Executive Summary

Welcome to the fourth State of Facilities in Higher Education report. Over the years, this report has become the definitive document for trends that affect campus facilities across the United States and Canada. This year’s report is no different. A review of the data from 2015 reveals several key insights into the challenges—and opportunities—that face campus facilities managers and finance leaders. According to our analysis, three key conditions are affecting the current state of higher education facilities: enrollment levels, facility age and use, and the availability of capital.

ENROLLMENT — College and university enrollments are, in aggregate, either stable or declining. As a result, many campuses now have more space to maintain than students to fill it. Of course, different types of institutions are facing different enrollment-related challenges:

- Smaller institutions that borrowed money to build or renovate space in hopes of attracting students have fewer students now than they did in 2007. That means more debt and less tuition revenue to repay it.
- Comprehensive institutions, after a surge of rapid growth, are bringing new space online just as enrollment is declining.
- Research universities continue to grow and have more capital, but struggle to manage space and address campus priorities.

FACILITY AGE AND USE — The majority of buildings on most campuses were constructed before 1975 and have passed key thresholds for renewal. On many campuses, capital investment to renew these older buildings has been postponed in favor of new construction. As a result, maintenance backlogs are reaching a level that keep campus facilities managers on a reactive footing—addressing critical building envelope and mechanical system problems and responding to daily emergencies.

CAPITAL INVESTMENT — Although institutional operating budgets and other recurring sources of facilities and maintenance funding have increased, they are not keeping pace with either inflation or the growth of campus square footage.

Given these trends, serious problems, including building failure, are inevitable. Fortunately, campus leaders are learning how to manage the risk. They have enacted integrated strategies to respond to daily challenges and still change the campus age profile, keep the facilities backlog in check, and use limited capital and staff resources more strategically.

We found campuses that implement policies and practices in four specific areas have experienced greater success in navigating the relentless trials of facilities management:

1. Lower capital and operational demands.
2. Make the problem “smaller” for decision-makers.
3. Make a greater impact with capital funding.
4. Manage operational resources more effectively.

The most successful campus leaders also use data and comparative metrics to document their accomplishments and make the case for continued or increased funding.
Introduction

This is the fourth consecutive year Sightlines has published the State of Facilities in Higher Education report. The first three reports became the definitive documents of record for North American campus facilities trends. The reports also spawned complementary reports and other data collection efforts. For example:

- The State of Sustainability in Higher Education was published in 2015 by Sightlines and the University of New Hampshire’s Sustainability Institute.
- Two additional Sightlines studies—one for Canadian Association of University Business Officers and another for the Association of Public Land Grant Universities—documented growing backlogs of deferred maintenance at Canadian universities and at U.S. schools of agriculture that are negatively affecting the condition of academic and research buildings.

A review of the data for this 2016 report revealed several key insights into the challenges—and opportunities—faced by campus facilities and finance leaders. Most of these insights are familiar, as we reported on similar trends in previous reports; but some changes provide new understanding of the actions and strategies campuses have used to overcome the most prevalent challenges presented by the data.

Data Set Statistics

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Data collection
Each year, we visit campuses from across North America to collect data on 200 indicators of facilities and financial health. We then compile that data in a comprehensive database.

Given the size, comprehensiveness, and consistency of our data over time, our confidence is high that our analysis of campus facility trends are valid and reliably represent the higher education industry.

Key trends and insights
Our analysis of 2015 data indicated that the conditional effects of enrollment, facility age and use, and available capital investment heavily influenced the various trends evident in the 2015 data. Below we briefly explain the general trends within these areas, and explore the specific data in more detail later.

**ENROLLMENT**
College and university enrollments are, in aggregate, either stable or declining. In light of the building boom of recent years, many campuses now have more space to maintain and fewer students to fill it.

The changes in enrollment vary by type of institution, with both comprehensive universities and small institutions experiencing a leveling or even decline in enrollment. Research institutions, however, continue to increase enrollment, and at a pace that exceeds the available space. Colleges and universities in certain geographic areas, like Texas, are likewise seeing a growth in student enrollment and need additional space to accommodate the required academic programs and student services.

There are important financial implications in the changes in enrollment. In past years, many institutions took on additional debt to pay for expansion. Without the increased tuition to help pay off that debt, these institutions must rely on revenue from endowments and other funding to service the liability from new construction.

**FACILITY AGE AND USE**
While new space is being added, at the core of most campuses are buildings constructed before 1975. These buildings have passed key thresholds for renewal of both space and building systems, like HVAC, electrical and plumbing.

On many campuses, investment in the renewal of older buildings has been postponed, often in favor of new construction. The result is a growing backlog in deferred maintenance. Across the board, new, high-tech buildings are surrounded by older buildings in need of full-scale renovations.

Interestingly, new analysis shows that 50 percent of campus growth is in buildings not used for academic programs. This is part of a 100-year trend to make campuses more residential and entice prospective students with better housing, dining, and other support services.
CAPITAL INVESTMENT
Overall capital expenditures for facilities renewal have grown modestly since the 2008–11 recession, but many campuses have not experienced a full recovery to the peak budget levels of 2008–09. In addition, despite recent positive adjustments, facilities operating budgets are not keeping pace with either inflation or growth of campus square footage. As a result, maintenance and custodial staffs have not expanded adequately to cover newly constructed space. In fact, average coverage rates (expressed as gross square footage by full-time equivalent, or GSF/FTE) have increased to once unheard-of levels.

Integrated Campus Stewardship
While these trends seem to equate to overwhelming obstacles for facilities managers and finance leaders, we found evidence (both anecdotal and quantifiable) that many institutions are implementing strategies that are making a positive difference.

The most successful strategies come from campuses that have clear policies and actions for managing space, capital, and operations in an integrated fashion, as depicted by the image below.

Higher education leaders can do more within the existing resources—and can manage risks more effectively—if they take a holistic approach to the problems they encounter. It is, therefore, important to examine the various data trends in this report in terms of how they affect the integrated management of space, capital, and operations on campuses.
**Space**

*Having the right amount and type of space*

College and university leaders are increasingly concerned about whether they are overbuilding and incurring additional facilities-related overhead that cannot be supported by tuition revenue. According to the data, there is good reason for their concern.

After seeing enrollment grow by 7 percent from 2007 to 2012, campuses experienced a leveling of enrollment between 2013 and 2015. All evidence supports a continuation of this leveling—or a greater decline—into the 2020s. Unfortunately, many campuses are still working to match available space to the pre-2013 enrollment projections through new construction. That new space started to come on line just as the enrollment surge ended. The result was an expansion mismatch between space and enrollment.

Some of the mismatch is a result of delays in bringing any new space on line. Decisions to construct a building are made years before the building ever opens. Campus developers, therefore, are always at risk of building to old demand.

Several campuses, realizing the possibility of a decline in enrollment, used the new construction (especially for housing, dining, and recreation facilities) as a way of attracting additional students. The hope being that the development of new amenities and support services can make a campus more attractive to millennials. According to several campus administrators, today’s student body “expects” high-end dormitories, multiple dining options, and modern fitness and recreational facilities. But fulfilling those expectations comes at a cost.

Of course, the trend in declining enrollments varies by type of institution, and there are parts of the country (namely Texas) where student body growth is outpacing the ability to build enough space to accommodate the required programs and student services.
We disaggregated the space and enrollment data by three types of institutions: comprehensive universities, research universities, and small institutions.

- Comprehensive institutions experienced an 8 percent growth in student enrollment from 2007 to 2012 and built new space to accommodate those students. However, enrollment has increased by an additional 1 percent since 2012, but the cumulative growth in space is nearly 14 percent.

- Research universities experienced the greatest enrollment surge (up 13 percent since 2007), but have kept their expansion rate to 8–9 percent.

- Small institutions have not fared well in the last 4 years. Smaller institutions have 2 percent fewer students than they did back in 2007. Even though these institutions have the lowest rate of facilities development (just over 4 percent), many now have more space but fewer students and far less tuition revenue.

Our analysis revealed another interesting trend. In the last 100 years, more non-academic space has been constructed than academic space. In 1915, 70 percent of available space was built specifically for academic purposes. One-hundred years later, the ratio is close to 50-50. In the last century, colleges and universities have become more residential and offer more campus services, like dining and recreation options, to make living on campuses more attractive to prospective students. Another trend that is likely to continue.
Historically, constructing non-academic space makes economic sense, especially for larger institutions. Housing, dining, and recreation services are charged separately to students (as auxiliary services), and the revenue directly offsets both debt service and operating costs. The economies of scale work in favor for the university or college if all students pay a full recreation fee, even if they don’t use the new pool or fitness center.

Unfortunately, when student enrollment drops, or fees are not set high enough to offset costs, the difference has to be made up through the operating budget or covered by an increase in tuition. The current trends in space and enrollment are worrisome to many campus administrators. Fearing they have gotten into an unsustainable amenities race, they must consider the cost implications of both the debt already incurred for building and the ongoing costs required for daily operations.

**Addressing the needs of aging buildings on campus**

After spending capital to build new space, campus administrators realize there is little money to address the much-needed renovation and renewal of older buildings on campus.

Higher education institutions across the United States and Canada are burdened with an unprecedented need to renew, renovate, and update aging buildings, many of which were built during one of two waves of construction.
The first wave coincided with a building boom in the 1960s and 1970s. In fact, almost more than 35% of the campus space currently in use was constructed to accommodate the baby boom generation. The buildings were built quickly, and many were never intended to hold up over time. In addition, oil (the primary fuel for heating) was plentiful and inexpensive at the time of this first building boom, so little attention was given to energy efficiency.

The second wave of construction started in 1995 and continued through 2015. This second building boom was mostly driven by increasing enrollment of millennials and their changing expectations. Campuses became more residential and added amenities. In addition to new construction during this era, many of the more historic, pre-war buildings were renovated, adding to the amount of space available for use.

The so-called “modern” buildings constructed during the 1960s and 1970s are currently driving the “catch-up” needs for campuses. They need to be repaired, renovated, or replaced. These buildings also represent a significant portion of the growing backlog of deferred maintenance. The second wave of construction—labeled as the “complex era”—are driving the “keep-up” needs for campuses. These buildings are more complex and require regular maintenance to keep systems operating at peak performance.

The conundrum faced by campus decision-makers is finding enough money to address both the catch-up and keep-up needs at the same time. For most institutions, there is simply not enough money to do both, and administrators must make hard allocation decisions about already tight capital resources.

A comparison of campus construction age and renovation age (defined as more than 50 percent of the current replacement value being invested in the building to reset the clock on building systems) reveals the kinds of decisions being made. We found that most campus leaders have set priorities to gut-renovate most buildings over 50.
The pressure to retain the character and history of older buildings is often intense. This is appropriate if the preservation is included as part of a broader sustainability goal. However, preservation becomes an undue burden if such buildings do not align with a future use or are exceedingly difficult to renovate.

Thirty-eight percent of the space on campuses was constructed more than 50 years ago, but only 25 percent of current space is considered “over 50” in terms of renovation age. New construction and full renovations have improved the overall renovation age on campuses, with 45 percent of space considered to be less than 25 years old.

An interesting number is the percentage of space in the 25- to 50-year building cohort: 31 percent based on construction age; 30 percent based on renovation age. These numbers suggest that campus leaders are postponing full renovations decisions on the buildings constructed in the 1960s and 1970s. Given the poor quality of their initial construction, some of these buildings are candidates for demolition rather than renovation.

One final space-related observation: The renovation-age profile in 2016 is much more balanced than the construction profile, meaning a more even distribution of space across the four age categories:

- Buildings less than 10 years old
- Buildings built or renovated within the last 10 to 25 years
- Buildings more than 25 years old (either from original build or last renovation)
- Buildings built or last renovated more than 50 years ago.

This is a positive development, because it is evidence that campus leaders are making systematic decisions to address space renewal and renovation requirements. There is considerable evidence that regular annual capital investment can be used effectively to address the risks across these age categories.
Making an impact with finite resources

With enrollment leveling, even declining, many campuses are experiencing a drop in tuition revenues. In addition, most state governments are not increasing capital funding for campus construction at public institutions.

The drop in tuition and government subsidy means little for new construction, as those projects are most often initiated by an endowment or other influx of one-time funding. The constraint on resources means more for the renovation and daily upkeep of existing facilities. To repair and renovate buildings, campuses are forced to either allocate dollars from their operating budgets or borrow money.

Data on capital investment for existing space shows a significant shift in terms of how campus leaders view these two options. Since 2007, the amount of capital invested in existing space has averaged $5 per GSF (gross square foot), not adjusted for inflation. Investment levels dropped below that average in 2010–11, following the Great Recession, but rebounded to nearly 2009 levels by 2015.

Our analysis also revealed differences between public and private institutions when it came to capital investment in existing space over the last 9 years. While public institutions averaged about $4.50 per GSF, private institutions averaged $5.20, about $0.70 more per square foot. However, the availability of one-time capital funding has kept the total capital investment by public institutions relatively steady.

Private institutions, which rely on debt and gifts for one-time capital, experienced a major reduction in funding between 2008 and 2010. These institutions have slowly worked their way back, but there is clearly a residual reluctance to take on more debt to address the repair and renewal of campus buildings.
Of note for both public and private funding is the growth of annual capital coming from institutional budgets. In the last 8 years, Sightlines members increased appreciably their spending on repair and renewal efforts:

- In 2007, public institutions spent $0.77 per GSF on space renewal from annual capital sources. By 2015, that amount nearly doubled to $1.48.

- In 2007, private institutions, which historically rely more on annual institutional capital to fund building repair and renovations, spent $1.55 per GSF. By 2015, that amount rose to $2.06.

We consider this a very positive trend. Steady annual investment can dramatically change the renovation-age profile of a campus.

**Having enough money to address aging space**

Obviously, campus decision-makers grapple with the competing resourcing needs of older, poorly constructed spaces; the upkeep of newer, more complex buildings; and the desire to build new space.

The **constraint on resources means more for the renovation and daily upkeep of existing facilities.**

The backlog in facilities maintenance, modernization, and infrastructure investment grows steadily year after year. In 2007, the campus facilities backlog was an average of $82 per GSF. By 2015, the backlog had grown to more than $100 per GSF; and there are no indications the rate of increase is slowing.
Again, backlogs at public and private institutions diverge. In 2015, public campuses had an average backlog of over $108 per GSF. Maintenance backlogs for private campuses averaged $88 per GSF, about 19 percent lower. Remember that private campuses invest about $0.50 more per GSF than public campuses, which may explain some of the difference. Still, the backlog in maintenance, modernization, and infrastructure has grown steadily for both public and private institutions since 2007.
Doing more with less

Since the start of the Great Recession in 2008, facilities leaders have struggled to increase their operating budgets. The situation was made worse as staffing levels dropped and existing vacancies remained unfilled. In 2008, campuses spent an average of $4.52 per GSF on daily service (maintenance, custodial, and grounds staff) and planned or preventive maintenance. Four years later, that amount increased by just $0.21 (to $4.73), a cumulative increase of just over 4 percent.

A modest improvement from 2012 to 2015 saw operating spending increase 7 percent to $5.07 per GSF. Although these increases have kept up with tepid increases in the consumer price index, today’s facilities organizations must recover from years of deferred investment and address a significant maintenance backlog. Moreover, problems that could have been addressed with routine maintenance—had it been funded—now require investment for larger construction projects that must accommodate rising construction costs, which are far outpacing inflation nationwide.

One important positive highlight: Despite constraints on facilities operating budgets, our data show that planned maintenance (PM) increased 27 percent between 2008 and 2015 (from $0.26 per GSF to $0.33). It would seem that the campuses represented in our database are being more proactive in their maintenance. Discussions with campus facilities leaders also suggest they are taking a more intentional and preventive approach to maintaining the newer, more complex buildings (those constructed from 1995 to 2015), a change that has contributed to the rise in PM.
**Staffing to the right levels**

Years of flat operating budgets and the growth in overall square footage directly affects the level of staffing and the amount of space covered daily. From 2007 to 2015, the average coverage rates for campus maintenance staff rose from 82,000 GSF per full-time equivalent (FTE) to 88,000 GSF, an increase of 7 percent. During the same period, custodial staff coverage rates rose from 32,000 GSF/FTE to 35,000, an increase of 9 percent.

We noted no substantial differences in maintenance coverage rates between public and private campuses. In 2015, custodians at private campuses covered almost 2,500 GSF less per FTE than custodians at public campuses, where the rates now exceed 36,000 GSF/FTE, on average. While the change in coverage rates over an 8-year period may not seem significant, facilities leaders report that their staffing levels are stretched like never before. As one observer put it:

>“Today's average coverage rates for maintenance and custodial staffing were considered to be outlier levels 10 years ago.”
While there is little reason to believe staffing levels will be restored to prior-year levels, they are beginning to level off. It may be that campuses have stretched coverage rates to their maximum.
Strategies for Success

As we have already detailed, the most recent data revealed important trends in facilities management:

- The age profile of a campus is driven by the need to renovate or replace buildings built in the 1960s and 1970s, many of which were poorly constructed to begin with.
- Campuses added more square footage to address increasing enrollment, which has now leveled off (or is even in decline).
- The combined demand to “catch up” on the renewal of aging buildings and “keep up” newer buildings is much higher than the availability of capital funding.
- Backlogs continue to grow even though capital funding is finally back to pre-recession levels, although not adjusted for inflation. Flat operating budgets have not provided relief to the backlog problem.
- Staff coverage rates have risen to levels that would have been well outside expectations just 10 years ago.

Given these “bad news” trends, why are we not seeing more building failures and serious facility problems on campuses?

One answer is that building failure and serious problems do occur every day, but there is enough new space that can be used if a building requires emergency repairs, renovation, or demolition. The other answer is that campus facilities and finance leaders have learned how to manage the risk of building failure and avoid serious facility problems.

Sightlines has been documenting how successful campus facilities and finance leaders change the age profile of their campuses, keep the facilities backlog in check, and use limited capital and staff resources more strategically. We found that successful leaders implement policies and practices in four major areas and most often work in all four areas simultaneously:

1. **Lower capital and operational demands.**
2. **Make the problem “smaller” for decision-makers.**
3. **Make the most of capital funding.**
4. **Manage operational resources more effectively.**

We explore each area in greater detail and provide case studies of campuses where these strategies have been implemented. The common theme in all cases is that facilities and finance leaders are changing the rules of the game.
Rutgers University is turning capital and operations challenges around by improving space utilization.

Faced with older buildings and limited reinvestment into existing space, Rutgers was struggling to meet maintenance requirements with limited capital funds—a familiar story to many. Furthermore, because average building size was much smaller than Rutgers’ Big 10 peers, the university was unable to harness economies of scale in operations.

To lower capital and operational stresses, Rutgers University shifted the paradigm of space planning and considered the problem in terms of growth, backlog, and utilization.

Rutgers instituted a new net-zero space growth policy, which freed up capital to address the maintenance and renovation needs of existing buildings. It also reduced capital and operational demand by targeting for demolition smaller buildings, or those with a high backlog. Then, to encourage smarter space utilization, the university adopted a budget model in which departments are charged for the space they occupy.

These policies have been successful in simultaneously keeping backlogs in check and reducing the overall cost of facilities operations.
Lower capital and operational demands

One strategy to address growing capital and operational demands for facilities is to get more money. Our data suggest that, overall, that is not happening for either capital or operations budgets—although we found some institutions are making the case for more capital funds from the campus annual budget.

Without more money, many campus leaders are working on ways to lower the capital and operation demand. But how can that be done, especially as the campuses recently added more space to manage?

We found that campuses are lowering capital and operational demands, and thus lowering the facilities overhead, by

- improving space planning and policies,
- creating a more balanced age profile, and
- improving space utilization.

**Improve space planning and policies.** In this report, we documented the growing backlog in deferred maintenance across both public and private campuses. Much of the backlog is concentrated in older, pre-war buildings and those buildings constructed in the 1960s and 1970s. Many campus leaders are now targeting for demolition non-historic buildings that are in poor condition. Some of these buildings will be replaced by more flexible structures, but many will not—and campus leaders are finding they can live without them.

Several campuses in our database have taken the additional step and implemented a no-net-new-space policy, keeping the net available space constant until they bring the backlog of deferred maintenance to acceptable levels. To be successful, campus leaders are asking critical questions about the need for additional square footage (which will only add to campus facilities overhead) as part of more effective space planning.

**Take actions to create a more balanced age profile.** Campus leaders like to show off new or newly renovated space, but too much space—in any age category—can lead to a backlog long term. In addition, too much space in one age category puts extra demand on both the capital and operational budgets. It is best to balance the percentages of newer (less than 25-year-old renovation age) and older space (more than 25-year-old renovation age). With a balanced space profile, campus leaders can regulate the allocation of capital resources as buildings and their systems come due for renewal.

**Improve classroom utilization if enrollment is flat or declining.** Studies of classroom utilization have shown that the average classroom utilization rate is between 50 and 60 percent. Considering most classrooms are busy during the 10 am–2 pm hours, but underutilized early and late in the day, many campuses are finding ways to work with faculty and students to make greater use of classrooms through better scheduling. Often that means putting all classrooms into a central scheduling plan, rather than relying on individual departments to set classroom schedules.
Sightlines recently conducted a detailed assessment of Wake Forest University’s 10-year capital need. The “big number” was a whopping $440 million. By segmenting the assessment into portfolios by campus and building function, however, Wake Forest was able to break down this total into more manageable pieces.

The result was a prioritized capital project list that applied risk management strategies and better reflected the institution’s mission.

A detailed, multiple-year capital plan offered a well-considered path for addressing the most important needs of the university. Campus decision-makers approved a $100 million plan for the immediate improvement of residential facilities, as well as an additional $150 million over the next 10 years to fund the capital plan.
**Make the “facilities problem” smaller**

To get the attention of campus leadership, many facilities managers have presented the backlog of deferred maintenance and day-to-day facilities-related requirements and emergencies as a large and growing problem. A common approach is to complete a detailed facilities assessment of the condition of the campus and present an extensive report with a big number to the president and board of trustees.

While the key decision-makers appreciate the due diligence of these facilities managers, having a big number without a detailed “get-well” plan stymies action. As one board chair said:

> *This backlog of deferred maintenance problem is so big, we don’t know where to start. And we will never get the kind of money needed to get it under control."

Over the last 2 years, Sightlines documented ways campuses are making the problem smaller—at least in terms of perspective—to spur action, new policies, and new funding.

**Manage campus facilities as a collection of assets and an investment portfolio.** The vast majority of colleges and universities are a collection of physical assets, and not every building is the same age or in the same condition. Some older buildings require full-scale renovation or demolition. Others may be newer, but require steady upkeep and preventive maintenance. Some older buildings may be in good condition, but need systematic maintenance over time.

Facilities and finance leaders are now thinking about their campuses as a portfolio of buildings, to which investments can be made over time. They realize physical assets can be managed much like endowment assets. A concept very familiar to the board of trustees and other key decision-makers.

**Prioritize capital resources with the understanding that funding is finite.** No campus has unlimited resources for upgrading and renewing all its facilities. Therefore, priorities need to be set.

Many campuses are now using a quad chart to help prioritize their expenditure of capital funding. On one axis is condition, with each building plotted on a 1–10 scale, with 10 being the excellent. The other axis represents the relevance of the building to the mission of the institution.

Buildings plotted on these two scales then fall into one of the four quadrants.

- Low mission criticality, poor condition
- High mission criticality, poor condition
- Low mission criticality, good condition
- High mission criticality, good condition.

Each quadrant requires a slightly different capital strategy. For example, buildings in poor condition but with high mission criticality are the highest priority for full-scale renovations. Buildings with low mission criticality and poor condition are prime candidates for demolition.

With a quick look at the chart, decision-makers can see what needs immediate attention, contracting for detailed condition assessments only on buildings identified as highly mission critical and in poor condition—which saves money and provides the right information for capital allocation decisions.
Consider time as an asset. Another way to make the backlog of deferred maintenance problem smaller is to set priorities and realize that work can be postponed without creating additional risk for the campus facilities.

For example, an assessment of a building’s HVAC systems may recommend a total replacement (a good idea if you can afford a full replacement). But campus facilities leaders need to ask follow-up questions. For example, “Can the mechanical system (like HVAC or electrical) be repaired or components replaced to buy more time (at least until capital resources are available)?” Repair is less expensive and can help campuses manage risk.

Unfortunately, priority setting for capital projects often stops when the highest priorities are identified. It is just as important to identify projects that can be postponed, or done on a smaller scale (component replacement), without increasing risk of a full failure.
The Pennsylvania State System of Higher Education (PASSHE) is one of the largest university systems in the United States, with 14 campuses serving more than 110,000 students, both undergrad and grad.

PASSHE needed system-wide integrative capital planning to optimize the impact of limited funding across 862 buildings and nearly 25 million square feet of classrooms, residence halls, administrative offices, and student support services (of varying conditions).

Beginning in 2014, Sightlines conducted a high-level assessment to model the 10-year capital needs of each PASSHE campus. Needs were broken down into high-, medium-, and low-risk categories according to the safety and program impact of potential building failures.

With the information from this study, PASSHE is planning the allocation of capital to address the most crucial needs across the system. PASSHE has also used this data to protect current funding levels and substantiate additional funding requests to the state legislature.
**Make the most of capital funding**

If a campus can lower the demand for capital and break the backlog problem into smaller, more manageable portfolios of work, it can make a greater impact with capital funding. We found campuses are making this happen in four key ways.

**Create a multiple-year capital plan.** The backlog of deferred maintenance did not happen overnight. It is the result of years of unchecked building deterioration and limited capital investment. So the problem cannot be solved by a massive infusion of one-time capital funding, even if it was made available. Fortunately, well-considered capital investment over time (based on priorities set by academic, finance and facilities leaders) can result in significant progress in taming deferred maintenance on campus.

**Increase capital investment from the annual operating budget.** Earlier in this report, we showed how both public and private campuses are increasing the amount of capital investment in their operating budgets. This is important. There is a cost associated with waiting to fix major facilities problems, so steady annual investment enables a campus to deal with a problem before it is too late. In years past, we reported that $1 in annual capital has an impact of $3–4 in one-time capital later. We have also found that campus facility leaders often struggle with managing the multiple projects associated with large infusions of capital dollars.

The most successful campus leaders know—and communicate—the data to show improvements.

Campuses may prioritize within their portfolio projects that directly affect the safety and reliability of building systems. This helps campus leadership address a problem before it affects the functional reliability of the building or becomes a danger to occupants. Another possibility would be to prioritize buildings that are critical to fulfilling the institution’s mission.

**Target capital to identified needs.** Earlier, we discussed the benefit of creating portfolios of work. Criteria should be set when developing those portfolios and prioritizing work.

One-time capital infusions are sometimes needed, but they can be very disruptive to the campus community that has to be displaced while buildings are gut renovated. It is better to continue the trend of increasing the annual investment and manage accordingly.

**Measure and track data that show improvements to build the case for more funding.** Campuses that are successful in controlling the backlog of deferred maintenance, track data on how capital investments have made a difference. This requires the campus to regularly measure the backlog: Is it continuing to grow? Have we been able to arrest the growth rate? or Are we reducing the backlog?

The most successful campus leaders know—and communicate—the data to show improvements and to win the confidence of decision-makers that further funding will be put to good use.
Managing Operational Resources More Effectively

Bowling Green State University

Increasing operations effectiveness has enabled Bowling Green State University to do a lot with few resources.

In 2008, the university began to centralize its facilities operations. Maintenance and custodial operations were reorganized into zones, allowing BGSU to “right size” staffing according to specific needs, save travel time, and consolidate fleet vehicles. To communicate service changes and solicit feedback, the BGSU facilities department met regularly with various campus groups.

BGSU has seen real benefits from this centralization and reorganization. Operational efficiency has increased and the university has avoided $6.6 million in costs since 2011.

Recognizing the relationship between a high maintenance backlog and costly operations, BGSU is reinvesting those savings to keep costs down. Within the past 5 years, BGSU has increased preventative maintenance spending an impressive 158 percent to extend the life of buildings and infrastructure and is now a far better steward of campus spaces.
Manage operational resources

Following the capital strategies cited above undoubtedly will help with the operations of any university or college system. Truly successful campuses go a step further. They prudently focus their efforts on managing the operational resources (fiscal budgets and staffing) to their greatest effect.

We found that effective facilities managers who have reduced the immediacy of problems by lessening the backlog have more time to focus on the following strategies.

Prioritize service and maintenance time according to condition and relevance. The same rationale for prioritizing capital projects (based on building condition and mission relevance) can be applied to daily operations. Effective facilities departments set out to prioritize the time spent on daily service and planned maintenance. For example, they expend more effort on preventive maintenance for buildings in good condition (to keep them up to date), where it will do the most good. Preventative maintenance has little effect on a building with a large backlog of deferred maintenance. If the rate of deterioration in better buildings can be slowed, it frees staff time to work in buildings that need major repairs.

Communicate standards for new service levels. Staff reductions inevitably result in changes in the level of responsiveness and service. Effective leaders work hard to communicate these new service levels to the campus community. We have found that, if the facilities department spends time explaining changes in service levels, the extension of response times often is accepted with little complaint. In fact, we know of several instances in which campus facilities departments are getting higher customer satisfaction levels, even with fewer available staff.

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To the campus community, communication is just as important as quality of facilities service being delivered.

Measure effects of service and maintenance and any changes in policy or practice. Most facilities departments record the cost of daily service and planned maintenance, but effective managers also measure the effect of such actions. They also seek direct feedback whenever changes are made to maintenance policies and practices.

If done properly, a timely survey of the campus community allows managers to make adjustments and mid-course corrections.

Colleges and universities across the United States and Canada are faced with many of the same challenges: level or reduced enrollment, deferred maintenance on aging buildings, and continued limits to capital and operational funding.
Campuses are in a seemingly unsustainable race to both “catch up” and “keep up” as they compete to attract the best students. With tuition revenue, endowments, and capital funding constrained, the age profile of many campuses continues to rise, as does the risk of deferred maintenance.

Fortunately, there is hope. Many campuses have overcome these facilities-related challenges by managing space, capital, and operations in an integrated way.

We work with hundreds of colleges and universities every year and have noted exemplary improvements in many. The reason for their success? They have been able to lower capital and operational demands, make the problem smaller for decision makers, get the most out of existing capital funding, and manage operational resources to the greatest effect.

The most successful facilities leaders also use data and comparative metrics to document their successes with capital and operational dollars. Confirming successful stewardship of their existing resources provides a solid base to make the case for continued funding.

Going forward, campuses will need to sustain these efforts—even expand on them. If campus leaders resolve to track, measure, and document their facilities-related performance, they will surely keep their campuses serving students well into the next century.
About Sightlines

Sightlines, a Gordian Company, is a leader in helping colleges and universities better manage their facilities operations and capital investments. Sightlines provides tools for strategic planning, analyzing and benchmarking that generate an independent, reliable comparison of campus performance in these areas against peer institutions.

Using its unique, proprietary Facilities Benchmarking & Analysis process, Sightlines visits each campus annually to collect more than 200 indicators of facilities and financial data and then identifies trends and provides useful analysis and benchmarks. With Sightlines, institutions receive the context and validation they need to make sound, clear, informed and financially credible decisions about campus facilities. As a result, campuses can optimize capital investments, address backlog of deferred maintenance projects, develop a strategy to steward physical assets, improve the effectiveness of facility operations, reduce energy consumption and better serve students, faculty, staff, and visitors.

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