luncheon in July 2011. The initiative, including new signage for the effort, was a great communication success at the Institute and was instrumental in decreasing single-occupant vehicles on campus.

Other communications efforts include support of recycling on campus. The communications manager organized a table in Lobby 10 to promote Recyclemania 2012. She also served as one of the co-chairs of the Green Committee, which promotes sustainable practices at MIT. In November 2011, she organized a monthly Choose to Reuse event for the community, which has turned into a monthly highlight due to popular demand. At the event, Facilities programs are promoted to raise awareness of sustainability efforts by the department.

Other communications efforts included an interactive PDF of a Facilities Services Catalogue to explain the core services of the Operations area within Facilities. The Communications team created promotional materials and assisted in the communication effort for the Know Your Numbers event, sponsored by Human Resources and MIT Medical's Wellness Program. The team continues to publish monthly projects profiles that promote the accomplishments of the Operations areas.

A major project for the coming year is to complete the redesign and rewriting of the Security and Emergency Management Office (SEMO) web pages, including the Card Office, to make the information easier for the user to access.

Environment, Health, and Safety

The Department of Facilities environment, health, and safety (EHS) manager welcomed a full-time employee to the staff. The Facilities EHS specialist Brandon Andrews came aboard in October 2011 and was charged with improving customer focus by increasing the amount of field time with the Facilities workforce.

Technological advances were implemented to support and maintain compliance with the US Occupational Health and Safety Administration's laws, such as safety equipment inspections, control of hazardous energy, and chemical hazard communication. These advances are also designed to maintain data and expand access of information to a larger audience.

Fall protection and safety hazard prevention within Facilities spaces continued to be a focus. An audit of all Institute rooftops began in November 2011 and is expected to be completed by fall 2012. The goal of the audit is to identify existing hazards to which service staff could be exposed, to provide mitigation recommendations, and to track the status of improvements as they are completed.

In 2011, Facilities offered a Safety Culture Survey to all Operations staff in order to identify strengths and weaknesses within the current safety culture. The survey indicated that there were existing safety culture elements that could be nurtured to influence operational safety. The survey results were presented to all managers, supervisors, and many service staff. Facilities will continue to use this survey as a baseline to improve the safety culture.

Facilities and the central EHS office collaborated on many accounts throughout the year. A priority was placed on training initiatives, program and policy updates, and new construction safety reviews.

Finance and Accounting

In FY2012, the Finance and Accounting team worked with the Information Services and Technology (IS&T) office to review the procedures and processes utilized in systems applications products (SAP) for dual cost accounting by capturing financial activity in all Operations units and building cost centers. The objective was to identify areas for enhancement, to improve efficiency and managerial reporting capabilities, to minimize the need for customized programming in SAP, and to reduce the need for manual transaction processing. The review confirmed the complexity of the existing system and process and the challenges faced to make improvements. This project will continue into FY2013 and beyond.

The team had numerous successes in automating procedures in the Facilities stockroom to improve efficiency and customer service, and to reduce paper. In addition, the team continues to leverage available financial tools and eliminated petty cash accounts by switching to the electronic request for payment, reduced invoices processed by using the procurement card and the electronic catalog, and streamlined travel administration using the MIT travel card and the Concur system.

Human Resources and Labor Relations

The Facilities human resources director sponsored and co-presented with the Association of Physical Plant Administrators a 32-hour training curriculum emphasizing supervisory competencies in the field of educational facilities management. MIT's central human resources office and the Office of the General Counsel provided harassment and civility training to all members of the Department of Facilities. A number of training and development initiatives are in process, including the implementation of a web-based performance management system.

In March 2012, four Facilities employees received an MIT Excellence Award in the Greening MIT category for their work on the Commuter Connections program: Lawrence Brutti, Parking and Transportation Manager; Robynn Cruz, Parking and Transportation Coordinator; Ruth Davis, Communications Manager; and Melody Craven, Communications Assistant.

Information Technology

The Applications and Desktop Services group continued to play an active role in both department and Institute-wide initiatives. The group continues to enhance mobile functionality within the department with iPads and iPhones for employees who benefit from them. The project to enhance mobile access to SAP Plant Maintenance, which is used for work order management in Operations, continues. In collaboration with IS&T and SAP representatives, a multiyear effort was launched. The first phase of the project, which focuses on master data, is nearing completion. Planning has begun for the second phase, which focuses on the customer interface.

The Applications and Desktop Services group also collaborated on projects to increase options for the MIT community to report issues to Facilities. The Work Order Mapping project for reporting issues via a map interface is nearing implementation. In addition, the group participated in a discovery project for the system that tracks keys at the Institute and helped expand the use of the SCLogic mail and package tracking software application to more areas of Facilities.

Operations

The Operations group had a busy year supporting the opening of Maseeh Hall while continuing to support the final events of MIT's 150th anniversary celebration. Additionally the group embarked on a strategic planning initiative that will lead the organization into the future as a more proactive steward of the campus's physical resources.

The group continued technology efficiency enhancements to support the growing and increasingly complex campus. Partnering with IS&T, several significant projects were undertaken, including a discovery project for the key request process, the first phase of a multiyear plant maintenance enhancement project, and a small-scale discovery project for financial double posting.

As a partner in the Accelerated Capital Renewal program, Operations has supported the development of the program as well as initiating and managing many of the projects launched during the year.

Because of a development project, Grounds Services needed to relocate this year. Facilities Campus Planning and Design (CPD) staff studied options for relocating Grounds Services with Repair and Maintenance in a collocated facility. After a thorough planning study and evaluating multiple options, a temporary facility for Grounds Services was chosen at the West Parking Lot. Construction is scheduled to be completed in September 2012.

Custodial Services

During the past year, Custodial Services completed an aggressive program to upgrade the appearance of the Main Group by refinishing flooring in the corridors, with special attention given to Lobbies 7 and 10. This included an increase to the floor maintenance schedule that helped preserve the floors' presentable appearance.

The Integrated Pest Management (IPM) program continued to develop and show positive results in FY2012. The program is a collaborative effort between Custodial Services, Grounds Services, and Facilities EHS, a consultant entomologist, and the pest control vendor. The areas, working as a team, address the source and root causes of pest control issues. During the past year, the IPM team had success in a number of buildings by identifying and eliminating the sources, which minimized pest issues.

An example of support and success for the program was the installation of new exterior compacting waste receptacles on Institute grounds. These units are sealed and do not allow pests access to a food source. In concert with Grounds Services, the IPM committee recommended the expansion of this receptacle program to include the entire campus. Funding was quickly provided, receptacles were installed, and data indicates a substantial decrease in pest activity.

A new custodial position, working foreman, was created to assist the supervisors with training, project work coordination, and communication with the custodial staff. There are currently six staff members in these positions. Since this position is at a new level, it also provides a career development opportunity for the custodial staff.

Custodial Services improved its management organization by adding a senior supervisor position to the evening shift. The position has improved quality and customer relations during the evening hours. The evening work shift had been scheduled from 4 pm to 12 am. New staff members are scheduled from 6 pm to 2 am to accommodate the increased activity at the Institute during the early evening hours.

Looking forward, the goal is to present the Institute in the best possible light by sustaining the present level of appearance in the Institute's public areas and to improve services in classrooms, laboratories, and offices through enhanced staff development and better cleaning technology and sustainability.

Customer Service Center

The Customer Service Center continues to improve access and communications between Facilities Operations and the community. The center implemented a public inspection program that has resulted in face-to-face customer contact and increased proactive repairs. Changes to the review process of work orders has improved the historical database of Repair and Maintenance work orders and helped identify repeating equipment issues, thereby reducing the need to reopen work orders.

Grounds Services

Grounds Services continued to make incremental improvements over the past year to advance the primary mission of exterior campus cleanliness and continuous landscape and hardscape improvements.

The alley between Bexley Hall and the Kresge Chapel was repaved and pedestrian walkway markings were added. Bollards were installed on each end to limit the access of vehicles. This improvement has enhanced the aesthetics of the area, and the alley has become the preferred path of travel between the Stratton Student Center and Maseeh Hall.

The six white pine trees between Buildings 54 and 18 have always been a maintenance challenge because of the small amount of pervious surface surrounding them and the limited space for root growth. Following research and consultation with an arborist, green giant arborvitae were chosen to replace the pine trees. The arborvitae will require minimum maintenance, will grow as tall as the pine trees, and are more tolerant of the existing environment.

After contracting the hydroseeding of several areas over the last two years and having success with hydroseeding, the Grounds Services management team decided to invest in a small hydroseeding machine this year. This machine will allow the landscape workers to more quickly and efficiently repair lawns that have become damaged by construction projects and large events. The machine will also be used for enhancements during spring and fall lawn restoration.

During midsummer, it has always been a challenge to keep the weeds in planting beds and on the hardscape under control. The Grounds Services management team began to address this problem by overseeing the regular application of pre-emergent herbicide and using a natural vinegar solution. The team has had some success and hopes to refine this process moving forward.

As was done over the last several years, the plantings from this year's Commencement stage garden were reused around campus. Ten trees, 40 shrubs, 190 perennials, and 300 annuals were dispersed to 20 locations on campus.

The Recycling Program purchased and installed 50 solar waste compactors, which brings the total number of units on campus to 88. These units save labor hours by reducing the frequency of collections needed.

Grounds Services will relocate its operation when its new structure in the West Annex Lot is completed in September 2012.

Mail Services

As a result of campus growth, new drop-off and collection points were added around campus. Consequently, delivery routes were adjusted and teams and workloads within Mail Services were realigned.

Mail Services purchased an x-ray machine and a trace detection unit, which have improved identification of potentially dangerous mail. Mail Services employees received training and were certified to use this equipment.

Also, Mail Services worked closely with representatives from EHS, the Insurance Office, the Office of the General Counsel, the Office of Sponsored Programs, and the Procurement Office to stay informed and compliant with the ever-changing shipping regulations, especially in hazardous materials and international destinations.

Off-Campus Facilities

Bates Linear Accelerator

The Bates Linear Accelerator in Middleton continues to support the many nuclear science programs presently in progress, with special attention given to the High Performance Research Computing Facility. The focus is on improving and/or renewing structures, systems, and equipment in need of replacement. Recent improvements and upgrades have included exterior painting, interior space restoration, exterior drainage repairs, installation of an electrical ground detection system for substation #5, and tree/brush cutting to reduce the perimeter overgrowth. Additional projects with electrical systems; heating, ventilation, and air conditioning systems; and roof replacements are currently in the project development stages. The wind turbine study and data collection continues, with a report on its feasibility due shortly.

Wallace Astrophysical Observatory

The Facilities team at Bates Linear Accelerator continues to support the Department of Earth, Atmospheric, and Planetary Sciences users at the Wallace Astrophysical Observatory, making noticeable improvements to the facility in the past year. Improvements included the replacement of all exterior windows with new low-E argon windows, paving and landscaping to the main access road, and forestry grooming to reduce the interference with the projection angle required for the larger telescopes at the site.

Health and Wellness Center (Annex 5) at Lincoln Laboratory

Project and maintenance work was completed over the past year on both the exterior and interior of the Health and Wellness Center at Lincoln Laboratory in Lexington. Replacement of a lower roof, caulking, and painting of the entire exterior were completed. Interiors of both the medical and athletic departments were painted. The men's shower room located in the Health and Wellness Center was repaired and retiled due to severe water and mold damage.

Massachusetts Green High-performance Computer Center

Operational support from Facilities with the new Massachusetts Green High-performance Computer Center (MGHPCC), located in Holyoke, has been ongoing. As the transition from construction and commissioning rolls over to operation and maintenance, guidance and support continues to be provided in conjunction with the other colleges: Boston University, Northeastern University, and Harvard University. The selection of the site facility manager and the facility management company was completed. Reviews of warranties, systems, equipment documentation, and operational procedures will continue until the construction phase is complete.

Parking and Transportation

The Parking and Transportation Office was recognized with a Pinnacle Award for Excellence in Commuter Options by the Massachusetts Department of Transportation. The office also supported MIT bicyclists who had a first place win in the 2012 MassCommute Bicycle Challenge.

The office rolled out the Commuter Connections branding in an effort to make students and staff aware of the many commuting options available to them. Sustainability initiatives included the installation of six electric vehicle charging stations in three locations on campus; implementation of the Zipcar 18+ program, which allows students 18 years of age and over to open a Zipcar account; increase in the number of Zipcars on campus to 20; rollout of the Zimride rideshare website, which assists MIT students and staff with creating a carpool or finding a ride; continuation of the bike rack replacement program throughout campus; upgrade of the shuttle fleet, which is now 100% handicap accessible and operable on biodiesel fuel.

Other accomplishments of note during the past year are installation of automated event parking equipment in the West Garage, allowing event attendees to self park for a modest fee, and continued expansion of the self-service options by making temporary parking passes available online.

The office managed the operation of parking, transportation, and commuter programs, including the allocation of 4,323 parking spaces in 39 locations, the annual parking permit application and distribution process for 7,280 permits, 68,000 monthly subsidized Massachusetts Bay Transportation Authority passes, and nearly 1,000,000 passengers on the campus shuttles.

Recycling

Efforts in recycling continued to be successful despite a 1% drop in the recycling rate. The drop was due to a 25% decrease in yard waste that resulted from a change in lawn maintenance. Lawns that had been sodded previously were reseeded this past year, reducing yard waste; yard waste is typically 8% of the materials recycled on campus.

As described in the Grounds Services section, Recycling took the lead with the purchase and installation of solar trash compactors and now has taken over emptying them.

The Recycling team worked with Custodial Services and the Communications team on a new program that educates the MIT community about keeping the hallways clear. To deter the abandonment of items in hallways, Facilities has waived the fee to departments, labs, and centers for the removal of any items, including white goods. This effort has been successful in decreasing the clutter in the hallways since its implementation in April 2012.

Repair and Maintenance

During the year, Edward Rita was promoted from plumbing supervisor to the position of assistant manager of Repair and Maintenance. Mr. Rita's main focus was to establish a new Comprehensive Stewardship Group.

The Comprehensive Stewardship Group was established with the goal of maintaining 11 of MIT's newest buildings in like-new condition. This self-sustaining group within Facilities is made up of tradespeople and management staff dedicated to performing proactive maintenance on the selected buildings. The standard by which the group will operate will be at a level that is in line with the Association of Physical Plant Administrators' service level two, described as "comprehensive stewardship." The buildings that are part of this initiative are Buildings 6C, 32, 46, 76, E14, E60, E62, W1, W35, W79, and NW35. Repair and Maintenance will continue to serve the rest of the campus under its current structure and service level.

As part of the Accelerated Capital Renewal program, Repair and Maintenance tradespeople as well as management staff were asked to advise on capital renewal projects.

Repair and Maintenance undertook a sizable project under the Major Repair Order program to balance airflow in Building 68, and made structural upgrades to major air handling units in Buildings 68, 13, 46, and 16.

The Maintenance Mechanic team that was formed last fiscal year managed to reduce its backlog by 25% below FY2011. This has allowed the team to take on a role assisting the Preventative Maintenance team with more proactive work.

Repair and Maintenance established a set of metrics to track and assess performance of individual teams. The main focus was the number of work orders over 60 days, the average age of work orders, the average turnaround time of work orders, and the missed frequency of scheduled preventative maintenance work orders.

Recommendations from the energy savings service provider Clockworks were acted upon, resulting in energy savings and the proactive handling of complaints regarding overheating and overcooling in Building 46.

The Public Area Inspection program continues to function and proactively address cosmetic repairs in building entryways, hallways, bathrooms, elevators, and lobbies.

Security and Emergency Management Office

The Security and Emergency Management Office expanded this year to include the Card Office. The transition was a success and included the hiring of a full-time employee, Kevin Schendell. His addition, along with the additional training of personnel in both locations, has allowed for greater flexibility in scheduling coverage both at the Card Office and the SEMO office. Mr. Schendell was trained to upload the alarm codes into the control panels remotely, thereby providing a timelier update into the systems. In an effort to support the Human Resources program for verifying I-9 forms, the Card Office vacated an office to allow for this verification process to be conducted in closer proximity to the other “first-day needs” of new employees.

The Emergency Management side of SEMO has been selected to participate in a pilot program that will evaluate and score emergency management preparedness. MIT is one of only four universities nationwide to be chosen to participate in this pilot program. The first site visit by the accreditation committee is scheduled for August 2012.

As a member of the Boston Consortium, SEMO was able to implement a new web-based program called WebEOC, which allows for improved documentation and sharing of critical information and updated statuses during an emergency. The program also allows for seamless sharing of information during an emergency, both within the emergency operations center and with similar users outside of MIT.

The Project Management section of SEMO worked closely with CPEC to ensure that capital renewal and renovation projects integrated seamlessly with alarm and card access devices.

The Background Check program continued to evolve as more departments, labs, and centers embraced the advantages of using this resource during their hiring process. During FY2012, SEMO processed 324 individuals in a variety of unique checks.

The key distribution service continued to improve through enhanced reconciliation with the actual stock. Periodic reviews of doors that contain card readers were scheduled, eliminating the need to carry that particular key in the inventory. A discovery project was launched to facilitate ideas on how to further improve this service to the community.

The repair and maintenance of SEMO infrastructure and data collection was enhanced by the transition from the Request Tracker system to the SAP Request for Services system, which includes inventory monitoring. The new system tracks where and when services are provided and documents where resources were distributed using metrics in SAP.

Vendor Management

A centralized resource within Operations, Vendor Management expanded its role as a source to qualify and contract service providers for routine maintenance and repair. The scope includes developing request for proposals, analyzing bids, budgeting, and summarizing data across all operational areas in search of vendor management solutions that maximize cost benefits, quality service, and timely response. Approximately \$200,000 in annual savings has been realized, with \$600,000 in savings over the life of the contracts since inception. More than 175 vendors providing various services and 30 contracts have been added to the database.

Utilities

Central Utilities Plant

The Central Utilities Plant (CUP) continued to provide reliable, low-cost electrical, steam, and chilled water service to the majority of the Institute's buildings, laboratories, and centers. Utilities personnel conducted tours of CUP for numerous groups, including some from other universities and outside organizations.

To ensure its continued and reliable operation, the gas turbine underwent routine maintenance at two different points during the year. These maintenance efforts were highly successful and resulted in reliable operation of the gas turbine throughout the year.

A major construction project that added a 100,000-pound-per-hour steam boiler, Boiler 9, to CUP was completed this fiscal year. This boiler was installed to provide firm steam capacity to MIT's growing campus. Boiler 9 replaced Boiler 8, which was of lower capacity and could not have its operating permit extended because of poor environmental performance. Boiler 8 was sold to a firm that provides rental boilers and was removed from the campus. As part of the project, a new building, N16B, was constructed to house Boiler 9 and Boiler 7, replacing an enclosure that only partially covered Boilers 7 and 8. Additionally, the individual exhaust stacks for Boilers 7 and 8 were replaced with a single stack that serves both Boilers 7 and 9.

Other major improvements include a new deaerator—DEA 3—condensate polishers, condensate sand filters, and condensate dealkalizers. DEA 3 replaced DEA 1, which was too small to carry the full load of the plant. Before DEA 3 was installed, the plant relied on DEA 2, which is over 40 years old and well past the normal lifespan of a deaerator. Following inspection and repairs, DEA 2 will be returned to service as a standby deaerator. The addition of DEA 3 made a major improvement to the reliability of the plant.

The new condensate polishers replaced 20-year-old polishers that were in poor condition and undersized for the current capacity of the plant. The addition of the sand filters and dealkalizers made further improvements to the plant's ability to properly clean and treat the feed-water to the boilers, which will extend the life of the boilers.

A new rotary screw, oil-free air compressor with an integrated air dryer and variable speed drive was also added to CUP this year. This more efficient air compressor, AC 3, provides instrument air to CUP and to a number of buildings on campus. It is anticipated that AC 3 will save approximately one million kilowatt hours of electricity per year.

MIT's partnership with Ictec, a firm specializing in improving commodity purchasing strategies and dispatching production assets to maximize efficiency and minimize costs, has continued to deliver significant utility savings. During the past year, these strategies saved the Institute more than \$1 million in commodity costs.

Chilled Water Production

Major repairs were made to Cooling Towers 1 and 2 during this fiscal year. These cooling towers, which are approximately 45 years old, were in poor structural and mechanical condition. The repairs included replacing most of the wooden structural members, the end walls, the top deck, the torque tubes for two of the four fans assemblies, and the fill. These towers should not require further major repairs for five years or more.

Steam Production

Funded by capital renewal and based on a detailed condition survey, Utilities continued to make extensive repairs to the campus steam supply system. These long-overdue repairs will enhance steam delivery reliability and safety on campus. Additional manhole and piping repairs will be undertaken over the next few years to further improve the condition of the campus steam distribution system.

This year, Utilities started a project to bypass and then remove approximately 600 feet of 100-year-old low-pressure steam piping. This piping is dedicated to providing heat to the main group, Hayden Library, Walker Memorial Hall, and Gray House, the president's house. The new system will improve the reliability of steam supply to these critical buildings and reduce the burden of repairs from the old low-pressure line.

During the course of the year, Utilities made numerous scheduled and unscheduled repairs to the steam and condensate system on West Campus. This section of the campus steam distribution system is in less than ideal condition, and Utilities is pursuing alternative approaches to replacing it. Currently Facilities is studying the feasibility of replacing most of the West Campus steam system with an expansion of the medium temperature hot water system that currently serves Buildings NW30, NW35, and W79. This approach would substantially reduce the cost of maintaining West Campus's district energy system.

Campus Planning, Engineering, and Construction

This past year was one spent reflecting on lessons learned during the recent capital program, while also maintaining a focus on current projects under construction, as well as on the Committee for the Review of Space Planning (CRSP), the Accelerated Capital Renewal, and the Efficiency Forward programs. Major renovations of Building E60 and Building W1 (Fariborz Maseeh Hall) were completed in August 2011. Other recently completed capital projects include Buildings NW35, E14, E62, and 76. Among the projects under construction are Buildings E25, E17/E18, and MGHPCC.

Projects that CPEC is developing include renovation projects for the Department of Chemistry and the Department of Mathematics in Building 2, and for the Department of Economics, the MIT Sloan School of Management, and a conference center in Building E52, as well as studying the Nano-materials, Structures and Systems program facility (nMaSS) on the site of Building 12. A schematic design has been completed for the Music and Theater Arts Section in Walker Memorial Hall.

As the department transitions to FY2013, it is focused on several major activities. The development of the Accelerated Capital Renewal program is proceeding with the oversight of a steering committee composed of the chancellor, the executive vice president, the associate provost for space, and directors of EHS and Facilities. Prioritizing the next round of MIT 2030 modules has started and the development of a governance process is being discussed. The Skolkovo Institute of Science and Technology (SkTech) and the MGHPCC are two collaborative initiatives—both national and international—and with multiple institutional partners where new types of models for interaction and collaboration are being developed.

There are two other major focus areas going forward: collaboration and improving customer service. Moving into the new academic year, it is critical for CPEC to become a partner and facilitator to help achieve the goal of one administration for the Institute. Equally important is that Facilities understand the customers' needs and desires in order to effectively work with them to support MIT's mission.

Campus Planning and Design

Feasibility Studies

The Building W31 and W32 renovation and feasibility study explored options for repurposing these buildings into a home for student users who would be displaced from Walker Memorial Hall if proposed renovations in Building 50 go forward. The study also explored options for connecting these buildings to Building W20.

230 Albany Street, a 24,800 gross-square-foot building, is currently in MIT's investment portfolio and has remained empty for many years. Campus Planning and Design was asked to evaluate the highest and best use for the property, given its structural and zoning limitations, as well as in the context of its neighboring buildings. The study looked at possible repurposing to accommodate office/research users or graduate student housing, as well as building an addition or replacing it with a new structure altogether.

CPD, working closely with the Division of Student Life, has initiated a series of undergraduate housing planning studies to evaluate existing conditions and baseline renovation costs for four dormitories deemed most in need of renewal. The dormitories selected for study include East Campus (Buildings 62 and 64), Bexley Hall (Building W13), Burton-Connor (Building W51), and MacGregor House (Building W61). The first three studies are complete. The final study will be completed by August 2012.

At the request of the Division of Student Life, CPD engaged a consulting firm to develop a building program to address current and future needs for the East Campus programming and proof of concept design study. Based on this program, the consultants will develop conceptual level design options that will inform future renovation decisions. Expected completion is September 2012.

CPD managed a study called Framework for Space Planning in the MIT Libraries, which updated the libraries master plan and will serve as the basis for the libraries component of MIT 2030.

Planning Projects

CPD worked with the City of Cambridge to bring the Hubway bicycle share program to MIT as part of a system expansion from Boston into the municipalities of Cambridge, Somerville, and Brookline. Two stations will be installed on campus in early August 2012 and will provide the MIT/Cambridge community with an additional means of convenient, sustainable campus, and city-wide transportation.

Other planning projects include an analysis of the financial viability of Endicott House under three operational models, including a program of selected renovation and expansion projects, with the final report submitted to the executive vice president on February 6, 2012; an analysis of current and forecast market demand for the Faculty Club as part of the programming and planning effort for the comprehensive renovation of Building E52, with the study's primary recommendations supporting the decision to add an additional floor with a large ballroom facility for expansion of the conference function; oversight of planning and renovations for Buildings E17/18, which will extend the buildings' useful life by 10 to 15 years and provide swing space essential to accommodate occupants of other campus renovation projects; and the planning, feasibility study, and conceptual design for the future renovation of Building 66 and the proposed nMaSS facility. CPD continues to monitor Walker Memorial Hall as fundraising activities proceed. The design was put on hold.

CPD is leading a study called Facilitating Space for Innovation and Entrepreneurship Activities under the sponsorship of the deans of the School of Engineering and MIT Sloan and the chancellor. The study's purpose is to develop a vision for these types of spaces that co-locates offices, meeting spaces, classrooms, and hands-on space, and which could serve as a hub and an environment for undergraduate and graduate students, faculty, and entrepreneurs to interact.

This year, CPD continued to act in an advisory role for campus planning and design review for SkTech. In the past year, the planning team worked with the project architects, technical consultants, and the staff of SkTech and the SkTech/MIT Initiative to develop the initial program for the approximately two million square-foot academic campus.

CPD has continued to support and provide content for the website for MIT 2030 and its associated website for Capital Projects. The group has been developing a framework for governance and a process for initiating the physical planning modules, which are an outgrowth of MIT 2030. In addition, a few of the 2030 modules, including Teaching and Learning, have been launched by faculty committees to document the current state and to develop a vision for future opportunities. CPD continues to collaborate with and support MIT Investment Management Company's planning efforts for the redevelopment of Kendall Square.

Two CPD staff were members of the Working Group on the Future of Teaching and Learning Space at MIT, which submitted its final report on March 20, 2012. This study will serve as a basis for the Teaching and Learning Spaces component of MIT 2030. The working group was assembled by the associate provost for space, the deans for undergraduate and graduate education, and the director of the MIT Libraries.

Ongoing Activities

CPD continues to conduct permitting activities and to fulfill regulatory requirements of municipal, state, and federal government, such as the City of Cambridge parking inventory, dumpster licensing, and Department of Conservation and Recreation (DCR) permits. This past year, these services included obtaining DCR permits for MIT 150 and the Festival of Art, Science, and Technology, permitting of the floating dock at the Wood Sailing Pavilion, negotiating the license for the pedestrian crossing of the Grand Junction railroad tracks at Pacific Street with the Massachusetts Department of Transportation, and representing MIT on the Kendall Square Association (KSA) on the Longfellow Bridge Task Force.

Staff members in CPD provide support for many MIT committees, including CRSP, the Building Committee, the Transportation Committee, and the Pedestrian Committee. A CPD staff member is part of the Events Scheduling Working Group, which is researching ways to increase the efficiency of this currently complex process. This year, CPD helped KSA create the Kendall Square retail map, showcasing the growing number of restaurants, hotels, and retail establishments that contribute to a vibrant Kendall Square. One staff member is on the KSA board of directors, and others serve on many of the KSA committees.

CPD staff represents MIT on several City of Cambridge committees, including the Pedestrian Committee and the Bicycle Committee. Participation in these committees acts to strengthen the image of MIT within the City of Cambridge and improves town-gown relations. CPD continues to collaborate with the other Institute administrative groups that develop the annual Town Gown report and presentation. CPD staff represents MIT on the board of A Better City.

Capital Projects

Completed Projects

CPEC submitted four buildings for various phases for Leadership in Energy and Environmental Design (LEED) accreditation, including submitting the final construction phase for LEED on Buildings W1 and E60, and the design phase for LEED for the MGHPCC. The Koch Institute for Integrative Cancer Research, Building 76, received a LEED Gold certification from the US Green Building Council.

The past year saw the successful replacement of a temporary boiler at the Central Utility Plant with a new, greener, and more efficient unit to provide steam to the campus. The plant condensate system was also upgraded to improve the thermal efficiency with the installation of a new deaerator, condensate polishers, sand filters, and dealkalizers, which replaced or supplemented equipment that was beyond its useful life.

Projects in Process

The renovation of the basement of Building E25 is scheduled to be completed in December 2012. A large part of the funding comes from a \$15 million grant from the National Institutes of Health as part of the American Recovery and Reinvestment stimulus program. This is a complete renovation of the existing large animal vivarium and will result in the replacement of outdated mechanical systems and a total reorganization of the vivarium programmatic spaces. The project will provide the Division of Comparative Medicine with modern, efficiently organized multi-species spaces and will greatly improve the energy efficiency of the operations.

Design efforts began on the nMaSS facility. The first phase, the concept design phase, is scheduled to be completed in January 2013. This project phase seeks to apply the defined nMaSS program to the parcel of land currently occupied by Buildings 12/12A. The concept design phase will culminate in a conceptual plan for the new building depicting the facility's size and organizational layout, a construction logistics plan, and a concept budget for this highly specialized building type. When completed, nMaSS will provide state-of-the-art cleanroom, imaging, and microfab facilities for the MIT community.

The north wing of Building 2 was substantially redesigned to include chemistry laboratories on the two upper floors, Registrar Office classrooms on the ground floor, upgraded lecture rooms in the Building 4 pavilion, and restoration of the façade. A construction manager was hired and construction documents are scheduled to be released in September 2012. Scheduled for completion at the end of 2013, this project will provide the Department of Chemistry with two large, fume hood-intensive open floor-plan laboratories and will provide the Registrar's Office with four upgraded teaching classrooms.

The Building E52 project completed the schematic design phase. The past year was spent on concept design for the building and then reprogramming for the expansion of the Department of Economics onto the third floor of the building. The schematic design phase allowed the team to further develop the design and refine the cost estimate before starting the design development phase.

An architect was hired and design activities began on the renovation of the east and south wings of Building 2. Envisioned as a pilot project for the renovation of the original main group structures, the Building 2 project will include replacement of the 100-year-old windows, repair of masonry damage caused by corrosion of internal steel supports, compliance with building and accessibility codes, and renovations to all of the Department of Mathematic’s facilities. This project will provide the department with its first significant renovation in many years and will provide the Registrar’s Office with a cluster of state-of-the-art teaching spaces.

Responding to an increasing need for childcare within the MIT community, efforts are under way to construct a childcare center at 219 Vassar Street, the property formerly known as the Donovan Building. The existing building will be demolished and replaced with a new two-story structure and connected playground. In order to accelerate the design and construction time, a customized prefabricated structure will be factory-built and delivered substantially completed to the site. This project will allow an additional 120 to 130 infants and toddlers to be cared for by the Technology Childcare Centers on campus.

Systems Engineering Group

Energy Conservation

The Sustainability team within the Systems Engineering Group (SEG) had a banner year both in terms of maximizing sustainable choices for the campus infrastructure and in reducing overall energy consumption. The team members included the director of commissioning, the sustainability coordinator, a project manager, and the director of engineering.

Sustainability projects included:

- Creating and implementing energy projects targeting an overall electricity savings of 12 million kilowatt-hours
- Managing the LEED submission of four new MIT buildings
- Joining the US Department of Energy, which uses the new ISO 50001 standard to establish and implement an energy management program for continual improvement of energy performance for facilities across the United States
- Continuing a program to analyze operational opportunities to reduce energy consumption in buildings across campus—now implementing energy saving strategies in multiple buildings with a commitment to continue this process for all new and major renovations
- Creating the first blower door test in Buildings E62, E60, and E52, which enabled SEG to identify opportunities to increase the operational efficiency in those buildings and replicate those in additional buildings across campus

Staff members from SEG and Project Management are collaborating with Operations to develop a structured, repeatable program designed to improve the planning, communication, and execution of the Facilities building turnover process. The program development has been divided into three phases, with the first phase including a detailed procedure for capital project turnover. Finalization of this first phase is scheduled for September 2012. Subsequent phases include renovation project turnover procedures and integration with EHS and IS&T. Annual reviews of this program are planned to ensure that it remains relevant and effective.

Director of engineering Walt Henry will retire at the end of August 2012. Due to Mr. Henry's efforts, the Institute has become a model of sustainable building design. While director, he oversaw the adoption of new technology that reduces energy consumption, guided the Efficiency Forward initiative, and was MIT's in-house lead for engineering of the new MIT Sloan building, which consumes approximately half the energy used by a typical building of its size and type.

Project Management and Capital Renewal

Renovations

The Renovations group continues to manage large volumes of projects with consistent and reliable project delivery and development of staff through promotions, training, and hiring. The group is also actively involved in expanding the vendor pool for both design and construction services by screening and prequalifying new firms and then adding appropriate firms to project bid lists. Highlighted projects for the Renovations group include:

- The relocation of Grounds Services to a new modular facility at the West Parking area
- New space for the Singapore University of Technology and Design program and the Development through Dialogue, Design, and Dissemination laboratory in Building N51
- Phased renovations in Building W91 for IS&T
- Renovations in another phase of the Clean Air/Clean Water initiative for the Department of Mechanical Engineering on the third floor of Building 3
- Several renovations in Buildings 66 and E15
- New floating docks at the Wood Sailing Pavilion

The MGHPCC computing center will reach substantial completion in November 2012. Occupancy is expected to follow the delivery of permanent power in January 2013.

The renovation of floors one through four continues in Buildings E17 and E18 as swing office space to enable large-scale renovations elsewhere on campus (excluding the recently renovated IS&T Help Desk space). Floor five is being developed as expansion space for the Department of Chemical Engineering faculty laboratories. The project remains on schedule and budget, with occupancy targeted for January 2013.

Capital Renewal

Responding to one of the guiding principles of MIT 2030—“accelerate systematic capital renewal programs”—a focused effort was made to develop an assessment process for current capital renewal needs. Starting in October 2011, a team, including representatives from Project Management, Engineering, Utilities, and Operations, worked to build the organization of the new Accelerated Capital Renewal program. Program goals have been established, as has a building prioritization model informed by the physical condition of each building, each building’s importance to the MIT mission, and the opportunistic nature of each building to enable projects intended to reduce the deferred maintenance within.

Multiple strategies to attack the deferred maintenance issue were developed and are in various stages of planning and implementation:

- Comprehensive building upgrades are intended to maximize the investment of capital renewal dollars through larger renovations. Nine feasibility studies were commissioned affecting 14 buildings, with the reported results due by December 1, 2012. These studies will lead the steering committee to decide in which building to launch capital projects.
- Targeted systems are intended to repair or replace deteriorated systems in the highly ranked buildings. Assessment and prioritization occur at the working group level followed by endorsement by the steering committee.
- CRSP enabling is intended to support infrastructure needs associated with specific CRSP projects. Maintenance Repairs Operations (MRO+) and Utilities are the fourth and fifth strategies within the program. MRO+ is smaller in nature and intended to replace equipment that has failed or is failing. Utilities is intended to address deferred maintenance in the Central Utility Plant and the utilities distribution network.

The department is developing the Capital Renewal team and has hired or assigned several staff members, including a program manager, an associate program manager, a financial analyst, and several project managers.

Facility Information Systems

Facility Information Systems (FIS) continued to provide space accounting, archiving, and mapping support to the Institute’s departments during FY2012. Staff members were active participants in the Emergency Operations Center and provided critical information about campus infrastructure during emergencies. FIS also continued to be the source of information and provided support for both internal planning initiatives and external events such as Commencement.

This past year, FIS created a collaboration with IS&T and successfully migrated FIS servers to a hosted solution managed by IS&T. The two departments worked together to build a strong relationship to centrally manage these resources. FIS also continued to work with IS&T on other initiatives, including updating capabilities for mapping and other decision support systems.

The group is midway through a major initiative to migrate the Institute's legacy space system, Institutional Space and Inventory Techniques, to an industry standard platform. To support this effort, the group also conducted a survey of two million square feet on the main campus using laser measuring devices and tablets. This resulted in better accounting of space and ensures the Institute's space practices will endure future technological shifts. The migration has also resulted in better linkages to other data about building cost centers and organizations, and will be available to the data warehouse early in FY2013.

FIS served an active role on the steering committee for the provost's Space Economy pilot project and continues to support the provost's efforts for better space management.

FIS continued to process project closeout materials for FY2012 and successfully indexed/ filed the materials into the department's digital archives. Thousands of documents were digitized during FY2012, freeing up storage space in both Buildings E19 and WW15. Currently there are over 84,000 records in the archiving system and the system has become a critical resource for both project management and operations.

In order to improve communications between groups, FIS has embarked on implementing SharePoint for Facilities. Named "dofpoint.mit.edu," this communication platform will improve transparency among departments and will foster new collaborations. The "dofpoint" platform has established a scalable, industry standard framework within Facilities that will be used to manage large interdepartmental initiatives such as the Accelerated Capital Renewal program. The needs assessment/ implementation plan was completed in early FY2012 and the first phase of site development is expected to be completed in FY2013.

Summary

The Department of Facilities maintained its fiscal responsibilities while adapting to the increase in buildings, landscape areas, and services needed by the community. Over the next year, Facilities will continue to provide quality service to its customers, and, through programs such as Comprehensive Stewardship, MRO+, and Accelerated Capital Renewal, will improve the appearance and functionality of the campus. Sustainability, maximization of resources, and safety continue to be chief areas of focus.

Richard L. Amster, Jr.

Director

Facilities Campus Planning, Engineering, and Construction

John DiFava

Director

Facilities Operations and Security