



STATE OF FACILITIES IN HIGHER EDUCATION

**2015 Benchmarks,
Best Practices & Trends**

Operations

Space

Facilities

Challenges

Capital Investment

Strategies



INTRODUCTION

During the great recession (2008-2011), higher education faced tremendous financial pressures: operating and capital budgets were cut; the demand for financial aid increased; and everyone on campus including facilities leaders was asked to do more with less. Despite these challenges, student enrollment grew fueled by record numbers of high school graduates and finances stabilized through increased tuition revenue, recovery of State funding and improved endowment returns. All indications were that America's colleges and universities were bouncing back from the recession lows.

In Sightlines' *State of Facilities in Higher Education* report, in both 2013 and 2014, we cited warning signs of new challenges for colleges and universities. These trends have accelerated in 2015 and suggest that for many institutions the recovery, if it ever really occurred, was a temporary situation. Our 2015 report shows that enrollment and financial pressures require finance and facilities leaders to yet again find new ways to address the latest challenges:

To make real change, campus finance, facilities and academic leaders must unite clearly defined policies around space management, capital allocation and facilities operating practices.

- Declining numbers of high school graduates are affecting college and university enrollments in most parts of the country. Campuses that have grown space faster than enrollment now have more space to maintain and fewer students to fill it.
- At the same time institutions in states like Texas and Utah face unprecedented numbers of new students, many of them first generation college attendees. They are advocating for new capital funding to relieve overcrowding.
- Resources on most campuses remain constrained as net tuition revenue growth is limited by tuition discounting and the need to provide more financial aid to students.
- Continued financial constraints on State governments mean public institutions can expect no growth or reduced capital funding, flat operating budgets and in some cases freezes on tuition increases. Despite this, states across the country, from New Jersey to Missouri to California, have found ways to finance new capital programs.
- While private institutions continue to support capital investment, the sources of this investment have shifted from borrowing to institutional operating budgets and other recurring sources.
- Capital needs for facilities continue to grow as buildings constructed in the 1960s and 1970s have passed key

Challenges

age thresholds and need to be renewed. Deferred maintenance backlogs continue to grow at most campuses, despite evidence that leadership is making sound decisions regarding project selection.

- At the same time, the more complex campus buildings constructed since 1995 require attention to keep them operating efficiently.
- Different types of institutions are facing different challenges. On almost every indicator Sightlines tracks, research universities outperform other types of campuses. They continue to grow enrollment, manage

space and strategically allocate capital to campus priorities. Small institutions, both private and public, that are not highly selective are faced with the greatest challenges. Many of these campuses have borrowed money to build new or renovate existing space in hopes of attracting more students, but our data suggests that the strategy has not worked to date. They now have more debt and less tuition revenue to repay it.

The 2015 State of Facilities in Higher Education draws from the largest verified database of college and university facilities metrics in the country.

- *The database features 343 institutions with over 400 campuses in 44 U.S. states and four Canadian provinces with over 1.5 billion gross square feet of space.*
- *All data is collected and verified by Sightlines professionals.*
- *The database includes 60% public and 40% private institutions with a mix of large, medium and small institutions serving over 2.5 million students.*
- *The database is supplemented by our 2014 analysis of 51 Canadian universities with 200 million gross square feet of space.*

The findings from our new work with Canadian institutions is strikingly similar to what we have found at public institutions in the U.S., although these campuses tend to have significantly more students on a limited campus physical footprint (nearly all universities in Canada are publically funded, even those that began as private institutions).

The growth of the Sightlines database over the last two years and the consistency of data gathered at our member campuses increases our confidence that these trends are more real than ever. Despite the glum picture we present in this report, campuses are finding ways to respond. The roof has not caved in and building systems have not shut down, with a few notable exceptions. Why?

Paradigm

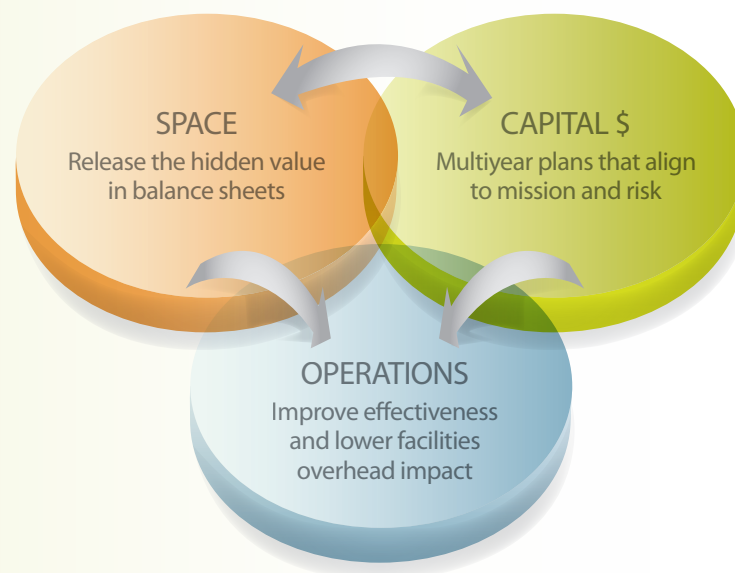
Across the U.S. and Canada Sightlines is engaged in new conversations with campus leaders to identify creative ways institutions can transform their physical environments while simultaneously reducing the percentage of institutional budgets dedicated to facilities. These discussions do not simply revolve around cutting budgets and waiting for disastrous consequences. They focus on identifying the primary drivers of facility investment and advocating for institutional policies that optimize resources and produce desired outcomes for facilities.

To make real change, campus finance, facilities and academic leaders must develop clearly defined policies around space management, capital allocation and facilities operating practices. We have learned that new construction cannot outpace growth or initiatives to preserve existing assets, even in campuses that have growing enrollments. Space policies must evolve to make critical decisions on renovating or demolishing buildings that are well beyond their useful life and do not support institutional priorities.

Similarly, capital allocation strategies must focus on supporting mission and mitigating long-term risk. The combination of these two initiatives will result in lower operating costs and more proactive facility management of the campus. Campuses that are getting ahead of the facilities challenges are not satisfied with “playing defense.” They are proactive and find ways to get ahead of the problems, recognizing that they need to take action before a building is in crisis stage.

Sightlines looks forward to playing an important role as a partner in the conversation as campuses work to find creative solutions to adapt to today's challenges.

The Sightlines' Paradigm



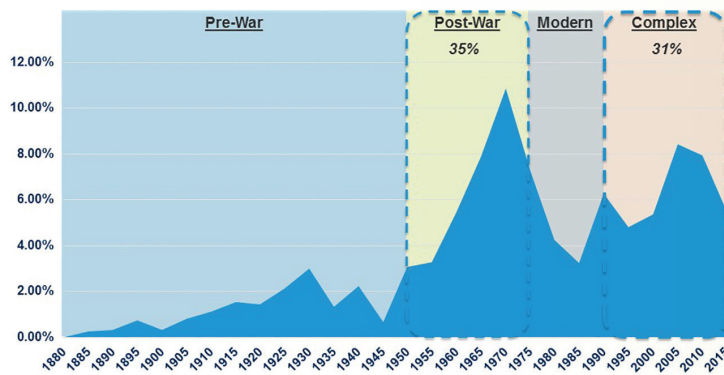
SPACE & DENSITY

The History

In our 2014 *State of Facilities in Higher Education* report, Sightlines documented two major trends regarding the construction of new space that we termed the “waves of construction.”

Constructed Space Over Time

Total Database GSF



*FY15 includes projections of new space online FY14-15

The 1960-70s building boom. Sightlines database identifies 1960-1975 as an era when almost 40% of current university space was constructed. The amount and speed of construction during this era means that many of these buildings were of poorer construction quality and experimental especially in mechanical systems that managed building environmental conditions. Not only are these spaces due for major repair and renovation, many of these spaces, even if renovated, will not meet today's programmatic needs.

Millennial expansion. At the same time the 1960s buildings are demanding investments, so are the spaces built since 1995. Sightlines database identifies this period as the second largest construction era with over 30% of all space nationally built since then. In general, these buildings represent higher quality construction and many are LEED certified with complex mechanical systems. This space has shorter equipment lifecycles which will require more frequent maintenance. These capital needs will inevitably compete with the 1960's buildings' needs.

Our 2015 update shows that these trends still are in place.

“Resetting the Clock” of Campus Facilities

The distribution of space across age categories is an important indicator of long-term facilities risk and therefore capital needs. When too much space is concentrated in a specific age category, such as between 25-50 years old, campuses are challenged to find the money to address the preponderance of needs coming due simultaneously. Faced with the challenge of having to “catch up” on the 1960-70s aging space and having to “keep up” the younger space built since 1995, there is evidence that campuses overall have achieved a level of success to date on resetting the clock on the oldest buildings.

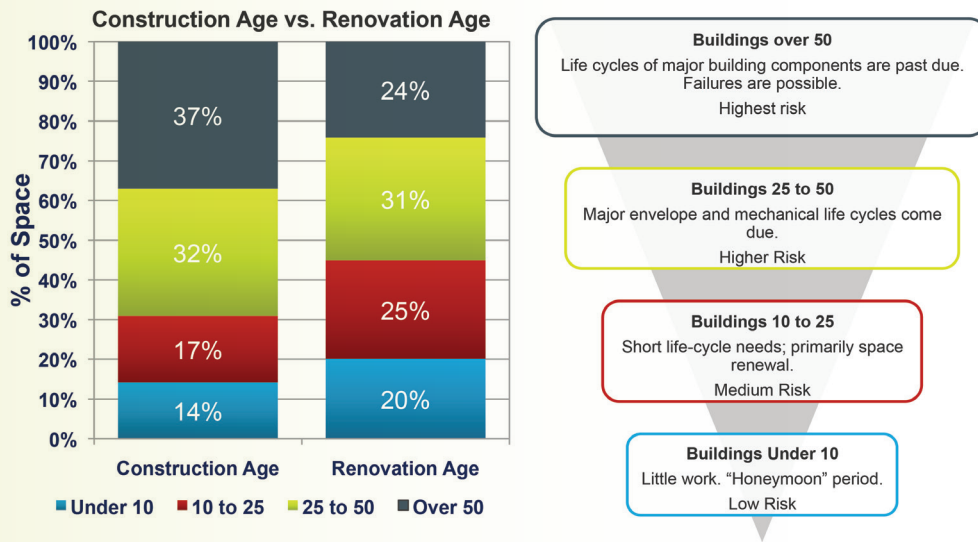
The following chart shows that a significant percentage of buildings constructed over 50 years ago have undergone major renovations and now perform like newer facilities. While 37% of the buildings on Sightlines database were constructed over 50 years ago, only 24% remain over 50 and not renovated. This means campuses have placed a priority on renovating older, more iconic buildings on campus. In many cases these are the historic core academic buildings.

Age Profile

Maybe more important is the lack of change in the group of buildings that are 25-50 years of age - 32% construction age and 31% renovation age (age redefined when capital investment amounts to more than 50% of the building's replacement value). These are the late 1960s – early 1970s buildings that have not yet reached 50 years of age. Many campuses are full of these brick, flat roof, casement window buildings

Facilities Age Profile

National Database Averages



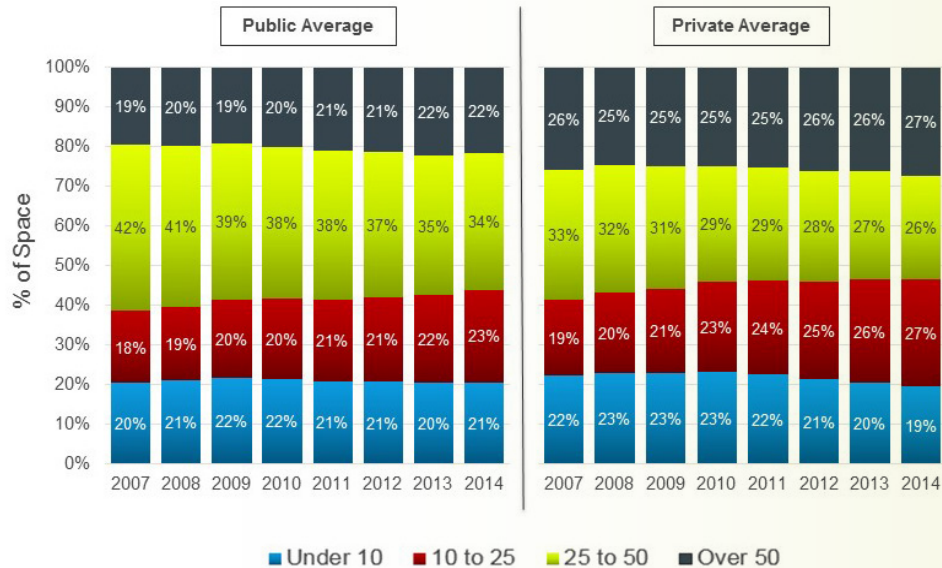
that were poorly constructed to start with and now have high backlogs of capital needs. **Samples of work order data collected by Sightlines also shows that these 25-50 year old buildings drive more and higher cost work orders than any of the other age groups on campus including the over 50 year old buildings.**

The data suggests that campus leadership has not yet decided what to do with these 25-50 year old buildings. Are they worth investing significant amounts of capital funding to save? Or are they in such bad condition and have so limited value to campus mission and program priorities that the best strategy is to demolish and replace them or even live without them?

Breaking down the renovation age data by type of campus provides further insight. We found significant differences in the renovation age of public compared to private institutions. Public institutions have the largest proportion of space in the 25-50 age range. Some public institutions have made progress on renovating these buildings and resetting the clock on components and systems. Others, with less funding, are seeing their 25-50 year old spaces continue to age. Without significant renovation these buildings will soon cross into the over 50 category.

Aging Campus – Renovation Age

Public vs. Private



Private institutions tend to have their older space split between the 25-50 years old and over 50 years old age categories. While it might appear that private campuses are disadvantaged by this space profile, remember that many of these are historic buildings with low complexity, high durability, and that continue to function with minimal investment.

The Enrollment Challenge – How to Manage Density

Nationally, current enrollment numbers and future demographic projections indicate that traditional high school graduates will no longer be able to support campus expansion at rates seen in years past. There are exceptions: Texas and Utah are two states where high school enrollment continues to increase, primarily due to net migration from other states and immigration. Most of the public campuses in Texas are overcrowded and recently the legislature approved new tuition revenue bonds to fund campus expansion.

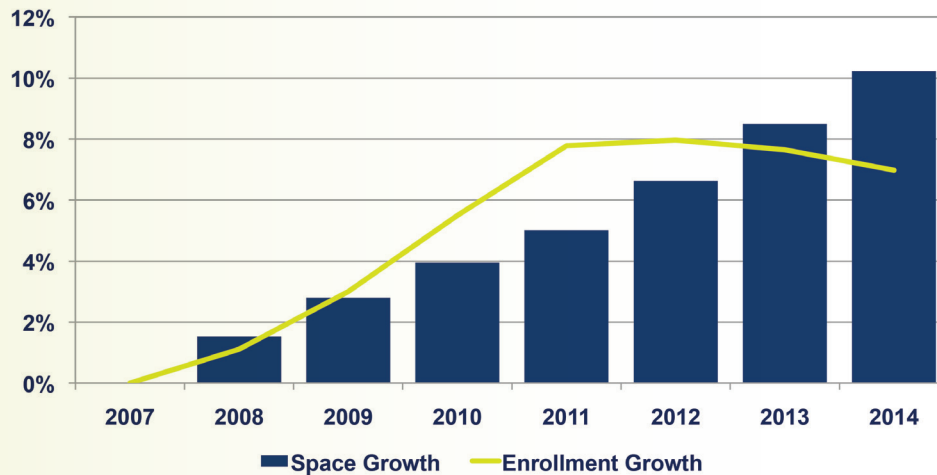
At Sightlines member campuses, enrollment grew by 8% between 2007 and 2011. During this same period, space grew by about half that amount. This suggests that campuses responded to the growth in campus population, but in a measured manner. Since 2011, enrollment nationally has flattened out and by 2013 and 2014 the rate of growth actually was in decline. However, space has continued to grow; since 2007 campuses have increased space by 10%, but now only have 7% more students. Historically, we know that there is often a lag in campus' response to enrollment, and that some of the space being constructed after 2011, when enrollments are leveling, was approved a few years earlier at the height of the enrollment growth and is just now coming online.

Density

We examined these trends further by looking at the amount of space per student over time. Both public and private campuses have gradually added more space per student from 2007 to 2014. Public campuses have 350 gross square feet/student; private campuses have 600 gross square feet per student. The fastest growing new space on campus are scientific/research buildings, new residence halls and student life facilities. Campuses, in general, are not adding to their core academic classroom space. This may be a function of changing teaching practices and more on-line learning opportunities. **However, the bottom line is that campuses are getting less dense; overall, they have more space for their students than ever before.**

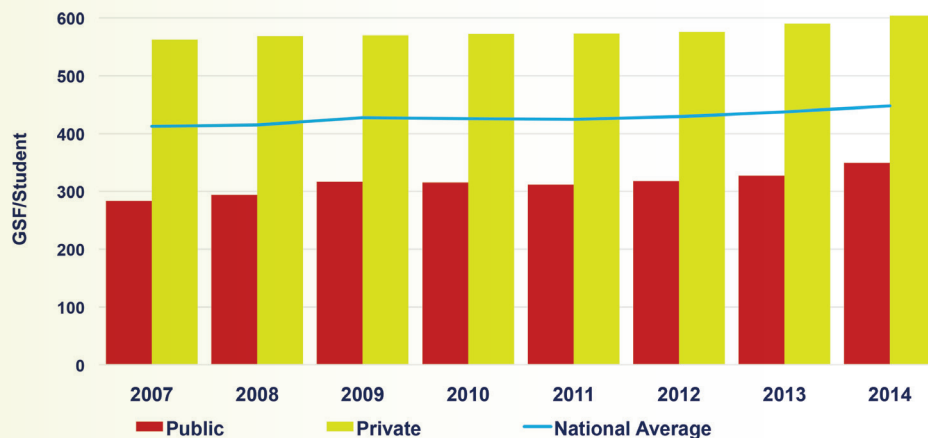
Space and Enrollment Growth

National average



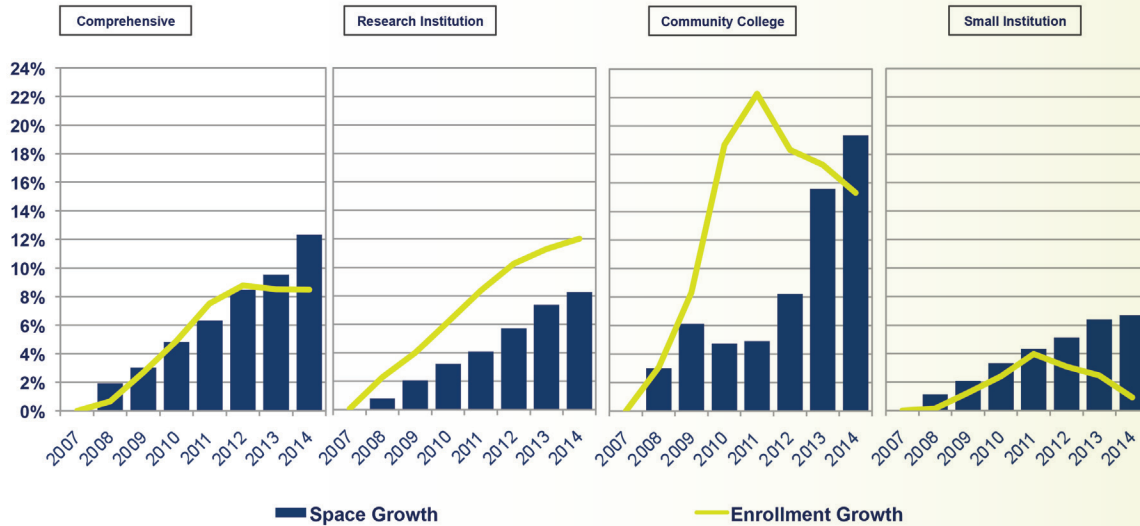
Space Per Student

Public vs. Private



Space and Enrollment Growth

By Constituent Group



When we disaggregate the data by type of institution, we see a different picture. Research institutions have been growing their enrollment at the fastest rate and growing their space at the slowest rate. Since these institutions are the largest in both square footage and enrollment, they have economies of scale in responding to new students without increasing space immediately. We have also seen a similar pattern at public universities in Canada where campuses tend to have much higher levels of density than U.S. institutions.

By contrast, enrollment growth at smaller institutions (less than 4,000 students) peaked in 2011 and has declined every year since. Many of these institutions continue to add space. The strategy is to attract more students by offering modern science labs, new suite dormitories and state of the art recreational space. While some of these institutions have also experienced large gains in endowment and may be able to fund campus expansion, the majority have funded expansion by borrowing money at very low interest rates — a good plan if enrollment numbers respond to the new space. There is evidence that the strategy has worked for some small institutions, however, the overall data for the 125 small institutions in our database calls the strategy into question. Furthermore, will the accumulation of debt on the balance sheets resulting from the new construction have a long-term negative impact on the financial health of these campuses?

Constituent Groups Defined*

Small Institutions: Four year public and independent institutions with full-time enrollment under 4,000; specialized institutions (art, engineering, technology, etc.); also includes two-year independent colleges and independent secondary schools.

Comprehensive/Doctoral Institutions: Four-year public and independent institutions with enrollment above 4,000; Carnegie categories - Baccalaureate, Masters or Doctoral

Research Universities: Public or independent research universities and medical schools/centers. Carnegie categories - Research Universities High (RU/H) and Research Universities Very High (RU/VH)

** Sightlines uses NACUBO's definitions of constituent groups.*

Rightsizing

Comprehensive universities and community colleges are seeing a leveling of enrollment growth and also have crossed the line between enrollment and space growth. Community colleges have the least space per student of any of the campuses in our database. So, if enrollment stabilizes, there is still space to accommodate new students and programs. However, if these campuses experience a growth in enrollment additional space will be needed. Comprehensive universities have a more complex picture. They have the highest percentage increase of space since 2007 of any of our campuses. At some campuses, for example in Massachusetts, California and Texas, overcrowding already exists and new space relieves that situation. We have also documented the opposite situation in states like Maine, Connecticut and Pennsylvania where enrollment continues to decline slowly and then will level off for the foreseeable future. State system and campus leaders are raising questions about how space will be managed at comprehensive universities with fewer students. In addition, the comprehensive institutions are in competition with research universities and private campuses for students, making future enrollment projections more difficult to determine.

Overall, these charts mean that managing campus density will be a critical strategy for institutions in the future. Not having enough quality space discourages both faculty and students from selecting a college or university. But having too much space in aggregate raises costs and often the “extra” space is of poor quality. Campuses that recognize that they need to rightsize their space to current and future enrollment trends and either demolish or replace poor quality space will be more successful in the long run.

Managing campus density will be a critical strategy in the future.

Rightsizing space is a must at U. Maine System

Many institutions and systems are re-evaluating their campus space through financial analysis with an eye towards creating greater efficiencies and cost savings. One example is the University of Maine System. In a January 3, 2014, report, the System noted that “the current multi-year financial analysis indicates the University of Maine System has more space than it can afford to sustain and annual facility assessments have documented that the facility portfolio continues to age and grow more costly.” As a result of this evaluation, the System has put policies in place to reduce the total square footage of their campuses by 10%.

CAPITAL INVESTMENT

Why Funding Source and Mix of Capital Spending Matters

Sightlines segments project spending between two different types of capital funding: annual stewardship and asset reinvestment. Annual stewardship is the recurring annual funding that ensures that buildings will perform properly and building components will reach their useful life. We call this the cost of “keeping-up.” Asset reinvestment is the cost of addressing the backlog of repair and modernization of buildings — or “catch-up” costs. When campuses allocate adequate resources to keep-up with building lifecycles, they defer fewer projects to their backlog and need less money to catch-up. **In fact, we have found that over time \$1 in stewardship avoids \$3 in future capital renewal investment.**

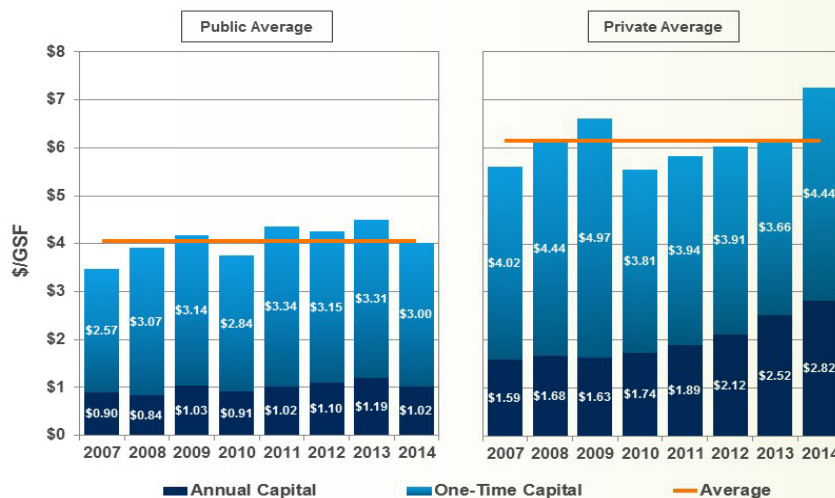
For facilities operators, another key advantage of annual stewardship is that its recurring nature makes it more predictable. This funding enables leaders to be proactive about pending critical needs and flexibly apply appropriations to preserve physical assets. When annual stewardship declines, facilities organizations tend to become more reactive as system failures increase utility consumption, daily service costs, and long-term capital needs.

Capital Investment — A Changing Picture

While construction age, construction vintage and renovation age all play a part in determining the backlog of deferred projects, access to capital over time is truly the way a campus can change the facilities picture.

Capital Investment into Existing Space

Public vs. Private



The capital funding picture for public and private campuses is quite different in both total amounts of investment into existing space and where the money originates. Capital funding at public campuses in our database grew from 2007-2009 and then was cut when the recession hit in 2010. These campuses recovered in 2011-13, only to experience a reduction in 2014 to under \$4 per gross square foot (GSF).

Funding Source

Essentially, the capital funding picture has been around \$4/GSF for seven years. Annual capital from the institution has contributed about 25% of capital; one time capital primarily from state capital appropriations and/or bonds has made up the remaining 75%. The sources of funding have not varied much, although there is some evidence that public campuses are beginning to look at institutional sources of funding more seriously, especially given the lack of confidence in receiving consistent levels of state funding. At public institutions in our database, institutional capital rose from \$0.91/GSF in 2010 to a high of \$1.19/GSF in 2013 — an increase of 30%. By 2014 this amount dropped back to \$1.02/GSF.

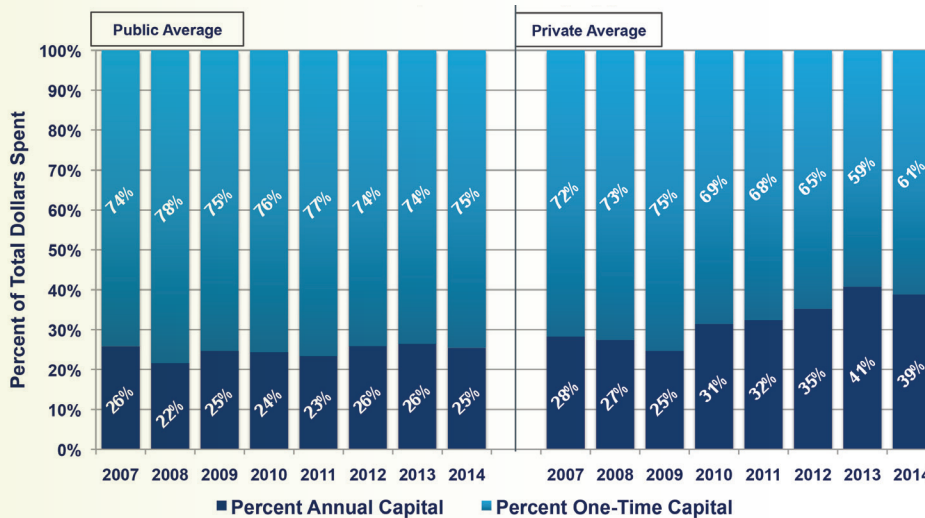
Private institutions, by contrast, took a serious cut in capital funding from the 2009 highs and it has taken until 2014 for these institutions to make a full recovery. But the sources of capital funding since the recession years have changed dramatically at private campuses. In 2009, the private campuses spent \$1.63/GSF in institutional capital (28% of total capital) and \$4.97/GSF in one time capital

(72%) for a total of \$6.60/GSF. In 2014, private campuses spent \$2.82/GSF from institutional sources and \$4.44/GSF from one time capital for a total of \$7.26/GSF. The key is that the recovery happened because institutional capital now makes up almost 40% of all capital funding. In fact, the amount of capital spending at private institutions from one time capital is significantly less on a percentage basis in 2014 than it was in 2009.

When we disaggregated the data by type of institutions we found significant differences. Research institutions (including both public and private) have the highest level of capital investment in existing space, growing from \$4.34/GSF in 2010 to \$5.89/GSF in 2015, an increase of 36%. The major source of this increase came from annual institutional capital which increased from \$1.26/GSF in 2010 to \$2.06/GSF in 2014, an increase of 63%. Given the enrollment versus space trends cited earlier, it is clear that the research institutions are growing enrollment and managing space in ways that give them significant revenue to invest annually in renewal of existing space.

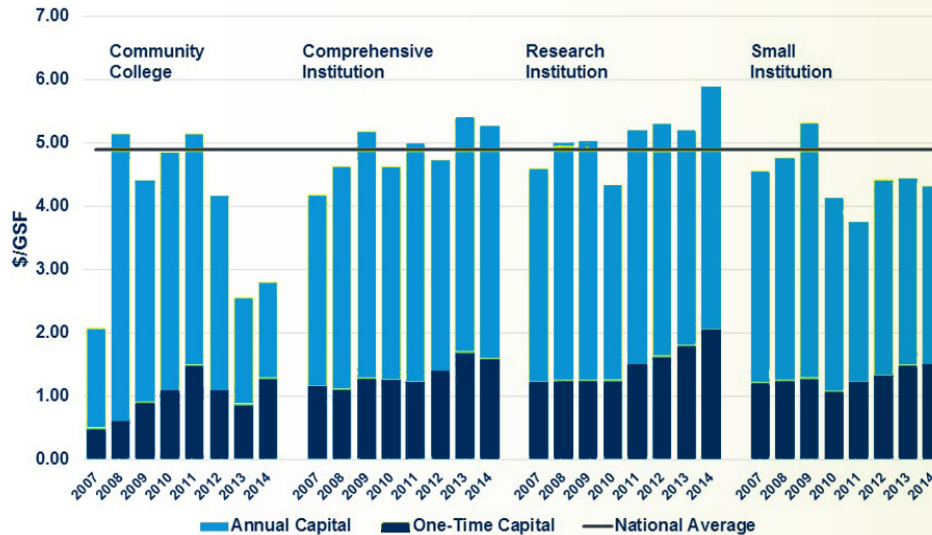
Mix of Capital Funding Type

Public vs. Private



Capital Investment into Existing Space

By Constituent Group



Comprehensive institutions are also growing capital investment in existing space, but not quite at the pace of research institutions. Overall comprehensive institutions have seen an increase of 14% in capital investment from 2010-2014, with the main increases coming from institutional capital.

By contrast small institutions and community colleges have not seen a similar recovery in capital investment in existing space. In 2014, both groups have capital investment below the levels that research and comprehensive institutions had in 2012. The community colleges in our database have been particularly hit hard by recent declines in capital investment into existing space driven by enrollment declines and reductions in state capital funding. These trends may vary in different regions of the country where enrollment continues to grow.

Public Campuses Shift Capital Spending Toward Envelope/Mechanical Projects

In the previous section, our data showed that public campuses as a group have significantly less capital funds than private campuses — a difference of over \$3/GSF. We also showed that a significant proportion of that difference was because private campuses were receiving more funding from annual institutional sources. While the amount and source of funding are clearly important, where the money goes is also critical.

The chart (on page 14) documents that there has been a very substantial shift in where public institutions are spending their limited capital dollars. In 2007, public campuses spent 44% of their funds on space and safety/code projects and 56% on more durable envelope/mechanical systems and infrastructure (utility distribution and grounds). By 2014, the amount of capital funding spent on envelope/mechanical systems and infrastructure increased to 64%.

Spending Patterns

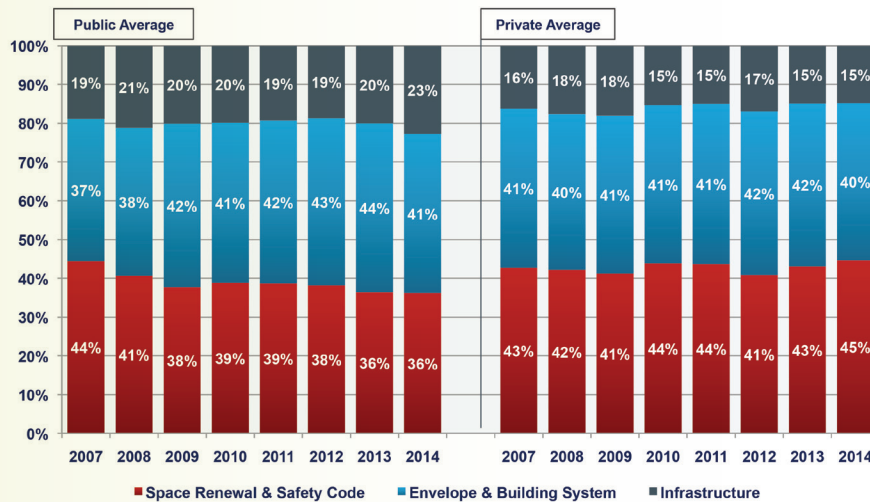
By contrast, private campuses actually increased their spending on space renewal/safety code projects during the 2007-2014 period from 43% to 45%. Why the difference in the sectors? We think there are a few explanations:

- Public institutions have more 1960s-70s space and infrastructure that is in critical need of repair.
- Public institutions have a higher backlog of deferred projects and the most critical are in envelope/mechanical systems. Either the roofs are leaking and the systems are not operating efficiently or facilities managers realize that they will fail soon. So capital investment is required now.
- Private institutions have more capital funding and have more flexibility to address space updates and modernization.

The key to the spending mix is the durability and return on investment (ROI). **Sightlines has found that space renewal projects last about 12 years while envelope and building systems investment last 30 years or more.** So, while public campuses may have less money, the shift of that funding to more durable, high ROI investments is an important strategy.

How Capital Dollars Are Being Spent

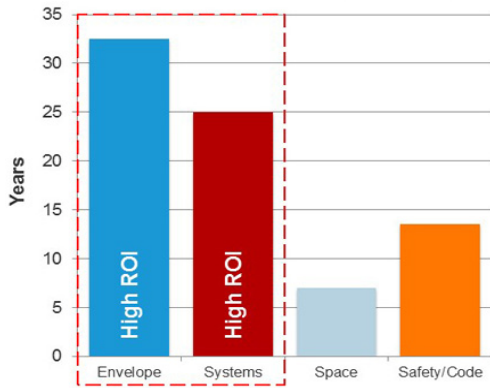
Public vs. Private



Campuses Commit Annual Capital to Slow Rate of Deferral

Average Life Expectancy

Data Taken From Life Cycle Estimates



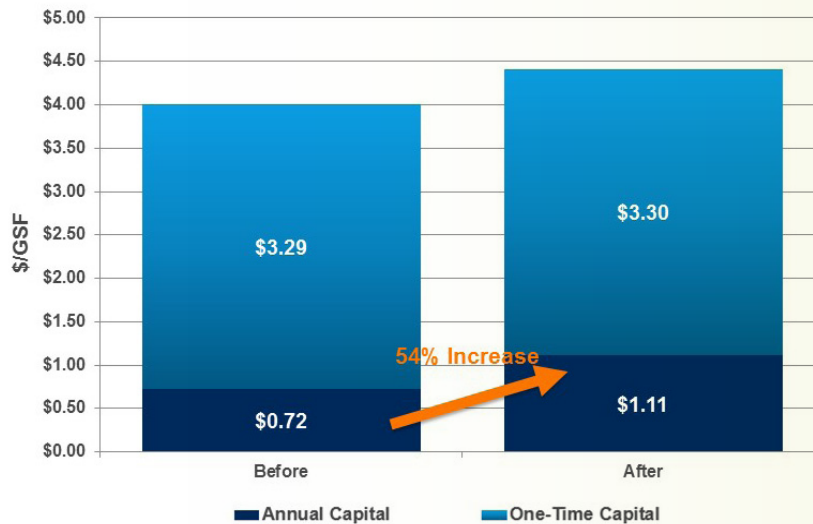
The data at left represents increased awareness and a commitment by campus leadership of annual capital funds to slow the rate of facility deferral. Over the years, we have learned that campuses engaged in documenting keep-up and catch-up needs and measuring their capital investment performance against targets make better decisions on project selection and do not add to their backlog of deferred projects. In this section, we look at a group of campuses that engaged with Sightlines in 2011 to determine if they are actually increasing a commitment to annual capital funding as a result of the Sightlines analysis.

The chart below is based on a sample of 30 campuses that began working with Sightlines on the Return on Physical Assets (ROPA) process for the first time in 2011. The 30

campuses represent both public and private institutions of varying sizes. We examined each institution's capital spending pattern prior to engaging in the ROPA process (where the emphasis and priority is placed on annual capital investment, what we call annual stewardship) and then after having been engaged in the process for three years. We found that this group of campuses increased their annual capital investment from institutional sources by 54% after engaging in the ROPA process. We also found that this increase did not replace one time capital funding (primarily from borrowing, gifts, State funding) which remained constant over time.

Annual Capital Investment Change

2011 New Members' Capital Spending Before vs. After Joining Sightlines



Backlog

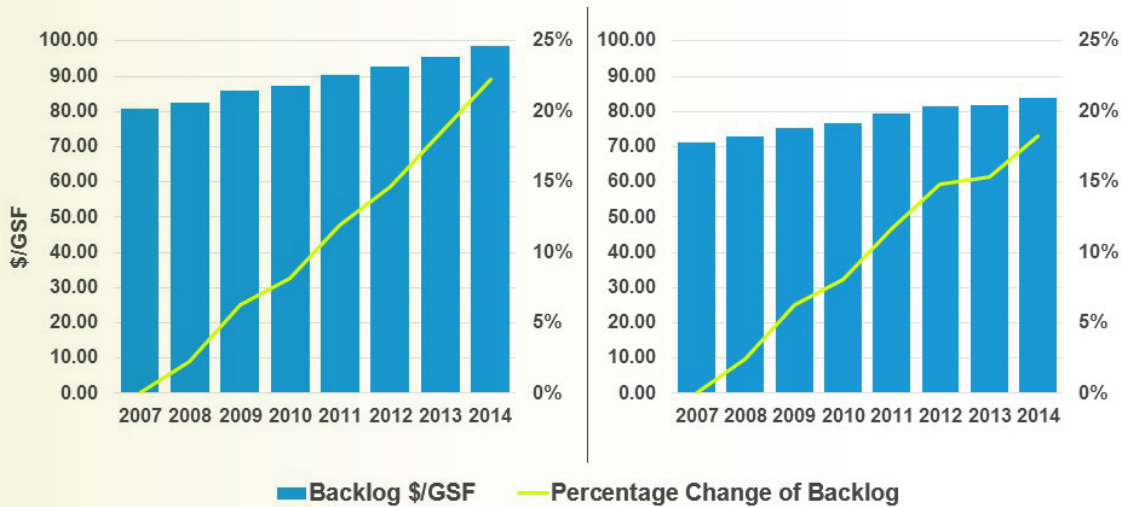
This is a very positive trend based on Sightlines analysis that \$1 of annual capital or stewardship investment can enable a campus to avoid as much as \$3 in future capital renewal investment.

Despite Gains in Capital Funding, Backlogs Continue to Grow

While we are beginning to see a recovery in capital investment, led by the private campuses, backlogs at all types of institutions continue to grow. However, there is a significant difference between private campuses, which have shifted more toward annual institutional capital funding, and public campuses that are much more reliant on one-time borrowing or State funding. The chart below shows that private campuses' backlog has grown by 18% since 2007 while the backlog at public campuses has increased by 22%. More importantly, we have been warning that public campuses are approaching an average backlog of \$100/GSF backlog, a level many experts believe is when facilities management moves from proactive to more reactive. There is a \$15 per square foot difference between private and public campuses when looking at total backlog.

Facilities Backlogs Continue to Rise

Public vs. Private



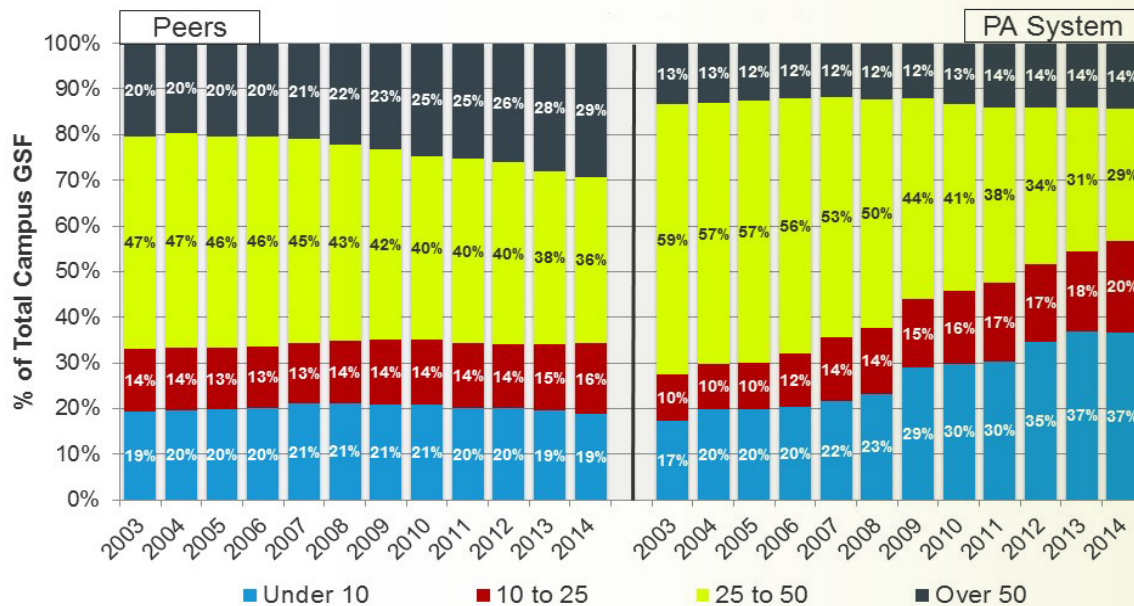
These trends raise an important question: why are campus backlogs continuing to rise when capital funding is relatively stable for public campuses and growing for private campuses? The previous data on growth of space and age profile provides some answers.

Despite having either stable or increasing capital funds, campuses just do not have enough money to address all of their needs. Many campuses have spent capital dollars on new space in hopes of attracting a shrinking pool of students. Others have focused on gut renovating and resetting the clock on building systems in the iconic buildings constructed more than 50 years ago. A smaller number of campuses have focused their capital on the large amount of space constructed in the 1960s and 1970s.

Pennsylvania's State System of Higher Education with its 14 campuses is an example of what happens when priority is set on addressing the 1960-70s bubble of square footage. The following chart shows the percentage of gross square footage in each of the four age categories Sightlines tracks.

State System Sets Priority on 1960-70s Buildings

Renovation Age by Category



Pennsylvania's State System of Higher Education used two key strategies: gut renovation that resets the clock on building systems and renovation through replacement that demolishes the 25-50 year old buildings and replaces them with new construction. This approach has reduced the amount of gross square feet in the 25-50 year old category from 59% of total campus space in 2003 to 29% in 2014. And the strategy accomplished this without growing the percentage of over 50 year old space.

While the System was able to secure additional capital resources to make these strategies work, it is clear that a focused and sustained effort to target the 25-50 year old buildings was the key to success.

OPERATIONS EFFECTIVENESS

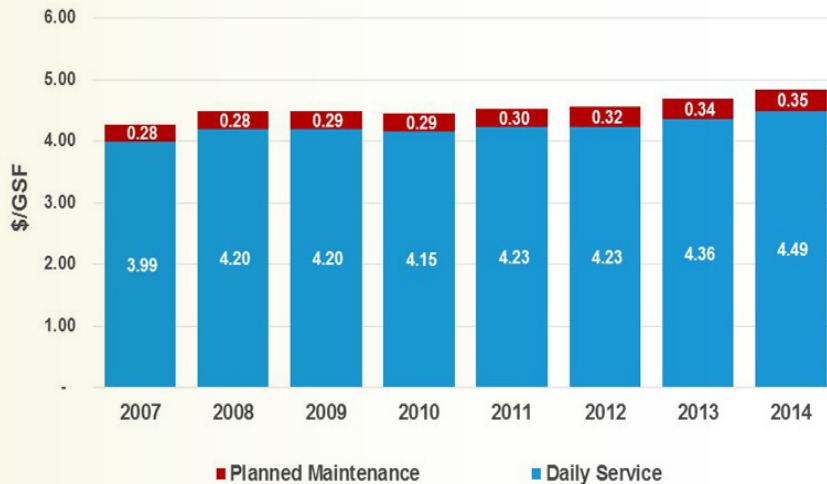
Facilities Operating Budgets

After being flat for years, facilities operating budgets are experiencing modest growth in 2013 and 2014. In 2008, the national average actual expenditure on facilities operations, including maintenance, custodial, grounds, planned maintenance, and administration, was \$4.48/GSF. By 2012, that expenditure grew only 7 cents per gross square foot to \$4.55/GSF — only 1.5% cumulative growth over four years. Clearly campuses were losing ground on funding operating budgets. Campuses needed to cut costs and facilities operating budgets were, at many campuses, first in line.

From 2012 to 2014, we have seen a modest recovery with operating budgets increasing to \$4.84/GSF, an increase of 6% over two years. Hardly enough to make up for years of flat budgets, but clearly some progress.

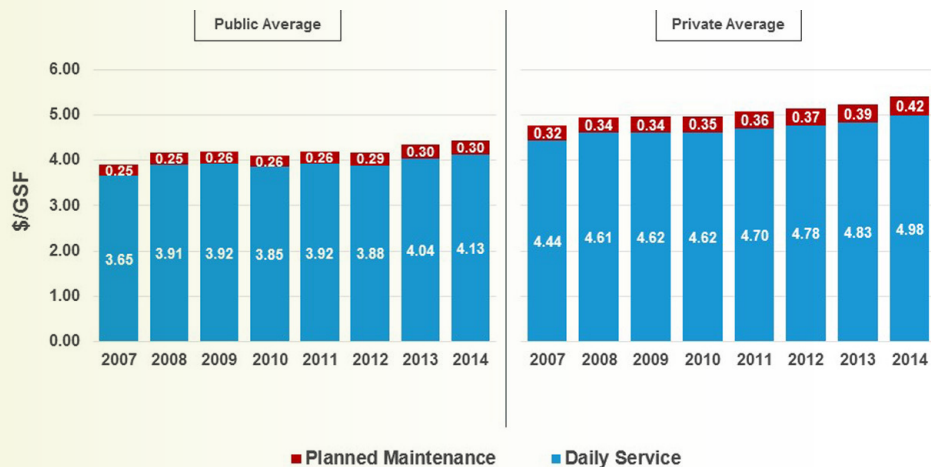
Facilities Operating Budget

National Average



Facilities Operating Budget

Public vs. Private



Similar to capital investment trends, operating budgets at private campuses are higher than public campuses by about \$.80/GSF. Both public and private campuses went through a period of flat or reduced operating budgets from 2008 to 2012. Both experienced a small recovery in 2013 and 2014. The one bright spot to report is that despite limited operating budgets, resources dedicated to planned maintenance (PM) have increased at both public and private institutions. Public campuses have increased PM from \$0.25 to \$0.30/GSF since 2007, a 20% increase. Private campuses have done even better increasing from \$0.32 to \$0.42, an increase of over 30%. Increasing PM shows that campuses are gradually working to become more proactive in maintenance operations despite rising backlogs.

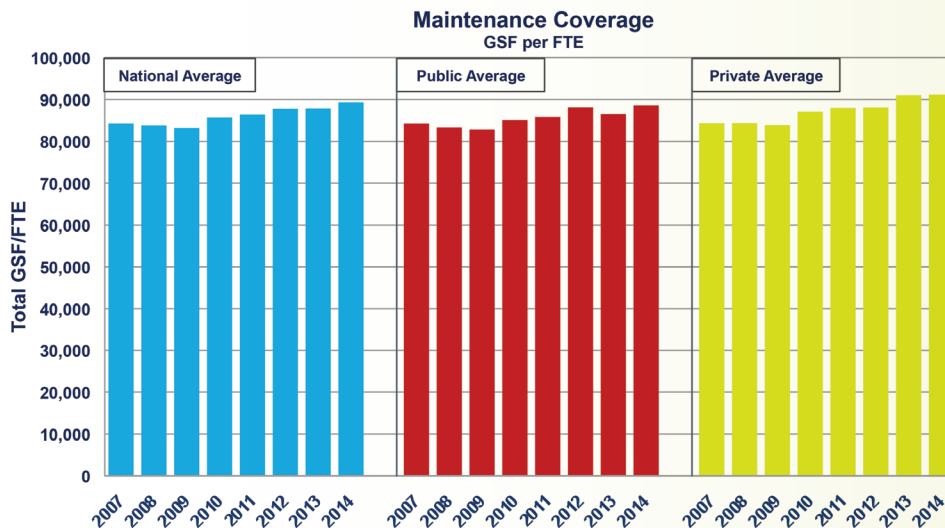
To illustrate the impact of no or limited growth facilities budgets, we examined staffing levels for both maintenance and custodial workers over time. The chart below shows that maintenance staff coverage rates, measured by “total GSF/FTE maintenance worker,” has increased

significantly from 2009-2014. In 2009 the average maintenance worker covered 83,000 GSF. In 2014 that number surpassed 89,000 GSF. Interesting is that private institutions have increased staff coverage faster than public campuses to the point where in 2014 the typical private campus worker covers over 90,000 GSF. Not all of this increase is a result of staffing cuts or unfilled vacancies. On many campuses the increase in coverage rates comes from adding additional square footage, but not adding additional maintenance workers. This approach may work in the short run while buildings are new, but as buildings age, fewer maintenance staff could reduce the number of repairs and actually add to the deferred maintenance backlog over time.

Custodial coverage is another area where facilities operators are asked to do more with less. Custodial coverage rates have risen at private campuses, increasing from 31,000 GSF/FTE to almost 35,000 GSF/FTE, an increase of 13%. Public campuses have retained coverage rates right around 35,000 GSF/FTE throughout the 2007-2014 period. Sightlines also independently assesses the

Maintenance Staff Coverage Rates Over Time

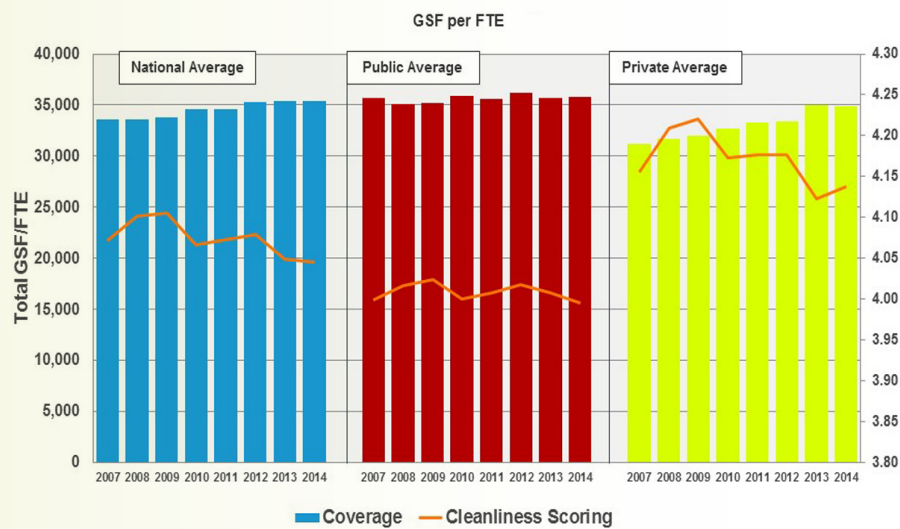
Public vs. Private



cleanliness of campuses on a scale of 1-5 with 5 being the highest level of cleanliness. During the 2007-14 period, we see cleanliness rates declining nationally, primarily driven by declines in cleanliness ratings of private campuses. This may have been a deliberate decision by private campuses; they may be willing to increase custodial coverage and accept a somewhat lower level of cleanliness. However, the cleanliness levels of private campuses are still higher than public campuses.

Custodial Coverage Rates Increasing

Public vs. Private



With budgets not keeping pace with inflation, most campuses are finding alternative methods to do more with less. We found that both maintenance and custodial coverage ratios have grown with typical employees responsible for an increasing amount of square footage. Many campuses are implementing new scheduling systems and changing campus community expectations about maintenance and custodial services. In the case of maintenance, there is a greater focus on planned maintenance.

Although there will always be ways to improve the efficiency of the facilities organizations, the prolonged period of budgetary stagnation has eliminated savings opportunities considered to be the “low hanging fruit.” Yet the pressures to lower costs even further are likely to continue. To affect meaningful operating cost reductions, campus leadership will need to look beyond operating issues to coordinating space and capital strategies in a meaningful way to modify the institution’s cost structure.

STRATEGIES FOR SUCCESS

Why Hasn't the Roof Caved In?

In 1980, Rick Biedenweg and Robert Hutson's article *Before the Roof Caves In* shouted a warning that more effective planning approaches were needed to address higher education's looming facilities challenges. Their research served as a precursor to modern lifecycle management. Many leaders and professional organizations used their research to make predictions of imminent system failures in order to compel action.

Given the data provided in this report, we certainly have reason to worry: aging campuses, flat enrollments, limited capital dollars, rising backlogs and more institutions forced to defer a growing list of repairs each year. It all adds up to scenarios where systems degrade to the point of program interruption. And this has happened on some campuses, but is not widespread. Why?

Sightlines examined multiple campuses to look for the answers to this question. Here are some of the reasons we found:

- **Facilities leaders have access to better data and management systems.** Through a variety of predictive models, including Sightlines' Return on Physical Assets (ROPA+) service, institutions have greater foresight into pending lifecycles as well as the conditions and repair requests of line-item components. The availability of this data allows a more proactive system-by-system approach to maintenance, even when large-scale capital programs are in doubt. Our data suggests that campuses have focused full renovations on older, more iconic core classroom buildings.
- **Building and system lifecycles are longer.** We have seen that the engineering lifecycle projections are appropriately conservative and systems tend to degrade rather than fail. Proactive planned and preventative maintenance programs in place at many institutions actually extended the lifecycles of a system by replacing key components rather than wholesale system replacement. The result of these actions is that systems and components are routinely exceeding foreseen useful lives.
- **Diversity spreads risk.** Most campuses are collections of buildings and not standalone assets. Whereas each facility is important, fewer system deficiencies rise to the level of program disruption when that at-risk building is one of 100 or 200 buildings. The addition of more flexible and shared classroom space over the last decade has also helped distribute the risk.
- **Functional obsolescence drives renewal.** Overall, new, more complex facilities have shorter mechanical system component lifecycles compared to pre-war era buildings. However, lifecycles have not decreased uniformly. Whereas, through post-war construction, space and program cycles were aligned with those for mechanical and building systems, the two groups have diverged over the past 50 years. Fundamentally, since the 1960s, space and program lifecycles have shortened while mechanical and structural systems have lengthened. With today's programmatic flux, the "churn" rate of space is substantially faster than the renewal cycle for building systems. It is modernization and program adaptation of space that drives most investment, as we documented in the section on capital investment. Therefore, the savvy facilities leader has been able to bundle critical mechanical projects with space updates in order to avoid failures and prolong the use of the building.

Changing the Conversation

If you accept the theory that the “roof hasn’t caved in” because of the aforementioned points, then one must conclude that there is tremendous elasticity in campus facilities. Even in an environment of finite resources, although failures will happen, widespread failures remain unlikely. Therefore a more targeted investment strategy, rather than a one-size-fits-all solution is needed. So, how can campuses get focused on the issues and take action?

It is easy to fall into the trap of making the deferred maintenance problems bigger as a strategy to spur action. The trends are compelling — aging buildings, not enough capital investment, campuses hitting borrowing limits, backlogs growing, operating budgets stretching maintenance cycles. In addition, competing priorities to fund faculty salaries and student financial aid within the institution make finding funding for annual capital investment more challenging. The idea of “growing” your way out of the problem through expanding enrollments, increased tuition and robust debt capacity is out of reach for nearly all but a few selective and well-endowed institutions.

In 2015, our experience at campuses shows that the strategy of making the problem bigger and more urgent paralyzes the decision making process. We found successful campus facilities leaders are winning confidence among decision makers by making the problem smaller and more manageable over time. How? Here are the strategies that are winning over decision makers and ultimately leading to a greater commitment of capital and operational resources for facilities.

- **Understand and communicate that not all buildings are created equal**, therefore they should not be treated that way. Project selection for all funding sources must unite mission, finance, and the technical needs of buildings. New construction must support the master plan and future program needs of the campus. Decisions to halt new construction, demolish non-functioning assets, or sell buildings to other organizations are difficult, so building consensus on campus using an integrated facilities management strategy works best. Armed with a new level of data, boards of trustees and campus leaders are today making courageous decisions to do just that by asking the question, “Do we really need all of this space?”
- **Use building portfolios** – for operations and capital - to make the problem smaller. Creating building portfolios is a useful tool to make the problem smaller and to enhance management’s ability to act. Just grouping buildings though is not enough. The projects need to be subdivided by issues such as safety, reliability, program, and asset management to assist in setting investment goals. This process will create a “balanced” investment portfolio strategy, which makes picking projects obsolete and will likely lower risk exposure.

- **Invest over time.** There will be limited resources for capital investment. Convincing campus decision makers to invest steadily over time is critical. To quote the 1960s rock song: “Time is on my side, yes it is.” Campuses that make annual capital investment a priority over time are making the greatest progress in managing the backlog and campus risks. These campuses are better able to keep-up buildings in good condition and selectively catch-up on deferred maintenance.
- **Reallocate savings.** Across our database, we estimate that campuses need to spend approximately \$5/GSF annually to “steward” the buildings and manage the assets. Campuses are funding on average 27% of this need (\$1.35/GSF). But, campuses are spending on average \$7.20/GSF on operations and utilities. A 10% savings is a 54% increase in stewardship funding. Campuses generally know how to do this, but policies are needed to reallocate savings from operations to stewardship to create the incentive to attain those savings. The data shows that that \$1 increase in stewardship offsets \$3 in future capital renewal investment – an amazing payback.

Conclusions

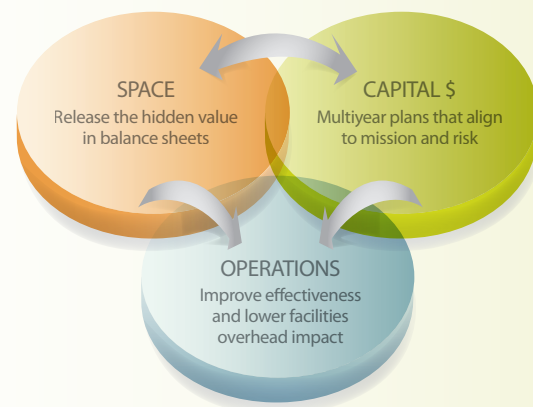
Today’s facilities leaders are faced with more challenges than ever before. Many say that their role at the institution is to “play the hand we’re dealt.” But campus leaders’ real job is to make a better hand.

Higher education leaders can do more within the existing resources, and can manage the risks more effectively. However, real progress calls for a holistic approach that bridges space, capital, and operations. It requires leadership to incentivize change, track it and reward positive results. Finally, it takes patience. Campuses were not built overnight, nor will they fall apart in a day. If money was no object, you wouldn’t need a plan. The reality is that resources are finite and without a sound plan mistakes can and will be made.

As a partner with higher education institutions, Sightlines is ready to help. Our Return on Physical Assets (ROPA+) program gives our members the ability to manage space, capital and operations more effectively. Technicians are needed to fix the systems but without the resources the technician is ineffective. Together we can effectively make the case for change by developing and articulating a strategy that can be understood from the boiler room to the boardroom.

For more information on the material contained in this article, please contact us at insights@sightlines.com or 203.682.4950.

The Sightlines’ Paradigm





Sightlines
405 Church Street, Suite 2
Guilford, CT 06437
(203) 682-4950
sightlines.com
insights@sightlines.com