The State of Facilities in Higher Education

2013 Benchmarks, Best Practices, & Trends
Executive Summary

We are at a unique point in the history of managing facilities on higher education campuses. Two major and historic waves of building construction are increasing demands for capital renewal investments at a time when resources available for capital are limited by reductions in state funding, decreases in research and philanthropy, and debt limits set by Trustees. The traditional strategy of cyclical building renovations and replacements will not work for the future. There is just too much work to be done. Institutions need to closely examine their mission and make tough decisions regarding capital backlogs if they wish to remain physically sustainable.

Buildings typically cross major capital thresholds after 25 and 50 years of age; times when most major component systems require replacement. Currently, the buildings built in the 60s and 70s in response to the post WWII baby boom and major science investments from the government in those decades are nearing or have crossed the 50-year mark. Many have not had significant renovation. This is happening at the same time that buildings from the construction boom of the 1990s will be nearing the 25-year mark. The result is substantial growth in the backlog of deferred maintenance.
Meanwhile, policy makers are asking: “But haven’t campuses been spending billions on new construction and renovations over the past 20 years? Why hasn’t this spending made a difference?” The answers to these and other critical questions are multifaceted and several areas need to be explored to develop a thorough understanding of the challenging situation facing facilities management today.

In the following guide, we will identify the trends within higher education facilities management that compound the age distribution issue mentioned above. In addition, we will discuss the root causes of these trends and recommend changes in policy and practices to address the resulting challenges. The identified trends are:

1. **Age Profile** – why the age distribution of space on your campus is important to know and what can be done to change it to reduce risk of building failure

2. **Capital Investments** – how much capital institutions are investing in existing facilities and the changes in the source of those investments

3. **Project Backlogs** – the current state of deferred maintenance backlogs and how these backlogs are driving investment decisions

4. **Facilities Operating Spending and Staffing** – what the level of funding is and the impact it is having on available staff to maintain, clean, and improve overall campus appearance

5. **Energy Consumption and Costs** – how changes in energy practices, consumption, and costs may provide an opportunity to shift resources
Age Profile

One of the simplest yet most valuable indicators of pending facilities needs is the age profile of your campus. When looking at this metric, Sightlines uses a concept called “renovation age.” By investing a significant amount of capital in an existing facility, it resets lifecycles and effectively resets the deferral clock of that facility. This process takes age calculations beyond just construction year.

Despite the addition of new modern buildings, campuses of all kinds continue to have a high percentage of space over 25 years old in terms of renovation age, a time when life cycles of key building components like roofs, windows, doors, HVAC, electrical, and plumbing systems begin to come due for replacement. In 2012, the majority (58%) of all space on campuses was over 25 years old. Additionally, the percent of space over 50 years old and not renovated grew from 18% to 22% in the 2007-2012 timeframe. Many of the older over 50 year old buildings with high levels of deferred maintenance are small and have limited program value to the campus. A key decision will be whether to invest money to renovate them or eliminate them from the physical portfolio.

There is a big difference in public vs. private campuses when looking at age profile. Public campuses tend to have a very high percentage of their space in the 25-50 year old age category. This reflects the building boom at public campuses that occurred from 1960-1975. We
have also discovered that many of these older buildings on public campuses were first generation research facilities that no longer meet the needs of a modern university. The problem is of course, unless this space is renovated and the clock reset on building components, all of these buildings will reach the 50 year old mark in the next 10 years. This means there is a substantial risk of failure of building components on public campuses because they are way past their due date for replacement...and it will get worse over time. Imagine a scenario where research experiments in process are stopped because the HVAC system fails to keep temperatures within appropriate ranges.

Private campuses have more space that has already reached the 50 year renovation age than public campuses – increasing to 27% in 2012. Another 29% of their campus space is in the 25-50 year old category. While these numbers suggest that private campuses are at higher risk of building component failure, private campuses tend to have a significant proportion of space constructed prior to 1951 and constructed after 1991. Buildings constructed during these eras are more durable and likely to last longer if properly maintained. So the era of building construction as well as the age of buildings is important to take into consideration.

**Key Takeaways:** Understand your age profile and the inherent risks the distribution represents. You will never have enough money to fix all buildings at one time. Buildings in different age categories require different strategies. For example, newer modern, complex buildings require annual investment and high levels of planned maintenance. High priority research buildings may need immediate component upgrades or be considered for repurposing or replacement. Not all buildings are created equal. A “one-size fits all” renewal strategy will not work to reduce the risk of an aging campus.
Capital Investments

It is difficult to think of 2009 as the “good old days”, but when Sightlines looked at capital investments into existing space on a gross square foot (GSF) basis, 2009 is the highest year recorded with both public and private campuses spending $5.50 per GSF.

The economic downturn had a huge and immediate impact on colleges and universities, even though campuses were increasing enrollments. By 2010, capital investment dropped almost $1/GSF in public campuses, and more at private campuses. That’s over $1 billion less invested in campus facilities at Sightlines member campuses alone.

The gradual recovery has had different impacts on public and private campuses. Public campuses have not reached 2009 levels and a second drop in capital investment from 2011 to 2012 brought them under $5/GSF. These numbers reflect reductions in overall state support and reduced willingness of governments and campuses to add further bond debt. In fact, there is growing evidence that many public universities have reached reasonable debt limits set by their Trustees and monitored by ratings agencies.

After sharply reducing capital investment in 2010 (in many cases delaying projects already planned), private campuses were back to investing $5.20/GSF in 2012. While still not at 2009 levels, these campuses are headed in the right direction. Note that private campuses’ one-time
capital spending (generally from gifts and debt financing) in 2012 was only $3.20/GSF, less than the level in 2007 and less than public campuses.

So what are they doing differently? After multiple years of flat annual capital investment, private campuses have steadily grown their Annual Stewardship funding – recurring dollars as opposed to special appropriations – from $1.50/GSF in 2010 to $2/GSF in 2012 (an increase of 33%). This reflects an understanding and commitment by private campuses to make regular annual investments to address capital needs.

One other important observation: public campuses have also increased their Annual Stewardship investment from $1.10 in 2010 to $1.40 in 2012 (27% increase), a level that even exceeds the 2009 annual investment. There is evidence that many public campuses are starting to emulate private campuses by taking an Annual Stewardship approach to maintenance and relying less on one-time capital from the state government in order to keep-up with the needs of their campus facilities. This long-term trend should to be monitored because it reflects a shift in reliance on state capital funds to a “keep-up” approach to maintaining their campus facilities.

**Key Takeaways:** Capital is going to continue to be limited so selecting and timing the right investments is critical to managing facilities risk. We have found that investing annually in buildings will reduce risk over time – this is called Annual Stewardship of buildings. An increasing number of both public and private campuses are moving in this direction. Implementing an Annual Stewardship policy and funding to target levels will enable one-time capital to be directed at the highest risk buildings that are important programmatically, for example, science research facilities. As a facilities management best practice, many campuses are creating building portfolios similar to endowment investment portfolios in order to better manage their capital investments.
Project Backlogs

It is no surprise given the increasing age profile of campuses and the lower levels of capital investment that project backlogs are growing. Sightlines defines project backlog to include repair and maintenance projects – traditionally “what’s broken” or deferred maintenance – and projects that will occur because life cycles are coming due in the next five years.

From 2007 to 2012 project backlogs have increased by 15%. Furthermore, the rate of increase in the backlog is accelerating from 2010 to 2012, a direct result of aging campuses and reduced capital investment. At the current rate, overall project backlogs will hit $100/GSF by 2015 and maybe sooner. Most facility experts cite the threshold of a $100/GSF backlog as a level where facility operations can no longer be proactive because so many building components are breaking; reactive work orders take up all of their staff time.
Another number that shows the impact of a growing backlog is how campuses are spending their capital.

In 2007, campuses invested 54% of their capital into envelope and mechanical projects and 46% into space renewal. By 2012 the percentage of capital invested into envelope and mechanical projects rose to 62%. It could be that facility managers are getting smarter and investing their limited capital into more durable building components. We think that might be true. However, it is more likely that the envelope and mechanical investments are being driven by the need to fix building components that are on the verge of failure. Campuses have no choice but to fix those building components that pose a threat to quality academic and research programs and providing acceptable student residences.

It is likely that this trend is making the practice of picking the projects before they pick you more difficult. Sightlines has also determined that the cost of fixing failing building components on an emergency basis can cost as much as 3-4 times more than making scheduled renovations. There truly is an added cost of waiting until building systems fail or the roof caves in.

**Key Takeaways:** Be sure to document the project backlog, including building components such as HVAC systems, electrical, plumbing, and roofs and ultimately, how much it is growing. Grouping buildings into project portfolios will help set priorities and focus work that
needs to be done immediately. Understand that the mix of project investment (envelope/mechanical vs. space renewal) is a critical decision and needs to be tracked over time to make sure you are making the right choices for your campus. You will never have enough money to eliminate the backlog so the key is making informed decisions to effectively manage it. Sometimes it will make more sense to demolish an aging building with a high backlog that no longer meets programmatic needs.
Facilities Operating Spending and Staffing

Facing the triple whammy of aging campuses, less capital, and growing backlogs, it would be great if campuses were providing more funding to facility operations. Unfortunately, there is very little good news for facility managers.

Facilities operating spending increased from $4.34/GSF in 2007 to $4.72/GSF in 2012 – an increase of 9.4%. The less than 2%/year increase (there actually was a cut from 2009 to 2010) does not even keep up with negotiated salary increases and increases in health care benefits. So it is not surprising that facility operations on campuses have less maintenance, custodial, and grounds staff overall in 2012 than they did in 2007. The data has shown increases in coverage rates for all three types of workers, meaning fewer staff are covering more space. These numbers are similar for both public and private campuses. However, in some parts of the country, private campuses have cut facility staff at a faster rate than public campuses.
The one piece of good news is that money committed to planned and preventive maintenance has actually increased over the last three years by 15% from $0.27 to $0.31/GSF. Why? In visits to campuses we observe a change in mind-set. Campuses are realizing that being more proactive with both their facilities staff and investing annual capital are better ways to manage facilities in the long run.
**Key Takeaways:** Operating budgets are likely to be limited or even cut further in the near term. Being more proactive and doing more planned and preventive work is an important step to reduce daily work orders. But on many campuses being more proactive will not be enough to meet the demands of campus customers. Finding new and innovative ways to deploy staff and use technology to increase productivity are important strategies for the future and should be considered a facilities management best practice. Setting clear standards and customer expectations for levels of maintenance and custodial service is also an important strategy.
**Energy Consumption and Costs**

A bright spot among the trends is the consumption and cost of energy. Campuses across the US have reduced energy consumption at an average rate of almost 14% over the last five years.

The largest gain has been in the consumption of fossil fuels; with a reduction of over 13,000 BTUs/GSF and a smaller, yet still impressive, reduction in electric consumption – at a little over 8%. However, given that many campuses are adding more complex, high tech buildings the reduction in electric consumption is a positive trend. Three major factors are leading to this result: improved energy efficiency practices on campuses; capital investments to improve utility infrastructure and upgrade building controls to monitor consumption; and fuel switching from oil and coal to natural gas.

All of the improvements in energy consumption, efficiency, and fuel switching have resulted in a reduction in utility costs from $2.54/GSF in 2009 to $2.24/GSF in 2012. When you consider that Sightlines member campuses have over 1 billion GSF of space, a $0.30 savings amounts to over $300 million. We are finding that many finance and facilities leaders are redirecting all or part of these savings in utility costs to enhance proactive facility operations like planned and preventive maintenance or to fund further capital enhancements.
Key Takeaways: There has been major progress at many campuses in reducing energy consumption and costs and if your campus has not already been working on this, you are overdue to begin. Campuses that have made significant progress on energy still have a way to go to be considered best practice institutions for “going green.” Campus finance and facilities leaders should consider using utility savings as a way to fund annual stewardship of the campus including capital investments and planned maintenance.
In Closing

Higher education leaders can look at the national trends like a glass half empty or half full. Some campuses are overwhelmed by aging buildings, growing backlogs and lack of capital and operational funding. This can lead to inaction and ultimately higher facilities costs in the long run.

Those finance and facilities leaders that understand these trends, however, can develop strategies that work to systematically bring down the project backlog, create a more balanced age profile so every building is not coming due at the same time and make the case for investing capital resources. In addition, by operating more effectively and efficiently, campus leaders can take advantage of savings and reinvest the money into further asset enhancing projects and preventative work.

Note – All exhibits contained herein generated via Sightlines’ ROPA+ database

Author

Jim Kadamus  
Vice President, Sightlines  
jkadamus@sightlines.com

About Sightlines

Sightlines gives colleges and universities the independent data and perspective they need to make critical decisions about their most valuable assets – their facilities. We have compiled the industry’s most extensive, verified database, allowing us to benchmark institution’s facilities against universities and colleges across the nation. In fact, over 400 campuses across the nation rely on Sightlines to help make the most of finite resources. At Sightlines, we’re reinventing how facilities are managed in higher education.

Contact us:  
insights@sightlines.com | www.sightlines.com
203.682.4950