

**Report of the Working Group
The Built Environment**

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ABSTRACT

This report offers a strategic vision for a thoughtful, inclusive, and transparent process of decision-making regarding the built environment and its crucial role in supporting the core mission of the college.

The first section outlines the broader themes and goals of the strategic vision, with particular attention to the potential for a comprehensive campus master plan, decision-making tools that would allow us to weigh trade-offs in the context of our most cherished values, the importance of clear and consistent communication, and the relationship between the built environment and the college's deep commitments to educational excellence in the liberal arts, sustainability, and inclusivity.

The second section offers a thorough description and appraisal of the current state of the principles and procedures that guide our decision-making, planning, and implementation regarding the built environment at Williams. It identifies the strengths and challenges of our current practices, and it highlights successful initiatives and processes that could form the foundations of our future strategies.

The third section presents a series of specific strategic recommendations in the key areas of campus planning, communication, assessment of facilities, sustainability, building an inclusive community, engaging the unbuilt environment, preparing facilities staff, and financial responsibility. The goal throughout is to offer realistic and meaningful commitments that the college could make to realize the vision described in the first section, while responding both to the appraisal offered in the second section and to the many ideas and themes raised during our outreach efforts.

The body of the report is followed by an appendix that contains the original charge and questions for the working group, and another that briefly describes the methods and outreach employed by the working group.

VISION AND GOALS

Our built environment comprises the buildings, grounds, and infrastructure that support and shape the core mission of the college. As the college's programmatic goals evolve, our overall approach to new building projects, maintenance and renovation of existing facilities, and preservation of open spaces on campus will need to attend to those goals while remaining consistent with our standards of sustainability, equity and inclusion, and financial responsibility. A thoughtful, inclusive, and transparent process of decision-making and campus planning will help the college and its community members to thrive in all of their endeavors.

The working group sought input from the widest possible range of campus constituents to learn what they value most about the spaces in which we live and work, and about what they hope the campus might look and feel like in the future. It is clear that the beauty of the natural environment and its protection are central values of the college community, and that there is wide agreement with Henry David Thoreau's oft-quoted opinion from 1840 that "[i]t would be no small advantage if every college were thus located at the base of a mountain."

What is rarely quoted, however, is the clause that completes Thoreau's sentence: "It would be no small advantage if every college were thus located at the base of a mountain, *as good at least as one well-endowed professorship.*" Whether or not we agree with his specific assessment, Thoreau acutely illustrates the challenges of responsibly balancing the competing demands of the various principles that we hold dear.

As we investigated and discussed the strengths and challenges of our existing decision-making processes, it became clear that the college would benefit from a coordinated master plan for the campus, along with a decision matrix that could accurately represent the trade-offs associated with various courses of action. A comprehensive master plan must envision the campus environment broadly by addressing such topics as support for the core academic and creative activities of the college, student life, technology and infrastructure, commitments to accessibility and sustainability, pedestrian and vehicle circulation, relations with surrounding communities, aesthetic values, and the unbuilt environment. At the same time, a master plan must be flexible and responsive to changing needs; it should serve as a rigorous yet supportive guide, rather than a path set in stone.

Likewise, a decision matrix could be designed to provide assistance about whether, where, and how to build new spaces. All new and replacement building projects could be assessed across such categories as the health of the existing building, the purpose of the building, its relationship to the college's programmatic needs and core educational mission, accessibility to current and potential users, current or predicted costs related to sustainability, historical significance, the impact on the local region, and the overall costs and potential funding sources. Having a consistent method of representing these values and concerns for every potential project would increase our capacity to make informed decisions, provide greater transparency, and improve communication with the entire community. Paired with a comprehensive master plan, a decision matrix would enable both the community as a whole and the key decision-makers to compare potential projects within a consistent framework that pays close and regular attention to how our built environment supports and encourages our shared goals.

Among the high priorities we identified through our conversations with campus constituents was a desire for improvement in communication around decisions and project planning. A decision matrix would provide more information in a clearer format to the campus community as a whole. Likewise, wider dissemination of our annual review of the condition of our facilities and any available specific assessments could improve understanding of the needs and challenges surrounding the built environment, which in turn might build more trust in the decision-making process and enable stakeholders to provide thoughtful input more frequently and effectively.

Communication is closely linked to inclusion and building of community. Many constituents raised ideas about making academic and student activities even more central within the built environment by moving activities and services that do not directly involve students on a daily basis to the perimeter of, or even entirely off, campus, while encouraging a greater density of events and interaction in the center of campus. Considerations about the relative locations of college offices and programs are connected to the broader question of the future of campus work spaces and to planning for how people will move across and through the built environment as the campus evolves. We must thoughtfully examine the relationship between pedestrians and vehicles throughout campus and also strive to make the campus as accessible as possible.

A central issue in the reevaluation of existing spaces is the quantity, size, and configuration of classrooms, which are at the very heart of the college's academic mission. Throughout our conversations we heard that our classrooms are not meeting the needs of faculty and students as well as they should be. A comprehensive assessment of classrooms across campus would allow us to determine how best to reconfigure existing spaces in order to support teaching and learning most effectively.

A similar intersection between the nature of our existing spaces and our efforts to build an inclusive community arose in our discussions around college-owned housing. Our conversations revealed that the existing portfolio of housing is not entirely meeting the needs of new faculty and staff, due to changing demographics. The college must continue to experiment with different types of housing and possibly expand the scope of our portfolio into neighboring communities. On campus, the college should continue progress on the residence hall sector plan begun in 2015.

Interwoven with all of these themes for campus planning is the importance of maintaining our built environment in ways that are financially responsible and attentive to sustainability. We will need to train users of buildings to use new technologies and to assess their realized benefits. Engaging facilities operations throughout the planning, construction, and active use of new buildings will yield significant improvements in the design and functionality of buildings and provide valuable insights into future projects and whether reconfiguration of existing space can obviate the need for new construction.

Finally, we return to the theme of the natural beauty of our environment. Thoreau's description of the setting of our campus continues: "Some will remember, no doubt, not only that they went to the college, but that they went to the mountain." The close connection between the experience of the interior and exterior worlds is a key aspect of the college's identity, and our planning efforts could take more intentional account of that connection by seeking to enhance opportunities for engaging

with the unbuilt environment. Such engagement could also contribute significantly to our efforts concerning sustainability and the building of community.

As we look to the future of the built environment at Williams, the next steps must include an exercise to clarify our values and develop a decision matrix. This should be closely followed by a full assessment of our existing spaces and needs. That assessment should then inform a comprehensive master planning process grounded in a clear expression of the values that have been identified. Finally, that process should place a high priority on communication and transparency at every stage. These steps would put the college in an excellent position to make thoughtful, responsible, and creative decisions about the built environment and its crucial role in supporting the mission of college.

DESCRIPTION AND APPRAISAL OF THE CURRENT STATE

I. PLANNING FOR CAPITAL PROJECTS ON CAMPUS

A capital project is a project that results in a major asset, such as the construction of a new building, major facility renovation, or construction of utility infrastructure (water, electrical, gas, and other utility systems). The project results in an asset that will have a life of at least 50 years and a cost of at least \$2,000,000. Capital projects take many years to plan and design before construction begins. Building committees are established for every capital project and faculty, staff, and students serve as members. These committees collaborate with the Planning, Design and Construction group (PDC) and work closely with design teams to determine the program and overall layout and finishes for a building's interior. Consistent and meaningful input from building committees throughout projects is essential to ensure that our facilities always reflect the evolving needs of the college community.

Capital projects are initiated for a variety of purposes, but most typically to provide sufficient facilities to serve the growth in a particular curriculum (e.g., the Science Center Renewal Project), to renovate a facility to meet current usage needs (e.g., the Hewat House Renovation Project), or to improve the life safety of a facility for its occupants. While we do not currently have a master plan for the campus, capital projects emerge in various ways and are typically focused on a particular sector of the campus. For instance, the colocation of Admission and Financial Aid in Weston Hall, the restoration of Chapin Hall, the Science Center Renewal Project, and the construction of Horn Hall, coupled with the long-range plan for the renovation of our deficient residence halls, were all projects that resulted from sector planning. The same process has been employed for our commercial areas. The revitalization of Spring Street was accomplished over a nine-year period through the renovation and reopening of The Log, the relocation of the bookstore from Water Street, and, most recently, the relocation of the Williams Inn to the base of the street.

Conversations about capital projects are customarily initiated by a combination of the following processes: an excessive number of work orders for a particular facility; the college's computer-based Building Management System (BMS), which monitors and controls such building services as heating and air, lighting, security, fire detection and alarm systems; observations and historical knowledge from Facilities staff and building users; and periodic reviews to assess a building's condition and functionality, which range from an annual tour of the campus by Sightlines, a third-party company, to Facility Condition Assessments (FCA) and Space Utilization and Program Studies (SUPS) facilitated by PDC.

Planning is the most crucial phase in a building project. Proper planning lays the groundwork for building and operating a functional facility. Since 2005 Sightlines has been assisting the Facilities Department to make more strategic, data-driven decisions for facilities planning. Sightlines professionals have assisted in developing strategies to manage the college's physical assets as well as assisting the Facilities Department in getting the most value from the operating and capital budgets. Sightlines professionals visit the campus annually to tour with our staff, collect data, and assess systems and spaces. Those data are benchmarked against the institutional information of other members in their proprietary database and specifically with our peer schools. The result is holistic, objective knowledge that provides a framework in which to balance operational goals, capital projects, and deferred maintenance. These data, in combination with our BMS, our work-order

process, and the input from Facilities staff and building users, provide the insight needed to create a prioritized, actionable renewal plan.

Smaller projects are categorized as either annuals (less than \$50,000) or renewals (between \$50,000 and \$2,000,000). The college spends approximately \$3,500,000 on annuals and approximately \$8,500,000 on renewals each year. These two types of projects are determined through an annual Capital Improvement Request (CIR) process, in which faculty and staff submit projects for consideration at any time during the course of the year, with a deadline of late November for project consolidation into a draft spreadsheet, which is reviewed by PDC, Facilities Operations, the Zilkha Center, OIT, and Environmental Health & Safety. A project list, with costs roughly estimated, is organized and sent to Senior Staff and the Committee on Priorities and Resources for their review. Projects are selected and incorporated into a five-year plan, with only those projects in the first year actually being approved. The CIR process has seen small improvements through the years, but it could benefit enormously from the creation of a decision matrix to structure, quantify, and prioritize project decisions, so that stakeholders are provided with sufficient justification for why their projects have or have not been approved.

II. COMMUNICATION FOR CAPITAL BUILDING PROJECTS

Communication with the campus and local communities is an essential feature of all building projects, and we have seen significant improvement in this area over the past several years.

During the planning and programming phase of a building project, we typically have broad participation from the campus community. Faculty, staff, and students are engaged and encouraged to meet with the design team for a particular building project at various intervals, in order to offer their insights into current processes and practices, as well as future functional and space needs. Likewise, building committees, comprising faculty, staff (including members of Facilities Operations and the Zilkha Center), and sometimes students, work closely with the design team, the respective project manager, and the Executive Director of Design and Construction to develop the program and advise the design team on building function.

The Design Review Committee (DRC) was formed in 2015 to provide guidance on design issues that pertain to the visual and aesthetic environment of the campus. This committee comprises three faculty members and one senior staff member with rotating three-year terms, an architect with a fixed membership, and another rotating staff member with a three-year term. The Executive Director for Design and Construction is the final member and chairperson of the committee. The DRC is charged with helping to ensure that new college architecture is both of high quality and appropriate to its context. PDC seeks guidance from the DRC on the appearance of the built environment, and committee members share ideas and perspectives with each project's building committee. Architects are required to make presentations to the DRC prior to the completion of each of the three phases of design for any project that will be significantly visible to the public. While the core committee is charged with reviews of the built environment, there is also an extended landscape DRC that is charged with reviewing the unbuilt environment.

For larger capital projects, public forums are held during the planning process to gather additional input from college community members not on committees, as well as stakeholders from the surrounding neighborhoods. Willinet is another venue that is often used to share programmatic

information with the campus community and the town. For projects focused on Spring Street, project managers have occupied the information booth located at the base of the street with design boards that address questions on a particular project or group of projects. And while we do not normally include local citizens, with no affiliation to the college, on our committees for educational buildings, we did include them on the building committee for the new Williams Inn. All of these efforts have been quite successful in reaching a wide range of stakeholders.

Because the campus is closely surrounded by residential neighborhoods, it is important and respectful to communicate regularly about college projects with our neighbors and town officials. During the past year, the Town Manager, the Director of Community Development, and the Executive Director for PDC met frequently to share ideas about how to strengthen the relationship between the town and the college as it pertains to the built environment. Cooperation, transparent communication, and a shared desire to improve existing practices have become the basic principles informing these meetings. As we move forward in a more collaborative relationship, we hope to educate stakeholders on both sides of the issues surrounding the building code and what is required for successful building projects, drive behavioral changes in both Facilities Operations and the PDC with regard to permits, and improve the efficiency and effectiveness of the town's enforcement procedures.

Once construction on a project is underway, a series of Construction Activity Notices (CAN) is emailed to a large campus distribution list at various milestones and is uploaded to Daily Messages as well. Descriptive signage, with appropriate graphics, is installed on construction fences or somewhere in the vicinity of all construction projects, regardless of their size.

Clear and consistent communication and broad participation in the building process, if conducted in a meaningful way, produce better outcomes for the final project. While communication surrounding the built environment has certainly improved in recent years, there are still too many instances when people tell us they never heard or knew about a particular project. This is a clear indication that we can do better.

III. STANDARDS FOR ASSESSING CURRENT BUILDINGS AND FOR ASSESSING NEW SPACE

As stated in the opening section, the Facilities Operations & Maintenance and Planning, Design & Construction groups conduct periodic reviews to assess a building's condition and functionality. A Facility Condition Assessment (FCA) and Space Utilization and Program Study (SUPS), typically conducted in concert with each other, provide a straightforward look at a building's current state, from the roof to the carpeting and everything in between, in an effort to determine the expected life of the asset and to evaluate its maintenance and replacement costs. An FCA is performed if the data collected by Sightlines, the BMS, and/or the work-order process suggest a significant deficiency that warrants a deeper analysis of the building systems. A SUPS, in combination with an FCA, provides both a more holistic overview of the condition of the building and a detailed analysis of the space needs of the occupants. A SUPS is conducted in close collaboration with faculty, staff, and students. The review is multi-faceted and includes the amount and functionality of the spaces, adjacencies, and future needs.

A more comprehensive approach to assessing the need for new space, outside of the current building assessment process, can be accomplished via a Needs Assessment. Generally speaking, a Needs Assessment will provide a good estimate of how much space is required for a specific program, calculated in usable net square footage. A Needs Assessment also takes into account common areas, accessibility, parking, geographic location, technological needs, sustainability, and curriculum-specific needs. While this list is not exhaustive by any means, it does provide a framework to understand better the process for how space needs are determined.

We do not currently use the Needs Assessment process outside of the planning phase for a specific potential capital project, but it might be helpful to engage in this process across the campus, in order to understand space needs from a holistic perspective rather than on a project-by-project basis. This could potentially inform our thinking about how and when to repurpose our existing buildings and spaces.

IV. SUSTAINABILITY GOALS AND THE BUILT ENVIRONMENT

The college's environmental footprint is quite substantial, with more than 3,000,000 square feet of floor space for a combined student body, faculty, and staff of approximately 3,200 persons. We have a responsibility to reduce our impact on the environment while still balancing the needs of these groups.

Williams is committed to incorporating principles of sustainable design and energy efficiency into all of its building projects. The result is an optimal balance of cost, environmental, societal, and human benefits, while meeting the mission and function of the intended facility. It is our intent to integrate sustainable design as seamlessly as possible into the existing design and construction process.

Historically, PDC has satisfied the Board of Trustees' requirement that all capital projects with a value of \$5,000,000 or more be assessed using the U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) rating system. At the January 2019 meeting of the Board's Campus Planning and Construction Committee, PDC and the Zilkha Center proposed moving away from LEED alone in an effort to broaden our approach to sustainability in the built environment. Green building certification systems are constantly evolving and PDC and Zilkha believed it was time to take another look at our policy of aiming for LEED Gold certification, in effect since 2011. The International Living Future Institute (ILFI) and Passive House are two new certification systems that were presented to the Board, with the goal of exploring multiple standards for different building projects. A further recommendation was made for an increased focus on the health of building occupants, including earnest consideration of indoor climate and comfort. The Board was generally supportive of this recommendation but did not want to get ahead of the strategic planning process, so they approved an approach toward experimentation before the commencement of a building project, with the intent of determining appropriate standards for each respective project.

ILFI has five different types of certifications, of which the Living Building Challenge (LBC), with its petal certification process, is the certification system we have chosen to follow, specifically three of its seven petals: health and happiness, materials, and equity. These three petals are at the heart of creating a clean and safe environment for all, and certification under this standard is one component of the sustainability goals being met in the Fort Hoosac renovation project that is currently in its

construction phase, along with LEED Silver certification and an ambitious Energy Use Intensity (EUI) goal.

Zero Energy or Net Zero, is another certification under the ILFI system. A building designed under this certification process consumes only as much energy on an annual basis as can be produced through onsite or offsite renewables. The new CDE Residence Hall was designed and constructed to net zero standards. We anticipate receiving certification for this project within a year of full building operation or sometime during 2020. Kellogg House (originally built c. 1794) was a combined historical renovation and new addition completed in 2013 under the Living Building Challenge, which requires that all imperatives of the program are met prior to certification. Kellogg has met six of the seven petals and anticipates achieving these goals no later than 2021. If certified under the LBC program, Kellogg will be the first historic building in the United States to do so. Certification under the ILFI program is the most challenging and comprehensive of the certification systems on the market.

Passive House is focused on lowering energy consumption and improving comfort for building occupants. This is achieved by intentionally focusing on the design of a tight building envelope including superior quality windows, insulation, and heat-recovery ventilation. A tight building envelope provides greater energy efficiency as well as increased comfort for the building occupant. Garfield House, although awaiting formal certification, is an example of Passive House construction, and it is also expecting to achieve LEED Gold certification.

Alongside these specific sustainability policies, an ambitious Energy Use Intensity (EUI) goal is established for every capital project. Green Gauges is a methodology developed by PDC and the Zilkha Center, together with Coldham and Hartman Architects, to set and measure EUI goals for building projects early in the design process. The methodology solicits specific details about design and construction strategies and systems from both the architects and construction managers in order to provide a more coherent understanding of how the goals will be achieved. After a building is completed and in use, the process also requires the design team and construction managers to evaluate the actual energy consumption and production in comparison with the original goals, as well as to correct any discrepancies in metering and controls.

V. FUTURE-PROOFING OUR BUILT ENVIRONMENT

Climate change, scarcity of resources, demographic and social changes, and technological advances all have a direct effect on our built environment.

PDC is currently using a variety of basic tools for planning and executing the building process that were not available to the built environment ten years ago, including Building Information Management (BIM), Revit, Navisworks, BIM 360, Multivista, virtual GIS, and virtual reality. These tools are helping us make informed decisions regarding the future of our building projects, and we are exploring other technologies, including point cloud laser scanning, drone-based surveying, and 3D printing, which many of our design and construction teams already use.

The college has made a broad commitment to sustainability in its buildings, operations, and educational mission. A particularly important part of that commitment focuses on the college's net emissions of carbon dioxide, or our "carbon footprint." In 2015, the Board of Trustees committed the college to two ambitious emissions goals by the end of 2020: reducing our emissions 35% below

1990 levels and achieving carbon neutrality. We are currently on track to achieve both objectives. We have pursued a variety of strategies to reduce emissions on campus, including weatherization projects, solar installations, LED lighting upgrades, and aggressive emissions targets on capital projects. We are also studying the costs and operational implications of replacing our fossil-fuel driven central heating plant with a renewable source of on-campus energy. The Zilkha Center has also hired a firm to conduct a zero-carbon feasibility study that will help us understand how the college might make this transition. While this would be a decades long process, it is important to have a road map for the near term as we proceed with construction and renovation projects on campus.¹

We are also conducting a study of our electrical distribution system on campus. Electricity is supplied to the majority of the campus through a central meter located at the heating plant. From there it is distributed throughout campus via our medium voltage system. The college has recently expanded the distribution system to include more buildings with even more on the horizon, along with the addition of necessary redundancy to assist with annual maintenance. A recent study has indicated that if we continue to become more electrically invested in renovations and new construction, an upgrade to the existing system will be required. This change would include an increase in our electrical distribution from our current 4.180kV to 13.8kV along with equipment upgrades at most buildings to accommodate the voltage change.

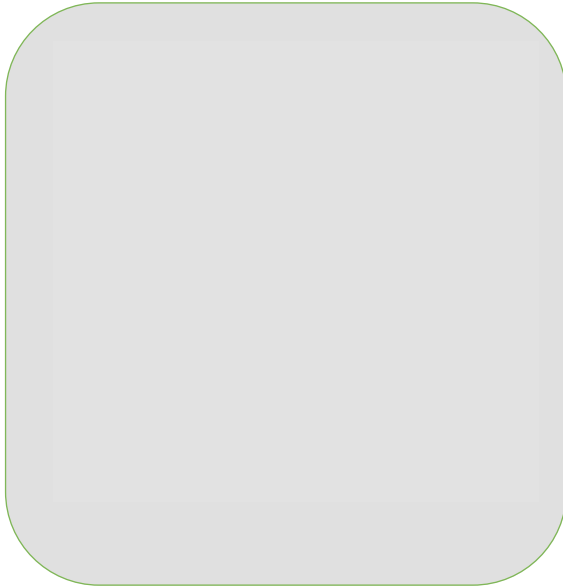
PDC, Facilities, and the Zilkha Center believe that a sustainable building environment can contribute to healthier lifestyles. To this end, we have recently broadened our approach to building by incorporating Passive House and the ILFI Living Building Challenge petal certification process as options for our sustainability goals on capital projects. By maximizing passive measures of more effective insulation, improved airtightness, and greater thermal mass, we can reduce our energy consumption while improving the interior environment for the building occupants. Each of these green building practices aims to contribute to the happiness and health of building occupants while also helping to form more inclusive communities.

During the building process itself, we are incorporating technologies to reduce both the energy usage of the buildings themselves and the energy needed to build them, including the embodied energy in the materials they contain. The CDE Residence Hall and Fort Hoosac are both using geothermal heat pumps to condition the building spaces. The North Science Building is making use of chromogenic glazing, which tint the windows, when necessary, for a drastic reduction in the heat load coming into the building, while still permitting a sufficient amount of daylighting. This type of glass also helps to reduce glare. The Garfield House project used Phase Change Material, which is a thermal storage mat that stores energy and releases it only when needed. Its main purpose is to curb peak heating and cooling loads, thereby decreasing energy costs and improving living conditions in the building. The CDE Residence Hall project also used structural insulated panels (SIPs), which require less energy and raw material to produce, save time in construction, and generate less waste during installation.

¹ CPC Board Memo; Emissions Update for Fiscal Year 2019

VI. SUSTAINABLE PRACTICES IN THE BUILT ENVIRONMENT

As part of the college's 2015 sustainability goals, we committed to "invest deeply in sustainable design, building practices, and systems that meet ambitious energy efficiency goals." If we examine the projects that we have initiated since that commitment, we can see that both rigorous design standards and aggressive Energy Use Intensity (EUI) targets have been pursued in every case:



*Baseline Code (EUI) is ASHRAE 90.1; the version depends upon what year the project was started. The baseline EUI's are taken directly from the project engineer's reports for the respective buildings, with the exception of St. Anthony Hall, which was based on the existing energy use for the building.

**Note: The CDE Residence Hall and St. Anthony Hall have a *combined* EUI target of 30, however both are shown with an EUI of 30 because in the

case of the residence hall, which is net zero, renewables are not deducted from the energy used by the building.

In addition to our investments in sustainable buildings, we have also been investing approximately \$1,000,000 a year in smaller sustainability projects. These projects typically range from weatherization projects (insulation, weather strips, and sealant) to lower-energy lighting and appliance replacements around campus. Another example is the forthcoming installation of a large community garden.

The installation of solar panels on our campus buildings continues to progress. In 2004, a small system was first installed on the roof of Morley Science Laboratories, and a second one in 2008 on the roof of the Library Shelving Facility (LSF). After installing a number of additional panels in 2015 on the grounds of the LSF, the roof of Sawyer Library, the '66 Center, Weston Field, and the renovated Log, we were slowed by challenges in getting an interconnection agreement with National Grid. We recently finalized, however, an agreement for a 1 mega-watt interconnection, and we expect to move forward with new solar installations on campus starting this fall. The installation of solar panels is an integral part of every capital project as a means to offset the electrical load of the building. We have also installed a solar thermal collector on the roof of the Chandler Pool House to offset some of the load associated with domestic hot water (57%) and the heating of the pool water (26%).

Our current sustainable practices also include economizers and heat recovery equipment, daylighting, and the use of LED lighting (including the replacement of fluorescent bulbs with LED

bulbs across campus), as well as enhancing indoor air quality through an increased use of outside air. The college also developed green cleaning policies in 2007/2008, recognizing the impact of incorporating safer methods to clean buildings and a healthy workplace on employee satisfaction and productivity. We are also in the process of increasing the number of campus EV charging stations to eight in total.

A Sustainable Design Charette is conducted during the Schematic Design Phase (the initial phase of design) of every capital project. This is typically a daylong process attended by all the major project stakeholders, including the members of the building committee. During this charette, the design team's sustainability consultant presents potential design strategies for minimizing resource consumption, reducing life-cycle costs, and maximizing health and environmental performance of the building. The college's decision-makers are then able to assess these various strategies and provide valuable feedback so that early choices can be made to avoid costly redesigns at a later date.

The college believes strongly in a high-performance building envelope, not only for the health and comfort of the building occupants but also for the longevity of the building itself. Building systems deteriorate if left unattended year after year. Recommissioning, retro commissioning, and energy audits, can be thought of as building tune-ups. In conjunction with our commissioning agent, PDC conducts one or more of these processes under any of the following conditions: increasing energy bills, major renovations of spaces within the building, numerous comfort complaints from the building occupants, advances in technology, or simply five years from the opening date or repurposing of the building.

VI. PREPARING STAFF FOR A MORE COMPLEX BUILT ENVIRONMENT

The Facilities Operations & Maintenance and Planning, Design & Construction (PDC) groups encompass a broad spectrum of services, competencies, processes, and tools required to ensure that the built environment will perform the functions for which its facilities were designed and constructed. Operations and Maintenance typically include the day-to-day activities necessary for the building structure, its systems and equipment, and its occupants and users to perform their intended functions. PDC typically provides the administrative, management, and professional services required to facilitate and accomplish new construction, renovations, and replacements of physical facilities and infrastructure.

Over the past six years, PDC has integrated its day-to-day processes with the latest in technology in an effort to stay current with the industry. These tools have included such innovations as Building Information Management (BIM), Multivista, Virtual and Augmented Reality, Virtual GIS, Project Management Information Systems, increased use of drones, and smart building management. This office is acutely aware of the significance that technology plays in how a building meets future challenges.

Currently, PDC engages the Operations staff for building tours on at least a monthly basis during the construction phase. A representative from Facilities Operations is also a member of every capital project's building committee, but this does not guarantee that information about building systems is learned by those specifically responsible for the operation and maintenance of that building. At the end of a building project, PDC, in conjunction with the construction manager, offers training on all building systems.

As our building systems become more and more complicated, it is essential for our integrated Facilities staff to stay current with on-going training and professional development. As the number, variety, and complexity of facilities increase, the Facilities Operations and Maintenance group should adapt in size and complexity accordingly. In all cases, PDC and Facilities Operations and Maintenance require a knowledgeable, skilled, and well-trained management and technical staff, in addition to a well-planned maintenance program.

VII. EVALUATING HISTORIC BUILDINGS

Historic preservation is the ultimate form of sustainable development. By encouraging the adaptive reuse of older buildings instead of abandoning or demolishing them, historic preservation reduces the demand for environmentally costly new building materials and decreases the amount of waste dumped in landfills. Building more space is not always the answer to meeting a department's current needs. Being good stewards of our historical resources means learning to preserve and repurpose these irreplaceable assets, just as we are learning and implementing ways to preserve our irreplaceable natural resources.

As an initial phase of the Garfield House Project and in conjunction with the design team of record, PDC implemented a new process called *Conditions of Success*. This process was based on a decision matrix (commonly known as the Pugh Decision Matrix) in which the building committee established a list of weighted criteria and then evaluated two options, renovate Garfield or build a new building, against those criteria. Among 30 criteria, eight essential considerations emerged as the focus of the discussion: building envelope, sustainability, quality of life, cost of construction, student trends, architectural expression, historical significance, and program. At the end of this six-week process, the building committee opted for new construction, and even members who had begun the process in favor of renovation had been swayed by this thorough review.

In order to evaluate historical significance as part of the *Conditions of Success* process, the committee reached out to E.J. Johnson, an architectural historian on the faculty who is widely known as an expert in historic buildings. His input was crucial in answering the question of Garfield House's significance. Because of the overall success of the process, the college has decided to implement *Conditions of Success* for every capital project where renovation is weighed against new construction. For those projects where historical significance is potentially relevant, such as the current Davis Center Project, consultation with subject-matter experts is desirable.

The average age of the college's 137 buildings is approximately 88 years, with 77 of these buildings over 100 years old. Over the past 10 years, the college has renovated or restored 25 buildings on campus. In comparison, after careful consideration of the historical significance of the building, the college has chosen to demolish only 10 buildings over the same period of time. Of these 10 razed buildings, only one was considered "historic" based on the local Historical Commission's definition of a building that is at least 100-year-old.

VIII. ACCESSIBILITY IN THE BUILT ENVIRONMENT INCLUDING WALKWAYS AND LANDSCAPING

Physical barriers make it difficult for people with mobility impairments or other disabling conditions to move about their environment. Some examples of barriers within the built environment include:

- Absence of ramps for wheelchairs
- Lack of depressed curbs at street crossings
- Narrow doorways that cannot accommodate various assistive devices, such as wheelchairs and walkers
- Lack of proper grade on walkways that allows for traversing between buildings or parts of campus

In its current practice, PDC does its best to adopt a policy of universal design for both new and renovated buildings. Universal design goes beyond the provision of special features for various segments of the population and instead emphasizes a creative approach that is more inclusive. This approach serves a wider array of people who have permanent disabilities, temporary disabilities, and everyone whose abilities change with age.

All building projects in the Commonwealth of Massachusetts are required to comply with 521 CMR, which is the specialized building code regarding access for persons with disabilities. This code requires that public and common-use areas in student housing be fully compliant with the code and that at “least 5% but in no case less than one of the units, sleeping rooms, and suites shall be accessible.” Furthermore, “accessible sleeping rooms and suites shall be dispersed proportionally among the various classes of sleeping accommodations available...” Because of the topography, age, and historic status of many of our buildings, full compliance with 521 CMR proves challenging.

Williams College is committed to making on-campus housing available to meet the reasonable needs of all students. To this end, in November 2015 Williams engaged Centerline Architects to work with PDC and Kessler McGuinness & Associates (KMA) to conduct a comprehensive study of all 39 residential dorms (726,000 gsf over 1,774 rooms) on campus with the goal of receiving a Memorandum of Understanding (MoU) from the Massachusetts Architectural Access Board (MAAB). This fully executed MoU outlines a plan that would allow the college to provide a minimum of 5% of accessible rooms spread across four housing typologies (first-year, upper-class, co-op, and graduate), rather than every building within every typology. Public and common-use areas of almost all of the buildings would be made accessible during the course of substantial renovation, and all new construction would be fully accessible and compliant.

The MoU does not absolve the college from applying for variances seeking relief from accessibility, but it does provide the College and the MAAB with prescriptive guidance in consideration of such applications. As long as the college remains compliant with the terms of the MoU, it is reasonable to assume that variance applications would be approved.

To date, we have a comprehensive plan for accessibility in our residential housing, but our educational and general (E&G) buildings are in need of the same. Any improvement in the accessibility status of many of these buildings requires an understanding of existing conditions and a

comprehensive assessment. As in our dormitory analysis, we have engaged Centerline Architects to conduct an in-depth investigation of our E&G buildings that will inform future design and construction projects.

Currently, all of our capital projects undergo a peer review for accessibility compliance at the end of the design phase. We engage KMA to review all capital project building plans for compliance with the accessibility code.

IX. CREATING A VISUALLY APPEALING AND LIVABLE ENVIRONMENT

The architectural history of the campus reveals much about the growth and events that have shaped our college. Founded in 1793, with buildings dating back to that era still standing, the college places a high value on historical preservation and architectural design. The rich diversity and quality of buildings, both in age and architectural styles, contribute to the living and the learning environment, while at the same time presenting distinct challenges to design and construction professionals.

In 2015, the Design Review Committee (DRC) was established with the charge and challenge of preserving our rich history by striving to ensure that each new site and building suits the context of the campus and its heritage, while also meeting the needs of contemporary functionality. The committee also serves to encourage and provoke remarkable and sustainable design that is functional and inspirational.

A recent campus landscape study, completed by Reed Hildebrand Landscape Architects from Cambridge, MA, was spearheaded by the DRC. The charge of the study was to describe what makes Williams feel like Williams and to provide criteria for evaluating change, balancing the needs of today, and providing a roadmap for what the campus will be in the future. Reed Hildebrand worked closely with PDC and the DRC to study a variety of campus elements, including the tree canopy, signage, handicap accessible access, lighting, parking, pedestrian circulation, storm water, and general landscaping. The goal of this study was to provide a document that the college can use to integrate its institutional goals with its landscape character.

Throughout much of the college's history, practical approaches to building on a landscape of rolling hills have shaped a pattern of open space, building, circulation, and vegetation that fits with the larger landforms and prevailing view sheds. However, such factors as larger building footprints, an aging tree canopy, and climate change have blurred the clarity of the landform and planting on campus. The study also offered ways to recognize the diversification of the community and the increasing programmatic demands of the campus landscape with respect to inclusion, flexibility, and sustainability.

To capture the many different ways the campus is used and understood, progress was presented and discussed during a number of community meetings, one Board of Trustees Campus Planning and Construction Committee meeting, and many Design Review Committee meetings. Representatives from the faculty, Facilities Operations, PDC, the town, the Office of Student Life, the student body, the '66 Environmental Center, the President's Office, the Office of Institutional Diversity & Equity, and many other organizations were engaged during these meetings. The combination of campus-scale analysis, site-specific case studies, and meetings with the college community provided a

comprehensive understanding of the college landscape and unlocked potential ideas and projects for shaping a uniquely Williams campus now and in the future.

Through analysis, interpretation, and community outreach, this study has developed a language to explain the elements that define the college landscape's character. Building upon investigative work, the study provides a framework to aid decision-making at multiple levels. At the conceptual scale, it identifies a list of landscape objectives and policies that the college can incorporate into its organizational structure. Guidelines, tool kits, and campus systems provide decision-making tools to guide future building projects. Finally, the framework contains recommendations and priority projects, which have been identified through conversation with the Williams community and will provide immediate improvements.

STRATEGIES

Based on our comprehensive review of current strengths and challenges, the valuable input provided by a wide cross-section of the college community, and our own deliberations, the working group offers several recommendations for addressing key areas of the college's approach to the built environment.

I. CAMPUS PLANNING

Recommendation: The college should develop a decision matrix for future capital projects in conjunction with a comprehensive but flexible master plan for the campus.

The college currently engages in comprehensive planning for capital projects on campus, but only on a piecemeal basis. In the 1990s, the college commissioned Venturi, Scott Brown and Associates to design a facilities plan, but that work was limited to the north side of the campus. More recently, we have completed planning projects for select geographic or thematic sectors of campus. These have included planning for the Science Center, our upper-class residence halls, our campus infrastructure (electrical, steam, chilled water, and storm water), the southwest sector of campus, the Spring Street commercial district, and the physical landscaping of campus. All of these plans have led to successful and important improvements to the built environment.

While there is general acknowledgement of the success of our capital program in addressing critical needs over the last few decades, we consistently heard from the community that the college would benefit from a coordinated master plan for the campus. A rigorous and responsive guide for future construction and major renovations would not only increase transparency and confidence in the decision-making process but would also help balance our commitments to sustainability, equity and inclusion, and financial responsibility.

The foundation of such a plan should be a decision matrix that takes into account the various programmatic goals of the college, including but not limited to:

- Supporting core academic programs
- Enhancing student life activities
- Increasing campus accessibility
- Promoting sustainable practices
- Building inclusion and community
- Maintaining and updating technology and infrastructure
- Preserving life, safety, and assets
- Improving pedestrian and vehicular circulation
- Upholding aesthetic values
- Respecting historic structures and spaces
- Nurturing meaningful connections to surrounding communities
- Attending to landscape and the natural environment
- Maintaining financial sustainability

Using a decision matrix that incorporates these core goals in every planning process will ensure that initiatives related to the built environment are closely tied to our shared principles and priorities. It will also allow for transparent discussions of the trade-offs associated with various courses of action.

Combined with a more comprehensive program to assess the condition of our facilities, such a matrix would guide the planning process and help us decide whether, where, and how to build or renovate spaces on campus. It should be directive yet flexible, and it should be refreshed periodically to respond to changing needs, technology, and economic conditions.

The specific design of a decision matrix and implementation of a campus master plan are topics for the operational plan that will ultimately emerge from the current strategic planning process. But there is a strong consensus in the community that campus planning should incorporate a wider range of voices and perspectives. While there is recognition of the need for a high-level group to oversee the process, there is also a strong desire for practices that could ensure that planners hear and take into account the views of all campus constituents, particularly in regards to the college's fundamental commitments to sustainability and community-building.

As noted above, we have undertaken some significant sector plans in recent years, and certain departments (e.g., athletics) have also completed some internal space planning exercises. The results of all this work will inform a campus master planning process in important ways. Likewise, the Planning, Design and Construction group has already developed a prototype for a decision matrix, called *Conditions of Success*, which has guided decision-making on some recent projects. That prototype may be a good starting point in the development of a campus wide planning matrix.

II. COMMUNICATION

Recommendation: The college should create a formal communication strategy for the campus master plan and subsequent capital projects.

As described earlier in this report, the college actively seeks broad participation in the planning stages of capital projects on campus and strives to inform the community about future projects and the status of projects under construction. Despite these efforts, it was evident from our conversations on campus that even more work needs to be done.

Achieving a culture of clear and consistent communication should be a high priority for any campus planning process. Broad participation from an informed community, if solicited and implemented in a meaningful way, will produce more successful outcomes for every project. The development of a decision matrix rooted in our shared goals will create more confidence in our overall decision-making and allow for greater transparency. Likewise, an inclusive and responsive master planning process will also help overcome some of the challenges to our communications efforts.

As part of an effective communication strategy we should redouble our current outreach efforts around every planning process by engaging the community earlier, more often, and more widely through open forums, town-hall meetings, and other presentations. We should provide more regular and prominent updates on our annual facilities assessments, as well as specific updates on particular

buildings, projects, and sustainability efforts, so that the entire community has a better understanding of the contexts and challenges that every decision about the built environment faces.

A greater use of social media platforms, videos, websites for specific projects and live cameras on construction sites would extend the reach of our communications around the built environment. Likewise, broader engagement with relevant faculty, staff, and student committees could help integrate our community outreach more thoroughly into the regular flow of college governance. Finally, we should include a wider range of stakeholders and partners earlier in the planning process for every capital project, including potential building occupants, Facilities Operations and Maintenance, Information Technology, the Zilkha Center, and the Committee on Priorities and Resources. Many of these groups are already included in our planning process, but a more formal strategy of engagement will improve both our communications and the overall quality of our projects.

III. ASSESSMENT OF FACILITIES

Recommendation: The college should implement a campus wide program to assess the condition of our facilities.

Although we perform regular assessments of building systems, track data on preventive maintenance and repairs for all the buildings on campus, and solicit an annual analysis of building conditions from an external consultant, which includes benchmarking with our peers, we do not currently integrate the results of these processes outside of planning for specific capital projects. These existing procedures should be incorporated into a formal campus wide program of facilities assessment that can directly inform our master planning process.

As part of that formal program, the college should also explore using life-cycle assessment techniques, which aim to determine the overall environmental impact of every stage of the life-cycle of a building, from the raw materials used in construction all the way through the final disposal of waste after the building has been decommissioned. These techniques can provide us with more sophisticated information about potential trade-offs in sustainability, use, and cost.

Recommendation: The college should conduct a campuswide study of how space is used and identify ways to use existing spaces more efficiently and productively.

In conjunction with our assessment of the condition of our facilities, we should also conduct a study of space use and needs, in order to understand more clearly how our buildings are currently being used by our faculty, students, and staff, as well as how they might better serve our needs in the future. Many constituents expressed a strong desire to have academic and student activities concentrated more centrally on campus, while moving functions that do not directly involve students on a daily basis to the perimeter of campus. A thorough study of our space use and needs would enable us to be more thoughtful about the prospect of repurposing and reallocating our existing buildings near the center of campus. Some of that work has already been done for the Science Center and residence hall sectors, but a campuswide analysis would be an important component of a master planning process.

A comprehensive study of our space use and needs will also help us determine how we might better use our existing campus footprint in sustainable and responsible ways. A first principle in achieving greater sustainability is to use our current buildings as effectively as possible before considering any new construction. This may require sharing spaces during parts of the day, which in turn might mean adjustments to certain kinds of work schedules to match the availability of limited space. We should also consider co-working spaces, telecommuting policies, and, on the student side, fewer single rooms in our residence halls. These behavioral changes could be challenging to implement, but they may be necessary to ensure that we are using our existing spaces in ways that accord with our shared values and goals.

Recommendation: The college should develop a long-term plan for how the campus is used over the summer.

Both the condition and use assessments of our facilities should include specific consideration of how the campus is used over the summer. The college currently hosts a variety of summer programs, which include education programs that serve our own students, the Williamstown Theatre Festival, summer camps, a housing program for students working on campus, and several small conferences and events.

These various programs, as well as the regular activities of our faculty and staff, keep the campus quite busy during the summer, but this is also the period when our Facilities staff performs the majority of the maintenance and repairs of our buildings, especially the residence halls. Increasing demand for space, particularly from our own educational programs and the Theatre Festival, has constrained our ability to undertake this work during the summer months, and we expect that demand to grow even more, which will further hamper our maintenance program.

A comprehensive study of current and projected use of our facilities in the summer will provide us with reliable data to inform any potential changes to schedules and appropriate trade-offs between the demand for space and our need to perform critical maintenance and repairs of our buildings.

IV. SUSTAINABILITY

Recommendation: The college should continue to experiment with challenging and innovative sustainability standards and begin planning for the replacement of the central heating plant.

We have already described the college's comprehensive approach to sustainability earlier in this report, and the Sustainability Working Group will provide detailed strategies for future efforts in this area. We offer here a few strategies for sustainability, many of which are already in use, related specifically to the built environment.

The college should continue to experiment with rigorous, established standards for sustainable construction. Every project is different and we should always seek to implement a strategy that best suits an individual project while maintaining the highest standards. Current methodologies and certification systems such as ILFI petals, LEED, Passive House, Net Zero, and Zero Energy should all be considered. We should also continue to maintain aggressive Energy Use Intensity (EUI) targets for all buildings and use the Green Gauges methodology to assess and track EUI throughout

the design and construction process. Finally, the college should continue to perform embodied carbon analyses whenever demolition of an existing structure is being considered, in order to ensure that we are implementing the most sustainable approach.

Likewise, we should pay particular attention to our historic buildings and the potential for their restoration as a way to meet evolving programmatic needs. While these kinds of restoration projects can be challenging, particularly regarding accessibility, they often represent the most sustainable course of action, while also aligning with many of our other core values.

Our efforts to meet rigorous standards of sustainability must also produce clean buildings that promote the health of their users. Every construction and renovation project should strive to optimize natural light, enhance indoor air quality, and pay close attention to the health implications of the materials used in construction.

Lastly, the college should continue to investigate the costs and operational implications of replacing our fossil-fuel-driven central heating plant with a renewable source for on-campus energy. While this would be likely a decades-long process, it is important to understand the potential impact of such a transition, both in the short and long term, as we develop a master plan and proceed with construction and renovation projects on campus.

In conjunction with this work, we need to assess our current electrical distribution system on campus. As Williams becomes more electrically invested in renovations and new construction, an upgrade to the existing system will be required. This change would include increasing the capacity of our electrical distribution system along with equipment upgrades in most buildings to accommodate this change.

V. BUILDING COMMUNITY

Recommendation: As part of the master planning process the college should develop and implement a comprehensive plan for the landscape of the college, with particular emphasis on accessibility and the role of the physical environment in building community.

One of the most prominent themes that emerged from our outreach sessions was the desire to approach the built environment with greater attention to its role in fostering a more inclusive community. Creating a more transparent planning process that engages as many constituents of our campus community as possible is an important part of this effort.

Our planning process needs to be more thoughtful about how we construct spaces designed for members of the campus community to engage with one another academically, professionally, and socially. There was some concern that the college has been building separate spaces in different places all over campus and that this is not serving the goal of bringing people together. As we design and redesign spaces in the future, we need to be more intentional about how they facilitate interactions on campus.

We should pay particular attention to how outdoor spaces might enable and encourage the variety of personal interactions that so many in the community desire. This might lead to the creation of

outdoor gathering spaces or pathways that allow for more chance encounters. We should also be more intentional about the interaction between pedestrians, bicycles, and vehicles on campus. We should examine potential changes to the Route 2 corridor that could improve pedestrian access across the road, and we should consider limiting vehicular traffic in the interior of campus and moving parking lots to the perimeter of the campus.

Reed Hilderbrand Landscape Architects recently completed a study that considered the natural environment on and around campus, the movement of people and vehicles around campus, and connections to the surrounding town. This work can be an excellent starting point as we begin to plan for a more inclusive and accessible landscape that is welcoming and encourages community gatherings and interactions.

A key component of inclusion with respect to the built environment is accessibility. Our hilly topography and historic buildings pose significant challenges to achieving the level of accessibility we desire on campus. As described earlier in this report, we have a state-approved plan to create accessible rooms in every type of residence hall, and we meet every building code requirement for accessibility on campus. But we need to increase our efforts in other areas.

One idea from the Reed Hilderbrand study was to create “lily pads” on campus, each with convenient drop-off spots and easily accessible corridors to academic and student-life spaces in its respective section of campus. This kind of creative proposal can be explored most effectively within a master planning process that keeps accessibility at the forefront.

Recommendation: The college should examine the portfolio of college-owned housing and make changes to meet the needs of faculty and staff more effectively.

Another area in which we can adapt the built environment to foster a more inclusive community is college-owned housing. Our outreach revealed that the current portfolio of housing does not always meet the needs of newer faculty and staff. To address this concern, the college should actively seek to diversify its holdings, including more apartments and perhaps co-housing arrangements. We should also explore arrangements with local developers to create more diverse housing stock in the community through private investment, rather than college resources, and investigate housing options in neighboring communities.

VI. ENGAGING THE NATURAL ENVIRONMENT

Recommendation: As part of the physical landscape plan the college should pay particular attention to vegetation, trees, viewsheds, and lighting on campus.

The natural beauty of our environment in the Berkshires was another recurring theme of our discussions. Our outreach sessions confirmed a widely held desire on campus to pay close attention to our natural environment as we consider new and renovated buildings, open spaces between buildings, and circulation around campus.

We should ensure that all building projects look beyond their immediate footprint to align with and enhance the existing campus landscape, so that we can offer members of the college community and visitors alike an inviting and inspiring engagement with the college's natural context.

We need to pay more attention to the kinds of vegetation we plant on campus and we should implement sustainable landscape systems and practices. We should maintain a vibrant and diverse tree canopy that is aligned with natural systems. We should also seek to preserve the magnificent viewsheds across the entire campus.

Finally, we should incorporate a thorough assessment of lighting on campus into the master planning process. We heard concerns that there is too much lighting in some sections of campus and too little in others. Lighting is a major safety issue and we must maintain adequate light levels, especially in more remote sections of campus. However, there may be places where we may be able to reduce lighting, and we should look at alternative ways to provide sufficient lighting without adding to light pollution, for example, through the use of LED bollards along walkways.

VII. CLASSROOM ASSESSMENT

Recommendation: The college should perform a comprehensive assessment of classrooms and make recommendations for changes to the current portfolio of classrooms and the creation of a formal maintenance program.

One aspect of facilities assessment that we especially want to highlight pertains to our classrooms. No space on campus is more fundamental to our core academic mission. Our outreach sessions with faculty and students revealed several concerns about the number, configuration, location, condition, maintenance, and availability of classrooms across campus.

Particular concerns were raised about the condition, configuration, and flexible use of furniture in classrooms; the number and configuration of blackboards and desktop lecterns in some classrooms; the number of classrooms in the center of campus and the lack of classrooms that work reasonably well for larger seminars; and the challenges of reserving classrooms after the end of the academic day for department colloquia, meetings, and social events. We also heard related concerns about the lack of adequate space for tutoring sessions and testing accommodations.

On a positive note, there was general agreement that the state of technology in our classrooms was good. OIT maintains and updates technology in classrooms in a systematic and comprehensive manner, and many people see that as a standard that could be emulated in other aspects of the classroom experience.

The large number and range of comments we received on these topics confirms the need for a systematic review of classrooms, which should include an assessment of the number, size, location, functionality, and aesthetics of our existing portfolio. This assessment should also offer recommendations about specific changes to that portfolio, as well as a formal plan to update and maintain classrooms on a regular basis.

VIII. PREPARING STAFF FOR A MORE COMPLEX ENVIRONMENT

Recommendation: The college should implement a formal professional development program for all Facilities staff and increase the use of technology in the Facilities department.

As our building systems become more and more complicated, it is essential for our integrated Facilities staff to stay current with on-going training and professional development. As the number, variety, and complexity of facilities increase, the Facilities Operations and Maintenance group should adapt in size and complexity accordingly. In all cases, PDC and Facilities Operations and Maintenance require a knowledgeable, skilled, and well-trained management and technical staff, in addition to a well-planned maintenance program.

On-going training and professional development should play a more integral part in the culture and practices of Facilities Operations and Maintenance. One potential avenue for training is the Institute for Facilities Management, offered twice a year by the Association of Physical Plant Administrators, which comprises the four core areas of general administration and management, maintenance and operations, energy and utilities, and planning, design and construction.

Offering training and development for those who are interested sends a message that the college cares about the success of its workforce. Professional development helps individuals to perform better, prepares them for positions of greater responsibility, and fosters greater job satisfaction and more successful retention of employees.

We should also consider ways to promote the use of new technology among the Operations and Maintenance staff. As we described earlier in the report, the Planning, Design and Construction staff have recently implemented several technological initiatives. The Facilities Operations group is currently implementing a new system for work orders but could benefit from greater engagement with the latest technology in the field.

A related need in our current building process is the formation of integrated teams for specific projects. It is imperative that PDC, Facilities Operations and Maintenance, OIT, and the Zilkha Center form teams early on in the process of a building project in an effort to gain better understanding of our more complicated buildings. These teams need to work together during the planning, programming, design, construction, commissioning, close-out, and warranty period of a building project, so that a complete understanding of the program, environmental goals, and building systems is gained from the very beginning of a project, rather than only at its completion.

IX. FINANCIAL SUSTAINABILITY

Recommendation: The college should continue to be prudent in the expenditure of funds for capital projects and examine optimal use of existing spaces before constructing additional space.

As we plan for a more environmentally sustainable, aesthetically pleasing, accessible, and inclusive built environment that meets the needs of all the constituencies on campus, we must also be attentive to financial sustainability. The college funds the majority of its capital improvements through a

combination of debt, gifts, and college operating budget. While we are fortunate to have considerable resources, those resources are not unlimited.

All debt we issue to fund capital projects must be repaid as part of the college's operating budget. These are permanent commitments that cannot be reduced when we experience the next market downturn, so we have to be prudent about the use of debt in order not to limit critical programmatic initiatives. We are fortunate to have a generous alumni community that provides substantial funding for capital improvements on campus, but there are many other programmatic needs on campus, including faculty support, financial aid, and student services, that vie for those important philanthropic contributions.

There are also significant operating costs associated with the built environment. While we strive to build the most sustainable buildings possible, there are additional operating expenses associated with any new square footage. Utility costs, cleaning, maintenance, and support for the programs using the building all have to be considered when we contemplate the addition of new square footage on campus.

The college has a history of investing in the maintenance and renewal of our facilities through the operating budget. As a result, the condition of our facilities is generally much better than those of our peers. Making substantial additional investments in the renewal budget to address the needs identified in this report is important, but those investments must be balanced against other priorities in the operating budget.

These financial considerations will require us continuously to review the use of space on campus, in order to ensure we are making the best possible use of our current built environment. We must be open to more effective and efficient use and reuse of existing spaces, as well as sharing space where appropriate.

We must carefully consider whether the reconfiguration of existing spaces can meet our needs, rather than assuming that we must meet those needs through the construction of new square footage on campus. We should also look for ways to take greater advantage of unused and under-used spaces on campus and in the surrounding community.

All of these strategies will allow us to balance our various commitments and aspirations regarding the built environment in the most financially responsible manner possible.

Appendix 1

Working Group Charge and Questions

Our buildings, grounds, and infrastructure support and shape the academic and co-curricular mission of the college. As our programmatic needs have changed, so, too, have our buildings. Our largest building projects in recent years have focused on core areas of the college, including academics, student life, and infrastructure. We have also invested in faculty and staff housing, a childcare center, and strategic community projects.

Despite the recent boom in construction, there are still areas of campus that will need attention in the coming years. Any new construction will need to meet programmatic goals and be financially responsible, sensitive to the campus and community, and consistent with our sustainability standards.

The working group is charged with examining the principles and procedures that guide our decision making regarding new buildings and other campus improvements, including:

- Examining the process for identifying and approving campus projects;
- Improving communication to the community;
- Setting standards for assessing current facilities and demand for additional space;
- Balancing building needs with our sustainability commitments;
- Ensuring we incorporate the appropriate technology infrastructure in our buildings;
- Preparing our staff for a more complex built environment.

This workgroup should consider the following questions:

- How do we identify and approve new buildings and renovation of existing structures? Do we need an overarching campus plan to guide our decisions? How can we ensure that our planning reflects and supports our broader goals and values?
- How can we most effectively communicate with key campus stakeholders at every point in the building process? How do we appropriately engage the community—town agencies and boards, neighbors to campus and citizens generally – in the process?
- How do we assess the condition and use of our current facilities? How do we evaluate the demand for additional space on campus? How do we balance other priorities, including, but not limited to, architecture, aesthetics, technology, accessibility, historical context, and landscaping?
- How do we balance our building needs with our commitment to reducing both embodied carbon and carbon emissions? How should we think about the full life-cycle implications of not just sustainability, but also operating costs and maintenance?
- How can we ensure that our technology infrastructure keeps up with evolving building systems, sustainability goals, academic needs and our changing expectations for technology?
- How will we prepare our design and construction and operation staff— as well as other key people across campus—for this increasingly complex environment?

Appendix 2

Methods and Outreach

The working group was charged with examining the principles and procedures that guide our decision-making regarding the built environment at Williams. The group sought to determine what kind of processes would lead to the most thoughtful, responsible, and transparent decisions about capital projects; how best to involve the college community in those decisions and communicate the results widely and clearly; and how to align all campus planning with the core values of the college, particularly our overarching commitments to sustainability, equity and inclusion, and financial responsibility.

In keeping with the guiding principles of the overall strategic planning process, we devoted the bulk of our efforts to sustained outreach throughout the campus and local community. We met with over two dozen groups and committees representing faculty, staff, and students; we participated in four joint sessions at The Log with other working groups; we met with members of the local community in Williamstown in conjunction with the Williams in the World working group; and we held conversations with elected officials and staff from the town government. The working group also participated in a campuswide planning day, a strategic planning retreat, an alumni phone-cast, and discussions with the Campus Planning and Construction Committee of the Board of Trustees.

In addition to these outreach efforts, we reviewed a wide range of previous campus planning efforts undertaken by the college, examined research about our peer institutions' practices around master planning, and investigated various training programs for facilities staff, as well as sustainability standards and methodologies.

The recommendations we have offered in this report reflect the community's strong interest in seeing the college develop a thoughtful and transparent plan to guide decisions regarding the built and unbuilt environments. Likewise, our outreach revealed a desire for clearer and more consistent communication about overall planning efforts and specific projects. Finally, the community places a very high priority on considerations of sustainability, inclusivity, and attention to the natural environment in all decisions regarding campus planning.